

Masiak, Christian; Moritz, Alexandra; Lang, Frank

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Financing Patterns of European SMEs Revisited: An Updated Empirical Taxonomy and Determinants of SME Financing Clusters

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Financing Patterns of European SMEs Revisited:

An Updated Empirical Taxonomy
and Determinants of SME Financing Clusters

Christian Masiak ■
Alexandra Moritz ■
Frank Lang ■



Christian Masiak is PhD student and research assistant at the Chair of Management at the University of Trier.

Contact: masiak@uni-trier.de

Tel.: +49 651 201 4489



Alexandra Moritz is research associate at the Chair of Management at the University of Trier. Alexandra is also managing director at the research institute “Forschungsstelle Mittelstand” at the University of Trier.

Contact: moritz@uni-trier.de

Tel.: +49 651 201 3232



Frank Lang is Senior Manager in EIF’s Research & Market Analysis team.

Contact: f.lang@eif.org

Tel.: +352 248581 278

Editor

Helmut Kraemer-Eis,

Head of EIF’s Research & Market Analysis, Chief Economist

Contact:

European Investment Fund

37B, avenue J.F. Kennedy, L-2968 Luxembourg

Tel.: +352 248581 394

http://www.eif.org/news_centre/research/index.htm



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Preface

Small and medium-sized enterprises (SMEs) play an important role for employment, investment, innovation, and economic growth of the European economy. However, SMEs differ in many ways from larger firms, such as, for example, age, size, activity, and ownership. Furthermore, the macroeconomic environments as well as the legal and institutional frameworks in which they are active affect SMEs more than larger companies. All this has an impact on, inter alia, the access to finance of SMEs as well as their financing patterns.

Enhancing the access to finance of SMEs through a wide range of financial intermediaries is the central mission of the European Investment Fund (EIF). To this end, the EIF primarily designs, promotes and implements equity and debt financial instruments which specifically target SMEs. In this role, the EIF fosters EU objectives in support of entrepreneurship, growth, innovation, research and development, and employment.

EIF's Research & Market Analysis (RMA) supports EIF's strategic decision-making, product development and mandate management processes through applied research and market analyses. RMA works as internal advisor, participates in international fora and maintains liaison with many organisations, institutions, universities and think tanks.

EIF's RMA division and the Chair of Management at the University of Trier have established a research cooperation, which has already generated many outputs. The most preeminent part of our cooperation is the joint research project "Financing of European SMEs: Patterns, Determinants and Dynamics over Time", which benefitted from a research grant of the STAREBEI research support programme of the EIB Institute. STAREBEI forms part of the EIB Institute's Knowledge Programme, which aims at providing support to higher education and research activities. More information can be found on the EIB Institute's website: <https://institute.eib.org/>.

This EIF Working Paper is a result of our joint STAREBEI research project. A second publication, which will more strongly focus on the differences between financing patterns of microenterprises and other SMEs, is underway and will be published soon. More information about the STAREBEI project can be found here: <https://www.uni-trier.de/index.php?id=58427>

We thank the authors for their important work and the very good cooperation.



Prof. Dr. Jörn Block

Professor of Management at the University of Trier
and the Erasmus University Rotterdam;
University Tutor of this project



Dr. Helmut Kraemer-Eis

Head of Research & Market Analysis,
Chief Economist, EIF
Editor of the EIF Working Paper Series

Abstract¹

This EIF Working Paper investigates financing patterns of European SMEs by looking at a large number of different financing instruments and their complementary and substitutive effects, using the SAFE dataset collected in 2015. We develop an empirical taxonomy of SME financing patterns in Europe, applying cluster analyses. In order to investigate the cluster stability over time, we replicate an approach by Moritz et al. (2016)², who used the SAFE data from 2013. In addition, we extend that study by looking at the role of the country-specific macroeconomic and institutional environment for the financings patterns of SMEs. Our results confirm the results of Moritz et al. (2016) and show that European SME financing is not homogenous, but that different financing patterns exist. Our cluster analysis identifies seven distinct SME financing types based on the financing instruments used: mixed-financed SMEs with focus on other loans, mixed-financed SMEs with focus on retained earnings or sale of assets, state-subsidised SMEs, debt-financed SMEs, trade-financed SMEs, asset-based financed SMEs, and internally-financed SMEs. Moreover, the SME financing types can be profiled according to their firm-, product-, industry-, and country-specific characteristics. Our findings can support policy makers in assessing the impact of changes in policy measures for SME financing.

Keywords: EIF; European SME financing; financing patterns; empirical taxonomy; cluster analysis

JEL codes: G32, G21, G24, G18

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² Former versions of Moritz et al. (2016): Moritz (2015) and Moritz et al. (2015), i.e. EIF Working Paper 2015/30.

Non-technical Summary

This EIF Working Paper investigates financing patterns of European SMEs by looking at a large number of financing instruments using the European Commission (EC) and European Central Bank (ECB) Survey on the Access to Finance of Enterprises (SAFE) dataset collected in 2015. We develop an empirical taxonomy of SME financing patterns in Europe by applying cluster analyses. In order to investigate the cluster stability over time, we replicate previous work by Moritz et al. (2016), which was based on the SAFE data from 2013. In addition, we extend that study by looking into the role of the country-specific macroeconomic and institutional environment on the financing patterns of SMEs.

Our study confirms the results of Moritz et al. (2016) and shows that European SME financing is not homogenous, but that different financing patterns exist. Our cluster analysis identifies seven distinct SME financing types based on the financing instruments used: mixed-financed SMEs with a focus on other loans, mixed-financed SMEs with a focus on retained earnings or sale of assets, state-subsidised SMEs, debt-financed SMEs, trade-financed SMEs, asset-based financed SMEs, and internally-financed SMEs. The SME financing types can be profiled according to their firm-, product-, industry-, and country-specific characteristics.

When investigating the use of specific financing instruments in the different clusters, we find that bank loans are relevant for all externally-financed SMEs, except for those in the cluster of asset-based financed SMEs. Equity capital is almost exclusively used by SMEs in the mixed-financed cluster with a focus on retained earnings or sale of assets, while subordinated debt instruments, participating loans and crowdfunding is predominantly used by SMEs in the mixed-financed cluster with a focus on other loans.

A look at the financing patterns of enterprises with particular characteristics reveals that innovative SMEs are relatively strongly represented in both mixed-financed clusters and in the cluster that comprises only state-subsidised SMEs. In the latter, SMEs are also characterised by relatively high past growth rates and future growth expectations. Even though this cluster contains a large share of SMEs that perceive high access to finance problems, our analysis shows that many SMEs in the state-subsidised cluster complement grants or subsidised loans with a large variety of financing instruments, including bank loans. This is in line with Moritz et al. (2016), and our findings support their assumption that government promotional programs for relatively risky innovative and fast growing SMEs appear to send a positive signal to external capital providers (Beck et al. 2008; Freel 2006; Mina, Lahr, and Hughes 2013).

Apart from the cluster comprising state-subsidised SMEs, those enterprises that perceive major difficulties when accessing finance are strongly overrepresented in the two clusters of debt-financed and mixed-financed SMEs with a focus on other loans. They can also be found comparatively more often in the cluster of trade-financed SMEs. These clusters show a relatively strong use of credit lines and bank or credit card overdrafts. This can also be seen as a sign for problematic access to other financing instruments.

Internally-financed enterprises frequently state low access to finance problems, which indicates that the non-use of external finance seems to be more often driven by a voluntary choice of SMEs rather than by supply-side-related restrictions.

SMEs in which the largest stake is owned by a venture capital (VC) firm or a business angel (BAs) are most common among the mixed-financed SMEs with a focus on retained earnings/sale of assets, while those enterprises cannot be found in the cluster comprising state-subsidised SMEs.

We also find that state subsidies seem to be more often used by small and medium-sized companies and less by micro firms. Micro firms are more likely to be in the internally-financed or debt-financed cluster (with a high percentage of short-term debt), in line with findings by Moritz et al. (2016). Further analyses could investigate if this result can be explained by specificities of these subsidies that do not fit the needs of micro firms or if micro firms simply lack the awareness of government support programmes. Related research within our project is underway and will be published in due course.

Moreover, we observe that country-specific differences, as well as the macroeconomic- and institutional-environment impact the financing patterns of SMEs often to an even higher degree than firm-specific characteristics. SMEs in countries with a higher inflation *rate* tend to use less trade financing and state subsidies, while SMEs in countries with very high inflation *volatility* tend to be comparatively more often in the internally-financed or mixed-financed cluster (with focus on other loans). This result might be due to lower predictability of a country's future development which in turn increases the business risk of firms.

SMEs in countries with high GDP per capita are comparatively more often in the mixed-financed (with a focus on retained earnings or sale of assets), asset-based and debt-financed clusters. Hence, SMEs in more developed and economically sound countries seem to be able to obtain financing from a larger variety of financing sources (Bas et al. 2009). In line with this finding, firms in countries with relatively high GDP growth rates appear to use a broader range of financing instruments, whereas SMEs in countries with lower GDP growth rates are more likely to use state subsidies. SMEs in countries with high unemployment rates are more likely to be in the internally-financed and trade-financed cluster.

In countries with higher tax rates, SMEs are more likely to be in the debt-financed and in the state-subsidised clusters, in which the use of bank loans is relatively high. This result could be driven by a higher importance of the tax deductibility of interest rates.

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1 Introduction

Small and medium-sized enterprises (SMEs) are a significant driver of the European economy, as approximately 99.8% of all European non-financial enterprises are SMEs generating around EUR 3.9 trillion value added per year (European Commission 2016). Nevertheless, SMEs are often confronted with financing constraints due to high information asymmetries, insufficient collateral, agency risks and high transaction costs for capital providers (e.g., Artola and Genre 2011; Berger and Udell 1998; Block, Colombo, Cumming, and Vismara 2017; Chong, Lu, and Ongena 2013; Ferrando and Griesshaber 2011; Popov and Udell 2012; Sogorb-Mira 2005; Ryan, O'Toole, and McCann 2014).

Although research in SME financing has increased over the last years, little is known about the substitutive or complementary usage of several financing instruments (Beck, Demirgüç-Kunt, and Maksimovic 2008; Casey and O'Toole 2014; Lawless, O'Connell, and O'Toole 2015; Moritz, Block and Heinz 2016). Moritz et al. (2016) have taken a holistic approach to investigate SME financing patterns in Europe by using cluster analysis. They identified six different SME financing clusters in Europe: mixed-financed SMEs, state-subsidised SMEs, debt-financed SMEs, flexible-debt financed SMEs, trade-financed SMEs, and internally-financed SMEs. The authors found that SMEs in the clusters differ regarding to firm-, product-, industry-, and country-specific characteristics such as age, firm size, or ownership structure, which is in line with previous research (e.g., Berger and Udell 1998; Chavis, Klapper and Love 2011; Ferrando and Griesshaber 2011). Our study is based on Moritz et al. (2016) but complements it in two respects: first, it remains unclear whether the identified financing patterns are stable over time. By using SME financing data collected in 2015 we investigate how the financing patterns differ from those identified by using data from 2013. Second, Moritz et al. (2016) found that country differences seem to have the strongest impact on cluster differences.

However, the authors did not further investigate the reasons for these differences. In our study we explore this by including macroeconomic variables (e.g., Beck et al. 2008; Camara 2012; Demirgüç-Kunt and Maksimovic 1999; Hernández-Cánovas and Koëter-Kant 2011).

In analogy to Moritz et al. (2016) we use the "Survey on the access to finance of enterprises (SAFE survey)", which is conducted on behalf of the European Central Bank (ECB) and the European Commission (EC). The SAFE survey contains information on about 17,950 firms in 39 countries (wave 2015H1). Since the majority of firms in the SAFE survey are SMEs (approximately 90%), the survey is ideally suited for our research question. Moreover, the SAFE survey contains information about a large number of different financing instruments (e.g., retained earnings or sale of assets, grants and subsidised bank loans, credit line, bank overdraft or credit card overdrafts, bank loan, trade credit, loans from family and friends, factoring, leasing or hire-purchase, debt securities issued, equity capital), as well as firm-, product-, industry- and country-specific information. We use the different financing instruments as active variables in our cluster analysis to identify financing patterns of SMEs in Europe. To profile the different financing patterns, we use the firm-, product-, industry-, and country-specific characteristics provided in the SAFE survey. To complement these profiles, we added a number of relevant macroeconomic variables to our dataset such as GDP per

capita, inflation rate and volatility, unemployment rate, or property rights. Finally, we compare our results with the results by Moritz et al. (2016) in order to investigate the stability of SME financing patterns over time.

Our findings contribute to the literature on SME financing in different ways (e.g., Beck et al. 2008; Casey and O'Toole 2014; Lawless et al. 2015; Moritz et al. 2016). To date, little is known about the complementary and substitutive use of different financing instruments (Beck et al. 2008; Casey and O'Toole 2014). Our findings suggest that the identified financing patterns by Moritz et al. (2016) are relatively stable over time and various financing instruments are used as complements and substitutes by European SMEs. Moreover, our study extends the research of Moritz et al. (2016) by adding macroeconomic variables to the dataset. We contribute to the literature by investigating the influence of country characteristics on small firms' financing (e.g., Beck et al. 2008; Camara 2012; Demirgüç-Kunt and Maksimovic 1999; Hernández-Cánovas and Koëter-Kant 2011; Mokhova and Zinecker 2014).

The remainder of the paper proceeds as follows: Section 2 provides a literature review focused on macroeconomic variables influencing SME financing. Section 3 explains the dataset (SAFE survey), the method applied and the description of the variables used in the empirical analysis. In Section 4 we provide the results of the cluster analysis, the determinants of the financing patterns and the comparison of our findings with those of Moritz et al. (2016). Section 5 summarises the results, discusses limitations and suggests further research areas.

2 Literature review

Previous research identified a significant effect of industry-, firm-, or product-specific factors such as firm size, firm age, growth, ownership structure, and industry sector on SMEs' access to and usage of different financing sources (Chittenden, Hall, and Hutchinson 1996; Ferrando and Griesshaber 2011; Hall, Hutchinson, Michaelas 2004; Mac an Bhaird and Lucey 2010). However, many previous studies focused on a single financing instrument and did not investigate the complementary and substitutive use of different debt and equity instruments (exceptions are, for example, Beck et al. 2008; Casey and O'Toole 2014; Lawless et al. 2015; Moritz et al. 2016). Moritz (2015) provides a comprehensive and detailed literature review on SME financing and its influencing factors.

As we do not want to be repetitive, we focus our literature review on previous research that analyzed the effects of macroeconomic variables on the financing of firms (e.g., Booth et al. 2001; Bopkin 2009; Cull et al. 2006; La Porta, Lopez-De-Silanes, Shleifer, and Vishny 1997). The Gross Domestic Product (GDP) is an indicator for a countries' economic development and its influence on the capital structure of firms has been widely investigated (e.g., Bopkin 2009; Mokhova and Zinecker 2013). Prior research found that there is a negative relation between both GDP and GDP growth and the firm's capital structure (Bopkin 2009; Gajurel 2006). Also, the unemployment rate is used as an indicator for the economic development. However, prior findings on the influence of a countries' unemployment rate on the capital structure of firms have been mixed, such as the finding of a non-significant effect or a significant positive effect on the leverage level of firms (Camara 2012; Mokhova and Zinecker 2013). Moreover, empirical studies investigated the effect of the inflation rate on the financing of firms but also with mixed findings. Whereas Camara (2012), Hanousek and Shamshur (2011), Sett and Sarkhel (2010) found a positive effect on the firm's leverage, Gajurel (2006) reported a negative influence of the inflation rate on total leverage. Beside these factors, prior research investigated the effect of macroeconomic indexes, such as legal system index or the property right index (e.g., Duan, Chic, and Liu 2012). It has been found that companies in countries with better protection of property rights use to a larger extent external financing, especially bank and equity finance, as better protection of property rights increases the security for capital providers (Beck et al. 2008; Psillaki and Daskalakis 2009).

However, most prior studies are either focused on larger firms and/or did not investigate the complementary and substitutive use of different financing instruments (e.g., Beck and Demirgüç-Kunt 2006; Bopkin 2009; Chavis et al. 2011). We tap into this research gap by developing an empirical taxonomy of SME financing patterns and characterise the patterns according to the macroeconomic variables. Table 1 provides an overview of relevant empirical studies regarding the effects of macroeconomic variables on SMEs' capital structure.

Table 1: Literature review

Authors	Main findings	Main data source/Main method	Country
Agarwal and Mohtadi (2004)	Stock market development is negatively linked to the debt levels of firms relative to their equity level, whereas the banking sector development is positively linked to debt level of firms relative to their equity level.	WorldScope, IFC, World Development Indicators/ regression analyses	Worldwide
Ayyagari et al. (2007)	The business environment, for instance better credit information, is positively linked to a larger size of the SME sector in a country.	World Bank Doing Business Database/ regression analyses	Worldwide
Beck and Demirgüç-Kunt (2006)	The improvement of financial and legal institutions can alleviate the access to finance constraints for SMEs.	Literature review	Worldwide
Bas et al. (2009)	The financing decisions of large and listed firms are influenced less by economic conditions than are small and private firms.	World Bank Enterprise Survey (WBES)	Developing countries
Beck et al. (2008)	Protection of property rights has a positive effect on external financing of small firms. Firm size determines the capital structure. Both financial and institutional development has an impact on financing of small and large firms.	WBES/ regression analyses	Worldwide
Berger and Udell (1998)	Government policies and national structures affect credit availability through lending technologies. Beside company-characteristics, the macroeconomic environment determines the financing of SMEs.	Literature review	Worldwide
Booth et al. (2001)	The capital structure choices are influenced by similar variables for both developed and developing countries. Country-specific fixed effects explain approximately 43% of firm leverage variation in developing countries.	International Finance Corporation (IFC)/ regression analyses	Worldwide
Bopkin (2009)	Inflation has a significantly positive effect on the choice of short-term debt over equity, whereas GDP per capita negatively affects the capital structure choices.	Accounting data/regression analyses	Worldwide
Chavis et al. (2011)	Younger firms rely more on informal financing and less on bank financing. More mature firms substitute informal financing with bank financing (substitution effect hold for different industries and countries). These effects hold for firms in countries with different GDP per capita rates.	WBES/ regression analyses	Worldwide

Authors	Main findings	Main data source/Main method	Country
Daskalakis and Psillaki (2008)	Firm size has a positive relationship with leverage. Profitability and asset structure (ratio of tangible assets divided by the total assets of the firm) have a significant negative impact on leverage. Firm-specific rather than country-specific factors explain capital structure (at least for SMEs in France and Greece).	AMADEUS database/ regression analyses	France and Greece
Frank and Goyal (2009)	Median industry leverage, tangibility, log of assets and expected inflation positively influence market leverage, whereas market-to-book assets ratio and profits negatively affect market leverage.	Compustat, Center for Research in Security Prices, public databases/ regression analyses	United States
Giannetti (2003)	The leverage of individual unlisted firms significantly influences institutional variables (e.g., stock market development, legal enforcement, or creditor protection).	AMADEUS database/ regression analyses	Europe
Hanousek and Shamshur (2011)	Both the GDP growth and the corruption perception index are positively related to the firm's leverage ratio.	AMADEUS database/ regression analyses	Europe
Hall et al. (2004)	Firm-specific determinants (firm size, firm age, profit, growth, asset structure) have partly a significant influence on the capital structure of SMEs but there exists variations between countries.	Dun & Bradstreet/ regression analyses	Europe
Hernández-Cánovas and Koëter-Kant (2011)	SMEs in countries with high protection rights are more likely to obtain long-term bank loans. The institutional environment effect is more pronounced for micro firms.	ENSR Survey/ regression analyses	Europe
Jõeveer (2013)	The explanatory power of country-specific factors is higher for small firms than it is for larger firms. The leverage of a firm varies according to the firm size.	AMADEUS database/ ANOVA and regression analyses	Western Europe
La Porta et al. (1997)	Countries with poorer investor protections have smaller capital markets. Common law countries have better investor protections and developed capital markets than have French civil law countries.	WorldScope Database/ regression analyses	Worldwide
Levine (2002)	The legal system has an influence on the financial sector development.	Country publications and national regulatory authorities/ regression analyses	Worldwide

Authors	Main findings	Main data source/Main method	Country
López-Gracia and Sogorb-Mira (2008)	Both trade-off and pecking order theory are appropriate theoretical approaches in order to explain the financial behavior of SMEs. Growth opportunities, firm size, age, internal resources and non-debt tax shields are important determinants of SME capital structure.	SABI database/ regression analyses	Spain
Mac an Bhaird and Lucey (2010)	The variables firm age, firm size, ownership structure, level of intangible activity and provision of collateral are substantial factors which determine the capital structure of SMEs. The findings are similar across industry sectors. Findings support the appropriability of the pecking order theory for SMEs.	Survey/ regression analyses	Ireland
Moritz et al. (2016) ³	SME financing in Europe appears to be heterogeneous, but several financing patterns exist. SME financing types differ according to their firm-, product-, industry- and country-specific characteristics.	SAFE/ cluster analysis	Europe
Sett and Sarkhel (2010)	Both the inflation rate and the effective rate of corporate tax positively influence the firm's debt-equity ratio.	RBI/ Regression analyses	India
Öztürk and Mrkaic (2014)	Firm size and age are positively linked to access to finance of SMEs. Subsidies significantly improve access to finance of SMEs. Increased bank funding costs as well as borrower leverage have a negative impact on the access to finance of SMEs.	SAFE/ baseline analysis and regression analyses	Europe
Psillaki and Daskalakis (2009)	Firm-specific determinants, such as profitability, asset structure, firm size or risk, rather than country factors appear to explain differences in capital structure in a country.	AMADEUS database/ regression analyses	Europe
Rajan and Zingales (1995)	The effective personal and corporate tax rate should be included to measure the effect of taxes on the aggregate leverage of a firm in a country.	Morgan Stanley Capital International Perspective/ regression analyses	Worldwide
Sogorb-Mira (2005)	Non-debt tax shields and profitability negatively influence SME leverage. Asset structure, growth options and firm size have a significant positive impact on SME capital structure.	SABI database/ regression analyses	Spain

³ Previous versions of Moritz et al. (2016) were published in Moritz (2015) and Moritz et al. (2015), i.e. EIF Working Paper 2015/30.

3 Data, Method and Variables

3.1 The SAFE Survey

The main data set used for our analysis is obtained from the ‘Survey on the access to finance of enterprises (SAFE survey)’, which is conducted on behalf of the European Central Bank (ECB) and the European Commission (EC). The SAFE survey is run on a bi-annual basis by the ECB, while it is carried out once a year (since 2013) as a cooperation between EC and ECB (European Central Bank 2016; European Commission 2015). The difference between the bi-annual and annual questionnaire are the number of questions asked and the participating countries. The firms in the sample are selected randomly from the Dun & Bradstreet database by a specialist research institute to underline that it is anonymous and professional.

The SAFE survey contains various firm-specific information such as firm size (turnover, number of employees), firm age, ownership structure, main activity (industry, trade, construction, service), growth, innovation activity and financing information (e.g., current financing sources, evaluation of the access to finance). According to the size categories, the SAFE differentiates between micro (1-9 employees), small (10-49 employees), medium-sized (50-249 employees), and large enterprises (> 250 employees). The sample of the SAFE survey is artificially distorted due to the sampling process. Therefore, we used post-stratification weights (calculated on the basis of Eurostat data) in order to restore the non-distorted proportions based on the approach applied by Moritz et al. (2016). For our analysis, we used the joint EC/ECB wave number 13 that was conducted between April and September 2015. In total, the sample includes 17,950 firms in 39 European countries. The reduced sample for our analysis is described in more detail in Section 3.4.

3.2 Method

In order to identify an empirical taxonomy of SME financing patterns, we conduct a hierarchical cluster analysis. Cluster analysis is an appropriate method to identify groups of firms that use similar financing instruments. The goal is to identify clusters which are relatively homogeneous within the clusters but are distinctively different from each other (e.g., Hair, Black, Babin, and Anderson 2010; Özari, Köse, and Ulusoy 2013).

Different hierarchical cluster analysis algorithms were tested (single linkage, average linkage, complete linkage and Ward’s method) in order to identify an empirical taxonomy of SMEs in Europe. We decided to use the Ward’s method because this algorithm generated relatively homogeneous clusters with balanced cluster sizes, whereas the other methods provided unbalanced cluster sizes or clusters with a high intra-cluster heterogeneity (Backhaus, Erichson, Plinke, and Weiber 2013). Furthermore, this approach allows us to directly compare our results with the analysis done by Moritz et al. (2016) without causing differences due to different methods applied. Consistent with the Ward’s algorithm, we used the squared Euclidean distance as a measure of proximity. Based on the validation tests (Test of Mojena and Elbow Criterion) as well as face validity and theoretical foundation (Backhaus et al. 2013; Mojena 1977), we identified seven distinct SME financing clusters.

3.3 Variables

Active cluster variables

In the SAFE survey, the participating SMEs are asked about the financing of their company, and in particular, the financing instruments used. The question consists of two parts: First, it was asked whether the enterprise used the specific financing instrument in the past or considered using it in the future (i.e., whether the financing instrument was relevant to the firm). Second, it was asked whether the company used the financing instrument during the past six months. The following financing instruments were queried: (a) retained earnings or sale of assets, (b) grants or subsidised bank loans, (c) credit line, bank overdraft or credit card overdrafts, (d) bank loans (both short and long-term), (e) trade credit, (f) other loans (for example from family and friends, a related enterprise or shareholders), (g) leasing or hire purchase, (h) factoring (i) debt-securities issued, (j) equity (quoted shares, unquoted shares or other forms of equity provided by the owners or external investors such as venture capital companies or business angels), (k) other sources of financing (subordinated debt instruments, participating loans, peer-to-peer lending, crowdfunding).

As we are also interested in firms which did not use any of these financing instruments, we added an additional variable that indicated whether a company did not use any external financing in the past six months. To be able to compare the cluster results with the analysis done by Moritz et al. (2016), we combined the financing instruments ‘factoring’ and ‘leasing or hire-purchase’ as these financing instruments were combined in one category in 2013. The different financing instruments are used as active cluster variables in order to identify financing patterns of European SMEs and to create a comprehensive taxonomy of European SME financing.

Passive cluster variables

To characterise the different financing patterns, several firm-, product-, industry-, and country-specific determinants are included as passive cluster variables. The majority of the variables is retrieved from the SAFE survey (see Table 2). To analyse the country specific differences, we add macroeconomic variables provided by the OECD, the European Commission, the Heritage Foundation and the World Bank.

Table 2: Passive cluster variables

Passive cluster variables	Coding	Comments
Firm size (1): Number of employees How many people does your company currently employ either full- or part-time in [country] at all its locations?	1 = from 1 employee to 9 employees 2 = 10 to 49 employees 3 = 50 to 249 employees 4 = 250 employees or more	Category 4 was excluded from the analysis
Firm size (2): Turnover What was the annual turnover of your enterprise in 2014?	5 = up to EUR 500,000 6 = more than EUR 500,000 and up to EUR 1m 7 = more than EUR 1m and up to EUR 2m 2 = more than EUR 2m and up to EUR 10m 3 = more than EUR 10m and up to EUR 50m 4 = more than EUR 50m	Category 5, 6 and 7 are recoded to "up to EUR 2m"
Firm age In which year was your enterprise first registered?	1 = 10 years or more 2 = 5 years or more but less than 10 years 3 = 2 years or more but less than 5 years 4 = less than 2 years	Recoded in the dataset
Ownership Who owns the largest stake in your enterprise?	1 = public shareholders 2 = family or entrepreneurs 3 = other enterprises or business associates 4 = venture capital enterprises or business angels 5 = one owner only 7 = other	
Growth in the past (1): Employee growth Over the last three years (2012-2014), how much did your firm grow on average per year in terms of employment regarding the number of full-time or full-time equivalent employees?	1 = over 20% per year 2 = less than 20% per year 3 = no growth 4 = got smaller	
Growth in the past (2): Turnover growth Over the last three years (2012-2014), how much did your firm grow on average per year in terms of turnover?	1 = over 20% per year 2 = less than 20% per year 3 = no growth 4 = got smaller	
Growth expectation Considering the turnover over the next two to three years (2015-2017), how much does your company expect to grow per year?	1 = grow substantially - over 20% per year 2 = grow moderately - below 20% per year 3 = stay the same size 4 = become smaller	
Profit Has profit decreased, remained unchanged or increased over the past six months? ⁴	1 = increased 2 = remained unchanged 3 = decreased	
Access to finance problems How important have the following problems been for your enterprise in the past six months? (scale 1–10)	1 = it is not at all important 10 = extremely important	Recoded in the dataset: 1 = low (1–3) 2 = medium (4 – 6) 3 = high (7 – 10)
Product-related innovativeness During the past 12 months have you introduced a new or significantly improved product or service to the market?	1 = yes 2 = no	

⁴ The actual SAFE question is „Have the following indicators decreased, remained unchanged or increased over the past six months“, and profit is one of nine queried indicators.

Sector of main activity What is the main activity of your company?	1 = industry 2 = construction 3 = trade 4 = services	Recoded in the dataset
Country	39 European countries	27 EU countries ⁵
Access to finance problems	1 = low (1–3) 2 = medium (4 – 6) 3 = high (7 – 10)	
Inflation rate	1 = deflation (0%) 2 = 0 to less than 0.5 3 = more than 0.5	
Inflation volatility	1 = 0 to less than 0.5 2 = 1 to less than 1.5 3 = 1.5 to less than 2 4 = more than 2	
Total tax rate	1 = low (0 – 25%) 2 = medium (26 – 50%) 3 = high (>50%)	
GDP per capita (in US-Dollar)	1 = very low (0 – 20,000) 2 = low (20,001 – 40,000) 3 = high (40,001 – 60,000) 4 = very high (>60,000)	
Average of annual GDP growth rate (averaged through 2011 – 2015)	1 = less than 0% 2 = 0 to less than 1% 3 = 1 to less than 2% 4 = 2 to less than 3% 5 = more than 3%	
Unemployment rate	1 = low (0 – 6%) 2 = medium (7 – 13%) 3 = high (> 13%)	
Property Rights	1 = very low (30 – 50) 2 = low (51– 70) 3 = high (71 – 90) 4 = very high (>90)	
Economic Freedom Index	1 = low (50 – 60) 2 = medium (61 – 70) 3 = high (>70)	

Note: Coding for all variables 9 = DK/NA (excluded in our analysis)

Source: European Commission, European Central Bank, Heritage Foundation, World Bank

⁵ Excluding Malta since the original weights could not be restored.

Firm level variables

Firm size: The SAFE survey contains two different measures with regard to the size of the firm. We include both variables - the number of employees and the annual turnover - in our analysis (categorical variables). Empirical research indicates that the size of a firm has a significant impact on its capital structure (e.g., Berger and Udell 1998; Cassar 2004; Hall et al. 2004). Due to the specific characteristics of SMEs, such as informational opacity, liability of smallness and liability of newness (Stinchcombe, 1965; Zimmerman and Zeitz, 2002), the capital structure of SMEs differs from that of larger enterprises (Berger and Udell 1998; Moritz et al. 2016; Psillaki and Daskalakis 2009; Watson and Wilson 2002). Previous research found that the size effect is particularly strong for accessing bank financing (e.g., Canton, Grilo, Monteagudo, and Van der Zwan 2013; Jöeveer 2012; Öztürk and Mrkaic 2014). In addition, recent studies have found validity of the pecking order theory⁶ for SMEs (López-Gracia and Sogorb-Mira 2008; Mac an Bhaird and Lucey 2010; Watson and Wilson 2002) with the result that smaller enterprises prefer internal financing or short-term external debt over long-term debt and equity (Mac an Bhaird and Lucey 2010).

Firm age: The survey contains information about firm age (categorical variable). Previous research has shown a significant effect of firm age on the capital structure of SMEs (e.g., Chavis et al. 2011; Chittenden et al. 1996). Younger firms rely more on informal financing, whereas older firms appear to use more formal financing such as bank loans (Chavis et al. 2011). More mature firms are more likely to receive formal financing, as they already have track records, a credit history and established relationships, which decreases information asymmetries for capital providers (Berger and Udell 1998; Chavis et al. 2011). Formal capital providers such as banks are more inclined to provide short-term debt for young firms as it is more flexible and the contract is easier to terminate in case the firm does not develop as expected (Huyghebaert and Van de Gucht 2007).

Growth: The SAFE survey gathers information about future growth expectations and past growth rates. Whereas the former is measured in terms of turnover growth rates, the latter considers turnover growth as well as number of full-time or full-time equivalent employees. Former studies suggest that the growth of small firms is constrained by the availability of financing. When internal financing sources are depleted external financing is required for further growth (Becchetti and Trovato 2002; Carpenter and Petersen 2002). In particular, SMEs with high growth ambitions require external financing sources in order to finance their future objectives (Cassar 2004; Rogers 2014).

Ownership: This variable captures the main owner of the firm. Since previous studies have shown that ownership structure affects business financing (e.g., Chittenden et al. 1996; Ferrando and Griesshaber 2011; Moritz et al. 2016), we included all different ownership types included in the SAFE survey in our analysis. Previous research has found that family firms, single-owner firms and

⁶ The pecking-order theory assumes that firms prefer internal financing over external financing due to higher information costs associated with external financing (Myers 1984; Myers and Majluf 1984). However, if external financing is required, firms prefer debt to equity since equity has not only the highest information costs but also leads to a dilution of control (López-Gracia and Sogorb-Mira 2008; Mac an Bhaird and Lucey 2010; Myers 1984).

owner-teams appear to avoid external sources of financing due to a possible loss of control rights (Bathala, Bowlin, and Dukes 2004; Chittenden et al. 1996).

Profit: According to former research, profitability is negatively related to gearing. In other words, SMEs with a higher profitability seem to prefer internal (e.g., retained earnings) to external financing instruments (e.g., Michaelas, Chittenden, and Poutziouris 1999; Hall, Hutchinson, and Michaelas 2000). In particular, firms with higher profits appear to use less debt (Frank and Goyal 2009). In the past, the SAFE survey contained information about the development of the profit margin as a measure of profitability. However, since 2015 the survey does not cover information about the profit margin. Therefore, we include the change in profit of the firm as a proxy for profitability in our analysis.

Access to finance: The SAFE survey contains a variable concerning the most pressing problem of the firm in the past six months. Companies were asked to indicate how important a specific problem (amongst others access to finance) was on a scale from 1 (not at all important) to 10 (extremely important). As SMEs typically are more opaque than larger firms, they are likely to have more difficulties to access external finance (e.g., Beck and Demirgüç-Kunt 2006). To understand how SMEs perceive their access to finance, we included this variable in our analysis and recoded the scale into three categories: low (1-3), medium (4-6) and high importance (7-10) that are also used in the ECB analyses (European Central Bank 2016).

Product characteristics - Innovativeness: The SAFE also covers questions about the innovativeness of firms. Participants were asked if they introduced a new or significantly improved product or service to the market during the past 12 months. Developing new products and services is often cost intensive and the success is highly uncertain (Block, 2012; Coad and Rao, 2008). Especially for SMEs innovations are often very risky as they are too small to diversify their portfolio, which increases the risk of bankruptcy for these firms (Achleitner, Braun, and Kohn 2011; Huyghebaert and Van de Gucht 2007; Rajan and Zingales 1995). As a consequence it has been found that innovative SMEs face problems in particular to obtain external debt (Hall 2010; Hall and Lerner 2010; Mina, Lahr and Hughes 2013; Singh, Tucker and House 1986).

Hence, equity investors such as venture capital firms, which are specialized on investing in innovative small and start-up firms with a high return potential, are an alternative financing source for these high-risk firms. In general, venture capital firms have a variety of selection criteria and extensive experience to evaluate innovative start-up companies (Franke, Gruber, Harhoff and Henkel 2008; Zhou, Sandner, Martinelli, and Block 2016). By using their networks and experience, venture capital firms are able to decrease information asymmetries and opportunity costs (Florida and Kenney 1988; Hall 2010). In addition, they closely monitor the firms after their investment and provide value-adding services. In contrast to debt providers, equity investors participate in the success of the firm and are incentivised by higher return potentials through an exit, such as an IPO or buyout (Gompers and Lerner 2004; Hall 2010).

Industry characteristics: According to the firm's main activities, the SAFE dataset distinguishes between different sectors. The one-digit European NACE classification was the basis for the statistical stratification. In order to ensure representativeness and anonymity, the different sectors

were grouped together into four categories: industry, construction, trade and other services (European Central Bank 2016). Previous research found that financing requirements differ between industries due to different asset structures and risks (Bradley, Jarrell and Kim 1984; Coleman and Robb 2012; Degryse, de Goeji, and Kappert 2012; Hall et al. 2000). While SMEs in the industry sector typically require more long-term capital to finance their assets with a long term character, SMEs in the trade sector appear to require more short-term debt (Chavis et al. 2011; Hall et al. 2000; Michaelas et al. 1999; Moritz et al. 2016). Service firms, however, have been found to use more internal financing sources than external financing, since capital requirements are relatively low (Harrison, Mason and Girlin 2004).

Country level and macroeconomic variables

Countries: The SAFE Survey (2015H1) covers in total 39 countries including mainly European but also non-European countries such as the United States, China, Japan or the Russian Federation. Our sample covers all countries, where the weights could be restored with the Eurostat data, i.e. 27 European countries.⁷ A number of previous research has highlighted the importance of country differences for firm financing (e.g., Booth et al. 2001; Canton et al. 2013; Chavis et al. 2011; Daskalakis and Psillaki 2008; Demirgüç-Kunt and Levine 1999; La Porta et al. 1997). In particular, the countries' legal and financial system affects the capital structure of firms (Beck et al. 2008; Demirgüç-Kunt and Maksimovic 1999; Fan, Titman and Twite 2012; Levine, 2002). This effect is even stronger for SMEs as they are more restricted in their cross-border financing activity than larger companies (Guiso et al., 2004; Jöeveer, 2012). It has been found that firms in countries with more developed financial and legal systems use more external financing (Beck et al. 2008; Demirgüç-Kunt and Maksimovic 1999). In order to analyse country differences, the 27 European countries are classified based on geography (Northern, Southern, Western and Eastern Europe), their financial market system (bank-based, market-based and former socialist countries) and the impact of the financial crisis (distressed and non-distressed countries) (Beck et al. 2008; Casey and O'Toole 2014; Demirgüç-Kunt and Maksimovic 1999; Ferrando, Popov and Udell 2015; Moritz et al. 2016). Furthermore, several country-specific and macroeconomic variables, which we took from sources other than the SAFE survey, are included in the analysis:

Inflation rate and volatility: The inflation rate and the inflation rate volatility of the different countries were obtained from the World Bank. We grouped the inflation rates of 2015 into three categories: deflation (rate below 0%), very low (0.0%-0.5%) and low (0.5%-1%)⁸. Different previous studies have analysed the connection between a countries' inflation rate and the financing of firms (Beck et al. 2008; Demirgüç-Kunt and Maksimovic 1999; Frank and Goyal 2009; Hernández-Cánovas and Koëter-Kant 2011; Jöeveer 2013; Öztekin, 2015). The results of the different studies, however, vary considerably. Whereas Demirgüç-Kunt and Maksimovic (1999), Hernández-Cánovas and Koëter-Kant (2011), Bopkin (2009) and Beck et al. (2008) reported a negative effect of high levels of inflation on the use of long-term debt, other studies did not find any significant

⁷ All 27 countries in the sample are members of the European Union (EU). Malta was excluded, since the original weights could not be restored. Moreover, the non-EU member Norway, which was part of the previous analysis by Moritz et al. (2016), was not included in our data set due to missing data.

⁸ The inflation rates are all below 1% in 2015.

relation between inflation rate and the firms' capital structure or reported the inflation rate as a non-reliable factor to predict leverage (Fan et al. 2012; Frank and Goyal 2009).

Furthermore, high inflation rates and high inflation volatility in the past indicate a high uncertainty about future inflation rates (Ball 1992; Fan et al. 2012; Frank and Goyal 2009). This uncertainty is associated with higher business risks as higher inflation rates increase the volatility of the firms' operating income. As a consequence, it has been found that inflation uncertainty negatively influences the number of firms' investments by issuing debt (Fan et al. 2012; Hatzinikolaou, Katsimbris and Noulas 2002).

Tax rate: We include the total tax rate and the corporate tax rate of a country as additional variables. We grouped these into three categories: low (0-25%), medium (26-50%) and high (>50%). Several studies analyzed the effect of taxes on corporate decision making and in particular, on financial decision making (e.g., Fan et al. 2012; Graham 2003). According to trade-off theory⁹, firms in countries with higher tax rates appear to use more debt (Graham 2003; Modigliani and Miller 1958; Miller 1977; Myers 1984; Wu and Yue 2009). Debt has a tax advantage over equity, since interest expenses are deductible (Graham 2000).

Gross Domestic Product (GDP) per capita: The World Bank provides data about countries' GDP. We categorized the GDP per capita levels (in US dollars): very low (0-20,000), low (20,001-40,000), high (40,001-60,000) and very high (>60,000). The GDP per capita is an indicator for the economic development of a country. Various studies have found a relationship between GDP and the capital structure of firms (Bopkin 2009; Camara 2012): firms in countries with a high GDP per capita have been found to rely more on internal (e.g., retained earnings) rather than external financing (Bopkin 2009).

In addition, previous research has investigated the effect of GDP growth rate and GDP change rate on the capital structure of firms (De Jong, Kabir and Nguyen 2008; Hernández-Cánovas and Koëter-Kant 2011; Holton, Lawless and McCann 2014). De Jong et al. (2008) investigated how firm- and country-specific factors affect the leverage choice of firms in 42 countries worldwide. They revealed that GDP growth rate has a positive effect on the firm's debt level (De Jong et al. 2008).

Unemployment rate: We include the countries' unemployment rate as another macroeconomic variable in the cluster analysis. We grouped the unemployment rates into three categories: low (0-6%), medium (7-13%) and high (>13%). Similar to the variable GDP per capita, the unemployment rate is an indicator for the economic development and stability of a country. Previous research has found a significant relationship between the unemployment rate and a firm's capital structure, but with mixed findings (non-significant effect or a significant positive effect on the leverage level of firms) (Camara 2012; Mokhova and Zinecker 2014).

⁹ The trade-off theory states that firms have to choose between tax advantages by using debt and the risk of bankruptcy due to high leverage (Bradley, 1984; Klapper, Sarria-Allende, and Sulla 2002; Myers 1977). Hence, this theory suggests that firms aim to reach an optimal debt level (Myers 1984).

Property rights (Index): In order to provide information on the impact of the institutional environment on firms' financing decisions, we include an indicator of property rights protection compiled by the Heritage Foundation. Since all European countries have at least a property rights index of 30, we grouped the values into four categories based on the classification of the Heritage Foundation: very low (property rights values between 30 and 50), low (51-70), high (71-90) and very high (>90). According to the Heritage Foundation, a property rights index of less than 30 means that the property rights are weakly protected, the court system is highly inefficient, corruption is extensive and expropriation is possible. On the contrary, a value of more than 90 implies that the government guarantees the protection of private property, the court system enforces contracts efficiently and there is neither corruption nor expropriation. Previous studies have indicated the importance of the protection of private property for the financial development of a country (Beck, Demirgüç-Kunt and Levine 2003; Beck et al. 2008). Furthermore, it has been found that companies in countries with better protection of property rights use to a larger extent external finance. In particular, bank and equity finance is used more often in these countries, as better protection of property rights is necessary for financial contracts and the security of investments (Beck et al. 2008; Psillaki and Daskalakis 2009).

Economic Freedom (Index): The Heritage Foundation also publishes annually an economic freedom index that covers ten quantitative and qualitative factors, grouped into four broad categories of economic freedom: rule of law (property rights, freedom from corruption), limited government (fiscal freedom, government spending), regulation efficiency (labor/business/monetary freedom) and openness of markets (financial/trade/investment freedom). Protection of property rights is one of ten factors included in the Economic Freedom index. However, additional country-specific characteristics with regard to the institutional environment are covered by this index. Each of the ten factors of economic freedom is measured on a scale of 0 to 100. The overall Economic Freedom Index is the average of the different category factors. Again, we grouped the values into categories based on the classification of the Heritage Foundation: low (index between 0 and 60), medium (61-70) and high (>70). Previous research has shown that the legal and financial environment has an impact on the firms' capital structure (La Porta et al. 1997; Fan et al. 2012). For instance, firms in countries with a higher corruption appear to be more levered as the expropriation of external equity holders is easier than it is for debt holders (Fan et al. 2012).

3.4 Descriptive Statistics

For our research goal to identify financing patterns of SMEs in Europe, we include all firms from the SAFE survey with less than 250 employees according to the definition of the European Commission (European Commission, 2005). Hence, our study includes 13,098 firms (see Tables 3 and 5). We reweighted the sample using data on firm size, economic activities and countries by Eurostat in order to make valid statements for the overall population of SMEs in Europe. The final reweighted sample mainly consists of micro firms with less than 10 employees (93%). Moreover, 6% of the firms employ 10-49 people, whereas only 1% of the firms have 50-249 employees. Furthermore, approximately 90% of the companies have an annual turnover of less than EUR 2m. Regarding to firm age, most of the firms (71.8%) are mature companies (≥ 10 years old). The majority of SMEs is from Italy (16.8%), France (13.3%), Spain (10.4%), Germany (9.7%) and the

United Kingdom (7.9%). About 40% are single-owner firms or belong to families or entrepreneurs, while only 0.2% of the companies are owned by venture capitalists or business angels. Most of the firms belong to the service (47.6%) and trade sector (27.8%). One third of the SMEs introduced a new or significantly improved product or service to the market during the past 12 months. Regarding growth expectations, around 45% of the firms expect to have a moderate turnover growth in the next two to three years (0-20% per year).

Credit lines, bank overdrafts or credit card overdrafts were the external financing source that the largest share (33.9%) of firms in the sample used over the past six months. Moreover, trade credit (15.7%), bank loans (14.3%) and leasing, hire-purchase or factoring (12.5%) were important sources of external financing. The issuance of debt securities (1.2%), equity capital (1.2%) and other sources of financing such as crowdfunding or subordinated debt instruments (1%) were used to a lesser extent. However, many firms (40.6%) in the sample did not use any external financing in the last six months. Table 3 provides a detailed overview of the utilisation of the different sources of financing.

Table 3: Sample description (active cluster variables)

Source of financing	used in the past 6 months
Retained earnings or sale of assets	10.7%
Grants or subsidised bank loans	5.3%
Bank overdraft, credit card overdrafts, credit lines	33.9%
Bank loans	14.3%
Trade credit	15.7%
Other loans	9.6%
Debt securities issued	1.2%
Leasing, hire-purchase or factoring	12.5%
Equity	1.2%
Other sources of financing	1.0%
Factoring	2.9%
No external financing used	40.6%

Source: SAFE 2015H1

4 Empirical analysis

4.1 Identifying an empirical taxonomy of SMEs in 2015

To identify an empirical taxonomy of SMEs based on different financing instruments, we perform a cluster analysis (see sections 3.2 and 3.3). In total, 13,098 SMEs are included in the analysis providing a seven cluster solution ($p < 0.01$). The results of the cluster analysis are shown in Table 4.

Table 4: Cluster results

Financing instruments	Clusters							Pearson Chi ²
	Mixed-financed (other loans)	Mixed-financed (retained earnings or sale of assets)	State-subsidised SMEs	Debt-financed SMEs	Trade-financed SMEs	Asset-based financed SMEs	Internally-financed SMEs	
Retained earnings or sale of assets	7.5%	92.8%	12.7%	0.0%	1.0%	0.0%	0.0%	10511.2 ***
Grants or subsidised bank loans	6.2%	1.1%	100%	0.0%	0.3%	0.0%	0.0%	11406.4 ***
Credit line, bank overdraft or credit card overdrafts	48.5%	35.5%	56.5%	85.7%	45.8%	37.2%	0.0%	6038.7 ***
Bank loans	21.8%	14.6%	49.7%	35.6%	18.4%	0.0%	0.0%	2632.5 ***
Trade credit	23.7%	22.1%	29.2%	0.0%	95.6%	0.0%	0.0%	8453.6 ***
Other loans	93.9%	14.2%	0.0%	0.0%	0.5%	0.0%	0.0%	10405.3 ***
Debt securities issued	0.5%	0.4%	1.0%	0.0%	9.8%	0.0%	0.0%	1021.7 ***
Equity	0.9%	10.4%	0.0%	0.0%	0.5%	0.0%	0.0%	1074.9 ***
Leasing, hire-purchase or factoring	16.8%	20.3%	23.0%	6.9%	23.6%	100%	0.0%	6106.6 ***
Other ^(a)	11.7%	0.0%	0.1%	0.0%	0.0%	0.0%	0.0%	1413.5 ***
No external finance	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100%	13098.0 ***
N	1,129	1,324	602	2,481	1,382	859	5,321	
Percentage of firms	8.6%	10.1%	4.6%	18.9%	10.6%	6.6%	40.6%	
Description	Firms that use a large variety of financing instruments with focus on other loans	Firms that use a large variety of financing instruments with focus on retained earnings or sale of assets, and equity	Firms that use grants/subsidised bank loans but also other types of debt	Firms that use different types of debt, in particular short-term debt	Firms that use mainly trade-related types of financing	Firms that mainly use asset-based related types of financing (leasing, hire-purchase or factoring)	Firms without external financing	

Notes: N = 13,098; Pearson's chi-square test: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

^(a) Other financing instruments = subordinated debt instruments, participating loans, crowdfunding

Cluster 1 (Mixed-financed SMEs with focus on other loans): This cluster is characterised by the utilization of a large number of different financing instruments. However, the main focus is on “other loans”, such as loans from family and friends or related companies, which were used by 93.9% of SMEs in the cluster. Also very important is short-term debt which is used by nearly half of the SMEs in the cluster (48.5%). In addition, trade credit (23.7%), bank loans (21.8%) and leasing, hire-purchase or factoring (16.8%) are relatively important, while retained earnings or sale of

assets (7.5%), grants or subsidised bank loans (6.2%), and in particular equity capital (0.9%) and debt securities (0.5%) are of less importance. It is noteworthy that this is the only cluster in which other sources of financing such as subordinated debt instruments, participating loans and crowdfunding are of any importance (11.7%). 1,129 SMEs (8.6% of the number of firms in the whole sample) belong to this cluster.

Cluster 2 (Mixed-financed SMEs with focus on retained earnings or sale of assets): Firms in this group also use a great variety of financing instruments. However, the most important financing sources are retained earnings or sale of assets (92.8%). Credit lines, bank overdrafts or credit card overdrafts (35.5%), trade credit (22.1%), leasing, hire-purchase or factoring (20.3%), bank loans (14.6%) and other loans such as loans from family and friends (14.2%) are also used in this cluster. Equity capital (10.4%) is much more important than in all the other SME clusters. Debt securities (0.4%) and grants or subsidised bank loans (1.1%) are used to a small extent. 1,324 SMEs (10.1%) belong to this cluster.

Cluster 3 (State-subsidised SMEs): The state-subsidised SME cluster contains the smallest number of firms (602 SMEs, 4.6%). All firms in this cluster use government grants or subsidised bank loans over the previous six months. In addition, short-term debt in terms of credit lines, bank overdrafts or credit card overdrafts (56.5%) and bank loans (49.7%) are important financing sources.

Cluster 4 (Debt-financed SMEs): The debt-financed SME cluster is the second largest group in the sample with 2,481 SMEs (18.9%). This cluster focuses on short-term debt (85.7%) and long-term debt (35.6%). Firms included in this group use leasing, hire-purchase or factoring to a lesser extent (6.9%).

Cluster 5 (Trade-financed SMEs): SMEs in this cluster (1,382 firms, 10.6%) focus on trade credit. 95.6% of the SMEs in this cluster use this source of financing. In addition, short-term debt is used by 45.8% of SMEs in this cluster. Furthermore, SMEs use leasing, hire-purchase or factoring (23.6%) and bank loans (18.4%). The trade-financed SME cluster is the only group where the issuance of debt securities plays a considerable role (9.8%).

Cluster 6 (Asset-based financed SMEs): The asset-based financed SME cluster is the second smallest group with 859 firms (6.6%). All SMEs in this group use leasing, hire-purchase or factoring as an external source of financing. Credit lines, bank overdrafts or credit card overdrafts (37.2%) are the only other financing source for SMEs in this cluster.

Cluster 7 (Internally-financed SMEs): The majority of firms belong to the internally-financed SME cluster (5,321 firms, 40.6%). All firms rely on internal financing and do not use any external financing instruments over the past six months.

4.2 Profiling and describing the taxonomy

According to Table 5, statistical tests reveal that firm-, product-, industry- and country-specific characteristics including macroeconomic variables ($p < 0.01$) affect the distribution of SMEs across clusters. In particular, country-specific characteristics are important influence factors. We highlight and discuss the main results of the cluster characteristics in the following.

Table 5: Cluster comparison: Firm-, and country-specific characteristics

Variable	Categories	Total sample	N	Mixed-financed SMEs (with focus on other loans)	Mixed-financed SMEs (with focus on retained earnings/ sale of assets)	State-subsidised SMEs	Debt-financed SMEs	Trade-financed SMEs	Asset-based financed SMEs	Internally-financed SMEs	Test Statistic	
											Pearson Chi²	Cramer's V
	SMEs per cluster			8.6%	10.1%	4.6%	18.9%	10.6%	6.6%	40.6%		
Firm level												
Size												
Number of employees	1 - 9 employees	93.0%	13,098	8.7%	9.7%	4.3%	19.1%	10.4%	6.1%	41.7%	182.5***	0.083
	10 - 49 employees	6.0%		7.9%	14.7%	8.4%	17.2%	12.5%	12.3%	27.0%		
	50 - 249 employees	1.0%		9.4%	21.1%	11.0%	14.8%	13.3%	11.7%	18.8%		
Turnover	≤ € 2m	90.1%	13,098	8.7%	9.5%	4.2%	19.1%	10.1%	6.2%	42.2%	225.7***	0.076
	> € 2m - € 10m	8.0%		7.1%	14.4%	7.7%	17.2%	15.6%	9.9%	28.1%		
	> € 10m - € 50m	1.6%		9.8%	21.5%	9.8%	17.3%	13.1%	9.3%	19.2%		
	> € 50m	0.3%		12.2%	12.2%	4.9%	34.1%	7.3%	4.9%	24.4%		
Firm age	≥ 10 years	71.8%	13,098	7.7%	10.4%	4.7%	20.4%	10.2%	6.0%	40.6%	147.9***	0.061
	5 to less than 10 years	19.0%		10.1%	9.7%	4.7%	16.2%	10.6%	8.6%	40.1%		
	2 to less than 5 years	7.7%		11.9%	8.9%	3.0%	11.9%	13.6%	6.9%	43.8%		
	< 2 years	1.5%		17.2%	5.7%	7.8%	18.7%	13.0%	5.2%	32.3%		
Ownership	Public shareholders	0.6%	13,096	14.7%	16.0%	8.0%	6.7%	10.7%	10.7%	33.3%	199.4***	0.055
	Family or entrepreneurs	40.4%		7.9%	10.8%	5.4%	19.8%	11.5%	5.8%	38.9%		
	Other firms or business associates	6.3%		10.6%	13.0%	4.1%	10.6%	13.3%	8.9%	39.4%		
	Venture capital firms or business angels	0.2%		12.9%	38.7%	0.0%	12.9%	6.5%	3.2%	25.8%		
	One owner only	50.1%		8.9%	8.9%	3.8%	20.0%	9.4%	6.9%	42.0%		
	Other	2.4%		6.8%	11.6%	8.7%	8.7%	11.0%	5.5%	47.7%		
Growth rate p.a. (average p.a. over past 3 years)												
Employment	High growth > 20% p.a.	10.1%	12,942	11.4%	10.7%	6.8%	16.4%	15.7%	7.7%	31.5%	290.7***	0.067
	Moderate growth < 20% p.a.	23.4%		7.6%	10.1%	5.7%	18.6%	11.3%	7.6%	39.1%		
	No growth	47.1%		7.4%	10.5%	3.4%	18.6%	8.7%	6.4%	45.0%		
	Got smaller	17.9%		11.5%	9.1%	5.1%	21.8%	11.3%	5.4%	35.8%		
Turnover	High growth > 20% p.a.	15.7%	12,920	8.5%	12.5%	3.9%	16.4%	12.8%	9.0%	36.9%	259.2***	0.063
	Moderate growth < 20% p.a.	35.8%		8.7%	11.1%	5.2%	18.7%	10.4%	7.8%	38.1%		
	No growth	25.9%		6.9%	8.5%	3.5%	18.9%	8.8%	5.6%	47.8%		
	Got smaller	20.9%		10.4%	9.1%	5.2%	21.1%	11.3%	4.2%	38.6%		
Growth rate p.a. - Expectation (next 2-3 years)												
	High growth > 20% p.a.	11.5%	12,761	12.6%	13.0%	6.0%	15.9%	10.1%	6.3%	36.1%	184.8***	0.059
	Moderate growth < 20% p.a.	45.4%		8.8%	9.7%	5.3%	19.5%	11.3%	7.1%	38.3%		
	No growth	30.5%		6.4%	10.7%	3.7%	18.8%	9.4%	6.3%	44.7%		
	Get smaller	9.2%		9.8%	9.0%	2.9%	20.5%	11.2%	5.5%	41.1%		
Profitability												
Profit	Increased	28.7%	13,098	8.8%	11.4%	4.4%	18.5%	10.4%	7.8%	38.7%	88.3***	0.058
	Remained unchanged	38.1%		7.4%	9.4%	4.3%	18.6%	9.5%	6.8%	43.9%		
	Decreased	33.2%		9.9%	9.8%	5.1%	19.8%	11.9%	5.2%	38.5%		
Access to finance problems												
	Low (1 - 3)	42.8%	12,604	5.3%	10.5%	3.1%	15.1%	8.3%	6.9%	50.9%	760.8***	0.174
	Medium (4 - 6)	23.6%		7.4%	9.3%	5.2%	21.3%	11.6%	7.8%	37.3%		
	High (7 - 10)	33.6%		14.1%	10.3%	6.6%	23.4%	12.5%	5.7%	27.6%		
Product characteristics	Product or service innovation	33.3%	13,098	10.7%	12.4%	6.1%	19.5%	11.3%	6.0%	33.9%	181.4***	0.118
Industry characteristics												
	Industry	10.0%	13,098	6.2%	13.4%	6.4%	18.9%	13.0%	6.4%	35.7%	232.6***	0.077
	Construction	14.6%		7.9%	9.2%	3.6%	21.2%	12.1%	6.4%	39.5%		
	Trade	27.8%		8.1%	8.9%	5.4%	19.4%	14.4%	5.6%	38.1%		
	Services	47.6%		9.6%	10.4%	4.0%	18.0%	7.3%	7.2%	43.5%		
Country level												
Inflation rate	Deflation (<0%)	28.3%	13,098	9.8%	9.1%	4.3%	14.4%	14.9%	6.8%	40.6%	190.0***	0.085
	0 to less than 0.5%	61.4%		8.2%	11.0%	4.8%	20.7%	9.0%	6.3%	39.9%		
	≥ 0.5%	10.3%		7.8%	7.4%	3.8%	20.8%	8.1%	7.2%	44.8%		
Inflation volatility (standard deviation over the preceding 4 years)												
	0 to less than 0.5	2.9%	13,098	4.7%	13.7%	3.1%	16.6%	8.5%	13.5%	39.9%	597.6***	0.107
	0.5 to less than 1	30.6%		7.5%	11.9%	2.7%	22.4%	5.3%	9.1%	41.1%		
	1 to less than 1.5	50.7%		9.1%	9.0%	6.3%	18.6%	13.4%	4.2%	39.3%		
	1.5 to less than 2	11.3%		7.9%	8.4%	3.7%	13.7%	15.7%	9.0%	41.6%		
	≥ 2	4.4%		14.7%	12.1%	1.4%	13.8%	2.9%	4.9%	50.2%		
	Low (0 - 25%)	1.7%		8.3%	15.7%	2.3%	17.0%	14.7%	5.5%	36.4%		
Total tax rate	Medium (26 - 50%)	44.7%	13,098	10.3%	9.8%	3.1%	15.2%	11.0%	8.7%	41.9%	268.1***	0.101
	High (> 50%)	53.7%		7.2%	10.2%	5.9%	22.1%	10.1%	4.8%	39.7%		
GDP per capita (in US-Dollar)												
	Very low (0 - 20,000)	20.0%	13,098	10.7%	9.2%	2.7%	14.5%	10.1%	7.2%	45.5%	391.1***	0.100
	Low (20,001 - 40,000)	34.8%		7.7%	8.7%	7.9%	20.2%	13.0%	4.0%	38.5%		
	High (40,001 - 60,000)	44.1%		8.5%	11.5%	2.8%	19.9%	9.0%	8.1%	40.1%		
	Very high (> 60,000)	1.1%		5.0%	14.2%	3.5%	21.3%	3.5%	12.8%	39.7%		
Average of annual GDP growth rate (averaged through 2011-2015)												
	Less than 0%	34.6%	13,098	7.7%	8.6%	8.0%	20.2%	13.0%	4.0%	38.4%	823.5***	0.125
	0 to less than 1%	22.9%		6.6%	11.2%	2.4%	23.6%	5.8%	6.9%	43.5%		
	1 to less than 2%	22.1%		10.0%	10.2%	2.9%	17.8%	4.6%	9.8%	44.6%		
	2 to less than 3%	18.3%		10.4%	10.5%	3.3%	13.0%	18.6%	7.2%	36.9%		
	≥ 3%	2.0%		16.1%	18.0%	1.1%	10.5%	12.7%	6.4%	35.2%		
Unemployment rate												
	Low (0 - 6%)	15.9%	13,098	10.3%	9.7%	2.7%	19.3%	4.5%	10.9%	42.6%	269.5***	0.101
	Medium (7 - 13%)	62.5%		7.9%	11.1%	5.1%	20.0%	10.9%	5.9%	39.2%		
	High (> 13%)	21.6%		9.5%	7.6%	4.6%	15.7%	13.9%	5.3%	43.4%		
Property Rights	Very low (30 - 50)	9.2%	13,098	11.6%	8.4%	1.4%	14.1%	15.5%	5.4%	43.6%	355.9***	0.095
	Low (51 - 70)	40.9%		7.8%	8.9%	7.6%	19.2%	12.0%	5.2%	39.4%		
	High (71 - 90)	48.9%		8.8%	11.4%	2.7%	19.6%	8.6%	7.8%	41.1%		
	Very high (> 90)	0.9%		5.7%	12.2%	3.3%	21.1%	4.1%	14.6%	39.0%		
Economic Freedom Index												
	Low (50 - 60)	3.7%	13,098	7.9%	5.0%	2.5%	7.7%	30.5%	4.6%	41.8%	424.0***	0.127
	Medium (61 - 70)	61.6%		7.5%	10.0%	5.8%	21.1%	9.8%	5.5%	40.3%		
	High (> 70)	34.7%		10.7%	10.8%	2.6%	16.3%	9.8%	8.7%	41.1%		

Notes: Pearson's chi-square test and Cramer's V for categorical variables. ***p < 0.01, **p < 0.05, *p < 0.1. The table should be read by comparing the share of SMEs per cluster and the share of SMEs in each category of passive cluster variables.

4.2.1 Firm level characteristics of the clusters

While larger SMEs use a great variety of financing instruments such as bank loans, trade credit, state-subsidised financing and equity, smaller SMEs tend to use more internal financing (41.7% of SMEs with 1-9 employees belong to the internally-financed cluster) and short-term bank debt (19.1% of SMEs with 1-9 employees belong to the debt-financed cluster). This result is in line with previous studies, which found that smaller firms with their liability of smallness and legitimacy problems, face difficulties to obtain external financing (e.g., Aldrich and Auster 1986; see for an overview also Kraemer-Eis, Lang, Torfs, and Gvetadze 2016). In particular, banks have been found to be reluctant to lend money to smaller companies as the bankruptcy risk for these firms is higher (Degryse et al. 2012; Michaelas et al. 1999). Hence, small firms tend to be more often financed by internal sources or short-term bank debt (Beck et al. 2008; Berger and Udell 1998; Freeman, Carroll, and Hannan 1983; Huyghebaert and Van de Gucht 2007; Singh, Tucker, and House 1986). In line with previous research, our cluster analysis reveals that not only size but also firm age seems to be an important determinant for financing (Chavis et al. 2011; Huyghebaert and van de Gucht 2007; Mac an Bhaire and Lucey 2010). More mature firms use a larger number of financing sources including bank loans, equity and retained earnings, whereas younger SMEs appear to rely more on other loans (e.g., loans from family and friends), internal or state-subsidised financing. Due to higher information asymmetries resulting from missing track records and the absence of established relationships between capital providers and younger firms, these firms typically have problems to obtain external financing and are more likely to rely on informal financing sources (Berger and Udell 1998; Chittenden et al. 1996; Holmes and Kent 1991; Jensen and Meckling 1976).

In addition, the ownership structure of SMEs across clusters differs significantly. In particular, owner-managed SMEs seem to prefer short-term bank financing (20% of owner-managed firms belong to the debt-financed cluster), whereas family-owned firms and SMEs with more than one owner tend to use a larger variety of financing instruments. These results are in line with previous research which found a significant influence of SME's ownership structure on its capital structure (Huyghebaert, Van de Gucht, and Van Hulle 2007; Romano, Tanewski, and Smyrniotis 2001). In particular, it has been shown that owner-managed firms prefer debt and internal financing instruments over equity in order to retain control (Bathala, Bowlin, and Dukes 2004; Chittenden et al. 1996). Whereas family-owned SMEs have been found to use a larger variety of financing instruments (Romano et al. 2001).

Furthermore, we find that innovative SMEs seem to use short-term bank debt to a relatively large extent (19.5% of SMEs with a product or service innovation in the last 12 months belong to the debt-financed cluster). Moreover, they are comparably strongly represented in both mixed-financed clusters, which have a high utilization of retained earnings or sale of assets, equity, and other loans (such as from family and friends). They also seem to frequently use grants or state-subsidised loans (6.1% of all "innovative" SMEs belong to the state-subsidised cluster, which is higher than the share of all SMEs (4.6%) in this cluster). Innovative firms are typically associated with a higher asset intangibility and higher failure risks (see Chapter 3.3). In addition, information asymmetries are particularly high and result in higher agency costs (Cosh, Cumming, and Hughes 2009; Gompers and Lerner 2000). Therefore, innovative SMEs have comparatively more difficulties to obtain external capital and especially bank debt (Achleitner et al. 2011; Huyghebaert and Van de Gucht

2007; Rajan and Zingales 1995). With regard to growth, the cluster analysis reveals that SMEs with higher past (turnover or employment) growth rates tend to use a larger variety of financing instruments and in particular trade credit, leasing or hire-purchase and factoring. Hence, they can be found more often in the trade-financed and asset-based financed clusters. Moreover, companies with high turnover growth rates are well-represented in the mixed-financed cluster with focus on retained earnings or sale of assets, while enterprises with high employment growth rates are more often in the mixed-financed cluster with focus on other loans as well as in the state-subsidised cluster. SMEs with high growth expectations for the future are also comparatively more often in the mixed-financed and the state-subsidised clusters. This result can be explained with previous findings stating that high growth firms typically require more external financing but at the same time have been found to face more difficulties to acquire external capital from formal financing sources due to their risk profile (Carpenter and Petersen, 2002b; Cassar, 2004).

With regard to profit development, our cluster analysis reveals that SMEs with increased profits in the past 12 months tend to be more often in the mixed-financed SME cluster (with focus on retained earnings or sale of assets). This result is not surprising as more profitable firms are more likely to retain earnings. Hence, these firms have more internal financing at their disposal and require less external financing. This result is also in line with the pecking order theory (Myers and Majluf 1984; Myers 1984). Furthermore, we find that firms with low perceived access to finance problems tend to be more often internally financed, while only a relatively small fraction of these firms is state-subsidised. SMEs suffering from high perceived access to finance problems are comparatively more often in the debt-financed, mixed-financed, state-subsidised and trade-financed clusters. This result might be explained by the fact that internally financed firms seem not to require external financing. On the contrary, financially constrained firms appear to follow a diversification strategy to secure the required level of financing.¹⁰

Comparing the industry-specific characteristics across clusters, service firms seem to focus mainly on internal financing. In addition, they are comparatively more often in the asset-based financing and mixed-financing clusters. This result is in line with previous research, which has shown that service firms typically rely more on internal financing due to their asset structure. Furthermore, they are less able to provide collateral which is required for external financing, especially bank debt. Therefore, they seem to rely more on alternative financing instruments such as asset-based financing (Chavis et al. 2011; Erramilli and Rao 1993; Grier and Zychowicz 1994). SMEs in the

¹⁰However, the result can - at least to some degree - also be biased by measurement and data collection. For instance, self-assessment of perceived and actual access to finance problems might be distorted in the sense that well-performing firms are less likely to complain about access to finance problems, while SMEs with a poor performance might be inclined to blame their problems on their access to finance situation in order to justify their current situation (Claessens and Tzioumis 2006). Therefore, the results might be - at least in part - driven by the current business situation of the firms. With regard to our sample, especially SMEs in the clusters with high perceived access to finance problems show decreasing profits in the past 12 months, whereas SMEs in the internally-financed cluster (where SMEs that stated low access to finance problems are comparatively strongly represented) have relatively stable profits. Moreover, the definition of access to finance problems is difficult to assess and might cause problems in firms' self-assessment (Claessens and Tzioumis 2006). Ferrando and Mulier (2015) indicate significant differences between perceived and actual financing constraints. Due to the data set, however, only the perceived access to finance problems of SMEs could be included as a passive cluster variable.

industry sector, however, tend to be more likely to be in the trade- or mixed-financed clusters with a focus on retained earnings and sale of assets. Due to their asset structure, SMEs in the industry sector require more long-term financing (golden rule of capital) but are also able to attract more debt as they can provide collateral to secure the debt (Michaelas et al. 1999; Degryse et al. 2012). This might be one explanation why SMEs in the industry sector are comparatively more often in the state-subsidised cluster, in which bank loans also play a prominent role. The cluster analysis further reveals that SMEs in the construction sector rely strongly on debt and trade-based finance. According to previous research, SMEs in the construction sector have to rely more on short-term rather than long-term debt, as banks are reluctant to provide long-term debt due to the sector's higher risks (Degryse et al. 2012; Hall et al. 2000; Jiménez and Saurina 2004). The typical assessment that the construction sector intensively uses asset-based financing (Kraemer-Eis and Lang 2012) is not confirmed by our analysis. SMEs in the trade sector especially use trade financing. SMEs in the trade sector, typically require more working capital and hence, are more likely to be financed by short-term debt and trade credit. (Chittenden et al. 1996; Klapper, Sarria-Allende, and Sulla 2002; Petersen and Rajan 1997).

4.2.2 Country level characteristics of the clusters

Country-specific characteristics: To analyze the effect of country-specific variables on SME financing, we follow the approach of Moritz et al. (2016) and categorize the various countries according to their geographic location in Europe, their financial market system and the effect of the financial market crisis (distressed vs. non-distressed countries) (see Table 6). To be able to analyse country-specific effects in more detail, we included a number of macroeconomic variables in our analysis. Using Cramer's V as an indicator for the ability to explain the cluster affiliation, we find that country-specific and macroeconomic differences are more pronounced than the differences by product-, firm- and industry-specific characteristics

Table 6: Cluster comparison: Country-specific characteristics

Groups of countries by region (UNSD)	Mixed-financed SMEs (with focus on other loans)	Mixed-financed SMEs (with focus on retained earnings/sale of assets)	State-subsidised SMEs	Debt-financed SMEs	Trade-financed SMEs	Asset-based financed SMEs	Internally-financed SMEs	Test Statistic	
								Pearson Chi ²	Cramer's V
Eastern Europe ^(a)	10.2%	8.8%	2.8%	15.0%	10.4%	7.1%	45.7%		
Northern Europe ^(b)	11.0%	12.8%	2.8%	12.6%	16.9%	7.7%	36.3%		
Southern Europe ^(c)	7.7%	8.6%	7.9%	20.2%	12.9%	4.1%	38.6%		
Western Europe ^(d)	7.6%	11.3%	2.8%	22.8%	5.1%	8.5%	42.0%		
Total sample	8.6%	10.1%	4.6%	18.9%	10.6%	6.6%	40.6%	651.7***	0.129

Notes: N = 13,098; Pearson's chi-square test and Cramer's V for categorical variables. ***p < 0.01, **p < 0.05, *p < 0.1.

^(a) BG, CZ, HU, PL, RO, SK; ^(b) DK, EE, FI, IE, LT, LV, SE, UK; ^(c) CY, ES, GR, HR, IT, PT, SI; ^(d) AT, BE, DE, FR, LU, NL

Groups of bank-based, market-based and former socialist countries	Mixed-financed SMEs (with focus on other loans)	Mixed-financed SMEs (with focus on retained earnings/sale of assets)	State-subsidised SMEs	Debt-financed SMEs	Trade-financed SMEs	Asset-based financed SMEs	Internally-financed SMEs	Test Statistic	
								Pearson Chi ²	Cramer's V
Bank-based countries ^(a)	7.4%	10.3%	5.9%	21.9%	9.5%	6.1%	38.9%		
Market-based countries ^(b)	10.8%	10.2%	2.2%	13.6%	15.0%	7.3%	41.0%		
Former socialist countries ^(c)	10.7%	9.5%	2.7%	14.4%	9.9%	7.5%	45.5%		
Total sample	8.6%	10.1%	4.6%	18.9%	10.5%	6.6%	40.6%	295.2***	0.150

Notes: N = 13,068; Pearson's chi-square test and Cramer's V for categorical variables. ***p < 0.01, **p < 0.05, *p < 0.1.

^(a) AT, BE, CY, DE, ES, FI, FR, GR, IE, IT, LU, PT; ^(b) NL, SE, UK, FI; ^(c) BG, CZ, EE, HR, HU, LT, LV, PL, RO, SI, SK

Table 6 (cont.): Cluster comparison: Country-specific characteristics

Groups of non-distressed vs. distressed countries	Mixed-financed SMEs (with focus on other loans)	Mixed-financed SMEs (with focus on retained earnings/sale of assets)	State-subsidised SMEs	Debt-financed SMEs	Trade-financed SMEs	Asset-based financed SMEs	Internally-financed SMEs	Test Statistic	
								Pearson Chi ²	Cramer's V
Non-distressed countries	9.1%	10.8%	2.8%	18.2%	9.1%	8.0%	42.0%		
Distressed countries ^(a)	7.8%	8.7%	7.9%	20.3%	13.2%	3.9%	38.2%		
Total sample	8.6%	10.1%	4.6%	18.9%	10.6%	6.6%	40.6%	325.5***	0.158

Notes: N = 13,098; Pearson's chi-square test and Cramer's V for categorical variables. ***p < 0.01, **p < 0.05, *p < 0.1.

^(a) CY, ES, GR, IE, IT, PT, SI (ECB, 2014b, 2014c)

Based on the classification by the United Nations Statistics Division (UNSD), we divided Europe into Northern Europe, Southern Europe, Eastern Europe and Western Europe. Our cluster analysis reveals that, although internally-financed SMEs have the highest percentage within each European region, SMEs in Eastern European countries seem to rely particularly on internal financing (45.7%). This result is in line with prior research (Moritz et al. 2016) and might be explained by the historically underdeveloped financial markets in Eastern European countries (Črnigoj, and Mramor 2009; Klapper et al. 2002). Northern European SMEs are comparatively more often mixed-financed or trade-financed SMEs. Prior studies have found that Northern European countries have well-organized financial market systems and consequently have access to a large number of financing instruments (Demirgüç-Kunt and Maksimovic 2001; Guiso, Padula, and Pagano 2004). Furthermore, firms in countries with well-developed financial markets have been found to use trade credit more often as it is an attractive alternative to other, mainly bank-related, short-term debt (Demirgüç-Kunt and Maksimovic 2001; Guiso et al. 2004; Marotta 2005). Southern European SMEs, however, tend to be more likely to be in the state-subsidised cluster. This result might be explained by the aftermath of the financial market crisis, as access to finance for SMEs in countries such as Spain, Greece or Portugal was especially difficult (Ferrando and Mulier 2015) and government support programs were issued to support the economy in these countries (Casey and O'Toole 2014; Ferrando and Griesshaber 2011). Western European firms are comparatively more often in the debt-financed cluster (22.8%), which is likely to be explained by the relatively strong banking sector in these countries (Allard and Blavy 2011; Demirgüç-Kunt and Maksimovic 1999).

To delve deeper into the differences due to the prevailing financial market system, we distinguished the European countries included in our study into bank-based, market-based and former socialist countries. Bank-based financial systems are characterised by the dominant role of banks (Demirgüç-Kunt and Levine 1999; Levine 2002). The results of our cluster analysis are in line with previous research and shows that SMEs in bank-based countries tend to be more often in the debt-financed cluster relying mainly on bank financing (Moritz et al. 2016; Nyasha and Odhiambo 2014). In addition, SMEs in bank-based countries tend to be more often in the state-subsidised cluster which is characterised by a high degree of financing with government grants and subsidised loans. During and in the aftermath of the recent financial crisis, banks reduced the availability of bank loans especially for risky and small firms (Ferrando and Griesshaber 2011). Bank-based financial market systems were particularly affected by this change in lending policies and required government actions to secure financing alternatives for firms in these countries. Interestingly, this cluster is also characterised by a high degree of bank loans which cannot easily be explained by the firm characteristics of SMEs in the state-subsidised cluster. Hence, it seems that government subsidies might provide a positive signal for other capital providers, in particular financial

institutions (Beck et al. 2008; Freel 2006; Mina, Lahr, and Hughes 2013). Previous research revealed that especially SMEs faced financing constraints during the recent economic and financial crisis (Ferrando and Griesshaber, 2011). To understand how the financial market crisis affected the financing patterns of SMEs, we divided the countries into distressed and non-distressed countries (Moritz et al. 2016). We find that SMEs in distressed countries seem to be more likely to fall into the trade-financed or state-subsidised cluster. This result is in line with previous studies that has indicated an increasing utilization of alternative financing instruments in deteriorating financial markets (Casey and O'Toole 2014; Moritz et al. 2016). Furthermore, SMEs in distressed countries appear to rely more on grants or subsidised bank loans which can be explained by financial constraints and the higher availability of subsidies (Casey and O'Toole 2014).

Macroeconomic variables: The cluster analysis further reveals that a country's inflation rate (Cramer's $V = 0.085$) and inflation volatility (Cramer's $V = 0.107$) seem to be important factors, in determining the financing patterns of SMEs (see Table 5). SMEs in countries with a higher inflation rate tend to use less trade financing and state subsidies, but are comparatively more often in the debt-financed cluster. Previous research found that higher inflation is negatively associated with the utilization of external financing (Beck et al. 2008), but, at the same time, higher inflation rates and higher expected inflation rates seem to increase the leverage ratio of SMEs (Frank and Goyal 2009; Öztekin 2015). However, we find a contrary result: firms in countries with a low inflation volatility tend to be more often in the debt-financed SME cluster. Regarding inflation volatility we find that SMEs in countries with a very high inflation volatility tend to be comparatively more often in the internally-financed or mixed-financed cluster (with focus on other loans). This can be explained by the fact that high inflation volatility decreases the predictability of a country's future development which in turn increases the business risk of firms. As a consequence, firms are more likely to avoid long-term debt in this uncertain environment (Ball 1992; Fan et al. 2012; Frank and Goyal 2009).

Furthermore, we find that GDP per capita (Cramer's $V = 0.100$) and GDP growth rates (Cramer's $V = 0.125$) are related to the financing of firms. Both variables provide information about the economic condition of a country (Bas, Muradoglu, and Phylaktis 2009; De Jong et al. 2008). Our cluster analysis reveals that SMEs in countries with high GDP per capita are comparatively more often in the mixed-financed (with focus on retained earnings or sale of assets), asset-based and debt-financed clusters. Hence, SMEs in more developed and economically sound countries seem to be able to obtain financing from a larger variety of financing sources (Bas et al. 2009). In line with this finding, firms in countries with relatively high GDP growth rate appear to use a broader range of financing instruments (18.0% of SMEs in countries with an average GDP growth rate of $\geq 3\%$ from 2011-2015 belong to the mixed-financed SME cluster with focus on retained earnings or sale of assets), whereas SMEs in countries with lower GDP growth rates are more likely to use state subsidies. This result implies that SMEs in less well developing countries obtain more government support than do SMEs in countries with high GDP growth rates.

SMEs in countries with higher tax rates are more likely to be in the debt-financed cluster (22.1% of SMEs in countries with a total tax rate of $>50\%$ belong to the debt-financed cluster) and in the state-subsidised cluster, in which the use of bank loans is also relatively high. In contrast, SMEs in countries with lower tax rates tend to use a larger variety of financing instruments as well as trade

financing. This result is in line with trade-off theory which is based on the idea that firms have to make a trade-off decision between a positive tax effect of debt and bankruptcy risk (Miller 1977; Myers 1977). Therefore, firms in countries with higher tax rates are able to generate a higher positive tax effect and are therefore more likely to use more debt than do firms in low tax rate countries (Graham 2003; Jensen and Meckling 1976; Meyers 1977; Psillaki and Daskalakis 2009).

A number of European countries suffered from economic instability and high unemployment rates due to the financial and economic crisis starting in 2007. The banking system was strongly affected by these developments and firms still suffer from bank lending constraints (Casey and O'Toole 2014; Tanveer, Marelli, and Signorelli 2012; Ferrando and Griesshaber 2011; O'Higgins 2012). It has been found that firms with bank lending constraints, are more likely to use internal financing and alternative financing instruments, for instance trade credit (Casey and O'Toole 2014; Ferrando and Mulier 2015; Love, Preve, and Sarria-Allende, 2007). These findings are reflected in our cluster analysis which shows that SMEs in countries with high unemployment rates ($> 13\%$) are more likely to be in the internally-financed and trade-financed cluster.

In addition, we find that SMEs in countries with low property right protections tend to rely strongly on internal rather than external financing. Nevertheless, trade finances and other loans (e.g., from family and friends, a related enterprise or shareholders) also appear to be important financing instruments in these countries. Property right protections are closely related to financial development and the effectiveness of financial contracting (Beck et al. 2003; La Porta et al. 1997). Therefore, better protection of property rights is associated with better access to external financing for SMEs (Beck et al. 2008; Psillaki and Daskalakis 2009). This finding is further supported by looking at the economic freedom index. We find that SMEs in countries with higher economic freedom use a broader range of financing instruments and are consequently more likely to be in the mixed-financed clusters. In addition, our cluster analysis reveals that SMEs in countries with a very low level of economic freedom seem to be more often in the trade financed cluster (30.5% of SMEs in countries with an Economic Freedom Index between 50 and 60 belong to this cluster). This finding might also be due to the financial crisis and the difficulties faced by various European countries, especially Greece (Drakos 2012; Gibson, Hall, and Tavlak 2012).¹¹

4.3 Comparison of two taxonomies of SME financing patterns

The results in the previous Sections 4.1 and 4.2 have shown that the distribution of SMEs across clusters differs significantly. In this section, we compare our cluster results, which is based on the SAFE Survey 2015H1, with the cluster analysis of Moritz et al. (2016), based on the SAFE Survey 2013H1, to examine the stability of the clusters over time.

¹¹ Greece is the sole country in the cluster comparison with an Economic Freedom Index that is less than 60. Due to the banking sector difficulties after the financial crisis, Greek firms appear to use alternative financing sources instead of bank loans and are consequently more likely to be in the trade-financed cluster (Casey and O'Toole 2014; Love et al. 2007)

Comparing the financing instruments used, both cluster analyses (SAFE Survey 2013H1 and 2015H1) show similar financing patterns, in particular with regard to the trade-financed, internally-financed and state-subsidised clusters. The latter is characterised in both cluster analyses by a very high utilization of government subsidies and grants. However, bank loans and short-term bank debt, trade credit, leasing, hire-purchase and factoring are used complementary to grants or subsidised bank loans. Both cluster analyses identified a cluster of SMEs which did not use any external financing over the past six months. This internally-financed cluster is the largest group of SMEs in both cluster analyses. In addition, the trade-financed cluster in both studies is characterised by the utilization of trade credit, other short-term debt and leasing, hire-purchase and factoring. The main differences between both cluster results are that the current cluster analysis (2015H1) contains two mixed-financed clusters, which are similar to the one mixed-financed cluster identified in the SAFE Survey 2013H1 but with two different main instruments: SMEs in the one cluster rely more on retained earnings and sale of assets whereas SMEs in the other use more loans from families, friends and business associates. In addition, we find a combined debt-financed cluster (2015H1), which includes elements of the debt-financed and flexible-debt financed cluster identified in the data of 2013. Finally, we found a new cluster in the 2015 data, in which all SMEs used leasing, hire-purchase or factoring as an external source of financing (asset-based financed cluster).

Even though the clusters changed in part, we find strong similarities regarding firm-, product-, industry- and country-specific characteristics in both cluster analyses. Both studies reveal that smaller firms are more likely to use internal financing or short-term debt (Moritz et al. 2016). Younger firms, however, tend to be more often in the mixed-financed or state-subsidised cluster. Interestingly, very young firms (< 2 years) are less likely to be in the internally-financed cluster in 2015H1 (32.3%) than they are in 2013H1 (41.8%), but there is a comparatively high proportion of young SMEs in the mixed-financed cluster with the focus on other loans in 2015H1 (17.2%). Since external financing is often not available, due to high information asymmetries, and internal financing is often not sufficient, young SMEs have been found to rely on informal financing sources (e.g., loans from family and friends) (Berger and Udell 1998; Chittenden et al. 1996). However, the results are limited by the very small sample of young firms in the SAFE-Survey 2015H1, since only 1.5% of all SMEs belong to this age classification. This small subsample might lead to significant inconsistent results over time. Both cluster analyses reveal that single-owner companies are more likely to be in the internally-financed cluster, whereas family firms or SMEs with owner teams appear to be more often in the debt-financed cluster. Owner-managed companies are more likely to avoid a dilution of control, which might explain the high proportion of these firms in the internally-financed cluster. Even though, family firms and entrepreneurial teams are also likely to avoid too much influence through external parties, they seem to be more open to a larger variety of external financing instruments but focus on low influential financing sources, in particular short-term bank debt (Bathala et al. 2004; Chittenden et al. 1996; López-Gracia and Sogorb-Mira 2008; Mac an Bhaird and Lucey 2010; Myers 1984). Innovative SMEs are more likely to use short-term debt, state-subsidised forms of financing or a large number of financing instruments whereas equity financing also seems to be a relevant financing instrument (2013H1 and 2015H1). As innovative SMEs are associated with a higher asset intangibility, higher risk due to less diversification possibilities and higher information asymmetries, firms are more likely to be restricted to short-term debt or have to rely on alternative financing sources. Venture capital is also

an important source of financing for innovative, high-growth SMEs (Achleitner et al. 2011; Block et al 2017; Cosh et al. 2009; Gompers and Lerner 2004). The high percentage of innovative SMEs in the state-subsidised cluster might be explained by the different government support programs initiated to support in particular these types of companies. Looking at the industry sectors, both cluster analyses reveal that SMEs in the service sector rely strongly on internal financing. This result might be explained by the typically low degree of tangible assets and consequently, less necessity for external financing. In addition, these firms also have less access to bank loans due to very limited availability of collateral. Therefore, financing from turnover or bootstrapping techniques are important financing sources for these companies (Chavis et al. 2011; Klapper et al. 2002; Moritz et al. 2016). According to the two cluster analyses, SMEs in the trade sector seem to prefer trade financing and short-term debt. This result is in line with prior research, which found that SMEs in the trade sector need large amounts of working capital which makes short-term debt and trade financing appropriate financing instruments (Hutchinson 1995; Klapper et al. 2002; Michaelas et al. 1999).

To sum up, both cluster analyses (2013H1 and 2015H1) show very similar cluster results and are surprisingly stable over time. Although our study (2015H1) reveals a seven cluster solution in contrast to the six cluster solution of the previous work (Moritz et al. 2016), SMEs in both cluster analyses use similar financing instruments as substitutes or complements, in particular in the trade-financed, internally-financed and state-subsidised clusters (2013H1, 2015H1). Moreover, SMEs in these clusters show very similar characteristics. However, some clusters identified in both studies differ from each other. The debt-financed cluster (2015H1), for instance, seems to be a combination of the debt- and flexible-debt financed cluster found in 2013. Furthermore, we found a distinction between two mixed-financed clusters and identified a completely new asset-based financed SME cluster. However, looking at the characteristics of the SMEs in the different clusters we find very strong similarities between both cluster analyses.

5 Discussion

5.1 Summary of main findings and contributions

We developed an empirical taxonomy of European SME financing patterns using the SAFE Survey 2015H1 and identified seven financing types: mixed-financed SMEs with a focus on other loans, mixed-financed SMEs with a focus on retained earnings or sale of assets, state-subsidised SMEs, debt-financed SMEs, trade-financed SMEs, asset-based financed SMEs, and internally-financed SMEs. The seven clusters differ according to firm-, product-, industry- and country-specific characteristics (including macroeconomic variables). Table 7 summarises the main results of the cluster analysis.

Table 7: Cluster summary

Cluster	Financing in cluster	Characteristics				Macroeconomic variables
		Firm-specific	Product-specific	Industry-specific	Country-specific	
Mixed-financed SMEs (with focus on other loans)	SMEs that used a large variety of instruments with a focus on other loans (94%)	more often younger micro and medium-sized firms with larger turnover; esp. single-owner firms, public shareholder, VC-financed firms or other firms/business associate as owner; more often negative past growth but high growth expectations	more innovation	more likely for service and trade sector	esp. in Northern and Eastern European countries; more often in market-based or former socialist countries	more often low inflation rate but high volatility and high annual GDP growth rate in the past 5 years; more likely high tax rate and high economic freedom score
Mixed-financed SMEs (focus on retained earnings or sale of assets)	SMEs that used a large variety of instruments with a focus on retained earnings or sale of assets (93%); only cluster with a noteworthy amount of equity financing (10%)	more often older, small and medium-sized firms with ownership by VCs and BAs relatively high represented; moderate to high past growth and high future growth expectations	more innovation	most likely for industry sector	esp. in Northern European/Western and bank-/market-based countries; non-distressed countries	more often very high GDP per capita and annual GDP growth rate in the past 5 years; more likely medium unemployment rate, low tax rates and very high protection of property rights and high economic freedom score
State-subsidised SMEs	100% of SMEs used grants or subsidised bank loans; large use of other bank loans	more often very young and small or medium-sized firms; esp. family firms/entrepreneurial teams and public shareholders; with moderate and high employee growth in the past; high growth expectations	more innovation	most likely for industry sector	esp. in Southern, bank-based and distressed countries	more often low annual GDP growth rate in the past 5 years; more likely medium to high unemployment rate, medium Economic Freedom and low Property Rights index
Debt-financed SMEs	86% of SMEs used credit line/ bank overdraft/ credit card overdrafts and 36% bank loans; some used leasing/factoring	more mature micro and small firms; esp. family firms/entrepreneurial teams or single-owner firms; no growth in the past and relatively low growth expectations	average innovation	more likely for construction and trade sector	esp. in Western European, bank-based and distressed EU countries	more often low inflation volatility and annual GDP growth rate in the past 5 years; more likely high tax rate and high protection of property rights
Trade-financed SMEs	96% of group used trade credit and 46% credit line/bank overdraft/credit card; some used leasing/factoring, bank loans; only cluster with considerable use of debt securities	more often younger (2-5 years) and small/medium-sized firms; esp. family firms/entrepreneurial teams or other firms/business associates; high employment and turnover growth in the past; no high growth expectations	average innovation	most likely for trade sector	esp. in Northern and Southern European countries; more often in market-based and distressed EU countries	more often deflation, but relatively high inflation volatility and high unemployment rate; more likely low tax rate, low protection of property rights and very low economic freedom index
Asset-based financed SMEs	100% of group used leasing/factoring and 37% credit line/bank overdraft/credit card overdrafts	more mature small and medium-sized firms; more often other firms or business associates with moderate to high employee and turnover growth in the past and moderate growth expectation	low innovation	most likely for service sector	esp. in Western European, non-distressed countries	more often low inflation volatility and moderate annual GDP growth rate in the past 5 years; more likely high unemployment rate and very high protection of property rights
Internally-financed SMEs	100% of group did not use any external debt	more often young micro firms; esp. single-owner firms with no growth in the past high and no growth expectations	low innovation	most likely for service sector	esp. in Eastern European, former socialist countries	more often high inflation rate and volatility; low annual GDP growth rate in the past 5 years and very low GDP per capita; more likely high unemployment rate and very low protection of property rights

Our study has several implications for both theory and practice. According to the theoretical contribution, our research extends the SME finance literature in particular in three ways. First, we contribute to the literature with regard to substitutive and complementary use of different financing instruments for SMEs. While previous research focused mainly on a single financing source or a small number of financing instruments (few exceptions are Beck et al. 2008; Berger and Udell 1998; Casey and O'Toole 2014; Lawless et al. 2015; Moritz et al. 2016; Robb 2002), for instance bank loans, trade credit, or venture capital, we considered a large variety of different financing instruments (Andrieu, Stagliano, and Van der Zwan 2015; Block et al. 2017; Cosh et al. 2009; Hutchinson 1995) by creating an empirical taxonomy of SME financing patterns. Second, we examine whether the empirical taxonomy of SME financing patterns found by Moritz et al. (2016) remains stable over time. The authors identified six distinct SME financing types, namely: mixed-financed SMEs, state-subsidised SMEs, debt-financed SMEs, flexible-debt-financed SMEs, trade-financed SMEs and internally-financed SMEs. Our study shows similar financing patterns which strongly indicates that specific financing instruments are often used as complements or substitutes. Third, we extend the study of Moritz et al. (2016) by adding macroeconomic variables to the dataset. Not only firm-, product-, and industry-specific variables affect the financing patterns of SMEs (e.g., Beck et al. 2008; Cosh et al. 2009; Michaelas et al. 1999) but also country-specific characteristics which we analysed deeper by investigating their macroeconomic differences (e.g., Beck and Demirgüç-Kunt 2006; Chavis et al. 2011; Hernández-Cánovas and Koëter-Kant 2011).

The results of our research can help policy makers to develop and adapt government support programs. Our results reveal that several homogeneous SME financing patterns in Europe exist. They can be characterised by different firm-, product-, industry- and country specific characteristics and use financing instruments in different combinations as substitutes or complements. Policy makers can benefit from these findings in several ways:

The results of the cluster analysis by Moritz et al. (2016) revealed that SMEs in the state-subsidised SME cluster complement grants or subsidised bank loans with a large variety of financing instruments, but in particular with bank loans. Our study supports this finding and reveals that state-subsidised SMEs have access to bank loans even though, their specific characteristics would imply a different result. We find that SMEs in this cluster are characterised by relatively high growth rates in the past, high future growth expectations and high innovation activities which typically make access to bank debt rather difficult. Hence, our findings support the assumption of Moritz et al. (2016) that the financing by government support programs for relatively risky innovative and fast growing SMEs appears to send a positive signal to external capital providers. In addition, we also find that state subsidies seem to be more used by small and medium-sized firms and less for micro firms. Micro firms, however, are more likely to be in the internally-financed or debt-financed cluster (with a high percentage of short-term debt financing instruments). This result is also in line with the results of Moritz et al. (2016). Hence, further analyses could investigate if this result can be explained by the specific structure of these subsidies which does not fit the requirements of micro firms or if micro firms simply lack the awareness of government support programmes. The answer to these questions can help policy makers to give valuable information on how to further improve their programmes. Further related work under our research project is underway and will be published in due course.

Finally, the cluster analysis identifies the impact of macroeconomic variables on the financing patterns of European SMEs. By comparing Cramer's V, we find that macroeconomic differences are more pronounced than firm level characteristics with regard to European financing patterns. Therefore, policy makers should consider macroeconomic factors, such as the country's inflation volatility, the property rights or the unemployment rate and their impact on the firms' financing.

5.2 Limitations and future research

Our study is subject to some limitations. First, the study is limited to the sampling technique and questions asked in the SAFE survey. For instance, the SAFE survey does not include solo self-employed entrepreneurs and consequently a large number of start-up firms are excluded from the research. In addition, firms are asked about the application for and the usage of different financing instruments rather than about the relative importance of each instrument for the firm. Also, SMEs are asked whether they used the specific financing instruments during the past six months. Although the short time period offers the possibility to control for macroeconomic changes and biases over the business life cycle of the firms, longer time periods could investigate more comprehensively SMEs' financing patterns. Furthermore, the inclusion of more firm-specific variables in the analysis, particularly balance sheet data, which have been used in prior research (Ferrando and Mulier 2013), would strengthen the results of our analysis. However, due to the anonymity of the SAFE survey a matching of these information with the survey data is very problematic (Ferrando and Mulier, 2013).

Second, our statistical approach leads to some further limitations. Although we have controlled for different cluster analysis algorithms and similarity measures, cluster analyses are relatively sensible to the number of variables included and variations in the data set (Hair et al. 2010). Furthermore, the comparison of the calculated cluster analysis in our study with the analysis of Moritz et al. (2016) can only be descriptive as there are no statistical tests for the differences and similarities of the two cluster solutions.

The described limitations provide a number of future research areas. First, to obtain a full picture of the stability of financing patterns over time, a panel data set of SMEs is required. Even though the ECB has introduced a (small) panel component to the survey, a complete panel data set for all waves is not available (European Central Bank 2016). However, future research could include the different waves of the SAFE survey in the cluster analysis and use the wave number as a passive cluster variable to examine the stability of the clusters over time. Second, the relation between financially constrained SMEs and the use of alternative financing instruments, including switches between them over time, would be an interesting research area. Hence, including separate categories for new financing instruments such as crowdfunding into the research could shed more light on the trends in SME financing. Third, future research could investigate the differences in financing of micro, small and medium-sized companies. In particular, research about the financing of micro firms and its differences to larger SMEs is still scarce. Similar to our results, Moritz et al. (2016) found that micro firms appear to use internal financing instruments and short-term debt more often. Lawless et al. (2015) have shown that size (measured as the number of employees) is positively related to the use of financing instruments. They found that the smaller the firms the less likely they are to use different financing instruments. However, it remains unclear whether the financing patterns of micro firms differ from other small or medium-sized companies which would be an interesting research questions for future studies.

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ANNEX

Annex 1: Number of SMEs in the SAFE survey by country

Country		Number of SMEs	in percent
Austria	AT	185	1.4
Belgium	BE	329	2.5
Bulgaria	BG	182	1.4
Cyprus	CY	27	0.2
Czech Republic	CZ	575	4.4
Germany	DE	1,275	9.7
Denmark	DK	123	0.9
Estonia	EE	36	0.3
Spain	ES	1,367	10.4
Finland	FI	135	1.0
France	FR	1,743	13.3
Greece	GR	406	3.1
Croatia	HR	85	0.6
Hungary	HU	289	2.2
Ireland	IE	88	0.7
Italy	IT	2,197	16.8
Lithuania	LT	88	0.7
Luxembourg	LU	18	0.1
Latvia	LV	56	0.4
Netherlands	NL	598	4.6
Poland	PL	864	6.6
Portugal	PT	452	3.5
Romania	RO	253	1.9
Sweden	SE	386	2.9
Slovenia	SI	74	0.6
Slovakia	SK	228	1.7
United Kingdom	UK	1,038	7.9
Total		13,098	100

Source: SAFE 2015H1

Annex 2: List of abbreviations

Countries

AT Austria	ES Spain	LT Lithuania	RO Romania
BE Belgium	FI Finland	LU Luxembourg	SE Sweden
BG Bulgaria	FR France	LV Latvia	SI Slovenia
CY Cyprus	GR Greece	MT Malta	SK Slovakia
CZ Czech Republic	HR Croatia	NL The Netherlands	UK United Kingdom
DE Germany	HU Hungary	NO Norway	
DK Denmark	IE Ireland	PL Poland	
EE Estonia	IT Italy	PT Portugal	

Other abbreviations

- BA: Business Angel
- BLS: Business Longitudinal Survey
- DK/NA: Don't know / no answer
- DSGV: Deutscher Sparkassen- und Giroverband
- EC: European Commission
- ECB: European Central Bank
- EIB: European Investment Bank
- EIF: European Investment Fund
- ENSR: European Network for SME Research
- EU: European Union
- EUR: Euro
- FGF: Förderkreis Gründungs-Forschung
- GDP: Gross Domestic Product
- H1: first half-year
- IFC: International Finance Corporation
- JEL: Journal of Economic Literature
- m: million
- NACE: Nomenclature statistique des activités économiques dans la Communauté européenne
- OECD: Organisation for Economic Co-operation and Development
- RBI: Reserve Bank of India
- RMA: Research & Market Analysis
- SABI: Sistema de Análisis de Balances Ibéricos
- SAFE: Survey on the access to finance of enterprises
- SME: Small and medium-sized enterprise
- STAREBEI: Stages de Recherche BEI - EIB research internships
- UNSD: United Nations Statistics Division
- US: United States
- VC: Venture capital
- WBES: World Business Environment Survey

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The European Investment Fund (EIF) is Europe's leading risk finance provider for small and medium sized enterprises (SMEs) and mid-caps, with a central mission to facilitate their access to finance. As part of the European Investment Bank (EIB) Group, EIF designs, promotes and implements equity and debt financial instruments which specifically target the needs of these market segments.

In this role, EIF fosters EU objectives in support of innovation, research and development, entrepreneurship, growth, and employment. EIF manages resources on behalf of the EIB, the European Commission, national and regional authorities and other third parties. EIF support to enterprises is provided through a wide range of selected financial intermediaries across Europe. Since its inception in 1994, EIF has supported over 1.8 million SMEs. EIF is a public-private partnership whose tripartite shareholding structure includes the EIB, the European Union represented by the European Commission and various public and private financial institutions from European Union Member States and Turkey. For further information, please visit www.eif.org.

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