EXAMINING THE IMPACT OF ENTREPRENEURIAL ACTIVITY ON EMPLOYMENT AND ECONOMIC GROWTH: THE CASE OF THE VISEGRÁD COUNTRIES

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Abstract: Entrepreneurship has become an emerging topic of discussion in recent years as more emphasis has been placed on the positive impact it may have on economic growth and development. Developed countries are focusing more on advancing innovation and opportunity-driven entrepreneurship while in several developing countries the importance of entrepreneurial activities to aid in job creation and alleviation of socio-economic challenges is accentuated. Literature suggests a strong link between entrepreneurship, economic growth and employment but few studies have shown the level of relationship between these variables. The purpose of this study was to determine the relationships between established business ownership (EBO), new business density (NBD), employment (E) and economic growth (GDP) rates using an econometric analysis method. The study design followed a quantitative empirical approach using annual secondary data from 2006 to 2017 for the Visegrád countries (Poland, Hungary, Slovakia and Czech Republic). A pooled panel analysis was used to test the long and short run relationships between the mentioned variables. The first pooled panel analysis tested the relationship between GDP, NBD and EBO rates, while the second pooled panel analysis tested the relationship between E, NBD and EBO rates. Results indicated a long run relationship between the variables by using the Fisher-Johansen cointegration analysis. Further results of the analysis indicated that both EBO and NBD are significant predictors at 5% and 10% significant levels respectively of economic growth (GDP), while for employment (E) as the dependent variable, EBO is a significant predictor at the 5% level and NBD is not a significant pridictor. In conclusion, the study proved that links between the mentioned variables do exist and that entrepreneurial activity should be stimulated and supported as it has a significant impact on economic growth and employment at various degrees of impact.

Key words: economic growth; employment; entrepreneurial activity, established business ownership (EBO), new business density (NBD), Visegrád countries

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Introduction

Several researchers and policy makers have emphasized the importance of entrepreneurship for the continues growth and development of a country. Entrepreneurial development does not only lead to increased economic growth and employment, but also to the sustained economic development (Athayde, 2012; Sivvam, 2012; Ambrish, 2014; Meyer and De Jongh, 2018; Meyer and Meyer,

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2017). Given this fact it is very important to develop entrepreneurisl skills and competencies (Greblikaite et al., 2016) and aspects such as quality higher education plays a crucial role here (Solesvik, 2019). The contribution entrepreneurship has towards Gross Domestic Product (GDP) is significant in many countries and a contributing factor to economic growth. For example, Herrington and Kew (2017) refer to countries such as Austria, China, France, Germany, Indonesia, Italy, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Turkey, United Kingdom and the United States of America all having small and medium enterprise (SME) activity contributions towards GDP in excess of 50 percent. Egypt and Greece reported the highest SME to GDP contribution with 80 percent and 75 percent respectively (Herrington and Kew, 2017). In essence, these countries make up more than half of its total GDP as a direct result of entrepreneurship and small business activity. This data highlight the significance that a strong entrepreneurial and SME sector is imperative for sustained GDP growth. In addition, Ambrish (2014) states that more entrepreneurial and business activity leads to an increase in employment opportunities and market stability. Several indicators are available to measure a country's different stages of entrepreneurial activity, for example entrepreneurial intent (EI), early-stage entrepreneurial activity (TEA) and establish business ownership (EBO) (Herrington and Kew, 2017). These variables are measured and tracked by the Global Entrepreneurship Monitor (GEM Consortium, 2019a). In addition, the World Bank measure new business density (NBD) to track the number of new business registrations in a calendar year (World Bank, 2019). Although, all indicators measuring entrepreneurial activity is important, this study set out to only consider established and registered business as these have a higher economic impact as they employ people, pay tax as they are officially registered or have been operating for longer than 3 years. In light of this, the purpose of this study was to determine the relationships between established business ownership (EBO), new business density (NBD), employment (E) and economic growth (GDP) rates using an econometric analysis method.

Literature Review

The English term entrepreneur originated from the French word '*entreprendre'*, and expression '*celui qui entreprend*' which can be roughly translated to someone who undertakes or is a manage and those who get things done (Price, 2011). Defining the phenomenon of entrepreneurship has since taken many shapes and forms over the decades. One of the first economists to write about the concept of entrepreneurship was Cantillon (1680-1734). He acknowledged three distinct categories of economic agents namely: property-owners, entrepreneurs and workers (Wennekers and Thurik, 1999; Tabor, 2011; Toma et al., 2014). Cantillon's definition of and entrepreneur included being a risk-taker who considers supply and demand as one of the main factors in order to create balance (Bula, 2012). Cantillon (1755), whose work was only published more than 2

decades after his death, formed part of the original Austrian school of though and stated that generating entrepreneurs leads to the development of an economy through exchange creation, transferring of money, fluctuations in prices, and increased competition. He added that entrepreneurs are responsible for bringing prices and production in line with demand. Other definitions include that of Schumpeter who describes entrepreneurs as individuals who creates new product, service, markets and distribution system combinations (De Bruin et al., 2006). Kirzner (1973) defines an entrepreneur as an alert person who timeously recognises opportunities and who can generate new businesses by doing so. In quintessence an entrepreneur can be defined as an individual who is self-employed with a certain character and skill set allowing them to exploit opportunities by presenting better and more innovative ways to provide services and goods to the greater community (Ambrish, 2014). Although several definition has been formulated over time, and though there are some minor differences between them (e.g. Bąk, 2016), certain keywords are consistently associated with entrepreneurship. These include: innovation, taking risk, creating new processes and combinations of resources, opportunism and eventually the creation of new businesses (Bird and Brush, 2002).
Entrepreneurship is a rather difficult concept to measure as several different phases or cycles during the entrepreneurial pipeline might affect fluctuation in the measurement (Wennekers and Thurik, 1999). Nevertheless, the Global Entrepreneurship Monitor (GEM) Consortium has over the past 20 years successfully developed a process to measure and compare various entrepreneurial activity data sets on national (e.g. female to male ratios) as well as international (e.g. country comparisons) level over a certain time period. The measurement and impact of the interdependency between economic growth and entrepreneurship is an important aspect to assist decision makers within a country on the allocation of resources and direction of policy development (Herrington et al., 2015). Six distinct stages of entrepreneurial development are identified by the GEM which include the potential stage (Stage 1), intention stage (Stage 2), nascent stage (Stage 3), new entrepreneur stage (Stage 4), established business owner stage (Stage 5), and business discontinuance (Stage 6) (Turton and Herrington; 2012, Herrington and Kew, 2013). However, for the purpose of this study only Stage 5 (referred to as EBO in the econometric model) will be used for the empirical analysis. In addition to EBO, the new business density was also included in the model as one of the entrepreneurial variables.
Established business owners (Stage 5 in the entrepreneurial pipeline) are considered those who have been running a business for a reasonable time (Turton and Herrington, 2012; Herrington and Kew, 2013). This indicator is measured by the percentage of population who are aged between18 and 64 years managing and owning an established business and who have paid salaries to employees for longer than 42 continues months (GEM Consortium, 2016). EBO is in many cases much lower compared to the indicators making up Stages 2 to 4 in the entrepreneurial pipeline (intention and TEA). Countries with a high EBO rate reflect sustainable

entrepreneurship most probably due to an enabling business environment (Kelley et al., 2013; Meyer et al., 2016).

The second entrepreneurial variable included in this study is the new business density (NBD). The NBD rate was initiated in 2006 by the World Bank. This indicator measures new business density as new registration per 1000 people aged between 15 and 64 years in one calendar year (World Bank, 2019). From an economic perspective two pertinent roles of entrepreneurs is identified. Firstly, new entry in the market referring to the role of creating new businesses, irrespective of the innovation level is very important. Secondly, the level of innovation forms a major part in economic growth and development as this involves transforming new discoveries or ideas into feasible economic activity (Wennekers and Thurik, 1999; Toma et al., 2014). Wennekers and Thurik (1999) mention that in Romer's it is assumed that an instrument of growth can be found in new varieties of capital goods which technically are introduced into the market by new entrepreneurs. Moreover, this model suggests that growth is driven by the development of new products and therefore economic change could be generated by the numerous activities executed by profit-pursuing entrepreneurs through new businesses. The very existence of entrepreneurship and subsequently the number of new businesses created is crucial to ensure sound economic growth and development as it addresses inefficiencies within economies, and in turn contributing to market supply and demand (Toma et al., 2014). Wennekers and Thurik (1999), Herrington and Kew (2013) and Meyer and Meyer (2016) state that entrepreneurship is directly and indirectly linked to economic development and growth. Whereas, Toma et al. (2014) empirically recognises entrepreneurship as a promoter of economic growth. An increase in the number of business leads to improved competition and higher employment rates which in itself can be a factor for economic growth. Two economic variables were included in the empirical model and these include economic growth (measured in GDP) and employment (employment to population ratio). As such, it is important to understand the relationship between entrepreneurship and these variables. Several academic researchers and policy makers have identified entrepreneurship as a key factor to the sustained economic prosperity of a country's (Toma et al., 2014; Meyer and De Jongh, 2018). In today's modern and open economies, entrepreneurship has become vital for economic growth (Toma et al., 2014).

Economic growth, from a Neo-classical theory approach, can be defined as an accumulative increase of output or the build-up of production factors reflecting a quantitative measurement of a country's progress (Masoud, 2014). Economic growth is primarily based on models by traditional economists such as Myrdal (1957), Rostow (1959) and Solow (1956) and can further be explained as a process to track development of a country through measuring its GDP and per capita GDP. A certain link exists between economic growth (GDP) and entrepreneurship. Authors such as Herrington and Kew (2013), Naudé (2013) and Meyer and Meyer (2017) report that there is a relationship between GDP and certain entrepreneurial

measurement. During the1980s global stagflation and unemployment period, much attention was drawn to the role of entrepreneurship and small businesses development play within an economy (Toma et al., 2014). Wennekers and Thurik (1999) and Máté et al. (2018) state that entrepreneurs form a major part of linking institutions at micro level to economic outcome at macro level (Oláh et al., 2017) and even still today researchers have apprehended that the majority of economic growth lies in small and medium enterprises development and not in the contributions by large corporate companies anymore (EIM, 1997; Toma et al., 2014). Empirical evidence exists demonstrating that a move from large businesses to smaller, more robust ones contributing to economic growth has occurred. Toma et al. (2014) state that ever since the 1970s a substantial volume of literature emerged specifically highlighting the contribution entrepreneurial ventures, especially SMEs have towards the economy. Evidence from Europe and the USA indicated that small and medium business growth exceeded that of large businesses (EIM, 1997).

Equally important to the aforementioned is the link between entrepreneurship and employment. High levels of unemployment in certain countries are connected to lower levels of economic growth. For this reason, many studies focusing on the influence of entrepreneurship and SME growth on employment has emerged. Several different relationships between entrepreneurial activity and employment are found within the literature and in the case of Visegrád Group Countries. For example, Baptista and Thurik (2007), Oláh et al. (2019) opine that increased entrepreneurial activities may increase self-employment which could in turn accelerate economic growth and lessen unemployment. Worldwide, industrial changes are affecting traditional manufacturing methods and creating a new trend allowing entrepreneurs through innovation and knowledge to start novel ventures and in turn create jobs. The rapid pace of innovation with shorter technology life cycles proves beneficial for new businesses to enter the market as they have higher levels of flexibility when compared to larger less flexible businesses. In addition, an increase in self-employment levels may lead to improved entrepreneurial initiatives, leading to increased employment (Audretsch et al., 2001). Sutton (1997) found that in general, SMEs have higher growth rates than large businesses and therefore in some cases have higher employment growth. Furthermore, Audretsch (1995) and Baptista and Thurik (2007) mention that in economies where unemployment levels are high, seasonal increases in entrepreneurial start-up activity might occur, however, in the case of structural unemployment, high levels of unemployment may be related to low levels of entrepreneurial activity. Lower economic growth rates may also decrease entrepreneurial activity leading to higher levels of unemployment as opportunities in the market environment are reduced. Loveman and Sengenberger (1991) state that the stimulation of entrepreneurial activity and SME development could lead to more labour intensive opportunities and thus create more employment opportunities. Lastly, Baptista and Thurik (2007)

state that the stimulation of entrepreneurial activity is needed for the ideal development of a knowledge-based economy.

Profile of Visegrád Group of Countries

The Visegrád group of countries (also referred to as the V4), including Poland, Hungary, Slovakia and Czech Republic (former Czechoslovak Republic) was formed 1991 in an attempt to eliminate the relics that the previous communist rule left in Central Europe and to overcome the hostilities between these countries (Visegrád Group, 2019). All four countries are part of the European Union with the last joining in 2004. Figure 1 represents a map of the region and its surroundings. All countries have an unemployment index of below 5 percent with the exception of Slovakia which recorded a rate of 7.6 percent in 2017. GDP per capita rates are all between around $25 000 and $31 000 per person with Slovakia showing the highest year on year growth rate (3.2%). All countries portray a very low to negative population growth rate. Czech Republic has the lowest Gini Coefficient (25) followed by Slovakia (26.1) representing higher levels of equality. All countries have a similar HDI index of between 0.836 and 0.878 indicating a good level of human development (United Nations, 2017; World Bank, 2017; Meyer, 2018).

Table 1 indicates the different entrepreneurial and business indicators for the relevant countries. All four countries form part of the OECD high income classification. From the data, it is evident that doing business with Poland is the easiest and as they are ranked 33rd out of the 190 countries included in this analysis. In terms of starting a business, Hungary is ranked 82nd and it only takes 7 days to officially start business in this country.

Table 1: Visegrád countries entrepreneurial indicators summary and comparison 2018 (unless otherwise stated)

Country	Doing Business (Rank)	Starting Business (Rank)	Nr of days to start a business	Entrepreneur Intent (EI) (%)	EBO (%)	TEA (%)
Poland	**76.95 (33)**	82.85 (121)	37	9.48	**12.99**	5.24
Slovakia	75.18 (42)	82.02 (134)	26.5	13.7	4.58	**12.12**
Hungary	72.28 (53)	**87.89 (82)**	**7**	**15.11** (2016)	5.5 (2016)	7.94 (2016)
Czech Republic	76.10 (35)	83.56 (115)	24.5	13.73 (2013)	5.26 (2013)	7.33 (2013)

Bold figures represents best performing country (GEM Consortium (2019b); World Bank (2019))

The average for OECD high income countries is 9.3 days (World Bank, 2019). Regarding the Global Entrepreneurship Monitor indicators, Hungary reported the

highest fear of failure rate (43.17%) but still managed to score an impressive established business ownership (EBO) rate of 5.5 percent. Poland has the highest EBO 12.99 percent. In general, all V4 countries reflect a positive entrepreneurial ecosystem. As can be seen from Table 1, the Visegrád group of countries display homogeneous business and entrepreneurial indicators thus supporting the unity they form from a business perspective.

Methodology

In this study, a quantitative research methodology was utilized to analyse time series data. Data was obtained from the World Bank data set and Global Entrepreneurship Monitor reports. The methodology includes a descriptive analysis of the variables and econometric time series panel data models. The focus of the study is on the Visegrád group of countries in Central Europe. The time series data ranged from 2006 to 2017. The data from the four countries were pooled in a panel, leading to 48 observations. The primary aim of this research article is to investigate the relationship between economic growth (measured in GDP) and employment (employment to population ratio) as the dependent variables of two econometric models with two independent entrepreneurship variables namely established business ownership (EBO) and new business density (NBD). Two different models were used as listed in equations (2) and (3).

Model Specification

According to Brooks (2014) the basic equation for panel data can be defined as:

$$y_{it} = \alpha + \beta x_{it} + u_{it} \quad (1)$$

Where y_{it} is the dependent variable, α is the intercept term, β is a $k\times1$ vector of parameters to be estimated on the explanatory variables, and x_{it} is a $1 \times k$ vector of observations on the explanatory variables, $t = 1, \ldots, T$; $i = 1, \ldots$. All variables are stationary at the 1st difference and for this reason the long run model was used (see Table 3 and 5 for unit root tests). The model from the function described in equation (1) can be explained as follows:

$$GDP_t = \propto_1 + \sum_{j=1}^{k} \beta_{1j}\ GDP_{t-j} + \sum_{j=1}^{k} \lambda_{1j}\ EBO_{t-j} + NBD_{t-j}\ u_{1t} \quad (2)$$

$$Employ\_ratio_t = \propto_2 + \sum_{j=1}^{k} \beta_{2j}\ Employ\_ratio_{t-j} + \sum_{j=1}^{k} \lambda_{2j}\ EBO_{t-j} + NBD_{t-j}\ u_{2t} \quad (3)$$

Where α_n is the constant, β_n, λ_n are the coefficients, K is the number of lags and $\boldsymbol{u_{1t}}$ and $\boldsymbol{u_{2t}}$ are the stochastic error terms which are also known as shocks in the model. The unit root test is carried out to measure whether the variables are stationary or not, and was conducted using the Levin, Lin and Chu test as well as the PP-Fisher Chi-square test. If the variables are stationary at I(0) a normal panel VAR analysis is conducted whereas if variables are stationary at I(1), the Fisher Johansen panel co-integration test for long run relationship is conducted.

Estimation Technique

The Visegrád group of countries display homogeneous socio-economic characteristics; hence, as mentioned, the data for the countries were pooled together as balanced panel data. According to Baltagi (2008) panel data defines a process where observations over a specific time period on a cross-section are pooled. A panel data analysis allows for the use of data possessing both cross-sectional and time series dimensions (Brooks, 2014). The data was analysed using descriptive analysis, correlation, unit roots test for stationarity of variables, pairwise Granger causality test, Fisher Johansen panel co-integration test, FMOLS and DOLS tests for long run relationships and diagnostic tests for stability of the model.

Descriptive Analysis

Table 2 presents a summary of the raw data used in the quantitative analysis. All four the Visegrád countries are classified as developed economies. Of the four countries, the Czech Republic has the highest EPR of 58.2% while Hungary had the lowest value at 53.3%. Hunary and Poland had the higest annual improvement rates of 1.3%. Regarding GDP, Poland has by far the largest economy and also has the highest annual growth rate of 4.5%, followed by the Czech Republic in terms of size. The second fastest growing economy is Slovakia at 3.7% average since 2006. For NBD, Slovakia had the higest value of 4.8, followed by Czech Republic at 4.1. The country with the higest improvement rate is Poland at 22.7% per annum since 2006. Lastly, in terms of EBO, again Slovakia had the highest value in 2017 of 10.0, followed by Poland with 9.76. Both countries had positive improvement rates while Hungary and Czech Republic had negative improvement rates.

Table 2: Summary of key data for Visegrád countries (annual growth rates from 2006 - 2017 indicated in brackets)

Country	Year	Employment to Population ratio (EPR) %	GDP (US$ Billions)	NBD	EBO
Poland	2006	46.7	403.2	0.486	8.0
	2017	53.8 (1.3)	600.9 (4.5)	1.7 (22.71)	9.76 (2)
Slovakia	2006	51.2	76.9	3.483	8.4
	2017	54.9 (0.7)	108.2 (3.7)	4.8 (3.44)	10.0 (1.73)
Hungary	2006	46.8	137.4	3.174	6.72
	2017	53.3 (1.3)	153.1 (1.0)	3.450 (0.79)	5.3 (-1.92)
Czech Republic	2006	55.1	196.5	2.243	5.41
	2017	58.2 (0.5)	241.3 (2.1)	4.1 (7.53)	5.0 (-0.69)

(Own compilation from World Bank and GEM reports)

Results and Discussion

In the next section, the relationship between the variables in the long run is tested. The first step in this process is to complete unit root tests for the panel data. Table 3 and Table 4 report the results from the Levin, Lin and Chu test as well as the PP-Fisher Chi-Square test. The results indicate that all variables are non-stationary at levels I(0), while all variables become stationary at 1st difference; they are therefore stationary at I(1). This result implies that the process of long run cointegration testing could be estimated. In this case the Fisher Johansen panel cointegration test is utilised.

Table 3: Panel unit root test: Levin, Lin and Chu Test

Variables	Levels (I(0) – p-value	1st difference I(1) – p-value	Result
GDP	0.9375	0.0020*	I (1)
Employment	0.7971	0.0007*	I (1)
EBO	0.3579	0.0417*	I (1)
NBD	0.7541	0.0012*	I (1)

*Notes: Null hypothesis: Unit root. * indicates 5% statistically significant*

Table 4: Panel unit root test: PP – Fisher Chi-Square Test

Variables	Levels I(0) – p-value	1st difference I(1) – p-value	Result
GDP	0.9474	0.0010*	I (1)
Employment	0.8924	0.0430*	I (1)
EBO	0.2072	0.0007*	I (1)
NBD	0.4513	0.0008*	I (1)

*Notes: Null hypothesis: Unit root. * indicates 5% statistically significant, ** indicates 10% statistically significant.*

Table 5 and 6 provides a summary of the Fisher Johansen panel cointegration test for the two models. For this specific test, the null hypothesis is rejected, meaning there is a long run relationship between variables. The test results indicate that for both the Trace test and the Max-Eigen test, there is evidence of a cointegrated relationship between the variables at a 1 percent significance level. It is concluded, therefore, that the results from the panel cointegration test, indicates a long run equilibrium relationship among the variables for both models.

Table 5: Fisher Johansen panel cointegration test (with GDP, EBO and NBD as variables)

Hypothesized No. of CE(s)	Fisher Stat.* (from trace test)	Prob.	Fisher Stat.* (from max-eigen test)	Prob.
None	91.33	0.0005	79.06	0.0004*
At most 1	23.47	0.0028	23.01	0.0034*
At most 2	11.15	0.1933	11.15	0.1933

*Note: *indicates that the test statistics are significant at the 1% level.*

Table 6: Fisher Johansen panel cointegration test (with Employment, EBO and NBD as variables)

Hypothesized No. of CE(s)	Fisher Stat.* (from trace test)	Prob.	Fisher Stat.* (from max-eigen test)	Prob.
None	123.4	0.0006	100.7	0.0008*
At most 1	45.49	0.0010	35.14	0.0015*
At most 2	25.04	0.0015	25.04	0.0052*

Note: *indicates that the test statistics are significant at the 1% level.

After the analysis confirming the long run equilibrium among the variables in the study, the short run impacts between the variables are estimated. The study uses two types of estimation methods; the Fully Modified Ordinary Least Squares (FMOLS) and the Dynamic Ordinary Least Squares (DOLS) models. A consideration of various forms of residual-based panel method results indicates that these models generally outperform single-equation estimation techniques (Pedroni, 2000). According to Tintin (2009), there is no consensus in the literature as to which method, FMOLS or DOLS, should be used; hence the results of both tests should be compared.

Table 7: Model 1 - FMOLS and DOLS results

Dependent variable: GDP, Independent variables: EBO and NBD

Method	Variables	Coefficient	t-statistic	P-value (prob)	Adjusted R-squared
FMOLS	EBO	1.9804	11.3320	0.0041*	0.7410
	NBD	0.3695	1.3566	0.0887**	
DOLS	EBO	1.6412	6.8913	0.0094*	0.4377
	NBD	0.2528	1.2963	0.09793**	

*Note: *indicates that the test statistics are significant at the 5% level and **indicates that the test statistics are significant at the 5% level.*

Table 8: Model 2 - FMOLS and DOLS results

Dependent variable: Employment, Independent variables: EBO and NBD.

Method	Variables	Coefficient	t-statistic	P-value (prob)	Adjusted R-squared
FMOLS	EBO	2.0018	22.4669	0.0080*	0.7186
	NBD	0.2001	1.6050	0.1098	
DOLS	EBO	1.8319	10.0217	0.0076*	0.4667
	NBD	0.2663	1.3712	0.1274	

*Note: *indicates that the test statistics are significant at the 5% level and **indicates that the test statistics are significant at the 5% level.*

Model 1: GDP is set as the dependent variable (Table 7). For both the FMOLS and DOLS methods the results indicate that EBO and NBD exerts a positive impact on GDP (economic growth), but only EBO has a statistical significant impact on the dependent variable. It can be stated that a 1 percent increase in EBO leads to an

increase of 1.9 percent (FMOLS result) and 1.6 percent (DOLS result) increase in economic growth. From the results it can be concluded that entrepreneurial activities have a significant impact on economic growth in the Visegrád group of countries. This result confirms findings by Toma et al. (2014), Naudé (2013) and Meyer and Meyer (2017).

Model 2: Employment is set as the dependent variable (Table 8). Both the results for the FMOLS and DOLS methods indicate that EBO has a positive and significant impact on employment. It could be postulated that a 1 percent increase in EBO leads to an increase of 2.0 percent (FMOLS result) and 1.8 percent (DOLS result) in employment. NBD has a positive impact on employment but the impacts are non-significant and this result is similar to findings by Audretsch et al. (2001) and Baptista and Thurik (2007). From the results it can be concluded that entrepreneurial activities have an impact on employment, but less so than on economic growth. This result could be due to the phenomenon of jobless growth.

Table 9: Pairwise Granger causality test: GDP, EBO and NBD

Null Hypothesis:	Obs	F-Statistic	Prob.
LOG_EBO does not Granger Cause LOG_GDP	44	6.0431	0.0183*
LOG_GDP does not Granger Cause LOG_EBO		0.0604	0.8070
LOG_NBD does not Granger Cause LOG_GDP	44	8.0626	0.0070*
LOG_GDP does not Granger Cause LOG_NBD		0.4823	0.4913
LOG_NBD does not Granger Cause LOG_EBO	44	0.0579	0.8110
LOG_EBO does not Granger Cause LOG_NBD		0.6702	0.4177

*Note: * indicates 5% statistical significance and ** indicates 10% statistical significance.*

Table 10: Pairwise Granger causality test: Emp, EBO and NBD

Null Hypothesis:	Obs	F-Statistic	Prob.
LOG_EBO does not Granger Cause LOG_EMP	44	3.3871	0.0313*
LOG_EMPRATIO does not Granger Cause LOG_EBO		0.9316	0.4379
LOG_NBD does not Granger Cause LOG_EMP	44	3.6969	0.0228*
LOG_EMPRATIO does not Granger Cause LOG_NBD		0.7119	0.5528
LOG_NBD does not Granger Cause LOG_EBO	44	0.4896	0.6922
LOG_EBO does not Granger Cause LOG_NBD		0.9183	0.4443

*Note: * indicates 5% statistical significance and ** indicates 10% statistical significance.*

Tables 9 and 10 presents the pairwise Granger-Causality test results for all the variables which form part of the two equations. The results indicate the causality results on the short run. From the results it is evident that both EBO and NBD cause changes in GDP on the short run, therefore indicating a uni-directional causality at 5 percent significance level. Also both EBO and NBD causes changes in Employment at a 5 percent significance level. In terms of residual diagnostics, both equations past the tests of normality distribution and serial correlation.

Conclusions and Recommendations

Entrepreneurship development and an increase in the number of small businesses are central factors to any economy's growth both on micro and macro level. The primary objective of the research was to determine the relationship between economic growth, employment, new business density and established business ownership rates for the Visegrád group of countries using a time series econometric analysis. Important results are that entrepreneurial activities (represented by EBO and NBD) have a significant impact on economic growth in the Visegrád countries and entrepreneurial activities have an impact on employment, but less so than on economic growth. These findings are important as it could assist in guiding policy development into a direction promoting entrepreneurship development. The use of various entrepreneurial measurements as utilised in this study also proved to be appropriate as it contributed vastly to empirical research within this important study field. The research objectives were achieved by using an econometric analysis in the determination of the impact of entrepreneurship on economic growth and employment. However, this research proved to add value to the existing available knowledge base it is not without limitation. The most prominent limitation could be regarded as the lack of longer spanning entrepreneurial data. As entrepreneurship has only been measured over the last two decades or so, and certain variables are limited in the availability of data, only an 11-year time span was used. The use of a panel analysis however addressed this issue.

Future research will focus on comparing other countries and homogenous groupings to each other and also including other economic variables to determine the effect entrepreneurship may have on it. It is recommended that development of entrepreneurship and small businesses again be prioritized as a key factor for economic growth. Current and future policy should attempt to remove stumbling blocks preventing accelerated business activities. Furthermore, the relationship between entrepreneurship and economic growth with employment is positive, but the impact can be increased more with better developed and implemented policies. Entrepreneurship development should be the focus of most development programmes through training initiatives and sustainable employment creation.

References

Ambrish, D.R. (2014). Entrepreneurship development: An approach to economic empowerment of women, *International Journal of Multidisciplinary Approach and Studies, 01(6),* 224-232.

Athayde, R. (2012). The impact of enterprise education on attitudes to enterprise in young people: an evaluation study. *Education and Training, 54(8/9),* 709-725.

Audretsch, D.B. (1995). *Innovation and Industry Evolution*, MIT Press, Cambridge, MA.

Audretsch, M.A., Caree, A. & Thurik, R. (2001). Does self-employment reduce unemployment? Discussion paper TI01-074/3, Tinbergen Institute, Erasmus University Rotterdam.

Baltagi, B.H. (2008). *Econometric analysis of panel data*, 4th Edition, New York: Wiley.

Bąk, K. (2016). Academic entrepreneurship – conceptual framework and example from Poland, *Forum Scientiae Oeconomia*, *4(3),* 105-114.

Baptista, R., Thurik, R. (2007). The relationship between entrepreneurship and unemployment: Is Portugal an outlier? *Technological Forecasting and Social Change*, *74*, 75-89.

Bird, B., Brush, C.G. (2002). A gender perspective on organizational creation, *Entrepreneurship Theory and Practice*, *Spring Issue,* 41-65.

Brooks, C. (2014). *Introductory econometrics and finance*, 3rd Edition, Cambridge: Cambridge University Press.

Bula, H.O. (2012). Evolution and theories of entrepreneurship: A critical review on the Kenyan perspective. *International Journal of Business and Commerce*, *1(11),* 81-96.

Cantillon, R. (1755). *Essai sur la nature du commerce in général* (Essay on the Nature of Trade in General) London: Frank Cass and Co., Ltd. Translated and republished in 1959.

De Bruin, A., Brush, A.G. & Welter, F. (2006). Introduction to the special issue: Towards building cumulative knowledge on women's entrepreneurship, *Entrepreneurship Theory and Practice*, September Issue: 585-593.

EIM, (1997). The European Observatory for SMEs, 5th Annual report, Zoetermeer.

GEM Consortium, (2016). Global Entrepreneurship Monitor: Key Indicators - Adult Population Survey Measures. Available at: http://www.gemconsortium.org/data/key-indicators (accessed 8 May 2019).

GEM Consortium, (2019a). Entrepreneurial behaviour and attitudes. https://www.gemconsortium.org/data (accessed 8 May 2019).

GEM Consortium., (2019b). Country Profiles. Available at: https://www.gemconsortium.org/economy-profiles (accessed 8 May 2019).

Greblikaite, J., Sroka, W., Gerulaitiene, N. (2016). Involving young people in Polish and Lithuanian social enterprises by fostering entrepreneurial skills and abilities as entrepreneurial opportunity at university, *Entrepreneurial Business and Economics Review*, *4(3),* 131-152.

Herrington, M., Kew, J. (2013). GEM 2013 South African Report: Twenty Years of Democracy, University of Cape Town, Cape Town South Africa.

Herrington, M., Kew, P. (2017). Global Entrepreneurship Monitor: Global Report 2016/17. Babson.

Herrington, M., Kew, J. & Kew, P. (2015). 2014 GEM South Africa Report: South Africa: The crossroads – a goldmine or a time bomb? University of Cape Town, Cape Town South Africa.

Kelley, D.J., Brush, C.G., Greene, P.G. & Litovsky, Y. (2013). Global Entrepreneurship Monitor 2012 Women's Report, MA: Babson College.

Kirzner, I.M. (1973). *Competition and entrepreneurship*, Chicago: University of Chicago Press.

Loveman, G., Sengenberger, W. (1991). The re-emergence of small-scale production: An international comparison. *Small Business Economics*, *3*, 1-37.

Masoud, N. (2014). A contribution to the theory of economic growth: Old and New, *Journal of Economics and International Finance*, *6(3),* 47-61.

Máté, D., Sarihasan, I., Popp, J. & Oláh, J. (2018). The role of regional differences in immigration: the case of OECD countries. *Economy and Socoilogy*, *11(3),* 190-206.

Meyer, D.F. (2018). An econometric analysis of the relationship between non-economic indexes and economic growth: The case of the Visegrad countries. Paper to be

presented at 7th International conference scientific conference, Management 2018, University of Prešov in Prešov, Faculty of Management, Konštantínova 16, Prešov 08001, Slovak Republic, 26 - 29 September 2018.

Meyer, D.F., Meyer, N. & Neethling, J.R. (2016). Perceptions of business owners on service delivery and the creation of an enabling environment. *Administratio Publica*, *24(3)*, 52-73.

Meyer, N., De Jongh, J.J. (2018). The importance of entrepreneurship as a contributing factor to economic growth and development: The case of selected European countries. *Journal of Economics and Behavioral Studies, 10(4),* 287-299.

Meyer, N., Meyer D.F. (2016). The relationship between the creation of an enabling environment and economic development: A comparative analysis of management at local government sphere. *Polish Journal of Management Studies*, *14(2),* 150-160.

Meyer, N., Meyer, D.F. (2017). An econometric analysis of entrepreneurial activity, economic growth and employment: The case of the BRICS countries. *International Journal of Economic Perspectives*, *11(2),* 429-441.

Myrdal, G. (1957). *Rich lands and poor*, New York: Harper and Row.

Naudé, W.A. (2013). *Entrepreneurship and economic development: Theory, evidence and policy*, Discussion Paper, IZA DP No. 7507. Maastricht: University of Maastricht.

Oláh, J., Kovács, S., Virglerova, Z., Lakner, Z. & Popp, J. (2019). Analysis and Comparison of Economic and Financial Risk Sources in SMEs of the Visegrad Group and Serbia, *Sustainability*, *11(7),1853*, 1-19.

Oláh, J., Halasi, G., Szakály, Z., Popp, J. & Balogh, P. (2017). The Impact of International Migration on the Labor Market - A Case Study from Hungary. *Amfiteatru Economic*, *19(46),* 790-805.

Pedroni, P. (2000). Fully modified OLS for heterogeneous cointegrated panels. *Advances in Econometrics*, *15*, 93-130.

Price, R.W. (2011). What is the history of entrepreneurship? Available at: https://news.gcase.org /2011/02/04/what-is-the-history-of-entrepreneurship/ (accessed: 19 April. 2019).

Rostow, W.W. (1959). The stages of economic growth, *The Economic History Review*, *12(1),* 1-16.

Sivvam, M. (2012). *Female Entrepreneurship: An Indian Perspective*. Saarbrücken, Germany: LAP Lambert.

Solesvik, M.Z. (2019). Entrepreneurial competencies and intentions: the role of higher education. *Forum Scientiae Oeconomia*, *7(1),* 9-23.

Solow, R.M. (1956). A contribution to the theory of economic growth, *The Quarterly Journal of Economics*, *70(1),* 65-94.

Sutton, J. (1997). Gibrat's legacy. *Journal of Economic Literature*, *35*, 40-59.

Tabor, J. (2011). Behaviors of Small- and Medium-Sized Enterprises in the Face of Employee Entrepreneurship, [In:] Determinants of Entrepreneurship Development in SME Sector Companies. (Eds). S.Lachiewicz, K.Szymańska, M.Kurowska. Techn. Univ. Lodz. Press, Lodz, 292-311.

Tintin, C. (2009). Testing the Balassa-Samuelson Hypothesis: Evidence from 10 OECD countries. Available at: http://lup.lub.lu.se/luur/download, (Accessed: 21 February 2019).

Toma, S.G., Grigore, A.M. & Marinescu, P. (2014). Economic development and entrepreneurship, *Procedia, Economics and Finance*, *8(2014),* 436-443.

Turton, N., Herrington, M. (2012). Global Entrepreneurship Monitor 2012 South Africa. University of Cape Town Centre for Innovation and Entrepreneurship, Cape Town: South Africa.

United Nations, (2017). Country classifications. Available at: http://www.un.org/en/ development/ country_classification.pdf. (Accessed 12 December 2017).

Visegrád Group, (2019). History of the Visegrad Group. Available at: http://www.visegradgroup.eu/about/history. (Accesses: 12 May 2019).

Wennekers, S., Thurik, R. (1999). Linking entrepreneurship and economic growth, *Small Business Economics*, *13*, 27-55.

World Bank, (2017). Worldwide Governance Indicators. available at: http://info.worldbank. org/governance/ wgi/index.aspx#reports. (Accessed: 14 May 2019).

World Bank, (2019). New Business Density (New Registrations Per 1,000 People Ages 15-64). Available at: https://datacatalog.worldbank.org/new-business-density-new-registrations-1000-people-ages-15-64-1 (Accessed: 14 May 2019).

BADANIE WPŁYWU DZIAŁALNOŚCI PRZEDSIĘBIORCZEJ NA ZATRUDNIENIE I WZROST GOSPODARCZY: PRZYPADEK KRAJÓW WYSZEHRADSKICH

Streszczenie: W ostatnich latach temat przedsiębiorczości stał się tematem dyskusji, ponieważ większy nacisk położono na pozytywny wpływ, jaki może on mieć na wzrost gospodarczy i rozwój. Kraje rozwinięte bardziej koncentrują się na wspieraniu innowacji i przedsiębiorczości zorientowanej na możliwości, podczas gdy w kilku krajach rozwijających się podkreśla się znaczenie działalności przedsiębiorczej dla pomocy w tworzeniu miejsc pracy i łagodzeniu wyzwań społeczno-ekonomicznych. Literatura sugeruje silny związek między przedsiębiorczością, wzrostem gospodarczym i zatrudnieniem, ale niewiele badań wykazało poziom zależności między tymi zmiennymi. Celem tego badania było określenie związków między ustaloną własnością przedsiębiorstw (EBO), gęstością nowych przedsiębiorstw (NBD), zatrudnieniem (E) a stopami wzrostu gospodarczego (PKB) przy użyciu metody analizy ekonometrycznej. Projekt badania był oparty na ilościowym podejściu empirycznym z wykorzystaniem rocznych danych wtórnych z lat 2006–2017 dla krajów wyszehradzkich (Polska, Węgry, Słowacja i Czechy). Analiza puli panelowej została użyta do przetestowania relacji krótko- i długookresowych między wymienionymi zmiennymi. Pierwsza analiza panelowa z pulą testowała związek między stopami PKB, NBD i EBO, natomiast druga analiza panelowa z pulą testowała związek między stawkami E, NBD i EBO. Wyniki wskazały na długoterminową zależność między zmiennymi za pomocą analizy kointegracji Fishera-Johansena. Dalsze wyniki analizy wykazały, że zarówno EBO, jak i NBD są istotnymi predyktorami odpowiednio przy 5% i 10% znaczących poziomach wzrostu gospodarczego (PKB), podczas gdy dla zatrudnienia (E) jako zmiennej zależnej EBO jest istotnym predyktorem na poziomie 5% poziom i NBD nie są znaczącym pridictor. Podsumowując, badanie wykazało, że istnieją powiązania między wymienionymi zmiennymi oraz że należy stymulować i wspierać działalność przedsiębiorczą, ponieważ ma ona znaczący wpływ na wzrost gospodarczy i zatrudnienie przy różnym stopniu oddziaływania**.**

Słowa kluczowe: wzrost gospodarczy; zatrudnienie; działalność przedsiębiorcza, ustalona własność biznesowa (EBO), nowa gęstość działalności (NBD), kraje wyszehradzkie

考察创业活动对就业和经济增长的影响:以有远见的国家为例

摘要:企业家精神已成为近年来讨论的新兴话题,因为人们越来越重视它可能对经济增长和发展产生的积极影响。发达国家将更多的精力放在促进创新和机会驱动的企业家精神上,而在一些发展中国家,企业家活动对于帮助创造就业机会和减轻社会经济挑战的重要性则更加突出。文献表明企业家精神,经济增长与就业之间有很强的联系,但是很少有研究表明这些变量之间的关系水平。这项研究的目的是使用计量经济学分析方法确定既有企业所有权(EBO),新企业密度(NBD),就业(E)和经济增长率(GDP)之间的关系。该研究设计采用定量经验方法,使用了维谢格拉德州(波兰,匈牙利,斯洛伐克和捷克共和国)2006年至2017年的年度二手数据。汇总面板分析用于测试上述变量之间的长期和短期关系。第一个汇总的面板分析测试了GDP,NBD和EBO率之间的关系,而第二个汇总的面板分析测试了E,NBD和EBO率之间的关系。结果表明,通过使用Fisher-
Johansen协整分析,变量之间存在长期关系。分析的进一步结果表明,EBO和NBD都是显着的预测指标,分别占经济增长(GDP)的5%和10%显着水平,而就就业(E)作为因变量而言,EBO则是5%的显着预测指标级别和NBD不是主要的决定因素。总而言之,研究证明上述变量之间确实存在联系,应鼓励和支持企业家活动,因为它在不同程度的影响下对经济增长和就业都有重大影响。

关键词:经济增长;经济增长就业;企业家活动,既有企业所有权(EBO),新企业密度(NBD),维谢格拉德国家