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THE IMPACT OF CREDIT AVAILABILITY ON SMALL AND MEDIUM COMPANIES

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Abstract. Existing research proves that companies' access to bank loans or other external sources of financing for business development is one of the defining factors of the survival and development of a company on the market. This is all the more important in the case of small and medium-sized companies, knowing that they face a series of difficulties in obtaining financing from banking institutions, especially due to an insufficient amount of information needed provided to banks and needed by them to analyze the opportunity for a loan. However, as the economic and financial conditions of a company are better, the more information is available to banks and the credit availability is higher. By this research we analyse the factors affecting the credit availability and their influence on development of Polish small and medium companies, such as company's size and age, financial results or the length of relationship with the banking institution, as well as the features characterizing the banking sector. The results demonstrate that in Poland, similarly to other European countries, small and medium companies have a more limited access to credit availability than large companies. Moreover, a significant dependence of bank credit availability from the size of the company, liquidity, profitability and the situation in the banking sector was demonstrated.

Keywords: credit availability; small and medium enterprises; banking sector

1. Introduction

The access to bank credit and its availability is one of the key factors to be considered development of a company. Many Polish companies use bank loans as the main source of external capital. Credit availability varies according to many factors related to enterprises and the operating banks. One of the features which may be described as differentiating the terms of credit availability is the size of the enterprise. Small and medium-sized enterprises, despite their importance for economic development, encounter many difficulties in searching for capital due to an insufficient amount of information forwarded to banks and its asymmetry. However, the better the economic condition of an enterprise and the more information about an enterprise available, the easier it is to gain access to bank funding.

The aim of the research was the determine the differences in the access to bank loans in terms of the length of the relationship with the bank institution, the size and age of the companies, along with other characteristics. Among the factors determining credit availability the ones that characterize enterprises (e.g. company's age, its financial results, the length of the relationship with the bank, the number of operating banks), as well as the features characterizing the banking sector (i.e. concentration ratio of the banking sector, interest margin indicator) were analysed.

A model approach to enterprise cooperation with banks is presented. On the basis of the logit model results and on the panel data, the factors significant for credit availability are presented, both the ones lying on the side of an enterprise as well as the banking environment. The research was carried out considering small and medium-sized enterprises (SMEs), as well as young and mature companies. Additionally, on the cross-sectional data, there was an analysis of the factors influencing the denial of credit by a leading bank and the factors influencing the inclination to use the services of many banks.

2. The literature review

The bank's decision on crediting an enterprise is based on the estimation of many factors. Petersen and Rajan (1994) enumerate:
* the debtor's inclination to the repayment of the debt determined on the basis of previous bank experiences (entity's credit history),
* the debtor's possibility of repayment of the debt (determined on the entity's economic situation),
* macro-economic conditioning (and the local situation) influencing the probability of repayment of the debt,
* possible collateral (property which can be allocated to repayment of the debt in case of failure),
* equity of the enterprise.

A part of the information essential for the decision on crediting an enterprise can be gained by a bank through keeping a long-term, closed cooperation (Petersen & Rajan 1994). The cooperation of an enterprise and a bank takes various forms depending on the information on the basis of which the bank makes a decision on its crediting. It can be a transactional (transaction-oriented banking) or relational cooperation (relationship banking).

Relations between the debtor and the financial institution differ depending on the size of the company. Crediting small enterprises is different than crediting the big ones in respect of the cost of the bank credit and the costs of gaining the information about the debtor. Insufficient amount of information given to banks and its asymmetry may result in limited access of SMEs to capital.

A determinant of credit availability for enterprises is also the length of an enterprise and bank's cooperation, especially if it goes to the cooperation of relational character. Petersen and Rajan (1994) showed that the long-term relationship strengthens the bank's inclination to financing the familiar enterprises' projects. The cooperation does not have to relate to crediting. A lot of information about the condition of the enterprise is supplied through the observation of changes in the current (trading volume, quality, and number of contractors, etc.) or deposit accounts.

A long-term cooperation is beneficial to the price of bank services. Boot and Thakor (2000) claimed that in the sample of small enterprises studied by them, the credit interest rate went down with the length of the entity's cooperation with the bank. The requirements related to collateral are also getting lower. They also observed that decreasing the price of credit may happen together with the length of cooperation, regardless of the amount (scope) of information gathered by the bank. Credit interest rate is lowered for entities which proved that they were able to complete the project (the bank does not broaden its knowledge with new elements, but analyses those which were given by the enterprise).

The level of competition in the banking sector may also influence the relation between the length of an enterprise's cooperation with a bank and an interest rate. Sharpe (1990), as well as Petersen and Rajan (1995), claimed that the interest rate may increase in such circumstances together with the length of the entity's cooperation with the bank. According to this approach, banks compensate previous riskier financing of unknown companies.

The banks' interest in financing the enterprises not checked before is a result of the necessity of soliciting customers and enhancing the credit portfolio. In the uncompetitive market, the banks have a tendency to smooth out the rate of return from crediting one entity. In the initial period of its existence, they provide relatively cheap capital, the cost of which increases in time. It results from the fact that banks wrongly price the credits given to young, unknown entities or they evaluate the mature, well-established entities in a highly restrictive way. In addition, banks in the uncompetitive market count on the future benefits from crediting a given company and that is why they decide to provide a relatively cheaper capital at the beginning of its functioning.

Banks behave differently towards mature entities in the competitive market – they charge a lower fee for a credit. It also explains why mature enterprises in an uncompetitive banking market finance investments basing rather on internal sources of finance than banking, and how banks adjust their corporate lending portfolio (Cahn, Christophe et al., 2017; Belás et al., 2017; Rajnoha et al., 2017; Davydenko et al., 2017). That is why the determinant of widely-understood credit availability for enterprises is the level of competition in the market of banking services.

Young enterprises which obtain bank loans are deeper in debt (the ratio of credit to total assets) in the uncompetitive market than in the competitive one. Mature companies are in a reverse situation. Boot and Thakor (2000), analysing the influence of growing competition in the banking sector, compared two methods of banks and enterprises cooperation (transactional and relational). They came to a conclusion that, regardless of the method of cooperating with enterprises, banks' profits decrease together with the increase of competition among them. However, it happens asymmetrically. Relational cooperation (in view of a unique character of information the banks administrate) allows protecting bank's profits from the dangers of the growing competition in the sector. Possible reductions of profit refer to the benefits reached from transactional crediting. Another aspect was discussed by Pietrzak et al. (2017), the quality of entrepreneurial environment becomes more and more important, and it may be an obstacle for growth for peripheral countries and regions.

Together with the increase of competition in the banking sector, the banks' interest in crediting the enterprises which require a relational – individual (enabling to benefit from having unique data about the enterprise) approach increases. On the other hand, the corporate sustainability performance is reflected in bank loan prices, as Hauptmann (2017) discuss in her paper. By taking the sustainability performance of the lending bank into account, Hauptmann shows that borrowers with strong sustainability performance pay lower loan spreads than borrowers with weak sustainability performance.

The processes of mergers and acquisitions in the banking sector also influence credit availability for enterprises. The analysis of the influence of consolidation processes in the banking sector on credit availability for small and medium-sized enterprises showed that if the processes related to big banks, financing of smaller enterprises was highly limited. However, if smaller banks merge, the effect is the reverse: credit availability for SMEs increases. It means that big banks willingly get rid of small debtors who they cooperated with basing on the relational model and decide to start cooperation of transactional type (Keeton, 1996; Peek & Rosengreen, 1998; Strahan & Weston, 1998).

Another feature differentiating credit availability for enterprises is the number of operating banks (multiple banking). Berger and Udell (1995), and also Petersen and Rajan (1994), analysing small enterprises, came to the conclusion that enterprises rarely cooperate with only one bank. The number of banks servicing an entity is a function of enterprise's size. In those studies, the number of banks servicing huge entities was from 1 to 6, whereas in the sample of medium-sized enterprises the span was significantly bigger: from 1 to 21, wherein the average number of operating banks was 5.

The results of studies by Detragiache et al. (2000) referring to the relation with many banks (multiple banking) show that duplication of monitoring and scoring assessment generate costs in all servicing banks. On the other hand, not duplicating the entity's economic situation assessment and basing only on the results of another bank's analysis may result in losses. Many factors indicate that for an enterprise maintaining a relationship with many banks is expensive, mainly because of transactional costs. Also, Cole (1998) came to similar conclusions stating that a big number of banks servicing an enterprise, does not make the access to capital easier for it.

Positive dependence between the size of an enterprise and financing with a bank credit was confirmed by Demiroglu, James, and Kizilaslan (2012), as well as Berrospide, Meisenzahl, and Sullivan (2012). Whereas, Ghosh (2010) and Jiménez and others (2010; 2012) underlined a low use of a bank credit by big companies. Big enterprises are attributed with a lower risk rate, since they are more diversified, better known to external entities, and they face the problem of information asymmetry to a smaller extent.

Andrés Alonso and others (2005) estimated an econometric model in order to stipulate the bank credit share in the financing assets of Spanish enterprises with the use of a generalized method of moments. A positive dependence was observed between the size of an enterprise and the use of a bank credit. Big enterprises have greater bargaining power which they use to establish and maintain relations with a bank. As a result, big entities, which could resign from financing in the banking market in favour of debt issue, use bank credits. On the grounds of conducted analysis, Dewaelheyns and Van Hulle (2007) stated that big enterprises with a high share of tangible fixed assets use bank credit to a greater extent. Another model was developed by Brkic, Hodzic and Dzanic (2017) as a support tool for evaluation of corporate client credit risk in a commercial banking environment.

Ghosh (2010) proved that in small enterprises tighter monetary policy results in limiting short-term indebtedness. A fixed effects estimator was used in the study while controlling the property of the enterprise. Less indebted enterprises lower their indebtedness in general, whereas profitable companies increase their level of indebtedness. On the grounds of achieved results, it was stated that the tightening of monetary policy is accompanied by an

increase in total indebtedness, which is contrary to the conclusions drawn from the operations of an interest rate channel. While analysing indebtedness components, it was indicated that short-term indebtedness against the bank increases, whereas short-term indebtedness in general decreases. An increase in interest rates translates into a deterioration of the availability of all financing sources of a liability character. Older, highly indebted enterprises, characterized by low profit, increase bank credits, in particular, short-term ones, as a reaction to a tighter monetary policy.

Cole (2008) proved that a lack of demand for credit was declared by smaller companies. Cole (2010) analysed the impact of the size of an enterprise (logarithm of sales) on financing with a bank credit. It was stated that smaller entities with higher profitability and liquidity, having fewer fixed assets, do not use credits. Whereas, enterprises financing activity with a bank credit are bigger, younger, less profitable and have lower liquidity. The relation between a bank credit and assets in such enterprises is positively related to liquidity.

On the grounds of a study, Cole and Dietrich (2013) stated that smaller and older enterprises report demand for credit less frequently. Among companies in need of credit, but not applying for it for fear of rejection of a credit application, young, slowly developing entities rarely operating in the form of a corporation or having an external auditor, as well as an experienced management, prevails. A majority of them have their registered offices in big cities and in countries with lower inflation and higher GDP increase. Among enterprises in need of credit, 40% do not apply for it, since they believe the application will be rejected (33% from developed countries and 44% from developing countries). In the studied sample, almost a half of the companies applying for credit did not obtain it, and the percentage of rejections was higher in developed countries (54%) than in developing countries (48%).

Jimenéz et al. (2009) proved that the size of an enterprise and its age has a positive impact on the number of obtained credits. Enterprises in a better financial situation benefit from external financing to a greater extent. Jiménez and others (2010) studied the availability of bank credit in Spain on the grounds of credit margins. The hypothesis that credit supply is limited in a situation of lower GDP increase and higher short-term interest rates was verified. It had been expected that enterprises with a lower capital have a higher creditworthiness. It was stated that lower bank capital impacts credit supply in various ways. Furthermore, banks' capital and liquidity rates constituting a core measure of their balance sheets were also taken into consideration. The Logit model was estimated, in which a dependent variable was defined as a binary variant with value 1 if a credit application of an enterprise i was considered positively in a period t by a bank b and credit was granted. From among the characteristics of enterprises, their size measured with total assets value was analysed. It was stated that banks with lower capital or liquidity grant fewer credits in a period of the lowest GDP increase or higher short-term interest rates. It was proven that weaker companies that need credit and companies moderately operating in the market and related with banks with low capital or small liquidity have smaller chances to obtain credit under conditions of the tighter monetary policy.

Love and Peria (2013) assessed the meaning of selected variables for enterprises' access to bank credit with the use of a linear probability model. Data on enterprises from the World Bank Enterprise Surveys' base and the information concerning bank competition in various countries were used. A dependent variable was defined as a binary variable assuming value 1 if the enterprise uses a bank credit, a credit line or an overdraft facility. The model included competition in the banking market, characteristics of a country, and features of an enterprise, including its size measured with the number of full-time employees.

The study was aimed at verifying the so-called market power hypothesis. In compliance with this hypothesis, competition in the banking system reduces the costs of financing and increases the availability of credit. Whereas, in compliance with an alternative hypothesis (information hypothesis), in the case of information asymmetry and

agency issue banking competition might reduce access to financing by preventing banks from benefiting from investment in establishing relations with prospects.

On the grounds of the obtained results, it was proven that low competitiveness of banking sector (high level of Lerner's index) is accompanied by limited access of companies to financing. In countries with a high level of financial development and better access to information, limitations in financing are smaller when competition between banks is weak. Enterprises and production companies that are bigger and that operate for a longer period of time have easier access to banking financing. Also, exporters have better access to credits, and for enterprises with foreign owners, it is more difficult to obtain credit, which is probably related to the possibility to obtain funds from related companies and the lack of need to apply for funds on the local market. Furthermore, it was observed that the impact of banking competition and concentration depends on the economic environment. In some countries, the adverse impact of weak competition between banks is mitigated by, among other things, better availability of information on credit or the general level of financial development. In other countries, this impact can be weakened by a high share of government in the ownership of banks.

Brown et al. (2012) stated that European enterprises are similar with regard to size. In Eastern Europe, there is a bigger percentage of state or privatized enterprises, and companies are less frequently subjected to audit than in Western Europe. In Eastern Europe companies perceive the market as less competitive but more ineffective. They conduct export activity more frequently than enterprises in Western Europe. While studying the demand for bank credit and its supply, authors also included such features of countries as the level of protection for creditors and macroeconomic conditions, among others, inflation.

After estimating the probit model for the purposes of declaring the need for bank credit Brown and others (2012) concluded that in Eastern Europe small, state, and foreign enterprises at the disposal of internal funds less frequently need bank credit. Whereas, the need for credit is higher in older enterprises and those conducting the export activity. State and foreign companies less frequently report the need for credit. Whereas, exporters probably benefit from credit more frequently than non-exporters. The determinants of the need for bank credit are similar in the studied regions. Enterprises with alternative financing sources, that is, state and foreign entities, as well as entities with high internal funds, probably use bank credit less frequently. Also, small companies report the need for credit less frequently. However, the impact of the size of an enterprise is weaker than in Western Europe. Small Eastern European companies and state companies from Western Europe less frequently apply for credit, despite the fact that they need it more frequently. The reasons for not applying for credit most frequently comprise the requirement to have collateral, too high interest, as well as complex and troublesome credit procedures.

In Eastern Europe, the probability of not granting credit is higher than in the case of small enterprises, enterprises which have been conducting business for a short period of time, and private entities. Exporters have more chance that their credit application will be positively considered. The probability of not granting credit to state or foreign companies in Western Europe is lower than in Eastern Europe. Foreign ownership of a bank sector discourages potential borrowers. The obtained results confirm the hypothesis that foreign banks more willingly lend to big companies with reliable financial statements. Nevertheless, it has not been proven that foreign ownership of banks results in an increase in the percentage of rejected credit applications, or tightening conditions of granting credit. The higher percentage of enterprises discouraged from applying for credit in Eastern Europe might result from the presence of foreign banks, and not from differences in the macroeconomic environment or creditor protection.

Jimenéz and others (2012) proved that bank crises are characterized by a permanently limited use of credit and low economic growth. The deterioration of banks' balance sheets impacts the economy mainly via limitation of credit supply. It was researched whether the reason for limiting credit is attributable to supply (a balance sheet

channel) or demand (a credit channel). The net value of a bank and enterprises changes along with the business cycle, yet the net value and strength of a bank's balance sheet play a significant role a during financial crisis (Gentler & Kiyotaki, 2013). In the study, the data for the years 2002−2010 were used, including information on all credits granted by Spanish banks. The hypothesis was verified of whether variables describing the conditions of a bank's and an enterprises' balance sheet have a bigger impact on the positive consideration of a credit application in a period of crisis than in a period of a good economic situation. For this purpose, they estimated a linear probability model. They included a share of a bank's non-performing loans and the Herfindahl–Hirschman index of a bank's credit portfolio in compliance with industry sectors, as well as the length of relations between the bank and an enterprise. Furthermore, they estimated models extended with control variables referring to the macroeconomic environment: annual revision of real GDP, annual revision of interest of three-month credits in the interbank market, CPI inflation rate. The crisis resulted in governments and central banks providing commercial banks with funds of significant value (government protectionism, recapitalization, support for liquidity and various activities of a central bank as a creditor of the last instance) in order to help in re-establishing liquidity. Despite these activities, banks' problems caused a decrease in credit supply in a period of a crisis. On the grounds of the obtained results, it was stated that banks' balance sheets have a significant meaning not only during a crisis, and that they do not influence granting credit during a period of economic recovery. It was proven that enterprises with a higher relation of equity capital to assets in general, and with a better credit history, have bigger chances to obtain credit. The impact of an enterprise's profitability on financing with bank credit could not have been unilaterally stipulated. Additionally, on the grounds of market data, a logit model was estimated in which a dependent variable was defined as a binary variable indicating whether an enterprise obtained credit. A method of least squares was used to research the number of credits obtained by one enterprise. From among dependent variables, the features of enterprises and banks, as well as variables reflecting macroeconomic conditions were used. More profitable enterprises (with higher ROA), with bigger fixed assets or cash, take fewer credits and depend on internal financing more.

In compliance with the theory of the hierarchy of financing sources, enterprises prefer to benefit from internal rather than external financing, since high profits enable financing investments with obtained revenues. More profitable entities have higher creditworthiness and low profitability can limit access to bank credit. Therefore, it is justified to expect a positive impact of profitability on the use of bank credit. Nevertheless, enterprises can increase indebtedness in banks in order to cover cash shortages resulting from low profitability. Thus, one should expect an adverse dependency between profitability and bank credit. Empirical studies do not explicitly stipulate the character of dependency between profitability and financing with bank credit; empirical confirmation can be found for adverse as often as for positive dependency.

3. Modelling of credit availability for enterprises

Initially, the following research problems were formed:
- Does the SMEs sector have a limited access to loans and worse credit conditions than large enterprises?
- What are the main reasons for rejecting loan applications by banks?

In the quantitative study carried out with the use of binary models, the data coming from the survey of enterprises and the data from banking statistics were used.

First, the results of the panel study were presented. Its aim was to extract significant factors influencing the rejection of loan applications both on the side of the companies applying for the loan and the crediting banks.

Next, the results of two cross-sectional studies were presented (carried out in the year 2013): the first dealt with the reasons for the rejection of the loan application by the leading bank, the second dealt with the relationship of the companies with many banks. Cross-sectional studies were repeated in the period 2015-2016.

4. Panel study results

In the panel study, the probabilistic model of logit type was used. The study allowed identifying the factors significantly influencing the denial of credit, both on the side of an enterprise (through studying the variables determining the feature of enterprises) and the banks (through testing the importance of the variables characterizing the situation in the banking sector).

The probabilistic models are used when the dependent variable has a quantitative character. The models of logit type are especially used in such a case when the dependent variable is dichotomous, i.e. it takes two values: 1 or 0. In the following study for the dependent variable was taken a dichotomous variable specifying an incident involving a denial of credit for an i enterprise by a bank in a t period of time. For every i enterprise in the t period of time in the analyzed panel of data, the dependent variable *(RE)* takes the value of 1, when the enterprise experienced a denial of a credit in the period of 12 months with the probability p_i. However, the dependent variable takes the value of 0 in the case of an opposite event – the enterprise did not experience a denial of a credit in the period of 12 months with the probability $1 - p_i$. The analytical form of the estimated logit model is presented by equation 1:

$$\ln\left(\frac{p(RE_{it} = 1)}{1 - p(RE_{it} = 1)}\right) = (fvariables)_{it} * \gamma_1 + (bvariables)_{it} * \gamma_2 + \alpha_i + \varepsilon_{it}$$

(1)

where:
α_i – individual random effects,
ε_{it} – pure random indicator,
fvariables – variables characterizing the enterprise sector,
bvariables– variables characterizing the banking sector (Cf. Degryse et al. 2005).

The data used in the panel study are individual data of enterprises from a nationwide survey and the data from the banking statistics, including the years 2005–2013. Additionally, in order to update previous studies' results, data for 2015 – 2016 were used. In the estimated model for a dependent variable was taken a binary variable (RE), defining the relationship with banks:
>   RE = 1, when the enterprise experienced a denial of a credit for the period of 12 months with the probability p_i,
>   RE = 0 in an opposite case.

For dependent variables (fvariables) were taken:
- net profitability ratio estimated as a quotient of the net result of the i profit of the enterprise (x_1),
- the indicator characterizing the financial situation of the company estimated as the funds to total assets i of the enterprise (x_2),
- the estimated size of the company, as a logarithm of the size of assets i of the enterprise (x_3),
- the age of the enterprise estimated as a logarithm of age i of the enterprise (x_4),
- the size of the financial leverage estimated as a quotient of the sum of long-term loans to short-term ones of an enterprise to the assets in total assets i of the enterprises (x_5),
- binary variables defining the form of ownership i of the enterprise:

b1 = 1, when the enterprise constitutes public ownership,
b1 = 0 in an opposite case,
b2 = 1, when the enterprise constitutes Polish private ownership,
b1 = 0 in an opposite case,
b3 = 1, when the enterprise constitutes foreign ownership,
b1 = 0 in an opposite case,

The variables from the banking statistics (bvariables) as the measurements characterizing the situation in the banking sector:

- a return from the banking sector assets in the t period of time (x'_1)[*],
- the indicator of bad loans in the t period of time (x'_2)[†],
- the concentration of the banking sector assets in the t period of time (x'_3)[‡],
- the indicator of the interest margin of the banking sector in the t period of time (x'_4)[§]

Table 1. The estimation of the panel model parameters divided into SMEs and large enterprises

	SMEs				Large enterprises			
	Regression1		Regression 2		Regression 1		Regression 2	
	indicator	p>|z|	indicator	p>|z|	indicator	p>|z|	indicator	p>|z|
x_3	-0,050	0,718	-0,050	0,718	-0,366	0,0028	-0,366	0,0028
x_4	-0,015	0,859	-0,015	0,859	-0,041	0,827	-0,041	0,827
x_1	-0,014*	0,052	-0,014*	0,052	-0,018**	0,019	-0,018**	0,019
x_2	-0,081***	0,008	-0,081***	0,008	-0,127***	0,001	-0,128***	0,001
x'_1	**-0,040**	**0,292**	**-**	**-**	**0,072*****	**0,005**	**-**	**-**
x'_3	**-0,037**	**0,461**	**-**	**-**	**0,083*****	**0,003**	**-**	**-**
x'_4			**0,002****	**0,029**	**-**	**-**	**0,088*****	**0,004**
x'_2	-	-	-0,006	0,387	-	-	0,001***	0,002
x_5	-0,003	0,303	-0,003	0,303	-0,002	0,798	-0,002	0,798
b1	-21,12	0,844	-21,4	0,878	0,876***	0,013	0,876***	0,004
b3	-0,881	0,135	-0,881	0,174	-0,499	0,163	-0,499	0,163
Fixed	24,66	0,461	8,26	0,452	-88,35***	0,002	-16,7***	0,001
No. of obs.	468		468		1454		1454	
No. of groups	332		332		620		620	

Source: own construction
Note: *** a significant variable, with the level of significance 1%,
** a significant variable, with the level of significance 5%,
* a significant variable, with the level of significance 10%.

Table 2. The estimation of the panel model parameters divided into young and mature enterprises

	Young enterprises				Mature enterprises			
	Regression1		Regression 2		Regression 1		Regression 2	
	indicator	p>|z|	Indicator	p>|z|	indicator	p>|z|	indicator	p>|z|

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[*] Estimated as the net result for the banking sector assets in a given year.

[†] Estimated as the share of assets of non-performing loans.

[‡] x'_3 is defined as a sum of squared shares of certain commercial banks in the market in assets in a given year.

[§] The net interest margin ratio is estimated as a quotient of net interest profit and an average state of the banking sector assets in a given year.

x_3	-0,023	0,779	-0,023	0,779	-0,218**	0,009	-0,232	0,009**
x_4	-0,175	0,471	-0,175	0,471	-0,091	0,536	-0,007	0,873
x_1	-0,058***	0,003	-0,058**	0,003	-0,018	0,049	-0,003	0,004
x_2	-0,088***	0,002	-0,088**	0,002	-0,160	0,001	-0,144	0,001
x'_1	**0,029**	**0,377**	**-**	**-**	**0,047****	**0,050**	**-**	**-**
x'_3	**0,048**	**0,312**	**-**	**-**	**0,077****	**0,026**	**-**	**-**
x'_4	**-**	**-**	**0,007**	**0,253**	**-**	**-**	**0,048****	**0,035**
x'_2	**-**	**-**	**0,003****	**0,037**	**-**	**-**	**0,003*****	**0,002**
x_5	0,003	0,791	0,003	0,791	-0,04	0,314	-0,04	0,314
b1	-0,846	0,255	-0,846	0,255	0,911	0,036	0,911	0,036
b3	0,719**	0,042	-0,719**	0,042	-0,269	0,525	-0,269	0,525
Fixed	-39,39	0,229	-13,44	0,229	-48,36	0,019	-19,26**	0,028
No. of obs.	536		536		998		998	
No. of groups	312		312		492		492	

Source: own construction
Note: *** a significant variable, with the level of significance 1%,
** a significant variable, with the level of significance 5%,
* a significant variable, with the level of significance 10%.

The results of the estimated panel model of the logit type on the basis of equation 1 showed that in the case of big enterprises the probability of the denial of a credit decreases due the following factors specifying the situation of an enterprise applying for a loan (fvariables): together with the increase of the enterprise (x3), the improvement of profitability (x1) and the improvement of liquidity (x2). Moreover, the probability of the denial of a loan by a bank is greater for a national enterprise than a Polish private enterprise.

The results of the study referring to the situation in the banking sector (bvariables) showed that the probability of the denial of a loan by a bank increases together with the decrease of competition in the banking sector (measured both with a concentration indicator x'3 (in regression 1), and also the interest margin indicator x'4 (in regression 2)). Additionally, the RE variable was also influenced by the improvement of profitability in the banking sector measured with a profitability indicator x'1 (in regression 1) and the increase of assets of non-performing loans x'2 (in regression 2) .

The variables specifying the age of the enterprise (x4) and the level of debt (x5) turned out to be irrelevant to the denial of a loan for big enterprises.
The results of the estimated model showed that for the enterprises from the group of SMEs the probability of the denial of a loan decreases together with the improvement of their profitability and liquidity . Other estimated variables turned out to be irrelevant for the denial of a loan in this group. The results of the panel analysis for mature enterprises turned out to be similar to the results for big enterprises. Also, the results for young enterprises are similar to the results for enterprises from the group of SMEs.

In the group of mature enterprises, as in the group of big enterprises, the denial of a loan is mainly conditioned by the size of an enterprise (x3), poor profitability (x1) and poor financial situation (x2).

The results of the panel study for Polish enterprises are consistent with the literature adequate for this research area. Karceski et al. (2000) and Degryse et al. (2005) on the basis of their studies proved that apart from the size of the company, an important factor influencing the relationship with banks is profitability. The results of their

studies proved that small enterprises have less stable relationships with banks than the big ones as well as the decrease of a company's profitability increases the probability of the denial of a loan by a bank.

The results of the panel analysis also showed that an essential factor influencing the relationship between companies and banks (bank lending relationships) is the situation in the banking sector. The results revealed are consistent with the literature dealing with the phenomenon in the mature economies. Petersen and Rajan (1995) and Boot and Thakor (2000) proved that a better situation in the banking sector and smaller competence among banks influenced the increase of probability of the denial of a credit for an enterprise. An important factor influencing the denial of a credit is also the share of assets of non-performing loans (Cf. Degryse et al., 2005).

5. Cross-sectional study results

In order to state which factors determine the denial of a credit for an enterprise by a leading bank, a cross-sectional study was carried out making use of the survey. For the dependent variable, a binary variable (REJ) was taken, which has a value of 1, when the enterprise experienced a denial of a credit by a leading bank in the period of 12 months with the probability p_i. The dependent variable takes the value of 0, in the case of an opposite event: the enterprise did not experience a denial of a credit in the period of 12 months with the probability $1 - p_i$. The analytical form of the estimated logit model is presented by equation 2.

$$\ln\left(\frac{p(REJ_i = 1)}{1 - p(REJ_i = 1)}\right) = (fvariables)_i * \gamma_1 + \varepsilon_i$$

(2)

where:
ε_{it} – pure random indicator,
fvariables – variables characterizing the enterprise sector [**].

The results of the panel analysis showed that the probability of the denial of a credit for an enterprise by a leading bank within the period of 12 months decreases together with the increase of the enterprise (x_3), the improvement of profitability (x_1) and the improvement of the financial situation (x_2). The probability of the denial of a credit for a national enterprise by a leading bank is greater than for a Polish private enterprise [††].

The dependent variables of the financial leverage (x_5) and the age of the company (x_4) turned out to be irrelevant for the event involving the denial of a credit by a leading bank. The results of the estimation of the cross-sectional model are presented in table 3.

Table 3. The estimation of the cross-sectional logit model (the denial of loans)

	indicator	p>|z|
x_3	-0,188*	0,075
x_4	-0,119	0,583
x_1	-0,044**	0,034
x_2	-0,119**	0,028
x_5	-0,005	0,477
b1	1,29**	0,021

[**] In the model, for the dependent variables were taken such variables of enterprises as in the panel model.
[††] The positive value of the estimated factor b1.

b3	0,013	0,881
fixed	0,139	0,936
No. of obs.		497
R²		0,1252

Source: own construction
Note: *** a significant variable, with the level of significance 1%,
** a significant variable, with the level of significance 5%,
* a significant variable, with the level of significance 10%.

The results of the cross-sectional study involving the denial of a credit for an enterprise by a leading bank confirmed previous observations and conclusions. On the basis of the results of the panel study, it can be stated that the main reasons for a denial are still: the poor financial situation of a company (lack of liquidity) and low profitability.

In order to state the significance of the variables determining the crediting of an enterprise in a few banks, a cross-sectional study of the logit type was carried out. For the dependent variable a binary variable (WZ) was taken, which has the value of 1, when an event meaning success took place: an enterprise uses the services of more than one bank with the probability p_i, and it takes the value of 0 when an opposite event took place: an enterprise does not use the services of more than one bank with the probability $1 - p_i$.

The analytical form of the estimated logit model is presented by equation 3:

$$\ln\left(\frac{p(WZ_i = 1)}{1 - p(WZ_i = 1)}\right) = (fvariables)_i * \gamma_1 + \varepsilon_i$$

(3)

where:
ε_{it} – pure random indicator,
fvariables – variables characterizing the enterprise sector[‡‡].

The results of the analysis showed that the probability of the event involving the fact that an enterprise uses the services of more than one bank increases together with the increase of the enterprise (x_3) and the increase of the enterprise's debt (x_5). Also, the deterioration of the company's financial situation significantly influences the use of the services of many banks (the negative value of the factor with the variable x_2).

The probability that a foreign enterprise uses the services of more than one bank is lower in case of a Polish private enterprise, as evidenced by the negative value of the estimated factor with the variable (b3). The result may show that foreign enterprises more frequently build relationships with one bank than Polish private enterprises.

[‡‡] In the model, for the dependent variables were taken such variables of enterprises as in the study of the denial of a credit by a leading bank.

Table 4. The estimation of the cross-sectional logit model (multiple banking)

	indicator	p>|z|
x_3	0,409***	0,001
x_4	0,115	0,315
x_1	-0,001	0,191
x_2	-0,038***	0,013
x_5	0,017***	0,002
b1	-0,433	0,169
b3	-1,227***	0,001
fixed	-4,14***	0,005
No. of obs.		478
R^2		0,1366

Source: own construction
Note: *** a significant variable, with the level of significance 1%,
** a significant variable, with the level of significance 5%,
* a significant variable, with the level of significance 10%.

The variables defining an enterprise's profitability (x_1) and the age of an enterprise (x_4) turned out to be irrelevant for the use of the services of more than one bank. The results of the estimation of the cross-sectional model are presented in table 4.

The results of the cross-sectional study confirm the observations and conclusions previously presented regarding the factors influencing the use of a bigger number of banks by a company. In this case, the size of the entity remains one of the more important strengths of the company which took loans in more than one bank.

Conclusions and discussions

The results of the research on the influence of credit availability for small and medium-sized companies are in line with those obtained in previous studies. The reapplying the cross-sectional analysis in 2015 has only confirmed the initial results, reinforcing the importance of identified factors of influence.

The first conclusion is that in Poland, similarly to other European countries, it is more difficult for small and medium-sized or companies to obtain a credit than the large ones. At the same time, it ought to be stressed that in recent years in both groups of enterprises the number of rejected loan applications had diminished. Most likely, this change is due to the increased willingness of banks to lend money on the background of general improvement of macroeconomic parameters, but also the change for the better of the economic and financial performance of the companies.

The main reasons for denying a credit for the enterprises from both the groups remains the lack of proper liquidity and the limited rate of profitability. The result was confirmed by the quantitative studies which were carried out. From the panel and cross-sectional studies, it can be concluded that together with the deterioration of a company's financial situation and the decrease of profitability, the possibility of a credit being denied by both the leading bank as well as any other has increased.

The banks' attitude towards the companies having financial difficulties during the period of their cooperation has served to improve the company's situation; at the same time, banks have protected their business. This is why it

can be said that banking institutions have played a certain role in supporting and strengthening the economic and financial performances of companies, together with financial discipline and financial communication. As far as large companies are concerned, the banks have decided to continue crediting provided that the enterprises have supply additional collateral or information about the enterprise in order to better monitor its situation. Relative to small and medium-sized enterprises, banks conditioned further crediting upon providing additional information about the company in order to improve the process of monitoring or they decided to increase the previous amount of credit in order to prevent financial problems.

For bank lending relationship the situation in the banking sector proves to be very important. The results of the panel analysis shwoed that, and according to the literature concerning this research area, a better situation in the banking sector and smaller competition between banks (involving greater concentration of assets and a greater interest margin indicator) influenced the increase of the probability that the crediting of a company would be denied. As well as regarding this factor, the results obtained from this study are in line with the results previously obtained.

Finally, the results of the analysis of multiple relationships proved that bigger companies cooperate with a greater number of banks more frequently than small and medium-sized enterprises. The hypothesis was also confirmed by the results of the logit study, which showed that the probability of an enterprise using the services of more than one bank increases together with the growth of the enterprise and its debt, and are in line with the results of the previous research.

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