ПРЕДПРИНИМАТЕЛЬСТВО-ЭТО НЕОБХОДИМОСТЬ ИЛИ ВОЗМОЖНОСТЬ В КЫРГЫЗСКОЙ РЕСПУБЛИКЕ? АНАЛИЗ ПАНЕЛЬНЫХ ДАННЫХ ЧЕРЕЗ STATA

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Аннотация

В статье обсуждается два типа предпринимательства, основанные на необходимости и возможности в контексте Кыргызской Республики. В частности, статья рассматривает различия в развитии предпринимательства между 7-ю областями Кыргызской Республики, и города Бишкек. Предприниматели с наёмным и без наёмного труда были использованы как зависимые переменные. Таким образом, автор использовал панельные данные для анализа независимых переменных и их положительные и отрицательные влияния на развитие предпринимательства.

Annotation

The paper discusses the necessity and an opportunity based entrepreneurship in the context of the Kyrgyz Republic. Particularly, the paper looks into differences of entrepreneurship development among the 7oblusus of the Kyrgyz Republic and its capital– Bishkek city. Entrepreneurs with and without hired labor were used as dependent variables. The independent variables include the average annual salaries and wages, unemployment, poverty rate and a few others. As such, the author uses the panel data to

analyze how these independent variables contribute or hinder two types of entrepreneurship development.

Ключевые слова: *Предприниматели; необходимость; возможность; наёмный труд; панельные данные.*

Key words: *Entrepreneurs; necessity; opportunity; hired labor; panel data.*

Is Entrepreneurship a Necessity or an Opportunity in the Kyrgyz Republic? Panel Data Analysis using STATA.

Since 2001, the Global Entrepreneurship Monitor (GEM) has differentiated between two different types of entrepreneurship, necessity and opportunity entrepreneurship (Reynolds et al. (2002); Bosma et al (2008)). The difference between the two types of entrepreneurs is in the motivation of the entrepreneurs to start their venture. Opportunity entrepreneurs are viewed as entrepreneurs who start a business in order to pursue an opportunity, while necessity entrepreneurship is more need-based. In our analysis, we use entrepreneurs with hired labor as opportunity entrepreneurs, whereas the entrepreneurs without hired labories used as necessity entrepreneurs.

The distinction between necessity and opportunity entrepreneurship becomes increasingly relevant in entrepreneurship research, mainly because of its practical impact in terms of different policy initiatives to support entrepreneurship. In many developed countries, economic policy differs greatly between these two types of entrepreneurs. For example, in Germany, the state uses funds to promote entrepreneurship as a way out of unemployment and therefore supports necessity entrepreneurs (Bergmann & Sternberg (2007).Many peer-reviewed studies involving entrepreneurship have been conducted at the level of the individual entrepreneur. Few studies have investigated entrepreneurship at the regional level. This paper is different, in that we analyze necessity and opportunity entrepreneurship from a macro perspective.

Doing so enables us to theorize about the differences between necessity and opportunity entrepreneurship. We then empirically test whether these differences really exist and, based on our results, discuss whether distinguishing between the two types of entrepreneurship is justified. Since there is no comprehensive theory on the issue of necessity and opportunity entrepreneurship, some parts of our paper are exploratory in nature.

For our study, we use data from the publications of the National Statistical Committee of the Kyrgyz Republic (2002-2012) and identify the number of entrepreneurs with and without hired labor as dependent variables. Independent variables include: poverty rate, education, annual average wages and salaries and a few others. The table of these variables is provided below. Using this data, we address the following research question: How do entrepreneurs with and without a hired labor interact with other independent variables taken separately and together as a binary variable?

Based on these results, our study contributes to entrepreneurship research in two ways. First, because we objectively discuss the classification of necessity and opportunity entrepreneurship and relate it to the concept of opportunity discovery and exploitation. Second, because we show empirically that the two types of entrepreneurs differ with respect to their socioeconomic characteristics and opportunities exploited. We conclude that the differences we found indicate a need to differentiate between the two groups in entrepreneurship theory and practice.

Using a panel of data across seven oblusus and capital city – Bishkek city of the Kyrgyz Republic from 2002 to 2012, this paper seeks empirically to measure the impact of varies variables on entrepreneurial activity. In this regard, this is the first known paper to study the regional entrepreneurial activity at the macro level across all oblusus of the Kyrgyz Republic. Table 1. List of Dependent and Independent Variables.

Dependent Variable(s)	Independent Variable(s)
Entrepreneurs with hired labor (number of people)	Annual Average Wages & Salaries (Kyrgyz soms)
Entrepreneurs without hired labor (number of people)	Export Operations (US dollars)
	Import Operations (US dollars)
	Total Volume of Industrial Output of Goods and Services produced by Entrepreneurs (Kyrgyz soms)
	Crimes Rate (number of registered crimes)
	University Graduates (number of people)
	Unemployment (%)
	Poverty Rate (%)
	Ethnically Kyrgyz people (number of people)
	Ethnically Non-Kyrgyz or Minority people (number of people)
	Recipients of Microcredits (number of people)
	Returning Migrants (number of people)
	Outmigration (number of people)
	Average Size of One Bank Deposit (Kyrgyz soms)
	Credit Investments by Commercial Banks (Kyrgyz soms)
	Women of Working Age (number of people)
	Men of Working Age (number of people)

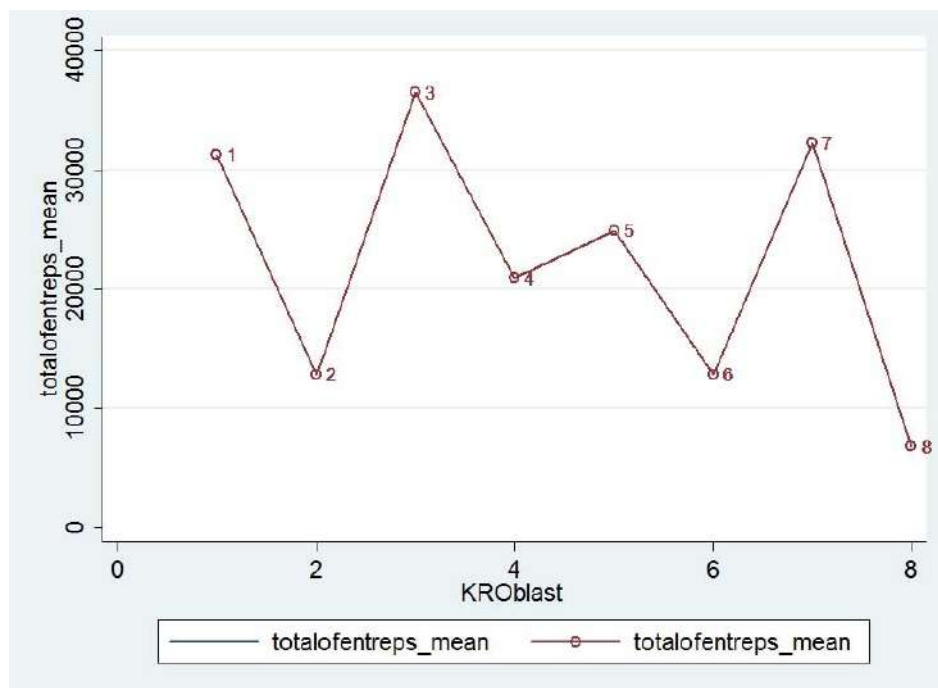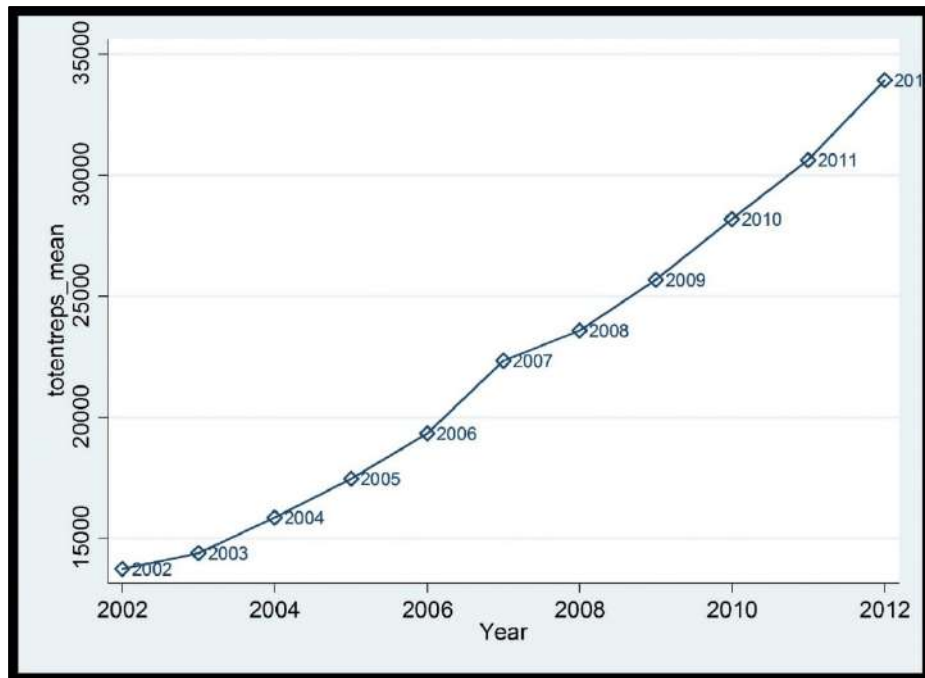**Figure 1. Heterogeneity of the Entrepreneur Numbers across seven oblusus and Bishkek city**

Figure 2. Heterogeneity of the Entrepreneurs Numbers across 11 years

In this dataset, the number of cross-sectional observations (N=8) is smaller than the time-series observations (T=11). Thus, as Hausman (1978) indicates, this situation will generally lead to differences between the fixed effects estimator and the random effects estimator. In general, these two methods are widely used in analyzing a panel data (Woolridge, 2010). The Hausman (1978) specification test is employed statistically to determine the more appropriate estimator for the various models. Prior to running this test, it should be clear in theory that the fixed effects estimator should be more appropriate since the observations (i.e. the oblusus) are not a random sample drawn from a population. According to the Hausman chi-square statistics computations, the null hypothesis was rejected ($p<0.0001$). Therefore, the fixed effects estimator is more appropriate for this study.

Within the fixed effects estimator, the least squares dummy variable (LSDV) model allows for unique effects to be controlled for across the cross-sectional elements (i.e. the oblusus). In theory, this model should be more appropriate than either a model without cross-sectional effects or a random effects model. The reasoning is that the 8 cross-sectional observations (i.e. the 7 oblusus and Bishkek city) are individual entities with their own unique sets of cultural, geographical and demographical elements. Each of these elements can create unique incentives for various types of individual behavior, including the decision to become self-employed. As Bruce (2000, 2002) indicates, if unemployment is high, the opportunity cost of opening one's own business is lower.

The following tables show the results of the LSDV model output for both dependent variables, entrepreneurs with (ols_dum1) and without (ols_dum2) hired labor.

Variable	ols_dum1	ols_dum2
avwagesann	-.00193315	.01385702
export	-.00029143***	.00003631
import	4.357e-06	.00003884
totoutput	-2.507e-08	-2.815e-07
crimes	-.40133297	-1.3619306
univergrads	.00892284	-.43572417
unemp	48.801305	163.96623
poverty	-11.012458	-48.831579
kyrgyz	.0095594	.10161993***
minorits	-.00006743	.00368128
microcredits	-.01520399*	.02532972
retmigration	-1.3029505*	2.1733365
outmigration	.04290453	-.24871132
bankdeposit	.0947524**	.24052812*
combankinv~m	3.169e-07***	-6.138e-07*
emplwomen	.06359128***	-.08132403
emplmen	-.0118951	.16256505***
D2	-193.80764	11120.348
D3	-919.46953	10392.251
D4	-8013.6222*	-29005.243**
D5	-1207.1602	19561.046*
D6	1762.2923	22971.656*
D7	-5813.8349	-40524.997***
D8	2958.5448	24182.86*
_cons	-5218.0638	-43396.894***
r2	.98300003	.97432538
df_r	63	63
N	88	88

legend: * p<0.05; ** p<0.01; *** p<0.001

It should be noted that Bishkek city was used as a reference entity – D1 for other dummy variables – oblusus. Therefore, it was omitted in the computation. As can be seen, only Jalalabad oblus (D4) shows strong statistical difference from Bishkek city for both dependent variables. The statistical fit (i.e. R^2) of these 2 models are 0.98 to 0.97. Hence, 98 and 97% of the dependent variable's variation can be explained by the independent variables included. For both dependent variables, average size of one bank deposits and credit investments by commercial banks added the most substantial contribution to the model's explanatory power. Many control variables are of the expected signs. Most of other independent variables, including unemployment and poverty rate are statistically not significant in both cases. This could be explained by the correlation among errors and repressors, and therefore another method may be needed to be employed further. To handle this issue, seemingly unrelated regressions (SUR) involves estimating a different model for each entity within the data set (Woolridge(2010). The process uses the information about the correlation between the error terms to improve upon the OLS estimates and come up with improved coefficient estimates. Therefore, we will use this method to analyze our data further.

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Seemingly unrelated regression
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Equation	Obs	Parms	RMSE	"R-sq"	chi2	P
entreps1	88	17	646.5814	0.9765	3663.85	0.0000
entreps2	88	17	2942.75	0.9176	980.59	0.0000

	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
entreps1						
avwagesann	-.0010566	.003687	-0.29	0.774	-.0082831	.0061698
export	-.0002698	.000025	-10.79	0.000	-.0003188	-.0002208
import	.0000235	.0000117	2.01	0.045	5.51e-07	.0000464
totoutput	4.31e-07	1.17e-07	3.70	0.000	2.02e-07	6.59e-07
crimes	-.6854759	.1716549	-3.99	0.000	-1.021913	-.3490385
univergrads	.1052757	.0750564	1.40	0.161	-.0418323	.2523836
unemp	-1.427128	32.26745	-0.04	0.965	-64.67016	61.8159
poverty	.3093583	8.40219	0.04	0.971	-16.15863	16.77735
kyrgyz	-.0212419	.0018852	-11.27	0.000	-.0249368	-.0175471
minorits	-.0037795	.0028977	-1.30	0.192	-.0094589	.0018999
microcredits	-.0131715	.0055012	-2.39	0.017	-.0239536	-.0023894
retmigration	-1.319945	.3763193	-3.51	0.000	-2.057517	-.5823729
outmigration	.001679	.0418402	0.04	0.968	-.0803262	.0836843
bankdeposit	.0940835	.0241496	3.90	0.000	.0467511	.1414159
combankinv~m	3.72e-07	8.03e-08	4.64	0.000	2.15e-07	5.29e-07
emplwomen	.0523123	.0111845	4.68	0.000	.0303911	.0742336
emplmen	.0278296	.0068139	4.08	0.000	.0144745	.0411847
_cons	2053.475	560.4888	3.66	0.000	954.9369	3152.013
entreps2						
avwagesann	.0097173	.0167806	0.58	0.563	-.0231721	.0426066
export	.0000196	.0001138	0.17	0.863	-.0002034	.0002427
import	.0001185	.0000533	2.22	0.026	.000014	.0002229
totoutput	5.96e-07	5.30e-07	1.12	0.261	-4.43e-07	1.64e-06
crimes	4.539918	.7812434	5.81	0.000	3.008709	6.071127
univergrads	-1.15777	.3416002	-3.39	0.001	-1.827294	-.4882458
unemp	294.9281	146.857	2.01	0.045	7.093569	582.7625
poverty	-110.5632	38.24042	-2.89	0.004	-185.5131	-35.61337
kyrgyz	.0261909	.0085798	3.05	0.002	.0093748	.043007
minorits	-.036496	.0131882	-2.77	0.006	-.0623444	-.0106477
microcredits	.0896718	.0250371	3.58	0.000	.0406	.1387437
retmigration	3.874141	1.712721	2.26	0.024	.5172691	7.231012
outmigration	.0799388	.1904248	0.42	0.675	-.293287	.4531647
bankdeposit	.337524	.1099108	3.07	0.002	.1221027	.5529453
combankinv~m	-1.18e-07	3.65e-07	-0.32	0.746	-8.34e-07	5.98e-07
emplwomen	-.2266502	.0509034	-4.45	0.000	-.326419	-.1268814
emplmen	.1756834	.0310119	5.67	0.000	.1149012	.2364656
_cons	375.5056	2550.922	0.15	0.883	-4624.209	5375.22

The SUR results have shown many more siginificant variables, including unemployment and poverty rate variables ($p<0.05$) in the second model. Perhaps, they were not significant in the first model, because entrepreneurs with hired labor needed more skilled labor than just unemployed or poor people. Nevertheless, oddly enough, university graduates were not statistically significant in the first model as well, although it is significant in the second model. Higher crime rates raise the cost of protecting private property. Thus, being less competitive, there should be lower rates of entrepreneurship in higher crime regions. Crimes rates confirm it in this study.

Finally, standard demographic variables are found significantly to influence entrepreneurial activity. Interestingly enough, minorities were not significant in the first model, whereas ethnically Kyrgyz people shows statistical significance in both models. Some studies show that minorities are typically less likely than other groups to become self-employed (Fairlie&Meyer (1999). Both women and men of working age is strongly significant ($p<0.001$) in both models. Perhaps, this is the indicator of gender discrimination absence in the Kyrgyz Republic. Theoretically, Blanch flower and Oswald (1998) find that females are less likely than males to become self-employed.

Conclusions and limitations

The purpose of this study was to initiate a dialogue and to inspire further research on entrepreneurship at a regional level from macroeconomic perspective. This research is the first attempt known to the author to quantify the effects of macro variables on entrepreneurial activity in the Kyrgyz Republic. The results, while sometimes difficult to interpret, still allowed for some discussion of oblusus' unobserved effects on entrepreneurship. Whether or not readers agree with the methodology of

this article, it is hoped that some will proceed with their own attempts at quantifying regional differences in order to explain not only entrepreneurship, but also much other regional economic activities.

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