PERSONAL CHARACTERISTICS AS DETERMINANTS OF RISK PROPENSITY OF BUSINESS ECONOMICS STUDENTS - AN EMPIRICAL STUDY

Ivan Pavić – Maja Pervan – Josipa Višić

Abstract

Studies have shown that the behaviour of managers under risk and uncertainty is an important factor that influences a company's performance. More precisely, it is considered that more successful companies are those that are run by managers who are prone to risk. There are numerous studies focused on understanding risk and risk preference. Some of these studies considered individuals' willingness to undertake risk in different risky situations. In that sense, particularly interesting studies are those which attempted to determine the individuals' risk propensity and tried to answer what influences that propensity. In order to assess a propensity and behaviour under conditions of risk and uncertainty for the first and second year students of business economics, an analysis based on questionnaires with standardized questions known as Risk in basket and Choice dilemma has been conducted. The aim of the research was to determine the risk preference of the student population in relation to certain personal characteristics such as gender, family income and individuals' self-perception as a risk loving/averse/neutral person.

Key words: risk propensity, students

JEL Code: D00, D81

Introduction

Business decisions are usually made under risk and uncertainty. In both cases there is more than one possible outcome. In the case of risk, the probability of each outcome is known or can be estimated, while in the case of uncertainty the probability of each outcome is unknown and cannot be assessed. Which alternative would be chosen by the individual depends on his/her risk propensity, with the risk propensity being defined as a willingness of the decision maker to accept or to avoid risk. Studies have shown that the behaviour of managers under risk and uncertainty is an important factor that influences a company's performance. More precisely, it is considered that more successful companies are those that are run by managers

who are prone to risk. At the same time, it is important to emphasize that risk propensity is determined by many factors, primarily by personal characteristics of the decision maker.

Hence the conclusion that it is possible to asses one's behaviour under risk and uncertainty and asses his/her capability for performing managerial tasks. In this sense, our study examines risk propensity of students of business economics at the University of Split depending on their personal characteristics.

1 Theoretical background: Previous research

There are numerous studies on different aspects of risk, yet theoretical background for this paper is formed by those analyses that are more related to the focus of the research. Since the aim of the research was to determine the risk preference of the student population in relation to certain personal characteristics, the analysis performed by Ding, Hartog, and Sun (2010) provided a valuable contribution to the measurement and validation of individual risk attitudes combining a survey and a computer programmed experiment among 121 Peking University students. Taking into consideration demographic background information and students' lifestyle behaviour, they found out that women were more risk averse than men and that risk aversion declined with family income while risk attitudes were domain-specific. Borghans, Heckman, Golsteyn, and Meijers (2009) related economic preference parameters with psychological measurements. They studied risk aversion and changes in measured ambiguity aversion when the degree of ambiguity is increased accounting for differences in personality traits and traits of cognition. The results of an experiment conducted on a sample of 347 students in a Dutch high school suggested that women were more risk-averse than men. As regards ambiguity, women initially responded to it much more favourably than men, but as ambiguity increases, men and women showed similar marginal valuations of ambiguity. An interesting feature of their data set is that, besides data obtained from compulsory participation, they also had data for students who would have participated voluntarily in the event. Powell and Ansic (1997) performed two computerised laboratory experiments using a sample of 128 i.e. 101 undergraduate and post-graduate students in a business school. They analysed their behaviour in: a) insurance cover decisions and b) currency market decisions. The results support the view that gender differences in financial risk preference exist (females were found to have a significantly lower preference) irrespective of the degree of familiarity, framing cost and ambiguity as context factors on risk preferences in financial decision making. Schubert, Gysler, Brown, and Brachinger (2000), on

the other hand, found differences depending on ambiguity frames indicating that women were more ambiguity averse than men in the investment context, but not in the insurance context. However, their results, obtained from a lottery experiment performed on ca 80 undergraduates from different fields at the University of Zürich and the Swiss Federal Institute of Technology, showed that in investment and insurance contexts with given probabilities women seemed to expose approximately the same risk aversion as men. The concept and measurement of general risk aversion (risk aversion regardless of domain) was in the focus of the research performed by Mandrik and Bao (2005) on 64 undergraduate students. They analysed the characteristics of most commonly used methods in exploring risk attitudes: a) choice dilemma questionnaires, b) gambles, c) self-reported measures and d) research on perceived risk, where overall perceived risk is comprised of two components: the perceived uncertainty of outcomes and the perceived importance of negative consequences associated with the outcomes of a choice. They generated a scale for measuring general risk aversion and applied the scale in the context of several other measures and examined the interrelationships among them and their predictiveness against several criterion behaviours. The results indicated that it was possible to measure general risk aversion using a simple, self-report scale. Furthermore, their scale displayed adequate psychometric properties and correlated well with certain risky activities.

Beside the previously presented studies involving students there are several studies that also offered an interesting insight into risk analysis. Dohmen, Huffman, Schupp, Falk, Sunde, and Wagner (2011) conducted a comprehensive research on individual risk attitudes analysing data collected from a survey involving a representative sample of roughly 22 000 individuals living in Germany and found evidence of heterogeneity across individuals, i.e. the results showed that willingness to take risks was negatively related to age and being female, and positively related to height and parental education. In order to test the behavioural relevance of this survey measure, they also conducted a complementary field experiment, based on a representative sample of 450 subjects, and the experiment confirmed the behavioural validity of this measure. Additionally, they compared the ability of different measures to explain risky behaviours such as holdings stocks, occupational choice and smoking, and found that the question about risk taking in general generated the best all-round predictor of risky behaviour. Gustafson (1998) offered an interesting perspective on gender differences. In this theoretical paper he states that gender differences in risk perception may be regarded from three different perspectives: a) quantitative approach, b) qualitative

approach and c) the meaning of the risk. In other words, women and men may perceive the same risks differently, they may perceive different risks, and they may attach different meanings to what appear to be "the same" risks. Also, differences in risk exposure, risk perception and risk handling were accentuated. Sjöberg (2000) focused on risk perception and criticised the psychometrical model (according to which risk perception is a function of properties of the hazards) and the cultural theory (stating that risk perception is a reflection of the social context an individual finds him- or herself in). He proposed a model in which attitude, risk sensitivity, and specific fear were used as explanatory variables. This model offered a different type of psychological explanation of risk perception. The analysis of data collected from a random sample of 1 224 adult Swedish respondents indicated that attitude was a crucial factor in risk perception while background factors (gender and income among others) were weakly related to risk perception. The author also emphasized that the risk target was of paramount importance in risk studies, since people do not make the same estimate when they rate the risk to themselves, to their family, or to people in general. Unlike most risk analyses performed on individuals, Lin (2009) analysed data from the 2003 Survey of Family Income and Expenditure (SFIE) in Taiwan, conducted by Taiwan Directorate-General of Budget, Accounting and Statistics. The aim of the research was to investigate the connection between income risk and risk aversion. After controlling other factors, including household income and wealth, the characteristics of the head of the household and other demographic variables and geographic factors, the author found that households which are more likely to face income risk exhibited a higher coefficient of risk aversion.

2 Questionnaire characteristics

The questionnaire consists of three segments. The first segment contains general questions about the respondent (e.g. male/female, household income), including the following question about the perception of his/her risk propensity: To which extent are you risk averse in decision making process? The purpose of this question was to perceive the possible difference between perceived attitude towards risk and real risk attitude measured by the analysis of respondent's behaviour in a certain number of standardised hypothetical situations. In order to estimate risk propensity, two types of survey were used: Choice Dilemma Questionnaire and Risk in Basket.

Choice Dilemma Questionnaire describes 12 hypothetical situations. Each situation represents a choice dilemma between a safe and risky alternative, where the respondents need

to state the acceptable probability of success of a risky alternative in order to choose the latter. The probability of success of the risky alternative varies from 1/10 to 10/10 and each level is assigned a certain number of points, making it possible to collect minimally 12 and maximally 120 points. A smaller number of points is associated with a greater propensity to risk.

Risk in basket describes four business situations and a respondent is offered to select one out of five presented answers, with one of them representing risky and one risk free alternative, and the three remaining alternatives representing modifications of the risk. The risky alternative, such as in example which offers a court settlement, denotes a willingness to take risk, while the risk free alternative denotes aversion to risk, such as in example which offers settling the case out of court. Modifications of risk imply the following alternatives: to delegate the decision, to postpone the decision and to gather more information. Furthermore, the respondents are also required to answer which is the lowest probability of the positive outcome of the event that would make him/her choose a risky instead of a risk free alternative. A probability higher than 50% implies that the respondent is risk averse, and if lower than 50%, it implies that the respondent is prone to risk.

3 Sample, methodology and results

The sample consisted of 174 students of the first and second year of undergraduate studies and the first year of graduate studies of Faculty of Economics, University of Split. Out of the total number of respondents, 22.4% were male students and 77.6% were female students. In order to reveal the way the students perceive themselves in terms of risk, a question related to their risk aversion was posed and the following answers were offered: You perceive yourself as a risk loving/ neutral/ risk averse person. The results related to this answer are presented in table 1.

Tab. 1: How students perceive themselves

	Male		**Female**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
(1) Risk loving	26	66.67%	82	60.74%	108	62.07%
(2) Neutral	4	10.26%	31	22.96%	35	20.11%
(3) Risk averse	9	23.08%	22	16.30%	31	17.82%

Source: Compiled by authors.

Based on the obtained results, it can be stated that the interviewed students mostly perceive themselves as *risk loving individuals* (62.07%), and such an attitude toward risk is slightly more pronounced for male than female participants. Similar results were obtained when the students' attitude toward risk was analysed on the basis of *Choice Dilemma Questionnaire* (CDQ). Although not presented here in a form of the table (due to the space limitations), descriptive statistics of students' real risk aversion reveal the mean value of 70.14, whereby female students are slightly less prone to take the risk (70.7) than their male colleagues (68.1). These results are consistent with those obtained by Ding et al. (2005). According to the presented numbers, it seems that students analysed in this research were less prone to take the risk than their colleagues form the Madrid School of Business (with the mean value of 65.1), while they were very similar to the students from the University of Houston (with the mean value of 71.6) (Zinkhan and Karande, 2011).

Having in mind that different authors (e.g. Dohmen et al. 2011) used different factors (e.g. gender, height, weight, religious, month of interview etc.) as possible explanation variables of a persons' willingness to take risk, in this research the authors wanted to test whether the way the students perceive themselves coincides with the way they actually act i.e. the results obtained from CDQ (in which students have to deal with 12 real life situations) are related to students' self-perception and tested with ANOVA[1].

The results of the ANOVA analysis are presented in table 2, while the post-hoc test is presented in table 3. Levene's Test of Equality of Error Variances was insignificant (p=0.625), suggesting that the error variance of the dependent variable is equal across groups (this assumption has to be fulfilled in order for ANOVA to be performed).

[1] Although the Spearman rank correlation test was also performed, no statistically significant relationship between these two variables was detected (P=0.94), i.e. students that perceive themselves as risk loving/risk neutral/risk averse persons, act in a completely different way in a real life situation.

Tab. 2: Tests of Between-Subjects Effects

Dependent Variable: Real willingness to take Risks

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	1054.312[a]	2	527.156	2.457	.089	.028
Intercept	632810.254	1	632810.254	2948.968	.000	.945
Self-perception	1054.312	2	527.156	2.457	.089	.028
Error	36694.378	171	214.587			
Total	893712.000	174				
Corrected Total	37748.690	173				

Source: Compiled by authors.

Due to the significant p value (table 2) it can be concluded that there exists a statistically significant difference in the mean of students' real risk aversion between the analysed three groups of students (risk loving, neutral and risk averse). In order to determine which pair of groups is statistically significantly different from one another, a post hoc test (Scheffe) is applied.

Tab. 3: Multiple Comparisons

Dependent Variable: Real willingness to take Risks

(I) Self-perception	(J) Self-perception	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
1.0	2.0	4.097	2.8492	.358	-2.939	11.133
	3.0	-3.893	2.9848	.429	-11.263	3.478
2.0	1.0	-4.097	2.8492	.358	-11.133	2.939
	3.0	-7.990	3.6129	.090	-16.911	.932
3.0	1.0	3.893	2.9848	.429	-3.478	11.263
	2.0	7.990	3.6129	.090	-.932	16.911

Source: Compiled by authors.

Table 3 shows that the 2nd group (neutral) compared to the 3rd group (risk averse) is significantly different from one another. However, since the p value is only slightly lower

than 0.1, the results must be treated with caution. At the same time, there are no differences between any other analysed groups.

In order to test whether there exists any statistically significant relationship between students' *household income* and students' real willingness to risk (obtained by CDQ), a Spearman rank correlation test is performed, however, the results indicated no statistically significant relationship among the observed variables (p=0.855). Even when household income is treated as an explanatory variable that may influence students' real willingness to risk, the results of the ANOVA didn't support the existence of the difference in the mean of student's real risk aversion among different students' household income groups (p=0.2). Similar results (regarding statistical insignificance) were obtained when students' *gender* was related to the students' real willingness to risk and tested with the Spearman rank correlation test (p=0.27), and later on with the Independent samples t-test (p=0.32).

In the following paragraphs, the students' risk attitude is analysed on the basis of *Risk in basket* questionnaire. Table 4 provides insights into the way the students would react if they found themselves in one (out of four) business situation. As a possible solution for the particular situations, the following options were offered: (a) to take the risk, (b) to avoid the risk or (c) to modify the risk by (c1) delegating the decision to the director of the company, (c2) postponing the final decision and (c3) gathering more information.

Tab. 4: Risk in basket – attitude toward risk

Attitude	**Male**		**Female**		**Total**	
	N	**%**	**N**	**%**	**N**	**%**
(a) Take the risk	42	26.9	141	26.1	183	26.3
(b) Avoid the risk	47	30.1	167	30.9	214	30.7
(c) Modify the risk	67	42.9	232	43.0	299	43.0

Source: Compiled by authors.

The analysis of answers of all students suggests that almost every second student is most willing to modify the risk (43.0%), while 30.7% of all students answered that they would choose to avoid risk in the presented business situations. Taking into consideration the respondents' gender, it is interesting to notice that both male and female students are almost in equal percentage prone to choose modification of the risk.

Tab. 5: Risk in basket – risk modification

Attitude	Male		Female		Total	
	N	%	N	%	N	%
c1) Delegate decision	8	5.1	14	2.6	22	3.2
c2) Postpone decision	31	19.9	114	21.1	145	20.8
c3) More information	28	17.9	104	19.3	132	19.0

Source: Compiled by authors.

Among the three possible ways of risk modifications, both male and female students are the least prone to delegate the decision, however, they equally often choose between the remaining alternatives of risk modifications. The results are presented in table 5.

The observed data on risk modifications brought up an interesting question why the alternative to delegate a decision to the supervisor/CEO is considerably the least often chosen one. A general tendency to avoid the possibility of higher-level executives to use this action while forming an opinion on their subordinates should primarily be seen as an answer. As a matter of fact, the results of this research indicate that the observed students are not different from their older colleagues, which is confirmed by numerous studies (e.g. Pavić & Vojinić, 2012).

In order to check whether there exists any statistically significant difference between risk averse and risk loving students in term of their reaction in different business situations (i.e. with respect to the answer they have chosen in Risk in basket), a Mann Whitney test is performed (with the ordinal variable consisting of only three groups of students' attitude toward risk, as presented in table 4). A significant p value (p=0.001) of the Mann Whitney test confirms the existence of the stated difference.

Conclusion

The aim of the research was to determine the risk preference of the student population in relation to certain personal characteristics such as gender, family income and individuals' self-perception as a risk loving/averse/neutral person. When the students' self-perception as a risk loving/risk neutral/risk averse person is related with the students' willingness to take the risk (measured by CDQ), the post hoc ANOVA revealed that the 2nd group (neutral individuals) is significantly different from the 3rd group (risk averse persons). No differences between any other analysed groups were found. According to the Spearman rank correlation

test, there is no statistically significant relationship between the students' household income (or students' gender) and the students' real willingness to risk (measured by CDQ). This notion was confirmed by ANOVA (for household income) and Independent samples t-test (for students' gender). On the other hand, when the students' risk propensity is presented in terms of Risk in basket, a Mann Whitney test confirmed the difference between risk averse and risk loving students in terms of their reaction in different business situations.

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Contact

Ivan Pavić
University of Split. Faculty of Economics, Cvite Fiskovića 5, 21 000 Split
ivan.pavic@efst.hr

Maja Pervan
University of Split. Faculty of Economics, Cvite Fiskovića 5, 21 000 Split
maja.pervan@efst.hr

Josipa Višić
University of Split. Faculty of Economics, Cvite Fiskovića 5, 21 000 Split
josipa.visic@efst.hr