

Influence of insurance on entrepreneurship: sector-specific evidence

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Abstract

Background: Numerous authors have researched the impact of insurance on entrepreneurship and focused primarily on different aspects of health and social insurance, and their alternatives to private insurance. This paper investigates the importance of various lines of insurance on entrepreneurial performance.

Purpose: The aim of the research is to analyse how insurance affects entrepreneurship in certain sectors of activity.

Study design/methodology/approach: A linear regression model was applied on data collected through the questionnaire, which consisted of 12 questions embodying the variables included in the regression analysis. The survey was conducted on a sample of 460 entrepreneurs, which provided a confidence interval of 4.5 at a confidence level of 95%. The questionnaire was submitted to entrepreneurs in person, and it was filled in accountancy agencies that provide them accounting services, thus avoiding initial mistrust of entrepreneurs as respondents.

Findings/conclusions: The main findings included the positive impact of premium paid on business results. By using variance analysis, the existence of sectoral differences regarding the impact of entrepreneurship on insurance was also confirmed. It was found that sectoral differences exist not only in the purchase of insurance, but also in the level of realized income, whereby the highest revenues were realized in the activities of information and communication and accommodation, and food service, while the smallest revenues were realized in the manufacturing industry. These results are also crucial for directing the government's economic policies to stimulate entrepreneurship and economic growth.

Limitations/future research: Future research will be directed toward comparisons of results obtained in a developing country, with the sector specific evidence in developed countries.

Keywords

Entrepreneurship, income, insurance, premium, risk

Introduction

The grand opus of theoretical literature points to various aspects of the contribution of insurance on entrepreneurship development (e.g., Rejda, 2005; Skipper & Kwon, 2007; Dorfman, 2008) in the context of making the insurance of entrepreneurial

activity safer and more certain. A lot of literature on insurance indicate insurance enables entrepreneurs to take over more business risks and make higher profits. Entrepreneurship includes creativity, innovation and willingness to accept risk. Given that the risk is inherent in entrepreneurial ventures and that

entrepreneurship in Serbia, as a developing country, is burdened with problems of financing. Njegomir (2020) researched how insurance contributes to the advancement of entrepreneurship in terms of risk management and financing.

Some authors researched the link between social security and entrepreneurship (e.g., Holly & Wadhwa, 2013; Hambert et al., 2014). Only Masci (2013) researched the impact of the availability of private insurance on entrepreneurship development. In the research, the author pointed out the interdependence of insurance and entrepreneurship availability, and the relation between social security and entrepreneurship in Brazil and the countries of South America. In developing countries like Serbia, there are various sources of incentives for entrepreneurship and economic development. Research of the impact of insurance on entrepreneurship can contribute to the advancement of entrepreneurship and lay the foundations for further empirical research into the impact of private insurance and entrepreneurship. Njegomir (2015) pointed out the double potential of insurance for the development of entrepreneurship, by two functions of insurance - risk management and institutional investment on financial markets.

The study's significance is that it presents an overview of the impact of insurance on entrepreneurship, including the analysis of the impact of insurance on entrepreneurship by individual sectors of activity. The aim of the study is to enable the systematization of the impact or quantification of certain sectors' elasticities, depending on the impact of insurance.

The remainder of this article is organized as follows. The second section reviews the prior literature. The third section presents the study's theoretical framework, while the fourth section presents the data and methodology applied in the analysis. The fifth section encompasses the presentation of the empirical results and the sixth section discussion. The sixth section concludes.

1. Literature review

Papers that investigate the impact of insurance on entrepreneurship in the literature focus primarily on different aspects of health and social insurance and their alternatives to private insurance.

For example, DeCicca (2010) investigated the link between the availability of health insurance and entrepreneurship. The paper examined the impact of the individual health insurance plan in New Jersey on self-employment. Interestingly, the

emergence of this plan had a positive effect on the self-employment of New Jersey citizens. A stronger relationship existed among unmarried, elderly, and individuals with poorer health.

Aggarwal et al. (2013) proved that the lack of health insurance has a significant negative impact on entrepreneurship. Also, they documented the importance of health insurance for self-financed entrepreneurs, who are married, have children who originate from poor socio-economic conditions, and who are older. The research of Fossen et al. (2021) also suggested that lower health insurance costs in the HIX (Health Insurance Exchange) would have the additional effect of stimulating entrepreneurship.

Kwapisz (2020) investigated the decision of self-employed to purchase health insurance, as well as the source of financial information for making such decision. The finding was that self-employed women are less likely than men to be insured, the opposite of what is seen in general population. Also, self-employed women who rely on family and friends as the main source of financial information are significantly less likely to purchase health insurance, an effect that is not true for self-employed men.

The results of research of Wolfe and Patel (2019) pointed out that individuals who have their own health insurance are less likely to exit self-employment. Among them, males, relative to females, are more likely to exit self-employment. Additionally, their results suggested that for older individuals, having one's own health insurance does not have a significant relationship with self-employment exit. Individuals who have own health insurance, for whom health does not limit work, are more likely to exit self-employment relative to those who have health problems.

Similar results were obtained in the study of Leopold et al. (2020) conducted in Vietnam. They pointed out that health insurance has a strong association with self-employment (SE) entry. Those insured under the compulsory membership category are less likely to enter SE, than those insured under the voluntary membership category. Regarding self-employment exit, people with compulsory insurance are more likely to exit self-employment compared with those covered by voluntary insurance.

Knut & Skogstrøm (2014) researched how unemployment insurance, an element of social insurance, affects the labor market and entrepreneurship. Their research indicated that entrepreneurial activities are strengthening with

the reduction or exhaustion of unemployment insurance.

Deloitte (2022) surveyed 5,300 SMEs (defined as companies with 5 to 75 full-time employees) including 400 in Switzerland, to gain deeper insight into their views on insurance and translate them into specific recommendations for insurers. The sample consisted of SMEs from 14 countries. Deloitte disclosed the following findings based on the survey: 1) SMEs increasingly see the value of insurance; 2) SMEs want a trusted advisor and digital engagement; 3) SMEs want advice and a holistic service offering more than just insurance. Unexpected, COVID has strengthened trust in insurers. In total, 99% of Swiss SMEs trust their insurer or intermediary as much or more than before the pandemic. Insurers should use these findings regarding SME segment, as opportunities to grow and provide them additional protection or advisory services.

Chatterjee and Wehrhahn (2017) pointed out that reducing the credit gap and improving access to finance are crucial, especially for MSMEs (micro, small and medium enterprises). Availability of collateral and credit risk assessment considerably contribute to the access to the needed and scarce capital. Improvement of MSME risk management system is very important for getting higher credit rating and positive credit decision by lender. Insurers as risk management experts contribute to assessment of existing risk management systems and better pricing of credit risk. Including insurers as creditors to MSMEs would increase competition and supply of credit, and contribute overcome the credit gap.

Brown et al. (2022) researched access of innovative SMEs to external funds and found that SMEs undertaking pure product and joint product and process innovation have a significantly higher incidence of borrower discouragement than non-innovative SMEs. Additionally, radical and incremental product innovators are more likely to be discouraged relative to non-innovative counterparts. It indicates that innovative SMEs should become visible for insurers as special segment to support them in managing risks that SMEs face.

Moric Milovanovic (2022) researched relation between entrepreneurial orientation (EO) and performances of small firms in an open, small, transitional economy and found that firms should take into account changes in their environment, to invest more in environmental scanning activities, to set up risk controls, to focus on limited number

of opportunities, in order to allocate their limited resources with the highest possible performances and returns. Providing insurance coverage could be one of the risk taking strategies, especially important for small firms and entrepreneurs that are considerably exposed to business and environmental risks.

Hambert et al. (2014) researched the impact of the reform in France that led to the reduction of unemployment insurance for individuals starting a business venture. The research results indicated that the reform had contributed to the improvement of the entrepreneurs' productivity, and created relatively smaller companies in relation to those created before the reform.

Unlike the above-mentioned research, this research focused on the analysis of the influence of private insurance on entrepreneurship development, as well as on the impact of insurance on entrepreneurship in certain sectors of activity.

In previous research, total revenue was used as an entrepreneurship measure (Foley & Green, 1989; Perren, 2000; Amit et al., 2000). Giannetti & Simonov (2004) explored how social norms, economic environment, and individual characteristics influence entrepreneurs' income, while Swindall (2010) explored how personal characteristics, availability of resources, and economic structure influence the income of entrepreneurs.

Typical explanatory variables that describe the income of entrepreneurs include education, activity structure, gender, marital status, age, mortgage, health insurance, type of activity, urbanization, unemployment, business environment, immigration, social protection, available labor and capital, level of income per capita, wealth tax per capita, unemployment rate, competition, specialization, public employment rate, degree of aversion, or risk tolerance, level of self-confidence and other variables (Verheul et al., 2003; Giannetti & Simonov, 2004; Arenius & Minniti, 2005; Freytag & Thurik, 2007; Swindall, 2010; Wennekers et al., 2010). In some studies that consider entrepreneurship as a dependent variable over the measure of total income, the usual effect of age (younger), gender (male), marital status (married), education (higher education), the number of employees (higher number), the amount of gross domestic product measured by different measures (higher gross domestic product) have a positive impact on entrepreneurial income.

As independent variables whose influence on entrepreneurship is determined, this paper uses the

type of activity, the level of education of entrepreneurs, the gender of entrepreneurs, the age of entrepreneurs, the number of employees, purchase of insurance, the types of insurance, and total premium according to the amount of total revenues per entrepreneur.

The question about the affiliation of entrepreneurs to different sectors of activity was taken in order to determine the existence of differences in the impact of the protection function against the risk that insurance performs by activities. Henriquez et al. (2002) indicated that in France and in general, the largest entrepreneurial presence was realized in service activities. The diversity of insurance impacts depending on the sector was examined by analysing variance. Also, the answers about the affiliation of entrepreneurs to certain types of activities were used in the regression analysis to obtain a response to differences in activity in the amount of annual business revenues per entrepreneur.

The level of education is usually observed in the context of population education and the impact on entrepreneurship (Web, Grace & Skipper, 2002; Davidsson & Honig, 2003; Aidis, Estrin & Mickiewicz, 2012). Warneryd et al. (1987), using data for Sweden, found that better-educated individuals are more likely to start an entrepreneurial venture, while Johansson (2000) came to the contrary data in Finland, where less educated individuals are more prone to start a business venture. Lazear (2005) indicated that individuals who completed diversified master studies of business administration have a greater probability of engaging in entrepreneurship.

Numerous studies analysed gender differences in the creation of entrepreneurial ventures and performances. In most studies, it was confirmed that men are more likely to become entrepreneurs than women (Reynolds et al., 2002; Verheul et al., 2006; Aidis, Estrin & Mickiewicz, 2012; Kelley et al., 2015). The most important results were obtained by examining gender differences in entrepreneurship performance, primarily on revenue and profitability. Watson (2002) provided an overview of various studies that have explored gender differences in the context of the impact on entrepreneurship profitability. Coleman (2007) suggested that human capital, including their education and experience, has a positive impact on profitability among women entrepreneurs, while the availability of capital has a greater impact on male entrepreneurs' profitability.

Most studies indicate that younger people, or people under 35, are most likely to become entrepreneurs (Levesque & Minniti, 2006; Aidis, Estrin & Mickiewicz, 2012). Evans & Leighton (1989) found empirically that individuals are more inclined to enter into entrepreneurial ventures before the age of 40, while after 40, they are less willing to start entrepreneurial activities. Even though young entrepreneurs have higher education and lack sufficient entrepreneurial training compared to the elderly, they could not build enough wealth due to the global financial crisis (Kauffman Foundation, 2015) and have fewer personal business relationships (Robinson & Stubberud, 2014). The largest number of studies confirm the thesis that entrepreneurs between the age of 35 and 55 are the most successful (Brüderl & Preisendörfer, 2000; Henley, 2005; Alam, Jani, & Omar, 2011). Starting from the previous studies' results, we expected middle-age entrepreneurs to earn the highest income in our research.

The type of insurance variable was established to test the relationship between the entrepreneurs' income and the types of insurance they use. The basic starting point was that insurance affects the increase in entrepreneurs' income, and therefore the assumption that each type of insurance, except life insurance, affects the increase of income. Three types of insurance were offered in questionnaire: property insurance, liability insurance, and life insurance. Entrepreneurs usually provide life insurance for their own needs. This option was given to determine if there is a relation between purchasing life insurance and income level. It was expected that the impact of life insurance on income per entrepreneur is neutral, or the purchase of life insurance would not have an impact on the income of entrepreneurs, since this type of insurance is deductible cost (Verdon, 2010), but not improving the business. Property and liability insurance is in the business's function, and their acquisition provides potential benefits if the harmful event covered by the insurance occurs. There are no previous studies of non-life insurance's impact, except for the health insurance impacts mentioned in the opening statement. According to the authors' knowledge, only Masci (2013) analysed the impact of private insurance in general on entrepreneurship, but not individually, the impact of the property, liability, and life insurance. The expected effect of property and liability insurance on incomes per entrepreneur is positive, and the expected effect of the life insurance is neutral.

The research's key explanatory variable was the amount of the total insurance premium by income per entrepreneur. By survey research, the amount of insurance premium per entrepreneur was compared with the amount of total revenues per entrepreneur, in order to determine the interdependence by regression analysis.

Research on the number of employees in entrepreneurial firms included research on wages (Bengtsson & Hand, 2013), the position of the union (Batt & Welbourne, 2002), and productivity (Garmaise, 2008). Creating new jobs is one of the three key impacts of entrepreneurship, with the other two being economic growth and poverty reduction (Ahmad & Hoffman, 2007; Haltiwanger, Jarmin & Miranda, 2013; OECD, 2014; Fairlie & Miranda, 2016). Bearing in mind that the number of employees directly affects the performance of entrepreneurship, the number of employees was also taken as the measure of the performance of entrepreneurs (Ahmad & Hoffman, 2007). Based on the above, positive impact of number of employees to the success of entrepreneurs was expected.

Entrepreneurship has been historically linked to risk (Cramer et al., 2002). Knight (1921) and Marshall (1961) pointed out the importance of the ability to handle uncertainty, identifying, and carrying risks. Numerous studies have empirically confirmed that successful entrepreneurs have a lower risk aversion (Kihlstrom & Laffont, 1979; Cramer et al., 2002; Memill et al., 2010) or loss (Koudstaal, Sloof & van Praag, 2015) relative to the rest of the population. Entrepreneurial attitudes about the business risk as an approximation of risk perception were used. Using previous studies' results, it was expected that the identified higher risk in business implies no correlation with the entrepreneur's annual operating income.

In the survey research, the individual risks presented to entrepreneurs as the most important were: price, credit, operational, risks of claim collection, fire risks, floods, earthquakes, and others that can be transferred into insurance and the risks of interruption of work, also insurable risks. By introducing a framework for the regulation of solvency of banks - Basel III (2011), as well as with the application of the European Union Directive regulating solvency issues of insurance companies - Solvency II (2009) not only in banking and insurance, but in all other sectors, the importance of holistic risk management and therefore recognizing the risks that were not previously covered, have been emphasized.

For further analysis, the most significant were the risks of fire, floods, earthquakes, and others that can be transferred into insurance. In particular, the risks of work termination to determine the extent to which these risks are identified were added. It was expected that those entrepreneurs who choose the most important insurance risks, or the risks of fire, floods, earthquakes, and others that can be transferred into insurance, will more often choose insurance as a form of risk management. The total insurance premium will be higher in relation to entrepreneurs who choose other types of risk as the most important.

2. Research methodology

The questionnaire consists of 12 questions embodying the variables included in the regression analysis. The authors have created the questionnaire (attached in the Appendix 1) to gather the data on company level. The research presents a 'snapshot' at a certain moment and hence no macro variables were included due to their constant value for each respondent. The survey was conducted in the period from June 1, 2019, until September 10, 2019, and data are related to 2019. The survey was conducted on a sample of 460 entrepreneurs, which provides a confidence interval of 4.5 at a confidence level of 95%. The entrepreneurs come from northern Serbian province of Vojvodina. The questionnaire was submitted to entrepreneurs in person, and it was filled in in accountancy agencies that provide them accounting services, thus avoiding initial mistrust of entrepreneurs as respondents. Thanks to trust in the agencies, anonymity of the questionnaire, precision, and clarity, the percentage of answers received is extremely high and exceeds 90%.

In the design of the questionnaire, two open questions were included regarding the size of the realized annual incomes of the participating entrepreneurs and the size of the total insurance premium for all types of insurance. These two open questions were necessary, as only in this way could the annual income of the entrepreneurs be ascertained. Furthermore, data on the amount of the insurance premium per entrepreneur or on the annual income of the entrepreneur could only be obtained by survey research.

The set of explanatory variables was limited by the availability of data collected through the survey. Variables used in the regression are both numerical and categorical, i.e., qualitative in nature. The problem with qualitative variables is

that they cannot be directly included in the regression equation. In general, a categorical variable with a k level must be transformed into a k-1 binary variable to avoid linear dependency among the variables. Binary variables can be entered directly into the model. The level of the category that is omitted becomes the “reference variable”, and all others in the same category are compared with it. In this case, the regression

model’s estimated coefficients that stand with the binary variables are interpreted as the difference (positive or negative) of the influence on the dependent variable relative to the influence that has the reference variable.
A linear regression model which includes m continuous explanation variables and n categorical variables is given by:

$$y_h = \alpha x_0 + \sum_{k=1}^m \beta_k x_{kh} + \sum_{k=1}^n \sum_{d=1}^{D_k} \gamma_{dk} x_{kdh} + \varepsilon_h, \quad h = 1, 2, \dots, N \quad (1)$$

where the y_h is the dependent variable, the variable intersection with y-axis x_0 is identically equal to 1, continuous explanatory variables x_{kh} , $k = 1, \dots, m$, and the set of indicator variables x_{kd} , $d = 1, \dots, D_k$ defines a categorical variable x_k with D_k level, where $k = 1, \dots, n$.

The parameters $\alpha, \beta_k, \gamma_{dk}$ are the regression coefficients evaluated by the analysis. The presented model is the so-called main effect model that does not contain interaction effects among the variables. Since the assumption of iid is unrealistic, feasible generalized least square (FGLS) approach was applied instead of OLS method, which is widely used to correct for heteroscedasticity as well as autocorrelation (Powers, D), and it is suitable when the dependent variable is continuous.

3. Results and discussion

The first hypothesis tested by the variance analysis was the hypothesis of equal premiums for all entrepreneurs. The following hypothesis were tested:

H0: Insurance premiums are the same for all entrepreneurs, regardless of which risks are indicated as the most important ones.

The application of the software package in the application of the variance analysis is presented in Tables 1 and 2.

Table 1 Descriptive statistics for the variance analysis of the premium size depending on the most important risks

Groups	Count	Sum	Average	Variance
Other risks	305	1.56E+08	510023	4,54E+11
Insurable risks	155	1.09E+08	702477	8,33E+11

Source: the authors' calculations

Table 2 The variance analysis of the premium size depending on the most important risks

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	3.81E+12	1	3.81E+12	6.541	0.011	3.862
Within Groups	2.67E+14	458	5.82E+11			
Total	2.70E+14	459				

Source: Eviews 7; the authors' calculations

Using the variance analysis on the data collected by survey research, the results were obtained, which reject the hypothesis ($F = 6,541 > F_{crit}$) on equal insurance premiums for all entrepreneurs. This rejection of the hypothesis means that premium insurance varies depending on whether entrepreneurs chose insurance risks or the risks of fire, flood, earthquakes, and others that can be transferred to insurance or other risks.

The second tested hypothesis was:

H0: More formal education has a beneficial effect on the purchase of insurance.

The results of the variance analysis are shown in Table 3 and Table 4.

Table 3 Descriptive statistics for the variance analysis of insurance purchase depending on the level of formal education

Groups	Count	Sum	Average	Variance
Faculty	137	96745000	706168	6.81E+11
Secondary school	308	1.58E+08	512162	5.45E+11
Primary school	15	9950000	663333	4.87E+11

Source: the authors' calculations

Table 4 The variance analysis in the purchase of insurance depending on the level of formal education

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	3.69E+12	2	1.85E+12	3.163	0.043	3.0154
Within Groups	2.67E+14	457	5.83E+11			
Total	2.70E+14	459				

Source: the authors' calculations

By applying the variance analysis, we get $\alpha = 0.05$. It was necessary to test the least significant differences and determine which level of formal education most favorably affects the purchase of insurance. Tukey's test confirms a significant difference in the amount of premiums between highly educated entrepreneurs and entrepreneurs who have secondary education. Entrepreneurs with a university degree, on average, pay higher insurance premiums.

Finally, the existence of sectoral differences in the amount of insurance premiums was tested using variance analysis. The following hypothesis was set up:

H0: There are sectoral differences in the amount of insurance premiums.

The software package application results in the application of the variance analysis are shown in Tables 5 and 6.

Table 5 The variance analysis in the purchase of insurance depending on the level of formal education

Sectors	Count	Sum	Average	Variance
a	85	27931000	328600	1.45E+11
b	77	84488000	1097247	1.07E+12
c	43	32018000	744605	7.32E+11
d	42	24124000	574381	3.43E+11
e	72	58348000	810389	8.50E+11
f	5	7000000	1400000	8.95E+11
h	5	1570000	314000	4.13E+09
j	69	11535000	167174	5.22E+10
k	61	16937000	277656	2.08E+11

Source: the authors' calculations

Table 6 The variance analysis of the premium amount depending on the sector of activity

Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	5.20E+13	8	6.50E+12	13.399	1.95E-17	1.959
Within Groups	2.18E+14	450	4.85E+11			
Total	2.70E+14	458				

Source: the authors' calculations

There are significant differences in the average premium depending on the sectors to which the enterprises belong. T-test, Tukey test, and LSD

(least significant differences) lead to the formation of three professional clusters:

The first cluster: The highest average insurance premiums were collected in the agriculture, forestry, and fisheries sectors and the accommodation and food service sector.

The second cluster: Insurance premiums that are among the largest and the smallest have been collected in the manufacturing and construction sectors and in the sector of transport and storage.

The third cluster: The smallest average insurance premiums were collected in the wholesale and retail sector, repair of motor vehicles and motorcycles, the real estate sector, sector of professional, scientific, innovative, and technical activities, and other service activities.

Next, the regression analysis results or estimated the equation parameters were analyzed (1). The explanations of the variables are shown in Table 7, and the results of the regression analysis are shown in Table 8.

Table 8 shows the regression analysis results obtained by using the software statistical data processing package Eviews 7. The dependent variable in the regression analysis, which is being considered, is the entrepreneur's total income realized in the previous year (in the logarithmic form).

Table 7 Explanation of variable labels for regression analysis

Label	Explanation
C***	Independent variable. The realized annual income in dinars in the previous year per entrepreneur.
A11*	Property insurance (answer to the question about the type of insurance)
A3**	Wholesale and retail trade; repair of motor vehicles and motorcycles (answer to the question about the type of activity)
A4	Faculty (answer to the question about completed formal education)
A9	Insurance (the answer to the question of which forms of risk management are used)
AB11**	Property and liability insurance (answer to the question about the type of insurance)
AB9	Insurance and prevention (the answer to the question of which forms of risk management are used)
ABC11***	Property, liability, and life insurance (answer to the question about the type of insurance)
ABD9	Insurance, prevention, and reduction (answer to the question of which forms of risk management are used)
AC11**	Property and life insurance (answer to the question about the type of insurance)
AD9	Insurance and risk retention (answer to the question about the type of insurance)
B11**	Liability insurance (answer to the question about the type of insurance)
B3	Agriculture, forestry, and fisheries (answer to the question about the type of activity)
B4	Secondary school (answer to the question on completed formal education)
B6*	36-55 (age of entrepreneur)
B9**	Prevention (answer to the question of which forms of risk management are used)
C11	Life insurance (answer to the question about the type of insurance)
C3***	Manufacturing (response to the question about the type of activity)
C6	over 55 (the age of the entrepreneur)
D3*	Construction (answer to the question about the type of activity)
D9	Risk reduction (answer to the question of which forms of risk management are used)
E3	Transport and storage (response to the question about the type of activity)
EMPLOYEE** *	Number of employees
F3*	Accommodation and food services (answer to the question about the type of activity)
G3*	Information and communication (answer to the question about the type of activity)
H3	Real estate (answer to the question about the type of business)
J3**	Administrative and support service activities (answer to the question about the type of activity)
POL***	Gender
TOTPREM***	Total insurance premium

Source: the authors' abbreviations for regression analysis

Table 8 Results of regression analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C***	15.061	0.207	72.809	0.000
A11*	0.,314	0.186	1.687	0.092
A3**	-0.179	0.086	-2.082	0.038
A4	-0.007	0.147	-0.047	0.962
A9	-0.144	0.209	-0.685	0.493
AB11**	0.389	0.193	2.019	0.044
AB9	-0.191	0.220	-0.863	0.388
ABC11***	0.367	0.148	2.482	0.006
ABD9	0.292	0.273	1.068	0.286
AC11**	0.369	0.198	1.858	0.063
AD9	0.075	0.217	0.343	0.731
B11**	0.485	0.218	2.218	0.027
B3	-0.105	0.093	-1.124	0.262
B4	0.013	0.142	0.090	0.928
B6*	-0.152	0.085	-1.784	0.075
B9**	-0.345	0.145	-2.368	0.018
C11	0.344	0.216	1,589	0.112
C3***	-0.299	0.107	-2,777	0.005
C6	0.041	0.104	0,395	0.692
D3*	-0.204	0.107	-1.890	0.059
D9	-0.154	0.132	-1.165	0.244
E3	-0.078	0.100	-0.780	0.435
EMPLOYEE***	0.103	0.008	12.669	0.000
F3*	0.429	0.242	1.771	0.077
G3*	0.899	0.485	1.851	0.064
H3	-0.090	0.263	-0.348	0.733
J3**	-0.179	0.094	-1.897	0.058
POL***	0.257	0.070	3.663	0.000
TOTPREM***	4.07E-07	4.28E-08	9.499	0.000
R-squared	0.754	Mean dependent var		15.879
Adjusted R-squared	0.738	S.D. dependent var		0.926
S.E. of regression	0.474	Akaike info criterion		1.406
Sum squared resid	96.884	Schwarz criterion		1.666
Log likelihood	-294.438	Hannan-Quinn criteria.		1.508
F-statistic	47.203	Durbin-Watson stat		1.898
Prob(F-statistic)	0.000			

Note: ***, **, * indicate the significance of coefficient at levels of 1%, 5% and 10% respectively.

Dependent variable: LOG(TOTREV) - total revenues

Method: Least Squares

Sample: 1460

Included observations: 460

Source: the authors' calculations

First, sectoral differences were pointed out. The sectoral impact is a categorical variable, and the sector k (other service activities) was taken for the

base size. Coefficients of the variables B3, E3, and H3 (binary variables that indicate affiliation, or non-affiliation to the sectors B, E, and H,

respectively, or to the following sectors: agriculture, forestry and fisheries (B), transport and storage (E) and real estate (H)) are not significantly different from zero, which implies that the average total income in each of these sectors is at the level of income in the sector of other service activities.

The coefficient of the variable A3 (-0.1794) is statistically significantly different from zero and shows that average revenue in sector A is 83.58% ($e^{-0.1794}$) of revenue in the sector K, or average income in sector A, wholesale and retail trade; repair of motor vehicles and motorcycles is about 16.5% lower than in the sector of other service activities (K), *ceteris paribus*.

The situation in sector C (manufacturing) is even more unfavorable. The C3-variable coefficient has a value of -0.299, which represents a lower average income compared to the sector of other service activities (K), almost 26%.

The situation in sector D (construction) is unfavorable given that the coefficient with the variable D3 (-0.2038) represents a lower average income compared to the sector of other service activities (K) by about 18.5%.

For the variable E3, the coefficient is negative (-0.0785). This coefficient explains that there is a notable lower income in the sector of transport and storage activities, or sector E, compared to the sector of the service activities (K) by about 7.5%.

In the accommodation and food service sector, the situation is favorable given the positive coefficient of the variable F3 (0.4292). In the accommodation and food service sector, higher income was recorded by 53.6% in relation to the service sector (K).

In sector G, the information and communication sector, the situation is the most favorable since the coefficient of the variable G3 is 0.8992. This coefficient shows that the revenue is higher by 145.7% in the information and communication sector compared to the service sector (K). This result, however, has to be taken cautiously given that only one entrepreneur from the information and communication sector participated in the questionnaire, which is not a representative indicator.

In sector J, the sector of professional, scientific, innovation, and technical activities, a lower income of about 16.5% was achieved in relation to the service sector (K).

3.1. The impact of formal education

The basic variable is the elementary education of the entrepreneur. Coefficients of the variables that

measure the additional impact of middle and high levels of formal education are not statistically different from zero, and it was concluded that on the observed sample of entrepreneurs, the level of their formal education does not affect the total annual income or that the annual income of entrepreneurs does not increase with the increase in years of formal education. The result is the highest share of entrepreneurs with secondary education in the structure of entrepreneurs, and the data indicate that for success in entrepreneurship, there are no differences in the level of education. Most of the literature deals with the impact of education on entrepreneurship in terms of willingness to engage with entrepreneurial activities and in those cases there is a positive impact of educational level towards entrepreneurship (Aladejebi, 2018; Hessels et al 2020).

3.2. Gender structure

The auxiliary explanatory variable POL is a binary variable with a value of 0 if it is a female entrepreneur and 1 if the entrepreneur is a man. The coefficient for this variable is significantly different from zero. The coefficient with POL is positive (0.2568), indicating that male entrepreneurs on average earn higher incomes than female entrepreneurs by 29.28%. This means that male entrepreneurs have better conditions for the business in relation to female entrepreneurs. This result is in line with the multitude of research which proves that female entrepreneurs earn less and have more fear of failure in starting a business (Hung & Tuan, 2020; Khalife & Chalouhi, 2013).

3.3. Age structure

Young entrepreneurs (18-35 years) are taken as the base variable. The values of the auxiliary variable B6 (middle-age entrepreneurs) and C6 (older entrepreneurs) indicate that older entrepreneurs earn on average the same income as the young (C6 is not significantly different from 0), while middle-aged entrepreneurs, on average, earn less than young entrepreneurs by 14%. This is due to the fact that young entrepreneurs have a greater initiative, as well as the fact of the differences in association with certain activities, and these differences are expressed in the amount of an annual income of young, old, and middle age entrepreneurs. This is in line with Zhao et al (2021), who also performed a meta analysis on age and entrepreneurial success and concluded that it exhibit signs of a U-shaped relationship.

3.4. Insurance purchase

The impact of different risk management methods (insurance, prevention, risk retention, risk reduction on total income) in relation to the annual income of entrepreneurs who do not use any of these methods is not significant. Entrepreneurs who use only insurance (alone or in combination with risk prevention or reduction) receive on average the same amount of annual income as entrepreneurs who do not use any of these methods. Coefficients of the variables A9 (insurance), AB9 (insurance and prevention), ABD9 (insurance, prevention, and risk reduction), AD9 (insurance and risk reduction), and D9 (risk reduction) are not significantly different from zero. The entrepreneurs who control risk by prevention are an exception; they have an average income of less than 29% compared to the control group. The obtained results related to prevention do not have a direct connection with theoretical bases. When it comes to other forms of risk management, the obtained results do not interpret the difference between their use or non-use.

3.5. Types of insurance

In relation to entrepreneurs who do not use any insurance (base variable), entrepreneurs who are insured on average earn higher incomes. Let us suppose that entrepreneurs only use property insurance, property and liability insurance, property insurance, liability and life insurance, property and life insurance, or only liability insurance. In that case, they earn more income by 37%, 47.6%, 44.3%, 44.7%, and 62.4%, respectively, in relation to entrepreneurs that are not insured.

The purchase of only life insurance does not affect the increase in income in relation to non-insured entrepreneurs. These relations confirm the positive influence of insurance on entrepreneurship, or the hypothesis that the primary insurance function of protection against the harmful consequences is to promote the development of entrepreneurship, making entrepreneurial activities safer and more certain.

3.6. Total premium

The TOTPREM variable's coefficient that describes the total premium per entrepreneur is positive and significantly different from 0 ($\alpha < 0.01$). The coefficient's value indicates that when 100,000 monetary units increase the total premium, the total revenue is increased by about 4%. As the

amount of insurance premium per entrepreneur represents an approximation for the protection function that insurance provides, the relation confirms the positive impact of insurance on entrepreneurship, or the hypothesis that the primary function of protection against the harmful consequences that insurance provides improves the development of entrepreneurship, making entrepreneurial activities safer and more certain.

Finally, **the number of employees** in entrepreneurial firms has a significant positive impact on total income. Each additional employee increases income on average by 10.8%, *ceteris paribus*.

The survey research was conducted in order to supplement the research on the interdependence of insurance and entrepreneurship that was applied on secondary data. The most important result is the confirmation of the interdependence of insurance and entrepreneurship. The premium amount per entrepreneur has a positive impact on business income. The value of the coefficient of the variable of the total premium per entrepreneur indicates that when the total premium is increased by 100,000 units, the total revenue is increased by 4%. The obtained result is in accordance with the expected theoretical assumptions and previous empirical studies (Masci, 2013). It was also confirmed the existence of sectoral differences in the impact of entrepreneurship on insurance. By analysing the variance, the existence of sectoral differences in the average premium per entrepreneur was established, whereby the largest insurance premiums were allocated in the agriculture, forestry and fisheries, and accommodation and food services, and the least in wholesale and retail trade; repair of motor vehicles and motorcycles, real estate, administrative and auxiliary service activities, and other service activities.

Besides the key results in the analysis of the results of the research, additional results were obtained. It was found that sectoral differences exist not only in the purchase of insurance but also in the level of realized income. The largest revenues were achieved in information and communication activities and accommodation, and food services, while the smallest revenues were achieved in the manufacturing industry.

Regarding the age structure, the results of the survey indicated that older entrepreneurs, over 55, earn, on average, the same as young people, up to 35, while middle-aged entrepreneurs earn, on average, 14% less. The obtained results were incompatible with previous research in the field,

which indicates that middle-aged entrepreneurs are among the most successful (Brüderl & Preisendörfer, 2000; Henley, 2005; Alam, Jani, & Omar, 2011). These results are explained by the fact that young entrepreneurs are more innovative, with fresh ideas, using advanced technologies. Quicker accepting changes, participate in entrepreneurial activities that are most propulsive, and are most often assisted by parents and their business and friendship relationships. In contrast, older entrepreneurs are well governed by business issues, have a business reputation, do business more carefully, and successfully use their business contacts.

Based on risk theory and risk management, it was anticipated that all entrepreneurs who have chosen any or more risk management approaches would receive higher returns than those who do not apply a single measure. However, the results denied the expectations. The results empirically confirmed that the choice of any risk management measure does not affect the realization of higher revenues, or the revenues of those entrepreneurs are not higher than revenues of entrepreneurs who have not chosen a single risk management measure. The entrepreneurs who have chosen risk prevention are an exception, which means that they have an average income of 29% less than entrepreneurs who did not apply a single risk management measure. This result is interpreted with the specificity of the economic environment, economic activities, and a relatively small volume of business activities in order to have the risk management impact absolutely evident.

In the regression model, the impact of insurance types that entrepreneurs use on annual operating incomes was examined. The obtained results were in accordance with the expectations given that entrepreneurs who have purchased property insurance and liability insurance, in combination with life insurance, earned higher incomes than entrepreneurs who did not have any insurance. The acquisition of life insurance alone had a neutral impact in relation to non-insured entrepreneurs. The obtained results were interpreted as the interconnection of property insurance and liability insurance with the business of entrepreneurs, while life insurance was associated with an entrepreneur, but not with his business.

The impact of the number of employees on the annual operating income of entrepreneurs was also examined and it was found that the number of employees in entrepreneurial companies has a significant positive impact on total income. Each

additional employee increases income on average by 10.8%. The obtained result is in accordance with previous empirical studies (Ahmad & Hoffman, 2007; Haltiwanger, Jarmin & Miranda, 2013; OECD, 2014; Fairlie & Miranda, 2017).

Conclusion

The positive impact of insurance on entrepreneurship is confirmed. The amount of premium per entrepreneur has a positive impact on operating income. The value of the coefficient with the variable of the total premium per entrepreneur indicates that when 100,000 units increase the total premium, the total revenue is increased by about 4%. The above confirms the hypothesis that the primary function of protection against the harmful consequences of insurance is to promote the development of entrepreneurship, making entrepreneurial activities safer and more certain. The obtained result is in line with the expected theoretical assumptions and previous empirical studies of Masci (2013). The variance analysis of the existence of sectoral differences in the impact of entrepreneurship on insurance is confirmed. The sectoral differences exist not only in the purchase of insurance, but also in the level of realized income, whereby the highest revenues were realized in the activity of information and communication, and accommodation and food services, while the smallest revenues were realized in the manufacturing industry. The level of entrepreneurs' formal education does not affect the entrepreneur's total income, but influences purchase of insurance coverage. Unlike similar research in the world, middle-aged entrepreneurs in Serbia earn on average by 14% less, compared to younger and older entrepreneurs. Higher risk perception identified by the entrepreneur, has a positive impact on entrepreneurial income, but does not have an impact on the purchase of insurance. Entrepreneurs who have chosen the risks of fire, flood, earthquake and other risks that can be transferred into insurance, as well as those who have a positive attitude towards insurance, and those who consider insurance as the investment, and not the cost, pay a higher amount of insurance premium.

The obtained results are relevant for entrepreneurs since the theoretical premise has been confirmed that they can achieve higher income with higher insurance premiums. These results are also important for steering the government's economic policies in order to stimulate entrepreneurship, and thus economic

growth. In addition, they represent the basis for conducting future research in developed countries and comparisons with the results obtained in a developing country.

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