

FINANCIAL INTEGRATION IN THE EURO AREA AND SMES' ACCESS TO FINANCE: EVIDENCE BASED ON AGGREGATE SURVEY DATA¹

Maricica MOSCALU, PhD *

Abstract

The paper deals with the issue of access to finance for small and medium-sized enterprises (SMEs) in the euro area and explores whether the linkages among the euro area financial markets do affect the capital structure of the SMEs in the same area. Using a logit model specification, aggregate country-level data and several price and quantity-based measures of financial integration, the results reveal statistically significant positive effects of increased financial markets integration on SMEs' debt ratio. The impact of sovereign debt crisis in GIPSI countries is also investigated and significant evidence of its impact is documented.

Keywords: cross-border loans, interest rate spread, GIPSI, debt ratio

JEL Classification: F36, G15, G32

1. Introduction

This paper aims at exploring the determinants of SMEs' debt ratio – as an expression of their capital structure – by integrating, besides traditional firm-level and even country-level factors, factors acting at the international level. In this way, the paper aims at capturing the impact of linkages among euro area financial markets on SMEs financing decisions. Therefore, the paper is theoretically built on two streams of literature. On one hand, it deals with the issue of financial structure which was traditionally studied by modelling the determinants of leverage. On the other hand, it integrates insights from the literature focusing on (co)integration among financial markets. The previous literature (Lucey and Zhang, 2011; Popov and Ongena, 2011) shows that financial integration does indeed (positively) impacts on firms' financial decisions. However, few recent papers concerned with the issue of SMEs' financial structure, take

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* Lecturer, Department of Finance, Bucharest University of Economic Studies.

into account the potential effects of financial integration (e.g. Popov and Ongena, 2011).

Thus, there are still opportunities for research that this paper seeks to exploit in a novel manner.

The paper uses aggregate country-level data coming from the European Central Bank' survey on SMEs' access to finance in the euro area (SAFE) for 2009H1-2014H1 and employs a conditional probability model specification. The empirical findings show that the financial markets integration measures significantly impact on the debt ratio of euro area SMEs. Regarding the banking market, the results indicate the positive impact of increased volume of cross-border lending and, additionally, the positive impact of reduction in interest rate spreads (over Germany) to loans granted by monetary financial institutions (MFIs) to non-financial corporations. Increased integration in stock euro area markets seems to be negatively correlated with debt ratio which is according to the expectations.

The paper contributes to the existing literature in several ways. First, it uses recent data which allows exploring the impact of the fragmentation in financial – especially banking – markets brought about by the sovereign debt crisis (see ECB, 2014). Second, aiming at a holistic approach, it considers also the stock market besides the banking market which is usually investigated. Thirdly, the novelty of this study stems from the focus on the SMEs sector given that previous papers usually rely on large (public) firms data.

The paper is structured as follows: the next two sections present relevant findings from the previous literature and the research methodology, respectively; the third section deals with the empirical results and their interpretations while conclusions are given in the last section.

2. Literature review

Compared with the literature on corporate capital structure, in general (Sunder-Shyam and Myers, 1991; Rajan and Zingales, 1995; Frank and Goyal, 2003; and others), research on SMEs' financial structure is relatively new (e.g. Mateev et al., 2013; López-Gracia and Sogorb-Mira, 2008). Also relatively new is the interest in financial integration which was stimulated by the outbreak of the financial crisis. Other topics stimulated by the recent financial crisis include the investigation of the determinants of long-run sovereign rating (Miricescu, 2014), the assessment of the systemic risk (Cimpoeru, 2015) and even the long-term fiscal sustainability of public sector entities' finances (Kršekova and Pakšiova 2014). The reason why financial integration is important for firms and their access to finance lies in the benefits they are expected to reap from acting on

integrated financial markets. According to Lucey and Zhang (2011), these benefits can be hypothesized as follows: broader access to finance; and lower cost of capital. In the present paper the focus is on testing the first of the two alleged benefits

Based on the law of one price, two markets are considered integrated if identical assets are identically priced regardless the geographical location (Yeyati et al., 2009). Bekaert and Harvey (1995) define same-class assets essentially in terms of their risk profile. Concerning the time-varying nature of financial integration, frequently mentioned in literature (Berger and Pozzi, 2013; Kim et al, 2005; and others), previous research has shown that both credit and stock markets followed a consistent trend towards financial integration for more than a decade, among the old as well as the new EU member states (Pungulescu, 2013) and among the Central and Eastern European countries (Gjika and Horváth, 2013; Demian, 2011). Unfortunately, this trend was reversed by the recent financial crisis and Pungulescu (2013) documents that the reversion took place both in credit and capital markets in the old as well as in the new member states. However, the general integration trend resumed since 2012 (ECB, 2014).

Previous literature has showed that financial integration does indeed affect firms' financial decisions. Referring to public firms from emerging markets, Lucey and Zhang (2011) have shown that greater credit markets integration is positively associated with leverage while equity markets integration correlates negatively. Moreover, they show that the positive effects are not equally spread across all firm-size classes with the large firms benefiting more than small firms from increased credit markets integration; similarly, the negative impact on leverage from integration in stock markets is stronger for large firms. Restricting the analysis to small firms, from both old and new EU member states, Popov and Ongena (2011) brought evidence on the positive impact of interbank markets integration on small firms financing through the channels of easier borrowing conditions and lower interest rates.

Firms' financial structure was more than often investigated using debt ratio as a proxy. The driving factors of leverage are usually derived from the theories of capital structure, of which the best known are the trade-off theory and the pecking order theory. For an in-depth description of both theories, see e.g. Sunder-Shyam and Myers (1999). The main purpose of the present paper is not to test any of the capital structure theories but, building on the theoretical framework they represent, to explain the dynamics of the debt ratio for the euro area SMEs by using a set of potential explanatory factors that includes factors derived from these theories. Traditionally, these

factors are represented by firm-level characteristics such as (Rajan and Zingales, 1995; de Jong et al., 2008; Wu et al., 2009; Kayo and Kimura, 2011): tangibility or assets structure; growth opportunities; size; profitability; and risk, including bankruptcy risk. In the present paper, firm-level factors are used as control variables but their choice is substantially limited by the nature of the data set. The main focus is instead on variables measuring financial integration. Further research (de Jong et al., 2008; Gungoraydinoglu and Öztekin, 2011; Kayo and Kimura, 2011) has proved that factors at superior levels – industry, country – help explaining the variation in corporate leverage. Hence, investigating the effect of integration in financial markets on (small) firms' leverage seems legitimate and this is where the present paper seeks to make a contribution to the literature.

The specific research hypotheses to be tested in the present paper are built on the recent findings by ECB (2014) and especially Lucey and Zhang (2011) and they will be formally stated in the next section.

3. Research methodology

3.1. Data

The main data set comes from the SAFE survey conducted by the ECB starting with 2009 in order to investigate the evolution of the financing conditions in the euro area in the past six months. The research presented here is based on the first 11 waves of the survey (2009H1-2014H2). The data set contains firm-level data aggregated at country-level for the following 11 euro zone countries: Austria, Belgium, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Portugal and Spain. This data set will be used to construct the dependent variable (change in debt ratio) and proxies for firm-level characteristics (size, age, risk etc.) that will be used as controls. For defining variables measuring financial integration, data retrieved from the ECB and Eurostat is used.

3.2. Variables

The dependent variable was constructed using the information regarding the evolution of the debt ratio reported by firms for the last six months. Since data is aggregated at country level, the shares of firms that reported an increase / a decrease for each country and for each wave of the survey were used to calculate the net percentage as the difference between the share of the firms that reported an increase and the share of the firms that reported a decrease. Next, a dummy variable taking the value of 1 if the net percentage was positive (more firms reported an increase than a decrease) and 0

otherwise was constructed. This will allow using a logit model specification.

Concerning the explanatory variables, several firm-level control variables were defined based on capital structure theories framework. Firstly, two variables (coded SIZE and AGE) were defined as the proportion in the national samples of firms located at the lowest extreme of size and age classes, respectively. For this purpose, information regarding the share of the two smallest (based on turnover brackets) and the two youngest (based on the number of years since registration) classes of firms, respectively, were summed to form the two variables. Their choice is motivated by the alleged greater vulnerability of firms located at these extremes. The capital structure theories suggests that both a positive and a negative correlation between size and leverage could be expected (Rajan and Zingales, 1995; Kayo and Kimura, 2011), the positive correlation being predicted by the trade-off theory while the negative one by the pecking order theory (de Jong et al., 2008). Regarding age, Lopéz-Gracia and Sogorb-Mira (2008) suggest that correlation is predicted to be negative according to the pecking order theory and positive according to the trade-off theory.

In order to capture information about the growth rate, a variable based on the change in turnover (TURN) over the past six months was constructed. Most authors (de Jong et al., 2008; Rajan and Zinagles 1995) agree on a negative expected sign for this variable while others consider that the predicted sign differs according to the theory – negative under the agency theory but positive under the pecking order theory (Kayo and Kimura, 2011). Profitability was included in the analysis through a variable built on the change in profit (PROF) over the past six months. Given that, according to the pecking order theory, more profitable firms need less external funds, a negative correlation is thus predicted (Kayo and Kimura 2011; Wu et al., 2009; de Jong et al., 2008). On the contrary, the trade-off theory predicts a positive correlation (Kayo and Kimura, 2011). An alternative measure used to proxy for firm's access to internal resources was the share of firms that reported the use of internal funds (retained earnings or sale of assets) over the past six months (INTUSE). The impact of the risk of the firm was investigated through using the information contained in the evolution of the firm's credit history (CREDHIST) over the past six months as perceived by the firm itself. It can be thought of as an inverse proxy for the bankruptcy risk. Generally, the theory predicts a negative correlation between operational (Wu et al., 2009; de Jong et al., 2008; Lopéz-Gracia and Sogorb-Mira, 2008) or bankruptcy risk (Kayo and Kimura, 2011) and corporate leverage.

Because the main concern in this paper is related to the impact of financial integration of SMEs' financing decisions which is supposedly highly dependent on the overall economic environment (see ECB, 2014), it becomes interesting to additionally investigate the impact of changes in economic outlook on leverage. To capture this effect, a variable (ECONOUT) was constructed based on the firms responses on the perceived recent evolution of the economy. This variable along with CREDHIST, PROF and TURN were constructed based on the net percentage and then assigned a value ranging from 1 to 4 using the quartiles of their respective distribution in the sample.

Two other demographic variables were included. The first one refers to the economic sector and it was defined using the shares of firms coming from the main four sectors (construction, industry, services and trade). They were regrouped as follows: the first two and the last two. The rationale behind it resides in their greater similarity with respect to the fixed assets intensity. Therefore, firms in construction and industry can be considered as exhibiting higher shares of fixed to total assets compared to firms in the latter two. The results reported here are derived using the sum of the first two shares (SECT). Hence, this variable can convey information about the assets structure of the firms; its influence on leverage is usually predicted to be positive (Kayo and Kimura, 2011; de Jong et al., 2008; Rajan and Zingales, 1995). The second variable refers to the ownership structure (OWNSTOCK) and gives information about the share of the firms in the national samples reporting public shareholders and thus listed on the stock exchange. The effect of this feature was less investigated empirically, at least for SMEs, and has the ability to shed more light on how access to public capital markets influence SMEs' financial decisions given that the presence of such ownership can help alleviate the problems associated with informational opacity, which is considered an intrinsic feature of SMEs (see e.g. Agostino and Trivieri, 2008).

To investigate the impact of financial integration, two types of measures were used following the recommendations in the literature (ECB, 2014; Friedrich et al., 2013): *quantity-based* and *price-based measures*. For the banking markets integration both types were used. The price-based measures are given by the interest rate spread to loans granted to NFCs by euro area MFIs. The spreads are taken over the corresponding value for Germany as in Pungulescu (2013) and Popov and Ongena (2011). Four different interest rates were used, as follows: (1) interest rate to new loans of up to 1 year maturity and up to and including EUR 1 million amount (IRSNLS); (2) interest rate to outstanding loans of up to 1 year maturity and total amount (IRSOLS); (3) interest rate to outstanding loans of over 1 year

maturity and total amount (IRSOLL); (4) interest rate to outstanding loans of total maturity and total amount (IRSOLT). The interest rates were taken as averages over the period most close to the period of the survey wave. The second type of measure was the share to quarterly country's GDP of the quarterly cross-border lending (outstanding amounts at the end of the period) to the non-MFI sector by MFIs located in the other euro area countries (CBLOANS_GDP), for the quarters most close to wave of the survey. The same approach was used to proxy for equity market integration applied to data referring to the cross-border holdings of shares and other equities by MFIs located in the other euro area countries towards the unspecified sector counterpart (which usually includes the private sector also) in the reference country (SHARES_GDP).

Consequently, the hypotheses to be tested here are the following:

1. There is positive correlation between the level of cross-border lending by MFIs to NFCs and the SMEs' debt ratio.
2. There is negative correlation between the interest rate spreads on loans by MFIs to NFCs and the SMEs' debt ratio.
3. There is negative correlation between the cross-border holdings of shares by MFIs and the SMEs' debt ratio.

Given that our sample includes the countries (Greece, Italy, Portugal, Spain and Ireland) hit by the sovereign debt crisis, a dummy variable (GIPSI) was included in order to investigate the potential impact that the membership to this group (value 1) could exert on the access to external finance for SMEs. Based on ECB (2014), the sovereign debt crisis is one of the causes that led to fragmentation in the euro area financial markets; thus, firms located in the troubled economies are expected to face tighter conditions when accessing bank finance and a negative correlation with debt ratio is hypothesized.

3.3. Model

The choice of a binary logit model is motivated by the dichotomous nature of the dependent variable. A thorough description of the theoretical underpinnings of the model can be found in Wooldridge (2009, p.574-587) and Stancu (2011, p. 305-319). Essentially, the model will estimate the probability of an increase in SMEs' debt ratio conditioned on the values of the covariates presented above. Obviously, Germany was excluded from all the regressions.

4. Results and discussion

Before presenting the empirical results, the pattern of debt ratio over time as well as across the sampled countries will be described. A pattern of deleveraging describes the SMEs' debt ratio across the whole country sample given that in 2009H1 the average net percentage was positive although small (0.68%) after which it continues on a general trend of decreasing and reaches -12.02% in 2013H2. The first half of 2014 marks a turning point with an average value of -7.95% meaning that the euro area SMEs starting getting more debt to finance their activity. Regarding the pattern across the 11 countries, the data shows that all the non-GIPSI countries exhibit high (absolute) negative average values over the period, which means that they generally deleveraged; Finland reaches the maximum (absolute) average value of -17.34%. Among the GIPSI countries, the pattern is not well defined. Ireland resembles the non-GIPSI group pattern (-7.10%) while the rest of the countries present negative or positive values but close to zero (Portugal -1.94%, Spain -0.27%, Greece +0.57%) or high positive values (Italy +13.96%). This suggests that SMEs in the distressed countries took on more debt than those in the other group, even during the crisis period.

The overall negative trend for the euro area SMEs debt ratio following the outbreak of the financial crisis raises questions about the potential reasons for this evolution. Specifically, it can be asked the question whether the high fragmentation in the euro area financial markets for most of the period under analysis, as documented by the ECB (2014), could explain this adverse evolution and could thus point towards a tightening of the financing conditions for SMEs.

Table 1 presents the results of estimating the model with and without the interest rate spreads given that they were found to be correlated with the GIPSI dummy variable. Results in table 1 show that all the estimated models are statistically significant given the significant (at 1%) LR statistic. Moreover, they fit well the data as the Hosmer-Lemeshow goodness-of-fit measure highlights; the insignificant statistic means that there are not significant differences between the fitted values and the real values. Also the McFadden R-squared exceeds 73% in all the cases. Some variables (SIZE, PROF and TURN) were dropped out given that they led to high correlations with other variables in the model or that their explanatory power became insignificant (QINTUSE).

Table 1

**Results of estimating the baseline models
(with / without the interest spreads)**

Explanatory variable	Model 1	Model 2 (IRSNLS)	Model 3 (IRSOLS)	Model 4 (IRSOll)	Model 5 (IRSOlt)
SECT	77.193 (0.007)*	65.594 (0.003)*	67.451 (0.002)*	45.615 (0.046)**	59.038 (0.007)*
AGE	38.954 (0.052)***	20.507 (0.087)***	22.916 (0.043)**	23.841 (0.039)**	23.033 (0.046)**
OWNSTOCK	-73.123 (0.049)**	-50.160 (0.089)***	-52.528 (0.067)***	-42.411 (0.124)	-46.289 (0.101)
INTUSE	11.627 (0.036)**	-	-	-	-
CREDHIST	-4.352 (0.014)**	-6.261 (0.001)*	-6.529 (0.001)*	-6.583 (0.001)*	-6.488 (0.001)*
ECONOUT	1.138 (0.178)	0.937 (0.158)	1.241 (0.080)***	1.302 (0.088)***	1.274 (0.080)***
SHARES_GDP	-207.326 (0.029)**	-168.907 (0.009)*	-186.142 (0.007)*	-180.273 (0.008)*	-185.873 (0.006)*
CBLOANS	40.582 (0.021)**	38.386 (0.007)*	41.516 (0.005)*	38.581 (0.006)*	40.540 (0.005)*
IRspread	-	-94.762 (0.082)***	-83.701 (0.143)	-299.233 (0.086)***	-158.404 (0.117)
GIPSI	8.290 (0.056)***	-	-	-	-
c	-38.424 (0.012)**	-17.053 (0.024)**	-18.945 (0.011)**	-13.137 (0.105)	-16.782 (0.032)**
McFadden R-sq.	0.767	0.742	0.731	0.744	0.735
LR statistic (Probab.)	92.320 (0.000)	89.236 (0.000)	87.893 (0.000)	89.532 (0.000)	88.393 (0.000)
H-L Statistic (Probab. Chi-sq.)	0.359 (1.000)	3.439 (0.904)	5.868 (0.662)	2.305 (0.970)	2.407 (0.966)

Source: author's own analysis; () p-values; *, **, *** - significant at 1%, 5%, 10%.

Regarding the significance of individual variables, it can be seen that they are significant at the conventional levels of significance (1%, 5%, 10%) except for the OWNSTOCK (models 4 and 5), ECONOUT (models 1 and 2) and the interest spreads (models 3 and 5). Thus, the evolution of SMEs' debt ratio is influenced both by firm-level factors as well as country- and international level factors including financial integration measures. The specific impact of the firm-level factors is next discussed.

The age of the firms seems to significantly matter in their financial decisions in the sense that younger firms (less than ten years here) take on more debt. This can be due to the fact that

younger firms have less internal funds to rely on and thus they need to use more debt. When the share of older firms (10 years or more here) is considered, age and debt ratio are negatively correlated. This finding can bring support to the negative correlation between age and debt hypothesized by the pecking order theory (López-Gracia and Sogorb-Mira, 2008). It is interesting that all the variables become more significant when the share of young firms is considered, especially the financial integration measures.

The positive strong correlation between the cumulative share of SMEs in construction and industry and leverage confirm that their assets structure is more fixed-assets intensive than in the other two sectors so that their stronger tangibility eases access to debt. The positive impact found in Kayo and Kimura (2011) and others is thus confirmed for euro area SMEs. When the share of the other two sectors is included, the correlation with leverage becomes negative; all other results hold.

Regarding the ownership structure, its negative impact is not highly significant across all the models; however, it can still indicate that SMEs being listed on stock exchange are less leveraged, possibly suggesting that they are less financially constraint so that they can access public capital markets more easily and thus substitute equity financing for debt financing, although in most sampled countries less much than 10% of SMEs reported such ownership. Firms that reported having used internal sources are more prone to use debt, given the significant positive coefficient for INTUSE. This finding could be taken as support for the trade-off theory (see Kayo and Kimura, 2011).

Regarding risk, although the impact of SMEs' credit history on debt is highly significant, meaning that this variable captures indeed information relevant for bank financing, the negative correlation is counter-intuitive since an improvement in the firm's credit history would be equivalent with a decrease in its (bankruptcy) risk level. This unexpected result could mean that as SMEs improve their credit history they switch towards other forms of external finance, such as debt securities or external equity but this hypothesis needs to be investigated.

The perceived evolution of the economic outlook in the past six months, although not significant in all the models, suggests that as the economic outlook improves banks are perceived by SMEs as being more willing to lend (the two are significantly positively correlated, 0.65) and thus SMEs' debt ratio increases.

Regarding the impact of the financial integration measures, it is generally highly significant. Concerning the banking markets, the deepening of the integration on this segment positively impacts on

SMEs' access to debt. This is especially true for the cross-border lending by MFIs located in different euro area countries which is significant at 1% in 4 out of the 5 models estimated. This finding is consistent with Lucey and Zhang (2011) for public firms.

The impact of the price-based measures of integration in banking markets does not yet appear to be very significant. The only significant impact (at 10%) is observed for the interest rate spreads to new short-term loans (IRSNLS) and for the outstanding long-term loans (IRSOLL); the most important thing to be noticed from these initial results is the negative correlation with the debt ratio suggesting that more fragmented euro area banking markets, documented by the ECB (2014), raises the cost of borrowing for NFCs and therefore restricts their access to credit. This finding is supported by Lucey and Zhang (2011) who argued that a lower cost of capital is one of the alleged benefits stemming from financial integration. Moreover, the result is consistent with Popov and Ongena (2011) who brought evidence that the interbank markets integration positively impacts on SMEs access to finance by lowering the interest rates charged to them on the credit markets.

As regards the stock markets, the findings in this paper are again consistent with the Lucey and Zhang (2011) considering the (high) significant negative correlation between the measure of stock market integration and SMEs' leverage. Therefore, as euro area stock markets become more integrated firms, even SMEs, seem to be stimulated to substitute equity finance for debt finance. This finding is strengthened by the ECB's goal to promote the developing of direct capital market solutions for SMEs, for medium to long-term financing (ECB, 2014).

Despite the limits associated with interpreting covariates coefficients in logit models (see Wooldridge, 2009, p. 574-587), it can be noticed that all the coefficients of the financial integration measures are large which is consistent with Lucey and Zhang (2011) and Popov and Ongena (2011) who showed that financial integration has not only a statistically significant effect on firms' leverage but also an important economic effect. The results reported so far provide full support for the hypotheses 1 and 3 while the second one is partially confirmed.

Table 2
Correlation between GIPSI dummy and interest rate spreads

	IRSNLS	IRSOLS	IRSOLL	IRSOILT
GIPSI	0.784 (0.000)*	0.737 (0.000)*	0.367 (0.000)*	0.563 (0.000)*

Source: author's own analysis; () p-values; * - significant at 1%.

As the descriptive analysis (not fully reported here in order to save space) revealed, SMEs in the countries affected by the sovereign debt crisis used more debt than those in countries outside of this group. This is confirmed by the significant positive correlation (at 5%) between the dummy variable GIPSI and the debt ratio. The GIPSI variable was not included in models 2-5 due to the high significant (positive) correlations between the GIPSI membership and all the four interest rate spreads, as table 2 reveals; three out of the four coefficients exceed 0.5. This is not unexpected and was previously confirmed in the literature (ECB, 2014; Maudos, 2013) that showed that the GIPSI countries did face higher borrowing costs for NFCs.

The previous results opened a new avenue for investigation in the sense that it became interesting to test the existence of a potential (negative) simultaneous effect on debt ratio induced by interest rate spreads and GIPSI membership. The results of empirically testing this hypothesis are given in table 3 where the models 6-9 include an interaction term between the interest spreads and GIPSI dummy. All the models are statistically robust according to the criteria presented earlier. Regarding the significance of the individual variables, the previous results generally hold even if the significance of some of them is slightly reduced. The same is noticed for the quantity-based measures of integration in both banking and stock markets.

However, an important difference appears with regard to the cumulative impact of the interest rate spreads and GIPSI membership. All the interaction terms are highly significant (at 5%, generally). The GIPSI membership alone is significant only when the interest rate spread to new short-term loans is considered. The negative correlations with the debt ratio suggest that the higher lending rates for NFCs in the distressed countries exerted an additional (negative) effect on SMEs access to debt by forcing them to deleverage. This partially offsets the positive effect induced by the GIPSI membership alone which is now significant (at 10%) only in model 6 although it is not far from statistical significance in models 7 and 9 as well. These findings suggest that the negative impact of the sovereign debt crisis was strongest with regard to new short-term and small amount loans (IRSNLS) and they are important from the perspective of SMEs financing patterns. First of all, they confirm the importance of bank financing for SMEs highlighted in literature. ECB (2014) argues that SMEs are more bank dependent compared to large enterprises given their higher informational asymmetries and transaction costs induced to external investors. Alternatively, Agostino and Trivieri (2008), based on the same arguments, consider

that SMEs' access to capital markets (equity and bonds) is hampered and, therefore, they are more dependent on (local) banks. Second, the interest rate spread that led to the most significant results refers to small amount loans i.e. up to and including EUR 1 million which are considered by ECB (2014) as proxy for SMEs loans. Last but not least, the same interest rate spread refers to short-term loans i.e. up to 1 year maturity and this may be extremely relevant given that SMEs are considered to be more prone to use short-term debt, according to Titman and Wessels (1988) and Daskalakis and Psillaki (2008), due to, *inter alia*, the greater transaction costs associated with long-term loans.

Table 3

Results of estimating the models with the interaction terms between the GIPSI dummy and the interest rate spreads

Explanatory variable	Model 6 (IRSNLS)	Model 7 (IRSOLS)	Model 8 (IRSOALL)	Model 9 (IRSOOLT)
SECT	69.832 (0.007)*	83.441 (0.010)*	46.181 (0.090)***	74.562 (0.022)**
AGE	37.389 (0.048)**	39.233 (0.046)**	25.330 (0.185)	35.072 (0.076)***
OWNSTOCK	-55.848 (0.107)	-63.439 (0.089)***	-37.187 (0.268)	-50.214 (0.162)
CREDHIST	-4.020 (0.029)**	-5.742 (0.008)*	-5.272 (0.022)**	-5.694 (0.011)**
ECONOUT	0.723 (0.351)	1.383 (0.108)	1.568 (0.110)	1.619 (0.092)***
SHARES_GDP	-228.880 (0.013)**	-320.032 (0.028)**	-289.183 (0.020)**	-354.622 (0.031)**
CBLOANS	45.564 (0.012)**	61.407 (0.020)**	53.119 (0.019)**	65.567 (0.025)**
IRspread*GIPSI	-194.500 (0.027)**	-211.760 (0.051)***	-560.846 (0.026)**	-392.457 (0.035)**
GIPSI	7.613 (0.068)***	6.368 (0.111)	3.208 (0.330)	5.945 (0.134)
c	-29.525 (0.018)**	-32.792 (0.025)**	-18.136 (0.109)	-30.028 (0.041)**
McFadden R-sq.	0.791	0.776	0.789	0.785
LR statistic (Probab.)	95.207 (0.000)	93.417 (0.000)	94.955 (0.000)	94.496 (0.000)
H-L Statistic (Probab. Chi-sq.)	6.720 (0.567)	0.723 (0.999)	0.436 (0.999)	0.495 (0.999)

Source: author's own analysis; () p-values; *, **, *** - significant at 1%, 5%, 10%.

Overall, the latter results suggest that SMEs located in the troubled economies have been more severely affected compared to

their counterparts located in the non-troubled countries and they fully supports hypothesis 2.

5. Conclusions

The research presented in this paper aimed at investigating the impact of the integration in banking and stock euro area markets – measured through both quantity- and priced-based measures – on the euro area SMEs' access to external finance proxied by the evolution in their debt ratio. Using data coming from the ECB's SAFE survey on SMEs' access to finance, the research showed that financial integration in the euro area positively impact on SMEs' access to debt finance.

Specifically, the paper brings evidence that cross-border lending by MFIs in the euro area is positively correlated with the evolution in SMEs' debt ratio while the interest rates spreads (over Germany) on loans to NFCs negatively impact on it. On the contrary, more increased stock markets leads to lower usage of debt by SMEs. The impact induced by the interest rate spreads is stronger for new and small short-term loans which are considered especially relevant for SMEs; moreover, their impact is stronger for SMEs located in the troubled GIPSI countries. These findings imply that more efforts are needed at European level to reduce the existing fragmentation on the financial markets, especially with respect to lending interest rates. Further research should consider using a more robust dataset, expand the range of market segments considered and explore different model specifications.

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