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Research Article

The Effect of Institutional Factors and their Weight Importance on Economic Growth of Oli-Producing Developing Countries

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Abstract: The main objective of this study is to examine and estimate the weight importance and effects of institutional factors on the economic growth of oil-producing developing countries considering the effect of the institution index on the economic growth of these countries. Investigation of the relative importance of these factors not only contributes to the identification of the effect of institutional factors on the economic growth of mentioned countries but also provides the field for institutional reforms by identifying the relative weight of each factor. Oil countries were identified in this research based on UNCTAD's division (2008). Considering the correlated nature of institutional factors that are influenced by the conditions of the countries, it is not possible to examine the relative importance of the effect of institutional factors on economic growth through regression methods. Accordingly, Johnson's Relative Weight Technique was used through SPSS programming. Estimation results showed that government effectiveness (GE), regulatory quality (RQ), and control of corruption (CoC) were the factors with the highest weight importance among other institutional factors regarding their effects on the economic growth of oil-producing developing countries. Furthermore, the institution index was calculated after identifying weigh the importance of institutional factors in the weighted average of these factors. Then, the effects of institutions on economic growth were estimated based on the dynamic panel data (GMM) and Dawson Model. Results proved the effect of the institution index on economic growth.

Keywords: Institutions, Economic Growth, Weight Importance, Oil-Producing Developing Countries

Introduction

A major issue in humanities is about reasons for different economic growth and development rates between countries. Why some countries are richer? Why some countries have achieved high economic growth and others not? Economists link these differences to their different accesses to physical capital, human capital, and technology. Accordingly, the economic growth of countries depends on the capacity and ability of countries to achieve these determinants. The more important question raises herein; why some countries have a lower rate of physical capital, human capital, and technology, and why they do not use their resources and opportunities optimally? To find reasons for differences between countries in the context of income and wealth, fundamental causes and determinants should be found by emphasizing the investigation of institutions. This framework helps to find practical responses to and policies made for some issues such as technology improvements in countries (Acemoghlu & Robinson, 2010).

Cavalcanti and Novo (2003), like Hall and Jones (1999), studied the relationship between institutions and economic growth. They found that a 1% improvement in institutions generates a 5% increase in output per worker. Accordingly, it is necessary to find how institutions affect the economic growth of countries. It is also essential to identify institutional factors and the importance level of their effect on the economic growth of countries to design strategies for institutional reforms. According to conducted studies, indicators and divisions proposed by World Bank (Saima, 2011; Hall, 2012; World Bank, 2012), six institutional factors were identified: accountability of state institutions, political stability, government effectiveness, regulatory quality, rule of law, and control of corruption. It is asked that how is the relative importance of the abovementioned institutions regarding their effects on the economic growth of countries. Also, are the relative importance rate of these factors similar in oil countries? This research aims to answer these questions.

1- Literature Review

2-1- Concepts, Characteristics, and Dimensions of Institutions

Although institutions play a vital role in forming economic history, few empirical studies have defined institutions in the context of social sciences (Qazi, 2009). Various popular perspectives define institutions as "rules of the game" in a society (Olson, 1982; Baumol, 1990; North, 1990). In other words, institutions are constraints that form interactions between individuals, which can be expressed in two forms of formal (rules and regulations) and informal (culture or social capital) institutions (Tabellini, 2005; Putnam, 1993). Some institutions reduce transaction costs to pave the way for innovation and efficiency improvement while some other ones might increase the information costs or limit entrepreneurial activities by making barriers to information flow (Danish, 2009; Qazi, 2009).

According to Douglass North, institutions propose three specific features: firstly, these institutions are out of the control of individuals like many environmental and natural factors. Secondly, they define the rules of the game and form the behavior of individuals. Thirdly, they affect the individual's motivation (North, 1982).

The main goal of studies related to institutions is to express institutions' features, which contribute to economic successes, such as the effect of legal institutions on different types of trade contracts (Acemoghlu, Robinson, 2010).

There are different institutions in societies owing to different social and political reasons. Institutions may be different in a society with a democratic political structure rather than a society with a dictatorship structure, even communities with close democratic structures considering the power distribution between social groups and classes. The democratic structure may vary from weak to strong in different societies. North's definition includes a wide range of aspects. This perspective may have some pros and cons. It can provide the field for extensive empirical and theoretical studies without any limitations caused by scientific boundaries. On the other hand, limited knowledge of specific institutions' effect might be obtained due to the extensive scope of the subject (Acemoghlu, Robinson, 2010).

2-2- Institutions and Economic Growth

Economists tend to find the main economic growth sources with emphasis on historical data and growth counting in the context of the effect of social and political factors on economic growth. In recent decades, many growth economists have confirmed the idea that institutional structures, particularly property rights as well as rights and responsibilities raised in a system of contractual relations are the critical source of long-run economic growth (Radygin, 2008).

Followed by studies conducted by some economists such as North (1981), Jones (1981), and Olson (1981), various empirical studies were conducted on the effect of institutions on the economic growth and performance by other economists. The main questions of these studies have been based on three goals. First, whether institutions affect economic growth or not. Second, how can explain and evaluate the institutional factors affecting economic growth? Third, how the classical growth models should be adjusted to examine the significance of institutions' effect on economic growth?

Knack and Keefer (1995) carried out a cross-country study on 97 countries during 1974-1989 and found a significant impact of institutions on investment and economic growth. Some other economists (Barro) also found similar results.

Hall and Jones (1999) examined 127 countries and concluded that the difference between their institutions led to a considerable difference between their capital accumulation, education, and productivity growth. Rodrik (2004) considered the rule of law as a proxy of institutions and found the significant impact of institutions in economic growth. Acemoghlu (2006) also introduced the institution of private property rights as the most substantial determinants of economic growth, investment, and financial development. Some other economists also studied the difference between institutional factors of countries and examined the correlation between these variables and the economic performance of countries. For instance, Knack and Keefer (1995), Mauro (1995), and Djankov (2002) examined the effect

of some factors such as property rights, corruption, and regulations of entry, respectively on the economic performance of some countries.

Model, Methodology, and Data

Dawson Model (1998) was employed in this paper. This model has been designed based on the Solow Growth and adjustments made by Mankiw (1992), which has been employed by Ahmad and Hall (2012) to examine the effect of some institutional factors, including control of corruption in the economic growth of Southeast Asian Countries. Some adjustments were done in this model to consider the effect of institutions and variable control of corruption. First, the Cobb-Douglas function is considered, which exhibits constant returns to scale but diminishing return to individual factors:

$$Y_{it} = K_{it}{}^{\propto}(A_{it}.L_{it})^{1-\propto}(1)$$

Where Y is the real output, K is the physical capital, and L indicates the amount of labor. A represents a labor-augmenting technology and is assumed to grow exogenously at rate g. The standard derivation of steady-state income per capital function then will be:

$$lny_{it} = lnA_0 + gt + \frac{\propto}{1-\propto} lns_{it} - \frac{\propto}{1-\propto}\ln(n+g+\delta)_{it} \qquad (2)$$

Where s_{it} represents physical capital, n is the rate of population growth, g is technological progress, and δ is the depreciation rate. all parameters are constant and exogenous.

The primary reason for use of the Solow Growth Model by Mankiw was due to its shift parameter of A, which reflects not just the effective labor, but also other factors such as environmental conditions and institutions. In this model, the institution affects economic growth through total factor productivity. Accordingly, the function of A will be as follows:

$$A_{it} = A_0 e^{gt+I_t} \qquad (3)$$

Accordingly, the implicit assumption of the model is that the institution variable shows its effect via productivity not via the investment parameter (s_{it}).

Following equation will be obtained by incorporating Equation (1) with Equation (3):

$$lny_{it} = lnA_0 + c_t + gt + \frac{\propto}{1-\propto} lns_{it} - \frac{\propto}{1-\propto}\ln(n+g+\delta)_{it} \qquad (4)$$

This model can be modified by considering of error term and time-section parameters. This is indeed the core model of this paper.

$$lny_{it} - lny_{it-1} = \beta_0 + \beta_1 lny_{it-1} + \beta_2 I_{it} + \beta_3 lns_{it} + \beta_4 \ln(n+g+\delta)_{it} + \mu_t + \gamma_t + \varepsilon_{it} \quad (5)$$

Model variables and data were collected, as explained herein.

Y_{it}: represents real per capita income that was extracted from PWT data for studied countries during 2002-2014.

S_{it}: indicates physical capital in the model. The investment share of GDP is the proxy of physical capital, and relevant data were collected from PWT for the studied period.

$\ln(n + g + \delta)_{it}$: according to some relevant studies including Hoeffler (2002), Caselli and colleagues (1996), Islam (1995), and Ahmad and Hal (2012), the sum of technical progress and depreciation rate ($g+\delta$) considered as a constant rate of 5% for different countries. The population growth rate was measured based on the PWT data collected for the relevant variable.

hc: represents human capital based on the human capital index calculated in PWT data.

op: trade openness index was calculated by summing up exports and imports share of GDP based on the PWT data.

g: government's expenditure share of GDP, which its data were collected from PWT.

The studied period was chosen between 2002 and 2014 based on the available data. This period was divided into four sections of 2002-2004, 2005-2007, 2008-2010, and 2011-2014. Dependent variables were measured in two forms of initial variables and mean of variables within different periods. According to the UNCTAD division (2008), 22 countries were chosen as oil countries of which 17 countries were studied considering the available data of variables. The relevant data of institutional factors affecting the economic growth (including six variable Voice and Accountability (VA), Political Stability and Absence of Violence (PSA), Government Effectiveness (GE), Regulatory Quality (RQ), Rule of Law (ROL), and Control of Corruption (COC)) were collected from WGI-related data published by World Bank. Dynamic Panel Data Method was used to estimate the model through ox software.

Johnson's Relative Importance Technique was employed to assess the weight importance of institutional factors in influencing economic growth. Regarding the correlational nature of these institutional factors that are influenced by the conditions of different countries, Johnson's Relative Importance Technique can be used as an appropriate method to examine the relative weight of institutional factors, the effect on economic growth. This technique is applicable in the case of intercorrelated independent variables. The case of determining the relative importance of independent variables in explaining dependent variables has received considerable attention in recent years. Relative importance indicates the relative contribution of each variable in R^2. Regarding the calculation of variable's contribution, both direct effect (its correlation with dependent or criterion variable) and indirect effect when combined with other independent variables are taken into account (Johnson & Lebreton, 2004).

Regression analysis is a method used by researchers in majority studies to measure the relative importance of independent variables. However, regression coefficients are insufficient for indicating the importance of each independent variable when there is a correlation between independent variables. This is because the effect of an independent variable on a dependent variable is considered when other variables of dependent effects are assumed as constant rate. In those researches that include several independent variables that have intercorrelation to each other, the relative weights (or importance) method is used. This technique indicates the direct effects of each independent variable on the dependent variable as well as the effect of independent variables when combined with each other on the dependent variable. The relative importance or weight shows the contribution of each dependent variable (predictor) made to the total R^2 of the model. Two methods can be used to calculate relative importance and achieve similar results. Dominance Analysis is a method used to measure relative importance that has been developed by Budescu (1993). Another method is Johnson's technique (2004), which is simpler and newer than dominance analysis (Budescu) and has been used in the extant study.

When there is a correlation between independent variables, variable change is used as the most appropriate method to measure the relative importance of each independent variable in explaining the dependent variable. In this method, orthogonal variables are used to examine the relative importance. Therefore, the first step is taken by measuring those variables that have intercorrelation to independent variables while there is not any correlation between these orthogonal variables. Orthogonal variables are achieved as explained herein. If the $n\times1$ vector of the dependent variable is indicated by Y and the $n\times p$ vector of independent variables is indicated by X and all variables are standard, then Matrix X can be designed using singular values decomposition as follows:

$$X = P\Delta Q'(6)$$

Where, where P is the eigenvalues vector of XX', Q is the eigenvalues vectors of $X'X$, andΔ is a diagonal matrix containing the singular values of X.

$$Z = PQ' \qquad (7)$$

Calculating values of Matrix Z, β_K (regression coefficients of y on Z) and λ_{JK} (regression coefficients of$x_j$on Z_K) values can be calculated. Finally, the weight of each variable can be measured using the following formula in explaining the dependent variable.

$$\varepsilon_1 = \lambda_{11}^2\beta_1^2 + \lambda_{12}^2\beta_2^2 + \lambda_{13}^2\beta_3^2(8)$$

In this research, six institutional variables (X_1, $X_2, \ldots X_6$) are considered independent variables that affect economic growth. This method is applicable through MATLAB software. Furthermore, Johnson has proposed a program in which this method can be implemented using SPSS software.

2- Model Estimation and Data Analysis

This study aimed at examining the effect of institutions on the economic growth besides the weight importance of institutional factors affecting the economic growth in developing countries divided into two oil and non-oil categories. To this end, Johnson's weight importance technique was employed to identify the weight importance of studied variables.

4-1- Estimation of Weight Importance of Coefficients Based on the Countries' Scales

Regarding the estimation of coefficients based on the countries, an individual weight coefficient was considered for each country during the studied period. Since this estimation emphasizes the characteristics of each country and institutional factors are under the direct effect of such characteristics, this is more reliable rather the time-base estimation. Estimation results of weight coefficients in oil developing countries have been reported in Table 1. According to the average weight coefficients of institutional factors in oil-producing developing countries indicated that GE (20.8%), RQ (19.6%), and COC (18%) had the highest weight coefficients, respectively, among institutional factors affecting the economic growth of oil-producing developing countries. The weight coefficient of each developing country has been estimated and shown in Table 1.

Table 1. weight importance of institutional factors affecting the economic growth of oil-producing developing countries based on johnson's technique (countries' scales)

Country-based coefficients	COC	ROL	RQ	GE	PS	VAC	Country-based coefficients	COC	ROL	RQ	GE	PS	VAC
Nigeria	6.7%	25.0%	14.4&	16.5%	29.5%	8.0%	Algeria	16.5%	5.9%	23.9%	38.9%	13.3%	1.5%
Qatar	12.3%	19.4%	22.0%	25.5%	15.5%	5.3%	Angola	14.9%	10.8%	20.2%	24.2%	24.6%	5.2%

Saudi Arabia	42.8%	17.1%	1.4%	29.1%	5.5%	4.1%	Bahrain	5.2%	24.7%	7.8%	45.8%	14.0%	2.6%
Sudan	13.1%	18.5%	24.7%	9.8%	12.5%	21.5%	Brunei	8.9%	6.4%	16.1%	41.9%	13.4%	13.4%
Trinidad and Tobago	14.3%	10.6%	31.8%	4.2%	16.5%	22.6%	Congo	31.2%	25.6%	14.7%	6.5%	20.0%	1.9%
Emirate	18.7%	9.7%	6.4%	34.0%	5.1%	26.1%	Ecuador	5.3%	26.5%	43.3%	12.6%	8.0%	4.4%
Venezuela	30.2%	19.6%	14.3%	12.4%	10.0%	13.5%	Gabon	9.9%	6.0%	27.1%	10.2%	43.8%	3.0%
Yemen	17.0%	4.7%	10.7%	31.8%	33.4%	2.4%	Iran	41.6%	25.4%	11.1%	1.2%	18.7%	1.9%
							Kuwait	19.8%	15.3%	44.6%	9.4%	0.8%	11.0%

Source: Findings

Model Estimation Results of Oil-Producing Developing Countries

A: Effect of Institution Index on Economic Growth

Like, two other studied groups of countries, the institution index was first entered into the model and its effect on the economic growth was analyzed to examine the effect of institution on the economic growth of oil-producing developing countries**.** The model estimation results show that the initial per capita income had a positive and significant effect on the economic growth of oil-producing developing countries. Since the coefficient of this variable, as of two other studied groups of countries, was smaller than one, the conditional convergence hypothesis was confirmed in oil-producing developing countries. Moreover, estimation results indicate that physical capital had no significant effect on the economic growth of these countries. Besides, human capital had no significant effect on the economic growth of these countries. The coefficient of human capital was negative; hence, this result will be analyzed in the discussion on model results. Also, the economic openness degree had a positive and significant effect on the economic growth of these countries like two other groups. Results also showed the positive and significant effect of government spending on the economic growth of these countries. inflation also had a negative but insignificant effect on the economic growth of oil-producing developing countries.

Table 2. results of model estimation for oil-producing developing countries

Model variables	Constant	LNYt	LNKt	ln(g+δ+p)t	HCt	Gt	OPENNESt	Pt	INSTITUTION
Coefficients	-0.0191787	0.679530	-0.158010	0.0567114	0.172356	0.172356	0.170364	-0.674605	0.374995
P-value	(0.498)	(0.000) **	(0.325)	(0.662)	(0.203)	(0.039) *	(0.030) *	(0.103)	(0.047) *
AR(2) test	0.615					Sargan	1.000		

Source: research calculations; * and ** indicate coefficient significance at 1% and 5% levels, respectively

According to the estimation results of the model of the effect of the institution index on the economic growth of oil-producing developing countries, this effect was positive and significant at the confidence level of 95%. It means that the improved institution index had a positive and significant effect on the economic growth of oil-producing developing countries like other studied groups of countries. To examine the validity of torque constraints and instrumental variables used in the estimated model, the Sargan test was used. It was seen that the values obtained from the Sargan test of the estimated model were greater than 5%. Therefore, the H_0 (validity of instrumental variables) hypothesis was not rejected and the validity of torque constraints was confirmed. Arellano-Bond test was used to examine the lack of

second-error correlation. Results showed that P-values in the estimated model was greater than 5%. Hence, the H_0 (lack of second-order correlation) hypothesis cannot be rejected.

B: Effect of Institutional Factors on the Economic Growth of Oil-Producing Developing Countries

Six models were designed for oil-producing developing countries to examine the effect of institutional factors (control of corruption (COC), rule of law (ROL), regulatory quality (RQ), government effectiveness (GE), political stability and absence of violence (PS), and Voice and Accountability (VAC)) on the economic growth of these countries.

Table 3. results of model estimation of effect of coc on economic growth of oil-producing developing countries

Model variables	Constant	LNYt	LNKt	ln(g+δ+p)t	HCt	Gt	OPENNESt	Pt	COCt
Coefficients	0.000962081	0.453470	0.245023	0.552744	-0.0666926	0.140660	0.393896	-0.717462	-1.09693
P-value	(0.963)	(0.003) **	(0.028) *	(0.015) *	(0.008) **	(0.040) *	(0.003) **	(0.039) *	(0.003) **
AR(2) test	0.996					Sargan	1.000		

Source: research calculations; * and ** indicate coefficient significance at 1% and 5% levels, respectively

Estimation results of the model of the effect of the institutional factor of COC on the economic growth of oil-producing developing countries indicated the negative and significant effect of COC on the economic growth of these countries. It means that measures taken in these countries to control corruption have a negative effect on economic growth. It was a notable result opposed to what was seen in other studied countries. According to theoretical literature and foundations, the effect of COC on growth generated different results that will be more discussed and compared in the discussion section. In this model, the validity of instrumental variables and lack of second-order correlation was confirmed by using Sargan and Arellano-Bond tests.

According to the estimation results of the model of the effect of ROL on the economic growth of oil-producing developing countries, this effect was positive and significant at the confidence level of 95%. This relation indicates the positive and significant effect of citizens' trust in rules, property rights, the judicial system, and police on economic growth. In this model, the validity of instruments and lack of second-order correlation was confirmed.

Table 4. results of model estimation of effect of rol on economic growth of oil-producing developing countries

Model variables	Constant	LNYt	LNKt	ln(g+δ+p)t	HCt	Gt	OPENNESt	Pt	ROLt
Coefficients	-0.127953	0.473747	-0.0480321	0.499093	-1.67627	0.511903	1.74295	-0.876679	1.87616

P-value	(0.492)	(0.040) *	(0.828)	(0.626)	(0.183)	(0.006) **	(0.047) **	(0.310)	(0.012) **
AR(2) test	0.072					Sargan	1.000		

Source: research calculations; * and ** indicate coefficient significance at 1% and 5% levels, respectively

Estimation results of the model of the effect of the institutional factor of RQ on the economic growth of oil-producing developing countries indicated a positive and significant effect of this factor on the economic growth of these countries. It means that the higher the government ability in adopting private sector-strengthening policies in oil-producing developing countries, the higher improved the economic growth of these countries. In this model, the validity of instrumental variables and lack of second-order correlation was confirmed by using Sargan and Arellano-Bond tests.

Table 5. results of model estimation of effect of rq on economic growth of oil-producing developing countries

Model variables	Constant	LNYt	LNKt	ln(g+δ+p)t	HCt	Gt	OPENNESt	Pt	RQt
Coefficients	-0.272689	0.651230	-0.0996335	0.0782025	-0.0501018	0.105889	0.182824	-0.392094	0.562775
P-value	(0.326)	(0.000) **	(0.428)	(0.506)	(0.384)	(0.026) *	(0.021) *	(0.121)	(0.034) *
AR(2) test	0.768					Sargan	1.000		

Source: research calculations; * and ** indicate coefficient significance at 1% and 5% levels, respectively

According to estimation results of the model of the effect of GE on the economic growth of oil-producing developing countries, this effect was positive and significant at the confidence level of 90% while this effect was insignificant at the confidence level of 95%. Results have reported in Table 6. This relation indicates the positive and significant effect of improved quality of public services, quality of civil services, and independence of these services from political pressures as well as implementation quality of public policies and government's commitment to such policies on the economic growth of studied countries. In this model, the validity of instruments and lack of second-order correlation was confirmed.

Table 6. results of model estimation of effect of ge on economic growth of oil-producing developing countries

Model variables	Constant	LNYt	LNKt	ln(g+δ+p)t	HCt	Gt	OPENNESt	Pt	GEt
Coefficients	-0.0283137	0.841376	2.69019	2.43811	-0.550568	2.59608	0.946680	-2.18339	4.21355
P-value	(0.553)	(0.000) **	(0.004) **	(0.025) *	(0.018) *	(0.011) *	(0.028) *	(0.005) **	(0.057) *
AR(2) test	0.124					Sargan	1.000		

Source: research calculations; * and ** indicate coefficient significance at 1% and 5% levels, respectively

Estimation results of the model of the effect of the institutional factor of PS on the economic growth of oil-producing developing countries indicated the insignificant effect of this factor on the economic

growth of these countries. In this model, the validity of instruments and lack of second-order correlation was confirmed.

Table 7. results of model estimation of effect of ps on economic growth of oil-producing developing countries

Model variables	Constant	LNYt	LNKt	ln(g+δ+p)t	HCt	Gt	OPENNESt	Pt	PSt
Coefficients	0.22230	0.492564	1.77700	-2.78310	-0.227046	1.45608	1.49654	1.17603	-0.136415
P-value	(0.082)	(0.000) **	(0.040) *	(0.007) **	(0.042) *	(0.008) **	(0.002) **	(0.129)	(0.753)
AR(2) test	0.070					Sargan	1.000		

Source: research calculations; * and ** indicate coefficient significance at 1% and 5% levels, respectively

According to the estimation results of the model of the effect of VAC on the economic growth of oil-producing developing countries, this effect was positive and significant at the confidence level of 95%. This relation indicates the positive and significant effect of empowerment of citizens in electing the government and ability to protest or express their ideas on the economic growth of these countries. In this model, the validity of instruments and lack of second-order correlation was confirmed.

Table 8. results of model estimation of effect of vac on economic growth of oil-producing developing countries

Model variables	Constant	LNYt	LNKt	ln(g+δ+p)t	HCt	Gt	OPENNESt	Pt	PSt
Coefficients	0.0199105	0.719889	0.127060	-0.817907	0.155281	0.288220	0.239742	0.321900	1.4140
P-value	(0.498)	(0.000) **	(0.567)	(0.027) *	(0.362)	(0.005) **	(0.020) *	(0.599)	(0.011)
AR(2) test	0.146					Sargan	1.000		

Source: research calculations; * and ** indicate coefficient significance at 1% and 5% levels, respectively

Discussion

Model estimation results regarding the effect of institutions on the economic growth of oil-producing developing countries indicated a positive and significant effect of this factor on economic growth. This finding was in line with results obtained by Behoudi and colleagues (2012), Mehmet and Chris (2004), Martha (2010), Mahyudin and Nur Fakhzan (2012), Flashaire and colleagues (2011), Siddiqui and Ahmed (2010), Knack and Keefer (1995), Hall and Jones (1999), Rodrik (2004), Acemoglu (2006).

Results of model estimation also showed the positive and significant effect of the lagged variable of per capita income on economic growth. Since the coefficients were smaller than one, the net value of these coefficients will be negative. This result is in line with the theoretical framework of the neoclassical growth model based on the negative relationship between primary per capita GDP and economic growth (conditional convergence hypothesis). Therefore, the conditional convergence hypothesis was confirmed in both groups of studied countries.

Physical capital and human capital had a positive and significant effect on the economic growth of non-oil developing countries, which is in line with theoretical foundations and conventional theories. However, these two variables showed different effects on oil-producing developing countries. In this context, the effect of physical capital on economic growth was estimated in seven models of which four models showed an insignificant effect, and three models found the negative effect of this factor on economic growth. However, some studies conducted on the effect of physical capital on the economic growth of oil-exporting countries emphasized that increased civil projects and long-run investment may lead to a negative effect on the growth due to rent-seeking actions, corruption, and low productivity rate of projects. They argue that the result is based on the Resource Curse Theory. These studies explain that adverse allocation and waste of resources in civil projects as well as low quality and investment efficiency are some factors causing negative effects of resources-derived income on the long-run production (Mehrara & Keykha, 2008, P. 70).

Unlike the non-oil developing countries, the effect of human capital on the economic growth of oil-producing developing countries was different so that human capital coefficients were negative in six models out of seven estimated models. In the three models also these negative coefficients were significant. These results were matched with some studies on oil countries. Behboudi and colleagues (2009) examined the impact of human capital on the economic growth of oil countries using various indicators. All indicators had a negative and significant effect on economic growth. This finding is matched with the results of the present study. Trade openness had a positive and significant effect on economic growth, which admits the expected results. Inflation had a negative but insignificant effect on the economic growth in studied countries. This finding met the theoretical predictions.

Government expenditure had a positive and significant effect on the economic growth of oil-producing developing countries. There is not any definite consensus between economists and economic theories regarding the relationship between government expenditure and economic growth. Besides, some evidence from developing and developed countries shows that excessive government expenditure in the economy causes a negative effect on economic growth. There are three general economic theories in the context of government expenditure and economic growth. According to relevant studies, there might be a positive, negative, or neutral association between government expenditure and economic growth (Golmoradi & AnjomShoaa, 2015, P. 94).

Examination of the effect of institutional variables on economic growth indicates that two institutional factors of rule of law, accountability, and regulatory quality have a positive and significant effect on economic growth. Government effectiveness and political stability have no significant effect on the economic growth in oil-producing developing countries. There are various perspectives, both theoretically and empirically, on the effect of economic corruption on economic growth. Many researchers argue that economic corruption would imbalance the optimal allocation of economic resources causing a negative effect on economic growth. Various empirical studies have confirmed this approach. Mo (2001) explored the effect of corruption on the economic growth of 49 countries that experienced economic corruption. Results showed that a 1% increase in corruption led to a 0.72% decline in economic growth. In other words, a one-unit increase in the corruption index led to a 0.545% reduction in economic growth. Akai and colleagues (2005) carried out a study to examine the effect of economic corruption on the growth in the USA during the short-run (1998-2000), mid-run (1995-2000), and long-run (1991-2000) spans. Results showed that economic growth had no significant effect on the economic growth in the short span while had a negative and significant effect in middle and long spans. Akva studied the effect of corruption on the economic growth of African countries and found the negative and significant effect of corruption on the economic growth of these countries. In this case, one unit increase in corruption led to a 0.75-0.9% reduction in corruption.

Kutan and colleagues (2007) studied the mentioned relationship in Middle Eastern, North African, and Latin American countries during 1993-2003. The main result of this study shows that cultural, geographical, and natural differences can generate different perspectives about the effect of economic corruption on growth. Results show that corruption can negatively affect the growth of middle eastern, and north African countries while this effect is insignificant in Latin American countries. Taghavi and colleagues examined the effect of administrative or bureaucratic corruption on the economic growth in OPEC countries using the simple regression model. They found the negative and significant effect of

corruption on the economic growth of OPEC countries (Taghavi et al., 2011). Fiorino (2010) studied the abovementioned association in 20 Italian regions during 1980-2004. Results confirmed the negative and significant effect of corruption on economic growth. Several other studies have also proved the negative and significant effect of corruption on economic growth.

However, there is a disagreement between researchers regarding the effect of corruption on economic growth. Some assume that economic corruption might be useful for growth since economic corruption can positively affect economic growth by strengthening bureaucratic efficiency (Huntington, 1968; Acemoghlu, 1998). According to this assumption, economic corruption serves as grease for the rigid wheels of the governmental administrations to facilitate and accelerate affairs done by economic actors (Hodge, 2009). Leff (1964) believes that economic corruption can provide the field for the development of economic and entrepreneurial measures by controlling risk and uncertainty as well as accelerating the bureaucratic measure taken by employees. In this case, corruption boosts economic growth. He explains that economic corruption creates a positive collaboration between the private and public sectors so that government employees will support the developmental programs designed by the private sector. In other words, economic corruption can match the interests and private and public sectors. Lui (1985) examines the allocation of governmental permissions to private firms based on the queue model. He argues that those firms that value the time pay bribes to accelerate the allocation process and obtain the license or permission rapidly. In other words, corruption can serve as an accelerator for the government's employees. Beck (1986) and Lien (1986) explain, based on the auction model, that efficient companies generally afford to use higher briberies to accelerate administrative affairs of such efficient companies. Acemoglu (1988, 2000) expresses that the government's presence is necessary to guarantee contracts and property rights. Government' interference in the process of solving market failures is a necessity although such intervention may cause economic corruption. Under such circumstances, therefore, optimization should be implemented, not just control of corruption. Full control of corruption and property rights actualization requires taking some measures, such as rising salaries of government employees that, in turn, cause non-optimal employment in the public sector. Therefore, the optimum conditions should allow a minor level of corruption in exchange for waiving the achievement of guaranteed contracts and property rights. However, such an exchange rate may experience a high level in the least developed countries.

Conclusions and Recommendations

Model estimation results indicated the positive and significant effect of institutions on the economic growth of oil-producing developing countries. Accordingly, any reformative measures taken to improve the institutional quality has a positive and significant effect on the economic growth of developing countries. Moreover, results of the effect of institutional factors on the economic growth of oil-producing developing countries showed that three institutional factors of ROL, VAC, and RQ had a positive and significant effect on the economic growth of developing countries. among these factors, institutional factors, including GE and PS had no significant effect on the economic growth of studied countries. The notable point of the effect of institutional factors on economic growth is about the negative and significant effect of the institutional factor of COC on the economic growth of studies countries. This point confirms the efficient corruption hypothesis in these countries. Considering the significant effect of institutional factors on the economic growth besides the weight importance of institutional factors, it is suggested taking some reformative measures regarding the institutional quality of oil-producing developing countries based on the primacy of regulatory quality, rule of law, and voice and accountability. The effect of the institutional factors of COC on economic growth is a complicated case in oil-exporting countries due to the negative effects of institutional reforms, in form of COC, on economic growth. Hence, policymakers should pay attention to such effects and consequences through Control of Corruption mechanisms.

References

1. Acemoglu, D; Robinson, J. (2010). The Role of Institutions in Growth and Development, Review of Economics and Institutions, Vol. 1 – No. 2
2. Acemoglu, Daron, and Verdier, Thierry, The Choice between Market Failures and Corruption. The American Economic Review, Vol. 90, No. 1 (Mar. 2000), pp. 194-211
3. Acemoglu, Daron, and Verdier, Thierry, "Property Rights, Corruption and the Allocation of Talent: AGeneral Equilibrium Approach." Econ. J. 108, 450:1381–1403, Sept. 1998.
4. Ahmad. M, Hall. S. G. (2012). Do institutions matter for growth? Evidence from East Asian countries, MPRA Paper No. 42158
5. Akai, Nobuo & Horiuchi, Yusaku, and Sakata, Masayo. short-run and Long-run Effects of Corruption on Economic Growth: Evidence from State-Level Cross- Section Data for the United States, Asia Pacific School of Economics and Government, THE AUSTRALIAN NATIONAL UNIVERSITY, 2005
6. Alesina, A., and Perotti, R. (1996). Income distribution, political instability, and investment", European Economic Review, vol. 40, No. 6, pp. 1203-1228.
7. Alesina, A., and Rodrik, D. (1993). Income distribution and economic growth: A simple theory and some empirical evidence", en the political economy of business cycles and growth, Alex Cukierman, Zvi Hercovitz and Leonardo Leiderman (eds.), MIT Press, Cambridge MA.
8. Alonso, J. Garcimartín, C. (2009). The Determinants of Institutional Quality. More on the Debate, Centre for Research in Economic Development and International Trade, University of Nottingham.
9. Alonso, J. A, Garcimartin, C. (2009). The Determinants of Institutional Quality. More on the Debate, CREDIT Research Paper
10. Baldwin, R.E. (1966). Economic Development and Export Growth: A Study of Northern Rhodesia, 1920-1960. Berkeley and Los Angeles, CA: University of California Press
11. Basu, K. (2001). On the goals of development, in Frontiers of Development Economics: The Future in Perspective, Meier, Gerald M., and Joseph E. Stiglitz, Oxford University Press.
12. Baumol, W.J. (1990). Entrepreneurship: Productive, Unproductive and Destructive, Journal of Political Economy 98(5): 893–921.
13. Beck, P., and Maher, M.W., 1986. 'A comparison of bribery and bidding in thin markets', Economic Letters, 20(1):1–5.channels', Kyklos, 57(3):429–56.
14. Budescu, D. V. (1993). Dominance analysis: A new approach to the problem of the relative importance of predictors in multiple regression. Psychological Bulletin, 114, 542-551.
15. Caselli, F., Esquivel, G., & Lefort, F. (1996). Reopening the convergence debate: A new look at cross-country growth empirics. Journal of Economic Growth 1 (3), pp. 363–389.
16. Cavalcanti, T. Novo, A. (2005). Institutions and economic development: How strong are the relations? Empirical Economics, 30:263–276
17. Collier, P., and Hoeffler, A. (2006). Military Spending in Post-Conflict Societies. Economics of Governance, 7: 31-48
18. Danish, A. Qazi. M. (2009). Does Institutions e_ect growth in Pakistan? An Empirical investigation, MPRA Paper No. 19744
19. De Muro, P. Tridico, P. (2008). The role of institutions for human development, università degli Studi Roma Tre.
20. Djankov, S. LaPorta, R. Lopez-de-Silanes, F., and Shleifer, A. (2002). The Regulation of Entry. Quarterly Journal of Economics, 117 (1), 1–37.
21. Easterly, W. (2001): "The Middle-Class Consensus and Economic Development", Journal of Economic Growth, vol. 6 (4), pp. 317-335.
22. Easterly, W. and Levine, R. (2003): "Tropics, germs, and crops: how endowment influence economic development", Journal of Monetary Economics, 50 (1): 3-39.

23. Fiorino, N& Galli, E ,and Petrarca, I. Corruption and Growth: Evidence from the Italian Regions. European Journal of Government and Economics Volume 1, Number 2 (December 2012)
24. Flashaire, E. et al. (2011). Political versus Economic Institutions in the Growth Process, Ax-marseille University.
25. Gelb, A. Windfall, G. (1988). Blessing or Curse? New York: Oxford University Press.
26. Gyimah-Brempong, Kwabena (2002) 'Corruption, economic growth, and income inequality in Africa', Economics of Governance 3(3): 183-209.
27. Gyimah-Brempong, Kwabena, Corruption, economic growth, and income inequality in Africa, Department of Economics, University of South Florida, 4202 East Flower Ave., Tampa, FL 33620, USA, 2001.
28. Gylfason, T. (2001). Natural Resources, Education, and Economic
29. Hall, R. E.and Jones, C. (1999). Why do some countries produce so much more output per worker than others? Quarterly Journal of Economics 114(1): 83–116.
30. Hirschman, A. (1958). The Strategy of Economic Development. New Haven CT: Yale University Press.
31. Hodge, A, Shankar S, Rao, P, and Alan Duhs, Exploring the links between corruption and growth, School of Economics, The University of Queensland, 2009.
32. Hodgson, Geoffrey, M. (2006). What Are Institutions? Journal of Economic Issues,
33. Hoeffler, A. (2002). The augmented Solow model and the African growth debate. Oxford Bulletin of Economics and Statistics 64 (2), pp. 135–158.
34. Huntington, Samual P., Political Order in Changing Societies. New Haven: Yale Univ. Press, 1968.Journal of Public Economics 69(2): 263-279.
35. Islam, N. (1995). Growth empirics: a panel data approach. Quarterly Journal of Economics 110 (4), pp.1127–1170.
36. Islam, R., and Montenegro, C. (2002). What Determines the Quality of Institutions? documento elaborado para el World Development Report: Building Institutions for Markets, Washington.
37. Johnson, J. W., and LEbreton J. M. (2004). History and Use of Relative Importance Indices in Organizational Research. Organizational Research Methods, 7, 238-257. Journal of African Economies, Vol. 6, pp. 335-76. Rodrik, D., A. Subramanian, and F.
38. Knack, S. Keefer, P. (1995). Institutions and Economic Performance: Cross-Country Tests Using Alternative Measures. Economics and Politics, 7 (3), 207–227.
39. Kutan, Ali M and Douglas, Thomas J and Judge, William Q, DOES CORRUPTION HURT ECONOMIC DEVELOPMENT? EVIDENCE FROM MIDDLE EASTERN, NORTH AFRICAN AND LATIN AMERICAN COUNTRIES, Southern Illinois University at Edwardsville Edwardsville, IL 62026, 2007
40. Leff, N.H., 1964. Economic Development Through Bureaucratic Cor-ruption., American Behavioral Scientist, 8 (3), 8-14.
41. Lien, D.D., 1986. 'A note on competitive bribery games', Economics Letters,22(4):337–.
42. Lui, F.T., 1985. 'An equilibrium queuing model of bribery', Journal of PoliticalEconomy, 93(4):760–81.
43. Mahyudin, Ahmad, Nur Fakhzan, Marwan. (2012). Economic growth and institutions in developing countries: Panel evidence, Universiti Teknologi MARA.
44. Mankiw, G. N. Romer, D., and Weil, D.N. (1992). A Contribution to the Empirics of Economic Growth. The Quarterly Journal of Economics, Vol. 107, No. 2. pp. 407-437.
45. Matsuyama, K. (1992). Agricultural Productivity, Comparative Advantage, and Economic Growth. Journal of Economic Theory. 58, pp. 317-334.
46. Mehmet, A, Chris, D. (2004). Institutions and Economic Growth: A Systems Approach, School of Accounting, Economics, and Finance, Deakin University.
47. Mehmet, U. (2010). Institutions and economic performance: a review of the theory and evidence, University of Greenwich.

48. Mo, P.H., Corruption and Economic Growth, Journal of Comparative Economics 29, 66–79 (2001)
49. Moore, M. (1998). Death without Taxes: Democracy, State Capacity, and Aid Dependency in the Fourth World.
50. North D. C. (1990). Institutions, institutional change, and economic performance. Cambridge, MA: Cambridge University Press, New York
51. North, D. C, Wallis, J. Joseph, W., and Barry, R. (2008). Violence and Social Orders, In Governance Growth and Development Decision-making. World Bank
52. North, D. C., Wallis, J., Joseph, W.and Barry, R. (2009b). Violence and the rise of open access orders. Journal of Democracy, 20(1), Pp 55 -68
53. Olson Mancur. (1982). The Rise and Decline of Nations. New Haven: Yale University Press.
54. Ostrom, E. (2008). Doing institutional analysis, digging deeper than market and hierarchies. Handbook of New Institutional Economics. pp. 819 -848.
55. Radygin A. D., Entov R. M. (2008). In search of institutional characteristics of economic growth New approaches at the turn of the 21st century. Voprosy ekonomiki, № 8, pp. 4-27.
56. Rigobon, R., and D. Rodrik. (2004). Rule of Law, Democracy, Openness, and Income: Estimating the Interrelationships. NBER Working Paper n. º 10750.
57. Rodrik, D. (2000). Institutions and high-quality growth: what are they and how to get them. Studies in Comparative International Development, vol. 35, no. 3, pp. 3-31.
58. Rodrik, D. (2003). What do We Learn from Country Narratives?" en D. Rodrik (ed), In
59. Rodrik, D. Subramanian, A, and Trebbi, F. (2002). Institutions Rule The Primacy of Institutions over Geography and Integration in Economic Development. IMF Working Paper 02/189, Washington.
60. Sachs, J., and A. Warner. (1997). Sources of Slow Growth in African Economies.
61. Samuel, R. (2006). Revisiting the oil curse: are oil-rich nations really doomed to autocracy and inequality? Webster University, Institute for Human and Social Studies, National Defense Academy, AT.
62. Siddiqui, D. Ahmed, Q. (2010). The Causal Relationship between Institutions and Economic Growth: An Empirical Investigation for Pakistan Economy, MPRA Paper No. 19745, posted 03.
63. Spreafico, M. (2004). Economic Institutions and Economic Growth in the Former Soviet Union Economies, UNIVERSITA' CATTOLICA DEL SACRO CUORE MILANO.
64. Tabellini G. (2005). Culture and Institutions: Economic Development in the Regions of Europe. CESIFO Working Paper no.1492.
65. Tilly, C. (1992). Coercion, Capital and the European States, AD 990-1992. Oxford: Blackwell
66. Trebbi. (2002). Institutions Rule The Primacy of Institutions over Geography and Integration in Economic Development", IMF Working Paper 02/189, Washington. University Press.
67. White G. and Robinson M. (2004). Towards a Democratic Developmental State. Oxford University Press
68. Caselli, F., Esquivel, G., & Lefort, F., (1996). Reopening the convergence debate: A new look at cross-country growth empirics. Journal of Economic Growth, 1 (3): 363–389.
69. Bond, S., Hoeffler, A. & Temple, J. (2001). GMM estimation of empirical growth models. CEPR Discussion Paper, 3048.
70. Bond, S. (2002). Dynamic panel models: a guide to microdata methods and practice. Institute for Fiscal Studies, Department of Economics, UCL, CEMMAP (Centre for Microdata Methods and practice) Working Paper. CWPO9/02.
71. Baltagi, B. H. (2008). Econometric analysis of panel data. Chichester: John Wiley & Sons Ltd.
72. Greene, W. H. (2008). Econometric analysis – sixth edition. New Jersey, Upper Saddle River: Pearson International.
73. Smith, A. (1978). translated by Ebrahimzadeh, Wealth of Nations.
74. Taiebnia A., Nikoonesbati A. (2013). Institutions and Economic Growth, Journal of Planning and Budget, 18(1), 109-132.

75. Azimi, H. (2004). underdeveloped circuits in the Iranian economy, Ney Publications, Fifth Edition.
76. Karimi, Z. (2005). Several articles in the context of institutional barriers to economic development, Parliament Research Center.
77. Mohammadzadeh, Y., Daneshjafari D., Majidi, S. Y. (2011). The role of institutional quality and human capital in the resource curse hypothesis (Case Study: Petroleum Exporting Countries), Journal of Economic Researches, 11(4), Pp.127-157.
78. MehrAra, M., Abrishami, H., Zamanzadehm H. (2008). Cursed by resources or institutions? The Case Study: Oil Exporting Countries.
79. MehrAra, M., Keykha, A. (2008). Institutions, oil, and economic growth in oil-dependent countries during 1975-2005, Journal of Quantitative Economics (Former Economic Surveys), Vol. V, Issue 4, winter.