




# “Important factors which predict entrepreneur’s perception in business risk”

## AUTHORS

Gentjan Çera  <https://orcid.org/0000-0002-9324-181X>  
Jaroslav Belás  <https://orcid.org/0000-0002-5900-997X>  
Zdeněk Strnad  <https://orcid.org/0000-0002-4371-4252>

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Gentjan Çera, Ph.D. student,  
Department of Business  
Administration, Tomas Bata  
University, Czech Republic.

Jaroslav Belás, Professor, Department  
of Business Administration, Tomas  
Bata University, Czech Republic.

Zdeněk Strnad, Senior Assistant,  
Department of Law, Faculty of  
Economics, University of South  
Bohemia in České Budějovice, Czech  
Republic.



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Gentjan Çera (Czech Republic), Jaroslav Belás (Czech Republic),  
Zdeněk Strnad (Czech Republic)

# IMPORTANT FACTORS WHICH PREDICT ENTREPRENEUR'S PERCEPTION IN BUSINESS RISK

## Abstract

This paper seeks to examine the role of factors originated from outside (economic, political, competitive environment and relationships) and within (entrepreneur's attitude) the organization on the business risk perceived by entrepreneurs. To test the hypothetical relationships, an ordinal regression with two link functions was applied on an original dataset of 641 small and medium-sized enterprises (SMEs) operating in Slovakia and Czech Republic. The analysis revealed that not only economic factors can predict business risk, but along with them are political and competitive environments, relationship with supply chain actors and entrepreneur's attitude. Consistent with prior research, it is found that an unstable economic environment leads the business to expose themselves to business risk. Also, a friendly regulation framework and quality education contribute significantly to reducing the level of risk. The research triggers the interest of policymakers who design policies aimed at improving the business environment by reducing the level of risk that firms face in doing business. Also, this paper is useful for managerial perspective, since entrepreneur attitude was found to be a predictor of business risk.

## Keywords

business risk, economic, political and competitive environments, business relationship, Czech Republic, Slovakia, ordinal regression

## JEL Classification

L26, O38, E02

## INTRODUCTION

The institutional environment within which firms operate determines the state of activity in the economy (Douhan & Henrekson, 2010). This implies that firm behavior is shaped by the changes in the institutional environment (Chowdhury, Audretsch, & Belitski, 2018; Stenholm, Acs, & Wuebker, 2013). Facing changes in the institutional environment, firms are exposed to a wide range of risks (García-Ramos, Gonzalez-Alvarez, & Nieto, 2017). Therefore, finding factors that predict the level of risks that firms face in doing business is vital, because exposing to risks may lead to a business termination. Managers try to adopt or apply different risk mitigation strategies in a way to avoid the failure of their business (Kim & Vonortas, 2014). On the other hand, the linkage between business risks and business failure should be a permanent concern for policymakers who tend to enhance entrepreneurship (Fereidouni & Masron, 2012). The latter can be achieved by designing policies aimed at reducing the level of business risks originated from the institutional environment (Welter & Smallbone, 2011). Thus, having a better picture over the factors that determine the level of business risk may be useful for reducing business risk. To fill this gap in the literature, the current study aims to examine the influence of institutional and business environments on business risk in the context of the Czech Republic and Slovakia, which are putting efforts to narrow the gap with advanced economies.

In the course of the two last decades, institutional theory (North, 1990) is used by scholars in studying the role of the institutional environment on entrepreneurship. The literature on entrepreneurship stresses the role of the institutional environment on business activity. Moreover, the institutional context can as well influence both the creation and termination of businesses, therefore, it is of interest to explore how the institutional environment affects business risk.

Shepherd, Wennberg, Suddaby, and Wiklund (2019) pointed out that there are research opportunities to examine further the effect of the institutional environment on the entrepreneurial endeavor. Despite the fact that research into the context and management of SMEs is consolidated and has matured with several sub-genres of focus (Herbane, 2010), studies which focus on business risk and its determinants are rare. Stimulated by Jenkins and McKelvie (2016) work which claims that business failure should not be considered as a single all-encompassing phenomenon, but rather one which includes a broader range of situations at different levels of analysis, we assumed that business termination is preceded by business risk. Thus, studying business risk and its determinants may complete a part of the entrepreneurship puzzle.

From pragmatist perspective, an enhancement of the SME sector is seen as vital for competitiveness and economic development at local, regional and national levels (Gao, Sung, & Zhang, 2011). In both countries, the Czech Republic and Slovakia, SMEs contribute significantly to 'non-financial business economy'. Compared to the European Union (EU) average, SMEs contribution to value added in both countries is slightly lower, while their contribution to employment is higher. According to the projections of European Commission (2018), during the years 2017–2019, SME value added is predicted to increase by 17.2% and SME employment by 4.4% in Slovakia, whereas in the Czech Republic these figures are expected to be 15.7% and 0.4%.

As Kelly and Ashwin (2013) have defined, the business environment consists of internal and external environments. The external business environment can be divided into macro and micro environmental factors, which affect the organization, but are beyond its control. These two environments do not act separately, but they affect each other. Taking together, it can be said that these interactions of business environments may expose the business to different risks. Therefore, in the current study, it is proposed that business risk is driven by economic, political and competitive environments along with business relationships with suppliers, competitors, employees and consumers, and entrepreneur's attitude.

The main contribution of this paper is to fill the gap found in the literature by providing new empirical evidence on the relations between business risk and business environment indicators, both from outside (economic, political, legislative, competitive environments, business relationships) and within the organization (entrepreneur's attitude). Furthermore, in the methodological aspect, the application of two link functions in an ordinal regression aims at giving more robust results.

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## 1. LITERATURE REVIEW

In recent decades, scholars have studied the factors which drive business failure mainly from two perspectives: deterministic and voluntaristic (Amankwah-Amoah & Wang, 2019). Academics who used the deterministic perspective have accumulated facts and evidence, which claim that failure of business might be determined by external organizational factors over which firm managers do not have control. These external organizational factors consist of technological change, deregula-

tion and competition. On the other hand, the voluntaristic perspective advocates that business failure is driven by factors in firm level such as poor leadership and not right management. Since these factors from both abovementioned perspectives may cause the failure of a business, it is reasonable to consider them as potential factors that may expose the business to different risks. In the next subsection, it is justify the inclusion of economic, political, competitive environments, business relationships (from suppliers to consumers), and entrepreneur's attitude.

## 1.1. Economic environment

Boden and Nucci (2000) claimed that issues concerning business creation and survival or failure must be analyzed within the context of prevailing macroeconomic conditions. According to Boudreaux, Nikolaev, and Klein (2019), economic institutions moderate the socio-cognitive traits on opportunity entrepreneurship. If economic institutions contribute to the explanation of opportunity entrepreneurship, then it can be assumed that they may predict business risk. Thus, doing business in an unstable economic environment may lead the business to expose themselves to business risk (Hudakova, Masar, Luskova, & Patak, 2018; Martinez, Zouaghi, Marco, & Robinson, 2019). Scholars have shown that macroeconomic environment affects business performance leading to the failure of businesses (Karabag, 2019). Consequently, an instability originated from the macroeconomic environment increases the possibilities of a business to failure (Martinez et al., 2019). The growth of the Gross Domestic Product in a country is found to be a predictor of business failure (Eling & Jia, 2018). Hence, it can be said that the unstable macro environment leads to higher risks that business should face.

In the current study, access to finance is considered as a special dimension of the economic environment that influences business risk (Sauka & Welter, 2014). In the literature, it widely recognizes the linkages between access to finance (seen as financial difficulties) and failure of a business (Fang He, Sirén, Singh, Solomon, & von Krogh, 2018). In this line, it is found that ability to finance the venture is among the important source of the fear of failure (Cacciotti, Hayton, Mitchell, & Giazitzoglu, 2016; Ključnikov, Belas, Kozubikova, & Pasekova, 2016). A logical extension in this line is that SMEs are seen as being dependent on external financial sources, and, as a result, a bank loan is the most frequent source available for financing business activity (Ardic, Mylenko, & Saltane, 2012; Falkner & Hiebl, 2015). Based on these considerations, businesses are not facing high risk levels when they can get easy access to finance.

Population consumption, changes in income and the structure of consumer expenditure can be a sub-dimension of economic environment. Auto

and Fu (2015) found a positive association between population growth and firm entry. Moreover, having good relationship with the customers is considered by entrepreneurs as the most powerful component affecting their operations (Kadocsa & Francsovcics, 2011). In addition, a study conducted in Poland concluded that as the population density increases, the firms' distress increases (Iwanicz-Drozdowska, Jackowicz, & Kozłowski, 2018). The latter is consistent with Thun et al.'s (2011) research, showing that, to meet their customers' needs, firms should offer a wide variety of goods and services. Nevertheless, this leads to higher dependence of firms on their supply chains because of high level of complexity (Falkner & Hiebl, 2015). Considering the above evidence and discussion, we may hypothesize an association between consumers and business risk.

## 1.2. Political environment

Beside economic environment, factors originated from the political environments such as legislation environment, regulation framework and educational system are seen critical for business risk. The domestic political condition as seen as a factor, which affects the business environment by shaping business behavior (Dai & Si, 2018; Grosanu & Bota-Avram, 2015; Kadocsa & Francsovcics, 2011). According to Karabag (2019), political risk consists of several risks that influence business performance, which might cause the failure of the business. Gao et al. (2011), by applying grounded theory, analyzed risk management capability building in SMEs, provided a useful perspective concerning the sub-genres of risk management, among them were regulation and procedures, education, networking and coordination.

Literature in the field of entrepreneurship suggests that an improvement in the quality of the legal environment lead to an improvement in the efficiency of the economy (Aristovnik & Obadic, 2015). This can be considered as an aftermath of entrepreneurship contribution. Facing with legal problems is an entrepreneur who involuntarily terminates (Fang He et al., 2018) and they affect business activity (Civelek, Ključnikov, Dobrovič, & Hudáková, 2016). The key business stakeholders can influence the legislative procedure either very limited (legitimate way) or effectively, but un-

der the risk of losing their reputation. The cause is generally the deficit of legal engagement of business in related legislation, the dynamics and unpredictability of changes in legislation and the absolute absence of legitimate expectations on the part of the business.

Another strand of the literature sheds light on the relationship between the regulation framework and entrepreneurship in general. After a critical review on regulation, Mallett, Wapshott, and Vorley (2018, p. 19) claimed “the effects of regulation are not always direct, predictable or constraining. Instead, studies show how regulations vary in terms of relevance and significance for businesses, can offer competitive opportunities or protections and, ultimately, carry variable consequences”. Similarly, prior research showed that the greater the regulatory complexity, the higher the business failure rate (García-Ramos et al., 2017). And this problem does not concern only the international or national level, but also the regional or local level.

Beside legislation environment and regulatory framework, the educational system may be seen as a dimension of political environment. Gao et al. (2011) identified education as a sub-genre of risk management. Quality education gained by society may equip even the firm’s employees with skills and ability to deal with business risk. Higher level of education and management education is associated with business failure rate (Sauka & Welter, 2014). There is also evidence of the long-term effect on cognitive learning through simulations in the field of law (Krasnicka, Vojtko, Strnad, & Hruby, 2017). Based on the above discussion, we may assume that the political environment (represented by legislation environment, regulation framework and educational system) may expose businesses to extra risks while they perform their activity.

### 1.3. Competitive environment

Operating in an intensively competitive environment might expose the business to risks that may cause their termination. According to a study conducted by Delerue and Perez (2009), SME managers have a tendency to involve into a cooperative relationship when they perceive “a high level of relational risk or when they hope to gain a

future competitive advantage over the competitor” (Falkner & Hiebl, 2015, p. 135). Another study (Cai & Yang, 2014) analyzed the relationship between competition and business environment indicators. The latter paper found that business environments characterized by intensive competition usually prompt customers to demand quality goods and services at low prices, and firms need effective operations processes to meet this increased demand. Facing with this type of situation is translated into additional risks for businesses. Hence, there is an association between competitive environment and business risk.

### 1.4. Business relationships (network)

Having problems or performing not good relationships with suppliers, competitors, employees and consumers can be a real problem for entrepreneurs to do business. Fang He et al. (2018) argued that partnership disputes lead to business failure. So, for SMEs it can be vital to have a network with other firms and interested parties (Gabbianelli, 2018). Moreover, cooperation with vertical partners reduces the effect of business failure in manufacturing sectors (Martinez et al., 2019). As mentioned earlier, according to Gao et al. (2011), networking and coordinating was identified as a sub-category of relationship that influences risk management in SMEs. Kim and Vonortas (2014) also support that networking is a risk mitigation strategy in SMEs.

Another way to manage the risk is to have close relationships with suppliers and customers. Gilmore et al. (2004) stated that continuing relations with actual customers increases the chance of having future business transactions. The latter studies show also that these relationships are created by using SME networks. Also, having good relationships with competitors can contribute to reducing risky transactions. Concerning their relationship with employees, SMEs rarely offer employee programs aimed at enhancing their know-how, skills and abilities (Sukumar, Edgar, & Grant, 2011). Almost all type of businesses may lose workers having vital know-how and being well-skilled (Rauch & Rijdsdijk, 2013). Therefore, Gilmore et al. (2004) argued that losing both managers and staffs can cause extra risk for SMEs, because usually only a few individuals in the firm have the appropriate knowledge to deal with something.

## 1.5. Entrepreneur's attitude

From the voluntaristic perspective (Amankwah-Amoah & Wang, 2019), poor leadership and mismanagement may cause business failure. Based on this school of thought, it can be concluded that the entrepreneur's attitude is important in managing the business. Therefore, the entrepreneur's attitude may expose the business to different business risk. A logical extension in this line is that personal ability is among the most important source of the fear of failure (Cacciotti et al., 2016). However, according to Kibler, Mandl, Kautonen, and Berger (2017), entrepreneurs tend to distance themselves from the failure by claiming that external forces, which are not under their control, cause it.

## 2. AIM, METHODOLOGY AND DATA

### 2.1. Aim and unit of analysis

The aim of this paper is to examine the effect of factors originated from outside and within the organization on the business risk perceived by entrepreneurs. The analyses are conducted on a firm-level data collection through a survey in 2018. Thus, the unit of the analysis in the current research are firms operating in the Czech Republic and Slovakia. 641 firms were randomly selected from two public databases ("Albertina" in the Czech Republic and "Cribis" in Slovakia). As with Jolley, Lancaster, and Gao (2015), the respondent to our survey was either the owner or a representative person from firm's top management.

They were considered to be the appropriate individuals to represent the firm's viewpoints. Doing so, similar to Cepel, Stasiukynas, Kotaskova, and Dvorsky (2018), we have captured the entrepreneur's perception.

### 2.2. Dependent variable

Similar to Acar and Göç (2011), entrepreneur's perception in business risk is the dependent variable in the current research. As Mallett et al. (2018, p. 16) discussed in their paper, "studies that survey owner-manager perceptions will capture some insights into identification-interpretation processes". It was measured as a single item, which was formulated: "The business environment of my country bears the adequate risk and enables to start a business" (Cepel et al., 2018, p. 29). Respondents were asked to choose one of the five listed options: 1 – 'totally disagree' to 5 – 'totally agree'. For our further analysis, we transform this variable into a new one with three categories: 1 – 'totally disagree' or 'disagree', 2 – 'neither disagree, nor agree', 3 – 'agree' or 'totally agree'.

In Table 1, some descriptive statistics of our dependent variable are summarized. As can be seen, its mean did not differ a lot between two countries (2.28 and 2.21 for Czech and Slovakian firms, respectively). Acar and Göç (2011) argued that entrepreneurs' risk appetite might change across countries. We applied the Mann-Whitney test to check for any potential difference in business risk between Czech and Slovakian entrepreneurs. The results of this test showed that there is no statistical significance in this regard. This means that, somehow, business risk is perceived similarly

**Table 1.** Descriptive statistics of the dependent variable and Mann-Whitney test

	Descriptive statistic					Mann-Whitney test <sup>b</sup>			
	Frequency	Share, %	Mean <sup>a</sup>	Median	SD	Mean rank	U	Z	p
Czech Republic	312	48.67	2.28	3	0.88	327.35	49343	-0.940	0.347
Slovakia	329	51.33	2.21	3	0.89	314.98			
Total	641	100	2.24	3	0.89				
Level of dependent variable			Frequency	Share, %	Cumulative percent, %				
1 – 'totally disagree' or 'disagree'			193	30.1	30.1				
2 – 'neither disagree, nor agree'			100	15.6	45.7				
3 – 'agree' or 'totally agree'			348	54.3	100				

Note: a – assuming a scale variable; b – almost the same results were found even when business risk was measured as a five-point Likert type scale. SD stands for standard deviation.

among entrepreneurs operating in both countries, due to the fact that both countries share a similar culture. This is consistent with another study, which found no differences between these countries on how optimistic entrepreneurs are for the future business activity (Belas, Machacek, Bartos, Hlawiczka, & Hudakova, 2014). Therefore, the country will not be considered as an independent variable. In the second part of the table, frequencies of the business risk categories are reported. The highest share is under category three (54.3%), and the second one is under category one (30.1%). Thus, one can see that the higher category is more probable, or even that the outcome tends to have extreme values. The discussion on frequencies of business risk is important, because it plays a key role in selecting the statistical method.

### 2.3. Independent variables

In the literature review section, it was concluded that economic and political environments determine business risk. Besides these, extra factors influence business risk such as competition, relationship with suppliers, customers and employees, and, at the individual level, the entrepreneur's attitude. They were composed as a mean of several items or indicators, all measured as a five-point Likert type scale: 1 – 'totally disagree' to 5 – 'totally agree'. This type of variables creation has been used in the literature, i.e. Batsakis (2014) and Çera, Breckova, Çera, and Rozsa (2019).

Influenced by Martinez et al. (2019), the economic environment is covered by three factors, which are: macroeconomic environment (macro), access to finance (finance), and population consumption, changes in income and the structure of consumer expenditure (consumers). Each factor was a composite of four items. Hence, the statements or indicators used to compose the macroeconomic environment were those used by Cepel et al. (2018, p. 26): "I consider the macroeconomic environment of my country to be favourable for doing business; The state of the macroeconomic environment of my country supports starting a business; The present macroeconomic environment supports enterprises' innovation activities; The present level of basic macroeconomic factors (GDP, employment, inflation) supports business and creates interesting business opportunities". Access to finance fac-

tor was a composite of four items, which were formulated as follows: "Enterprises have easy access to bank loans; Banks' credit conditions for entrepreneurs are acceptable; The cost of loans for enterprises is acceptable; Banks have a positive impact on the quality of the business environment" (Cepel et al., 2018, p. 26). Other four items were used to compose the factor related to consumers, which were: "The growing consumer consumption positively influences the quality of the business environment; People can afford to buy more products and services; The growing consumer consumption positively impacts my business; People purchase more, compared to the past" (Cepel et al., 2018, p. 26). Based on the literature review, a hypothesis can be as follows:

*H1: Better performance of economic environment (macro, H1a; finance, H1b; consumer, H1c) reduces business risk.*

Similar to the case of economic environment, motivated by prior studies (Dai & Si, 2018; García-Ramos et al., 2017; Grosanu & Bota-Avram, 2015; Kadocsa & Francsovcics, 2011; Karabag, 2019), political environment is covered by three factors, which are: legislation related to the business environment (legal), state regulation concerning entrepreneurship (regulation), and quality of education (education). Each of these three factors was composed of four items. The items covering legislation are: "I positively rate the level of the legislature in business; The judicial system in the area of business law works well; The enforceability of law in my country is good; The legal environment in my country is stable" (Cepel et al., 2018, p. 27). Inspired by Peck, Jackson, and Mulvey (2018), state regulation concerning entrepreneurship was composed by these statements: "The state's tax and levy policy supports entrepreneurship; The state politics supports the export of our products and services; The state supports entrepreneurship financially; The state has a positive impact on the quality of business environment" (Cepel et al., 2018, p. 27). The quality of the educational system was covered by the following items: "I view university education as that of high quality; I view high school education as that of high quality; The state is able to provide a qualified work force for businesses; Graduates have high-quality knowledge and skills" (Cepel

et al., 2018, p. 27). Based on the discussion in the literature review section, a hypothesis can be as follows:

*H2: Better performance of political environment (legal, H2a; regulation, H2b; education, H2c) reduces business risk.*

Three remaining independent variables are competition, relationship with suppliers, employees and customers, and, at the individual level, the entrepreneur's attitude. Intensive competition might expose firms to different business risks. Influenced by Delerue and Perez (2009), competition is measured by four items, which are: "New competitors entering the industry I operate in present an adequate risk; The level of competition in the industry I operate in is normal; My customers accept the prices of my products and services; My suppliers' prices for products and services are adequate" (Cepel et al., 2018, p. 29). Driven by prior studies (Fang He et al., 2018; Gilmore et al., 2004; Rauch & Rijdsdijk, 2013), relationship with suppliers, customers and employees is measured by three items, which are: "My competitors do not present a threat to my business; My customers support me in doing business; My suppliers intensively support me in doing business; My employees intensively help me in achieving business goals" (Cepel et al., 2018, p. 29). The inclusion of entrepreneur's attitude was inspired by the work of Cacciotti et al. (2016). Its items are: "If I were to decide whether to start a business today, I would do it again; I am able to bear the risk associated with entrepreneurship in a normal way; I feel that the society appreciates me and my work; I feel inner satisfaction with the fact

that I am conducting business" (Cepel et al., 2018, p. 29). Based on the discussion in the literature review, these hypotheses can be stated:

*H3: The more normal the competitive environment, the lower the business risk.*

*H4: The higher the relationships with supplier chain actors, the more adequate business risk.*

*H5: Positive entrepreneur's attitude toward entrepreneurship reduces business risk.*

## 2.4. Reliability test

Before constituting composite variables by calculating the mean of the items or indicators, the reliability of the scales was checked. Reliability test is a statistical tool scholar use to checks whether the measure reflects the construct that it is measuring or not. Table 2 shows the mean, standard deviation, Cronbach's alpha for the composed variable and the correlation coefficient. Based on DeVellis's (2017) benchmarks, the construct reliability of access to finance (finance) was very good (.814), legal (.765) and education (.706) constructs were respectable (between .70 and .80), whereas the rest of constructs were minimally acceptable (between .65 and .70). In addition, regarding multicollinearity issue, all correlation coefficients were no bigger than .70 threshold, which mean that there will not be any multicollinearity problem if all the listed variables are included in a regression leading to the fact that there is no redundant variable (Dormann et al., 2013).

**Table 2.** Mean, standard deviation, Pearson correlation and Cronbach's alpha

Dimension	Composite	Mean (SD)	1	2	3	4	5	6	7	8	9
Economic	Macro	2.822 (0.684)	.679	–	–	–	–	–	–	–	–
	Finance	3.068 (0.753)	.411	.814	–	–	–	–	–	–	–
	Consumers	3.708 (0.628)	.364	.358	.660	–	–	–	–	–	–
Political	Legal	2.364 (0.775)	.487	.273	.256	.765	–	–	–	–	–
	Regulation	2.370 (0.664)	.532	.321	.266	.699	.697	–	–	–	–
	Education	2.727 (0.689)	.323	.192	.247	.434	.377	.706	–	–	–
Competition	Compet	3.545 (0.604)	.272	.207	.377	.167	.196	.194	.668	–	–
Relationship	Network	3.602 (0.621)	.210	.163	.384	.169	.149	.190	.490	.656	–
Attitude	Entrep_att	3.564 (0.680)	.381	.301	.421	.312	.276	.180	.513	.548	.647

Note: All correlation coefficients are significant at the .01 level (2-tailed). Cronbach's alpha values are in the diagonal. The numbers in parentheses are standard deviations.

## 2.5. Method

To investigate the effect of business environment on business risk, ordinal regressions were used, which is similar to what Schwarzkopf (2006) used. Ordinal regression is a statistical technique used to predict the ordinal level of the dependent variables with a number of independent variables. In comparison with the multinomial logit model, it estimates one equation over all categories or levels of the dependent variable. The dependent variable is an ordinal variable and the independent variable may be categorical or continuous. Our dependent variable is business risk, which has three ordered levels (1 – ‘totally disagree’ or ‘disagree’, 2 – ‘neither disagree, nor agree’, 3 – ‘agree’ or ‘totally agree’). When referring to ordinal regression, scholars have to distinguish five link functions, which can be applied in an ordinal regression. The link function is a transformation of the cumulative probabilities of the ordinal outcome to be applied in the model’s estimation. The five link functions are: logit, probit, negative log-log, complementary log-log and cauchit (Harrell, 2015). They predict the probability of a certain level or category of the dependent variable ( $\gamma$ ) occurring with respect to the known values of the independent variables ( $X_i$ ), and their formulae are presented in Table 3.

Constrained by the distribution of the categories of the outcome variable (see the second part of Table 1), in the current research, cauchit and complementary log-log are applied. This goes in line with Norušis’s (2012) suggestion: cauchit should be applied if higher categories of the dependent variable are more probable; complementary log-log is recommended to be applied if the dependent variable reflects extreme values. The ordinal regressions were performed by using computer statistical software SPSS version 23.

## 3. EMPIRICAL RESULTS

The mean, standard deviation and number of observations by entrepreneur’s perception in business risk categories for each composed variable are demonstrated in Table 4. All means of these variables had a positive trend across the business risk levels. Based on these trends in the data, it was expected that ordinal regression would find a positive relationship between business risk and composed variables covering the business environment. However, taking into account the differences between levels per each pair, it can be judged that those variables that have a low magnitude between business risk levels are expected to be not significant. Possible insignificant effect on business risk could be noticed at these variables: legal (min(diff) = 0.09), regulation (min(diff) = 0.106), education (min(diff) = 0.139), competition (min(diff) = 0.093), and network (min(diff) = 0.066). Ordinal regression will test and provide statistical evidence of whether or not these variables predict the entrepreneur’s perception of business risk.

An ordinal regression analysis was performed to assess the prediction of affiliation with one of three outcome levels on the basis of nine covariates. Our outcome variable was business risk (1 – ‘totally disagree’ or ‘disagree’, 2 – ‘neither disagree, nor agree’, 3 – ‘agree’ or ‘totally agree’) and the covariates used were three variables covering economic dimension of business environment, three other covering political environment, competition, relationship with suppliers, competitors, employees and consumers, and entrepreneur’s attitude. After checking for cases with missing values on our covariates, data of 461 firms remained suitable for analysis (the minimum required sample size is 184 subjects (Harrell, 2015, p. 363)). In respect to the distribution of the dependent variable and to get more robust results, two types

**Table 3.** Link functions

Link name	Function	Inverse	When to apply
Cauchit	$P(\gamma) = \frac{1}{\pi} \frac{1}{\tan(\alpha_0 + \alpha_{1i} X_{1i})} + \frac{1}{2}$	$\tan \left[ \pi \left( y - \frac{1}{2} \right) \right] = \alpha_0 + \alpha_{1i} X_{1i}$	Higher categories more probable
Complementary log-log	$P(\gamma) = 1 - e^{-e^{(\alpha_0 + \alpha_{1i} X_{1i})}}$	$\log(-\log(1 - \gamma)) = \alpha_0 + \alpha_{1i} X_{1i}$	Outcome with extreme values

**Table 4.** Mean and standard deviation by risk levels for each construct

Dimension	Composite	Business risk level			Difference between levels		
		1	2	3	2-1	3-2	3-1
Economic	Macro	2.367 (0.657)	2.860 (0.486)	3.063 (0.618)	0.493	0.203	0.696
	Finance	2.723 (0.791)	3.003 (0.638)	3.279 (0.687)	0.280	0.276	0.556
	Consumers	3.391 (0.717)	3.645 (0.533)	3.902 (0.517)	0.254	0.257	0.511
Political	Legal	1.999 (0.759)	2.445 (0.715)	2.543 (0.731)	0.446	0.098	0.544
	Regulation	2.012 (0.623)	2.442 (0.586)	2.548 (0.630)	0.430	0.106	0.536
	Education	2.462 (0.693)	2.733 (0.613)	2.872 (0.665)	0.271	0.139	0.410
Competition	Compet	3.325 (0.696)	3.418 (0.564)	3.704 (0.507)	0.093	0.286	0.379
Relationship	Network	3.434 (0.702)	3.500 (0.570)	3.724 (0.560)	0.066	0.224	0.290
Attitude	Entrep_att	3.253 (0.791)	3.500 (0.552)	3.754 (0.573)	0.247	0.254	0.501

Note: The numbers in parentheses are standard deviations. Disagree (1) and agree (3) categories correspond to strongly disagree or disagree and agree or strongly agree, respectively.

of link functions are applied: cauchit and complementary log-log.

In Table 5, the output of both conducted models is summarized. Regarding the case when cauchit was applied as link function, the results indicate that the overall model was statistically significant,  $\chi^2(9, n = 461) = 204.341, p < .001$ . Moreover, there was a good model fit (discrimination among levels) on the basis of our nine covariates,  $\chi^2(1267, n = 461) = 1217.863, p = .835$ , using a Pearson criterion. Additionally, the slope coefficients in the model were the same across dependent variable categories (and lines of the same slope were parallel), as the parallel lines assumption was not violated,  $\chi^2(9, n = 461) = 9.519, p = .391$  (see first part of Table 4). If this assumption is violated, then a less restricted model should be used, i.e. the multinomial logit model (Harrell, 2015). Pseudo R-square of the model was reported to be .273, according to Cox and Snell statistic, or .317 based at Nagelkerke statistic.

As cauchit, similar results were found even in the case when complementary log-log was applied as a link function (see the second part of Table 5). The fitting of the model was significant,  $\chi^2(9, n = 461) = 208.669, p < .001$ , and Pearson criterion indicated a good model fit,  $\chi^2(1267, n = 461) = 1254.192, p = .596$ . In addition, its test of parallel lines was not violated demonstrating that slope coefficients are the same across the business risk categories,  $\chi^2(9, n = 461) = 6.921, p = .645$ . Pseudo R-square of the model was reported to be .278, according to Cox and Snell statistic, or .323 based at Nagelkerke statistic. As a result, taking all together, both link functions are not misleading.

In Table 6, the summary of parameter estimates of the ordinal regression when cauchit was applied as a link function is given. To distinguish the outcome variable categories, the ordinal regression calculates a continuous latent variable (Harrell, 2015). The thresholds [risk = 1] and [risk = 2] stand for the dependent variable in the ordi-

**Table 5.** Model fit, goodness-of-fit and test of parallel lines for two types of ordinal regressions

Link function	Criteria	Statistics				Pseudo R-square		
		-2 LL	Chi-square	df	Sig.	CS	Ng	MF
Cauchit	Model fitting	1055.698	204.341	9	.000			
	Test of parallel lines	1046.178	9.519	9	.391			
	Goodness-of-fit	Pearson	1217.863	1267	.835	.273	.317	.162
Complementary log-log	Model fitting	1051.370	208.669	9	.000			
	Test of parallel lines	1044.449	6.921	9	.645			
	Goodness-of-fit	Pearson	1254.192	1267	.596	.278	.323	.166

Note: LL stands for Log likelihood; CS, Ng and MF are Cox and Snell, Nagelkerke and McFadden.

**Table 6.** Results of ordinal regression – link function: cauchit

Dimension	Variable	Estimate	Wald	95% CI	
				Lower	Upper
Threshold	[risk = 1]	8.040 (1.013)	62.950***	6.054	10.027
	[risk = 2]	8.981 (1.062)	71.515***	6.900	11.063
Economic	Macro	0.812 (0.165)	24.09***	0.488	1.136
	Finance	0.437 (0.123)	12.63***	0.196	0.678
	Consumers	0.337 (0.156)	4.656**	0.031	0.643
Political	Legal	-0.100 (0.154)	0.420	-0.401	0.202
	Regulation	0.410 (0.184)	4.946**	0.049	0.770
	Education	0.301 (0.137)	4.861**	0.033	0.569
Competition	Compet	0.400 (0.166)	5.778**	0.074	0.726
Relationship	Network	0.013 (0.163)	0.007	-0.307	0.333
Attitude	Entrep_emoc	0.323 (0.157)	4.217**	0.015	0.632

Note: Dependent variable: business risk. \*  $p < .10$ , \*\* $p < .05$ , \*\*\*  $p < .01$ . The numbers in parentheses are standard errors. CI is confidence interval.

nal regression. The estimated threshold for [risk = 1] represents the cutoff value between the first category of business risk and its second level, and the threshold estimate for [risk = 2] is the cutoff value between second and third business risk levels. Hence, [risk = 1] is the estimated cutpoint on the latent variable used to distinguish the first category of business risk from two others, when all factors and covariates are zero. Subjects that had a value of 8.04 or less on the latent variable that caused a rise in business risk would be classified in the first category. Following this logic, if values of all factors and covariates are zero, [risk = 2] differentiates first and second categories from third category of business risk. Subjects with a value of 8.981 or greater on the underlying latent variable that rise business risk would be classified in the third category of business risk. Subjects with a value between 8.04 and 8.981 on the latent variable would be classified in the second category of business risk. According to cauchit link function's output, both thresholds were statistically significant.

According to cauchit link function's output, economic environment positively affects business risk supporting *H1*. The three variables covering economic environment resulted statistically significant in predicting business risk. So, entrepreneurs perceived more adequate risk and may get involved in start-up activity, as macro environment where they operate gets improved ( $W = 24.09$ ,  $p < .001$ ), access to finance gets easier ( $W = 12.63$ ,

$p < .001$ ), and as consumers number or their income get higher ( $W = 4.656$ ,  $p < .05$ ). The three variables covering the political environment did not show a similar effect on business risk. Surprisingly, legal variable did not statistically affect business risk,  $W = 0.420$ ,  $p > .10$ , rejecting *H2a*. However, we expected this result as discussed earlier the trend in means of this variable across business risk levels. The other two variables of political environment positively influence business risk (regulation,  $W = 4.946$ ,  $p < .05$ , and education,  $W = 4.861$ ,  $p < .05$ ), supporting *H2b* and *H2c*. Thus, as the regulation concerning entrepreneurship gets friendlier and education is improved, entrepreneurs perceive more adequate risk in their activity. Moreover, as the competitive environment becomes easier, entrepreneurs perceive the business environment less risky,  $W = 5.778$ ,  $p < .05$ , supporting *H3*. We did not find any evidence to support *H4*. At a personal level, higher levels in the entrepreneur's attitude lead to the reduction of business risk supporting *H5*. This was statistically significant,  $W = 4.217$ ,  $p < .05$ . Like legal variable, business relationships (networks) did not statistically influence business risk,  $W = 0.007$ ,  $p > .10$ . Somehow, this result was expected as we discussed earlier the trend in means for this variable across business risk levels (see Table 4). On the other hand, differently from what it was expected, regulation, education and competition statistically predicted the entrepreneur's affiliation with one of the three levels of business risk.

**Table 7.** Results of ordinal regression – link function: complementary log-log

Dimension	Variable	Estimate	Wald	95% CI	
				Lower	Upper
Threshold	[risk = 1.00]	5.533 (0.527)	110.292***	4.500	6.565
	[risk = 2.00]	6.195 (0.536)	133.665***	5.145	7.246
Economic	Macro	0.597 (0.123)	23.474***	0.356	0.839
	Finance	0.238 (0.089)	7.071***	0.063	0.413
	Consumers	0.364 (0.110)	10.954***	0.148	0.580
Political	Legal	0.013 (0.121)	0.011	-0.224	0.250
	Regulation	0.244 (0.141)	3.007*	-0.032	0.520
	Education	0.183 (0.103)	3.120*	-0.020	0.386
Competition	Compet	0.277 (0.119)	5.454**	0.045	0.510
Relationship	Network	-0.037 (0.123)	0.088	-0.278	0.205
Attitude	Entrep_att	0.292 (0.114)	6.527**	0.068	0.516

Note: Dependent variable: business risk. \*  $p < .10$ , \*\*  $p < .05$ , \*\*\*  $p < .01$ . The numbers in parentheses are standard errors. CI is confidence interval.

The output of ordinal regression when complementary log-log was applied as a link function is shown in Table 7. Similar results to the case of cauchit link function were found, with few differences, but not substantial ones. Thus, compared to cauchit case, the thresholds were a bit low, but again significant with 99% confidence level: for [risk = 1],  $W = 110.292$ ,  $p < .001$ , and for [risk = 2],  $W = 133.665$ ,  $p < .001$ . Economic environment covered by three our constructs resulted to be significant. The construct dealing with consumers reflected higher significance as compared to the cauchit case. Furthermore, even in this ordinal regression, the only insignificant

constructs were legal and relationship (network). Another difference that can be noticed is that complementary log-log output gives weaker significance for regulation and education construct, as compared to cauchit output. Taking all together, business risk is perceived to be more adequate when an improvement at economic environment occurs concerning macroeconomic dimension, access to finance and consumers; by doing a friendlier business environment by reducing business regulations; when efforts to get better education toward entrepreneurship are increased; when the complete environment is not very intensive.

## DISCUSSION AND CONCLUSION

Our findings emphasized that a stable and progressing economic environment can be translated into fewer risk firms face during their activity, which goes in line with previous studies (Eling & Jia, 2018; Karabag, 2019; Martinez et al., 2019). Therefore, the entrepreneur's perception of business risk can be in lower levels when macro indicators perform well, access to finance can be easier and consumer expenditure increases.

Turning back to the political environment, as it is mentioned earlier, the legal environment resulted to be not significant in predicting business risk, but regulation was. It was expected for these two factors to have similar results. We believe these findings are due to the fact that businesses face with more challenges and problems related to regulatory framework dealing with their operational activities rather than legislation, which changes not that often, compared to the regulatory framework. This is consistent with what Xheneti and Bartlett (2012) found, which was that tax regulation was the second most significant constraint identified by entrepreneurs, and surprisingly, legislation was not among them. In addition to this, Peck et al. (2018) argue that small and micro businesses are affected by regulation in

a way that they are aware of the costs related to compliance with regulation framework regarding the additional money needed to be allocated to purchase specialist external advice and managing time. Our finding regarding regulation framework is in line with García-Ramos et al.'s (2017) conclusion that a complex regulation framework increases the possibility of business termination due to facing extra risks.

The competitive environment is found to be a predictor of the level of business risk entrepreneurs' perception. Our findings concerning intensive competition as a factor that impacts business risk are consistent with previous studies (Cai & Yang, 2014; Delerue & Perez, 2009). Operating in a not intensive competition may not expose firms to extra risks. The other factor which resulted to be insignificant was the one related to business relationships (network) with suppliers, competitors, employers and customers. Even though our initial intention was to capture all spectrums of business relations into a single composite, methodologically it might be fragile and not rigour. Capturing several relations (from suppliers to customers) into the same construct might lead to a scale that is not valid. With this in mind, we suggest that scholars put some extra efforts on developing more valid scale concerning business relationships. This could be considered as an issue for further research.

Both types of ordinal regressions revealed a statistical significance of entrepreneur attitude for business risk. As Cacciotti et al. (2016) claimed, personal abilities and attitude of the owner-manager can influence business risk. Having a positive attitude toward entrepreneurial activity reduces the risk business might face in daily activity.

The current research took a combined deterministic and voluntaristic perspective (Amankwah-Amoah & Wang, 2019) by using external and internal factors to predict the entrepreneur's perception of business risk. The deterministic perspective assumes that business failure is determined by external factors from the organization, which are not easy to be controlled by the owner-managers. Such factors might be macroeconomic, indicators, access to finance, changes in population and consumers income, political environment including legislation, regulation framework, educational system, competitive environment, and relationship with other actors in the supply chain. On the other hand, voluntaristic perspective claims that business failure is driven by internal forces within the organization. Since these factors originate from inside the organization, then a certain level of control over them can be assumed. Entrepreneur's attitude could be a representative factor for this perspective.

This paper contributes to the stock of knowledge in two ways: firstly, by testing the impact of different business environmental indicators on business risk perceived by owner-managers of firms operating in Czech Republic and Slovakia, countries trying to get closer or narrow the gap with the advanced economies, and, secondly, by using two type of ordinal regressions to get more robust results. Our findings emphasized that economic factors are not the only ones, which predict the entrepreneur's perception of business risk. Our study found that other factors originated from political and competitive environments and the entrepreneur's attitude determine owner-managers' perception of risk. Nevertheless, legislation environment and business relationship were not revealed as predictors of business risk.

Even though our paper has reached its aims, there are limitations in research. Firstly, study's findings are limited to two countries, which might share a similar regional, economic, institutional, historical and political environments and entrepreneurial mindset, as well with only a limited number of countries. Therefore, our findings can be generalized only for countries having an almost similar business environment with the Czech Republic and Slovakia. Secondly, although Mallett et al. (2018) stressed out that studies, which survey owner-manager perceptions, are useful for identification-interpretation processes, we believe that some external factors could be measured differently. In this regard, using secondary data could be a good approach even to validate our results.

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