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February 2019

THE ASSESMENT OF IMPACT OF COMPETITIVENESS TO ECONOMIC DEVELOPMENT

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ABSTRACT

Competition plays key driving force for economic development in the efficient market economy. To achieve competitive advantage at the international level, each country needs to improve competitiveness on different economic indicators at the national level. The Global Competitiveness Report 2018 of World Economic Forum calculated the competitiveness index of countries under 98 sub-indexes. The goal of the research is econometric assessment of the impact of competitiveness to economic development in the oil rich countries, such as Azerbaijan. For the purposes of this research, the global rating of Azerbaijan was determined through calculating the volume of GDP, as well as, oil and non-oil GDP. The research was conducted by applying systematic and statistical analysis and running Excell and Eviews8 calculations. As a result, the impact of competitiveness index to the GDP (oil and non-oil GDP) at the oil rich countries, such as Azerbaijan was calculated and following outcomes were achieved:

- *The semi-elasticity coefficient is above 1 on the volume of non-oil GDP on the competitiveness index. That means, if the competitiveness of Azerbaijan increases on the global rating then the next year non-oil GDP increases more than 1%. The improvement of the competitiveness indicators in the current year in Azerbaijan increases non-oil sector the following year. It takes time to attract investments to a country, so this outcome is expected.*
- *The semi-elasticity coefficient of the GDP volume on the competitiveness index is smaller than the semi-elasticity coefficient of the non-oil GDP at the oil rich countries.*

The practical importance of the research: this study can motivate other scholars to conduct reseach on the area. The innovativeness and uniqueness of the research: the impact of the competitiveness indicators on the economic growth has been assesed in Azerbaijan.
Keywords: Competition, Competitiveness Index, Economic Growth, Econometric Assessment, Oil Rich Countries

1. INTRODUCTION

Under the condition of increasing of globalization and liberalization, raising the competitiveness of the countries' economy is the most important problem. In high globalized and competitive world markets, states has great role in increasing the competitiveness of products. It is no coincidence that, the protection of competition - implementation of anti-monopoly policies is one of the main economic functions of the government (Brue, McConnell, and Flynn. 1996, pp. 88-94). Education-science-technology and innovation-oriented competitive strategy enhance the global competition force of countries and enable them to achieve sustainable development. The goal of the research is econometric assesment of the impact of competitiveness on GDP, including oil and non-oil GDP which are the main indicators of economic growth for oil-rich countries, including Azerbaijan. It has been found that countries with science-technology-innovation oriented competitive strategies have sustainable competitiveness and long-term development. Competition is one of the driving forces of economic development. It is the main principle of markets' activity and is involved in innovation, productivity and economic growth, at the same time reducing of poverty. However, markets do not always work well and economic growth is not a lasting one in unfavorable markets. Relationships between economic development indicators and competition have been investigated by a number of researchers. (Gellhorn, Ernest, and William E. Kovacic,1994. Sutton, J.,1991). Economic development, macroeconomic stability and the role of factors influencing its indices (inflation, unemployment, etc.) including competition were conducted in a number of studies (Almas Lal K., Hajiyev Nazim, 2014. Muradov A and Hajiyev N. (2014). p. 5-20., Hajiyev N., pp..97-117, Imanov G., Hasanli Y., Murtuzaeva M. pp. 223-229, Sadik-Zada Elkhan, Loewenstein Wilhelm, Hasanli Y p.21. Hasanli Y., Ismayilova S. 2017. pp. 11-15). However, the impact of the Global Competitiveness Index on economic growth has not been estimated by using econometric models.

2. DATA SET OF RESEARCH AND ITS PROCESSING

World Economic Forum annually publishes a report on Global Competitiveness Index (GCI). The Global Competitiveness Index has been calculated using 12 Pillar and 98 indicators from World Economic Forum's report for 2018 and the countries' rating has been determined (Klaus Schwab, World Economic Forum, The Global Competitiveness Report, 2018 http://www3. weforum.org/docs/GCR2017-2018/05FullReport/TheGlobalCompetitivenessReport2017%E 2%80%93201 8.pdf.). It should be noted that, the indicators used in calculating this index are constantly improving. The place of Azerbaijan on that index was 69 among 140 countries in 2018. It should be noted that, Azerbaijan was ranked 35th among 137 countries in 2017. The reason for the decline of Azerbaijan was changes that took place in the methodology of calculation of the GCI as mentioned above. Because of the fact that in the 2018 report, some indicators were excluded from the GCI indicator system. The dynamics of Azerbaijan's Global Competitiveness Index score as well as the volume of GDP (oil and non-oil) are given on the table 1.

Table following on the next page

Table 1: Azerbaijan's Global Competitiveness Index score, its place in Global Competitiveness Index ranking and the dynamics of the volume of GDP (oil and non-oil) (Statistical Year Book of Azerbaijan, 2018, p.37-43; (Klaus Schwab, World Economic Forum, The Global Competitiveness Report, 2018, p.83-85)

Years	GDP, million manat	Non-oil sector in GDP, million manat	Oil sector in GDP, million manat	Global Competitiveness Index in Azerbaijan rank	Global Competitiveness Index in Azerbaijan score
abbreviation	GDP	Non oil_GDP	Oil_GDP	GCIAR	GCIAS
2003	7,146.5	4,447.6	2,698.9		
2004	8,530.2	5,242.5	3,287.7		
2005	12,522.5	6,055.1	6,467.4		
2006	18,746.2	7,630.0	11,116.2	64	4.06
2007	28,360.5	10,576.1	17,784.4	62	4.02
2008	40,137.2	15,197.3	24,939.9	69	4.10
2009	35,601.5	16,726.0	18,875.5	51	4.30
2010	42,465.0	21,363.8	21,101.2	57	4.29
2011	52,082.0	25,431.5	26,650.5	55	4.3
2012	54,743.7	29,262.0	25,481.7	46	4.4
2013	58,182.0	33,213.6	24,968.4	39	4.5
2014	59,014.1	36,189.2	22,824.9	38	4.5
2015	54,380.1	37,920.5	16,459.6	40	4.5
2016	60,425.2	39,975.8	20,449.4	37	4.6
2017	70,135.1	44,061.9	26,073.2	35	4.7
2018				69	3.8

As can be seen from the table, the place of Azerbaijan in the GCI ranking in 2017 was the highest - the 35th.

3. ECONOMETRIC MODELING

3.1. Econometric evaluation of the impact of Global Competitiveness Index score of Azerbaijan on its place in the ranking among the countries

The following econometric model was obtained from evaluating the regression equation in the Eveiws application package (Eviews, http://www.eviews.com/EViews10/ev10main.html) to identify the relationship between Azerbaijan's place in Global Competitiveness Index ranking and Global Competitiveness Index score of Azerbaijan.

$$GCIAR = 254.955591646 - 47.2549918297 * GCIAS \quad (1)$$

Here, GCIAR – shows Azerbaijan's place in Global Competitiveness Index ranking and GCIAS- Global Competitiveness Index score of Azerbaijan. The main statistical characteristics of the model (1) are given on the table 2.

Table 2: The main statistical characteristics of the model (1)

Dependent Variable: GCIAR				
Method: Least Squares				
Sample: 2006 2018				
Included observations: 13				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	254.9556	19.74042	12.91541	0.0000
GCIAS	-47.25499	4.564718	-10.35222	0.0000
R-squared	0.906913	Mean dependent var		50.92308
Adjusted R-squared	0.898450	S.D. dependent var		12.58611
S.E. of regression	4.010803	Akaike info criterion		5.756498
Sum squared resid	176.9519	Schwarz criterion		5.843413
Log likelihood	-35.41724	Hannan-Quinn criter.		5.738633
F-statistic	107.1686	Durbin-Watson stat		1.592587
Prob(F-statistic)	0.000001			

Statistical indicators given on the table 2 and relevant tests show that the model (1) is adequate (Marno Verbeek, p.29-87). The model (1) shows that the growth of the Global Competitiveness Index of Azerbaijan by 0.1 units can contribute to the advancement of its place in the ranking among countries by about 5 steps.

3.2. Econometric evaluation of the impact of Azerbaijan's place among the world countries on competitiveness index on the country's GDP, including the oil and non-oil GDP

To assess the impact of changes in the place of Azerbaijan among world countries on the competitiveness index on country's GDP (including oil and non-oil GDP), the following econometric model was obtained on the basis of data from Table 1:

$$LOG(GDP) = 18.5331453239 - 0.0167762907672 * GCIAR \quad (2)$$

Here, GDP – shows the volume of GDP of Azerbaijan. GCIAR – shows the place of Azerbaijan in Global Competitiveness Index ranking

The main statistical characteristics of the model (2) and the adequacy tests are given on the table 3.

Table following on the next page

Table 3: The main statistical characteristics of the model (2) and the tests

Dependent Variable: LOG(GDP)				
Method: Least Squares				
Date: 11/23/18 Time: 01:43				
Sample (adjusted): 2008 2017				
Included observations: 10 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	18.53315	0.180485	102.6853	0.0000
GCIAR	-0.016776	0.003771	-4.449152	0.0021
R-squared	0.712178	Mean dependent var		17.74969
Adjusted R-squared	0.706200	S.D. dependent var		0.219984
S.E. of regression	0.125178	Akaike info criterion		-1.141298
Sum squared resid	0.125357	Schwarz criterion		-1.080781
Log likelihood	7.706491	Hannan-Quinn criter.		-1.207685
F-statistic	19.79496	Durbin-Watson stat		1.989715
Prob(F-statistic)	0.002142			
Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-statistic	0.238989	Prob. F(1,8)		0.6381
Obs*R-squared	0.290071	Prob. Chi-Square(1)		0.5902
Scaled explained SS	0.350088	Prob. Chi-Square(1)		0.5541

As can be seen from table 3, the change in the explanatory variable GCIAR can explain the change in the explained variable LOG(GDP) by 71% (because of R-squared=0.712178). Estimates of the t-Statistic (4.449152) and Prob (F-statistic) tests show that the value of the determination coefficient is qualitative and significant. The fact that the adjusted coefficient of determination (Adjusted R-squared=0.706200) is close to the coefficient of determination and values of t-Statistic (4.449152), Prob(F-statistic) given in table 3 (t-Statistic=4.449152, Prob.=0.0021; F-statistic=19.79496, Prob(F-statistic)= 0.002142) show that the value of the coefficient of determination is qualitative and significant (Damodar N. Gujarati. 2003. pp.212, 217,2 58, 267). The actual, fitted derived from the model (2) and residual dynamics of GDP of Azerbaijan are given on Figure 1.
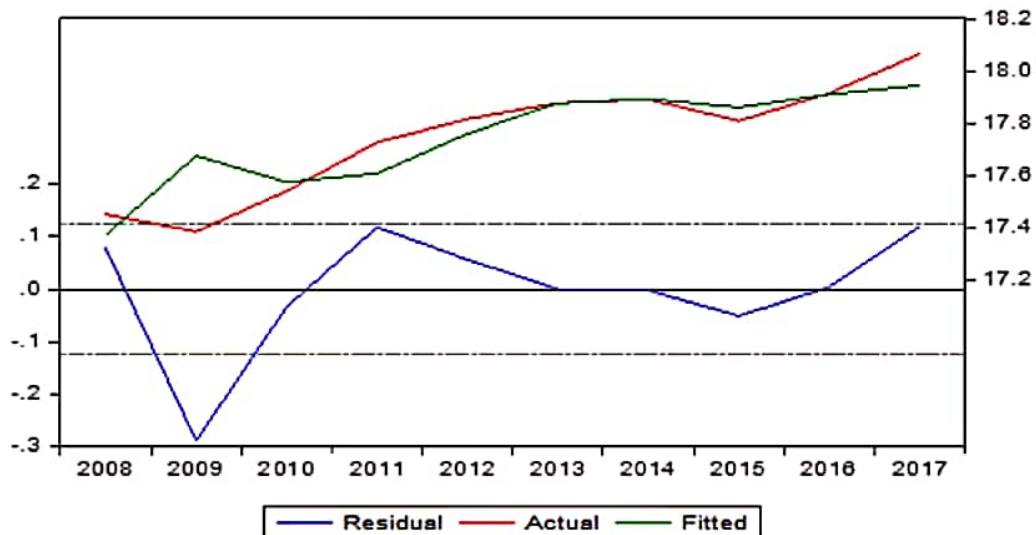

Figure 1: The actual, fitted derived from the model (2) and residual dynamics of GDP of Azerbaijan

As we can see from the Figure 1 actual and fitted GDP values are very close (with the exception of 2009). The difference of Actual and Fitted Values of GDP derived from model (2) of Azerbaijan in 2009 can be explained by world the financial crisis.

Logarithmic linear model (2) shows that, the semi-elastic coefficient of GDP in Azerbaijan in relation to GCIAR equals to 0.0167762907672. In other words, the growth of the Global Competitiveness Index of Azerbaijan by 1 step increases GDP by 1.7 %. To assess the impact of changes in the position of Azerbaijan among world countries on the competitiveness index on non-oil GDP, the following econometric model was obtained on the basis of data from Table 1:

$$LOG(Non\text{-}oil\_GDP) = 11.616918448 - 0.0270612179539 * GCIAR \quad (3)$$

Here, Non-oil_GDP – shows the volume of the non-oil GDP of Azerbaijan.
The main statistical characteristics of the model (3) and the adequacy tests are given on the table 4.

Table 4: The main statistical characteristics of the model (3) and tests

Dependent Variable: LOG(Non-oil_GDP)				
Method: Least Squares				
Date: 11/23/18 Time: 01:14				
Sample (adjusted): 2009 2017				
Included observations: 9 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.61692	0.207370	56.02032	0.0000
GCIAR	-0.027061	0.004225	-6.405757	0.0004
R-squared	0.854269	Mean dependent var		10.31798
Adjusted R-squared	0.833450	S.D. dependent var		0.319056
S.E. of regression	0.130208	Akaike info criterion		-1.046233
Sum squared resid	0.118679	Schwarz criterion		-1.002405
Log likelihood	6.708047	Hannan-Quinn criter.		-1.140813
F-statistic	41.03373	Durbin-Watson stat		1.819891
Prob(F-statistic)	0.000365			
Heteroskedasticity Test: Breusch-Pagan-Godfrey				
F-statistic	0.141131	Prob. F(1,7)		0.7183
Obs*R-squared	0.177868	Prob. Chi-Square(1)		0.6732
Scaled explained SS	0.145295	Prob. Chi-Square(1)		0.7031

As can be seen from table 4, the change in the explanatory variable GCIAR can explain the change in the explained variable LOG (GDP) in the studied years by 85.4% (R-squared=0.854269). Estimates of the t-Statistic (4.449152) and Prob (F-statistic) tests show that the value of the determination coefficient is qualitative and significant. The actual, fitted derived from the model (3) and residual dynamics of GDP of Azerbaijan are given on Figure 2.

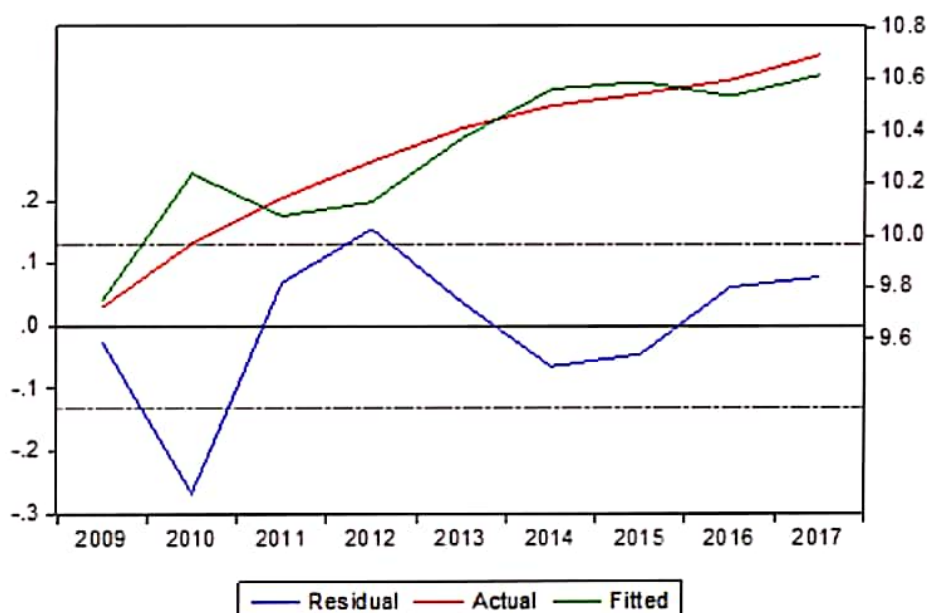*Figure following on the next page*

Figure 2: The actual, fitted derived from the model (3) and residual dynamics of GDP of Azerbaijan

As we can see from the Figure 2 actual and fitted GDP values are very close (with the exception of 2009-2010). The difference of Actual and Fitted Values of GDP derived from model (3) of Azerbaijan in 2009-2010 years can be explained by the fact that the financial crisis of 2008 beginning with the falling of oil prices negatively affected the non-oil sector in Azerbaijan in 2009-2010 years. Logarithmic linear model (3) shows that, the semi-elastic coefficient of non-oil GDP in Azerbaijan in relation to GCIAR equals to 0.0270612179539. In other words, the growth of the Global Competitiveness Index of Azerbaijan by 1 step increases Non-oil_GDP by 2.7 %.

4. CONSLUSION

The results of implemented econometric models shows that the growth of the Global Competitiveness Index of Azerbaijan by 0.1 units can contribute to the advancement of its position by about 5 steps. Growth of the Global Competitiveness Index of Azerbaijan by 1 step increases GDP by 1.7% and Non-oil_GDP by 2.7 %. That is, the effect of the GCIAR change by 1 step on Non-oil_GDP is more than n GDP. We should note, that effect of the change in position of GCIAR on oil GDP turned out to be insignificant during econometric estimation. More precisely, the model did not work out adequate. We can explain such result by the fact that the production and export of oil is made on the basis of long-term contracts (for exaple, The Contract of the Century) is not closely related to GCIAR. This can also be seen on the example of other oil rich countries. Since, despite the fact that the positions of Nigeria (Klaus, Schwab, 2018, pp.435-437), Saudi Arabia (Klaus, Schwab, 2018, pp.*491-493)*, Russia (Klaus, Schwab, 2018, pp. *483-485)*, Iran (Moghsoudi N., Hasanli Y. 2011. pp.399-409) and others on the Global Competitiveness Index are not high, the GDP of the oil sector of these countries in recent years continued to grow.

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