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COMPARISON OF APPLICANT´S RESULTS FOR STUDIES FROM RUSSIA AND VIETNAM AT THE UNIVERSITY OF ECONOMICS, PRAGUE

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ABSTRACT

Aim/Purpose	The aim of this paper is analysis of applicants for study at the University of Economics, Prague (UEP) that are coming from foreign countries. The second aim is to learn the graduation rate of foreign students.
Background	Knowledge about applicants results are important for changing entrance exams according to the changing situation in high school education systems and according to the changing requirements coming from teachers at UEP. The background question is, if the both components of entrance exams should have the same significance.
Methodology	Entrance exams results were analysed for 2009-2016 period. We used standard statistics methods supported by the IBM SPSS tool and Microsoft Excel. All data were processed by way of Microsoft SQL Server. We analyzed the faculties that require Mathematics and English entrance exams. We are comparing mainly results of applicants from Russia and Vietnam. For graduation rate estimations the logit model approach has been applied. The data for our analysis came from UEP information systems and hard-copy applications and were then set anonymous.
Contribution	Detailed analysis of situation at the UEP and guideline on how to process similar research at another universities. Paper offers comparison of Russian education system results in Mathematics and English with the education system of Vietnam. Further contribution is for Vietnamese potential applicants for study in the Czech Republic.

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Findings	Based on our analysis, we concluded that total number of applicants for studies was 109,996 students at the UEP during the analyzed period and applicants from Vietnam 1,686 and from Russia 7,227. For studies were accepted 717 applicants from Vietnam (42.5%) and 1,986 applicants from Russia (27.5%). We were also able to prove a slightly positive correlation between the number of points obtained for the English entrance exam and the mathematics entrance exam. However, this correlation goes slightly downhill over time. Further findings are from logit model of correlation between number of obtained points and successfully studies completion. The border for effective acceptance of students from this data set is approximately 170 obtained points in entrance exam.
Recommendations for Practitioners	This analysis offers results of entrance exams on UEP from English and Mathematics. Recommendation could be held in comparison of education systems efficiency in Russia and Vietnam in these two areas with reflection requirements on students of economy at University of Economics, Prague.
Recommendation for Researchers	The way of analysis, number of analyzed sample, final data and conclusions from this research. Using logit model for study success rate modeling. Offer for cooperation in analysis of entrance exams data queues.
Impact on Society	Comparison of entrance exams results on University of Economics, Prague between Russian and Vietnamese applicants for study in the area of economics. Comparison of education systems effectiveness in Vietnam and in Russia in relation to economics studies in EU country.
Future Research	Process this analysis in longer period and extend for another countries and nationalities. Next step planned for this is year is analysis of relation among results of Mock Entrance Exams – Entrance Exams – Study Results. This is long-term plan. In next 5 years, we should be able to answer question if there is some probability, that students failed during standard entrance exams when these students pass mock exams for example because he was in stress?
Keywords	mathematics, English, economic study applicants, Vietnamese students, Russian students, entrance exams

INTRODUCTION

Integration of the Czech Republic's into European structures resulted in joining the Bologna Declaration (Stastna & Walterova, 2014). The integration of the Bologna Declaration into Czech education system results in changing the university education system (Flegl & Vltavska, 2013; Musil &Fischer, 2015; Nedomova, Doucek, & Maryška, 2015; Sigmund, 2015; Sperkova & Nedomova, 2015) and opening and making available the study programs of Czech universities to foreign students (Kohanova, 2012; Kuncova & Mulac, 2015; OECD, 2009). Foreign students can apply for study program in Czech or for foreign-language study programs that are usually in English, German, or Russian. Study programs in foreign-language are paid. For this reason this paper is about applicants which are applying for study programs in Czech. If foreign students apply for Czech study programs, they must pass exam from Czech language to prove that they are fluent in the Czech language (Vysokeskoly, 2010). These are foreign students who either have some kind of relationship to the Czech Republic (e.g., one of their parents is Czech) or come from Slavic countries where the language is so similar that they can become fluent in Czech in one year – these are usually students from Ukraine, Russia, Belorussia, etc. or from Russian-speaking enclaves in the Central Asian republics of the former Soviet Union). The university education systems of the Czech Republic in the context of ICT education and its results are described, for example, in these studies: Hanclova, 2015; Hanclova, Rozehnal, Ministr, & Tvrdikova, 2015; Nedomova, Maryska, & Doucek, 2014; Pavlicek, 2013; Reznicek, Smutny,

Kalina, & Galba, 2013. This article shows the knowledge of students from Vietnam and Russia upon their admission to the UEP during 2009 – 2016 and provides information about correlation between points gained during entrance exams and probability of finishing their studies at UEP.

Sources for this research were split on three levels. Nedomova et al. (2014) presented mainly Czech sources, which cover all national and university specifics. Hanclova et al. (2015) are sources from Slovak Republic, where entrance exams are rather like ours. The main source deals with entrance exams from mathematics (Kohanova, 2012), but this source did not analyse obtained points, but the structure of tests for entrance exams. Further sources from the world are involved in English exams results analysis. Analysis of knowledge of English of applicants for studies in the Japan is analyses in Kitao and Kitao (2009) and similar study in Iran is analyzed in Razmjoo and Tabrizi 2010). From financial point of view is analysis of entrance exams made in USA in a paper by Klasik (2012). Analysis of knowledge from Physics was realized in Turkey in year 2000-2003 (Azar, 2005). Some relations to our research could be visible in analysis of Kitao and Kitao (2009). The problem is that they have a data set with only 31 respondents from 4 universities in Japan and the topic of this research was focused on vocabulary frequency not on final exams results.

PROBLEM FORMULATION AND RESEARCH QUESTIONS

The presented analysis is based on scientific research as well as on the analysis of data about applicants that the UEP has been collecting for a long time. The target group of this analysis are foreign students from Russia and Vietnam who applied for study programs taught in the Czech language. This analysis also focuses on undergraduate study applications only. We are analyzing dependency between amount of points from entrance exams and probability of finishing their bachelor studies.

We also analyzed the trend in the number of foreign students from Russia and Vietnam at the UEP during the analyzed time period.

We consider citizenship only and we are not concerned about nationality. Citizenship is specified in application for study.

For the purposes of presentation in this article, we formulated the following research questions.

- RQ 1: Russian applicants have higher score in Mathematics than Vietnamese ones.
- RQ 2: Russian applicants have higher score in English than Vietnamese ones.
- RQ 3: Average score from English is increasing on undergraduate level by both nationalities.
- RQ 4: Average score from Mathematics is increasing on undergraduate level by both nationalities.

The formulation of research questions is based on the presumption that the Russian education system is more like the European and the Czech one as well. This presumption also implies that taught subjects prepare applicants better for study on European HEIs (Higher Education Institutions) or universities than Vietnamese education system.

For specification of the evaluation of results we state, for the sake of completeness, that there are six faculties at the University of Economics, Prague at this time - Faculty of Finance and Accounting (FFA), Faculty of International Relations (FIR), Faculty of Business Administration (FBA), Faculty of Informatics and Statistics (FIS), Faculty of Economics (FE), Faculty of Management (FMJH). The last two faculties are not included into research data sample.

MATERIAL AND METHODS (DATA COLLECTION)

The UEP information system, which includes the complete data of applicants for all academic disciplines of all levels, was our basic source of data. This system includes both the basic identification data and the entrance exam results of the applicants. Our analysis focused only on foreign students applying for undergraduate study programs at the UEP during the analyzed time period. Foreign

students are considered to be those who checked a citizenship other than the Czech citizenship in their applications. In view of the nature of the data collected about the applicants, we have no information about where they actually live.

We analyzed the data in compliance with Act No. 101/2000 of Coll., on the protection of personal data. Based on its provisions, we are obliged to set anonymous the analyzed data and to process them in a way that makes it impossible to track down specific applicants or to obtain their personal data (date of birth, first name, last name, etc.). We analyzed individual years as well as the group of data as a whole.

In the case of logit function we are analyzing the correlation between an entrance exam result and a successful or failed completion of studies; we transformed the completion of studies into the binary values of 0 and 1, where 0 - a student failed his studies and 1- a student successfully completed his studies. To calculate the correlation values, we used the logistic regression, where the binary variable of studies completion was the dependent variable and the number of points obtained in an entrance exam was only one independent quantitative continuous variable (Kuncova & Wasserbauer, 2007; Rezankova, 2010). The probability of studies completion is marked as p. Then:

$$\ln (p/1-p) = \beta_o + \beta_1 \text{ NPEE} \quad (1)$$

where

NPEE is number of points from entrance exams,

β_o constant,

β_1 – increment - points from entrance exam,

p - probability of successful studies completion.

To calculate the actual correlation, we used the SPSS application, and to accept or reject the null hypothesis of regression parameters being zero we used the Wald test (Rezankova, 2010) where we rejected this hypothesis if the Wald test was higher than zero.

The correlation (1) shows that

$$p = e^{(\beta o + \beta 1 * \text{NPEE})} / 1 + e^{(\beta o + \beta 1 * \text{NPEE})} \quad (2)$$

where

βo – constant,

β1 – increment - points from entrance exam,

NPEE - is number of points obtained in an entrance exam,

p - the estimated probability of successful studies completion if a certain number of points is obtained in an entrance exam.

GENERAL DATA CHARACTERISTICS

The UEP received 109,996 application forms for bachelor studies since year 2009.

We obtained a total of 109,996 records of applications for the analyzed time period. Each record includes information about an application of one applicant. If an applicant applied for several study programs, he/she has several records. An applicant's basic attributes, which are anonymously analyzed, are as follows: gender, study program, academic discipline, faculty, type of study, entrance exam results, and admission or non-admission. If the student is accepted for studies, then those records provides information about their studies also. We have information about all marks received during their studies and information if the students finished his studies and when (year, which semester etc.)

The actual data analysis was performed in MS Excel and the model was formulated in the SPSS computer application. A total of 8,913 records of foreign students from Vietnam and Russia from all faculties and for the entire analyzed time period were analyzed.

RESULTS AND DISCUSSION

GENERAL OVERVIEW

The UEP received 109,996 application forms since year 2009 and 8,913 are from foreign student from Russia and Vietnam which are main objectives of this paper. From those 8,913 we have 4,152 records (46.6%) with results from Mathematics and English. The difference between those numbers is caused by the fact that some of applicants are not arriving to entrance exams which are written and have to be taken at the UEP. For this reason there is a difference between the number of applicants and the number of records from entrance exam.

The Table 1 provides information about structure of the whole sample of applicants which are applying for studies at UEP. You can see that the highest number of applicants is for studies at FBA and FE. But we see that number of applications is decreasing in time which is caused by demographic characteristic of the Czech society.

Table 1. Amount of All Applicants per Year and Faculty

Year	FFA	FIS	FMJH	FIR	FBA	FE	Total
2009	2,747	2,306	999	2,982	4,267	3,215	16,984
2010	2,690	2,333	1,169	2,858	4,158	3,322	17,162
2011	2,765	2,516	1,118	3,030	4,290	2,715	16,384
2012	2,672	2,470	954	2,855	4,047	2,242	14,810
2013	2,478	2,405	856	2,720	3,390	1,820	13,011
2014	2,105	1,969	775	2,521	2,678	1,568	11,079
2015	1,765	1,799	641	2,157	2,702	1,588	10,475
2016	1,544	1,623	464	1,877	2,515	1,316	91,11
Total	18,766	17,421	6,976	21,000	28,047	17,786	109,016

The structure of the sample from the gender point of view shows that 54% of applicants are female.

Table 2. Amount of all applicants according to the gender

Gender	N	%
Male	50,512	45.9%
Female	59,484	54.1%

Table 3 and Table 4 provide basic statistical characteristics about the whole sample of applicants for studies. Based on number of records from entrance exams (54,228 – see Table 3) and total number of applications (109,996) we calculated, that only 49.3% of applicants arrived to their entrance exam. Mean value of the points from English is 68.710 and from Mathematics 60.52 for the whole sample with standard deviation 17.227/24.771. When we compare those numbers with number in Table 4 where are results of all applicants accepted for studies, we see that these results are much better.

Table 3. Descriptive Statistics for the Whole Sample of Applicants

	N	Mean	Std. Deviation	Variance	Kurtosis	Skewness
English	54,228	68.710	17.227	296.768	0.545	-0.634
Mathematics	54,228	60.520	24.771	613.578	-0.862	-0.193

Especially in case of Mathematics, there is approximately 17 points difference in the mean value between all applicants and applicants accepted for studies. This means, that Mathematics is the biggest problem for applicants during examination process.

Table 4. Descriptive Statistics for the Whole Sample of Applicants Accepted for Studies

	N	Mean	Std. Deviation	Variance	Kurtosis	Skewness
English	24,653	77.018	12.062	145.490	0.016	-0.485
Mathematics	24,653	77.883	16.011	256.353	0.016	-0.369

Results of Entrance Exams for Students from Vietnam

The number of applications from Vietnam (see Table 5) is decreasing for the last three years. But acceptance rate (AR) of students from Vietnam is continuing to increase. The decreasing number of applicants is caused by the fact that the newer generation of applicants does not have Vietnam citizenship but Czech one because they are already born in the Czech Republic as descendants of people with Vietnam citizenship living in Czech Republic.

Table 5. Number of Applicants from Vietnam based on the Years and Faculty

	FFA		FIS		FMJH		FIR		FBA		FE		Total
	N	AR	N	AR	N	AR	N	AR	N	AR	N	AR	N
2009	54	44%	33	76%	13	38%	28	57%	49	33%	15	7%	192
2010	64	50%	23	61%	6	33%	29	34%	61	43%	15	13%	198
2011	86	40%	40	43%	8	50%	44	57%	84	42%	19	5%	281
2012	68	54%	56	55%	10	70%	63	41%	100	37%	21	24%	318
2013	79	35%	62	44%	7	57%	60	50%	107	28%	16	19%	331
2014	57	40%	45	29%	5	60%	38	45%	91	54%	15	7%	251
2015	13	38%	25	60%	3	0%	13	46%	15	33%	1	0%	70
2016	10	60%	14	57%	1	100%	8	50%	8	63%	4	50%	45
Total	431		298		53		283		515		106		1,686

Note: N = number of applicants, AR = Acceptance Rate

Table 6 provides basic statistical characteristics about applicants with Vietnam citizenship. Based on number of records from entrance exams (1,108 – see Table 6) and total number of applicants (1,686) we calculated, that only 65.7% of applicants took the entrance exam. The mean value of the points from English is 72.857 and from Mathematics 67.367 with standard deviation 16.567 / 21.743. When we compare those numbers with number in Table 3 we see that applicants with Vietnam citizenship have better results in Mathematics and English than results analyzed for all applicants in whole sample. .

Table 6. Descriptive Statistics for the whole sample of applicants with Vietnam Citizenship

	N	Mean	Std. Deviation	Variance	Kurtosis	Skewness
English	1,108	72.857	16.567	274.455	1.918	-1.090
Mathematics	1,108	67.367	21.743	472.758	-0.225	-0.516

Table 7 shows important information. The mean of points from mathematics is decreasing in time for FIS and FIR but for FFA is increasing and for FBA relatively stable in time. Skewness is in almost all cases with negative value which is between value -0.08 – -0.8. There is only one difference in case of FIS in year 2016 where Skewness has high positive value 0.8.

Table 7. Detailed Descriptive Statistics for Mathematics for Applicants with Vietnam Citizenship in Detail of Year and Faculty

Year	Faculty	N	Mean	Median	Std. Deviation	Variance	Kurtosis	Skewness
2009	FFA	49	62.041	70	33.290	1,108.248	-0.669	-0.744
2009	FIS	24	72.083	70	18.703	349.819	-1.176	-0.129
2009	FIR	26	71.923	77.5	24.003	576.154	-0.258	-0.816
2009	FBA	29	76.552	80	17.632	310.899	0.298	-0.869
2011	FFA	77	67.662	70	19.032	362.227	-0.943	-0.171
2011	FIS	13	71.923	65	20.569	423.077	-0.180	-0.283
2011	FIR	36	71.250	77.5	20.646	426.250	-0.825	-0.601
2011	FBA	66	64.242	67.5	22.001	484.033	-0.609	-0.204
2013	FFA	71	63.732	60	21.107	445.513	-1.153	0.101
2013	FIS	38	60.263	62.5	20.728	429.659	-0.627	-0.080
2013	FIR	43	64.698	68	22.559	508.930	-0.679	-0.168
2013	FBA	77	62.273	65	19.391	376.017	-0.527	-0.368
2016	FFA	8	70.625	77.5	18.408	338.839	-0.995	-0.750
2016	FIS	12	56.667	55	16.967	287.879	1.019	0.812
2016	FIR	6	54.833	55.5	36.471	1,330.167	-0.476	-0.328
2016	FBA	6	70.833	67.5	13.934	194.167	-1.552	0.493

Table 8 shows similar information but for English language. Mean of points from English has cyclical character for all faculties. Values are decreasing and increasing in time. In case of FFA the lowest mean is 55 point and the highest mean is 82. In case of FIS is it between 56 and 73, FIR 68 and 75 and FBA between 73 and 78 points. We see that better results are at the FBA in comparison with other faculties. The second one is FIR and the last one is FIS.

Table 8. Detailed Descriptive Statistics for English Applicants with Vietnam Citizenship in Detail of Year and Faculty

Year	Faculty	N	Mean	Median	Std. Deviation	Variance	Kurtosis	Skewness
2009	FFA	49	55.837	62	30.124	907.473	-0.640	-0.622
2009	FIS	24	65.417	65	15.598	243.297	-0.105	-0.309
2009	FIR	26	71.962	76	16.513	272.678	-0.003	-0.745
2009	FBA	29	78.483	78	13.945	194.473	-0.392	-0.519
2011	FFA	77	72.987	74	14.642	214.381	-0.194	-0.581
2011	FIS	13	56.769	58	17.730	314.359	-0.125	-0.403
2011	FIR	36	73.778	76.5	13.269	176.063	0.534	-1.057
2011	FBA	66	73.970	77	15.549	241.784	-0.242	-0.738
2013	FFA	71	77.606	82	13.655	186.471	0.688	-0.962
2013	FIS	38	73.842	78	16.264	264.515	-0.276	-0.601
2013	FIR	43	75.791	77.5	12.842	164.919	-0.826	-0.226
2013	FBA	77	76.026	80	16.005	256.157	1.963	-1.290
2016	FFA	8	67.750	69	15.872	251.929	-0.753	0.257
2016	FIS	12	71.833	71	16.959	287.606	-1.073	-0.221
2016	FIR	6	68.667	65.75	17.218	296.467	-2.429	0.285
2016	FBA	6	75.333	78	12.437	154.667	-0.407	-0.644

Estimated regression model coefficients for the entire time period is shown in Table 9. This function compares results from entrance exams and information if the student finished his studies successfully or not. Students that are still studying are excluded. This function provides information about dependency between the amount of points received during entrance exam and its influence into probability of finishing studies.

Table 9. Logit function

	β	Std. Error	Wald Test	Exp(β)
Increment - Points from Entrance Exam (β_1)	.042	.007	40.167	1.043
Constant (β_o)	-7.244	1.067	46.065	.001

Correlation between analyzed variables is weak and is 1:0.042 on average.

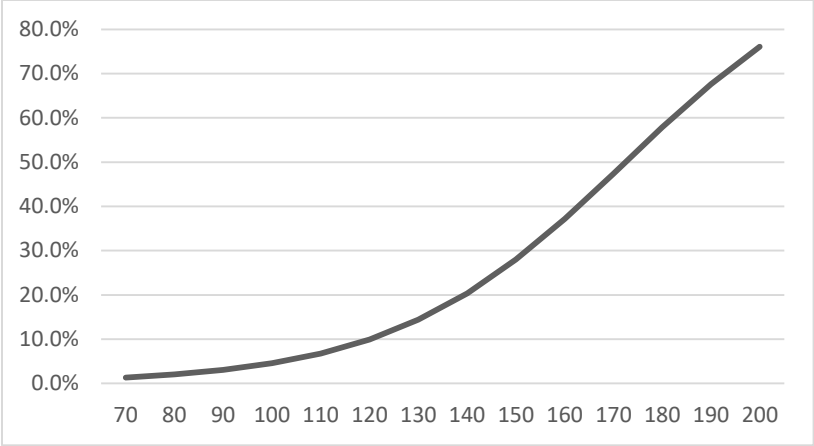

Figure 1. Correlation Obtained Points and Completion of Studies – Vietnamese Students

Figure 1 shows that for 50 % probability to complete successfully studies it is necessary to obtain more than 170 points in entrance exams. In the case that student gets maximum 200 points, the probability of successfully completing study is a little higher than 75%. (76.1%)

Results of Entrance Exams for Students from Russia

Similar analysis as for Vietnam student was processed for applicants with Russian citizenship.

The biggest difference shown in Table 10 is number of applicants from Russia in comparison with applicants from Vietnam. The number of applicants with Russian citizenship is higher than applicants with Vietnam citizenship. The second difference is in acceptation rate, which is smaller in case of Russian students as is show in Table 10.

Table 10. Number of Applicants from Russia Based on the Years and Faculty

	FFA		FIS		FMJH		FIR		FBA		FE		Total
Year	N	AR	N	AR	N	AR	N	AR	N	AR	N	AR	
2009	227	37%	160	49%	26	15%	102	32%	294	24%	44	0%	853
2010	173	36%	151	32%	24	25%	80	35%	276	21%	27	11%	731
2011	190	24%	139	37%	35	14%	92	30%	285	21%	44	0%	785
2012	196	43%	137	28%	19	21%	114	28%	335	25%	27	7%	828
2013	267	21%	181	35%	23	13%	144	38%	350	8%	40	25%	1,005
2014	319	28%	227	26%	41	37%	170	36%	335	12%	44	25%	1,136
2015	263	21%	222	38%	26	35%	148	43%	383	31%	35	29%	1,077
2016	157	19%	197	27%	15	13%	119	50%	289	29%	35	26%	812
Total	1,792		1,414		209		969		2,547		296		7,227

Note: N = number of applicants, AR = Acceptance Rate

Table 11 provides basic statistical characteristics about applicants with Russian citizenship. Based on number of records from entrance exams (3,044 – see Table 11) and total number of Russian applicants (7,277) we calculated, that only 42.1% of applicants took the entrance exam. Mean value of the points from English is 69.132 (applicants with Russian citizenship have worse results in comparison with applicants with Vietnam citizenship) and from Mathematics 71.610 (better results in comparison

with applicants with Vietnam citizenship nationality) with standard deviation 19.863/24.436. When we compare those numbers with number in Table 3 we see that applicants with Russian citizenship have better result in Mathematics and English than results analyzed for all applicants from the whole sample.

Table 11. Number of Applicants from Russia Based on the Years and Faculty

	N	Mean	Std. Deviation	Variance	Kurtosis	Skewness
English	3,044	69.132	19.863	274.455	2.869	-1.454
Mathematics	3,044	71.610	24.436	472.758	0.734	-1.033

Table 12 shows information about the mean of points from mathematics. This number is decreasing in time for FIS, FBA and FIR but increasing for FFA. The highest mean has been identified for applicants for FFA and lowest for applicants at the FBA.

Table 12. Detailed Descriptive Statistics for Mathematics for Applicants with Russian Citizenship in Detail of Year and Faculty

Year	Faculty	N	Mean	Median	Std. Deviation	Variance	Kurtosis	Skewness
2009	FFA	212	44.741	45	43.317	1,876.354	-1.802	0.093
2009	FIS	82	77.988	80	19.227	369.667	0.131	-0.847
2009	FIR	58	75.862	80	20.798	432.577	0.435	-0.887
2009	FBA	119	78.445	85	22.631	512.181	1.446	-1.416
2011	FFA	97	74.588	80	18.124	328.474	0.037	-0.775
2011	FIS	64	72.813	75	19.556	382.440	-1.158	-0.232
2011	FIR	51	77.353	80	18.449	340.353	-0.283	-0.629
2011	FBA	102	68.971	70	21.861	477.890	-0.452	-0.409
2013	FFA	135	72.259	80	21.732	472.283	-0.304	-0.749
2013	FIS	86	66.977	70	21.778	474.282	-0.090	-0.403
2013	FIR	69	74.623	81	22.385	501.091	-0.896	-0.509
2013	FBA	56	64.482	65	19.876	395.054	-0.721	-0.182
2016	FFA	83	76.506	80	18.158	329.716	-0.173	-0.603
2016	FIS	98	70.510	75	23.698	561.593	-0.593	-0.600
2016	FIR	62	70.581	81	25.143	632.149	-0.631	-0.715
2016	FBA	144	69.271	70	20.509	420.618	0.341	-0.722

Table 13 shows similar information but for Mathematics. Mean of points from mathematics has increasing tendency in case of FFA and FIS but is decreasing in case of FIR. This is absolutely different tendency in comparison with results from whole sample of all applicants which knowledge are lower than knowledge or applicants from Russia and Vietnam.

Table 13. Detailed Descriptive Statistics for English for Applicants with Russian Citizenship in Detail of Year and Faculty

Year	Faculty	N	Mean	Median	Std. Deviation	Variance	Kurtosis	Skewness
2009	FFA	212	40.472	50	38.427	1,476.630	-1.795	0.036
2009	FIS	82	70.878	72	13.885	192.800	1.075	-0.722
2009	FIR	58	71.690	74	17.407	302.990	-0.945	-0.233
2009	FBA	119	73,076	78	17,766	315,647	-0,016	-0,819
2011	FFA	97	73.691	76	15.688	246.112	0.738	-0.923
2011	FIS	64	66.313	66	17.689	312.917	-0.515	-0.013
2011	FIR	51	67.588	67	18.743	351.287	1.933	-0.865
2011	FBA	102	72,706	74	14,155	200,368	0,558	-0,660
2013	FFA	135	72.459	76	15.546	241.668	0.002	-0.672
2013	FIS	86	69.047	70	16.839	283.551	2.065	-0.828
2013	FIR	69	68.094	67.5	15.762	248.451	3.837	-0.973
2013	FBA	56	67,911	70	17,050	290.701	-0,176	-0,476
2016	FFA	83	75.494	78	13.789	190.131	0.070	-0.665
2016	FIS	98	73.653	76	16.482	271.672	-0.126	-0.627
2016	FIR	62	65.315	67.5	17.260	297.920	2.218	-1.220
2016	FBA	144	71,826	74	14,847	220,424	-0,425	-0,451

Estimated regression model coefficients for the entire time period is show in Table 14. Correlation between two analyzed variables is weak and is 1:0.037 on average.

Table 14. Logit Function

	β	Std. Error	Wald Test	Exp(β)
Increment - Points from Entrance Exam (β_1)	.037	.004	81.845	1.038
Constant (β_o)	-6.614	.677	95.535	.001

Figure 2 shows that for 50 % probability to complete successfully studies is necessary to obtain a little less than 170 points in entrance exams. In the case that student gets maximum 200 points, the probability of successfully completing study is approximately 70 %.

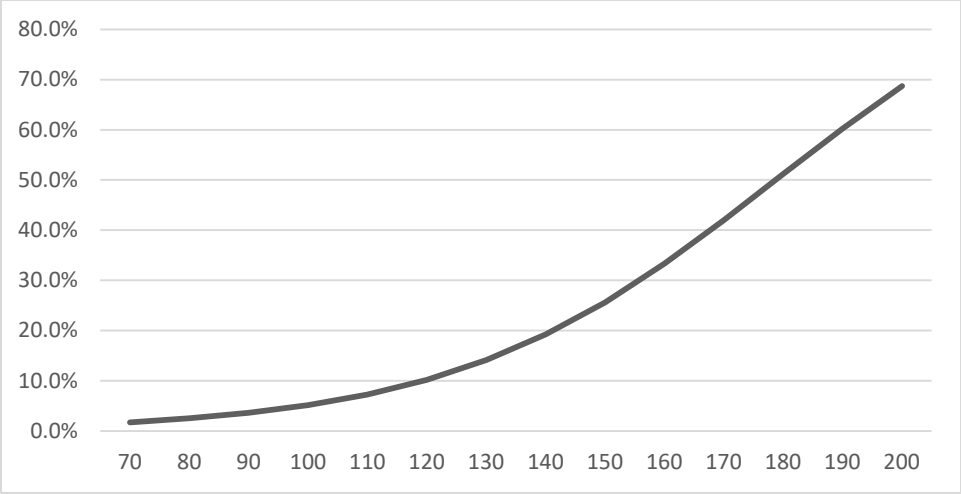

Figure 2. Correlation Obtained Points and Completion of Studies – Russian Students

RESEARCH QUESTIONS ASSESSMENT

Based on presented data we are able to make assessment to prior formulated research questions.

The **RQ 1: "Russian applicants have higher score from Mathematics than Vietnamese ones" is accepted**, because the average obtained points of Vietnamese applicants is 67.367 and for Russian students is the average 71.610. (Table 6 and Table 11)

The **RQ 2: "Russian applicant have higher score from English than Vietnamese ones" is rejected**, because the Vietnamese applicant's average is 72.857 obtained points and for Russian applicants is the average value 69.132 points. (Table 6 and Table 11)

The **RQ 3: "Average score from English is increasing on undergraduate level by both nationalities" is rejected**, because results for majority of faculties oscillate and do not follow clear trend in investigated period. (Tables 7-8)

The **RQ 4:** "**Average score from Mathematics is increasing on undergraduate level by both nationalities" is rejected**, because results for majority of faculties oscillate and do not follow clear trend in investigated period. There are only two identified exceptions – FIS for Vietnamese applicants in mathematics – but the trend is continuing to decrease from 72.083 points in 2009 to 56.667 in 2016 and the same entity for FIR from 71.923 points in 2009 to 54.833 points in 2016 (Tables 12-13).

Conclusions from our research questions are not very surprising, because the education system of former Soviet Union was mainly focused, especially on high schools, on mathematic education. In comparison to Vietnamese education system is appearing, that Vietnamese applicants obtain by entrance exams in average worse assessment than Russian ones.

Open issues are in further research of social aspects of entrance exams by citizenship. The first very often discussed factor is motivation related with geopolitical situation. The trend in number of Russian applicants for Czech study programs is decreasing in last two years (Table 10). On the other hand the number of Russian applicants and students in increasing in paid English study programs at the same university.

CONCLUSION

This paper is a result of a long-term project realized at the University of Economics, Prague that helps management of UEP and faculties to answer essential questions concerning entrance examinations, relation between entrance examinations results and results of regularly examinations, rate of graduate students etc.

By analyzing the eight-year time series, we discovered that 8,913 foreign students (from Vietnam and Russia) are admitted to the UEP and that this is decreasing during the past three years. Foreign students mostly apply to the FIR and the FBA.

The analysis of mathematics entrance test results identified a slightly negatively skewed normal distribution and a practically zero average value. The quantile analysis proved higher data consistency with respect to English entrance exam results and lower data consistency with respect to mathematics entrance exam results. The mean of the points obtained for English entrance exams is 72 and the mean of the points obtained for mathematics entrance exams is 67 in case of applicants with Vietnam citizenship and 69 (English) resp. 71 (mathematics) in case of applicants with Russian citizenship – RQ 1 and RQ 2 assessment.

RQ 3 and RQ 4 did not identify any clear trends in progress of obtained points by assessment of entrance examinations. Both were rejected.

Thanks to this research and this paper, we find out plenty of new knowledge about structure of applicants for study, their knowledge and differences based on the citizenship, type of high school, etc. Very important information is success rate based on the study subjects, years of study, etc. Further important information for deans of faculties and also for the management of the UEP is modeling the graduation probability using logit model. This model presents to stakeholders correlation between number of obtained points in entrance exams and the probability of successfully completion of studies. For this data set (Vietnamese and Russian students) it seems to be relevant to accept for study in economics student that obtain more than 180 points in entrance exams. The logit model analysis results more positive for Vietnamese students.

Next step planned for this is year is analysis of relation among results of Mock Entrance Exams – Entrance Exams – Study Results. This is long-term plan. In next 5 years, we should be able to answer question if there is some probability, that students failed during standard entrance exams when these students pass mock exams for example because they were in stress?

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