

ECONOMICS

UDC 330.3:330.5

DOI 10.31733/2786-491X-2022-2-85-95



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THE EFFECT OF THE COMPETITIVENESS INDEX ON ECONOMIC GROWTH, WITH AN EMPHASIS ON INSTITUTIONAL AND STRUCTURAL VARIABLES: 10 SELECTED COUNTRIES EXPORTING OIL

Abstract. Reaching long-term sustainable economic growth is very important for every country. Almost all macro-economic policies in a country founded based on rational criteria and indicators of competitiveness of the economic, social, and cultural country can be a vital element of sustainable economic growth. This paper tries to investigate the impact of the competitiveness index on economic growth with the emphasis on institutional variables and structural changes and for this purpose, it used the combined data of 10 oil-exporting countries, during the period (2000-2017) through the generalized method (GMM). Independent variables include: Capital

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stock per capita, labor, structural change index, competitiveness index, international indicator risk of the countries, and the dependent variable for per capita growth economy is GDP.

The estimation results show that the increase in the competitiveness index leads to increasing economic growth as well as effects of structural index on economic growth is positive and significant, and increasing the international risk countries (Institutional Index) has a negative effect on economic growth which is based on theoretical principles.

Keywords: *economic growth competitiveness index, institutional variables, structural variables.*

Introduction. Economic growth is one of the most significant economic variables & obvious markers of the correct direction of an economic now identifying the determinants of the economic growth can be an effective step was to design a practical model of economic development. In addition to traditional factors determining the economic growth including capital (physical and humanitarian) and labor force, structural variables and institutional variables considered as potential factors of growth. While putting competitiveness index along with this variable has created comprehensive combination and integration of traditional and modern elements have been predicted a complete index as competitiveness index. Different theory accumulation of capital and enhanced productivity and investment in research and development is considered the determinants of economic growth. But this theory was unable in explaining the reasons for the differences between the country in economic growth although based on theoretical and experimental studies developing poor countries has a lot of potential to achieve convergence with a developed country, these countries were unable in creating positive results due to the lack of growth, and the inadequacy of the supporter institutions and structural changes (Rodrik, 2005).

Therefore, in this study, with an emphasis on institutional and structural indicators, the effect of the competitiveness index on economic growth has been taken into consideration to prevent problems such as alignment and reducing the degree of freedom in the way of making the index Institutional and structural changes is used so that can study the effects of more economic variables on economic growth at the same time.

The purpose of our article. In this study, we aimed to investigate the effect of the global competitiveness index on economic growth, of course adding two other factors also increases the accuracy of the estimating institutional index and the index structure, which each of them arises with a large number of sub-indexes. 10 selected countries exporting oil during the period (2000-2017) included population in this study, the selection criteria of these countries are simply because of the economic databases. So checking the countries with different economic conditions, for example, some of the reports for many years in the top ranks and even lower middle classes of global competitiveness index and the annual economic growth performance. In this context, issues raised is whether the global competitiveness index has an effect on economic growth with the structural and institutional variables? And are considered variables can be good criteria for measuring economic growth? The theoretical literature investigates the role of the competitiveness index as one of the most effective indicators of economic growth with an emphasis on institutional and structural variables in the economy. In the following brought conducted experimental at foreign and domestic levels and then expressed participation of researchers in this study.

Analysis of recent research and publications. Mid-20th century, many theories in growing economic literature have been formed which can be classified into 4 groups of theories.

Harrod-Domar growth model Niokinzin 1 (Harrod, 1939; Domar, 1946). Conditions to achieve the desired economic growth in this model is perfect using of both labor and capital, if we have unemployed labor force, Growth theory of full employment is rejected and if and if the capital is not used fully we face to declining investment and good demand. The condition of fully operational capital in the time of economy grow that guide us toward dynamic process which has been expressed by Harrod-Domar underlying in early 1940s.

Solow-Swan neoclassical growth model (Solo, 1956; Swan, 1956). In investigating the growth patterns can start with the Solow growth model (1956). Because the first steps of growing are expressed in defining this pattern of model, this model along with the traditional neoclassical model expressed the differences in per capita income based on differences as of factors of production accumulation. These models consider increasing investment are as the best way, and express capital as the most important factor of difference incomes in these countries. So, more and faster accumulation of capital leads to high economic growth rate. The fundamental problem of the neoclassical growth model is that it is unable of explaining the most fundamental realities of growth actual behavior as well as explaining the observed growth differences in income.

Lokas-Romer endogenous growth model (Romer, 1986; Lucas, 1988). In this models, economic growth occur based on a set of internal mechanisms such as human capital development, improved productivity, research and development and quality of government. These models were known as endogenous growth model of the economy. The analysis is based on the accumulation of physical capital; human capital accumulation and production of specified amounts of capital emphasize on different countries income and know developing technology as the revenue engine of economic growth.

New institutional and political economy growth models. In terms of institutional economics, innovation, economies of scale, education, capital accumulation are the superficial reasons of growth. These issues are not growth causes but are growth itself (North, 1990).

Infrastructure of an economy, governance types, variables structure and rules and institutions of a country are the important factors and primary determining motivation and people's desire for physical investment and who have the skills and technology that all these factors together led to the success. So effective is the economic infrastructure of a country's social institutions that carry signs of growth or disaster. One of the offered theories for economic growth in the field of institutional economics, that has worked that shows the role of institutions in economic growth as endogenous, is asthma Aghlv theory, Johnson and Robinson (2004). Acemoglu et al. (2004) distinguished between two types of institutions, economic institutions and political institutions, economic institutions are important from economic growth point of view because they give form to key players of economic incentives, Especially effects on investment in physical and human capital and technological and production structure. Of course this division caused by colonialism in the 17th and 19th, as well as factors such as ideology and social conflict, and that the institution always not selected by the whole society, but also select by certain groups that

control political power in their hands.

If neoclassical growth theory compares to institutional economy these two theories differ is clearly defined in terms of economic growth prominent institutionalisms believe that neoclassicist recommendations are more for the long term and fail to provide and explain foundation for economic growth, and their reasons are factors such as innovation, economies of scale education, capital accumulation that introduce as an important factor in the neoclassicists point of view.

Formulation of the main material. Frederick (2002), formed their research on two different categories, one with a sample size of 80 countries and the other one with a sample size of 140 countries to evaluate the effect of these three factors on the economic growth. The results show that institutions are significantly superior to all the other factors and the effects of other factors are also due to their impact on the institution

Pender (2003) has shown positive correlation between the relative shares of exports and imports of high-level skills and the industry benefit from the technology and the growth of per capita GDP for the countries of the Organization for Economic Cooperation and Development.

Afonso and for Furceri (2010), investigate the effects of policies and volatility economic growth. The basic aim of this study was to investigate the effect of government policies with the distinction between income and spending policies and volatility on economic growth of Europe and the OECD area, the government policies on the one hand is able to mitigate the impact of business cycles and on the other hand can be its factor. Also less spending shows less required to taxes from the increased investment and growth. On the other hand, in some cases accompanied by high growth has been higher public spending. The results show that the proportion of total revenue in both cases has a negative effect, but its volatility has not significant impact, Expenses level is like income level and volatility for OECD countries is meaningless in European countries has a significant negative effect. The levels of indirect taxes and social contributions in both cases have a negative effect.

Haul and Jouns (1999) in a study with designing this question that why per capita GDP among countries are different? Examined 127 countries with combination data and the result of this research shows that social infrastructure (institutions) answered a lot of difference among the nation's long-term performance. The total regulations index has not significant effects on the growth, but the commercial market regulation index has a significant positive effect and ultimately impact of financial regulation were identified indirectly through investment on economic growth. Simon Commender & Zlatco Ghazouani Dawson (2006), investigate the relationship between regulation, growth and investment in selected countries result has shown that the financial regulation index Nikolaski (2010) in the article "Structure and Economic Performance" to investigate the importance of the institution have in the economic performance of the index in three categories: political system, Trade and investment and business environment.

Studies conducted in Iran. Moshiri and Altejai (2008) investigate the relationship between structural changes and economic growth in the newly industrialized countries. To provide empirical evidence about the impact of structural change on economic growth in newly industrialized countries were

used a growth model the pooled data of eleven countries in the period 1970-2004. The key innovation of this research is using multivariate analysis techniques and principal components and dynamic action to extract a synthetic indicator of structural change of the primary structural variables.

Jafari Samimi and Azarrmand (2005) investigate the impact of institutional variables on economic growth in the countries. The results of this research showed a significant correlation between economic growth and the performance of the economic, political and legal.

Isazade and Ahmed Zadeh (2009) in an article entitled “The institutional factors on economic growth, with emphasis on governance institutions”, the results showed that public institutions such as the rule of law, political stability, control of corruption direct impact on production factors and other factors lead to improved economic growth. Of course that Institutions itself does not produce economic growth, but also by the impact of the direct factors and other factors lead to improved economic growth.

Nadiri and Mohammadi (2011) “examined the impact of institutions on economic growth by MMG dynamic panel data” (endogenous and institutional factors affected the development process to solve them). The results based on effectiveness institutions on economic growth at the global level and between different countries examined samples of the oil countries. Shah Abadi and Poorjavan (2010) examined rule of competitiveness and economic growth. The results showed that whatever the governance index is lower than the average of their group as well as the effectiveness and transparency of government is reduced. It also states government that provide more rapid necessary institutions for integration into the global economy, and utilize economic policies in such a way to that in addition to the use of natural comparative advantages in the production process, the use of the extensive use of the advantages of relative to be acquired, they can by improving national competitiveness and compete with industrialized countries increased their share in the global economy. As results show a significant relationship considered variables are in the governance and competitiveness has significantly effect on economic growth of a country.

The statistical population and methods of collecting statistical information. The statistical populations of the 10 oil-exporting countries are (Iran, Saudi Arabia, UAE, Algeria, Angola, Venezuela, Kazakhstan, Qatar, Nigeria, and Kuwait). The studied variables are for the period (2000-2017). The method of collecting data for the library was exploited by official databases such as the World Bank index (IDW) and the World Economic Forum (WEF) and institutional variables related to indexing the site (PRS Group).

Introducing the Template Variables.

– Economic growth (GDP): the rate of change in real inside production GDP compared to that same variable in the previous year defined as economic growth.

– The Global Competitiveness Index (GCI): The weighted average of creating many different components that which of them shows the complex aspects of competitiveness in global competitiveness the Global Competitiveness index by using 110 variables with 12 elements or components and the 3 sub-index finally change to global competitiveness index.

– The institutional index (ICRG): international Directory index risk of the countries is obtained with a rating of 22 variables in three sub-groups political

risk, financial risk, and economic risk.

– Structural index (S) as well as the simple average of the following variables:

- 1) rate of urbanization;
- 2) rate of investment growth GDP of Impure inside production;
- 3) rate of industry growth GDP;
- 4) rate of growth of total employment in the industrial sector share of employment;
- 5) rate of employment shares in industry growth part in total industrial exports;
- 6) rate of growth of import share of Impure inside production GDP;
- 7) rate of import of Impure inside production in this research is exploited.

It should be noted that for calculating the structural indicators, there are many variables, but the selection of present variables according to the conditions of the country and available data also the choice is based on the integrity of the structure of the economy.

Also, it has been used to estimate this model. Institutional factors include government stability, social and economic conditions, prospects of investment, corruption, rule of law and order, the quality of the administrative system, administrative system's response, and structural variables, including the rate of urbanization, the rate of growth of investment share in impure inside production GDP The rate of Industry growth of impure inside production GDP, the rate of employment in the industrial sector, the rate of domestic savings to impure production growth GDP, the rate of the share of exports industrial goods growth, the rate of import impure internal production growth.

Examining the Stationary of variable. In this study, before estimation of the model investigate static variables. For the static test variables, the augmented Dicky-Fuller test (ADF) is used.

Table 1

The results of stationary variables

Variables	Intercept and process status	ADF statistics	The critical value in level of 95%	Viability times
GDP	With intercept and no trend	94.409	00.00	I(1)
GCI	With intercept and no trend	174.168	00.00	I(0)
Capital	With intercept and no trend	45.3170	00.02	I(1)
ICRG	With intercept and no trend	74.3005	00.00	I(0)
STRUCTURAL	With intercept and no trend	103.71	00.00	I(0)
Labor	With intercept and no trend	120.641	00.00	I(0)

Source: research findings

Based on the test, the institutional, competitiveness, structural and workforce indicators are at the level of stationary, and the economic growth and capital are of the first degree and they can be measured with one time differentiation.

Model estimation. In this study, using composite data, the desired model was estimated by the GMM method using EVIEWS6 software.

Stipulated model Growth equation for examining the relationship between global competitiveness and economic growth in institutional and structural factors are as follows:

$$g_{y(i,t)} = \alpha_0 + \alpha_1 g_{y(i,t-1)} + \alpha_2 g_{K(i,t)} + \alpha_3 CGI + \alpha_4 ICRG_{it} + \alpha_5 S_{it} + u_{it}$$

$$U_{it} = \mu_i + v_t + \varepsilon_{it} \tag{1}$$

In equation (1):

- | | |
|--|--|
| $g_{y(i,t)}$: The growth of per capita | U_{it} : A general distribution |
| $g_{K(i,t)}$: Per capita capital stock growth | μ_i : Specific non-visible effects of each country |
| CGI: The global competitiveness index | v_t : Specific time factor |
| $ICRG_{it}$: The institutional index | ε_{it} : stochastic term |
| S_{it} : Structural index | |

We start estimating the model by relying on panel models and using random-effects estimators. To estimate the equation, it is first necessary to determine the type of estimation method for the specific type of composite-cross-sectional data. Therefore, first, the F statistic was used to determine the existence (or non-existence) of latitude from the spatial origin for each of the countries. Because the calculated statistic was larger than the F statistic in the table, therefore, with a confidence level above 95 %, the null hypothesis of the test based on the use of the ordinary least squares method is rejected, and as a result, the ordinary least squares method is not valid, and it should be calculated from different sources.

The method of fixed effects or random effects was included in the model to continue the test of this model using the method of fixed effects and random effects, Hausman χ^2 test was used. This test was done using EVIEWS6 software. The χ^2 test obtained from the calculations for this regression is greater than the χ^2 value in the Table 2, the null hypothesis of using the random effects method will be rejected with a probability of more than 95 %. Therefore, the fixed effects method was confirmed to estimate the model, and the results of both methods are presented in Table 3.

Table 2

The results of Hausman test

Prob	Level of freedom	χ^2	Test Summary
0.9674	4	0.5603	Period random

Source: research findings

Table 3

The results of the effect of the competitiveness index on economic growth with an emphasis on structural and institutional indicators using fixed and random effects methods

Variables	Estimation of the model by fixed effects method		Estimation of the model by random fixed effects method	
	Coefficients	T-statistics	Coefficients	T-statistics
Fixed coefficient	-1/85	-0/625	-2/71	-1/8
GCI	-0/055	-0/06	0/51	0/305
Capital	0/7	25/32	0/69	05/26
ICRG	1/34	0/88	0/24	0/29
STRUCTURAL	-0/17	-0/70	-0/21	-0/89
Labor	0/02	1/44	0/01	0/01
R²	0/75		0/74	

Source: research findings

The results of the fermentation show that the institutional index (ICRG) statistically has significant positive effect on economic growth in selected countries, so that an increase in institutional index will lead to an increase in unit 1.34 in the average growth in selected countries.

As well as a unit increase in structural indicator (s) average economic growth will decrease to 0.17, and as well an increase of one unit in the Competitiveness Index (GCI) will have the ability to reduce the economic growth units to 0.055.

The main problem can be seen in the estimation of fixed and random-effects models. And it is the existence of lags of the dependent variable on the right-to-cross impacts of each country that leads to solidarity with the disruption of bias and conflict of the estimator. So it should be in the search of other variable selection. One method of using an instrumental variable is the generalized method of moments (GMM) that can be used in the Arellano-Bond dynamic panel that has been developed for patterns. This method to fixes the error correlation variables between the dependent variable and lagged variables as tools to be used to estimate the two-step GMM.

This study using GMM estimator (GMM) and dynamic panel model is estimated based on the use of the method (GMM) has many advantages and this factor cause macroeconomic and financial range widely used in the recent studies. For example, one of the advantages that Lvyaz and Levine (1998) have described in the use of this method is the ability of this estimator in removing the variance in the time series data.

The estimator GMM with calculating individual special unseen effects in models (which are import-dependent variables as an explanatory variable in the model) provides better control on the explanatory variables model. The results of estimating the impact of the competitiveness index on economic growth with institutional and structural measures using generalized moments (GMM) can be seen in the Table 4. All estimated variables have visible marks consistent with the theory.

Table 4

The result of the effect of the competitiveness index on economic growth with an emphasis on structural and institutional factors GMM method

Variables	Coefficients	T-statistics	Prob
GDP(-1)	0.251 (0.120)	2.07	0.03
GCI	3.02 (0.897)	0.89	0.0009
Capital(-1)	0.25 (0.100)	-2.50	0.0130
ICRG (-1)	-3.54 (0.92)	0.92	0.0002
STRUCTURAL	-0.79 (0.251)	0.251	0.0019
Labor	0.02 (0.0066)	0.0066	0.001

Source: research findings (The numbers in the first rows are the t coefficients and the numbers in the parentheses are the standard error)

In the Table 4 the results show estimating the model using the GMM Method, as can be seen, the results obtained from this method confirmed the described theoretical principles. The values show that variables of per capita economic growth with a one-year interval, institutional index with a one-year interval, structural index, and competitiveness index have significant effects on economic growth. As the results show, one unit change in the institutional index with a one-year interval reduces the per capita growth by 3.54 units, also one unit change in the competitiveness index increases the per capita growth by 3.02 units, and one unit change in The structural index of 0.79 units will reduce economic growth per capita.

Sargan test. Total credit instrumental variables or used in the model, test with using predefined test limits. Statist of Sargan test is in the way those degrees of freedom is equal with the number of constraints that are too clear and used statistics in this test is x^2 . The zero hypothesis governor of this test indicates that there is any connection between the error components and used tools.

Table 5

The result of the validity of the instrumental variables for simple GMM method

Type of test	Chance of statistic	Amount of statistic	Test of statistics
Sargan	x^2	8.27	0.99

Source: research findings

In the Sargan test, if the probability of the statistic is greater than the significant level, the null hypothesis of non-correlation of instrumental variables with disturbance components is not rejected. As can be seen, the probability of the statistic is greater than the significant level of 5 %, so the null hypothesis cannot be rejected. Therefore, Sargan test has x^2 distribution with a certain number of degrees of freedom. It confirms the validity of the instrumental

variables used in the model.

Conclusions. The study is an attempt to investigate the relationship between competitiveness index and economic growth by emphasizing institutional and structural variables. vast studies have been done about the affecting factors on economic growth, and in many of these studies only the interactions between institutional variables and economic growth or structural variables and economic growth are considered. But this research has innovation in the case that it investigated the relationship between the competitiveness index on economic growth, along with other factors including structural indicators and institutional variables. The results indicate that the competitiveness index considered as one of the affecting factors of economic growth and a significant share of this index on economic growth along with other institutional structure indexes can be seen as more significant, and said hypothesis indicates a positive and significant impact on the competitiveness index in the presence of institutional index and structural changes will be accepted and results show this assumption. As well as institutional indicators have a significant effect on per capita economic growth in a way that increases the international risk index will follow a decrease of per capita economic growth.

Conflict of Interest and other Ethics Statements

The authors declare no conflict of interest.

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**Хамун ДОРУДІ, Фатеме Хелма Гасемі ГОУДАРЗІ, Біджай Кумар КАНДЕЛ
ВПЛИВ ІНДЕКСУ КОНКУРЕНТОСПРОМОЖНОСТІ НА ЕКОНОМІЧНЕ
ЗРОСТАННЯ З НАГОЛОСОМ НА ІНСТИТУЦІЙНІ І СТРУКТУРНІ ЗМІННІ:
10 ОБРАНИХ КРАЇН, ЯКІ ЕКСПОРТУЮТЬ НАФТУ**

Анотація. Досягнення довгострокового сталого економічного зростання є дуже важливим для кожної країни. Майже всі макроекономічні політики в країні, засновані на раціональних критеріях і показниках конкурентоспроможності економічної, соціальної та культурної країни, можуть бути життєво важливим елементом сталого економічного зростання.

Автори цієї статті намагаються дослідити вплив індексу конкурентоспроможності на економічне зростання з наголосом на інституційних змінних і структурних змінах. Для цього використано об'єднані дані 10 країн-експортерів нафти за період (2000-2017) та ці дані застосовані до узагальненого методу. Незалежні змінні включають: запас капіталу на душу населення, робочу силу, індекс структурних змін, індекс конкурентоспроможності, міжнародний показник ризику країн, а залежною змінною економіки є зростання на душу населення ВВП.

Результати оцінки показують, що підвищення індексу конкурентоспроможності призводить до збільшення економічного зростання, а вплив структурного індексу на економічне зростання є позитивним і значним, а підвищення міжнародного ризику країн (Інституційний індекс) негативно впливає на економічне зростання, тобто засноване лише на теоретичних засадах.

Ключові слова: *індекс конкурентоспроможності економічного зростання, інституційні змінні, структурні змінні.*

Submitted: 27.06.2022

Revised: 31.08.2022

Accepted: 22.09.2022