IS INDIVIDUAL ENTREPRENEURSHIP NECESSITY OR AN OPPORTUNITY IN THE KYRGYZ REPUBLIC? A PANEL STUDY

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ABSTRACT

The goal of this research has been to verify the theoretical discussions on the similarities of the Global Entrepreneurship Monitor (GEM) classified opportunity and necessity entrepreneurship across seven regions of Kyrgyz Republic (KR) and its capital, Bishkek city. Individual entrepreneurs with employees (IEWEs) and without employees (IEWOEs) were used as proxy dependent variables for opportunity and necessity entrepreneurship. The independent variables include unemployment rates, poverty rates, microcredit recipients, crime rate and a few others. The study period was from 2002 to 2012. The least squares dummy variable (LSDV) panel data method was employed, using dummies specifically for each region. The findings of this research from a macro perspective did not confirm those similarities. Proxy dependent variables for opportunity and necessity entrepreneurship, IEWEs and IEWOEs, are rarely affected by the same factors.

JEL CLASSIFICATION & KEYWORDS

■ C12 ■ C23 ■ IEWE ■ IEWOE ■ KR ■ REGIONS
■ INFORMAL SECTOR ■ PANEL DATA ■ LSDV

INTRODUCTION

Much research indicates that entrepreneurship plays an important role in the economies of both developing and developed countries, even when they operate in informal sectors (e.g. Uusitalo, 2001; Smallbone & Welter, 2012; Williams & Youssef, 2014). However, entrepreneurship has not been well researched in the context of the post-Soviet transition economies of Central Asia (CA) as part of developing countries. The Kyrgyz Republic (KR), better known as Kyrgyzstan (KG(Z)), was a part of the former Soviet Union as were its neighboring countries in CA - Kazakhstan, Tajikistan, Turkmenistan and Uzbekistan. These countries became independent after separation from the former Soviet Union in 1991, and since then their economies have been in transition from centrally planned economies to free markets (Barnes, 2012; Nikitina, 2012). Speaking of this transition, Stark (1996, p. 1018) noted that post-socialist transition is not a transition from plan to market but 'from plan to clan'. This could be the case in KR as well; however, that was not the focus of this research.

Private property was illegal during Soviet times (Smallbone & Welter, 2012), which meant almost three generations of the Kyrgyzstani people grew up unfamiliar with the concepts of owning or running a private business or entrepreneurial activities. In fact, Aidis (2005, p. 11) wrote about entrepreneurship in the CIS countries that there is 'no memory of private business'. Yet, data from the 2009 census indicate that, in the overall restructuring of the labor market, the private sector has become an alternative employer to the state (NSC of KR, 2010). Although the development of the private sector was seen as a way out of the economic

crisis, institutional, structural, and personal factors, such as dependency on the state lingering from Soviet times and difficulty in adjusting to a liberal market setting, have made the entrepreneurship growth difficult.

According to publications by the National Statistical Committee (NSC) of KR (2002-2012), over the last 11 years the share of the average gross value added to the country's Gross Domestic Product (GDP) by entrepreneurship has been 43.05%. The NSC specifically distinguishes the contribution of the owners of small and medium entrepreneurship (SMEs), individual entrepreneurs (IEs) and farmer-entrepreneurs (FEs). At the same time, their share in employment has been 13.7%. These statistics are comparable with the world data on entrepreneurship; for example, the employment share of entrepreneurs in OECD countries is 8% and their contribution to GDPs makes up about 50-60% in many countries (Manolova, Brush, & Edelman, 2007; Wozowczyk & Massarelli, 2011).

The specific interest of this research has been the IEs (individual FEs and SMEs are not included), as their share in both national GDP and employment has been steadily growing up. Many studies were carried out, either studying entrepreneurship in general, including SMEs, and FEs (e.g. Williams, 2010; Millan, Congregado, Roman, Praag, & van Stel, 2014; Williams & Youssef, 2014), or by using the Global Entrepreneurship Monitor (GEM) data (e.g. Verheul, van Stel, & Thurik, 2006; Cetindamar, Gupta, Esra, Karadeniz, & Egrikan, 2012). This work extends the research by Williams and Youssef (2014) and other related authors using NSC data across provinces of KR from the aggregated macro perspective. GEM has classified entrepreneurship into two types; that of necessity and opportunity (Reynolds, Bygrave, Autio, Cox, & Hay, 2002; Bosma, Jones, Autio, & Levie, 2008; Linan, Fernandez-Serrano, & Romero, 2013). KR is not a participating country in the GEM studies, and this was another reason to use the NSC data only.

Williams & Youssef (2014) and some other authors argue that this GEM classification of entrepreneurs into necessity and opportunity types is no longer accurate as most of entrepreneurs in transition economies operate in the informal economy. They also claim that this distinction between opportunity and necessity entrepreneurship is oversimplified. For example, Williams & Youssef (2014) found in their research from Brazil that for "...many informal sector entrepreneurs, participation in this endeavor is a matter of choice, rather than due to lack of choice, such as because they were seeking independence (16.5%), had experience or skills in the business (8.4%), were following family tradition (8.1%)," (p. 48). In the same fashion, in Smallbone & Welter's (2003, p. 3) research in Ukraine, Belarus and Moldova, the major 3 reasons for start ups were - "to increase income" (73%), "independence" (71%) and "personal fulfillment" (61%). Only a minority referred to 'unemployment'. Also, Aidis, Welter, Smallbone, & Isakova (2007) surveyed 297 women and 81 men in Lithuania and

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Ukraine and confirmed the co-existence of both opportunity and necessity in the motivations behind starting an individual entrepreneurship. William and Youssef (2014) pointed out, that this classification is also used in studying “the motives of entrepreneurs operating in the informal economy,” (p. 42).

To the author’s best knowledge, this is the first known paper to study provincial level entrepreneurial activity in KR. Up to now, entrepreneurship and other related fields have been understudied, both in KR, and in other CA countries. Therefore, the findings of this research may have an important contribution in terms of differentiating the needs and priorities of these two types of entrepreneurship in designing appropriate policies in the transition economy.

Thus, a few hypotheses have been formulated, theorizing about the similarities or differences between necessity and opportunity entrepreneurship, using individual entrepreneurs with employees (IEWEs) and individual entrepreneurs without employees (IEWOEs) as proxy variables in the context of KR as a transition economy. In the next sections, this article seeks to measure empirically the differential impact of various variables on IEs’ activities. In doing so, it uses panel data across seven provinces and the capital, Bishkek city of KR from 2002 to 2012. Finally, based on the results, the author discusses the similarities or differences between these two types of entrepreneurship based on the findings of this research and their policy implications as mentioned above.

Provinces and their Peculiarities in KR

There are seven provinces and two main cities - Bishkek and Osh in KR. Provinces of KR are different in terms of their areas, natural-economic endowments, population size and density as in any other country. In general, the provinces in KR are divided into north (Chui, Issyk-Kul, Naryn and Talas provinces) and south (Batken, Jalal-Abad, and Osh provinces); more industrial bases are located in the north, whereas the south has a more agricultural base (Aiupov, Abdyrashitov, & Brovko, 2007; Ishenov, 2012).

According to the Draft Concept of Provincial Development of KR (2012), the traditional division of provinces based on their social-economic indicators (living standards, GDP per capita, available services). Based on their share of contribution to the GDP, they are classified as following: More developed or advanced provinces and cities – Bishkek city, Issyk-Kul and Chui provinces; Medium or Moderately developed provinces – Jalal-Abad province and Osh city (Osh province); Weak or Less developed provinces – Batken, Naryn and Talas provinces.

This classification was created using traditional macroeconomic indicators. However, the author needs to look into differences in terms of their entrepreneurship growth using these provinces’ macro data. The IEWEs ranges from 40% in the capital city of Bishkek to 0.6% in the Naryn province. The IEWOEs range is reverse values of IEWEs – the maximum value is in Naryn at 99.4% and its minimum value is in Bishkek, at 60%. Also, their share in both national GDP and employment has been steadily growing up as mentioned above. For example, in 2012, IEs’ contribution to GDP was up from 15.1% in 2002 to 18%; and from 6.8% to 13% in employment respectively. During the same period, IEs’ growth in absolute numbers nearly tripled, from 122 525 in 2002 to 297 895 by 2012.

As can be seen in Table 1 below, there is a significant variation among these provinces in terms of their IEs’ contribution to the local and national economy. The table contains six major industries that the IEs are mainly involved in across the provinces of KR. The contribution of SMEship and farmer-entrepreneurs’ is not included in these calculations, although they are included in the national GDP. Therefore, these numbers do not match the total amount in the national GDP column. Thus, the mean values of the following six major economic activities of the local IEs over 11 years are given in the table below.

The table above demonstrates that the IEs’ share in the volume of industrial output (both work and services) in the country’s GDP is low, only 8.15%, whereas construction work is 25.01%, and transportation of cargo and passengers is 78% and 81.03% respectively. The latter two demonstrate the important role of the IEs in the Kyrgyz economy. At the same time, IEs’ share in the volume of the industrial output (both work and services) in their respective Osh, Talas and Batken provinces’ GRP is among the top – 26.1%, 23.73%, and 20.07% respectively. Also, Talas and Batken provinces’ share in the national GDP is among the lowest- 4% and 3.83% correspondingly. The average poverty level among these provinces differ greatly as well, ranging from 54.44% in Naryn to 15.28% in Bishkek city; the unemployment range was from 12.91% in Batken to 4.81% in Talas provinces (NSC Living standards, 2013). These uneven development levels indicate the increasing gap among them, including the entrepreneurship activities.

Theoretical Framework and Research Hypotheses

The above described GEM classification is used as a theoretical base for this research, using two types of individual entrepreneurship studied here: IEs with employees (IEWEs) and IEs without employees (IEWOEs).

Table 1: Individual Entrepreneurs’ Contribution to the National GDP and Gross Provincial Products (GPPs) by Industry, %. Mean Values for 11 years (2002-2012)

		Industrial Output (Both Work and Services)	Construct-ion Work	Trade and Repair of Cars, Home and Personal Appliances	Hotel and Restaurant Services	Cargo Transported	Passengers Transported
% of National GDP	100	8.15	25.1	54.00	40.1	78.00	81.03
Province GPP’s share in the national GDP	Individual entrepreneurs contribution in the provinces’ GPP by industry as labeled above						
Bishkek city	35.05	15.18	21.77	35.58	50.47	37.53	79.45
Batken province	3.83	20.7	18.00	74.35	47.81	68.38	61.18
Chui province	17.18	7.20	36.61	59.74	31.44	79.52	81.25
Issyk-Kul province	13.45	1.39	55.02	47.93	50.35	80.37	90.53
Jalal-Abad province	12.29	4.20	17.50	58.12	28.87	59.11	81.16
Naryn province	3.97	12.31	11.31	77.04	41.98	88.51	87.75
Osh province	10.24	26.10	25.15	75.22	25.2	70.37	88.87
Talas province	4.00	23.73	22.27	69.97	11.91	89.52	90.13

Source: Adopted from the Publications of NSC of KR, 2002-2013

The goal of this research has been to verify the similarities or differences between opportunity and necessity entrepreneurship across provinces of the KR. According to Sternberg & Bergmann (2003, p. 15), opportunity entrepreneurship is a "good entrepreneurship." Presumably, these types of entrepreneurs are better educated and occur more often in developed countries. In this regard, the author used IEWEs as proxy for the opportunity entrepreneurship. The mean percentage of IEWEs in KR for the study period from 2002 to 2012 is 13.46%.

On the other hand, other authors state that necessity entrepreneurship is a negative factor as far as 'national growth and development are concerned' (Smallbone & Welter, 2003, p. 4). Seemingly, these types of entrepreneurs are less educated and occur more often in developing countries. This author classifies IEWOEs as necessity entrepreneurship. The mean percentage of IEWOEs in KR for the study period from 2002 to 2012 makes up 86.54%. Williams & Youseff (2014) found approximately the same percentage distribution of self-employed entrepreneurs or sole-traders (86.7%) and entrepreneurs with employees (13.3%) working in an informal sector in Brazil.

The peculiarity of the IEs in KR is that majority of individual entrepreneurs operate in the informal sector similar to findings in Smallbone & Welter's (2012) and Williams & Nadin's (2012) research. The informal sector is defined as 'economic activities that are not registered in the national accounts and are not subject to formal rules of contract, licensing, labour inspection, reporting and taxation' (International Labour Organization (ILO), 1984). For the purpose of this research, the following definition of informal economy by the Turkey Household labour force survey was used "[h]ousehold unincorporated enterprises paying a lump-sum tax or not paying any tax, and with fewer than 10 persons engaged (agriculture excluded)," (ILO, 2013, p. 23).

According to the existing legislature of KR, many entrepreneurs receive the status of individual entrepreneur or sole trader without creating any legal entity. They become so by simply purchasing a patent for some entrepreneurial activities. Patents, in turn, are divided into two types - voluntary and mandatory, depending on the types of business activities entrepreneurs are involved in (Taxation Service of KR, 2014). The list of these activities are defined by the Kyrgyz legislature. These types of entrepreneurs are not required to maintain even simple bookkeeping. Another contributing factor to the informal economy is, perhaps, the cash economy, where all the financial transactions are conducted using cash payments. Therefore, it is difficult for the tax inspectors and other inspecting agencies to detect these transactions, as they go unrecorded and unreported.

Nevertheless, the activities of the above-mentioned IEs are legal, although they do not report their total earnings to the state for tax, social security or labour law purposes (Williams & Windebank, 1998; Williams, 2006). As a result, these IEs with or without employees belong to the household or informal sector as defined above. The following industries' share in the informal sector in KR for 2012 was as following: trade, and repair of cars and home and personal appliances alone made up 12.9% of the GDP, transportation services come next with 2.4%; and construction was 0.9% (NSC National Accounts, 2013). At the macro level, the estimated volume of non-observable or informal economy grown up from 35.5 billion KGS in 2008 to 61.7 billion KGS in 2012 (Kyrgyz Soms (KGS) exchange rates: 1USD ~ 57 KGS as of October 2014), and its share in GDP has been 18.8 and 19.9% respectively (NSC National Accounts, 2013).

Unemployment and IEs across provinces of KR

Unemployment rates are considered an important variable in this research, although there is no clearly defined relationship between unemployment and entrepreneurship. Some research findings have indicated a positive relationship between unemployment rates and business start-ups (Storey, 1991; Parker, 2009), yet other findings demonstrate a negative relationship between them (e.g. Acs & Mueller, 2008; Thurik, Carree, van Stel, & Audretsch, 2008).

With the introduction of a market economy as opposed to the previous socialist planned economy, the majority of employment in KR shifted to the private sector. Mainly, these are self-employed workers or those who work in private enterprises, or on their own lands and farms to produce for personal consumption. The share of private sector employment increased from 83.6% in 2006 to 84.6 in 2009 (NSC Employment, 2011). Another point to note is that 70.4% of the self-employed were working in the informal sector in 2011 (NSC Employment, 2011, p. 154).

Interestingly, the proportion of employees of enterprises, institutions and organizations decreased from 34% in 2003 to 31% in 2011. However, many self-employed jobs were created, and the number of individuals employed by other individuals significantly increased by 2.4 times (NSC Employment 2011, p. 16). The average official unemployment rate countrywide has been 8.52% from 2003 to 2011. The graph of the original data below shows the general trend between IEs and unemployment in KR, which is positive.

Figure 1: Relationship between total number of IEs (Log) and unemployment rate, 2002-2012

Source: NSC publications (2002-2013)

This type of positive relationship between unemployment and entrepreneurship has a relatively 'long research history' (Evans & Leighton, 1990; Sugheir, Baughn, & Neupert, 2013, p. 23). In this sense, the entrepreneurship in KR is seen not only in economic terms, but it also helps to maintain social and political stability in the society and to reduce the tension between unemployed people and the government (Aiupov et al., 2007; Ishenov, 2012).

Thus, the following hypothesis is proposed:

Hypothesis 1: The unemployment rate is positively related to the total number of IEs as well as IEWEs and IEWOEs across the provinces and capital city of KR.

Poverty and IEs across provinces of KR

The poverty rates is another major variable for this research. The role of entrepreneurship in poverty reduction has been

studied from different aspects (Cohen & Soto, 2007; World Bank (WB), 2011). However, results have been mixed. Despite the impressive growth of entrepreneurship in KR, the poverty rates have not declined over the years. In fact, the poverty rates grew during last two years (NSC Living Standards, 2013). Perhaps, this is reflected in the graph below.

Figure 2: Relationship between the total number of IEs (Log) and the poverty rate, 2002-2012

Source: NSC publications (2002-2013)

The main reason for poverty among working age people and households in KR is the fall of real income from working, i.e. 'frozen' or declining wages and salaries which are not catching up with inflation. In terms of income inequality calculations using quintiles, the richest 20% of the population owns 47.5% of monetary income, whereas the poorest 20% has only 5.2%. Thus, the difference is more than 9 times (NSC Living standards, 2013).

Moreover, given poor people's low skills and social status, they have limited access to financial resources (Peredo & Chrisman, 2006), which limits their ability to start up a business. All these circumstances exist in KR, and are even exacerbated in some remote and mountainous provinces. For example, the provinces of Batken, Naryn and Talas have very limited access to more prosperous provinces for trade and exchange of goods and services. Perhaps, for the same reasons, these provinces have the highest poverty rates and the fewest number of IEs.

Thus, the following hypothesis was formulated:

Hypothesis 2: The poverty rate in all provinces and capital city is negatively related to the total number IEs, including both IEWEs and IEWOEs.

Microcredit recipients and IEs across provinces of KR

It is well known that access to financial capital can also play a critical role in the growth of entrepreneurship (e.g. Cooper et al., 1994). Conventionally, many start-up entrepreneurs try to borrow money from their friends, family, and relatives as this lending is based on trust and entails almost no interest rates or collateral (Bhide, 1992). However, in the absence of these sources, microcredits become quite a popular means of funding (Khavul, 2010; Yunus, 1999). Usually, microcredits are given to individuals and groups, where group responsibility is used instead of collateral. Therefore, the social capital of individuals becomes an important factor in the acquisition of financial resources (Baker, 2000).

The percentage of the microcredit recipients among the working age population of the most remote provinces – Naryn (24.80%), Talas (22.01%), and Batken (12.85%) were the highest. Perhaps, this can be explained by the smaller amount of loans and the group responsibility nature of the microcredits. The latter could also affect the high repayment rate of these microcredits, which ranges from 85% to 95%. It is noted that the majority of the recipients were women, accounting for 75.75% over the last 7 years (NSC SMEship, 2013).

There is also an interesting trend that can be easily observed in the structure of microcredits. From 2008 to 2012, more than 50% of microcredit recipients, received credits for agricultural purposes, rather than for trade or restaurant businesses, as they did early 2000s, when the share of microcredits for trade or restaurants was almost 80%. This can also be explained by the increasing number of long-term microcredits, as opposed to the more prevalent short term ones in the past. This leads to the formulation of the following hypothesis:

Hypothesis 3: Number of recipients of microcredits in provinces and the capital city is positively related to the total number IEs as well as IEWEs and IEWOEs.

Covariates

Entrepreneurs in KG have faced several challenges, including high crime rate as have all post-Socialist environment entrepreneurs. According to NSC (2014) crime against property, including theft of property and livestock is the major part of the crimes in the country. Therefore, crime rate was included as a control variable.

According to these authors (e.g. Kuczi & Vajda, 1992; Glas & Petrin, 1998), the entrepreneurs in post-Soviet transition countries have a high education level compared with their western counterparts. For example, Smallbone and Welter (2001, p. 254) noted that '80% of surveyed SMEs in the Ukraine, Belarus and Moldova had owners that were educated to university or higher education level, although this varied from 85% in Ukraine and Belarus to 54% in Moldova.' Taking into consideration this, controlling for the university graduates was important.

Data and Methods

As mentioned above, the author used data from the publications of the NSC of KR (2002-2013), related to all seven provinces and the capital city Bishkek of KR for 11 years, available in Kyrgyz and Russian languages. The time frame was restricted to 11 years as no data was available for some provinces before 2002. In fact, the province of Batken was created late 1999, and the statistical data was available only from 2002. The second largest city in the South, Osh, was not included in this research as it was a part of Osh province until 2004, and no separate data was available before 2004.

Thus, using the data described above, the author studied the differential impact of several independent and control variables on the total number of IEs as well as the IEWEs and IEWOEs across provinces and capital city of KR. To test the hypotheses posed above, the panel data analysis has been used. This method allows the study to compare observations across space (seven provinces and Bishkek city) and over time (11 years) (Wooldridge, 2010). Below more detailed description of dependent, independent and control variables are provided.

Dependent, independent and control variables

As mentioned above, the total number of IEs as well IEWEs as IEWOEs across provinces and the capital city were

defined as dependent variables (DVs). This is similar to what GEM has been doing with opportunity and necessity entrepreneurship since its inception. As can be seen in Table 2 below, the independent variables (IVs) include unemployment rates, poverty rates and recipients of microcredits. The control variables are crime rates, and university graduates in the provinces. Provinces' GPP, included initially, was removed at a later stage as it was not a good measurement given the very large share of the informal sector in KR. These variables were discussed in relevant sections above. Many of these variables are used by many researchers across countries and continents (e.g. Osoba, 2009; Khaful 2010; Millan et al., 2014).

Table 2: List of dependent and independent variables	
Dependent Variable(s)	Independent Variable(s)
Total number of individual entrepreneurs (IEs) (Log)	Unemployment rates (%)
Individual entrepreneurs with employees (IEWEs) (Log)	Poverty rates (%)
Individual entrepreneurs without employees (IEWOEs) (Log)	Recipients of microcredits (%)
	Control Variables
	Crime rates (number of registered crimes) (Log)
	University graduates (number of people) (Log)
Source: Author	

Model specification

As mentioned above, panel data analysis was used for this research. Panel or pooled data allows the use of repeated observations (most frequently years) on fixed units (most frequently states, provinces and nations). According to Andreß, Golsch, & Schmidt (2013), panel or pooled analysis has become central in quantitative studies of comparative political economy and other disciplines.

Panel data allows researchers to control for variables that cannot be observed or measured like cultural factors or differences in business practices across provinces, states, firms, organizations and others as described above. These unobserved individual differences are termed individual heterogeneity (Wooldridge, 2010). The peculiarity of the panel data is that the correlations are expected between error terms for a particular individual/entity across different time periods. In panel data analysis, two popular methods are used most often; fixed effects (FE) and random effects (RE) (Wooldridge, 2010). As the provinces and capital city of KR were not randomly selected for this research, using the FE method is warranted (FE calculations are available from the author).

Within the FE estimator, the least squares dummy variable (LSDV) model allows for unique effects to be controlled for across the cross-sectional elements. The reasoning is that eight cross-sectional observations, i.e. seven provinces and capital 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 engage in entrepreneurship. LSDV can show how the intercepts vary among provinces and capital city. The FE least squares and LSDV can be used interchangeably (Baltagi, 2005).

This is a balanced panel, since the data is available for all years (T) and provinces and the capital city (N). Also, this is a compact panel as it covers consecutive time periods for

each individual – there are no “gaps” for any given year from 2002 to 2012. Thus, the final model is as following:

$$IE_{it} = \alpha_0 + X_{it-1}\beta_i + \alpha_1 Bishkek_t + \alpha_2 Batken_t + \alpha_3 Chui_t + \alpha_4 Issyk-Kul_t + \alpha_5 Jalal-Abad_t + \alpha_6 Naryn_t + \alpha_7 Osh_t + \alpha_8 Talas_t + \alpha_i + \mu_{it}$$

X_{it-1} means all the IVs and control variables have a one year lag, because of their delayed effect. All seven provinces and the capital city have their own Dummies or $D=1$ or $D=0$ otherwise. However, one of these provinces will be used as a comparison or reference entity for all provinces to avoid perfect multicollinearity; α_i are respectively parameter estimates of dummy variables D_i ; β_i are parameter estimates of IVs and control variables (X_{it-1}). In these models, α_i and X_{it} are allowed to be correlated, where α_i is called a fixed effect that does not vary over time. The advantage of the panel data methods is that it allows the estimation of the parameters consistently using these fixed effects; μ_{it} is the error term. Here the constant terms vary by entities, but slopes are the same for all entities. The dummy variables and regressors are also allowed to be correlated in a fixed model (Wooldridge, 2010).

Thus, LSDV models are used to test the hypotheses formulated above and to verify the similarities or differences between necessity and opportunity entrepreneurship in transition economies (Williams & Youssef, 2014). The significance level to reject a hypothesis is at the 10% level. The sign of the estimated coefficients should also correspond with the relevant hypotheses.

Results

Two types of LSDV model tables provided. The first has independent and control variables with provincial dummies; the second model has the interactions of the variables with the microcredits. Thus, five IVs and seven dummies each for a province are used. Chui and Jalal-Abad provinces are used as reference or comparison provinces and omitted in the following two LSDV models respectively. Bishkek city is obviously very different from provinces in terms of its economy, amount of entrepreneurship growth and so on; therefore, it is not used as a reference entity.

LSDV model I analysis

Table 3 below displays the determinants of the number of IEs across provinces and the capital city of KR using LSDV analysis. We see from the table that a few variables are significant at various levels, either supporting or contradicting their corresponding hypotheses. The negative sign of the unemployment rates across all three DVs is in contradiction with Hypothesis 1. However, it is strongly significant at 1% level in relationship to the number of IEWEs only. This indicates that unemployment has a differential effect on IEWEs and IEWOEs, meaning it does not affect much the number of IEWOEs.

The poverty rates has a strong significant effect at 1% level on the total number of IEs and IEWOEs, and has a negative sign with the same coefficient. This supports Hypothesis 2, although it is not significant in relation to the number of IEWEs and has a positive sign. Microcredit recipients are also strongly significant at the 1% level with positive signs in relation to the total number of IEs and IEWOEs, which supports Hypothesis 3. However, it is not significant against the number of IEWEs. The crime rates has negative signs across all three DVs, but has a significant effect at 5% level only on the number of IEWEs. Finally, the results of the university graduates do not have significant effects on all DVs.

Variables	Total IEs	IEWEs	IEWOEs
Unemployment rates (%)	-0.019 (0.012) ^a	-0.077*** (0.027)	-0.014 (0.014)
Poverty rates (%)	-0.010***^b (0.002)	0.001 (0.006)	-0.010*** (0.002)
Microcredit recipients (%)	0.017*** (0.002)	0.002 (0.005)	0.018*** (0.002)
Crime rates (Logged)	-0.117 (0.127)	-1.249** (0.518)	-0.077 (0.138)
University graduates (Logged)	-0.080 (0.083)	-0.196 (0.141)	-0.101 (0.096)
Bishkek city	0.260 (0.395)	2.561*** (0.716)	-0.071 (0.456)
Batken province	-0.821*** (0.297)	-3.128*** (0.804)	-0.649* (0.331)
Issyk-Kul province	-0.414* (0.220)	-3.058*** (0.418)	-0.223 (0.250)
Jalal-Abad province	-0.235 (0.276)	-3.573*** (0.395)	-0.020 (0.315)
Naryn province	-1.089*** (0.273)	-5.708*** (0.928)	-0.873*** (.299)
Osh province	-0.065 (0.186)	-0.702 (0.577)	-0.117 (0.211)
Talas province	-1.931*** (0.274)	-6.450*** (0.942)	-1.706*** (0.303)
Constant	12.197*** (1.200)	20.103*** (4.556)	11.830*** (1.334)
Entity-year observations	88	88	88
R ²	0.954	0.973	0.933
Number of entities	8	8	8

Notes:
^aRobust standard errors are in parentheses.
* denotes p<0.10; ** denotes p<0.05; *** denotes p<0.01 (two-tailed tests).
^bHighlighted values refer to statistically significant variables at 10% or less level and with the predicted signs in Hypotheses 1-3.

Source: Author

As for provincial dummies, Chui was used as a reference or comparison province in this model for more developed provinces, including Bishkek city and Issyk Kul. The notion in this case is comparing Chui to other provinces in terms of numbers of IEs and finding out whether they still belong to the same provinces. Therefore, statistically not significant provinces, whose p-values are greater than 10% level dummies will be considered. Not surprisingly, Bishkek city was similar to Chui in relation to the total number of IEs and IEWOEs, as Bishkek city is located in the Chui province. On the other hand, it was interesting to see that two Southern provinces, Jalal-Abad and Osh, were similar across all three DVs to Chui. Issyk-Kul was also similar. Again, all these provinces belong to advanced and moderately developed groups. This points to the correlation between the level of economic development and IEWOEs across provinces.

Thus, none of hypotheses regarding the relationship between DVs and major IVs received full support from the analyses above. Therefore, it was decided to use interaction terms between microcredit recipients and three IVs – unemployment rates, poverty rates and university

graduates. The logic behind this new variable is to detect the indirect effect of microcredit recipients on the growth of the number of IEs through those three IVs. Clearly, access to finance is the foundation for start-ups, especially for the unemployed, poor and new university graduates, as discussed above. Table 4 presents the results of the LSDV model with the interaction terms in the next section.

LSDV model II analysis

The interaction term between unemployment rates and microcredits recipients did make a big difference in the Table 4 below. This new variable is strongly significant across all three DVs at 1% level and has only one positive sign for the number of IEWOEs. Therefore, it does not fully support Hypothesis 1 because of negative signs for the two other DVs, IEWOEs and total number of IEs. However,

Variables	Total IEs	IEWEs	IEWOEs
Unemployment rates (%)	-0.008 (0.013) ^a	-0.133*** (0.029)	-0.001 (0.015)
Interaction (Unemployment rates * Microcredits)	-0.002*** (0.0006)	0.009***^b (0.001)	-0.002*** (0.0006)
Poverty rates (%)	-0.007*** (0.002)	0.003 (0.004)	-0.008*** (0.002)
Interaction (Poverty rates * Microcredits)	-0.0002* (0.0001)	-0.0003 (0.0002)	-0.0002 (0.0001)
Microcredit recipients (%)	0.047** (0.019)	-0.135*** (0.033)	0.056*** (0.021)
Crime rates (Logged)	-0.311** (0.145)	-0.703** (0.342)	-0.279* (0.154)
University graduates (Logged)	-0.081 (0.079)	-0.340*** (0.108)	0.091 (0.089)
Interaction (University graduates * Microcredits)	-0.0001 (0.002)	0.010*** (0.003)	-0.001 (0.002)
Bishkek city	0.689*** (0.239)	5.832*** (0.462)	0.136 (0.261)
Batken province	-0.766*** (0.172)	-0.843** (0.388)	-0.817*** (0.185)
Chui province	-0.357 (0.269)	3.160*** (0.296)	0.144 (0.303)
Issyk-Kul province	-0.200* (0.107)	0.452*** (0.152)	-0.216* (0.116)
Naryn province	-1.023*** (0.239)	-1.716*** (0.446)	-1.033*** (0.264)
Osh province	-0.130 (0.272)	2.793*** (0.336)	-0.133 (0.306)
Talas province	-2.043*** (0.296)	-1.750*** (0.553)	-2.055*** (0.327)
Constant	13.197*** (1.379)	13.819*** (2.830)	13.029*** (1.506)
Entity-year observations	88	88	88
R ²	0.958	0.985	0.939
Number of entities	8	8	8

Notes:
^aRobust standard errors are in parentheses.
* denotes p<0.10; ** denotes p<0.05; *** denotes p<0.01 (two-tailed tests).
^bHighlighted values refer to statistically significant variables at 10% or less level and with the predicted signs in Hypotheses 1-3.

Source: Author

the interaction term between poverty rates and microcredits did not make much difference. The new “combo” variable has only 10% significance level with the predicted sign in relation to the total number of IEs only.

An unexpected indirect effect of these interaction terms was that the crime rate variable became significant at 5% and 1% levels across all three DVs with the negative signs. The last “combo” variable between university graduates and microcredits has changed the negative sign to a positive one with the significance level at 1% in relation to the number of IEWEs only. Nevertheless, this was an important change, as it shows that university graduates with access to finance can contribute to the number of IEWEs. Microcredit recipients also became statistically significant at 1% and 5% levels across all DVs, but with one negative sign. An interaction term between poverty rates and microcredits was not successful as discussed above.

Jalal-Abad (a moderately developed province) was used as the reference province in the table above. It was similar to Chui and Osh in relation to the total number of IEs and IEWOEs. Bishkek city was also similar regarding the IEWOEs. Again, we can see a similarity only between more developed (Chui province and Bishkek city) and moderately developed provinces (Jalal-Abad and Osh) mostly in terms of IEWOEs.

Discussions and Policy Implications

The goal of this research has been to verify the theoretical discussions on the similarities of the GEM classified opportunity and necessity entrepreneurship in transition economies in the KR context. The findings of this research from a macro perspective did not confirm those similarities. Proxy dependent variables for opportunity and necessity entrepreneurship, IEWEs and IEWOEs, are rarely affected by the same factors. Perhaps, a future study may require country level data, as opposed to the provincial or regional data used in this paper. It may be that qualitative research using a micro perspective is needed as well.

As can be seen in the models above, crime rates negatively affect the number of IEs across all provinces. This implies that the law enforcement agencies and the court system are not working well yet. Perhaps this could be one reason for the large share (almost 40%) of the shadow economy in the GDP of KR (Kutueva, 2014). Poverty rates have shown a negative effect in these two models, even when used as an interaction term with the microcredits recipients. Perhaps this is because IEWEs need skilled labour rather than employees chosen solely on the basis of their poverty.

On the positive side, the models have shown that microcredits play an important role in the growth of IEs. Regarding this, two important findings are that unemployed people and university graduates provided with microcredits or some type of funding can contribute positively to the number of IEWEs across provinces. These two categories of people have been the major concern of the government of KR, since there is a large share of the unemployed and higher educated population in KR (NSC Demographic year, 2013). Therefore, facilitating access to finance for the unemployed and university graduates would benefit greatly both sides.

The poverty rates, microcredit recipients and crime rates variables added the most substantial contribution in these two models' explanatory power. The models have also shown that provinces need differentiated policies to boost entrepreneurship growth taking into consideration the particularly differential impact of these three factors.

The traditional division of provinces by their macroeconomic indicators may not yield the desired results.

This research may have a significant conceptual and empirical contribution, as there have been not many studies on these two types of entrepreneurship, IEWE and IEWOE, in the post-Soviet transition economies of CA. Furthermore, this was done at the provincial level within an understudied country, using dummies specifically for each province in a panel data. As far as the author knows this kind of approach is not used very often. Therefore, this could be considered as a methodological contribution, at least within the post-Soviet space.

Conclusion

Individual entrepreneurs (IEs) have been growing in numbers steadily since the late 1990s, despite the barriers created by political entrepreneurship and looting during two revolutions in KR (2005 and 2010). Political entrepreneurship and the revolutions might be closely related, as the revolutions occurred due to the “predatory and discriminatory” (Zhou, 2011, p. 871) practices of the political ruling elite regarding entrepreneurship in the country. Smallbone & Welter (2001, p. 252) call this “nomenclature entrepreneurship.” Perhaps, this could be the reason why most of IEs prefer to operate in the informal sector. After the second revolution in 2010, the political system of the country was changed and KR became the first post-Soviet Parliamentary system with extensive restrictions of the President's power (Parliament of KR, 2011).

Also, KR became a lower-middle income country in 2014, after being a low income country since its independence (WB Income Classifications, 2014). There is no doubt that entrepreneurship, including IEs in the informal economy, played an important role in achieving this level of living standards in KR. This has also coincided with the improved ranking of KR from 14 in 2012 to 12 in 2014 in the category of starting a business (WB Doing Business, 2014). These improved rankings signal the growing importance of entrepreneurship and start-ups in the country.

Lastly, a natural and legitimate question is, can these research findings be generalized to other post-Soviet CA countries such as Kazakhstan, Tajikistan, Turkmenistan and Uzbekistan? The answer is no, which could be another limitation of this study. Despite their cultural and historical similarities, these countries are politically and economically very different at this point. This is especially true given the short times series data, available only for 11 years, and the large share of the informal economy in KR. These, perhaps indirectly affected the explanatory power of this study too. In this regard, Tajikistan, Turkmenistan and Uzbekistan may not even have this kind of publicly available datasets. Again, these transition countries, including KR, have been independent only for the last 23 years. Therefore, the findings of this research may have important policy implications in terms of designing sound policies to support the individual entrepreneurship, whose important role in the transition economy of KR is indisputable.

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