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Is The Entrepreneurship Still Popular as A Growth Dynamic?

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Abstract

Economic growth is very important for open economies. In the structural change process brought by globalization and technology, the entrepreneurship is vital for the new economic opportunities. In the present study, the relationships between economic growth, entrepreneurship, and employment variables were analyzed. The panel data analyses based on the cointegration and causality were conducted for the countries that were in the middle-income group between years 2006 and 2016. First, the first generation unit root tests revealed that all the series were stationary in difference values. Accordingly, the cointegration relationship between the series was investigated. After determining that the variables were cointegrated, the results of Panel VECM are presented for determining the direction of the relationship. According to the results of the analysis, it was found that there was no causal relationship from growth to entrepreneurship and employment in the short-term, there was a causal relationship from entrepreneurship to growth and employment. Furthermore, there was no causal from employment to growth and entrepreneurship in the short-term. For the long-term, however, it was determined that there was no causal relationship when the growth variable is independent, whereas a causal relationship was found when the entrepreneurship and employment variables were independent, respectively. The findings suggest that entrepreneurship is an important factor for economic growth.

Keywords: Entrepreneurship, Cointegration, Panel VECM

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1. Introduction

In his study, Schumpeter (1911) considered innovative entrepreneurship as a key factor in economic development. According to Schumpeter, the innovative activities of entrepreneurs causing changes in the economy create "innovative destruction" and bring the system into an imbalance. The theory of Schumpeter is based on the assumption that the increase in the number of entrepreneurs causes an increase in economic growth (Wong, 2005:336). After Schumpeter, the interest in entrepreneurship studies increased and it was concluded that the economic growth is related not only with general but also with the growth of companies (Vázquez, et al. 2010:1). In literature, the roles related with entrepreneurship and entrepreneur were defined as follows (Stam, 2008:4-5):

- Marshall (1839) regulator and coordinator of economic sources,
- Knight (1921) uncertainty,
- Schumpeter (1934) innovation/innovator/leader,
- Kirzner (1973; 1997) arbitrager taking the opportunities,
- Schultz (1975) a search for a source for alternative uses,
- Casson (2003) decision-maker

For all intents and purposes, the common idea is that entrepreneurship is effective in growth. As known, Solow's growth model relates the growth to capital and labor variables and it accepts the presence of a technical residue including new technological and organizational information. The internal growth models, which arose in 1980s, showed that the investments in knowledge and human capital belong to the companies, which generally seek profit maximization. It is accepted that the companies investing in research and development in order to achieve a competitive

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advantage against their rivals transform a part of this knowledge to a social knowledge that affects the production function of all other companies and increasing their productivity. The growth now started to be explained over phenomena other than increases in capital investments and labor supply (Braunerhjelm, 2007:24-25). The effect of entrepreneurship on economic growth was investigated in many studies. In these studies, the relationship between economic growth and entrepreneurship was investigated sometimes directly and sometimes over the innovation or employment. Salgado-Banda (2005) carried out an empirical analysis between economic growth and entrepreneurship on 22 OECD countries for the period between 1980 and 1995 by using OLS, Two-State OLS, and GMM methods and found that entrepreneurship positively affected the economic growth when measured using patent applications. Baptista and Thurik (2007) examined the relationship between entrepreneurship, growth, and unemployment for Portugal for the period between 1972 and 2002. They reported that the employment increasing effect of entrepreneurship in Portugal was higher than the OECD average. Carree and Thurik (2008) used regression analyses for investigating the effect of entrepreneurship on employment increase, economic growth, and labor productivity increase in 21 OECD for the period between 1972 and 2002. The authors found that entrepreneurship had a positive effect on economic growth and employment increase and no effect on labor productivity. Valliere and Peterson (2009) analyzed the effect of entrepreneurship on the growth in 44 developing and developed countries in years 2004 and 2005 by using regression analyses. The results showed that a significant portion of economic growth rates in the developed countries was explained with entrepreneurship but the same effect couldn't be observed in the developing countries. Braunerhjelm et al. (2010) used Granger test on 1981-2002 data of OECD countries and reported causality from entrepreneurship to growth. The results showed that the policies making entrepreneurship easier are an important tool for increasing the information distribution and encouraging economic growth. Vázquez-Rozas et al. (2010) determined the effect of entrepreneurship on economic growth at local level for the period between 2000 and 2008. The static panel data analyses revealed the positive effect of entrepreneurship on growth. Box et al. (2014) used Vector Autoregressive Model (VAR) and Granger causality test in examining the relationship between entrepreneurship and economic growth in Sweden for the period between 1850 and 2000. In their study, in which the self-employed individuals were considered as an entrepreneurship indicator, a positive relationship was found between economic growth and economic growth in the long-term but no causality was reported. Chen (2014) investigated the effect of entrepreneurship and employment on economic growth in Taiwan for the period between 1987 and 2012 by using Impulse Response Function-Variance Decomposition and Granger's causality test. The results showed that the entrepreneurship encouraged both growth and employment. Karagöz (2016) analyzed the relationship between economic growth and entrepreneurship in Turkey for the period between 1968 and 2012 by using VAR, impulse-response analysis, and causality. The results revealed a positive relationship between entrepreneurship and economic growth in the short-term but no causality was found. Ağır and Kara (2017) used VAR model and Johansen's cointegration analysis in examining the relationship between self-employed and economic growth in Turkey for the period between 1988 and 2014. The results showed that entrepreneurship significantly and positively affected economic growth.

The most important point in the literature is the difficulty of directly measuring the entrepreneurship. In empirical analyses, entrepreneurship was represented with the number of patents, the number of newly founded companies, and the rate of self-employed population. Moreover, in the recent period, the Global Entrepreneurship Monitor (GEM) data are also used (Karagöz,2016:269).

2. Econometric Analysis

In the present study, the relationship between economic growth, entrepreneurship, and employment in the countries, which were in the middle-income group between 2006 and 2016, was investigated using panel data analyses. Depending on the availability of data, the countries constituting the panel are Albania, Armenia, Botswana, Brazil, Costa Rika, Dominican Republic, Iraq, Jamaica, Kazakhstan, Macedonia, Malaysia, Mauritius, Mexico, Montenegro, Paraguay, Peru, Romania, Russia, Samoa, South Africa, Saint Lucia, Saint Vincent and Grenadines, Surinam, Thailand, Tonga, and Turkey. The annual growth rate of the gross national product was used as the dependent variable. The independent variables were entrepreneurship and employment. The entrepreneurship was expressed with new business density and the employment was expressed with employment rate. The data were obtained from the database of the World Bank. In the present study, the time is T=11 and the number of countries is N=26. The empirical analyses were conducted with panel methods meeting the N>T criterion. The first of these analyses is the unit root analysis. As in the time series, the presence of trend, cyclical fluctuation, or seasonal fluctuations in panel data analyses creates spurious regression problem in relationships. For this reason, it is very important to examine the stationarity of series (Nelson and Plosser, 1982: 140; Tarı, 2011: 374). The analysis of series in panel data analyses is examined using first and second-generation

unit root tests. In this study, the unit root analysis was performed using IPS test, which is one of the first generation unit root tests and developed by Im, Pesaran, and Shin. Because it was determined that there is no cross-section independence. In the present study, since N>T, $CDLM$ test were used in order to test cross-sectional dependency for both of series and cointegration equation.

$$\mathrm{CDLM} = \sqrt{\frac{2\mathrm{T}}{\mathrm{N}(\mathrm{N}-1)}}\left(\sum_{\mathrm{i}=1}^{\mathrm{N}-1}\sum_{\mathrm{j}=\mathrm{i}+1}^{\mathrm{N}}\sqrt{\mathrm{T}_{\mathrm{ij}}\hat{\rho}_{\mathrm{ij}}}\right);\ \mathrm{N}(0,1)\ \text{ve}\ \mathrm{N}\rightarrow\infty\ \text{(Pesaran, 2004:9)} \quad (1)$$

In IPS test, the unit root test was applied to the time series for the units before combining the data. This test is the average of all individual ADF test statistics. In this test, the null hypothesis $\beta_i=1$ and alternative hypothesis $\beta_i<1$ are accepted (Yerdelen Tatoğlu, 2012:212; Im et al., 55). If it is found in unit root tests that the variables are stationary in difference, it is necessary to examine the cointegration between the series. The long-term relationship between the variables was examined using Pedroni, Kao, and Johansen Fisher Cointegration tests.

In the cointegration analysis developed by Pedroni (1997, 1999, 2000), several test suggestions allowing heterogeneity in cointegration analysis suggestions were proposed (Asteriou and Hall, 2007: 373). Pedroni tests are more advantageous since they allow multiple explanatory regressors, cointegration vector diversifies through different portions of panel, and errors through the section units allow heterogeneity. Seven different cointegration tests are provided in order to cover the effects within and between the dimensions in the panel (Gülmez and Yardımcıoğlu, 2012: 345). Pedroni proposed 7different test statistics as panel v, panel p (panel rho), panel PP, panel ADF statistics and group p (group rho), group PP, and group ADF. The hypotheses are H0: There is no cointegration and H1: There is cointegration. Here, t refers to time, i to the number of horizontal sections, and m to the number of variables in the model. The main equation of the test is as follows (Asteriou and Hall, 2007: 374):

$$Y_{it} = \alpha_{it} + \delta_{it} + \sum_{m=1}^{M}\beta_{mi}X_{mit} + \varepsilon_{it} \quad (2)$$

i:1,…N; t:1,…,T; m:1,…M

In Kao's (1999) cointegration test, DF and ADF are the main tests and the null hypothesis is $Y_{it} = X'_{it}\beta + Z'_{it}\gamma + u_{it}$ (Yerdelen Tatoğlu, 2012:231). Finally, in Johansen Fisher's Cointegration Test, H_0: There is no cointegration and H_1: There is cointegration. For these hypotheses, the cointegration between the series is determined using trace and maximum eigenvalue statistics.

It means that there may be a causal relationship between the cointegrated variables. The causality can be estimated with the Vector Error Correction Model (VECM) using the Augmented VAR model. The estimation for panel VECM is made using the following equations (Ağır et al., 2011:453):

$$\Delta InY_{it} = \delta_{1i} + \sum_{p=1}^{k}\delta_{11ip}\,\Delta InY_{it-p} + \sum_{p=1}^{k}\delta_{12ip}\,\Delta InE_{it-p} + \sum_{p=1}^{k}\delta_{13ip}\,\Delta InX_{it-p} + \varphi_{1i}\hat{\varepsilon}_{it-1} + \upsilon_{1it} \quad (3)$$

$$\Delta InE_{it} = \delta_{2i} + \sum_{p=1}^{k}\delta_{21ip}\,\Delta InE_{it-p} + \sum_{p=1}^{k}\delta_{22ip}\,\Delta InY_{it-p} + \sum_{p=1}^{k}\delta_{23ip}\,\Delta InX_{it-p} + \varphi_{2i}\hat{\varepsilon}_{it-1} + \upsilon_{2it} \quad (4)$$

$$\Delta InX_{it} = \delta_{3i} + \sum_{p=1}^{k}\delta_{31ip}\,\Delta InX_{it-p} + \sum_{p=1}^{k}\delta_{32ip}\,\Delta InY_{it-p} + \sum_{p=1}^{k}\delta_{33ip}\,\Delta InE_{it-p} + \varphi_{3i}\hat{\varepsilon}_{it-1} + \upsilon_{3it} \quad (5)$$

Thus, both short-term and long-term causalities can be determined. The short-term causality is tested with Wald test by setting zero limitation to the parameters of the difference variable. The long-term causality is, however, investigated using the statistical significance of t-statistics of error correction coefficients (ϕ) (ECT).

3. Results

In Table 1, the results of cross-sectional dependence test are presented. The H_0 hypothesis was accepted and it was determined that there wasn't a cross-sectional dependence in the series.

Table 1. The Results of Cross-Sectional Dependence

Variables	Statistic	Probability
Y	-0.286	0.387
E	-0.898	0.815
X	-0.106	0.542

The stationarity statuses of variables were examined using IPS panel unit root test and presented in Table 2.

Table 2. Results of Unit Root Test

Variable	Y		E		X	
	Statistics	Probability	Statistics	Probability	Statistics	Probability
Level	-0.97940	0.1637	-0.74470	0.2282	-0.68311	0.2473
Difference	-4.13113	0.0000*	-4.46235	0.0000*	-1.82064	0.0343**

Note: The results include constant and trend values and * refers to stationarity at 1%, ** to stationarity at 5%, and *** to stationarity at 10%.

As seen in Table 2, all the variables have unit root at level values and, after taking the differences, they become stationary. The cointegration was examined for series in I(I).

Table 3. Cointegration Test Results

Test	Pedroni			
Within-dimension tests	t statistics	Probability	Weighted Statistics	Probability
Panel v Statistic	-1.729980	0.9582	-4.735994	1.0000
Panel rho-Statistic	2.378028	0.9913	2.301270	0.9893
Panel PP-Statistic	-8.633942	0.0000*	-14.15402	0.0000*
Panel ADF-Statistic	-3.400275	0.0003*	-5.415937	0.0000*
Between-dimension tests				
Group rho-Statistic	4.563723	1.0000		
Group PP-Statistic	-16.42556	0.0000*		
Group ADF-Statistic	-3.472927	0.0003*		
Test	Kao			
	t statistics		Probability	
	-2.253277		0.0121**	
Test	Johansen- Fisher			
Hypothesized No. Of CE(s)	Fisher Stat.* (from trace test)	Probability	Fisher Stat.* (from max-eigen test)	Probability
None	121.2	0.0000	121.2	0.0000
At most 1	4490.	0.0000	325.6	0.0000
At most 2	171.2	0.0000	171.2	0.0000

Note: * refers to stationarity at 1%, ** to stationarity at 5%, and *** to stationarity at 10%.

Pedroni, Kao, and Johansen-Fisher tests, in which the cointegration relationship was analyzed, showed that there was a cointegration relationship between the series. All the statistics, except for panel-v, panel rho, and group

rho (from group statistics) among the Pedroni cointegration tests, are significant. Again, Kao test (5%) and Johansen-Fisher test (1%) showed cointegration between the series.

Table 4. Results of Vector Error Correction Model (VECM)

	Short-Term Causality			Long-Term Causality
	Y	E	X	-
Y	-	2.144 (0.548)	3.022 (0.397)	-0.947005 (0.14630) [-6.47323]
E	7.225(0.065)	-	24.074 (0.000)	0.014807** (0.02767) [0.53516]
X	0.387 (0.942)	3.444(0328)	-	0.062571*** (0.05374) [1.16428]

After determining that the variables are cointegrated, the results of Panel VECM are presented in order to determine the direction of relationship. According to Table 4, there was no causal relationship from Y to E in short-term, whereas there was a causal relationship from E to Y and X. Furthermore, there was no short-term causal relationship from X to Y and E. In the long-term, however, it was determined that there was no causal relationship when Y was the independent variable, whereas a causal relationship was found when E and X were independent variables.

Conclusion

Globalization made itself more apparent in social, political, cultural, and economic areas throughout the previous century. Especially the changes in technology and organization areas influenced all the countries. In order to keep up with the new world order, the countries altered their competition strategies towards developing unique products and establishing new production and distribution channels. These countries put this differentiation into practice through either the new commercial ideas of current companies or new entrepreneurship activities. Thus, the new entrepreneurship activities have a direct effect on economic growth by improving the competitive environment not only on a global scale but also in domestic markets. In the present study, the effect of entrepreneurship on economic growth was examined using panel data analyses for 26 countries, which were in the mid-income group between 2006 and 2016. In these analyses, the growth, entrepreneurship, and employment variables were utilized. The results of panel causality analyses indicate a causal relationship from entrepreneurship to growth and employment in both short- and long-term. Entrepreneurship plays a determining role in the economic growth of middle-income countries. For this reason, it is necessary to take steps into increasing the entrepreneurship activities. Many parameters such as social, cultural, political, technological, economic, demographic, etc. are effective in increasing the entrepreneurship. The principal factor in entrepreneurship is to increase the research and development activities for innovation. The innovative activities not only lay the foundation of new business opportunities but also improve the quality of the labor force. Another point for increasing the number of entrepreneurs is the improvement of the government's inventive system. The inventive policies to be prepared in accordance with national and regional strategies should include the regulations and instructions, especially about the finance. On the other hand, the adoption of entrepreneurship culture by the society and the inclusion of this culture into the education system are necessary.

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