DOES ACCESS TO EXTERNAL FINANCE AFFECT DEVELOPMENT OF SMALL AND MEDIUM ENTERPRISES AND ECONOMIC GROWTH?

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EUROPEAN JOURNAL OF BUSINESS SCIENCE AND TECHNOLOGY

Volume 1 Issue 1
ISSN 2336-6494
www.ejobsat.com

ABSTRACT

Small and medium-sized enterprises (SMEs) have become increasingly important in nowadays society as providers of employment opportunities and key players for the well-being of local and regional communities. Access to external funding is one of the largest problem facing SMEs in European Union (EU). Entrepreneurs face difficulties implementing their development plans while creating new businesses, adopting innovation, etc. Scientists also argue that without external funding business cannot achieve good financial performance results. The European Commission (EC) is implementing a number of programs specifically designed to improve the financial environment for SMEs in Europe. Since the financial markets have failed to provide SMEs with the finance they need, the EC has developed and funded various financial instruments. According to the scientists, creating the appropriate conditions for the development of SMEs in each country would possibly reduce the unemployment rate, accelerate country's economic growth, help to overcome social problems, and create competitive environment. Given the current economic situation in the EU countries, the subject's relevance is obvious underlying the importance to assess whether a better access to external funding sources would provide benefits to the countries at micro and macro levels.

The main empirical findings of this study confirm the results of early empirical studies that a better access to external funding is an important growth factor for SMEs as well as for the whole economy. The panel regression analysis results suggest that a better access to banks' funding has a positive and statistically significant effect on country's economic growth as well as on SMEs development, however, a better access to equity finance (venture capital, business angels' investment) has no statistically significant effect. While SMEs represent over 99% of businesses in the EU so it is crucial to support their growth and innovation as well as improve the financing environment for small businesses in Europe.

KEY WORDS

small and medium-sized enterprises, access to finance, economic growth, the European Union

JEL CODES

L11, G32, O4, O52

PODERYS, Dominykas. 2015. Does Access to External Finance Affect Development of Small and Medium Enterprises and Economic Growth? *European Journal of Business Science and Technology,* 1 (1): 43–53. ISSN 2336-6494.

1 INTRODUCTION

While the largest share of gross domestic product (GDP) is created by SMEs, many economists agree that SMEs are the main drivers of economy. In 2014 the number of SMEs in the EU countries has increased significantly up to 21.52 millions and accounted 99.8 percent of all European enterprises, while the number of SMEs employees has reached 88.98 millions (about 66.9% of private-sector jobs and more than 80% of employment in some industrial sectors such as the manufacture of metal products, construction and furniture). The value added of the SMEs increased almost 108 percent during recent years and accounted 58 percent of total EU GDP in 2014. The development of small and medium-sized business has major implications for the economy considering the growing share of GDP created by SMEs along with the economic and social problems solved by SMEs. Šivickas, Simanavičius and Pukis (2010) note that despite the growing importance of SMEs in shaping and maintaining competition in the market, being small and having limited financial resources, SMEs cannot compete with the largest business companies, so policymakers have to create more favorable conditions for competition in the market for SMEs. Scientists note that in different stages of business development companies need different funding sources. The analysis of scientific literature reveals that the availability of external funding sources improves the competitiveness of SMEs in the long term, whereas this effect is not observed at the early stage of business development. However, most researchers investigating the effect of access to external funding on businesses focus on micro level, while research dealing with these issues at macro level is still lacking. In 2007, EC introduced the Small and Medium-sized Enterprises Access to Finance (SMAF) index which allows to monitor developments in SMEs access to financial resources, analyze differences between EU member states, and comprehensively assess the issue in question. However, a number of empirical studies investigating the impact of SMEs access to financial resources at EU level is relatively low.

Due to the growing business needs the volume of various external funding sources is increasing every year as well as amount of alternative funding sources. Alternative funding sources such as venture capital, peer-to-peer lending, crowdfunding are becoming more important these days. According to Jurevičienė and Martinkutė (2013) these alternative funding sources had been created because of growing needs for alternative funding sources in EU countries. The survey by the European Central Bank reveals that the demand for financial funding increased by 18% in 2013. Scientists agree that the supply and demand of external funding sources is growing every year, however, SMEs are facing a numerous challenges in order to get external funding. Railienė and Ivaškevičiūtė (2013) note that information asymmetry, risk uncertainty, transaction and monitoring costs, insufficient collateral are the main factors affecting the access of SMEs to external funding. According to Adomavičiūtė (2006), Paliulytė (2009), the choice of optimal funding structure under competitive market conditions is becoming very relevant issue for most of firms. Therefore, chief executive officers as well as chief financial officers are facing the dilemma of optimal funding structure in order to maximize financial results and profitably ratios. Adomavičiūtė (2006), Paliulytė (2009), Beržinskienė, Cibulskienė and Būdvytytė-Gudienė, (2012), Ivanovienė and Karalevičienė (2011) argue that companies using mixed funding structure increase profitability almost 50 percent comparing to companies using only equity. The empirical results show that at the early stage of business development SMEs are facing a shortage of financial funding, whereas external funding could be a solution in this situation.

The main purpose of this study is to investigate the effect of an access to external finance on development of SMEs and economic growth. The article is structured as follow. Section 2 reviews the literature on the financial constraints of SMEs and economic growth. Section

3 presents our data and research methodology. Section 4 contains our results, which we discuss in the following section (5) before concluding with a set of final comments on the contribution of the article.

2 LITERATURE REVIEW

The scientific literature provides some empirical studies related to access to external funding and economy. Scientists Carpenter (2001), Becchetti and Trovato (2002), Vos, Jia-Yuh Yeh, Carter and Tagg (2007), Mina, Lahr and Hughes (2013), Alvarez and Lopez (2014), El-Said, Al-Said and Zaki (2015) had investigated the impact of the access to external finance on economy. However, there are only a few studies (Krishan, Nandy and Puri, 2015; Lee, Sameen and Cowling, 2015) analyzing the effect of external funding on the development of SMEs at the EU level.

Carpenter (2001) investigated the impact of funding structure on the development and growth of SMEs. The empirical results of this study show that most of companies use only a small share of external funding. The results of regression analysis suggest that the growth of companies that do not use external funding is strongly related to the size of company's equity. These empirical results also indicate that the growth of SMEs is limited due to the size of equity and low financial leverage. Becchetti and Trovato (2002) observed the impact of the determinants of growth: company's size, age, number of employees on the development of Italian SMEs. The empirical results suggest that the hypothesis of independence of company's growth from the initial size and other factors is not rejected for large companies, while it does not hold for SMEs under financial constraints in a Vbank-oriented financial system in which access to external funding is difficult. Jia-Yuh Yeh (2007) examined the financial behavior of the American and British private firms. The empirical results suggest that only minority of American private firms view a lack of capital other than working capital as a major financial problem. The results contradicting the conventional financial lifecycle paradigm suggest that financial performance indicators such as sales growth, return-on-assets, and net profit margin are insignificant determinants of small business finance. Vos, Jia-Yuh Yeh, Carter and Tagg (2007) argue that "younger and less educated private-firm owners more actively use external finance even though more education reduces the fear of bank loan denial, whereas, older and wiser small business owners with better education are less likely to tap into external finance". Overall, these empirical results do not support the agency lifecycle prediction that the vast majority of private firms suffer from severe financial constraints or financing gaps. Vos, Jia-Yuh Yeh, Carter and Tagg (2007) suggest to rethink about the conventional wisdom that private firms cannot grow as fast as their public counterparts due to a lack of reasonable access to external capital. Mina et al. (2013) analyzed how firm-level innovation affects the likelihood of seeking external finance. They find that overall the probability of seeking external finance is significantly affected by the human capital-intensity of the business and by the profitability of the firm but is not affected by research and development (R&D) intensity or innovation outputs. Alvarez and Lopez (2014) examined whether access to finance increases the probability of exporting of Chilean manufacturing plants. The results show that real exchange rate depreciations increase the probability of exporting for firms with access to banking funding and especially for firms in industries with higher financial needs. These results are robust to controlling for other firm characteristics affecting the probability of exporting and also for time varying industry-specific shocks that may affect export performance and banking finance. El-Said et al. (2015) tried to examine the impact of access to finance on export performance of SMEs. The results suggest that limited resources and barriers to entry are critically higher for SMEs

than for large companies that can be explained by their limited access to financial services. They found a significant and positive impact of dealing with banks and having banking facilities on the probability of exporting and that of exporting to more than one destination.

Krishan, Nandy and Puri (2015) conducted an empirical study focusing on the access to external funding and productivity at the micro level. The empirical results confirmed that a better access to funding allowed to implement productive projects, which normally would have to give up. Krishan, Nandy and Puri (2015) also show that an external financial support is important at the early stage of business development as well as later. The empirical results suggest that a better access to financing allows financially constrained SMEs to invest in productive projects and increase SMEs' productivity. Lee, Sameen and Cowling (2015) considered the differential effect of the 2008 financial crisis on access to finance for innovative SMEs. They found that innovative SMEs are more likely to be turned down for finance than other firms, and this worsened significantly in the crisis. However, regressions results show that the worsening in general credit conditions has been more pronounced for non-innovative firms with the exception of absolute credit rationing which still remains more severe for innovative firms. The results of this empirical study suggest that there is a structural problem which restricts access to finance for innovative firms and the financial crisis has impacted relatively more severely on non-innovative firms.

Beck and Demirguc-Kunt (2006) summarized some empirical research which shows "that access to finance is an important growth constraint for SMEs that financial and legal institutions play an important role in relaxing this constraint, and that innovative financing instruments can help facilitate SMEs' access to finance even in the absence of well-developed institutions". The summarized research suggests "that a competitive business environment, of which access to finance is an important component, facilitates entry, exit and growth of firms and is therefore essential for the development process. A focus on improving the business environment for all firms is more important than simply trying to promote a large SME sector which might be characterized by a large number of small but stagnant firms". The literature suggests that a focus on improving the institutions and the overall business environment is probably the most effective way of relaxing the growth constraints SMEs face and facilitate theirs to contribution to economic growth. However, institution building is a long term process and in the interim innovative lending technologies hold promise, providing market-friendly ways of relaxing the constraints SMEs face.

According to Beck and Demirguc-Kunt (2006), while cross-country research sheds doubt on a causal link between SMEs and economic development, there is substantial evidence that small firms face larger growth constraints and have less access to formal sources of external finance, potentially explaining the lack of SMEs' contribution to growth. Financial and institutional development helps alleviate SMEs' growth constraints and increase their access to external finance and thus levels the playing field between firms of different sizes. Together, these results suggest that it is important to have a competitive business environment that allows for the entry of new and innovative entrepreneurs resulting in the Schumpeterian process of "creative destruction" rather than simply having a large SME sector, which might be characterized by a large number of small enterprises that are neither able to grow nor to exit. Indeed, a large, but stagnant SME sector may be a by-product of a poor business environment itself. Furthermore, the existing evidence suggests that access to finance plays a very important role in the overall business environment, potentially constraining both firm entry and growth.

3 METHODOLOGY AND DATA

There are various methods that were used during different researches: cross-correlation function (CCF), cross-covariance function (CCVF), Granger causality, etc. It's hard to use them when analyzing short period, because it gives very inaccurate results.

Panel data (also known as longitudinal or cross-sectional time-series data) is a dataset in which the behaviors of entities are observed across time. These entities could be states, companies, individuals, countries, etc. Panel data allows controlling for variables that cannot observe or measure like cultural factors or difference in business practices across companies; or variables that change over time but not across entities (i.e. national policies, federal regulations, international agreements, etc.). Panel regression method is used to analyze either short or long period of data. The mostly used techniques to analyze panel data: fixed effects and random effects. Fixed effects technique (FE) is better to use in this situation, because we are only interested in analyzing the impact of variable that vary over time. FE explores the relationship between predictor and outcome variables within an entity. Each entity has its own individual characteristics that may or may not influence the predictor variables. Simple equation for the fixed effects model is:

$$Y_{it} = \beta_1 X_{it} + a_i + u_{it}, \tag{1}$$

where a_i is the unknown intercept for each entity (n entity-specific intercepts); Y_{it} is the dependent variable (DV) where i = entity and t = time; X_{it} represents one independent variable (IV); β_1 is the coefficient for that IV; u_{it} is the error term.

There are various ways how to modify the model for FE technique: use binary variables, add time effects to the entity effects model to have a time and entity fixed effects regression model (Torres-Reyna, 2007).

We employ the following regression specification to investigate whether a better access to external finance affects development of SMEs and economic growth:

$$Y_{it} = \alpha + X'_{it}\beta_{it} + \delta_i + \gamma_t + \epsilon_{it}, \tag{2}$$

where Y_{it} dependent variable characterizing economic growth (real GDP change – ΔRGDP) and development of SMEs[1] (change of number of SMEs – ΔNSME, change of number of persons employed in SMEs – ΔNPESME, and

[1]Companies classified as small and medium-sized enterprises (SMEs) are defined officially by the EU as those with fewer than 250 employees and which are independent from larger companies. Furthermore, their annual turnover may not exceed €50 million, or their annual balance sheet exceed €43 million. SMEs may be divided into three categories according to their size: micro-enterprises have fewer than 10 employees, small enterprises have between 10 and 49 employees, and medium-sized enterprises have between 50 and 249 employees.

[2]The SMAF index provides an indication of the changing conditions of SMEs' access to finance over time for the EU and its member states. The overall SMAF index and the individual sub-indices present scores for each country, and the EU and euro-zone averages. The SMAF index is calculated using a baseline of EU 2007 = 100, and so allows comparison between countries and across time. The base reference of 2007 deliberately provides a baseline before the onset of the financial downturn. The index comprises two main elements or sub-indices: access to debt finance and access to equity finance and is a weighted mean of the sub-indices. The sub-indices themselves are weighted means of the indicators that comprise them with the indicators normalized (nine indicators are included in the debt finance sub-index and five in the equity finance sub-index). Appropriate values for the weights are defined based on actual volumes, the nature of indicators and the coverage of indicators. In general the index largely reflects the importance of debt finance in the area of access to finance: the debt finance sub-index was set to represent 85% of the SMAF weighting. The equity finance sub-index was set to represent 15% of the SMAF weighting. In interpreting the scores, it is important to bear in mind the following: (a) the reference point in the index corresponds to the EU average in 2007 (100 = EU 2007); (b) low values in the overall index and individual sub-indices indicate poor performance against the access to finance indicators relative to the EU level in 2007, and vice versa for high values; (c) year-on-year increases indicate a relative improvement over time for that particular sub-index or the overall index. Sub-index on access to debt finance is comprised of indicators based on the take-up of different sources of debt finance, SME perceptions of loan finance and actual data on interest rates. The equity finance sub-index is calculated with data from the European Venture Capital Association and the European Business Angel Network reflecting investment volumes and numbers of deals/beneficiaries.

change of value-added at factor costs of SMEs – ΔVASME), X'_{it} is a k-vector of regressors (SMAF index – SMAF^2, debt finance sub-index – DFSI, equity finance sub-index – EFSI, unemployment rate – UR, harmonized indices of consumer prices – HICP), and ϵ_{it} are the error terms for $i = 1, 2, \ldots, M$ cross-sectional units observed for dated periods $t = 1, 2, \ldots, T$. The α parameter represents the overall constant in the model, while the δ_i and γ_t represent cross-section and period fixed effects.

4 RESULTS

The developments in SMEs access to financial resources and differences between EU member states are reflected by SMAF index dynamics. The value of SMAF for many EU countries has increased since 2008 when the EU average for SMAF hit its lowest point (see Fig. 1). For 24 out of 28 EU member states, the SMAF score has increased between 2007 and 2013. The key factor driving this seems to be the fall in interest rates for loans and overdrafts since 2009 for many EU countries, and so this has contributed to an improvement in the debt finance sub-index score for 25 EU member states between 2007 and 2013. Venture capital investment declined significantly between 2007 and 2009, and has remained relatively stable ever since. Business angel investment has slightly increased between 2007 and 2013, though for some countries there was a peak in 2009 before falling levels in the last years. As a result of these trends, the equity finance sub-index of 11 EU member states has slightly declined since 2007. The improvement in the debt finance sub-index has outweighed the decline in the equity finance sub-index.

Fig. 1 shows the SMAF index scores for each of the EU member states in 2007 and 2013. France, Austria and Finland are the highest performing countries in terms of access to finance for SMEs, all with an index value ranging between 122 and 126 (approx. 24 points higher than the EU overall in 2007), while Greece, Cyprus and Romania have the lowest scores (index values of 78, 82 and 85 respectively). The Fig. 1 shows the changes in the overall SMAF index for EU member states in the period 2007 to 2013. In total, 24 countries have shown improvements in their access to finance environments over the six year period to 2013. In particular significant improvements have been made by Latvia, Lithuania, Estonia, France and Ireland. Conversely 4 countries have experienced declines in their access to finance environments since 2007. EU member states having experienced a deterioration of their access to finance index score with respect to their original situation in 2007 are Cyprus, Greece, Romania and Sweden. The only countries to consistently have an index value of over 110 were Sweden, Germany, France and Austria. It is important to note that even if Sweden has experienced a deterioration of its index score, it is still one of the strongest EU member states in terms of access to finance, with scores above the EU-28 average during the whole period 2007 to 2013.

The EU index score for 2013 is 108, indicating an improvement of 8 points with respect to the score in 2007. Fig. 1 shows that the SMAF value for the EU-28 declined between 2007 and 2008. From this point the value increased again until 2010, before levelling off. The euro area average has performed consistently better than the EU-28 average although there was a marked decline between 2010 and 2011 in the euro area, which narrowed the gap with the EU. The data for 2013 shows a significant rise in values for both the EU-28 ad euro area – implying financial conditions for SMEs are better inside and outside the euro area.

Fig. 2 presents the sub-indices scores for each of the EU member states in 2013. The EU-28 debt sub-index value has increased by nine points since 2007. Across EU member states, 25 countries have seen their relative performance on this sub-index improve since 2007. Luxembourg, France and Austria represent the strongest performing countries, whereas

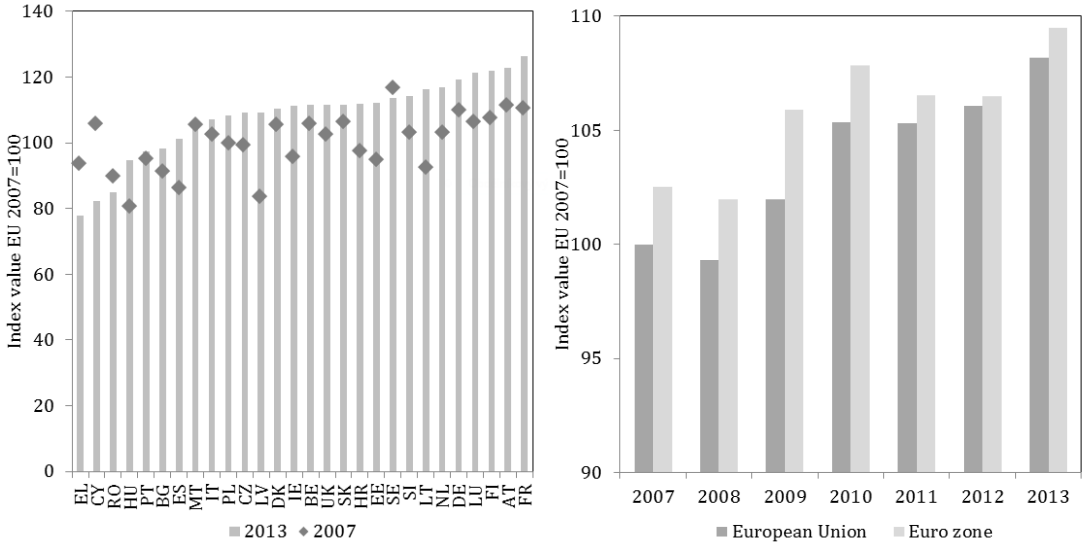

Fig. 1: SMAF index per country in 2007 and 2013 (left side) and SMAF index in EU and Euro area in 2007–2013 (right side)
Source: The European Comission

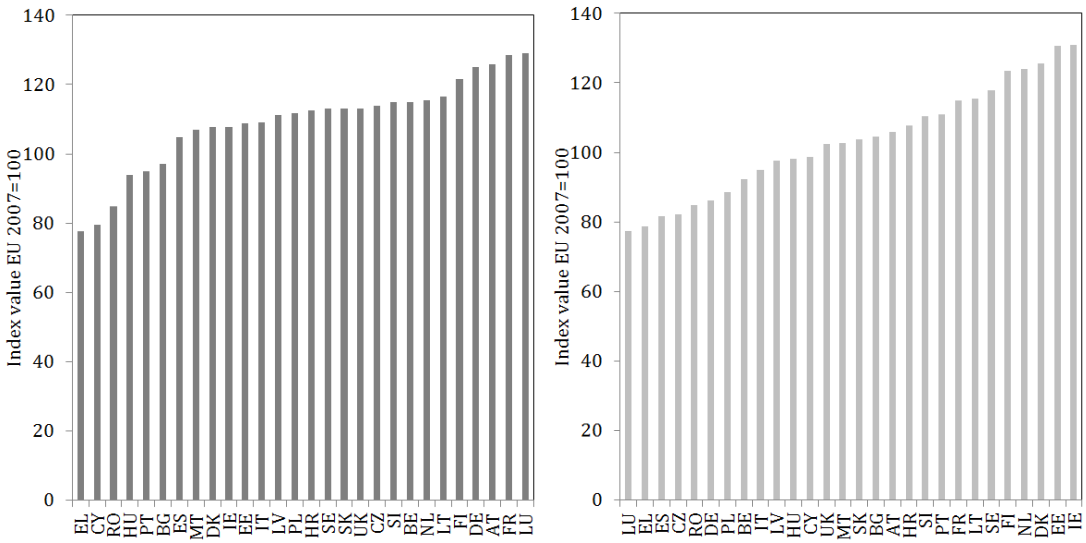

Fig. 2: Sub-index on access to debt finance per country in 2013 (left side) and sub-index on access to equity finance per country in 2013 (right side)
Source: The European Comission

Greece, Cyprus and Romania have the least favorable environment for debt finance. Ireland, Estonia, Denmark, Netherlands and Finland are the strongest performing countries, whereas Luxembourg Greece and Spain have the least favorable equity finance environments. The EU-28 sub-index value is 103, indicating a slight improvement since 2007. Sixteen countries have improved relative performance in the equity finance sub-index between 2007 and 2013.

The empirical results on the impact of an access to external finance on development of SMEs and economic growth using fixed-effects panel regression models are presented in Tab. 1–4. The empirical results suggest that a better access to external finance positively affects country's economic growth. Our tests highlight that a better access to debt finance has a positive and statistically significant effect on country's economic development while a better access to equity finance (venture capital, business angels' investment) has no effect on dependent variable. The main explanation for these findings is that in most of EU countries financial systems are bank-based and SMEs more often use banks' funding than alternative external funding sources.

The empirical results also suggest that unemployment rate has a negative impact on economy's growth while a positive impact of inflation on economy's growth was observed. An access to external funding source has no significant effect on some SMEs development indicators (e.g. change of number of SMEs) while a positive impact of access to external funding (including banks' funding) on change of number of persons employed in SMEs and change of value-added of SMEs was identified. When companies have that external funding option, it also has a way to expand. New employees, new places to grow, new opportunities opens right at that moment when business gets financial injection. Competition level in each country also grows, because of the better access to external funding sources.

5 DISCUSSION AND CONCLUSIONS

The main empirical findings of this study confirm the results of early empirical studies that a better access to external funding is an important growth factor for SMEs as well as for the whole economy. The empirical results of this study suggest that a better access to banks' funding has a positive and statistically significant effect on country's economic growth as well as on SMEs development while a better access to equity finance (venture capital, business angels' investment) has no statistically significant effect. The literature suggests that a focus on improving the institutions and the overall business environment is probably the most effective way of relaxing the growth constraints SMEs face and facilitate theirs to contribution to economic growth. Furthermore, the existing evidence suggests that access to finance plays a very important role in the overall business environment, potentially constraining both firm entry and growth.

The empirical results show not only the situation at this moment, but also a perspective in long term. The European Commission has changed its approach and decided to focus on SME development. Next incoming years will be targeted on SMEs development. It means that the positive connections between variables let us to predict positive situation in future researches. The research summarized in this study is only the first step on a long term research agenda. Much more analysis, particularly using microeconomic and macroeconomic data, country case studies, is needed to explore in more detail the policies and financing tools that can help SMEs overcome financing constraints and expand their access to external finance. In this context, it seems especially relevant to focus on institutions that are important for SMEs' access to finance. Going along with institution-building, however, the search has to be continued for financing tools that can work

Tab. 1: The empirical results of fixed-effects panel regression models (dependent variable – real GDP change, ΔRGDP)

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
C	−13.5295**	−9.1818**	−12.0730**	−8.3722**	3.2968	4.4252
	(5.4645)	(4.4130)	(4.8258)	(4.0082)	(4.2613)	(2.9472)
SMAF	0.1529***	0.1237***				
	(0.0496)	(0.0377)				
DFSI			0.1389***	0.1153***		
			(0.0433)	(0.0337)		
EFSI					−0.0047	0.0048
					(0.0383)	(0.0259)
UR	−0.3160***	−0.3006***	−0.3216***	−0.2948***	−0.3225**	−0.4027**
	(0.1095)	(0.0883)	(0.1092)	(0.0882)	(0.1129)	(0.0854)
HICP	0.4137**	−0.1101	0.4034**	−0.1304	0.2570	−0.2275
	(0.1728)	(0.1370)	(0.1710)	(0.1347)	(0.1733)	(0.1421)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes	No	Yes
Observations	196	196	196	196	196	196
R^2	0.2549	0.7168	0.2582	0.7184	0.2121	0.6977
S.E.	3.8427	2.4132	3.8341	2.4064	3.9515	2.4932

Notes: Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Tab. 2: The empirical results of fixed-effects panel regression models (dependent variable – change of number of SMEs, ΔNSME)

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
C	4.7912	−103.8330	6.4947	−96.0468	20.7771	−3.6307
	(68.6563)	(88.2474)	(60.9518)	(80.7391)	(51.0570)	(55.4473)
SMAF	0.1508	0.9394				
	(0.6030)	(0.7334)				
DFSI			0.1349	0.8622		
			(0.5285)	(0.6594)		
EFSI					0.0057	0.0916
					(0.4443)	(0.4752)
UR	−1.1426	0.9090	−1.1526	0.9243	−1.1842	−0.0665
	(1.4640)	(1.8549)	(1.4595)	(1.8526)	(1.4714)	(1.6997)
HICP	−2.1764	0.2868	−2.1873	0.1316	−2.3345	−0.4716
	(2.0539)	(2.6133)	(2.0369)	(2.5803)	(1.9819)	(2.6305)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes	No	Yes
Observations	168	168	168	168	168	168
R^2	0.1740	0.2091	0.1740	0.2095	0.1736	0.1995
S.E.	42.8791	42.7452	42.8787	42.7341	42.8889	43.0039

Notes: Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Tab. 3: The empirical results of fixed-effects panel regression models (dependent variable – change of number of persons employed in SMEs, ΔNPESME)

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
C	−20.8376*	−33.6980**	−18.1076*	−30.4594**	−0.9458	−3.5497
	(11.0746)	(14.3732)	(9.8324)	(13.1552)	(8.3613)	(9.1775)
SMAF	0.2035**	0.3012**				
	(0.0973)	(0.1195)				
DFSI			0.1781**	0.2702**		
			(0.0853)	(0.1074)		
EFSI					0.0233	0.0475
					(0.0728)	(0.0787)
UR	0.1361	0.3726	0.1218	0.3700	0.0881	0.0677
	(0.2362)	(0.3021)	(0.2354)	(0.3018)	(0.2410)	(0.2813)
HICP	−0.8299**	−0.6816	−0.8490**	−0.7368*	−1.0306***	−0.8978**
	(0.3313)	(0.4256)	(0.3286)	(0.4204)	(0.3246)	(0.4354)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes	No	Yes
Observations	168	168	168	168	168	168
R^2	0.2914	0.3082	0.2913	0.3081	0.2693	0.2769
S.E.	6.9166	6.9621	6.9170	6.9629	7.0237	7.1179

Notes: Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Tab. 4: The empirical results of fixed-effects panel regression models (dependent variable – change of value-added at factor costs of SMEs, ΔVASME)

	Model 1	**Model 2**	**Model 3**	**Model 4**	**Model 5**	**Model 6**
C	−33.4181**	−41.5560***	−34.1180***	−40.6380***	15.7834	2.0864
	(12.9843)	(15.5461)	(11.4196)	(14.1632)	(9.8134)	(9.9861)
SMAF	0.3093***	0.3579***				
	(0.1140)	(0.1292)				
DFSI			0.3146***	0.3457***		
			(0.0990)	(0.1157)		
EFSI					−0.1403	−0.0152
					(0.0854)	(0.0856)
UR	0.7531***	0.8120**	0.7425***	0.8384**	0.5898**	0.4186
	(0.2769)	(0.3268)	(0.2734)	(0.3250)	(0.2828)	(0.3061)
HICP	−2.1101***	−1.1822**	−2.0898***	−1.2266***	−2.5584***	−1.5459**
	(0.3884)	(0.4604)	(0.3816)	(0.4526)	(0.3809)	(0.4738)
Country FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	Yes	No	Yes
Observations	168	168	168	168	168	168
R^2	0.4934	0.5791	0.5028	0.5829	0.4765	0.5548
S.E.	8.1093	7.5302	8.0335	7.4964	8.2434	7.7450

Notes: Standard errors in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

around institutional deficiencies. While SMEs represent over 99% of businesses in the EU so it is crucial to support their growth and innovation as well as improve the financing environment for small businesses in Europe.

6 REFERENCES

Adomavičiūtė, I. 2006. *Verslo finansavimo šaltinų įtaka kapitalo pelningumui*. Vilniaus universitetas.

Alvarez, R. and Lopez, R. A. 2014. Access to banking finance and exporting. *Industrial and Corporate Change*, 23 (6), 1523–1539.

Becchetti, L. and Trovato, G. 2002. The determinants of growth for small and medium sized firms: The role of the availability of external finance. *Journal of Small Business Economics*, 19 (4), 291–306.

Beck, T. and Demirguc-Kunt, A. 2006. Small and medium-size enterprises: Access to finance as a growth constraint. *Journal of Banking & Finance*, 30 (11), 2931–2943.

Beržinskienė, D., Cibulskienė, D. and Būdvytytė-Gudienė, A. 2012. ES struktūrinių fondų paramos įsisavinimo intensyvumas Lietuvos smulkaus ir vidutinio verslo sektoriuje. *Ekonomika ir vadyba: aktualijos ir perspektyvos*, 4 (28), 53–64.

Carpenter, R. E. 2001. *Is the Growth of Small Firms Constrained by Internal Finance?* Washington University.

El-Said, H., Al-Said, M. and Zaki, C. 2015. Trade and access to finance of SMEs: is there a nexus? *Applied Economics*, Cairo University, Giza, Egypt.

European commission. 2015. *EUROSTAT database*. [online]. Available at: `http://ec.europa.eu/eurostat/data/database`.

Ivanovienė, I. and Karalevičienė, J. 2011. Smulkaus ir vidutinio verslo sektoriaus situacijos analizė verslui teikiamos paramos aspektu. *Profesinės studijos: teorija ir praktika*, 8, 158–166.

Jurevičienė, D. and Martinkutė, A. 2013. Rizikos kapitalo fondai: teoriniai aspektai. *Verslas: teorija ir praktika*, 14 (2), 117–130.

Krishan, K., Nandy, D. K. and Puri, M. 2015. Does Financing Spur Small Business Productivity? Evidence from a Natural Experiment. *Review of Financial Studies*, 28 (6), 1768–1809.

Lee, N., Sameen, H. and Cowling, M. 2015. Access to finance for innovative SMEs since the financial crisis. *Research policy*, 44, 370–380.

Mina, A., Lahr, H. and Hughes, A. 2013. The demand and supply of external finance for innovative firms. *Industrial and Corporate Change*, 22 (4), 869–901.

Paliulytė, I. 2009. Kapitalo struktūros įtaka įmonių pelningumo rodikliams. *Journal of Management*, 3 (16), 41–47.

Railienė, G. and Ivaškevičiūtė, L. 2013. Re-evaluating the Supply Side of Finance Availability for Lithuanian SMEs. *Social Sciences*, 4 (82), 70–83.

Šivickas, G., Simanavičius, A. and Pukis, A. 2010. Paramos smulkiam ir vidutiniam verslui įtakos darniam vystymuisi vertinimas. *Ekonomika ir vadyba*, 792–798.

Torres-Reyna, O. 2007. *Panel Data Analysis Fixed and Random Effects*. [online]. Available at: `http://dss.princeton.edu/training/`.

Vos, E., Jia-Yuh Yeh, A., Carter, S. and Tagg, S. 2007. The Happy Story of Small Business Financing. *Journal of Banking & Finance*, 31 (9), 2648–2672.

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