- RESEARCH ARTICLE –

Relationship between Global Competition and Growth in Developing Countries

Gamze SART[a]

Abstract

With globalization, a phenomenon of competition has emerged throughout the world and countries have faced intense competition in order to achieve economic growth. The network of relations that developed over time has become a concept that covers not only economic, but also social, cultural and political areas of this concept and expresses a transformation in time and space beyond the economic dependence of the countries of the world. It is an important goal for countries to bring the economy to competitive conditions and to deal with global risks with a prudent and rational approach. Therefore, countries that want to maintain their position in the global arena must be ahead of their competitors. This target will only be possible with high competitive power. From this point of view, the aim of the study is to reveal the effect of the global competitiveness index on growth for the developing countries for the 2009-2020 period with panel cointegration analysis. As a result of the cointegration test of Westerlund and Edgerton (2007), it was determined that the series are related in the long run. It is concluded that a 1% increase in the global competitiveness index variable in the long run will lead to a 7.3% increase in the GDP variable. As can be seen, growth is positively affected as competition increases. In addition, as a result of the Boostrap Granger Causality Analysis, bi-directional causality was determined for growth and global competitiveness index.

Gelişmekte Olan Ülkelerde Küresel Rekabet ve Büyüme İlişkisi

Özet

Küreselleşmenin hız kazanmasıyla, dünya genelinde bir rekabet olgusu oluşmuş ve ekonomik büyümeyi sağlamak için ülkeleri yoğun bir rekabetle karşı karşıya bırakmıştır. Zaman içinde gelişen ilişkiler ağı, bu kavramın sadece ekonomik değil, sosyal, kültürel ve siyasal alanları da kapsamış ve dünya ülkelerinin ekonomik bağımlılıklarının ötesinde, zaman ve mekansal olarak bir dönüşümü ifade eden bir kavram olmuştur. Ülkeler için, ekonomiyi rekabet edebilir koşullara getirebilmek ve küresel risklerle sağduyulu ve akılcı bir yaklaşımla başa çıkabilmek önemli bir hedeftir. Dolayısıyla, küresel arenada konumunu korumak isteyen ülkeler kesinlikle rakiplerinden önde olmak durumundadır. Bu hedef, ancak rekabet gücünün yüksek olması ile mümkün olacaktır. Bu çalışmanın amacı, panel eşbütünleşme analizi ile 2009-2020 dönemi için küresel rekabet endeksinin gelişmekte olan ülkeler için büyüme üzerindeki etkisini ortaya koymaktır. Westerlund ve Edgerton'un (2007) eşbütünleşme testi sonucunda serilerin uzun vadede ilişkili olduğu belirlenmiştir. Uzun vadede küresel rekabetçilik endeksi değişkeninde %1'lik bir artışın GSYİH değişkeninde%7,3'lük bir artışa yol açacağı sonucuna varılmıştır. Görüldüğü gibi, rekabet arttıkça büyüme olumlu yönde etkilenmektedir. Ayrıca Boostrap Granger Nedensellik Analizi sonucunda büyüme ve küresel rekabetçilik endeksi için çift yönlü nedensellik belirlenmiştir.

[a]Doç. Dr., İstanbul Üniversitesi-Cerrahpaşa, HAYEF, Eğitim Bilimleri Bölümü, gamze.sart@istanbul.edu.tr Orcid: 0000-0002-0653-2855.

INTRODUCTION

The phenomenon of globalization has a great place in the frequent use of the concept of competition and the increase in its importance in the economic growth process, especially in parallel with the information-communication technologies developed after the 1980s. With globalization, a phenomenon of competition has emerged around the world and countries have faced intense competition in order to achieve economic growth (Aghion, 2001:470). The advancing time and the developing network of relations of this concept included not only economic, but also social, cultural and political fields, and it became a concept that expresses a transformation in time and space beyond the economic dependence of the countries of the world (Hasan & Tucci, 2010:1266). In particular, privatization of public institutions, globalization, trade and financial liberalization, high welfare growth in some regions around the world; On the other hand, high rates of welfare decline in some regions and rapid movement of capital are among the economic characteristics of the current period.

In the changing competitive environment, businesses have had to increase their performance levels in order to be successful. Companies operating in a global environment are faced with an environment with a high level of satisfaction and constantly changing demands and needs. They also need to respond quickly to this change in their environment. Entering the market rapidly by responding to the needs of customers in a short time by increasing the quality of products and services is a necessity to keep up with the increasing competition (Aghion et al., 2005: 705; Srivastava et al., 2017:65). On the other hand, similar products are offered for sale in different ways in different markets. Quality in one market, service in another, price in another. The high quality, low price, good service offered by a business will soon set the standard for all competitors, and high-performing businesses will wipe others out of the market (Weerawardena, 2003:16).

The competitiveness of the country also depends on factors such as the level of development and efficiency of R&D activities, the performance of various sectors, the country's foreign trade surplus, the production of goods containing high technology, and the availability of expert and trained workforce. While examining the competitiveness, other factors should be taken into account along with all these indicators. Criteria such as democratization, tax structure, human rights, quality of education and freedom, which play an important role in determining the country's position in the world, are included in the studies and researches of many international industries. The main purpose of being competitive is to increase the living standards and welfare of its citizens in the country. This increase in welfare is possible by giving sufficient importance to activities such as trade, investment and production, increasing solidarity among all institutions in the country and paving the way for specialization.

1. THE RELATIONSHIP BETWEEN COMPETITIVENESS AND ECONOMIC GROWTH

In the definition of international competition by many economists, the relationship between competitiveness and economic growth is mentioned. According to Fagerberg (1988), international competitiveness; The growth of the economy and the increase in employment, without causing problems in the balance of payments, are primarily defined as the ability of a country to achieve its basic economic policy objectives. Accordingly, it is possible to say that economic growth is an indicator of competitiveness. According to Marsh and Tokarick (1996), competitiveness and innovation are the two main elements of sustainable growth and high employment generation. At the same time, competitiveness is a tool for achieving the goal of economic growth. According to Grossman and Helpman (1991), Romer and Rivera-Batiz (1991), Romer (1990), increasing competitiveness accelerates economic growth. The reason for this is that R&D funds tend to diversify in the face of increasing competition with external expansion, thus positively affecting growth. Rodrik (1991), on the other hand, stated that with the increase in competition, enterprises will reduce their R&D related expenditures and thus growth will be negatively affected.

The increase in employment and economic growth in a country show that the international competitiveness of that country is also high. According to Scoot and Lodge (1985), international competitiveness is the ability of countries to maintain a national income balance equal to that of traded countries, provided that they keep imports/exports in balance while adhering to free trade conditions. Therefore, in this understanding, it is seen that competitiveness is taken into account as an indicator of economic growth.

The increase in competition activates the global market, and the developments in the global market have a positive effect on growth. From this point of view, it is possible to talk about bilateral relations in international trade and growth (Symeonidis, 2008:135). Depending on the dynamism caused by the opening up process in the

economies, it is possible that a market structure with a high added value of some factors, along with the scale size, will lead to even higher growth (Paraušić et al., 2014:667). Thus, in terms of trade, it is expected that foreign trade will create even stronger results in growth in sectors where the foreign demand elasticity value of production is relatively high (Weerawardena, 2003:18).

While developments in economic growth activate foreign trade, accelerations in foreign trade can also play a nurturing role in growth. In this respect, it can be mentioned that there are bidirectional causal relationships between foreign trade and growth (Gilbert, 2006: 163). However, the existence of the capacity to produce highly flexible goods and services in terms of product diversity and flexibility against external shocks is important for foreign trade, and especially exports, to have the expected positive effects on economic growth. Because, the dynamism, externalities and scale dimension created by the processes of opening up in the economy, together with a number of factors, are highly likely to create a structure with high added value and provide higher growth potential (Halpern& Muraközy, 2015:118). In terms of commodity trade, it is expected that foreign trade will have stronger effects on growth in sectors where the foreign demand elasticity of production is relatively high. When this situation is evaluated in terms of sectors, it is clear that a high level of flexibility brings success, but this is a necessary but not sufficient condition (Hashmi, 2013:1266). As a sufficient condition, it is important whether the country has competitive power in the relevant sectors. International competitiveness; It is defined as the power of a sector to create higher income and employment relative to the same sectors of other countries.

2. ECONOMETRIC ANALYSIS

2.1. Purpose and Importance of the Study

The aim of this study is to determine the effect of the competition index on growth for the developing country group, as the importance of competition is increasing day by day. Every factor that will contribute to growth is important for this country group, which is trying to increase its growth rate. According to Wilson and Purushothaman (2003), developing countries, which displayed a growth performance of 35 percent between 2008 and 2019, have the potential to contribute to world economic growth and welfare in the coming years.

2.2. Sample and Data

In this study, developing countries Brazil, Russia, India, China, Chile, Romania, Greece, Hungary and South Africa and Turkey constitute the sample of the study. For 2009-2020 annual data, the relationship between the Gross Domestic Product (GDP) variable and the global competitiveness index (GCI), which shows the growth, has been examined. Data were obtained from www.worldbank.org and www.weforum.org/global-competitiveness-report databases.

While creating the Global Competitiveness Index prepared by the World Economic Forum (WEF), sub-topics were determined under 3 main headings. Firstly, competitiveness in natural resources, cheap labor force, cost, structuring of public and private institutions, condition of infrastructure, health and basic education indicators and the existence of a stable macroeconomic environment, which are titled as basic requirements (basic), are investigated. In the second title, the variables that provide efficiency (effectiveness) are tried to be measured with variables such as higher education status, the status of job training, the efficiency of the goods market, the existence of a well-functioning labor market, the development of financial markets and the size of the market. Third, technological breakthroughs and the versatility of business (innovation) were measured by the emphasis on science and research, by the capacity to create innovation. High efficiency in more competitive economies ensures a high return on investments. Thus, countries can reach higher growth rates and development levels (Farinha et al., 2016:3 ; Yang & Zhang, 2017:44). With the Global Competitiveness Index, 12 different variables that affect competitiveness are grouped under 3 headings according to their domains and weighted.

2.3. Method of Study

In the study, first of all, the existence of cross-sectional dependence between the countries included in the analysis was determined by tests, and then homogeneity tests were applied. In this direction, the stationarity of the series was determined from the first generation unit root tests by Im et al. (2003), Maddala and Wu (1999) and Choi (2001) tests and the CADF unit root test, which is the second generation panel unit root test. Similarly, the long-term relationship between the variables was examined with the LM Bootstrap cointegration test developed by Westerlund & Edgerton (2007), which takes into account the cross-sectional dependence. Dumitrescu and Hurlin (2012) test was used for causality analysis.

2.4. Cross Section Dependency and Homogeneity Tests

The "cross-sectional dependence between the series was determined by the LM CD test developed by Pesaran (2004) and Pesaran et al. (2008) LM adj. analyzed using the test and the test results are presented in Table 1. Since the probability values of the test results are less than 1% and 5%, the null hypothesis (there is no cross-sectional dependence) was rejected and it was determined that there was a cross-section dependency between the series. In addition, the homogeneity of the cointegration coefficients was tested using the delta tilde and corrected delta tilde tests of Pesaran and Yamagata (2008), and the test results are given in Table 1. Since the probability values of the test results are less than 1% and 5%, the null hypothesis (the slope coefficients are homogeneous) was rejected and the cointegration coefficients were determined to be heterogeneous."

Table 1. Cross Section Dependency and Homogeneity Test Results

Cross Section Dependency Test (H_0: There iscross-sectional independency)		
Test	**Test Statistic**	**p**
LM (Breusch and Pagan (1980)	34.781	0.000
LM $_{adj}$ (Pesaran vd. (2008)	35.112	0.000
LM CD (Pesaran (2004)	38.405	0.000
Homogeneity Test (H_0: Slope coefficients are homogeneous)		
Test	**Test Statistic**	**p**
Delta_tilde	21.563	0.000
Delta_tilde_adj	24.908	0.000

2.5. First Generation Unit Root Test Results

First "generation unit root tests are divided into two as homogeneous and heterogeneous models. Since the coefficients are heterogeneous, first generation unit root tests will be used by Im, Pesaran and Shin (2003), Maddala and Wu (1999), Choi (2001) based on the heterogeneous model assumption."

Tablo 2. Panel Unit Root Test Results

Unit Root Test	GDP	GCI
Level		
Im vd. (2003)	-1.372 (0.092)	-0.921 (0.145)
Maddala ve Wu (1999)	10.326 (0.185)	11.245 (0.161)
Choi (2001)	-0.983 (0.133)	-1.037 (0.152)
First Differences		
Im vd. (2003)	-7.372 (0.000)	-8.253 (0.001)
Maddala ve Wu (1999)	36.794 (0.000)	34.750 (0.007)
Choi (2001)	-9.112 (0.000)	-9.706 (0.013)

Note: The deterministic specification of tests includes constant and trend. Probability values are shown in parentheses. Tests were conducted for significance at the 5% level. The null hypothesis of the tests is that there is a unit root. The optimal lag length was determined using the Schwarz information criterion.

As "seen in Table 2, the variables have unit roots in their level values. However, the first difference series do not contain a unit root. Therefore, it is seen that all the variables are I(1), in other words, they are stationary for the 1st order difference."

If "there is cross-section dependency in panel data, using second generation unit root tests provides more consistent, efficient and powerful estimation. In this study, second generation unit root tests should be used as the cross-sectional dependence was determined. CADF, one of the second generation unit root tests, was used. The results of the CADF test developed by Pesaran (2007) are given in Table 3."

Tablo 3. Second Generation CADF Unit Root Test Results

	Level		First Differences	
Variables	**Constant**	**Constant + Trend**	**Constant**	**Constant + Trend**
GDP	-0.894	-0.912	-7.584*	-8.231*
GCI	-1.109	-1.236	-9.229*	-9.966*

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In CADF tests, the maximum lag length was taken as 1 and the optimal lag length was determined according to the Schwarz information criterion. It is seen that the null hypothesis was rejected at the 1% and 5% significance levels. The unit root test results show that the series are not stationary at the level, in other words, they contain a unit root, and the variables are stationary at the I(1) level.

2.6. Panel Cointegration Test

In "this study, the LM Bootstrap panel cointegration test developed by Westerlund and Edgerton (2007) was used to determine the long-term relationship between the variables. The LM Bootstrap panel cointegration test is based on the Lagrange multiplier test developed by McCoskey and Kao (1998). The main advantages of the test are that it allows cross-sectional dependence, determines the cointegration relationship for all countries in the panel, allows autocorrelation and varying variance in the cointegration equation, and produces effective results even in small samples. The null hypothesis of the test is that there is a cointegration relationship for all countries in the panel, and bootstrap simulation is used in its calculation. In case of cross-section dependency, bootstrap critical values are used."

Table 4. Westerlund and Edgerton (2007) LM Boostrap Cointegration Results

	Constant			Constant + Trend		
	Statistics	**Asimptotik p-value**	**Bootstrap p-value**	**Statistics**	**Asimptotik p-value**	**Bootstrap p-value**
LM_N^+	1.573	0.147	0.217	1.783	0.153	0.362

Note: Bootstrap probability values are obtained from a 10,000 replicated distribution. Asymptotic probability values were obtained from the standard normal distribution.

When the results in "Table 4 are examined, it is seen that there is a cointegration relationship between the series (p>0.05). In this case, the series move together in the long run. After deciding that the series are cointegrated, the coefficients in the model can be estimated with cointegration estimators. The coefficients obtained as a result of the estimation of the model with FMOLS are presented in Table 5."

2.7. FMOLS (Full Modified OLS) Estimation of Long-Run Cointegration Coefficients

In this study, "long-term cointegration coefficients were investigated by FMOLS (Full Modified OLS) method. According to Phillips and Hansen (1990), FMOLS method; Since it takes into account the simultaneous relationships between the error terms of the equations of the variables, it also eliminates second-order deviations. The FMOLS estimator fixes diagnostic issues that occur with standard estimators. This method was obtained by developing the OLS, taking into account the internality and autocorrelation problem. In addition, to eliminate the inadequacy of the OLS estimator in calculating the optimal values of the cointegrated equations, asymptotic deviation and externality assumption are used in FMOLS."

Table 5. Coefficient Estimation Results of the Cointegrated Model

Countries	DLogGCI
Brazil	*0.082**
Russia	*0.096**
India	*0.093**
China	*0.102**
Chile	*0.053**
Romania	*0.057**
Greece	*0.065**
Hungary	*0.088**
South Africa	*0.072**
Turkey	*0.047**
PANEL	*0.073**

*The problems of statistically significant variable for 0.05, autocorrelation and varying variance in the estimations were tried to be solved by the Newey-West method. The "D" notation denotes a first-order difference.

Brazil, Russia, India, China, Chile, Romania, Greece, Hungary and South Africa and Turkey in the country group, according to the FMOLS method; It is concluded that a 1% increase in the global competitiveness index variable will lead to a 7.3% increase in the GDP variable. A significant positive relationship was determined. In terms of countries, a positive and significant relationship was determined for each country. The highest impact

of competition on growth was determined as China, Russia and India. As can be seen, Turkey took the last place.

2.8. Dumitrescu and Hurlin (2012) Causality Analysis

All "panel causality tests estimate under the assumption of cross-section independence. Only with the Dumitrescu and Hurlin (2012) test, both cross-section dependence and cross-section independence can be estimated and effective results are obtained. The Dumitrescu and Hurlin (2012) test is similar to the Granger causality test for heterogeneous panels. It represents the average of individual Wald tests calculated for cross-section units within the scope of Granger causality test. This test takes into account both heterogeneity and cross-section dependence. Another feature of the Dumitrescu and Hurlin test is that it works both in the presence and absence of a cointegrated relationship. In the panel causality test, 3 different statistical values are calculated."

Tablo 6. Dumitrescu ve Hurlin (2012) Test Results

Null hypothesis	Test	Statistics	p
DGDP variable is not Granger cause of DGCI variable	*Whnc*	6.452	0.000
	Zhnc	5.491	0.000
	Ztild	6.334	0.000
DGCI variable is not Granger cause of DGDP variable	*Whnc*	7.309	0.000
	Zhnc	8.112	0.000
	Ztild	8.574	0.000

As can "be seen from the results, bi-directional causality is obtained from GDP to GCI (GDP→GCI) and from GCI to GDP (GCI→GDP) in the developing country group. The past values of the global competitiveness index affect the current GDP values, while the past values of the GDP variable affect the current competitiveness index values."

3. CONCLUSION

The concept of competitiveness is perceived as an economic and social performance indicator depending on globalization, therefore it is considered as a measurable success and target criterion. It is seen that the welfare levels are increasing rapidly in countries where the competitive power is high. In this study, the effect of competitiveness, which has become the most important lever of growth for 10 developing countries, on growth is revealed with the help of panel cointegration analysis. For this purpose, analyzes were carried out for the period 2009-2020. As a result of the application, the existence of cross-sectional dependence between countries was determined, and then homogeneity tests were applied. The stationarity of the series in this direction is determined by the first generation unit root tests of Maddala and Wu (1999), Choi (2001) and Im et al. (2003) tests and the second generation panel unit root test, the CADF unit root test. The long-term relationship between the similar variables was analyzed with the LM Bootstrap Cointegration test. Bootstrap Granger causality test was also used for causality analysis. Since the variables considered are stationary in the first order, they were used in the I(1) degree cointegration analysis. As a result of the cointegration test of Westerlund and Edgerton (2007), it was determined that the series are related in the long run. As a result of the long-term correlation coefficients estimation, it was concluded that a 1% increase in the global competitiveness index variable would lead to a 7.3% increase in the GDP variable. As can be seen, as competition increases, growth is positively affected. As a result of the causality analysis, bidirectional causality was obtained from GDP to GCI (GDP→GCI) and from GCI to GDP (GCI→GDP).

Today, competitiveness has become the most important indicator of success and high performance in the international arena. It is observed that the welfare levels of countries with high competitiveness tend to increase more rapidly. For the emerging economy group, it has been determined that the growth will gain momentum as the competition phenomenon increases. In this case, emerging economies need to implement policies that will create competitive advantage.

There is no single model to increase competitiveness that can be applied all over the world, as it is linked to a country's resources, culture and habits. A country's competitiveness can only be increased and strengthened by a collective national effort, not by individual policies. For this reason, developing countries should first reveal their resources, opportunities, deficiencies and dangers and form their vision in the light of these data and international agreements and environmental realities. This vision will be the main guide in the formation of

policies. For this reason, in order to be successful, first of all, the advantages and disadvantages of countries in the competitive world should be revealed and then policies for the future should be formed after these evaluations.

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