MUSTAFA GERÇEKER
Selçuk University, TURKEY

BILAL ÖZEL
Selcuk University, Turkey

AHMET AY
Selcuk University, Turkey

EFFECTS OF ENTREPRENEURSHIP ON ECONOMIC GROWTH IN TURKEY: AN EMPIRICAL ANALYSIS

Abstract:

The entrepreneurship seems to be an important source for economic growth. For this reason, the emphasis on entrepreneurship with the importance for economic growth is increasing day by day. This study investigates the existence of the relationship between entrepreneurship and economic growth by using control variables including employment and savings. For this purpose, possible relations were tried to be determined by using bound test and ARDL method for the period 1988-2012 with annually data. The results of bound test, shows that there is a long-run relationship between economic growth and entrepreneurship. Afterward long-run coefficients and equations were estimated. The results of long run coefficients shows that there is a positive and significant relationship between economic growth and entrepreneurship.

Keywords:

entrepreneurship,economic growth,ARDL method

INTRODUCTION

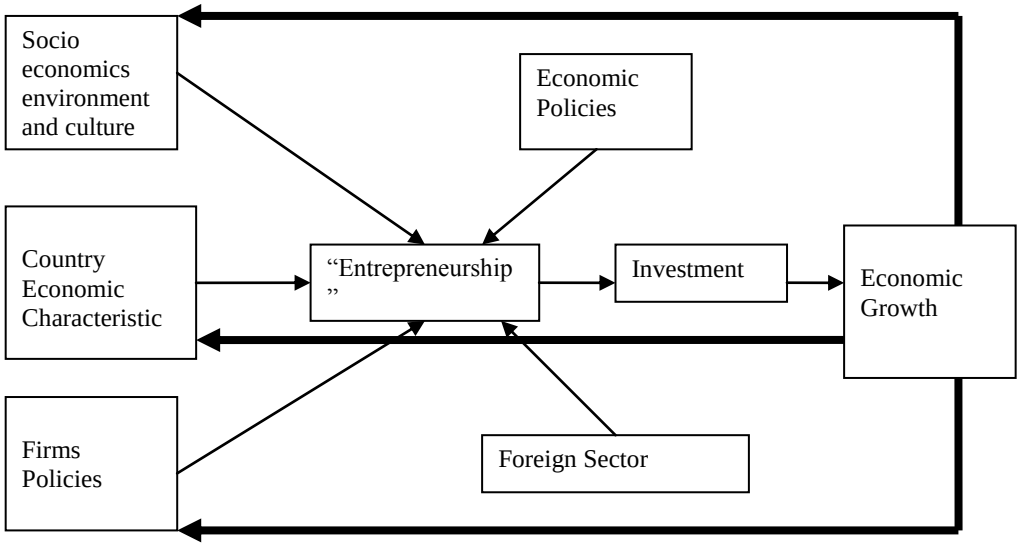
The concept of introduction is summarized as a process including risk taking, making use of available novelties, catching opportunities and actualization of them. Looking from this point of view both company establishment and the process of making innovations are considered within the scope of entrepreneurship. In this scope, company establishment is considered as an indicator of entreprenurship along with making innovations. According to J. Schumpeter function of an entreprenur is to provide a new point of view to a production process either by making a new invention or producing a new good or by producing a good via using a different method or previously untried technologies (Öztürk, 2008: 21 – 22).

In the framework of “Entrepreneurship Indicators Program” published by OECED entreprenurship is defined as follows (KOSGEB, 2013: 7): “Entrepeneur is a person (business owner) who starts a new economic activity or grows an existing one by finding new products, process or markets. According to this definition entreprenur should be considered not with their actions, but the results of its actions. Entrepeneur makes investment by using time, thought and other resources and starts an activity that includes risk and uncertainty. After implementing this activity "new", namely results that lead to destruction of the previous ones should emerge and an aconomic and/or social value should be created.”

The role of entrepreneurs was first analyzed by Richard Cantillon in 1700s. Afterwards, although economics like J.B. Say, Walras, Francis Walker, Fredrick Hawley and John Bates Clark mentioned the entrepreneurship as a factor in this or that way within the history of economic thought, J.A. Schumpeter was the one who analyzed and regarded the role of entrepreneur as a main actor of economic activities. In this sense Schumpter diverged from the traditional economic thought of economists preceding himself. Schumpter drew attention to dynamic disequilibrium in the economy caused by innnovative entrepreneurs, rather than trying to establish an equilibrium and achieving optimization in the economy. For Schumpeter said disequilibrium is a rule within a healthy economy, and accepted as a reality from the standpoint of economic theory and practice (Topkaya, 2013: 32,36). On the other hand, proliferation of the knowledge was emphasized in intrinsic growth models put forth by Romer (1986) and Lucas (1988) in 1980s and the main factor that led to this proliferation effect is considered to be the entrepreneur (Gerni et al. 2013: 761). The debate whether entrepeneur and entrepreneurs are the propellant factor behind economic growth, employment, innovation and productivity became a political agenda in 1990s. On the other hand 2000s were years when economic policy makers and international organizations provided various supports for entrepreneurs and tried to remove impediments facing entrepeneurs and there were concentrated efforts to develop the entrepreneurship. Current global economic structure promotes the entrepreneurship in every way. Furthermore, entrepeneurship supports this change by dynamics it create, beyond its acceleration of changing economic structure. For this reason the most important means by which countries can escape from foreign dependence and build a structure that works based on production is supporting the entrepreneurship. Besides, it is observed that there is an economic structure changing from rural production to big entreprises and economies of scale and where small firms become the main motor of many industries within time. As soon as it was realized that large added value can be obtained from small and middle sized enterprises and they

can come with innovative applications, in a sense entrepreneurship was opened to the public KOSGEB, 2013: 5 - 6).

Increase in the number of entrepeneurship within an economy is one of the most important factors in transfering the resources from areas where economic productivity is low to the areas where economic productivity is higher. The innovative and creative ideas brought by entrepeneurs can be the driver of economic growth by providing possibility for the birth of new industries in a country economy.
Also, increase in the competitive power of countries with economic growth, accordingly creation of new jobs have important effects in creation of more favorable economic conditions for entrepreneurs. Reduction of risks facing entrepeneurs and increasing their potential of making profits can be possible with a sustainable economic growth. As economic growth brings along an economic environment which uses new resources for creating new jobs and industries and where risks are low, it is widely accepted as one of the most important factors in development of entrepeneurship. Looking from this point of view economic growth itself is considered as an activity of entrepreneurship (Öztürk, 2008: 28). According to Audretsch and Keilbach entrepeneurship positively contributes to the economic growth by proliferation of knowledge, increasing competition and variety (Hessel ve Stel, 2011: 256; Audretsch and Keilbach, 2010: 953).



In the above table created by Martin et al. (2010) it was tried to explain the relationship between entrepeneurship and the economic growth. There is feedback effect between economic growth and entrepeneurship via indirect channels. Accordingly, firm policies, existence of foreign private sector, economic characteristics of the country, economic policies, socio-economic environment and culture etc. determines the nature and the framework of the entrepreneurship in a country by directly affecting the entrepeneurship activities. The ones who are engaged with entrepreneurship activities also influence the economic growth of a country by taking investment decisions. Besides, realized economic growth can be effective on economic characteristics of countries, company policies, socio-economic environment and culture (Martin et al. 2010: 135-136).

1. ECONOMIC GROWTH AND ENTREPRENEURSHIP

In the litereature there is a general view that asserts that there is a positive relationship between entrepeneurship and economic growth. Briefly, entrepeneurship activities within the relationship between entrepreneurship and economic growth accelerates the economic development through increase in new jobs and welfare. In addition, entrepeneurship activities increase economic growth, productivity and job opportunities by forming basis for innovations in the economy (Gerni et al., 2013: 761). There are many studies that scrutinizes the relationship between economic growth and entrepeneurship via theoretic and ampiric methods. They are mainly as follows:

Li et al. (2012), analyzed the effect of entrepeneurship on economic growth ampirically by using panel data set formed based on China's 29 regions (provinces) for the period between 1983-2003. Two indicators of the entrepeneurship were defined within the scope of traditional growth regression estimated by using S-GMM method. According to the results obtained by carried out ampirical analysis, it was found that entrepeneurship (private employment rate) had a significant positive effect on economic growth.

Galindo and Mendez (2014) analyzed the relationship between entrepeneurship, innovation and economic growth in the context of Schumpeterian approach under the framework of fixed effects approach, with help of Panel Least Squares method by using statistics of 13 developed country economies. The analysis results performed with data covering 2002-2007 period indicate that monetary policy and various factors including social climate has pozitive effect on innovation and entrepeneurship. Both innovation and entrepeneurship has positive relationship with economic growth. Furthermore, the finding that economic activity increases entrepeneurship and innovation activities is also among the results obtained from the study.

Acs et al. (2012) analyzed the relationship between entrepeneurship and economic growth by using general Least Squares and two-stage Least Squares method via forming panel data set for 18 countries. In the econometric model where economic growth is defined as the dependent variable, the entrepreneurship, R&D expenditures, education, government expenditures, capital stock and dummy variables are independent variables. The obtained ampirical results indicate that economic growth and entrepeneurship activities do have effect on economic growth.

Martin et al. (2010) analyzed the relationship between entrepeneurship, income distribution and economic growth via theoretical and also ampirical applications. They formed panel data set with figures covering 2000-2006 period for 25 countries. According to the findings obtained from economic model used for the study, increases in the entrepeneurship activities increased the investments and in its return investments made positive contribution on the economic growth.

Van Stel et al. (2005) ampirically analyzed the effect of entrepeneurship on economic growth in case of 36 countries and by making use of TEA (Total Entrepreneurial Activity) indicator published by GEM (Global Entrepreneurship Monitor). In the model where gross domestic product growth is taken as dependent variable, total entrepreneurial activities-Total Early Stage Entrepreneurial Activity, income per capita and competitive growth index indicators are included in the model as independent variables. According to the results obtained entrepreneurship affects the economic

growth. Said effect is dependent on the income per capita. Thus, TEA index negatively affects the economic growth in countries where gross domestic product level is lower and posivitely affects the growth in countries which have high income level.

Zwan et al. (2013) analyzed the relationship between entrepreneurial activity and economic growth relationship by using Total Early Stage Entrepeneurial Activity (TEA) index published by GEM and based on technological production concentration for the period of 9 years (2001-2009) covering 70 countries . According to the regression results applied in the study, entrepreneurial activities within the industries of advanced technology concentration make more contribution to the economic growth when compared to the industries with low or null technology concentration.

Portela et al. (2012) ampirically tested the relationship between entrepeneurship, social capital and economic growth. The findings obtained from the study indicate that there is positive and significant relationship between said variables.

Gerni et al. (2013) analyzed the causality relationship between entrepreneurship and the economic growth by using panel data set covering 2008-2011 years for twenty three transition economies and Turkey. GDP/Growth rate for each country, Total Savings/GDP rate, working population with age over 15 years/total population ratio and number of newly established companies per each 1000 people working and of age between 15-64 years as an indicator of the entrepeneurship were used as variables. As a result of the analysis performed, it was determined that entrepreneurship factor was more important than labor and capital as a fundamental factor driving the economic growth in twenty three transition economies and in Turkey. In other words in these countries it was observed that increases in entrepreneurial activity affected the growth posivitely. In causality tests performed it was determined that there was bidirectional causality relationship between entrepreneurship factor and the economic growth.

2. ENTREPRENEURSHIP INDICATORS AND TURKEY

Countries publish certain statistics through official statistical institutions with purpose of showing the situation of entrepreneurship activities and contributing to production of healthy policies over the existing situation. Besides, various indices and reports related with entrepreneurial activities are published by some international institutions. Among these publications, Global Entrepreneurship Monitor – GEM, Entrepreneurship Indicators Programme – OECD, Global Entrepreneurship and Development Index (GEDI), Euro Flash Barometer, World Bank Report on Ease of Doing Business and EU Progress Report etc. provide information on international scale about statistics on entrepreneurship. Among these reports, especially the statistics obtained from the reports published by GEM have been frequently used by ampirical studies carried out in relation to entrepreneurship recently.

2.1. Global Entrepreneurship Monitor-GEM

GEM Research Program is an activity initiated by London Business School and Babson College in 1999, and makes research aimed at determining the level of entrepreneurship in attending countries and tries to reveal the relationship between entrepreneurial activity and the level of development of countries.

The number of attending countries – which was 10 in 1999 – rose to 70 in 2013. Turkey attended the studies in years 2006, 2007, 2008, 2010, 2011 and 2012. Turkey was kept out of the study in 2009 and 2013. Studies are carried out under the leadership of KOSGEB, and technical support needed for conducting questionnaires are provided by University of Yeditepe.
The attending countries since 2008 are categorized under three groups in parallel to classification of Global Competitiveness Report:

- Factor driven economies
- Productivity driven economies
- Innovation driven economies

In this classification Turkey was among countries which have Productivity Focused Economies until 2012 report. Although listed in 2013 report statistics, Turkey is accepted as an economy which has transitional period between productivity driven and innovation driven economies within the definitions given in introduction section of this report (KOSGEB, 2013: 8; GEM, 2013: 25)

2.1.1. Nascent Entrepreneurship Rate: Percentage of 18-64 population who are currently a nascent entrepreneur, i.e., actively involved in setting up a business they will own or co-own; this business has not paid salaries, wages, or any other payments to the owners for more than three months

Table 1: Nascent Entrepreneurship Rate

Country/Year	2006	2007	2008	2010	2011	2012
Brasil	3.5	4.3	2.9	5.9	4.1	4.5
China	4.4	6.9	-	4.9	10.1	5.4
Russia	3.4	1.3	1.7	2.2	2.4	2.7
TURKEY	2.2	1.9	3.2	3.7	6.3	7.3

GEM, 2013

According to the data within the Table 1, the nascent entrepreneurship rate in Turkey which was 2.2 in 2006 reached 7.3 in 2012 by increasing steadily except 2007.

2.1.2. New Business Ownership: Percentage of 18-64 population who are currently a owner-manager of a new business, i.e., owning and managing a running business that has paid salaries, wages, or any other payments to the owners for more than three months, but not more than 42 months

Tablo 2: New Business Ownership

Country/Year	2006	2007	2008	2010	2011	2012
Brasil	8.6	8.7	9.3	11.7	11	11.3
China	12	10	-	9.7	14.2	7.4
Russia	1.7	1.3	2	1.7	2.3	1.8
TURKEY	4	3.7	3	5.1	6	5.4

GEM, 2013

Considering the new entrepreneur rate amoung years shown indicated in Table 2, Turkey had 4% rate in 2006 and this figure rose to 5.4% in 2012. This figure achieved in 2012 was below the figures for Brazil and China, but higher than the figure for Russia.

2.1.3. Total Early-Stage Entrepreneurial Activity-TEA: This rate covers both nascent entrepreneurship rate and new business ownership rate.

Tablo 3: Total Early-Stage Entrepreneurial Activity-TEA

Country/Year	2006	2007	2008	2010	2011	2012
Brasil	11.7	12.7	12	17.5	14.9	15.4
China	16	16.4	-	14.4	24	12.8
Russia	4.8	2.7	3.5	3.9	4.6	4.3
TURKEY	6.1	5.6	6	8.6	11.9	12.2

GEM, 2013

GEM early stage entrepreneurial activity index was 6% in average for years 2006-2007-2008, and this figure rose to 8.59% in 2010 and this rise continued in 2011 and 2012 and was about 12%. In other words, 12 people out of each 100 people either plans to engage in entrepreneurial activity or initiated a new entrepreneurial activity in the last 12 months. It is commented that increase in the early period entrepreneurial activity will lead to increase in organization, process between firms, innovation and productivity in product and service markets and will increase the competitiveness of the economy by increasing competition pressure in the market.

3. DATA AND METHOD

In this study, based on the study by Gerni et al. (2013) on example of transition economies, Growth rate of GDP, rate of total savings to GDP (SAV), rate of working population with age over 15 years to total population (EMP) and number of newly established companies per each 1000 working people between 15-64 years old as an indicator of entrepreneurship were used as variables for Turkey. From the relevant data, GDP data were compiled from Turkish Statistics Institution, savings data were compiled from Ministry of Development and World Bank, company number was compiled from Union of Turkish Chambers and Stock Exchanges internet databases. Accordingly, GDP was determined as dependent variable and other variables were determined as independent variables. The annual data covering the 1988-2012 period were converted logarithmically and Eviews 6.1 package program was used for econometric analysis. The model used in the study was formed as follows:

GDP = b0 + b1SAV + b2EMP + b3ENT **Equality 1**

3.1. Unit Root Tests

Three different regression estimations are made with respect to the whether series are with constants, with constant and trend and without constant conditions in ADF test developed by Dickey and Fuller (1981). The models to be estimaed in application of ADF test are expressed in Equalities 2, 3 and 4.

$$\Delta Y_t = \delta Y_{t-1} + \sum_{i=1}^{m} \alpha_i Y_{t-i} + u_t$$ **Equality 2**

$$\Delta Y_t = \beta_1 + \delta Y_{t-1} + \sum_{i=1}^{m} \alpha_i Y_{t-i} + u_t$$ **Equality 3**

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{i=1}^{m} \alpha_i Y_{t-i} + u_t \qquad \textbf{Equality 4}$$

In the equalities u_t represents the error term, Y_{t-1} represents one period deferred value of dependent variable. The existence of unit root in the ADF test is tested with condition that δ is equal to zero and calculated values are compared with MacKinnon values and thus a decision is obtained (Gujarati, 2004: 817). In decision stage, it is neccesary that calculated value should be lower than critical table value for denial of null hypothesis and acceptance of alternative hypothesis, in other words for stability of the series.

Phillips and Peron unit root test was developed by Phillips and Perron (1988) as a method which corrects the relationship of error terms with each other and changing variance problem. This method can be explained with Equality 5 (Zivot and Wang, 2006: 127).

$$\Delta y_t = \beta' D_t + \pi y_{t-1} + u_t \qquad \textbf{Equality 5}$$

The case when error term (u_t) found in Equality 5 includes unit root and possible changing variance problem is eliminated with correction of $t_{\pi=0}$ and $T\hat{\pi}$ test statistics in this method. Whether series are stable or not is determined as a result of comparison of calculated value and critical value as in the ADF test. If calculated value is lower than critical value, it indicates that series does not include unit root, in other words the series are stable also in PP test.

3.2. Bound Test and ARDL Method

Engle and Granger (1987) and Johansen and Juselius (1990) cointegration tests which emerged in order to test whether there is long term relationship between variables require the same level stability in the series where long term relationship between variables will be tested and if this condition is not met these methods can not be used. In case the series which will be tested with respect to whether there is long term relationship between variables have the same level stability then the Bound Test and ARDL method are the most appropriate methods.

In the Bound Test developed by Pesaran et al. (2001) at first whether there is long term relationship between series is analyzed and if Bound Test results indicate the existence of relationship then short term coefficients are obtained from ARDL method developed by Pesaran and Shin (1999). The regression equation to be estimated in this study can be expressed as follows:

$$GDP_t = \beta_0 + \beta_1 SAV + \beta_2 EMP + \beta_3 ENT + \varepsilon_t \qquad \textbf{Equality 6}$$

In the Bound Test developed by Pesaran et al. (2001) an unrestricted error correction model adapted to the dependent variable is estimated. Error correction model with unrestricted condition to be estimated with respect to GDP levels which are the dependent variable of this study is shown in Equation 7.

$$\Delta GDP_t = c_0 + c_1 t + \delta_1 GDP_{t-1} + \delta_2 SAV_{t-1} + \delta_3 EMP_{t-1} + \delta ENT_{t-1} + \sum_{i=1}^{p} \lambda_1 \Delta GDP_{t-1} + \sum_{i=0}^{p} \omega_1 \Delta SAV_{t-1} + \sum_{i=0}^{p} \varphi_1 \Delta EMP_{t-1} + \sum_{i=0}^{p} \gamma_1 \Delta ENT_{t-1} + u_t \qquad \textbf{Equation 7}$$

c_0 constant term in Equation 7 represents first diferences of Δ variables; δ_1, δ_2 and δ_3 represent the long term coefficients of variables. In the first stage of Bound Test, *p* delay values of the equation in Equation 7 are estimated by using delay lengths proposed by Akaike (AIC) and Schwarz (SBC) information criteria. In determination of delay lengths, it is very important that there isn't any autocorrelation problem in models to be estimated by these delay lengths (Pesaran and Shin, 1999: 373, 386).

The existence of long term relationship between variables is determined by comparison of F statistics values belonging to the regressions to be estimated with critical values given by Pesaran et al. (2001). Critical F statistics given by Pesaran et al. (2001) provie two statistical values: lower and upper critical values. In case the calculated F value is higher than critical upper limit value of Pesaran et al. (2001) then it can be considered that there is a long term relationship (Pesaran et al. (2001): 290).

In cases where Bound Test findings indicate the existence of long term relationship, long and short term regression equations will be obtained by ARDL method. ARDL model with long term condition formed according to appropriate delay lengths obtained in Bound Test stage is expressed in Equation 8.

$$GDP_t = c_0 + \sum_{i=1}^{p_1} \alpha_i GDP_{t-i} + \sum_{i=0}^{q_1} \theta_{1i} SAV_{t-i} + \sum_{i=0}^{q_2} \theta_{2i} EMP_{t-i} + \sum_{i=0}^{q_3} \theta_{3i} ENT_{t-i} + u_t \qquad \textbf{Equation 8}$$

The equation for the error correction model from which the short term coefficients of the variables will be obtained is shown in Equation 9.

$$\Delta GDP_t = u + \sum_{i=1}^{p} \lambda_1 \Delta GDP_{t-1} + \sum_{i=0}^{p} \omega_1 \Delta SAV_{t-1} + \sum_{i=0}^{p} \varphi_1 \Delta EMP_{t-1} + \sum_{i=0}^{p} \gamma_1 \Delta ENT_{t-1} + \vartheta ECM_{t-1} + u_t$$

Equation 9

The coefficients found in front of each variable in Equation 9 are the short term coefficients of the variables, meanwhile ϑ term represents the error correction coefficient of the model. For the error correction model to work well, the error correction coefficient should be negative signed and statistically significant.

4. EMPRICIAL RESULTS

In Bound Test and ARDL method where the variables do not need to have the same stability, even series with different level stability can be tested with respect to existence of long term relationship. However as these methods can be used in case series are stable at most in their first differences, none of the series should be stable in the second difference. In this study, Extended Dickey-Fuller Unit root test (ADF) developed by Dickey and Fuller (1981) and Phillips-Perron (PP) unit root tests of Phillips and Perron (1988) were used for testing the stability levels of series. ADF and PP unit root test results for original series converted logarithmically are reported in Table 4.

Table 4: ADF ve PP Unit Root Test Results (Level)

	ADF		Phillips-Perron	
Variable	**Constant**	**Constant and Trend**	**Constant**	**Constant and Trend**
LGDP	-5.80(0.00)	-5.681(0.00)	-5.878(0.00)	-5.892(0.00)
LSAV	-1.485(0.52)	-3.148(0.11)	-1.446(0.54)	-3.148(0.11)
LEMP	-1.573(0.48)	-1.776(0.68)	-1.573(0.48)	-1.776(0.68)
LENT	-1.95(0.30)	-4.937(0.00)	-1.997(0.28)	-1.795(0.67)
Critical Values				
%1	-3.737	-4.394	-3.737	-4.394
%5	-2.991	-3.612	-2.991	-3.612
%10	-2.635	-3.243	-2.635	-3.243

Table 4 reports the findings of ADF and PP tests in two different ways being with constant and with constant-trend. Considering the results of ADF and PP test results, it is observed that stability levels differ according to applied test type and whether models are with constant and trend. Whether series which do not have stability in the level are stable in their first differences or not require re-application of ADF and PP tests by taking first differences of all series. Table 5 shows the stability test results of series first differences of which are taken.

Table 5: ADF ve PP Unit Root Test Results (First Differences)

	ADF		Phillips-Perron	
Variable	**Constant**	**Constant and Trend**	**Constant**	**Constant and Trend**
LGDP	-8.652(0.00)	-8.443(0.00)	-28.078(0.00)	-27.644(0.00)
LSAV	-6.571(0.00)	-6.404(0.00)	-7.778(0.00)	-7.501(0.00)
LEMP	-5.074(0.00)	-5.011(0.00)	-5.07(0.00)	-5.006(0.00)
LENT	-4.399(0.00)	-4.598(0.00)	-4.399(0.00)	-4.599(0.00)
Critical Values				
%1	-3.752	-4.416	-3.752	-4.416
%5	-2.998	-3.622	-2.998	-3.622
%10	-2.638	-3.248	-2.638	-3.248

Considering findings found in Table 5 it is observed that series which are not stable in original level are stabilized in their first differences. After it is found that all series to be used in econometric analysis are stable in at most first level, technically it is understood that I(1) is the case, then existence of long term relationship between series can be tested.

For application of Bound Test to be used in testing of the existence of long term relationships between variables Equation 7 should be estimated by ordinary least squares method. In selection of appropriate lag length expressed as p in Equation 7 generally Akaike and Schwarz information critera are used. Also whether there is autocorrelation problem in models estimated by lag lengths proposed by these information criteria are checked by Breusch-Pagan Lagrange multiplier(LM) and LM test results are summarized in Table 6.

Table 6: Appropriate Lag Length

p	AIC	SBC	LM(1)
1	2.684	3.126	0.414 (0.51)
2	2.080	2.722	2.722 (0.09)
3	1.717	2.560	0.903 (0.34)

(Note: "p" is the appropriate lag length while in the values parenthesis probability values).

According to the values given in Table 6, appopriate lag length for the established model is determined as 3 and no autocorrelation problem is encountered in this lag length.

Table 7 shows Bound Test results for models that include trend and doesn't include trend. Critical values given by Pesaran et al. (2001) and calculated F statistics are necessary for determining the existence of cointegration relationship between series in Bound Test. In case calculated F statistics is higher than upper critical value given by Pesaran et al. (2001) it can be deduced that there is long term relationship between series and in such a case null hypothesis will be denied and alternative hypothesis will be accepted. Bound Test results performed with this purpose are given in Table 7.

Table 7: F-statistics obtained from bound test

Dependent variable	**With Trend**		**Without Trend**	**Result**
	F-iv	**F-v**	**F-iii**	**-**
LGDP	5.160	6.368	3.672	Cointegration
	Pesaran et al. (2001) sub-limit critical values		**Pesaran et al.(2001) upper limit critical values**	
%1	-3.65		-4.66	
%5	-2.79		-3.67	
%10	-2.37		-3.20	

According to the Bound Test results in Table 7, it is seen that calculated test statistics values exceed upper critical values of Paseran et al. (2001) with respect to both models with or without trend. This result shows that there is a cointegration relationship between four variables, subject of the analysis. As result of determination of cointegration relationship, it was deduced that there was a long term relationship and was passed to ARDL model from which short and long term coefficients of series would be obtained.

Table 8: ARDL(2,3,3,2) Model and Long Run Co-efficients

Variable	**Co-efficient**	**St. Error**	**t-statistic**	**Probability**
LGDP(-1)	-0.422210	0.216672	-1.948614	*0.0924
LGDP(-2)	-0.277298	0.199416	-1.390552	0.2070
LENT	-0.348800	1.006626	-0.346505	0.7391
LENT(-1)	1.667160	1.706990	0.976666	0.3613
LENT(-2)	-0.226820	1.573390	-0.144160	0.8894
LENT(-3)	2.220607	1.103603	2.012142	*0.0841
LSAV	-1.909227	2.745066	-0.695512	0.5092
LSAV(-1)	-14.49589	3.484768	-4.159785	***0.0042
LSAV(-2)	-11.58583	4.126266	-2.807824	**0.0262
LSAV(-3)	-7.554710	3.713164	-2.034575	*0.0814
LEMP	-3.584815	4.295645	-0.834523	0.4315
LEMP(-1)	19.70636	6.099543	3.230792	**0.0144
LEMP(-2)	-8.381682	5.718499	-1.465714	0.1862
C	131.1811	38.72119	3.387838	**0.0116
Long Run Co-efficients				
LENT	1.948885	0.607486	3.208114	***0.0042
LSAV	-20.91526	5.218223	-4.008119	***0.0006
LEMP	4.554176	3.124061	1.457775	0.1597
C	77.18771	19.56908	3.944372	***0.0007
(Note: * %10, **%5, *%1 ,shows that significance levels)**				

Table 8 shows ARDL(2,3,3,2) model estimation results determined according to Akaike information criteria and statistical values belonging to long term coefficients. In the model where GDP is dependent variable, entreprenurship and saving variables give statistically significant results, but employment variable found to be statistically insignificant. It is observed that ENT variable expressed as entrepreneurship indicator out of independent variables affects GDP variable taken as growth rate, pozitively in the long term.

The coefficients explaining the short term relationships between variables can be obtained by error correction model formed based on ARDL equation and expressed in Equation 9. Table 9 shows coefficient findings that give short term relationships between variables.

Table 9: Results of Error Correction Model Based On ARDL Model

Variable	Co-efficient	St. Error	t-statistic	Probability
DLGDP(-1)	0.277298	0.148917	1.862093	0.0895
DLENT	-0.348800	0.553058	-0.630676	0.5411
DLENT(-1)	-1.993786	0.880138	-2.265312	0.0447
DLENT(-2)	-2.220607	0.711752	-3.119915	0.0098
DLSAV	-1.909227	1.501633	-1.271434	0.2298
DLSAV(-1)	19.14054	4.122677	4.642745	0.0007
DLSAV(-2)	7.554710	2.360906	3.199919	0.0085
DLEMP	-3.584815	2.848349	-1.258559	0.2342
DLEMP(-1)	8.381682	3.347199	2.504088	0.0293
C	-1.132208	0.204028	-5.549276	0.0002
ECMT(-1)	-1.699508	0.234284	-7.254061	***0.0000
(Note: * %10, **%5, *%1 ,shows that significance levels)**				

The error terms obtained from long term relationship in the model expressed with Table 9 are teh one period lag values. In this context, as ECMT(-1) error correction term is negative and statistically significant it confirms that there is long term relationship between series in hand. Also, error correction term indicates how quick the internal variable adapts to the changes in explanotry variables before it converges to the equilibrium level. According to these results if error correction term coefficient is higher than 1 then it shows that in the short term model comes to equilibrium by fluctuating in case there is a deviation from long term relationship. Furthermore, when short term coefficients of estimated variables in the odel are significant statistically, it is paralel with long term results in respet of the direction of the sign.

CONCLUSION

In this study it was tried to determine the relationship between entrepreneurship and economic growth through ampirical methods. General information related with entrepreneurship concept and the theoretical substructure of the relationship between entrepreneurship and economic growth are considered in the introduction section. Then in the light of literature review and reports presented as a result of studies made by international institutions on the subject matter, current condition of Turkey's entrepreneurship indicators has been shown. Ampirical testing of the relationship

between entrepreneurship and economic growth has been conducted with data pertaining to Turkey, covering the period between 1988-2012.

The ampirical model formed in the study was based on the study of Gerni et al. (2013). After determining that data do not have the same level stability in stability test, it was decied to apply Bound Test and in this direction it was possible to conduct cointegration analysis. ARDL model was set up by determining that series in question act together in the long term according to the results obtained. The long term coefficients obtained based on ARDL model indicate that entrepreneurship variable is statistically significant. The coefficients in question express that entrepreneurship variable affects the economic growth coefficient positively in the long term. Also results of error correction model confirm the existence of long term relationship between series in question. Short term coefficients indicate that relevant coefficients are significant statistically but signs of the coefficients are not same with that of long term results.

Accordingly, the results obtained from this study confirm the existence of positive relationship between entrepreneurship and economic growth in the long term. Especially increase in global support provided to entrepreneurs after 2000s, increased the support given to entrepreneurs in developing countries like Turkey as well. It can be expected that by transfer of said supports to the entrepreneurs in right areas at the right time, it can have positive and essential effect on economic growth of the country in coming years.

REFERENCES

ACS, Zoltan J., AUDRETSCH, David B., BRAUNERHJELM, Pontus, CARLSSON, Bo, (2012), “Growth and entrepreneurship”, Small Business Economies (2012) 39: pp.289-300.

AMOROS, Jose Ernesto and BOSMA, Niels, (2014), “Global Entrepreneurship Monitor-2013 Global Report”,England.

AUDRETSCH, David B. and KEILBACH, Max, (2004), “Entrepreneurship Capital and Economic Performance”, Regional Studies, Vol. 38.8, pp.949-959.

DICKEY, D.A. ve WAYNE, F. (1981), “Likelihood ratio statistics for autoregressive time series with a unit root. Econometrica”, 49(4), pp. 1057-1072.

ENGLE, R.F. ve GRANGER, C.(1987), “Co-integration and error correction: representation, estimation and testing”, Econometrica, 55(2), pp.251-276.

GALINDO, Miguel-Angel and MENDEZ, Maria Teresa, (2014), “Entrepreneurship, economic growth and innovation: Are feedback effects at work?”, Journal of Business Research 67, pp.825-829.

GERNİ, Mine, NİŞANCI, Murat, ÇELİK, Ahmet Alkan, YURTTANÇIKMAZ, Ziya Çağlar, (2013). “Geçiş Ekonomilerinde Girişimciliğin Ekonomik Büyüme Üzerine Etkileri”, International Conference On Eurasian Economies 2013, St. Petersburg, pp.761-767.

GRANGER, C.W. ve NEWBOLD, P. (1974), “Spurious regressions in econometrics” Journal of Econometrics, 2(1974), pp.111-120.

GUJARATI, D. (2004), “Basic Econometrics”, The Mcgraw Hill Companies

HESSELS, Jolanda and STEL, Andre van, (2011), “Entrepreneurship, export orientation and economic growth”, Small Business Economies (2011),37: pp.255-268.

JOHANSEN, S. ve JUSELIUS, K. (1990), “Maximum likelihood estimation and inference on cointegration” Oxford Bulltein of Economics and Statistics, 52(2), pp.169-210.

KOSGEB, (2013). “Türkiye Girişimcilik Stratejisi ve Eylem Planı”, Ankara.

LI, Hongbin, YANG, Zheyu, YAO, Xianguo, ZHANG, Haifeng, ZHANG, Junsen, (2012), “Entrepreneurship, private economy and growth: Evidence from China”, China Economic Review 23, pp.948-961.

MARTIN, Miguel-Angel Galindo, PICAZO, Maria Teresa Mendez, NAVARRO, Jose Luis Alfaro, (2010), “Entrepreneurship, income distribution and economic growth”, International Entrepreneurship Management Journal 6: pp.131-141.

ÖZTÜRK, İbrahim, (2008). “2008 Girişimcilik Raporu”, İstanbul.

PERRON, P. ve PHILLIPS, P. (1988), “Testing for a unit root in time series regression. Biometrica”, 75(2), pp. 335-346.

PESARAN, H., YONGCHEOL, S. ve SHIN, R. (2001), “Bounds testing approaches to the analysis of level relationship”, Journal of Applied Econometrics, 16(3), pp. 289-326.

PORTELA, Marta, ROZAS, Emilia Vazquez, NEIRA, Isabel, VIERA, Elvira, (2012), “Entrepreneurship and Economic Growth: Macroeconomic Analysis and Effects of Social Capital in the EU”, Entrepreneurship - Born, Made and Educated", book edited by Thierry Burger-Helmchen, pp.249-265.

STEL, Andre Van, CARREE, Martin, THURIK, Roy, (2005), “The Effect of Entrepreneurial Activity on National Economic Growth”, Small Business Economies (2005) 24: pp.311-321.

TOPKAYA, Özgür, (2013). “Tarihsel Süreçte Girişimcilik Teorisi: Girişimciliğin Ekonomik Büyüme ve İstihdam Boyutu”, Journal of Entrepreneurship and Development (8:1), pp.29-54.

ZIVOT, E. ve JIHAUI, W. (2006), “Modelling Time Series with S-Plus”, Springer, Second Edition

ZWAN, Peter van der, HESSELS, Jolanda, SANDERS, Mark, (2013), “Entrepreneurial activity, industry, orientation and economic growth”, http://www.ondernemerschap.nl/pdf-ez/H201307.pdf (Research Reports).

www.tuik.gov.tr

http://www.tobb.org.tr

www.**kalkinma**.gov.tr

http://databank.worldbank.org