

## **CROSS-BORDER DISPARITIES IN THE ASPECTS OF ENTREPRENEURSHIP AND PERSONALITY TRAITS OF FUTURE ENTREPRENEURS**

**Alice REISSOVÁ<sup>a</sup>, Jana ŠIMSOVÁ<sup>a</sup>, Kateřina KOVÁŘOVÁ<sup>a</sup>**

<sup>a</sup> Faculty of Social and Economic studies, Jan Evangelista Purkyně University, Ústí nad Labem, Czech Republic, email address: [alice.reissova@ujep.cz](mailto:alice.reissova@ujep.cz)\*; [jana.simsova@ujep.cz](mailto:jana.simsova@ujep.cz); [katerina.kovarova@ujep.cz](mailto:katerina.kovarova@ujep.cz)

\* corresponding author

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### **Abstract**

Entrepreneurship is a source of financial, economic and social prosperity for countries as well as their regions. The objective of this article was to identify whether the young generation is interested in entrepreneurship, especially students of economics at public universities, and whether there are regional cross-border disparities in this respect (i.e., comparison of regional differences between neighbouring countries). 540 students of economics at public universities based in border areas were included in the survey group. The selected universities were the Faculty of Social Sciences in Ústí nad Labem (Czech Republic) and the Hochschule für Technik und Wirtschaft Dresden (Germany). Written interviews were selected as the research method. German students were established to be statistically significantly more interested in entrepreneurship. The second objective was to verify whether there are differences in the personality traits of students who are willing to set up their own business from those who are not. The personality traits tested representation of traits, such as independence, risk tolerance, creativity, initiative and responsibility. It was established using the chi-squared test, Saphiro-Wilk test, t- test, test for two binomial distributions and the Kruskal-Wallis test that different traits are not exhibited by students according to the region or country in which they live and study, but according to the criterion of whether they want to set up their own business or not. Accordingly, there are no differences between Czech and German students in the monitored traits but there are statistically significant differences between the traits of students who want to set up their own business and those who do not want to – both between German and Czech students.

Entrepreneurship, regional differences, personality traits, university student, economics subjects

### **INTRODUCTION**

Entrepreneurship undoubtedly brings socio-economic prosperity and business growth. Most countries feature a negative relationship between the rate of self-employment and unemployment rate (Blanchflower, 2000). The dependence between the functioning of small and medium-sized enterprises and economic growth in developing countries has been established (Obi et al., 2018). The level and development of entrepreneurship is differentiated in this way both interculturally and regionally. On top of that, the standard of entrepreneurship in a specific region features a significant persistence. Regional differences in the standard of self-employment and creation of start-ups tend to persist for a period of up to eighty years,

regardless of abrupt changes in the political and financial environment (Fritsch & Wyrwich, 2014).

Entrepreneurship is assessed differently in each country as a result of differing cultural values (Liñán & Chen, 2009). In the USA, for example, entrepreneurship is regarded as a prestigious and enhancing status activity, however, other countries may have different attitudes (de Pillis & Reardon, 2007). Entrepreneurship and the development of small businesses is considered a good solution in countries or regions with a high unemployment rate as it can improve the difficult situation (Amadi-Echendu, Phillips, Chodokufa, & Visser, 2016).

Entrepreneurship forms an integral part of economics in prosperous countries and introduces innovation and dynamic changes. Small businesses provide the most appropriate environment for enterprise and innovation, they do not necessarily need to support the know-how and resources characteristic for large businesses, but they require commitment and close co-operation among the company members (Sahut & Peris-Ortiz, 2014). Governments of individual countries usually seek to support entrepreneurship irrespective of the subject of business of the company. Entrepreneurship can be carried out in all areas, not only in manufacturing or industry, but also in agriculture (Wang, Chang, Yao, & Liang, (2016), arts (Lang, 2018; Friedrichs, 2018), or even in sport (Burmaoglu, 2018; Karabulut & Dogan, 2018). It is important to find out the attitude of young people to entrepreneurship in a specific country because it can to some extent forecast future stagnation or development, either at a local or regional level, which, as stated above, tends to persist for decades.

## **THEORETICAL BACKGROUND**

To set up a business, entrepreneurs must have an entrepreneurial intention upon which they develop a business. The research published so far shows that there is a relationship (dependence) between the entrepreneurial intention and other variables. These variables are divided into external and internal ones and their effects are usually synergistic. Family background (Farrukh, Khan, Shahid Khan, Ravan Ramzani, & Soladoye 2017), culture (Di Giunta & Pantanella, 2014; Minola, Criaco & Obschonka, 2016), education (Kautonen & Palmroos, 2010), prior entrepreneurial experience – even unlawful (Aidis & Van Praag, 2007), can be some of the external predictors, for example. The social environment can also positively influence the willingness to set up a business. Andersson and Larsson (2016) speak about the effects of social interaction, where entrepreneurs living in the neighbourhood influence other local people to become entrepreneurs. Similar conclusions were made by Westlund, Larsson and Olsson (2014) following an extensive analysis.

Apparently, there are particular negative variables as well which can influence entrepreneurial success. Prior unemployment may be such a predictor. People who set up a business when unemployed exhibit worse financial performance and they usually do not employ other persons (Andersson & Wadensjö, 2006). Their lower achievements may result from the fact that they regard entrepreneurship as a necessity. While people who set up a business who were formerly employed see opportunity and challenge in entrepreneurship (Block & Koellinger, 2009; Binder & Coad, 2013). However, the interesting idea that a potential predictor of entrepreneurship may be a hereditament or donation as financial capital necessary for doing business, has not been confirmed (Blanchflower & Oswald, 1998).

On the other hand, internal positive predictors are, for example, personal attitude, perceived behavioural control and perceived relational support (Ambad & Damit, 2016). Another internal predictor for entrepreneurship may be work values. However, the conclusions of the study by Espíritu-Olmos and Sastre-Castillo (2015) suggest that personality traits influence the entrepreneurial intention more than work values. Other authors, such as Karabulut (2016), Wang et al. (2016), Dinc and Hadzic (2018), etc., also refer to the personality traits of an entrepreneur.

Dimensions of personality leading to the development of an entrepreneurial intention most frequently contain an internal locus of control, the need for achievement, risk tolerance and entrepreneurial alertness (Karabulut, 2016). Apparently, personality traits are unique predictors of a successful entrepreneurial intention.

An individual's personality can be investigated in different ways. Relatively reliable psychological diagnostics can be used on the one hand, but their use in practice is limited as they place extreme demands on the time devoted to administration and evaluation as well as the special training necessary for a qualified evaluation and interpretation of the conclusions. On the other hand, researchers have developed a variety of questionnaires and inventories to measure dimensions of personality using tools which are not standardized but focus on identifying those traits important for entrepreneurship.

Big Five, or its modification, is the questionnaire of standardised tools most frequently used in practice, which measures five basic dimensions including Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism (Zhao & Seibert, 2006; Brandstätter, 2011; Di Giunta & Pantanella, 2014; Farrukh et al., 2017). The second big group looking into personality traits are non-standardised questionnaires based on self-assessment by respondents. Such questionnaires feature a different scope and level of scale development and they can be successfully used in intercultural comparisons as well (Liñán & Chen, 2009). Some authors create tools that create models based on selected variables (Karimi et al., 2017).

Entrepreneurs must naturally have a certain knowledge of their industry as well as a whole set of general skills and traits to be able to succeed in the marketplace (Lazear, 2004). Prior studies designate the type of behaviour which predicts entrepreneurial success as Type A behaviour (Begley & Boyd, 1987).

## **DATA AND METHODS**

The objective of the paper was to identify whether university students in Czech-German border areas exhibit the same willingness to set up a business, and whether students who want to set up their own business manifest different personality traits than students who are not willing to. The traits included in this investigation were independence, risk tolerance, creativity, initiative and responsibility. These traits were selected upon the results of a number of studies which looked at traits typical of entrepreneurs (Alstete, 2008; Liñán & Chen, 2009, Burmaoglu, 2018). Consequently, the following hypotheses were defined:

H1 The willingness of university students of economics to set up a business does not differ in the border regions of both neighbouring countries.

H2 There is no difference in self-assessment of the monitored traits between Czech and German students with a similar study focus.

H3 Students who want to set up their own business exhibit statistically significantly different self-assessment of the monitored traits as opposed to students who do not want to.

H4 Self-assessment by students willing to set up their own business does not differ between Czech and German students.

The survey group consisted of students of economics from a Czech and German university. Both were regional public universities, the regions being separated by the state border. The distance between the selected universities is rather small (dozens of kilometres). The Czech Republic was represented by the Faculty of Social Sciences of the Jan Evangelista Purkyně University in Ústí nad Labem (the "FSE UJEP") and Germany by the Hochschule für Technik und Wirtschaft Dresden (the "HTWD"). The selected method was written interviews. The survey group included students of higher classes who already consider their future labour market prospect. The questionnaires were filled in by students during their lessons. Deliberately, the courses with compulsory attendance were selected in order to make sure the files are of sufficient size.

The meritorious questions looked at the interest of students in entrepreneurship and self-assessment of the traits (independence, risk tolerance, creativity, initiative and responsibility). The respective traits were rated on a scale of 1 - 4 (1 strongly agree up to 4 strongly disagree). Answer coding was analogically ascending (i.e., 1, 2, 3, 4). Consequently, lower scores 1 and 2 mean positive responses and 3 and 4 mean a different score of a negative response.

Czech students were provided with a questionnaire in the Czech language and German students with a questionnaire in German. Students filled in the questionnaires in classrooms during classes at both universities (upon prior agreement with the respective teacher). The questionnaires were anonymous. 540 questionnaires were included in the survey group once the data had been checked for correctness and incomplete or improperly filled in questionnaires had been disqualified. There were 269 questionnaires at the FSE UJEP (CZR) and 271 at the HTWD (BRD).

Data were developed using MS Excel and MS STATISTICA followed by the statistical methods: chi-squared test of homogeneity, binomial distributions test, Shapiro-Wilk test, t-test of mean value concordance and the Kruskal-Wallis test.

## RESULTS

### 1. Willingness in students in the Czech-German border areas to set up a business

Firstly, the questionnaires looked at whether there are differences between the groups of Czech and German students in their willingness to set up their own business. The following hypothesis was defined:

H1 The willingness of university students of economics to set up a business does not differ in the border regions of both neighbouring countries.

The Tab. 1 shows that total positive responses (i. e., the option strongly agree, agree and I have already set up a business) occur more frequently in German respondents than in Czech students, in the ratio 150:86.

**Table 1** Willingness to set up a business

Are you planning to set up a business?	FSE UJEP (Czech Republic)		Dresden (BRD)	
	frequency		frequency	
	absolute	relative	absolute	relative
Strongly agree	11	4.09	27	9.96
Agree	67	24.91	119	43.91
Disagree	142	52.79	104	38.38
Strongly disagree	41	15.24	17	6.27
I have already set up a business	8	2.97	4	1.48
	269	100.00	271	100.00

Source: own development

The binomial distribution test looked at whether the number of students of the FSE UJEP and HTWD who do business or who are willing to do business is different. If we designate the

probability of the willingness to set up a business in German students  $\pi_1$  and the probability of the willingness to do business in Czech students  $\pi_2$ , then the null hypothesis is the formula  $H_0: \pi_1 - \pi_2 = 0$ . The opposing alternatives is the formula  $H_1: \pi_1 - \pi_2 > 0$ . The test statistics value is 20.45. This value is higher than the 95% quantile of the standardized normal distribution of 1.645. It was established that the difference is statistically significant. The test confirmed that **there are more students of economics who consider setting up their own business after graduating at the HTWD (Germany) than at the FSE UJEP (Czech Republic)**. The willingness of university students of economics in border regions of both neighbouring countries shows statistically significant differences.

## 2. Self-assessment by students - differences between Czech and German students

The set of monitored personality traits comprised: independence, risk tolerance, creativity, initiative and responsibility. In the questionnaires, students evaluated in a scale from 1 (strongly agree) up to 4 (strongly disagree) whether they believe they exhibit these traits.

The second hypothesis was defined:

H2 There is no difference in self-assessment of the monitored traits between Czech and German students with a similar study focus.

To establish differences in both groups the chi square test was used to test the homogeneity of both groups (Czech and German students) in all five monitored traits, i.e., independence, risk tolerance, creativity, initiative and responsibility. To use the test, it was necessary to join negative responses into one. Firstly, all the students were assessed for whether they are willing to do business or not. The results are shown in Tab. 2.

**Table 2** Self-assessment by Czech and German students

trait	p-value
independence	0.27747
risk tolerance	0.35491
creativity	0.58469
initiative	<b>0.01384</b>
responsibility	0.97624

Source: own development

The results suggest that Czech and German students **assess themselves differently only in the initiative trait**. The homogeneity of both groups in all other traits is not rejected. The p-value shows that the largest concordance of both groups is in the responsibility trait. As Tab. 3 suggests, self-assessment by students is rather positive. Only a few students stated that they believe they are non-selfgoverning and irresponsible. Nearly the same quantity of negative self-assessment occurs in Czech and German students.

**Table 3** Self-assessment results - absolute frequencies

trait	Group	Strongly agree	Agree	Disagree	Strongly disagree
independence	German	127	128	12	4
	Czech	112	145	11	1
risk tolerance	German	74	143	53	1
	Czech	62	142	62	3
creativity	German	66	118	77	10
	Czech	61	132	69	7
initiative	German	67	163	39	2
	Czech	49	151	67	2
responsibility	German	174	87	7	3
	Czech	175	84	7	3

Source: own development

As for initiative, the differences in self-assessment by the addressed students in both countries are better shown in the relative frequencies listed in Tab. 4.

**Table 4** Relative frequencies in the initiative trait

	Strongly agree	Agree	Disagree	Strongly disagree
German	0.247232	0.601476	0.143911	0.00738
Czech	0.226766	0.490706	0.256506	0.026022

Source: own development

As for this trait, the addressed Czech students assess themselves as having less initiative than students from Germany. The probability concordance was tested using relative frequencies (see Table 4). The null hypothesis assumed the probability concordance that the number of students in the Czech Republic and Germany is equal in each of the 4 possible responses (strongly agree, agree, disagree, strongly disagree). The alternative hypothesis was bilateral, hence the rates are different. The test statistics values are listed in Tab. 5.

**Table 5** Test statistics – concordance of the initiative trait

response	test statistics value
Strongly agree	0.57902
Agree	2.60891
Disagree	-3.2936
Strongly disagree	-2.5261

Source: own development

The critical value is 1.96 (97.5% quantile of the standardized normal distribution). This value was exceeded by the absolute value of the test statistics in the response agree, disagree and strongly disagree. These responses exhibit statistically significant differences in the number of students in the Czech Republic and Germany. **It was confirmed that Czech students believe they have less initiative than German students.** It can be stated upon the established results that there is no difference between Czech and German students with a similar study focus in the self-assessment of independence, risk tolerance, creativity and responsibility. A statistically significant difference was established in the initiative trait.

### 3. Identification of differences in the personality traits in student “entrepreneurs” and “non-entrepreneurs”

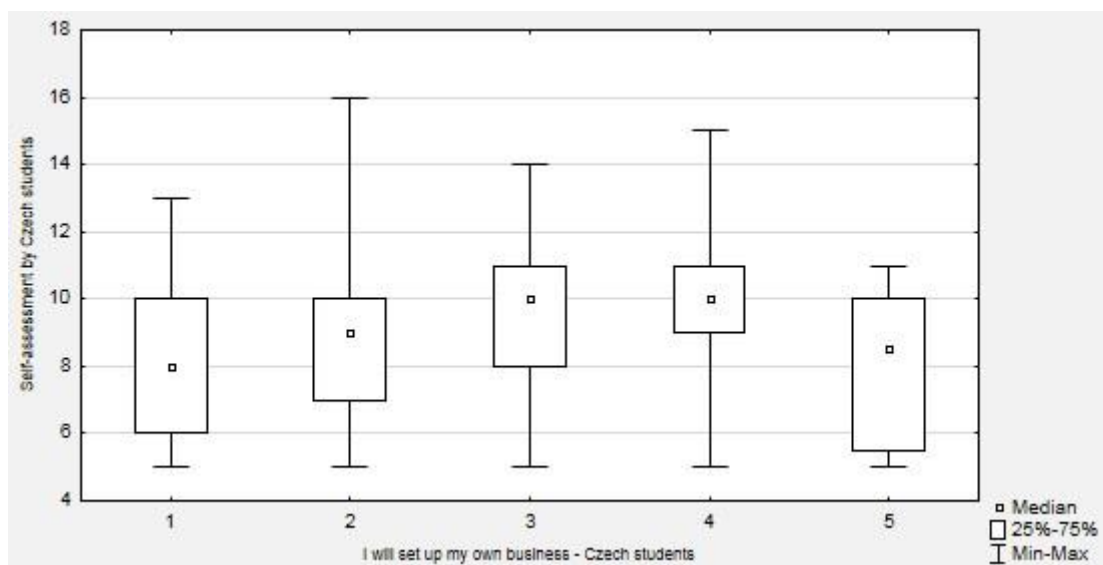
The continuous variable of self-assessment was created according to the following formula:  $S = a + b + c + d + e$ , where  $a, b, c, d, e$  stand for the investigated traits: independence, risk tolerance, creativity, initiative and responsibility. This variable can be considered continuous. The questionnaire looked at whether the mean value of students' self-assessment varies depending on whether they want to set up their own business. H3 was defined:

H3 Students who want to set up their own business exhibit statistically significantly different self-assessment of the monitored traits as opposed to students who do not want to.

#### 3.1 Students of the FSE UJEP (Czech Republic)

Firstly, it was investigated how self-assessment by the FSE UJEP students varies in connection with their attitude to entrepreneurship.

**Figure 1** Boxplot of the self-assessment variable (FSE UJEP)



Source: own development



The chart shows whether the students' self-assessment varies according to their attitude to entrepreneurship (1 = strongly agree, 2 = agree, 3 = disagree, 4 = strongly disagree and 5 = I have already started my own business). The lower the value, the more positive the self-assessment. Fig. 1 shows that lower median values appear in individual responses to entrepreneurship in the options I have already started my own business, I will definitely do business, I might do business. A higher median value of self-assessment appears in the responses I might not do business and I will definitely not do business. Apparently, students who are not willing to do business score higher in self-assessment, i.e., the investigated traits are not represented at such a level as in students who want to set up their own business.

Fig. 1 indicated that students who want to set up their own business feature different variables of self-assessment than students who do not want to; nonetheless, it is not apparent whether these identified differences are statistically significant.

The differences could be verified using the ANOVA test, provided that the data come from normal distribution. This was verified using the Shapiro-Wilk test (Tab. 6).

**Table 6** Shapiro-Wilk test verifying normality of the self-assessment variable – group of Czech students (FSE UJEP)

	SW-W	p
Strongly agree	0.9532	0.6852
Agree	0.9311	0.0011
Disagree	0.9678	0.002
Strongly disagree	0.9698	0.3388
I have already set up a business	0.8566	0.1412

Source: own development

The data did not convincingly prove normality in all investigated categories. A nonparametric test had to be used – the Kruskal-Wallis test. The test results with pair comparisons are shown in Tab. 7.

**Table 7** Kruskal-Wallis test – self-assessment of Czech students (p values)

self-assessment of Czech students	strongly agree	agree	Disagree	strongly disagree	I have already set up a business
Strongly agree		1	0.69989	0.420241	1
Agree	1		<b>0.001588</b>	<b>0.005708</b>	1
Disagree	0.69989	<b>0.001588</b>		1	1
Strongly disagree	0.420241	<b>0.005708</b>	1		0.692916
I have already set up a business	1	1	1	0.692916	

Kruskal-Wallis test:  $H(4, N=269) = 21.39465, p = 0.0003$

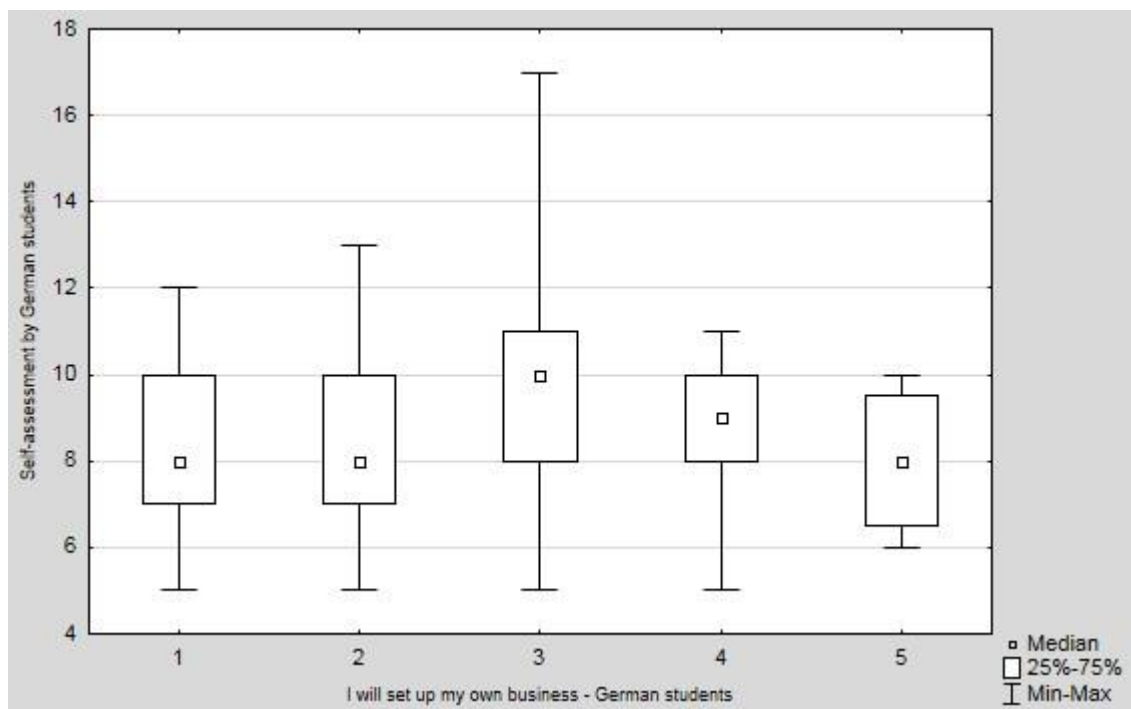
Source: own development

Tab. 7 suggests that the self-assessment variable medians **statistically vary in students who might want to set up their own business and students who might not or definitely do not want to do business**. It was confirmed that the willingness of Czech students to run a business links to a more positive self-assessment.

### 3.2. Students of the HTW Dresden (Germany)

German students studying a similar field of study were asked the same question. The questionnaire looked at whether the self-assessment by students who want to set up their own business vary from students who do not want to.

**Figure 2** Boxplot of the self-assessment variable (HTWD)



Source: own development

Fig. 2 also clearly shows that German students who want to set up their own business assess themselves in the monitored traits more positively than those who do not want to, although the established difference is not as significant as in Czech students.

The ANOVA test could not be used in this case either, as the data normality was not verified by the Shapiro-Wilk test at all levels.

**Table 8** Shapiro-Wilk test verifying normality of the self-assessment variable – group of German students (FSE UJEP)

	SW-W	p
Strongly agree	0.9339	0.086
Agree	0.957	0.0008
Disagree	0.9735	0.0352
Strongly disagree	0.9231	0.1663
I have already set up a business	0.9497	0.7143

Source: own development

Its nonparametric equivalent - the Kruskal-Wallis test, was used accordingly. The results are displayed in Tab. 9.

**Table 9** Kruskal-Wallis test – self-assessment by German students (p values of pair comparisons)

self-assessment of German students	Strongly agree	Agree	Disagree	Strongly disagree	I have already set up a business
Strongly agree		1	<b>0.017138</b>	1	1
Agree	1		<b>0.000012</b>	1	1
Disagree	<b>0.017138</b>	<b>0.000012</b>		0.832349	0.945033
Strongly disagree	1	1	0.832349		1
I have already set up a business	1	1	0.945033	1	

Kruskal-Wallis test:  $H(4, N=271)=27.66433$   $p=0,0000$ 

Source: own development

Self-assessment medians in **German students who want to set up their own business and in students who do not want to statistically vary**. It was established that the monitored traits of German students are also represented more significantly in the self-assessment by students who want to set up their own business rather than students who do not want to.

Hence, the answer to the formulated H3 is that students who want to set up their own business exhibit statistically significantly different self-assessment of the monitored traits as opposed to students who do not want to, and this hypothesis was confirmed in both Czech and German students.

#### 4. Comparison of self-assessment by entrepreneurially- oriented Czech and German students

The investigations of the last hypothesis verified whether the self-assessment by students from neighbouring countries who want to set up their own business or those who have already started business varies. H4 was defined:

H4 Self-assessment of students who want to set up their own business does not vary in Czech and German students.

The mean value concordance of self-assessment was established using the t-test.

**Table 10** T-test – mean value concordance in the self-assessment between Czech and German students who want to run a business

T-tests; Grouping: Group 1: DE Group 2: CZ									
Mean DE	Mean CZ	t-value	p	N DE	N CZ	S.D. DE	S.D. CZ	F-ratio Var.	p Var.
8.373	8.384	-0.038	0.970	150	86	1.961	2.154	1.206	0.318

Source: own development

The results suggest that the mean value concordance was not rejected. This means that **Czech and German students considering doing business assess themselves equally.**

For the sake of completeness, it was also tested whether the self-assessment by Czech and German students who do not want to run a business will statistically vary.

**Table 11** T-test – mean value concordance in the self-assessment between Czech and German students who do not want to run a business

T-tests; Grouping: Group 1: DE Group 2: CZ									
Mean DE	Mean CZ	t-value	p	N DE	N CZ	S.D. DE	S.D. CZ	F-ratio Var.	p Var.
9.702	9.607	0.416	0.677	121	183	2.088	1.886	1.225	0.215

Source: own development

The mean value concordance was not rejected in this case, either. **Hence, the self-assessment by German and Czech students who do not want to set up a business does not vary.** It suggests that there are statistically significant differences in the self-assessment of the selected traits between “entrepreneurially-oriented” students and those “not entrepreneurially-oriented”, irrespective of nationality. The identified differences will be quantified in the following part.

## 5. Identification of different traits between students who want to set up a business and those who do not want to

Finally, the statistical significance of the monitored traits in the varying self-assessment by Czech students who want to be self-employed and those who do not want to was verified. It

was necessary to join negative responses into one category for the test due to the small representation of responses in the “strongly disagree” category.

Tab. 12 shows the p-values of the chi square test of homogeneity of the group of Czech students willing to be self-employed and those who are not.

**Table 12** P-values of homogeneity tests of individual traits in Czech students

trait	p-value
independence	0.050992121
risk tolerance	3.63438E-09
creativity	0.035310906
initiative	0.000228594
responsibility	0.146471

Source: own development

The table shows that both groups of Czech students (who want to be self-employed and those who do not want to) vary not only in the responsibility and independence trait (however, its p-value is on the edge). Responses to all other traits vary in all other traits. The p-value clearly shows that **the largest difference** between both groups is exhibited in the **risk tolerance trait**.

Finally, the traits identified as varying were investigated in terms of where the possible scale responses vary. The binomial distribution test was used. It tested whether the number of students responding to individual traits varies positively or negatively. The null hypothesis was the concordance of the numbers, the alternative hypothesis was one sample. The following table shows the test criterion variables (Tab. 13).

**Table 13** Identification of varying self-assessments in the group of Czech students

Test criterion	Strongly agree	Agree	No
risk tolerance	5.953685	-1.93735	-3.59792
creativity	2.341049	-0.31402	-1.82864
initiative	3.500554	-0.07248	-3.01155

Source: own development

The table suggests that variables greater than the critical variable 1.65 in the responses strongly agree in all traits where a difference was established. The variable is most significantly exceeded in the risk tolerance trait. This means that Czech students willing to be self-employed **marked the option "strongly agree" significantly more frequently in the self-assessment** than students who are not willing to.

The “agree” responses exhibit significant difference only in the **risk tolerance trait**. There are demonstrably more students who are not willing to be self-employed, and as for the

creativity and initiative traits, the number of students who selected this response does not vary between "future entrepreneurs" and "future employees".

Negative scores (strongly disagree and disagree) were selected by a bigger percentage of those who are not willing to be self-employed than those who want to be self-employed in all traits where a variance was identified (risk tolerance, creativity and initiative).

The homogeneity of the groups of German students who want to be self-employed and those who do not want to be self-employed was tested using the chi-squared test, similarly as in the group of Czech students. The disagree and strongly disagree responses were joined into one category, "no", due to the small representation in this case as well. Tab. 14 suggests that both groups are homogenous as far as responsibility, but both groups of students vary in the self-assessment of the independence, risk tolerance, creativity and initiative traits.

**Table 14** P-values of homogeneity tests of individual traits in German students

trait	p-value
independence	0.019815913
risk tolerance	2.72865E-08
creativity	0.006753055
initiative	0.01610666
responsibility	0.600191011

Source: own development

It was finally investigated which type of responses to the traits where diversity was established feature varied percentage in German students. It was monitored where the test criterion exceeds the critical value 1.65 (eventually -1.65).

**Table 15** Identification of varying self-assessments in the group of German students

test criterion	Strongly agree	Agree	No
independence	2.3764	-1.43154	-1.99909089
risk tolerance	4.1727	-0.2818	-4.86064
creativity	2.980278	-0.5702	-2.13437
initiative	2.52517	2.09703	-1.94159

Source: own development

Tab. 15 shows that students with entrepreneurial orientation select the yes response significantly more frequently in all traits where a difference was identified. The most significant was in the risk tolerance trait. As for the "agree" response, there was a statistically significant number of students willing to be self-employed only in the initiative trait. The number of "future

entrepreneurs” and “future employees” does not significantly vary in all other traits. On the other hand, there are significantly more students not willing to set up their own business in all traits in the no response. Lastly, both Czech and German students willing to set up their own business scored positively significantly more frequently in the self-assessment of the monitored traits (strongly agree, agree), whereas students not willing to be self-employed preferred negative scores more frequently. All the monitored traits play an important role and should be represented in the personality profile traits of entrepreneurs, while risk tolerance appears to be the fundamental monitored trait.

## **DISCUSSION**

This article investigated the rate of latent entrepreneurship between Czech and German students, with German students showing statistically significantly greater interest in entrepreneurship as an alternative for their labour market prospects. Blanchflower and Stutzer (2001) established a varying potential between both nations as well. Their conclusions suggest that the highest rate of latent entrepreneurship is in Poland, the USA and Portugal. A very high rate of latent entrepreneurship (80%) was established in Poland. On the other hand, the lowest rate was established in Norway, Denmark and Russia (around 20%). Another important finding made by Blanchflower and Stutzer was that for individuals the probability of preferring to be self-employed strongly falls with age, while the probability of being self-employed strongly rises with age). Singh and DeNoble (2003) also confirm that people who had retired return to the labour market as self-employed within a short time, which is designated as bridge employment.

The findings of this study should be interpreted in this context, where the preference of being self-employed was selected by only approx. 32% Czech students and 56% of German students. Accordingly, a different rate of latent entrepreneurship between individual nations has been confirmed regardless of the proximity (cross-border regions). Since the respondents were only young people, their attitude will probably change with age according to the findings made by Blanchflower and Stutzer (2001). Similar conclusions, i.e., the identification of differences in the preference for being self-employed between individual nations and cultures and the influence of age on entrepreneurship, were made by other authors as well, e.g., Minola, Criaco and Obschonka (2016). Giacomini, Janssen and Shinnar (2016) investigated the level of business optimism between American, Spanish and Amerindian students. The highest level of business optimism was noted in American students. Their optimism is frequently based on their expectations of unrealistic advantages following from being self-employed.

Education plays an important role in increasing the interest in being self-employed as well as eliminating the unrealistic expectations of students. Education in the field of entrepreneurship was proved to positively influence students' attitudes to entrepreneurship, particularly according to research conducted in less developed countries (Chaguay & García, 2016; Zubairu, 2016; Widayat & Ni matuzahroh, 2017; Kiyani, 2017; Ali Sher et al., 2017; Bako, Ajibode Oluseye, & Aladelusi, 2017; Ahsan, Zheng, DeNoble, & Musteen, 2018 and others). It is interesting to compare research into the benefits of entrepreneurship education in more economically developed countries where the effects of education are not so explicit (Welsh, Tullar & Nemati, 2016; Hayes & Richmond, 2017). The type of education has a completely different role, attention being focused on the development of creativity and innovation (Degen, 2013) or looking for new forms of education (Darnell & Means, 2017; Ramsgaard & Østergaard, 2018; Chang, Hsiao, Chen, & Tsung-Ta, 2018) rather than on the basics of entrepreneurship. However, some contemporary research warns that entrepreneurship education is necessary even in European countries as its possible influence on students' motivation towards entrepreneurship is often underestimated (Kourilsky & Walstad, 2017; Kamovich & Foss, 2017). It is also interesting to find out, that while Czech students are mostly willing to study in tertiary education in order to find employment (Skořepa & Pícha, 2012), they are often not ready to find employment through starting their own business.

One of the findings made in this study was that Czech and German students considering being self-employed have similar self-assessment. The same finding was made by other authors as well. Chan, Uy, Chernyshenko, Ho, and Sam (2015), for example, state that students motivated to entrepreneurship and management, seem to be more similar than others.

The risk tolerance was one of the traits investigated in this study. This trait appears to be fundamental for entrepreneurs. A risk can be perceived as a threat or potential loss on the one hand, or as an opportunity or challenge on the other. The tendency towards or aversion to risk then influences an individual's perception of barriers in entrepreneurship (Giacomin, Janssen, & Shinnar, 2016; Markowska, Grichnik, & Brinckmann, 2018).

Other traits of an entrepreneur's personality traits could be investigated in further investigations. Such a trait is stress resistance, for example. It was established that entrepreneurs who do not employ other persons exhibit substantially less stress than those who employ other persons (Hessels, & van der Zwan, 2017). Accordingly, creating larger businesses means greater stress resistance. Finally, it is important to note that not all students who declare their intention to start a business during their studies really set up a business in the future. One of the



latest studies (Ferreira, Loiola, & Gondim, 2017) compared two groups of students – one group comprised students who wanted to start a business, the second group comprised students who have already started a business. The groups exhibited different motivation to entrepreneurship (financial motivation in students – entrepreneurs as opposed to social motivation in students who intend to do business), but both groups exhibited the same traits equally (e.g., cautious risk tolerance). This study comparing Czech and German students could not verify similar findings as both groups comprised a very small number of students who already do business.

## CONCLUSION

Entrepreneurship plays an important role in all economies, so it is important to pay attention to the new generation of future entrepreneurs. The objective of this article was to identify whether current students of economics at a regional public university are willing to be self-employed and whether such willingness is the same in university students in neighbouring regions, even between countries, i.e., Czech Republic and Germany in this case. The willingness of university students of economics to start business in the border regions of both neighbouring countries shows statistically significant differences. German students exhibit significantly greater interest in entrepreneurship than Czech students. There is an opportunity for further research into how the situation can be changed. It could help Czech students if greater emphasis was placed on the extent and forms of entrepreneurship education.

At the same time, the research wanted to establish whether students willing to be self-employed exhibit different personality traits than those who are not. The total assessment of the differences between Czech and German students in the self-assessment revealed that Czech students assess themselves as having less initiative than their German peers, otherwise, the self-assessment by students does not show any significant differences. However, statistically significant differences in the self-assessment were identified between students who want to set up their own business and those who do not want to, if the group was divided according to interest in entrepreneurship (not according to region/country). Such findings confirm the presumption that the personality of an entrepreneur, apart from other aspects (financial, professional and social), is very important for entrepreneurship. Traits such as independence, risk tolerance, creativity, initiative and responsibility were investigated in this survey. These traits seem to differentiate the “entrepreneurial” profile from the “non-entrepreneurial” profile. Students willing to do business scored these traits positively in their self-assessment statistically significantly more frequently compared to students who do not want to be self-employed, who

scored the answers negatively. Risk tolerance plays a fundamental role among the investigated traits.

The findings have an important practical application. Governments of the countries and regional authorities create good conditions for entrepreneurship because it represents economic growth and prosperity. In their curricula, the schools (high schools and universities) seek to develop entrepreneurial thinking among their students and support their entrepreneurial intentions. This effort will be more effective if all the above mentioned entities respect the specific personality characteristics identified in this research. Personality traits are crucial variables that distinguish future entrepreneurs from “non-entrepreneurs”. It is necessary to take these variable into consideration when measuring the effectiveness of business support or education.

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#### REFERENCES

- Ahsan, M., Zheng, C., DeNoble, A., & Musteen, M. (2018). From Student to Entrepreneur: How Mentorships and Affect Influence Student Venture Launch. *Journal of Small Business Management*, 56(1), 76. DOI: 10.1111/jsbm.12362
- Aidis, R., & Van Praag, M. (2007). Illegal Entrepreneurship Experience: Does it Make a Difference for Business Performance and Motivation? *Journal of Business Venturing*, 22(2), 283–310. DOI:10.1016/j.jbusvent.2006.02.002.
- Sher, A., Adil, S. A., Mushtaq, K., Ali, A., & Hussain, M. (2017). An Investigation of Entrepreneurial Intentions of Agricultural Students. *Pakistan Journal of Agricultural Sciences*, 54(4), 943. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=edb&AN=127187653&lang=cs&site=eds-live>
- Alstete, J. W. (2008). Aspects of Entrepreneurial Success. *Journal of Small Business and Enterprise Development*, 15(3), 584–594. DOI: 10.1108/14626000810892364
- Amadi-Echendu, A. P., Phillips, M., Chodokufa, K., & Visser, T. (2016). Entrepreneurial Education in a Tertiary Context: A Perspective of the University of South Africa. *International Review of Research in Open and Distributed Learning*, 17(4), 21–35. DOI: 10.19173/irrodl.v17i4.2482
- Ambad, S. N. A., & Damit, D. H. D. A. (2016). Determinants of Entrepreneurial Intention among Undergraduate Students in Malaysia. *Procedia Economics and Finance*, 37, 108–114. [https://doi.org/10.1016/S2212-5671\(16\)30100-9](https://doi.org/10.1016/S2212-5671(16)30100-9)
- Andersson, M., & Larsson, J. P. (2016). Local Entrepreneurship Clusters in Cities. *Journal of Economic Geography*, 16(1), 39–66. <https://doi.org/10.1093/jeg/lbu049>.
- Andersson, P., & Wadensjö, E. (2006). Do the Unemployed Become Successful Entrepreneurs? A Comparison between the Unemployed, Inactive and Wage-Earners. IZA Discussion Paper No. 2402. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=edszbw&AN=EDSZBW519643445&lang=cs&site=eds-live>

- Bako, Y.A., Ajibode, I.A., Oluseye, A.B., & Aladelusi, K. B. (2017). An Investigation of Entrepreneurial Intention among Entrepreneurship Students in South-West Nigeria Polytechnics. *International Journal of Entrepreneurial Knowledge*, Vol 5, Iss 2, Pp 16-32 (2017), (2), 16. <https://doi.org/10.1515/ijek-2017-0008>
- Begley, T. M., & Boyd, D. P. (1987). Psychological Characteristics Associated with Performance in Entrepreneurial Firms and Smaller Businesses. *Journal of Business Venturing*, 2, 79–93. [https://doi.org/10.1016/0883-9026\(87\)90020-6](https://doi.org/10.1016/0883-9026(87)90020-6)
- Binder, M., & Coad, A. (2013). Life Satisfaction and Self-Employment: a Matching Approach. *Small Business Economics*, 40(4), 1009–1033. <https://doi.org/10.1007/s11187-011-9413-9>.
- Blanchflower, D. G. (2000). Self-Employment in OECD Countries. *Labour Economics*, 7(5), 471–505. [https://doi.org/10.1016/S0927-5371\(00\)00011-7](https://doi.org/10.1016/S0927-5371(00)00011-7).
- Blanchflower, D. G., & Oswald, A. (1998). What Makes an Entrepreneur? *Journal of Labor Economics*, 16, 26–60. DOI: 10.1086/209881.
- Blanchflower, D. G., Oswald, A., & Stutzer, A. (2001). Latent Entrepreneurship Across Nations. *European Economic Review*, 45, 680–691. [https://doi.org/10.1016/S0014-2921\(01\)00137-4](https://doi.org/10.1016/S0014-2921(01)00137-4)
- Block, J., & Koellinger, P. (2009). I Can't Get No Satisfaction – Necessity Entrepreneurship and Procedural Utility. *Kyklos*, 62(2), 191–209. <https://doi.org/10.1111/j.1467-6435.2009.00431.x>.
- Brandstätter, H. (2011). Personality Aspects of Entrepreneurship: a Look at Five Meta-analyses. *Personality and Individual Differences*, 51(3), 222–230. <https://doi.org/10.1016/j.paid.2010.07.007>.
- Burmaoglu, G. E. (2018). The Investigation of the Relationship between the Risk Management with Creation and the Entrepreneurship of Erzurum Sport Staffs. *Journal of Education and Training Studies*, 6(4), 76–82. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=eric&AN=EJ1184517&lang=cs&site=eds-live>
- Darnell, J. A., & Means, T. S. (2017). What do People, Prototyping, Problem Solving, and Play-Doh have in Common? Team-based Learning! *American Journal of Management*, 17(2), 43. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=edo&AN=124869247&lang=cs&site=eds-live>
- De Pillis, E., & Reardon, K. K. (2007). The Influence of Personality Traits and Persuasive Messages on Entrepreneurial Intention: A Cross-Cultural Comparison. *Career Development International*, 12(4), 382–396. DOI: 10.1108/13620430710756762
- Degen, R. J. (2013). Teaching entrepreneurship students the practice of innovation: A brain-based guided experience approach. *Revista de Ciências da Administração*, 15(37), 92-104. <https://doi.org/10.5007/2175-8077.2013v15n37p92>
- Di Giunta, L., & Pantanella, G. (2014). The Association between Personality Traits, Entrepreneurial Intentions and the Promotion of Cultural Heritage in Late Adolescence. *Proceedings of the European Conference on Innovation & Entrepreneurship*, 145. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=edb&AN=99239935&lang=cs&site=eds-live>
- Dinc, M. S., & Hadzic, M. (2018). The Mediating Impact of Personality Traits on Entrepreneurial Intention of Women in Northern Montenegro. *International Journal of Entrepreneurship and Small Business*, 33(3), 400. DOI: 10.1504/ijesb.2018.10011172

- Chaguay, L. A. L. & García, M. F. E. (2016). Spirit Entrepreneur: Attitude of Change for it Innovation and Entrepreneurship. *Journal of Science and Research*, Vol 1, Iss 4, Pp 31-35 (2016), (4), 31. <https://doi.org/10.26910/issn.2528-8083vol1iss4.2016pp31-35>
- Chan, K.Y., Uy, M. A., Chernyshenko, O. S., Ho, M.-H. R., & Sam, Y.-L. (2015). Personality and Entrepreneurial, Professional and Leadership Motivations. *Personality and Individual Differences*, 77, 161–166. <https://doi.org/10.1016/j.paid.2014.12.063>
- Chang, J.-C., Hsiao, Y.-D., Chen, S.-C., & Tsung-Ta, Y. (2018). Core Entrepreneurial Competencies of Students in Departments of Electrical Engineering and Computer Sciences (EECS) in Universities. *Education + Training*, 60(7/8), 857. DOI: 10.1108/et-10-2016-0160
- Espíritu-Olmos, R., & Sastre-Castillo, M. A. (2015). Personality Traits versus Work Values: Comparing Psychological Theories on Entrepreneurial Intention. *Journal of Business Research*, 68, 1595–1598. <https://doi.org/10.1016/j.jbusres.2015.02.001>
- Farrukh, M., Khan, A. A., Shahid Khan, M., Ravan Ramzani, S., & Soladoye, B. S. A. (2017). Entrepreneurial Intentions: the Role of Family Factors, Personality Traits and Self-Efficacy. *World Journal of Entrepreneurship, Management & Sustainable Development*, 13(4), 303. DOI: 10.1108/wjemsd-03-2017-0018
- Ferreira, A. da S. M., Loiola, E., & Gondim, S. M. G. (2017). Motivations, Business Planning, and Risk Management: Entrepreneurship among University Students. *RAI Revista de Administração e Inovação*, 14, 140–150. <https://doi.org/10.1016/j.rai.2017.03.003>
- Friedrichs, A. M. (2018). Suggestions for Incorporating Entrepreneurship Education in the Classical Performance Studio [Online]. *Artivate: A Journal of Entrepreneurship in the Arts*, 7(2), 27-40. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=asu&an=131930986&scope=sit e>
- Fritsch, M., & Wyrwich, M. (2014). The Long Persistence of Regional Levels of Entrepreneurship: Germany, 1925–2005. *Regional Studies*, 48(6), 955–973. <https://doi.org/10.1080/00343404.2013.816414>
- Giacomin, O., Janssen, F., & Shinnar, R. S. (2016). Student Entrepreneurial Optimism and Overconfidence across Cultures. *International Small Business Journal: Researching Entrepreneurship*, 34(7), 925. DOI: 10.1177/0266242616630356
- Hayes, D., & Richmond, W. (2017). Using an Online Assessment to Examine Entrepreneurship Student Traits and to Measure and Improve the Impact of Entrepreneurship Education. *Journal of Entrepreneurship Education*, 20(1), 88. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=edb&AN=125822373&lang=cs &site=eds-live>
- Hessels, J., Rietveld, C. A., & van der Zwan, P. (2017). Self-Employment and Work-Related Stress: the Mediating Role of Job Control and Job Demand. *Journal of Business Venturing*, 32(2), 178–196. <https://doi.org/10.1016/j.jbusvent.2016.10.007>
- Kamovich, U., & Foss, L. (2017). In Search of Alignment: A Review of Impact Studies in Entrepreneurship Education. *Education Research International*, 1. DOI: 10.1155/2017/1450102
- Karabulut, A. T. (2016). Personality Traits on Entrepreneurial Intention. *Procedia - Social and Behavioral Sciences*, 229, 12–21. <https://doi.org/10.1016/j.sbspro.2016.07.109>
- Karabulut, E. O., & Dogan, P. K. (2018). Investigation of Entrepreneurship Trends and General Competency Levels of University Students Studying at Faculty of Sports Sciences. *Journal of Education and Training Studies*, 6(4), 212–220. DOI: 10.11114/jets.v6i4.3128
- Karimi, S., Biemans, H. J. A., Naderi Mahdei, K., Lans, T., Chizari, M., & Mulder, M. (2017). Testing the Relationship between Personality Characteristics, Contextual Factors and

- Entrepreneurial Intentions in a Developing Country. *International Journal of Psychology*, 52(3), 227–240. <https://doi.org/10.1002/ijop.12209>
- Kautonen, T., & Palmroos, J. (2010). The Impact of a Necessity-Based Start-Up on Subsequent Entrepreneurial Satisfaction. *International Entrepreneurship & Management Journal*, 6(3), 285. <https://doi.org/10.1007/s11365-008-0104-1>
- Kiyani, S. A. (2017). Role of Entrepreneurship Education on Student Attitudes. *Abasyn University Journal of Social Sciences*, 10(2), 270. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=edb&AN=126741471&lang=cs&site=eds-live>
- Kourilsky, M. L., & Walstad, W. B. (2017). The Early Environment and Schooling Experiences of High-Technology Entrepreneurs: Insights for Entrepreneurship Education. *International Review of Entrepreneurship*, 15(4), 1. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=edb&AN=126913689&lang=cs&site=eds-live>
- Lang, S. (2018). Passion First, Business Might Follow: An Austrian Study of Arts Entrepreneurship. *International Journal of Social, Political & Community Agendas In The Arts*, 13(2), 9-21. DOI: 10.18848/2326-9960/CGP/v13i02/9-21
- Lazear, E. P. (2004). Balanced Skills and Entrepreneurship. *The American Economic Review*, 94(2), 208–211. <https://doi.org/10.1257/0002828041301425>
- Liñán, F., & Chen, Y. (2009). Development and Cross-Cultural Application of a Specific Instrument to Measure Entrepreneurial Intentions. *Entrepreneurship Theory and Practice*, 33: 593-617. <https://doi.org/10.1111/j.1540-6520.2009.00318.x>
- Markowska, M., Grichnik, D., Brinckmann, J., & Kapsa, D. (2018). Strategic Orientations of Nascent Entrepreneurs: Antecedents of Prediction and Risk Orientation. *Small Business Economics*, [On-line]. <https://doi.org/10.1007/s11187-018-0107-4>
- Minola, T., Criaco, G., & Obschonka, M. (2016). Age, Culture, and Self-Employment Motivation. *Small Business Economics*, 46(2), 187. DOI 10.1007/s11187-015-9685-6
- Obi, J., Ibidunni, A. S., Tolulope, A., Olokundun, M. A., Amaihian, A. B., Borishade, T. T., & Fred, P. (2018). Contribution of Small and Medium Enterprises to Economic Development: Evidence from a Transiting Economy. *Data in Brief*, 18, 835-839. <https://doi.org/10.1016/j.dib.2018.03.126>
- Ramsgaard, M. B., & Østergaard, S. J. (2018). An entrepreneurial Learning Approach to Assessment of Internships. *Education + Training*, 60(7/8), 909. <https://doi.org/10.1108/et-11-2016-0164>
- Sahut, J.-M., & Peris-Ortiz, M. (2014). Small Business, Innovation, and Entrepreneurship. *Small Business Economics*, (4), 663. <https://doi.org/10.1007/s11187-013-9521-9>
- Skořepa, L., & Pícha, K. (2012). Evolution and perspectives of the regional market of applicants for tertiary education in South Bohemian Region. *Acta univ. agric. et silvic. Mendel. Brun.* 60(7), 265–272
- Singh, G., & DeNoble, A. (2003). Early Retirees as the Next Generation of Entrepreneurs. *Entrepreneurship Theory and Practice*, 23, 207–226. <https://doi.org/10.1111/1540-8520.t01-1-00001>
- Wang, J.-H., Chang, C.-C., Yao, S.-N., & Liang, C. (2016). The Contribution of Self-Efficacy to the Relationship between Personality Traits and Entrepreneurial Intention. *Higher Education: The International Journal of Higher Education Research*, 72(2), 209–224. <https://doi.org/10.1007/s10734-015-9946-y>
- Welsh, D. H. B., Tullar, W. L., & Nemati, H. (2016). Empirical Paper: Entrepreneurship Education: Process, Method, or Both? *Journal of Innovation & Knowledge*, 1, 125–132. <https://doi.org/10.1016/j.jik.2016.01.005>

- Westlund, H., Larsson, J. P., & Olsson, A. R. (2014). Start-Ups and Local Entrepreneurial Social Capital in the Municipalities of Sweden. *Regional Studies*, 48(6), 974–994. <https://doi.org/10.1080/00343404.2013.865836>.
- Widayat Widayat, & Ni matuzahroh Ni matuzahroh. (2017). Entrepreneurial Attitude and Students Business Start-Up Intention: A Partial Least Square Modeling. *Jurnal Manajemen Dan Wirausaha*, 19(1), 46-53. Retrieved from <http://search.ebscohost.com/login.aspx?direct=true&db=edsdoj&AN=edsdoj.9e6bc0c63d4e4992a1ad2497afcd9e72&lang=cs&site=eds-live>
- Zhao, H., & Seibert, S. E. (2006). The Big Five Personality Dimensions and Entrepreneurial Status: a Meta-Analytical Review. *Journal of Applied Psychology*, 91(2), 259–271. <https://doi.org/10.1037/0021-9010.91.2.259>.
- Zubairu, U. (2016). Making the Student Learning Experience Fun, Memorable and Effective: A Case of Entrepreneurship Students. *International Journal of Social Sciences & Educational Studies*, 2(4), 74-84.