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Evaluation of the credit risk importance during the crisis: The case study of SMEs according to a time of operating on the market

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Abstract

Research background: One of the possibilities for entrepreneur who is trying to start-up a successful business or grow a business, is to ensure the business from an economic perspective. Entrepreneurs can use a various alternative forms of financing. Despite the wide range of programs, grants and subsidies, the most commonly used form of financing is still a loan which is provided by the bank institutions. The relationship between entrepreneurs and banking institutions is mainly connected in the area of lending and guarantees for funding. Therefore the perception and the evaluation of the credit risk by entrepreneurs contributes to a better understanding of needs of both sides.

Purpose of the article: A comparison of the evaluation of factors which affect the perception and management of the credit risk by entrepreneurs. Not only socio-demographic factors (gender, level of education or age of entrepreneurs) but also the nature of corporate activities in the business environment for small and medium-sized enterprises in the Czech Republic.

Methodology/methods: During data collection, method of random firm's selection using specialized database of companies "Albertina" was used. Afterwards, the method of interview with responsible managers of the company and method of online questionnaire survey were used. Data from 1141 enterprises in 2015 from all 14 regions of the Czech Republic were collected. In the first step of our research, the descriptive statistics (pivot tables, pie charts) were conducted. Afterwards, the two-sample t-test to compare a mean values of the perceptions of credit risk factors and verify the conditions for its completion (Histogram, Q-Q plot, Goodness of Fit Test, Pearson coefficient of contingency, t- test).

Findings & Value added: With an increase of the time of operating in the business environment, the amount of women as a responsible people for business management is decreasing. Entrepreneurs are united in the opinion that the importance of credit risk during the crisis increases. There are statistically significant differences between entrepreneurs by a gender and age in enterprises with a time of operating on the market between 5-10 years that the importance of credit risk during the crisis increases.

Introduction

The business environment of small and medium-sized enterprises (SMEs) is a current area of theoretical research and practical applications in the European Union (Belás and Sopková, 2016a; Kozubíková, Belás, Ključnikov, & Virglerová, 2015; Dúbravská, Mura, Kotulič, & Novotný, 2015 ; Belás, Demjan, Habánik, Hudáková, M. & Sipko, 2015). Micro, small and medium-sized enterprises can be included among the basic factors which determine the economic growth in each country and a positively impact the social and economic system of the country (Henderson & Weiler, 2009).

The relationship between bank institutions and enterprises operating in business environment affects many risks (Belás & Sopková, 2016b; Mentel, Szetela & Tvaronavičienė, 2016; Betakova, Lorko & Dvorsky). The credit risk is characterized by the possibility that the borrower will not be able to fulfil the obligations arising from the loan relationship to the creditor on time or even at all. It represents the risk of

possible failure of the contractor, which leads to non-compliance with the content of the contract and to financial losses of the counterparty in the same time. It can be represented in a form of a direct credit risk, risk of equivalents or settlement risk.

The importance and intensity of credit risk increases as for banks as well as for business particularly during a crisis. During the crisis period, it is found that innovative SMEs are credit rationed from all other sources of external finance and that is suggesting an absolute credit crisis for the innovative firms (Lee, Sameen & Cowling, 2015).

From the bank's perspective, causes that influence the emergence of credit risk are divided on the reasons related to own decisions of banks: credit terms toward entrepreneurs, client's creditworthiness, default measurement, duration of credit risks and etc. (Belás, Ključnikov, Vojtovič, Sobeková-Májková, 2015). Other types of causes are those which are developed by the economic and political situation in the country.

Berger & Udell (2002) states that it models the inner workings of relationship lending, the implications for bank organisational structure, and the effects of shocks to the economic environment on the availability of relationship credit to small businesses. Relationship lending depends on the accumulation over time by the loan officer of 'soft' information.

According to Neuberger & Räthke (2009), micro-enterprises are especially predisposed to incorrect selection and moral hazard, and therefore their access to debt financing is limited. Small firms are characterized by higher Business Administration and Management information asymmetry and credit risk.

A political support for SMEs in the form of subsidies, government programs and the possibilities of co-financing with EU funds (Vojtovič, 2016) are one of the key activities to increase an economic activity, a level of solvency and an export growth of the company. The state plays a very important role within its business environment (Ključnikov & Sobeková Majková, 2016). Through its legislative environment, the state can be helpful to entrepreneurs in their activities or it can burden them (Virglerová, Dobeš, & Vojtovič, 2016).

Research Methodology

The main aim of the article is the comparison of credit risk assessment by entrepreneurs according to selected socio-demographic factors and their variations. The comparison between the relationship perception between persons responsible for the company management according to a gender, age and achieved education and the arguments regarding to granted loans by banking institutions, will contribute to the knowledge of a different attitude with a respect to the examined factors.

To meet the objectives of this article, following statistical hypotheses have been evaluated:

H1A: With an increase of the time of operating on the market, the number of women which are responsible to company's managements decreases.
H1B: Between men and women representing the enterprise with a competence between 1-5 years in the business environment, there is not a statistically significant difference between opinions on the argument that the importance of credit risk during the crisis tends to increase.
H2A: Among entrepreneurs with age under 45 and above 45 years which represents a company with a competence between 5-10 years, there is not a statistically significant difference in attitude on the argument that the importance of credit risk during the crisis tends to increase.
H2B: Between entrepreneurs with the achieved university education and higher education which represents a company with a competence between 5-10 years, there is a statistically significant difference in attitude on the argument that the importance of credit risk during the crisis tends to increase.

The scope of the statistical data represent 1650 enterprises. We managed to collect data from 1141 (70%) companies successfully. During data collection, methods of random selection in "Albertina" database were used. All enterprises are operated in the Czech Republic. Enterprises in the first phase were contacted via e-mail contact that has been mentioned in above mentioned database, or searched on the web servers. In the case where they did not respond to our request, they were contacted by phone.

To evaluate the statistical hypotheses about credit risk arguments, entrepreneurs could select from following options on pre-formulated arguments: strongly agree (score = 2), agree (score = 1), I don't have an attitude (score = 0), disagree (score = - 1), strongly disagree (score = -2). The importance of assigned qualitative assessments of entrepreneurs and their quantitative statement is used not only for the need of

statistical evaluation of performed tests but also for the possibility of weight settings toward individual qualitative assessments.

For draw conclusions and answers to our formulated statistical hypotheses in the area of credit risk evaluation, statistical tools of descriptive statistics in the first step were used, as follows: a pie chart, pivot tables - sorting businesses by two or more factors, characteristics and variability - absolute and relative frequency, mean, variance and scores. The score is calculated by the sum of all ratings. To compare the enterprises by selected socio-demographic factors, two-sample test (unpaired) with the same variances is used. Hypotheses where differences between mean values of the sample is zero (null hypothesis) versus non-zero difference between the mean values (alternative hypothesis) were tested. All tests were performed at the significance level of 0,05. Critical values for a confirmation or rejection of the null hypothesis with the usage of the numbers of degrees of freedom are represented as the subject of evaluation of the data in tables (t-Statistics and p-value (P (T<=t))). Critical value of test are as follows: gender – t = 1,969 (0.05, 243 degrees of freedom), achieved education – t = 1,973 (0.05, 703 degrees of freedom), age – t = 1,969 (0.05, 243 degrees of freedom). To verify the assumption of normality, the graphical analysis of data (histogram, Q-Q graph) and tests of good compliance (Goodness-of-fit) were used. To verify the hypothesis of equality of variances between samples, F-test was used. The conditions which were imposed on relevant testing by a two-sample t-test with a same variances in individual selected groups of entrepreneurs were met. Calculations have been conducted through a sophisticated statistical software SPSS Statistics.

The structure of entrepreneurs which filled out our questionnaire survey are persons responsible for business management in their companies: men - 75% women - 25%; age: up to 35 years - 25%, 35-45 years - 28%, over 45 - 47%; according to motivation for starting a business: money - 28.9%, seen as a mission - 22%, other motivation - 49.1%. Entrepreneurs who represent enterprises which have the following characteristics: by size: the number of employees up to 10 - 64.9%, between 10 to 50 employees - 26.8%, between 50 to 250 employees - 8.3%; according to the time of operating of the enterprise in the business environment: 1-5 years - 21.5%, 5-10 years - 16.7%, and over 10 years- 61.8%. According to national-economic focus of the company on the market: 33% trading companies, 23% of manufacturing companies, 14% construction companies, 6% transport companies, 3% agriculture companies and other companies which did not mentioned industry specification.

Literature Review

The credit risk in the company may be influenced by external as well as internal factors. The next chapter specifies the authors who have dealt within their studies with factors influencing credit risk:

Yildirim, Akci, & Eksi (2013) have examined the firm-specific characteristics that affect the access to credit from banks for SMEs. They find that SMEs with larger asset base can have more access to formal credit rather than SMEs with small asset base. Because, larger asset base can signal the bank that, the SME will be able to pay the extended loans by liquidating the assets. Higher asset turnover and international trade activities are positively associated with higher possibilities for SMEs to get credit from the banks. However, they do not find any significant relationship between firm age and availability of credit.

More than 10 years old was able to use 1.3% of trade credit than those firms were less than 2 years old. Hence, the age of the firm was also important in getting the trade credit during the study period. However, when then firms were getting larger they have increased the usage of trade credit and suppliers were able to trust them to provide finance due to a gradual increment of the asset base. The result also found that Spain and Ireland significantly reduced the bank financing to SMEs during the crisis and it encouraged the firms to use the alternative sources of funds. (Casay & Toole, 2014).

The survey showed that young SMEs were twice as likely credit constrained than established firms and more importantly 17.1% for young firms did not receive any form of finance from the bank. On top of that, 13.5% young SMEs reported the problem of accessing bank finance in compared to 2.5% of the established SMEs. Hence, it is possible to say that business age has a significant impact on bank financing in the Scottish market (North, Baldock & Ekanem, 2010).

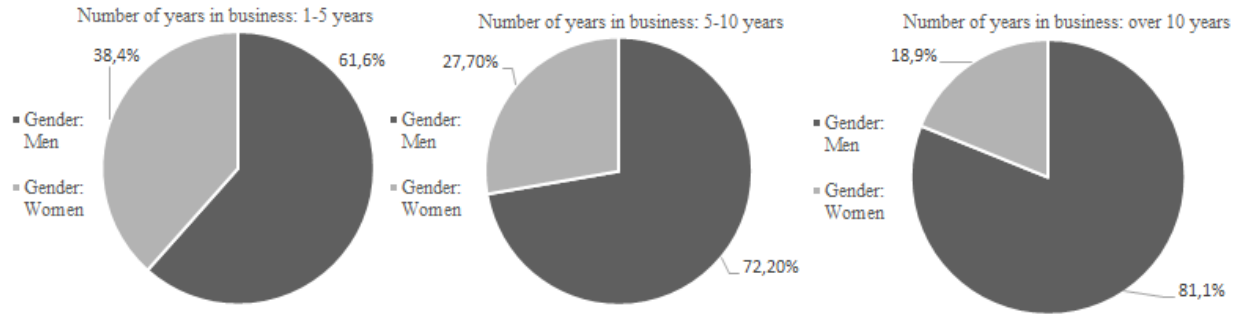
Carter, Shaw, Lam & Wilson (2007) examined the effect of gender in the bank lending process to the small business when the loan applicant is a female or male. They have found that, when considering an application, applicant education plays an important role, lower level of education for female applicant mostly rejected. However, when considering for the higher level of education, the gender criteria for loan processing

diminishes. It is found that, when the loan applicant is male, the loan officer is most likely to know about the business plan, financial history and general characteristics of the applicant.

Results and Discussion

Using a pie chart, relative frequency of persons who are responsible for business management according to their gender, and the length of operating on the market of enterprises have been graphically illustrated (figure 1).

Figure 1. The structure of persons who are responsible for business management according to their gender, and the length of operating on the market of enterprises



Source: own calculations

Above mentioned graphic analysis in absolute and relative frequency of businesses by the gender and the time of operating on the market of enterprises shows that the amount of women responsible for business management decreases with an increasing competence in the business environment. *Hypothesis H1A is confirmed.*

Results of credit risk evaluation and its growth during a crisis among entrepreneurs who are operating in companies between 1 to 5 years are the subjects of Table 1.

Table 1. Credit risk importance during a crisis has an increasing tendency among enterprises traded between 1-5 years on the market.

Characteristics	Gender		Education		Age	
	Men	**Women**	**Other education**	**University education**	**-45**	**45+**
Number of entrepreneurs	151	94	143	102	222	23
Score	82	39	76	45	109	12
Mean	0.543	0.415	0.531	0.441	0.491	0.522
t – Statistics	**1.729**		1.581		0.351	
P(T<=t)	**0.042**		0.057		0.363	

Notes: -45- age of entrepreneurs till 45 years, 45+ - age of entrepreneurs over 45 years. Source: own calculations

Entrepreneurs agree with an argument that the credit risk during a crisis had higher importance in enterprises with a time of operating on the market between 1-5 years. The average evaluation of entrepreneurs without distinction of a gender, achieved education or age of entrepreneurs is in the interval < 0.415; 0.543 >. Men are mostly agreed with this statement (mean – 0.543). Between men and women is a statistically significant difference in the attitude toward this given statement (see Table 1 P (T <= t) = 0.042). Between statistical variations of character such as gender and age of entrepreneurs, there are not significantly differences in the attitude to the given statement (see Table 1: education P (T <= t) = 0.057, age (T <= t) = 0.363). *Hypothesis H1B of above mentioned statement is rejected.*

Results of credit risk evaluation and its growth during a crisis among entrepreneurs who are operating in the companies between 1-5 years are the subject of Table 2.

Table 2. Credit risk importance during a crisis has an increasing tendency among companies which are operated on the market between 1-5 years.

Characteristics	Age		Education		Age	
	Men	**Women**	**Other education**	**University education**	**-45**	**45+**
Number of entrepreneurs	138	53	131	60	137	54
Score	78	37	79	36	78	37
Mean	0.565	0.698	0.603	0.600	0.569	0.685
t – Statistics	**2.133**		0.213		**1.924**	
P(T<=t)	**0.017**		0.831		**0.028**	

Notes: -45- age of entrepreneurs till 45 years, 45+ - age of entrepreneurs over 45 years. Source: own calculations

Entrepreneurs agrees with a statements that a credit risk during a crisis has a higher importance in the companies which operates between 1-5 years on the market. The average evaluation by entrepreneurs without a distinction of a gender, level of education and age of entrepreneurs is in the range of <0.565; 0698>. The highest achieved education of entrepreneurs has not statistically significant effect on assessment of entrepreneurs who are operated in business environment between 1-5 years in the Czech Republic (see Table 2: P (T <= t) ≥ 0.831). *Hypothesis H2A is confirmed*. Between statistical variations of character such as gender and age of entrepreneurs, there are statistically significant differences within attitudes to the given statement. (see Table 2 .: gender P (T <= t) = 0.017, age (T <= t) = 0.028). *Hypothesis H2B is confirmed.*

Conclusions

Different positions of persons who are competent for credit risk management and leadership by the time of operating on the markets and by their socio-demographic factors (gender, age, achieved education) has been examined in this article.

Our research confirmed that the longer time of operating on the market, the less women in the position of competent persons for business management are occurred. With an increasing time of operating on the markets by enterprises in the Czech Republic, the growing confidence between entrepreneurs that credit risk has higher importance during a crisis has been found out. It can be confirmed that there are significant difference in the assessment of this statement between types of enterprises according to time of operating on the market. Younger entrepreneurs are convinced that a crisis does not have so significant impact on the importance of credit risk in the company; older entrepreneurs are convinced that the importance of credit risk during a crisis increases.

Factors such as gender, age or the highest achieved education does not have an influence on the assessment of the statement that the importance of credit risk increases during a crisis in companies which operates on the market for more than 10 years. Among selected factors which influence the ability to pay company's liabilities at the given time and amount toward a bank, we advise: depth knowledge of credit conditions by entrepreneurs, transparency of bank's conditions toward entrepreneurs and credit history of the companies.

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