

A META-ANALYSIS OF SMEs LITERATURE BASED ON THE SURVEY ON ACCESS TO FINANCE OF ENTERPRISES OF THE EUROPEAN CENTRAL BANK

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ABSTRACT

Small and Medium Enterprises (SMEs) are substantial contributors to employment and to the GDP growth in many countries. Therefore, understanding their difficulties to find appropriate financial resources are a key task for policy makers. Despite being a long-debated topic, there are still several gaps in the literature, probably due to the lack of empirical data. A relatively new database, the Survey of Access to Finance of Enterprises (SAFE) emerged after the subprime crisis. It is regularly conducted by the European Central Bank and can provide new information on SMEs financing. This paper conducts a meta-analysis of the literature based upon this survey, identifying key working hypothesis, methodologies and results.

Keywords: SAFE, SMEs, financial decisions, credit constraints, European firms.

1. Introduction

Small and Medium Enterprises (SMEs) contribution to economic growth is a topic of general interest for all countries in the world. Hence, the improvement of these firms is a key factor to stimulate many economic variables.

The European SMEs contribution in the non-financial business sector¹ is considerable. SMEs comprise 99.8% of all enterprises, 57.4% of value added and 66.8 % of employment. The vast majority of SMEs (93%) are micro enterprises with less than 10 employees (European Commission, 2016). These firms present many different problems

¹ The non-financial business sector consists of all sectors of the economies of the EU28 or Member States, except for financial services, government services, education, health, arts and culture, agriculture, forestry, and fishing European Commission (2016).

such as obstacles to access to external financing. The financial situation and the access to external finance of firms are essential for the investment and the development of an economy (Ferrando and Mulier, 2015; Ferrando, Popov and Udel, 2017).

In this work, we focus upon the studies that have been done using data from the European Commission and the European Central Bank Survey on Access to Finance (hereinafter SAFE). On the one hand, we analyze the main contact points of the papers that used SAFE, considering not only their results, but also methodologies, variables and countries studied. On the other hand, we highlight the main areas of the Survey that yet, have not been explored. In this sense, we fill the gap in the literature by gathering the findings of papers generated around SAFE, and detecting the unexplored items of this database, providing tentative research lines.

The importance to review what has been done considering SAFE resides in that it is a current database, conducted bi-annually since 2009, designed to capture timely and accurate information on the financing of firms considering different financing instruments. To our knowledge, these characteristics make this database, the largest and most comprehensive source of European SMEs financing characteristics.

The revision of the scientific production based on SAFE data is justified in several aspects. To the best of our knowledge, this is the first European-wide survey conducted regularly. It is a reliable source of data, considering that it is organized jointly by the European Central Bank and the European Commission. It has a bi-annual frequency, which could allow to detect changes in SMEs financial constraints due to several specific events occurred within a year. The survey is designed to capture timely and accurate information on the financing of firms considering different financing instruments. Finally, ten years have passed since the first survey was launched. A specific body of knowledge has been generated around this survey, and needs proper systematization, in order to facilitate future research. In this line, our paper constitutes the first review of papers using SAFE and contributes to the literature in several ways: (i) collecting all the papers using this database, (ii) analyzing critically the methodology and results of these papers, (iii) finding literature gaps. We do not only systematize and summarize papers' findings, but also, we describe the methodologies applied and relate them with the survey.

The remaining of the paper is organized as follows. Section 2 contains an overview on the determinants of SMEs' financial access. Section 3 describes the main characteristics of SAFE. Section 4 describes what has been done with SAFE, considering all the papers using this database. Finally, Section 5 shows the main conclusions.

2. Contextualizing SMEs' access to finance

SMEs' access to finance has received an increasing interest over time. These firms face more obstacles in accessing external finance in comparison to larger and more established firms. Even so, SMEs' financial decisions are highly complex given the existence of asymmetric information, agency costs, insufficient collateral, and small transactions volumes. These concerns give rise to the capital structure theories, among which: Trade-Off Theory (Modigliani and Miller, 1958; 1963), Pecking Order Theory, (Myers, 1984; Myers and Majluf, 1984) and Financial Growth Cycle (Berger and Udell, 1998), among others.

The seminal paper of Modigliani and Miller (1958) led to the theories on the capital structure of firms. These authors, assuming perfect markets, state that the value of a firm is independent of its capital structure. In this way, they deny the existence of an optimal capital structure. In a subsequent work, Modigliani and Miller (1963), relax the assumptions of perfect markets and expand their initial model by incorporating the tax advantages of debt. Interest payments reduce the taxable profit, concluding that the value of a debt-ridden company will be higher than that of a debt-free company, and therefore the optimal financing structure would be one composed entirely of debt. This result gave rise to the so-called Trade Off Theory, sustaining that debt generates a benefit for the company due to the effect of financial leverage, but a disadvantage due to incremental risk. Therefore, there would be an optimal debt ratio that would maximize the market value of the company somewhere within the range from 0% to 100% debt.

Myers (1984) and Myers and Majluf (1984) have proposed the Pecking Order Theory, that describes an order in financing choices and has as key element the asymmetric information between lenders and borrowers. The Pecking Order Theory considers that entrepreneurs choose the financing sources inversely to the need for information disclosure for each financial instrument. Therefore, they use first internal sources, then bank debt and, finally, access to the capital market.

Another stream of literature incorporates the cycle of business growth as a condition for access to financing. Along these lines, we find the work of Ang (1991), which states that SMEs go through several stages on the road to becoming a large company. Consequently, it is possible that a single theory cannot explain the capital structure adopted. Berger and Udell (1998) propose the Financial Growth Cycle, which supports that the financial structure of a company changes according to its size and age. As the company moves through its business cycle, decreased information asymmetries improve access to external financial sources, with longer terms and reduced costs. That means that, in the early stages, when companies are young and/or small, they are less transparent in terms of financial information, which leads them to finance themselves using internal sources, commercial loans or through business angels. However, when companies experience later stages of higher growth, they can access to different external sources: venture capital, bank loans or financial markets.

Most empirical studies on capital structure are focused on Pecking Order Theory and Financial Growth Cycle. In order to test such theories, models include several SMEs' characteristics, to proxy seniority, information transparency, etc. In this regard, many authors find a positive relation between size and debt level (Petersen and Rajan, 1994; Cardone Riportella and Casasola, 2003; Hutchinson, 2004; Kumar and Francisco, 2005; Krasniqi, 2010). Moreover, firms' age is a controversial variable found in the literature respect to its incidence over financial access. Some authors discover a positive relation between SMEs seniority and the external financial access (Gregory et al., 2005; Bougheas, Mizen and Yalcin, 2006). On contrary, some authors find a negative relation between these variables (Petersen and Rajan, 1994; Kumar and Francisco, 2005), and others do not find significant relation (Cole and Dietrich 2013). In a similar vein, Ferrando and Griesshaber (2011) find that firms' age and ownership are significant explanatory variables for perceived financing obstacles across firms. The legal form adopted by SMEs could be considered as a proxy for information disclosure quality. Firms with limited liability legal form are more likely to access external financing than unlimited liability firms, since it is related to greater reliability and formality of the firms' operations (Storey, 1994; Harhoff et al., 2014; Guercio et al., 2014). Sector of

activity seems to be an important characteristic that influences SMEs access to finance. Firms belonging to the manufacturing/industrial sector, compared to services, trade or technology sectors, face less limitations of access to external financing. The reason is that these companies have higher proportion of fixed assets that can be used as collateral. Additionally, innovative firms face more problems of access to finance, related to greater risk, long payback period and complexity (for the lender) to understand the technical aspects of the activity carried out (Roberts, 1991; Bank of England, 1996; Oakey, 2003; Hogan and Hutson, 2005 and Guercio, et al 2016). Manager's gender is also considered as a conditioning factor of access to external financing. Companies that are run by women have less external funding (Carter and Rosa, 1998; Coleman, 2000; Guercio et al., 2015; among others). Some authors affirm that companies managed by women demand less external financing than companies managed by men, given the greater aversion to risk by the former (Buttner and Rosen, 1992; Orser et al., 2006).

Finally, macroeconomic and legal environments are correlated with financial developments, affecting SMEs access to finance (La Porta et al., 1997; Beck et al., 2005 and Hall, 2004; Moritz et al, 2016; Mac an Bhaird et al., 2016). In particular, Beck et al. (2005) mention that SMEs are negatively affected from deficient financial, legal and enforcement structures and mechanisms, resulting in greater financing constraints. International organizations, such as OECD (2016), sustains that since 2014 the ongoing economic recovery had a moderately positive effect on SMEs' financing, given that the economic growth increased between 2012 and 2015. In this line, the developments of the macroeconomic environment, coupled with overall favourable financial conditions in most participating countries, led to a general trend of rebound in credit lending in 2014. Similarly, credit conditions, although still challenging for many SMEs, have been easing across participating countries.

During the period of the financial crisis and its spill over effects over the economies, SMEs seem to suffer extremely by deteriorating external financing conditions (Artola and Genre 2011; Ferrando and Mulier 2013; Terceño et al., 2013). Investor confidence diminished dramatically in the banking sector of the economies more affected by the financial crisis, such as Greece, Ireland, Italy, Portugal and Spain, given that their banks tended to assign large percentages of their portfolios to the debt securities issued by domestic sovereigns (Ferrando et al., 2017).

Wehinger (2014) mentions the severe decline in bank profitability and the erosion of bank capital reserves that hit these lenders. The author considers that the 2008 crisis led to disruptions in banks' access to wholesale funding. These events generated serious pressures on banks' balance sheet positions and consequently reduced their lending capacity as they were forced to readjust their risk exposure. Consequently, when bank lending is reduced, SMEs tend to be more vulnerable and affected than larger corporations. In this line, Hempell and Sorensen (2010) show that supply constraints have slowed euro area bank lending during the crisis period.

As has been observed in many empirical works, SMEs have long been heavily overdependent on traditional bank finance. The crisis has shown that it is necessary to extend the range of financing instruments available to SMEs and entrepreneurs to improve their financing.

3. What is the Survey on the Access to Finance of Enterprises?

The survey started in 2009, shortly after the inception of the global financial crisis. In this context, SAFE pretends to obtain data about the use of different financial sources and about the SMEs financial problems in the access to external finance. It constitutes a great and singular source of information about SMEs credit constraints on a regular basis since 2009. SAFE is conducted biannually and covers micro, small, medium and large firms.

The aim of SAFE is to provide information on the financing needs of SMEs, their experience in attempting to access finance, along with information on their perceptions of current economic and financial conditions. It includes questions on the demand for and the availability of credit for firms along with valuable additional firm-specific information. Moreover, it contains firm-level information, mainly related to major demographic characteristics (size, sector, firm autonomy, turnover, firm age and ownership) as well as to firms' assessments of recent short-term developments regarding their financing needs and access to finance.

The companies in the sample are randomly selected from Dun & Bradstreet business register. In some countries, where the register is not sufficient or not available, other (mainly local) sources are also used. The sample is stratified by country, size and economic sector. The number of firms in each of these strata is adjusted to increase the accuracy of the survey across sectors and size classes.

The sample size in the different countries are selected considering a trade – off between the costs of the survey at the euro area level and the representativeness at the country level.

In each round, the smallest countries in the euro area (currently Estonia, Cyprus, Latvia, Lithuania, Luxembourg, Malta and Slovenia) were excluded from the sample, since they constitute a marginal impact on the results for the euro area as a whole. Since 2014 Slovakia has been included in the sample in each survey round, while initially it was included only every two years (2009H1, 2011H1 and 2013H1). The number of interviews conducted in the euro area, classified by country and survey round is detailed in Appendix A.

The sample contains only non-financial firms and excludes firms in agriculture, public administration and financial services. Some of the firms are interviewed only once in the survey but there is a rotating panel of enterprises that are re-surveyed in subsequent rounds. The European Central Bank provide, at request, anonymized microdata, which protect the confidentiality of the answers.

Each round includes a rotating panel of enterprises to obtain a more accurate estimator for each wave. A company is classified as a panel if it participated in the survey at least twice, though not necessarily in consecutive waves. Moreover, changes to the questionnaire in each survey round are included in order to improve the quality of the survey. For more information to the methodological aspects, see ECB (2017).

In general, most of the information of SAFE is qualitative, implying that most of the variables in the sample are categorical. This aspect perhaps hinders researchers from using SAFE, as continuous variables are usually preferred in financial studies.

In our opinion, SAFE reduces sample selection bias, compared to other databases. The reason is that SAFE includes not only firms that applied for financial aid, but also those that did not apply. In the latter case, the Survey asks for the reason of this self-exclusion. In addition, being a homogeneous European-wide survey, allows for studying country-specific drivers.

4. What has been done with SAFE survey?

4.1 Bibliometric analysis of scientific production using SAFE

There are twenty-two papers that use SAFE database as the primary source of data in their empirical analysis. Even though, it can be thought as a small number, we should highlight that publications have been at increasing pace, with seven papers published in 2019. Probably, what deters from its use is that firms surveyed in each wave are not (necessarily) the same ones, so it is not possible to analyse the evolution of at firm level along time. In addition, most data are categorical. This situation precludes the use of standard econometric techniques in the field of time series of cross-section.

The total citations of papers that use the SAFE as a main data source, the index Field-Weighted Citation Impact (FWCI) and citations per years of the papers using SAFE are shown in Table 1. We gathered this information from Scopus. Some of the papers using SAFE are published as working papers. Consequently, they are not indexed into Scopus. In such cases, we use the citation count from Research Papers in Economics (<http://repec.org/>) a collaborative repository of papers specialized in economics, and when the paper is not in RePEc, we use Google Scholar (<https://scholar.google.com/>). The table includes the Field-Weighted Citation Impact, a metric developed by Snowball Metrics (<https://snowballmetrics.com/>), which compares how well cited a document is when compared with documents of the same discipline and year of publication. A value equal to 1 means that the document is averaged cited in its field, controlled by document's age. The average FWCI of the papers using SAFE is 1.89, meaning that they are cited more than expected average. It could reflect an interest in researchers in this field. Papers, on average, have 12.5 total citations with an average of 2.53 citations per year.

Table 1: Citation impact of papers using SAFE

Authors	Citations	Field-Weighted Citation Impact	Citation per year
Artola and Genre (2011)*	34	NA	3.78
Ferrando and Griesshaber (2011)*	23	NA	2.56
Casey and O'Toole (2014)	85	5.14	14.17
Holton et al. (2014)	27	3.2	4.50
Kaya (2014)**	14	NA	2.33
Öztürk and Mrkaic (2014)*	5	NA	0.83
Ferrando and Mulier (2015)	14	1.01	2.80
Lawless et al. (2015)	7	0.2	1.40
Mac an Bhaird et al. (2016)	12	1.37	3.00
Moritz et al. (2016)	19	2.58	4.75
Ferrando et al. (2017)	15	3.4	5.00
Masiak et al. (2017)**	9	NA	3.00
Bremus and Neugebauer (2018)	5	1.95	2.50
Galli et al. (2018)	2	0.74	1.00
Russo and Parlapiano (2018)	0	NA	0.00
Bongini, et al (2019)	0	NA	0.00
Dedu et al. (2019)	0	NA	0.00
Dowling et al. (2019)	1	1.13	1.00
García Posada (2019)	1	1.29	1.00

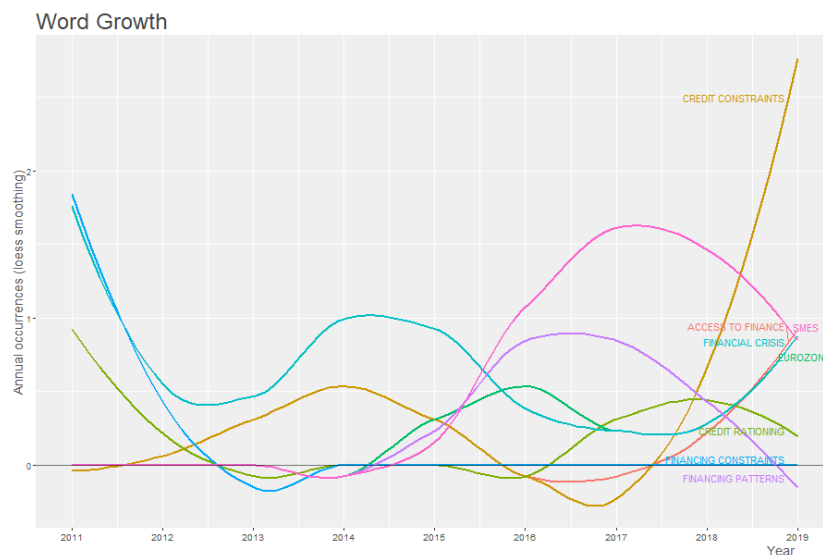
Guercio et al. (2019)	1	1.37	1.00
Mc Namara et al. (2019)	0	NA	0.00
Wagner (2019)	1	1.21	1.00
<i>Average</i>	12.5	1.89	2.53

Note: Total citations, Field-Weighted citation impact, and citations per year of papers using SAFE. Total Citations are from Scopus. When not available, citations are gathered from RePEc and Google Scholar.

* Citations in Repec, ** Citations in Google Scholar.

The bibliometric analysis conducted in this section (including graphics) was done using Bibliometrix Package, based on R language and elaborated by Aria and Cuccurullo (2017). Figure 1 presents the evolution of the use of words in keywords, titles and abstracts of the 22 selected papers. We observe that one of the most frequent topics covered by these papers is the relationship of SMEs and financial crisis in the access to finance. These papers also tackle topics such as financial structure and financial constraints. Even though papers in 2011-2015 were most concerned with the financial crisis (it was one of the motivations for the onset of SAFE database), more recent papers are more concerned with more general topics as credit constraints and credit rationing. In the following subsections, we describe in detail the main findings of all these papers.

Figure 1: Evolution of use of words in papers based on SAFE



Note: Own elaboration based on keywords, titles and abstracts of selected papers, processed with R.

4.2 The crisis impact in European SMEs according to SAFE

Empirical evidence suggests that given the high dependence on bank credit, SMEs became specially constrained when banks adjust their loan portfolios as a consequence of negative shocks in their balance sheets.

Artola and Genre (2011) study the effect of the last financial crisis over SMEs perception and experienced financial constraints and find that SMEs tend to suffer more when credit standards are tightened. Moreover, considering countries effects, some of them seem to have suffer significantly more than others in terms of access to finance, consistency with those more affected by the financial crisis over their real economies. Similarly, Holton et al. (2014) suggest that the financial crisis has impacted on external

financing, reducing firms' demand for bank financing, increasing the conditions on the allocated credit. Thus, these authors find that the financial crises affected more the credit supply than the credit demand. They identified three separated but connected aspects of the euro area crisis that have affected lending: a real economic crisis, a financial/sovereign crisis and a private sector debt overhang crisis and find that a feeble real economy is concomitant both with more restrictive credit supply and with shakier credit demand.

Öztürk and Mrkaic (2014) find that bank funding cost is negatively associated with access to finance of firms in those economies more affected by the financial crisis. Nonetheless, they do not find clear effects over the rest of the European economies respect to bank funding's and access to debt of SMEs. Similarly, Casey and O'Toole (2014) report a general credit rationing due to the elevated lending cost, since the financial crisis. In addition, they find that financial rationed firms are more likely to use or apply for alternative external finance including trade credit, informal lending, loans from other companies, market financing (issued debt or equity) and state grants.

Ferrando et al. (2017) examine the consequences of the financial crisis over the SMEs financial access considering two sample periods: one of them before the turmoil (2009) and the other one after the onset of the financial crisis (2010 to 2012). They find that firms suffered a strong supply driven reduction in credit access, especially in countries more affected by the crisis (Greece, Ireland, Italy, Portugal and Spain). The overall cost of SMEs funding in the context of the financial crisis, aggravate real economic problems related with investment and employment (Ferrando et al., 2017).

Russo and Parlapiano (2018) analyze the hypotheses of the companies' balance sheets according to their characteristics and the risk profile in the transmission of monetary policy in the framework of the sovereign crisis and the successive changes in interest rates. The results of the econometric analysis indicate that the characteristics of the borrowers and changes in their financial conditions (financial constraints, changes in credit history, leverage and profit margin) played a significant role in the reduction of interest rates applied to companies after the financial crisis.

Bremus and Neugebauer (2018) analyze the impact of the financial crisis over the evolution of financing costs for SMEs, considering the structural changes in cross-border banking. They find different channels through which credit market fragmentation affects the financing constraints of SMEs, and affirm that in those economies with the strongest reductions in international credit, the probability of facing higher loan rates is higher than in countries with the most favorable evolution of international credit.

Mc Namara, Pierluigi and O'Donohoe (2019) test the effect of nine countries' lending infrastructure on SMEs capital structure, during the period 2005 to 2011. Their results support that SMEs environment affects their capital decisions. SMEs debt is higher in countries with more efficient bankruptcy procedures (in terms of debt recovery), and in countries with less severe regulatory laws and lower capital regulatory requests for banks.

4.3 Methodological tools and variables used with SAFE database

To the best of our knowledge, since the first paper published in 2011, until February 2020, SAFE database has been used in 22 works published in academic's journals or working papers of recognized institutions whose details are listed in Table 2.

Considering all the publications compiled, some of the works listed in Table 2 use another database to complete their goals. The main reason that justified the use of other databases is the inclusion of macroeconomic variables as determinants of firm's financial access.

Moreover, respect to the methodology applied, the most common are the discrete variables models, such as ordered, binary, or multinomial logit/probit models. Nonetheless, the dependent variable considered differs in all the studies analyzed. On the other side, the independent variables are in general, the same for hardly all the models presented, such as: firms age, size, sector, turnover, ownership, some related to the banks applications and to others instruments, credit history, among others.

Table 2: Detail of papers using SAFE survey in their empirical analysis

Authors	Period	Sample	Support to others database	Methodology
Artola and Genre (2011)	2009 - 2010	Germany, Spain, France, Italy and others countries. 1000 firms per country in each wave	No	Binary probit and multinomial logit
Ferrando and Griesshaber (2011)	2009	All euro area countries 5320 firms	No	Binary probit and multinomial logit
Casey and O'Toole (2014)	2009 - 2011	11 countries 5876 firms	No	Panel probit Model with random effects
Holton et al. (2014)	2009 - 2011	11 countries 38802 firms	Yes	Binary probit
Kaya (2014)	2010 - 2013	France, Italy, and Germany	Yes	Descriptive analysis
Öztürk and Mrkaic (2014)	2009 - 2013	All euro area countries 7510 firms	Yes	Ordered logit
Ferrando and Mulier (2015)	2009 - 2011	9 countries 11886 firms	Yes	Non-parametric Nearest Neighbour Distance Hot Deck (NNDHD)
Lawless (2015)	2010 - 2013	16 countries 51800 firms	No	Poisson regression
Mac an Bhaire et al. (2016)	2009 - 2011	9 countries 6287 firms	Yes	Logit regression
Moritz et al. (2016)	2013	28 countries 12726 firms	No	Cluster analysis
Ferrando et al. (2017)	2009 - 2011	11 countries 28453 firms	Yes	Probit model

Masiak et al. (2017)	2015	27 countries 12144 firms	No	Hierarchical cluster analysis. Multivariate probit model.
Bremus and Neugebauer (2018)	2010 - 2014	11 countries 26032 firms	Yes	Pooled Probit Model
Galli et al. (2018)	2009 - 2014	11 countries 60058 firms	Yes	Multinomial logistic models
Russo and Parlapiano (2018)	2014 - 2016	19 countries 6811 firms	No	Weighted least squares and Heckman's selection model estimates
Bongini, et al. (2019)	2009 - 2014	7 countries 50000 firms	Yes	Probit model
Dedu et al. (2019)	2004- 2011	6 countries number of firms not available	Yes	Vector Autoregressive Methodology and Ordinary Least Squares Method
Dowling et al. (2019)	2013 - 2017	26 countries 19905 firms	Yes	Logit regression
García Posada (2019)	2014 - 2016	12 countries 10774 firms	No	Ordered probit model
Guercio et al. (2019)	2009 - 2015	28 countries 40000 firms	No	Ordered probit model
Mc Namara et al. (2019)	2010 - 2014	11 countries 13957 firms	Yes	Probit Model
Wagner (2019)	2014 - 2017	25 countries 62904 firms	No	Probit and fractional logit regressions

Note: Own elaboration, based on papers' information.

Considering the information of table 3, we can observe that besides the papers deal with similar areas of study they use different dependent and independent variables. Many of them contemplate profile's variables and some incorporate financial independent variables, not only from the SAFE database but also from others databases. Besides, as has been appreciated in table 2, the methodological tools are similar, there are many variables considered and models presented. The non-SAFE data incorporated correspond to complete with macroeconomics data.

The main findings obtained in the different works focus to determine SMEs' characteristics like age, ownership, size, among others that affect the external financial access. Moreover, bank lending constraints, crisis effect and balance sheet situation are considered as determinants to obtain financial access. In general, the results obtained, considerer that the SMEs' characteristics are important explanatory variables perceived as financial obstacles. Nonetheless, there are different samples of analysis, considering different countries and set of years, so the results differ among them.

Table 3: Variables used in the empirical analysis.

Authors	Dependent variable	Independent Variables			
		SAFE		No SAFE	
		Profile	Financial	Macroeconomics	Balance
Artola and Genre (2011)	Experienced constrained (Q7.b) access to finance and Perceived constrained access to finance (Q0.b)	D1, D3, D5, D6	-	-	-
Ferrando and Griesshaber (2011)	Financing obstacles (Q0), Internal and external financing (Q4)	D1, D2, D3, D4, D5, D6	Q7A	-	-
Casey and O'Toole (2014)	Trade credit, other loans, informal or company, market financing and grants. Apply all, apply trade credit, apply others (Q7.a)	D1, D4, D6	Q7A		-
Holton et al. (2014)	Loan rejection dummy (Q7.b) Perceived loan availability deterioration dummy (Q9) Loan demand decrease dummy (Q6) Interest rate increase dummy (Q10.a) Loan size increase dummy (Q10.c)	D1, D2, D5, D6, Q2,	Q11	GDP change, domestic demand, Government Bonds Yields, CDS, private debt to GDP	-
Kaya (2014)	Q0.b.3 (access to finance difficulty)	Q4, Q7b	-	-	
Öztürk and Mrkaic (2014)	Bank Access (Q9)	D1, D2, D3, D5	Q3, Q6	GDP Growth, Bank CDS premium	
Ferrando and Mulier (2015)	Facing financing constraints (Q0), Actual financing constraints (Q7.a, Q7.b)	D1, D4, D5, D6	-	Debt burden	Return on equity, Coverage ratio, Profit margin, working capital, Cash, Debt, Leverage,

					Short-term loans, age, total assets.
Lawless et al. (2015)	Use of financial resources previous and actual (Q4; Q5, Q7.a)	D1, D3, D5, D6	-	-	
Mac an Bhaird et al. (2016)	Apply for banks (Q7a)	D1, D4, D5	Q0, Q3, Q6, Q9, Q11	-	-
Moritz et al. (2016)	Mixed-financed, state-subsidised, debt-financed, flexible-debt-financed, trade-financed and internally financed (Q4)	D1, D3, D4, D5, D6, Q1, Q2, Q11, Q17	-	-	
Ferrando et al. (2017)	Credit constrained (Q7.b)	D1, D4, D5, D6, D6b	Q4, Q10, Q11	-	-
Masiak et al. (2017)	Debt-financing, trade-financing, state-subsidised, asset based financing and internal financing instruments (Q4)	D1, D5, D4, D5_rec, Q2, Q1, D3, Q0.b, Q11, D6	Q4	-	-
Bremus and Neugebauer (2018)	Interest rate increase dummy (Q10.a)	D1, D3, D4, D6	Q0	Total credit, Cross-border credit, Domestic credit, Euro-Dollar nominal exchange rate, Consumer price index, Gross domestic product, Deposit interest rate, Interbank dependence, Number of Banks, Economic risk, CDS spreads	
Galli, et al. (2018)	Apply for banks (Q7.a)	D1, D5, D6.b, Q11	Q6, Q9,	Freedom from corruption by country, Control of corruption, GDP growth rate, Trade freedom, Rule of law, Domestic credit by banks, Bank Concentration	
Russo y Parlapiano (2018)	Increase in interest rate (Q10) Credit demand	D3, D4, D5, D6, D7	Q6.a, Q11	-	

(Q7.b)						
Bongini et al. (2019)	Used market-based instruments (Q4)	D5, D6			Economic growth, Stock market Development, Bond market Development, Banking system Development, Rule of law, Property rights, Time needed for dispute resolution, Number of procedural steps	Size, Profitability, Current ratio/liquidity, Turnover growth, Fixed asset growth, Leverage, Tax, Tangibility
Dedu et al. (2019)	Not clearly specified	-	Q4, Q10, Q5, Q7.a, Q7B, Q20, Q6		Stock market index	
Dowling et al. (2019)	Confidence on banks/ investors about financing (Q19) Preference for external financing form(Q20)	D1, D3, D5	D4, Q16.b		GDP growth, Common Law origin, institutional trust, interpersonal trust, equity availability	Corporation tax
García Posada (2019)	Investment working capital (Q2.h) employment (Q2.i)	D3, D4, D5, D1 D6 y D7. Q7			GDP, consumer confidence, government bond yield, investment, growth, unemployment	-
Guercio et al. (2019)	Apply for banks (Q7a), Access (Q7.b)	D1, D3, D4, D7, Q1	Q4			
Mc Namara et al. (2019)	Credit Rationing (Q7.b)	D2, D3, D4, D5	Q3		Credit Index, Legal Rights, Recovery Rate, Number of procedures, Cost to Enforce, Social Trust (WVS), Regulatory Index, Regulatory change, Domestic Demand, Bank Deposits, Bank Concentration, Inflation, Industrial dummies	-
Wagner (2019)	Export profile (D7) Access to finance difficulty (Q0.b.3)	D1, D2, D3, D5				

Note: Own elaboration based on papers' information. The code uses in each paper according to their

research questions are in some cases estimative, according to the variables presented and the wave analyzed. D1=size, D2=legal form, D3=sector, D4=turnover, D5=register (age), D5_rec=age, D6=ownership, D6.b=gender, D7=export, Q1=innovation, Q2= change in results indicators, Q3=debt ratio, Q6=change in external financial needs, Q7= financial application, Q9=change in availability in financial instruments, Q11= perception of change in finance and market condition, Q20=preferences for external financing.

As has been presented, one of the main objectives of most of the papers focuses on whether the financial crisis affected access to finance for SMEs in the sample countries.

Depending on the results, several papers analyze whether the impact of the crisis was homogeneous in countries with differences in development, growth, strength of the financial system, regulations, etc. On the other hand, other papers analyze whether the consequences of the crisis were channeled through a decrease in the supply of bank financing (Öztürk and Mrkaic, 2014; Ferrando et al., 2017), due to the impact on the banks' balance sheets (Wehinger, 2014), the appearance of alternative financing and the increase in the costs of traditional financing (Cassey and O'Tolle, 2014), or it was channeled by a decrease in the demand for financing, given by a more conservative behavior of the companies (Holton et al., 2014), or if it was only a perception of the increase of the limitations that was not corroborated really (Ferrando and Mulier, 2015).

Although most of the effects of the crisis are negative, as far as the decrease in external financing is concerned, some authors mention that the crisis expanded the demand for financing, incorporating new actors into the financing supply segment (Wehinger, 2014; Cassey and O'Tolle, 2014).

Regarding to the relationship between the characteristics of enterprises and access to external financing, most of the papers find a positive relationship between size, age and ownership on access to financing (Ferrando and Griesshaber, 2011; Öztürk and Mrkaic, 2014; Holton et al., 2014; Ferrando and Mulier, 2015; Mac an Bhaird et al., 2016; García Posada, 2018).

Other authors state that, in addition to the variables mentioned, there is a negative correlation with financial access and debt to asset ratio and a positive correlation with profits (Mac an Bhaird et al., 2016; Ferrando and Griesshaber, 2011 and Ferrando and Mulier 2015). More recently, Galli et al. (2018) report that the owner firms' gender are correlated with the financial access. Lastly, Guercio et al. (2019) found that innovation is an additional limitation to access to finance.

4.4 SMEs profile and financing access under the lens of SAFE

Taking into account the information of section 2, several variables describe the relationship between SMEs' profile and the access to finance. In the present section, we highlight the key results of papers that use SAFE as a main database of their study, for assessing such relationship.

In this vein, Ferrando and Griesshaber (2011) investigate the determinants of financing obstacles. They find, using probit regressions, that age and ownership² are robust explanatory variables as SMEs' financial difficulties and its effect is negative. The results obtained for the variables size and economic sectors are mixed depending on the country (Spain, France, Italy or Germany).

² Ownership is a dichotomous variable that takes value 1 if the company is listed on the stock market.

Öztürk and Mrkaic (2014) find that an increase in bank funding cost reduces the SMEs' financial access in stressed economies. Similarly, an increasing in debt-to-asset ratio deteriorates firms' access to finance. In addition, they confirm that the use of subsidies is positively related to access to finance of all firms, except for the large one. Finally, they find that firm size and age are positively associated with improved access to finance.

Casey and O'Toole (2014) find that credit rationed firms are more likely to use and apply for trade credit and this effect increases with the firm's size and age.

In line with previous works, Holton, Lawless and McCann (2014) find that larger and older firms face the lowest risk of having loan applications rejected. Age and size are less important for firms' perceptions of credit availability than they were for actual experience of obtaining a loan.

Lawless, O'Connell and O'Toole (2015), analyse the European firms' financial structure and diversification during 2010 to 2013. SMEs have been shown to rely mainly on banks for funding and, unlike larger firms, rarely have direct access to capital markets. They study the extent to which SMEs explore a wider range of funding options. Firm size and age are key characteristics respect to firms' financial structure given that smaller and younger firms are significantly more reliant on a limited set of finance types than older, larger firms. Moreover, they find that trade credit and informal sources of finance are extremely prevalent across all countries.

Ferrando and Mulier (2015) find that firms with lower profit margins and lower return on equity have a higher probability of facing actual financing constraints. In addition, the perceived financial constraints, but not the actual constraints, increase significantly when firms have more short-term debt. Lastly, firm age is important in explaining both the perceived and the actual financial limitations. Younger firms are more likely to perceive access to finance as a high problematic.

Mac an Bhaird, Vidal and Lucey (2016), examine the decision by firm's owners to not apply to intermediated debt given that to their application will be rejected. Such "discouraged borrowers" are found to be smaller, younger, with declining turnover and increasing debt to assets ratio. Furthermore, the concentration of the banking sector shows a negative relation with the presence of discouraged borrowers.

Moritz, Block and Heinz (2016), consider that SMEs financial instruments and its determinants cannot be investigated in isolation from each other, given that there are substitutive and complementary effects between them. They construct different clusters considering a set of financing instruments, firms' characteristics (size, age, growth, profitability), and countries specific characteristics. They conclude that SMEs financing in Europe is not homogeneous, nonetheless there are different financing patterns with different profiles. Moreover, they highlight the importance of government support programs over firms' access to finance.

Mc Namara et al. (2019) analyse the impact of the lending infrastructure on SMEs credit rationing. They find that there are more rationed SMEs in countries with efficient judicial systems, inefficient bankruptcy systems and with greater levels of trust. Moreover, the firms' age and size show a negative relation respect to credit rationing.

Masiak et al. (2017) consider a sample of 27 countries and investigate how the financing patterns of micro firms in Europe differ respect to small and medium-sized firms. They find that micro firms are less likely to use state grants, trade credit or asset-based financing instruments, whereas they are more likely to use internal financing

instruments. Moreover, micro firms contrast from medium-sized firms by relying more on short-term bank debt (credit card overdrafts, credit lines and bank overdrafts).

On the other side, Galli et al. (2018) analyse the relationship between the gender of the manager and levels of corruption with access to finance. They find that female-led SMEs request less external financing than male-led SMEs, regardless of the level of corruption in the country. Therefore, they find the relationship between the gender of the manager and access to finance is significant, but it is not related with country corruption.

Russo and Parlapiano (2018) show that borrowers' characteristics (such as economic sector, age, turnover, ownership structure, export and main financial needs) are related with the interest rates charged to non-financial firms in European countries.

During the year 2019, seven papers have been published. One of them is the work by Guercio et al. (2019) who analyze the main characteristics of European SMEs associated to the demand for and access to external financial resources. They find that firms characteristics like size and innovative activities influence not only the access to, but also the demand for external finance. In this line, the smallest firms have lower probabilities in applying for and accessing to the financial instruments. Furthermore, innovative firms have higher probabilities in demanding financial instruments but lower probabilities in accessing to them. Bongini, Ferrando, Rossi and Rossolini (2019) analyze which are the characteristics of the firms and the country that affect the probability that firms could access to the capital market. These authors construct an indicator called index of market suitability and find that the macroeconomic conditions of the countries affect the suitability to access the capital market of SMEs. In relation to the characteristics of the company, they discover that size, ownership, growth, liquidity and leverage have a positive effect on the use of market-based instruments.

The paper of García Posada (2019) identify that credit constraints, both in bank financing and other financing have important negative effect over investment in fixed assets, inventories and other working capital and firm growth. Besides, the effect over these two last indicators is less robust. Moreover, considering the marginal effect for different types of firms, the author remarks that micro firms are largely unaffected by credit constraints considering that this kind of firms rely more on internal funds.

Dedu, Nițescu and Turcan (2019) study the situation and challenges faced by the European SMEs related to funding access and financial inclusion. They consider six European countries and try to answer which are the most important factors (internal macroeconomic and business sector factors), and the correlations between them, and how do they influence the access to finance for SMEs. They find that the most difficulties in the access to finance were faced by Spanish and Portuguese SMEs. Moreover, the Spanish and French SMEs have suffered mostly from credit history decline in bank loans availability for companies (excluding overdraft and credit lines) and most of SMEs consider that during the period of analysis financing cost have increased notably.

On the other side, Wagner (2019) scrutinizes the relationship between the difficulties to access to finance and export activities, finding no supporting evidence of a negative relationship, as reported in previous literature.

In another strand, Dowling et al. (2019) based on a social capital perspective, find that interpersonal and institutional trust positively influences SME attitudes towards equity financing.

5. Conclusions and limitations

SAFE database is one of the most important open sources of information with respect to SMEs financial access, which includes different sections of data. First of all, it collects evidence regarding firms' general characteristics, followed by the type and situation of the firm, current and future financing of the firm, growth and obstacles to growth. We highlight that it is a very rich data source in terms of quality (type of information collected and reliability) and in terms of quantity (number of covered countries and periodicity of the survey).

The works published since August 2011, investigate SMEs financial access and consider similar sets of variables to different samples of study. The results are interesting and contribute to guide economic policies. Nonetheless, there are many works and ideas to exploit the SAFE's information, besides the complement of others databases such as many works have used.

To our knowledge, the thorough information recollected allows to investigate not only the internal characteristics of the firms, but also, if the firms apply to different financial instruments, and if they obtain them. Using SAFE it is possible to detect supply and demand problems of the financial system and possible financial self-exclusion problems.

Considering the information collected in this paper we observe that many works focus their analysis on the impact of the crisis on the access to finance. Some of them show the changes in access to financing depending on the severity with which the financial crisis affected countries (Artola and Genre 2011; Öztürk and Mrkaic, 2014; Mc Namara et al., 2017; Ferrando et al., 2017; Russo and Parlapiano, 2018). Other authors analyze the effects of the crisis depending on the profile of the companies (Casey and O'Toole, 2014; Ferrando and Mulier, 2015). Finally, other works evaluate the impact of the crisis on the supply and demand of financing (Holton et al., 2014; Wehinger, 2014).

Even though SAFE database is a great source of data, much remains to be done in order to detect the main obstacles faced by SMEs. During the review, we detect some limitations regarding the questionnaire. The first, is the difficulty to obtain continuous variables. Most of the answers (due to anonymity concerns) are reported in intervals or as discrete variables, limiting the suitable methodological tools. The second, is that the enterprises that respond the survey each year are not always necessarily the same. This situation constrains the general analysis with respect to the evolution of SMEs' growth during their life. Moreover, this type of analysis could be contrasted with macroeconomics variables evolution for each firm analyzed. The use of pseudo panel or fractional response models may be an alternative to bypass this limitation.

Furthermore, the particularity of financial instruments is closely related to the economic variables of each country. So, the inclusion of some details related to financial instruments would be desirable.

One common characteristic of the papers considered in this review, is that they solely (or mainly) rely on SAFE database. They only include external variables to consider the macroeconomic environment. Nonetheless, there is a lack of research comparison with results obtained with other surveys. The comparison, at present, may not be performed for all countries, given that WBES only cover emerging economies. However, there is an important set of countries to be included in a comparative research. Running the

same model in both databases could shed light on data selection bias, or representativeness of results. This analysis will deep some aspects in common of both surveys and will complete other aspects not contemplated in SAFE.

Recent waves of SAFE include additional questions related with the perception of firms' difficulties to access to external financial resources. Then, in addition to the traditional characteristics, these new questions could be introduced as proxy variables for financial access.

Finally, we think that this paper is the starting point of a large research program of an extended network of researchers working around SAFE. This review begins with Artola and Genre (2011) and show an increased peak during the last year, especially during 2019, and be updated with new publications.

Data Availability Statement

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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APPENDIX A

Table A.1. Number of interviews conducted in euro area, broken down by country (Common and ECB rounds)

<i>Round</i>	<i>euro area*</i>	<i>AT</i>	<i>BE</i>	<i>CY</i>	<i>DE</i>	<i>EE</i>	<i>ES</i>	<i>FI</i>	<i>FR</i>	<i>GR</i>	<i>IE</i>	<i>IT</i>	<i>LT</i>	<i>LU</i>	<i>LV</i>	<i>MT</i>	<i>NL</i>	<i>PT</i>	<i>SI</i>	<i>SK#</i>
2009H1	6091	224	220	110	1003	110*	1012	111	1000	220	110	1006	110*	103	112*	100	323	327	110	112
2009H2	5320	203	202	.	1001	.	1004	100	1001	200	101	1004	.	.	.	.	252	252	.	.
2010H1	5312	200	203	.	1000	.	1000	100	1003	200	100	1000	.	.	.	.	256	250	.	.
2010H2	7532	500	517	.	1000	.	1000	500	1004	500	500	1000	.	.	.	.	502	509	.	.
2011H1	8316	502	500	100	1006	100	1001	500	1002	500	502	1001	300*	100	200*	100	500	502	100	300
2011H2	7511	500	503	.	1000	.	1000	500	1005	500	500	1000	.	.	.	.	500	503	.	.
2012H1	7514	506	500	.	1006	.	1001	500	1001	500	500	1000	.	.	.	.	500	500	.	.
2012H2	7510	500	500	.	1002	.	1003	500	1002	500	500	1003	.	.	.	.	500	500	.	.
2013H1	8305	501	500	100	1000	100	1001	501	1002	500	500	1000	301*	100	200*	100	500	500	100	300
2013H2	7520	500	507	.	1000	.	1000	502	1005	500	500	1001	.	.	.	.	504	501	.	.
2014H1	10750	502	501	101	1337	100	1303	501	1500	501	500	1500	301*	102	200	100	800	501	200	501
2014H2	11720	801	801	.	1500	.	1506	500	1503	800	501	1503	.	.	.	.	1001	802	.	502
2015H1	11226	501	500	101	1501	100	1303	501	1505	501	504	1501	300	101	200	101	802	504	200	500
2015H2	11725	803	801	.	1502	.	1504	500	1502	802	502	1504	.	.	.	.	1002	803	.	500
2016H1	11233	504	501	102	1501	101	1303	502	1501	501	502	1504	300	101	201	101	803	503	201	501
2016H2	11724	802	803	.	1500	.	1503	501	1502	805	500	1502	.	.	.	.	1002	802	.	502
2017H1	11202	500	500	100	1505	100	1302	502	1503	502	503	1502	302	100	201	100	801	503	201	475
2017H2	11733	802	801	.	1501	.	1502	501	1505	804	500	1502	.	.	.	.	1004	806	.	505
2018H1	11020	502	502	102	1503	100	1303	501	1501	504	502	1500	300	101	200	100	804	502	201	292
2018H2	11722	803	801	.	1502	.	1503	501	1502	802	500	1503	.	.	.	.	1000	804	.	501
2019H1	11204	501	500	100	1504	100	1302	505	1503	502	501	1501	300	100	200	101	801	503	179	501
2019H2	11236	804	801	.	1460	.	1200	502	1358	803	500	1503	.	.	.	.	1006	801	.	498

As from 2014 Slovakia is included in the sample in each survey round, while initially it was included only every two years (2009H1, 2011H1 and 2013H1).

* The aggregate "euro area" takes into account the composition of the euro area at the time to which the statistics relate. Estonia joined the euro area on 1 January 2011; Latvia joined on 1 January 2014, Lithuania on 1 January 2015. Sign (*) denotes the sample not included in the euro area.

Austria AT, Belgium BE, Cyprus CY, Estonia EE, Germany DE, Spain ES, Finland FI, France FR, Greece GR, Ireland IE, Italy IT, Lithuania LT, Luxemburg LU, Latvia LV, Malta MT, Netherlands NL, Portugal PT, Slovenia SI, Slovakia SK

Fuente: Survey on the access to finance of enterprises Methodological information on the survey and user guide for the anonymised micro dataset.

https://www.ecb.europa.eu/stats/pdf/surveys/sme/methodological_information_survey_and_user_guide.pdf