



## Investigating the macro-econometrics of economic growth in Iran according to the simultaneous equation system approach

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### ABSTRACT

The sustainable economic growth of countries is the most important criteria for development of countries. Numerous studies are conducted on investigation of economic growth and factors which affect it in Iran and each of them have investigated this issue through various models. This study aims to investigate the economic growth of Iran according to the indices, namely, the imports, exports, government expenditures, gross capital, etc. This is done according to the interaction of variables in the form of simultaneous equation system for a period of 1978-2011. The results indicate that there is a significant positive correlation between the growth of imports and exports and the economic growth. Furthermore, the fitted equations indicate that there is a significant positive correlation between the growth of gross domestic capital and growth of government expenditures with economic growth. Accordingly, it can be argued that the changes in the macro-economic variables such as the government expenditures and oil revenues have significant impact on the size of government size in economy of Iran and proportionally the economic growth of Iran.

**KEYWORDS:** Economic growth, macro-econometrics models, simultaneous equation system

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### 1 - INTRODUCTION

Utilizing a set of definite and decisive relationships and according to the theoretical economic and statistical considerations, the models of macroeconomic variables seek to explain the behavior of variables. These models are often applied for short-term economic prediction. In these models, the econometrics theories play the main role in building the model and deformation of relationships which are "generally" obtained from the economic theory [Kavand, 2009].

The investigation, study, and presentation of history for macro-econometrics models and alternative models are considered as the first entry of model design. In this section, we should investigate the evolution of macro-econometrics modeling after introduction of Lucas critique and problems caused by the structural break as well as providing a solution map for modeling a part of division modeling within the framework of macro-econometrics models. Furthermore, we should analyze the history of applying the macro-econometrics in economic policy making at the global level and especially in countries where similarities with Iran in terms of economic structure have. The model designer should compare and evaluate the alternative models in terms of strengths and weaknesses and thus select the best model for macroeconomic modeling of Iran; in other words, it should be noted by presenting the applied models that how these models can be utilized for accurate assessment of specific characteristics of an economy and policy analyses which are significantly important for economic policy makers [Shahrestani and Arbabi, 2009].

The main objective of this study is to investigate the using the economic growth of Iran by macro-econometrics models; thus we have utilized the macroeconomic data in the form of regression models of simultaneous equation system. Expanding the models of economic variable at the large scale has been slow mainly due to their nature and questions for which they are designed in order to respond to them. The prosperity of these models was made in the 60's. These models often follow the traditional approach of Cowles Commission and differentiate between the endogenous and exogenous variables of model and impose the constraints on the short-term dynamic characteristics of model in order to solve the problem. Since the 1970s, the macro-econometrics models are criticized in different forms at large scales and academic level. In practice, it is difficult to organize these models in a way that are consistent with theory and are able to clearly indicate the characteristics of long-term relationships and are also consistent with data<sup>1</sup>. According to the previous studies, perhaps we are not still able to perform a comprehensive modeling according to the regional and economic

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<sup>1</sup>Bodkin, Klein, and Marwah, (1991)

conditions and the country's dependence on the oil industry, thus this research seeks to perform a comprehensive and applied modeling for country with regard to the mentioned cases.

The attitudes towards the mono-product economy or the approach associated with currency markets and monetary and financial policies and such these cases, which consider similar cases in this regard, are not strength enough to predict the macroeconomic variables. The investigation of changes in local production and economic growth, the contribution of various economic sectors to creation of value added as well as investigating the components of aggregate demand in economy indicate how to use the produced goods and services in various sectors. The procedure of per capita income as an index for welfare of population refers to the variables which provide the bases for evaluation of economic performance in a country. The Gross Domestic Product (GDP) is among the indices by which the economic performance of a country can be investigated and measured at the large level. The lack of access to sustainable economic growth has been one of the most important challenges facing the economy of Iran during the past three decades [Kavand, 2009].

In general, the low economic growth and its high volatility can be caused by factors such as the poor allocation of resources resulted from the sale of oil and gas, high dependence on the oil revenues and its volatility in global oil markets, the lack of suitable capital markets for efficient transfer of community savings to productive investments, the existence of inefficient public sector in implementation of investment projects and the lack of optimal allocation of public resources which have prolonged the implementation of construction projects. In this study, the economic growth of Iran is analyzed and investigated through indices, namely, the imports and exports, government expenditures, and gross capital growth by using the macro-econometric models.

In this regard, the second section provides the studies in this regard and the third section introduces the theoretical principles of research for macroeconomic models, and the fourth section investigates the theoretical model of research, and finally, the fifth section represents the conclusion and analysis of research output.

## 2- Theoretical principles of analysis

The macro-econometrics models have a history of over a half century. These models are first organized for achieving the general theory of Keynes, but the other pattern makers such as Monetarists, new Keynesians and new Classics are added to the set of macro-econometrics model designers over time.<sup>2</sup>

Tinbergen is one of the pioneers of macro-econometrics models before the World War II. In 1930, he designed the macro-econometrics model for the Netherlands. The main purpose of this model is to help the central administration of planning in the Netherlands to formulate and organize the appropriate economic policies.

After the World War II, the macro-econometrics modeling was seriously followed through organizing a professional team in Cowles Commission by Marschak. Then Klein joined this research team and the first macro-econometrics model of this group was designed for economy of America in the 1940s.<sup>3</sup>

The creation of new horizons in developing the economic ideas and theories and econometrics and keeping pace with a new season of computing power and quick speed of computers have led to the prosperity in designing the macro-econometrics models. A large flow of macro-econometrics models were created in the 1960s. During this decade, Brookings's model was designed with input-output table. The progress in macro-econometrics models was in an extent under which it was claimed that the more advanced models would be able to increase understanding of economic processes and thus would be more efficient in solving the economic and financial problems in real world.<sup>4</sup>

During the last four decades, the macro-econometrics models have been faced with numerous changes. Lucas critique (1976) is one of the most important effective factors leading to utilizing the methodology of rational expectations in macro-econometrics models. This critique also made the doubts in using the macro-econometrics models for political analyses and became the starting points for a new generation of econometrics models which are essentially based on the decisions of inter-period dynamic maximization decisions by households and firms. At the same time, Sims critique (1980) led to doubts in traditional approach of Cowles Commission for identifying the behavioral relationships. This critique is based on the subject which is called as "incredible limitations" on the short-term dynamism of model. This critique led to the researchers' willingness to use VAR models in macro-econometrics analyses.<sup>5</sup>

The third factor affecting the modeling of macro-econometrics models is arisen from the researchers' growing attention to the non-stationary issue in macroeconomic variables. The studies by Nelson & Plosser (1982) indicate that the hypothesis of existence of unit root cannot be rejected at vase scale of time series for macro-economic variables in America. These results changed the idea for existence of spurious regression,

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<sup>2</sup>Bodkin, Klein, Marwah 1986a

<sup>3</sup>Fair, R. C. (1987)

<sup>4</sup>Sowey & Hargreaves 1991, p. 60

<sup>5</sup>Garratt, A., K. Lee, M.H. Pesaran and Y. Shin (2000)

which was previously introduced by Yule (1926) and Chambernowne (1960) and recently by Newbold<sup>6</sup>, to current discussions. Later, the studies by Engle & Grenger (1987), and Johansen (1991) and Phillips (1991) on the cointegration and the methods of management paved the ways for spurious regressions which are caused by the variables with unit roots.<sup>7</sup>

### **2-1. Review of previous studies**

Based on the accounting framework of economic growth, Diamond (1989) introduces the government expenditures, the private investment, and labor as the explanatory variables. Separating the composition of government expenditures, he has utilized its components in growth equation. Therefore, the government expenditures separately includes the infrastructural expenditures (including the expenditures associated with energy, roads, transportation and communications), expenditures on direct production sectors (agriculture, fishing, animal husbandry, industry and mining, etc), social expenditures (expenditures on the health, education, housing and welfare service), and the educational expenditures in another model in the growth equation. Diamond has estimated the target model for data of 102 countries including 79 developing countries and 23 developed countries. This study investigates the correlation between the portion of government expenditures in gross domestic product and national income growth rate through data of time series for all countries during the period of 1960-1980. The obtained results indicate that the total government expenditures have no significant effect on the economic growth and this result is true for current expenditures, while it is not true for capital expenditures. The capital expenditures on the social service have a significant effect on the growth in the short-term, while the construction expenditures in infrastructures have low effects a the productive direct investments have negative effect on economic growth. However, the current expenditures in the direct fields of production have had the positive and significant effects on the economic growth. In data of time series, there is a significant high negative correlation between the portion of government expenditure in GDP and national income growth rate for most of the advanced countries, but the results were different for developing countries.

In an empirical study, Barro (1991) investigated the factors affecting the economic growth in 98 countries in the world during 1960-1985. The results of this research indicate that there is a direct correlation between the growth rate of GDP per capita and the human capital, but the inverse correlation with the initial level of GDP per capita. The countries with higher human capital have lower fertility rates and higher ratios of physical investment to GDP. The government consumed expenditures on GDP has a negative impact on the economic growth. The public investment growth has no significant effect; the political stability and market deviation have positive and negative effects on the growth respectively.

Within a framework of vector error correction model (VECM), Ghali and Al-Shamsi (1997) investigated the causal relationship between the current and capital government expenditures and the GDP growth for the United Arabic Emirates during 1973 to 1995. The obtained results of this study indicate that first, the variables are co-integrated; the government investment has a significant positive impact on the economic growth in the short-term, while the consumption expenditure has a negative and statistically insignificant effect on the economic growth. According to the causality tests, the government expenditure is considered as the Granger cause.

Khalifa (1997) investigated the relationship between the GDP per capita and the total expenditure, the consumption expenditure and the government capital expenditures as a proportion of GDP for Saudi Arabia. Utilizing the time series of period from 1960 to 1996, he has indicated that both government expenditures have positive but statistically insignificant effect on the economic growth. Also, Furthermore, Khalifa has concluded that there is a unilateral Granger causality from the economic growth to total government expenditure.

Abizadeh and Yousefi (1998) investigated the correlation between the government expenditures and economic growth for South Korea. The research results indicate that the increased revenue of private sector is considered as the Granger cause of public sector expenditure growth. Then they conducted the experimental study of Wagner's Law based on which the income elasticity of demand for public goods is greater than the unit. The results of this section indicate that the South Korean government expenditures are positively and significantly affected by income of private sector. These two researchers found other results in their research: The urbanization ratio as an index for side effects has no effect on the government expenditures. The dependency ratio has positive significant effect on the public expenditures. The growth of public sector has harmful effects on the income of private sector; this result rejects the Keynesians' idea based on the government intervention in the private sector affairs. The physical capital stock has a significant positive impact on the private sector earnings. The industrialization process, which is measured by the reduction of agriculture sector contribution in national production, has a significant positive effect on earnings of private sector. Finally, the development of democracy, integration in the global economy and the improved economic conditions diminish the state's role in the economy of South Korea.

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<sup>6</sup>Granger, Newbold, 1974

<sup>7</sup>Fair, R. C. (1987)

Using a dynamic model and data of 1970-1997, Al-Farsi (2002) investigated the nature of causal relationship between the government expenditures and economic growth for countries of the Persian Gulf Cooperation Council (GCC). The results of this study confirm the Wagner's hypothesis based on which the national income is the factor for expansion of government size. On the other hand, public expenditure is not considered as the Granger cause of economic growth; therefore, this result does not support the Keynesian idea.

Lawrence Klein et al investigated the Ukraine's economic growth through macro-econometric model which investigates the impact of rising the government tariffs and reformation on retirement pension.

Nilzadeh (1998) investigated the effects of financing from foreign countries on the economic growth in Iran. He has studied the macro-economy of Iran according to the investment methods which are created due to the domestic investment in various sectors of economy as well as the foreign savings which are led physically as the capital transfer flows.

Utilizing the government size and several indices, Ariana (2009) has conducted a comparative investigation for effect of social capital and economic freedom on the economic growth in Iran. The conclusion of this study will lead to error due to the qualitative nature of indices such as the security of property rights, access to sound money, freedom of interaction with foreigners, etc. According to the government size index, the government expenditures can be measured and applied implicitly. He has utilized a series of qualitative indices of neoclassic growth model.

Amiri (2012) has investigated the effect of inflation on the correlation between the financial development and economic growth. Since the inflation is implicitly correlated with export and import growth, government expenditures and domestic capital growth, these indices can be investigated for macro econometrics in Iran through inflation analysis model, and thus we can investigate the negative effect of inflation on the correlation between the financial development and economic growth in low-income countries.

### 3- Theoretical principles of models and data analysis and statistical information

This research utilizes the statistical and econometric methods to evaluate and test the hypotheses. Various studies are conducted in regards to the economic growth, but most of them have applied the neoclassic growth model, while an important limitation of this model indicates that the sustainable development is only dependent on the development of technology and population which are both introverted with respect to the model. Based on this model, the economic politics have no effect on the sustainable development and are only effective when the economy is sustainable. However, this study studies the economic growth based on a simultaneous equation system approach. This research initially examines the stationary or non-stationary of variables based on generalized Dickey-Fuller test. Subsequently, their long-term relationship is investigated using the concept of co-integration with Johansen's test (1988), and then the simultaneous equation system is utilized and the research hypotheses studied. The equations of mentioned model are estimated through Eviews econometrics software. The statistical population of this research consists of all applied variables of time series during the research period from 1978 to 2011 through annual data. The aim of this research is to study the economic growth of Iran through indices, namely, the imports, exports, government expenditures, and gross capital. Therefore, the following hypotheses are developed:

- 1- There is a significant positive correlation between the export growth and economic growth.
- 2- There is a significant positive correlation between the import growth and economic growth.
- 3- There is a significant positive correlation between the gross domestic capital and economic growth.
- 4- There is a significant positive correlation between the growth of government expenditures and economic growth.

Therefore, the empirical model of research is considered as follows according to the previous studies in this field:

Gross domestic product (GDP):

$$Y(exp) = CN + I + G + EXP - IMP \quad (1)$$

Consumption expenditures of households:

$$CN = \alpha_0 + \alpha_1 Y + \alpha_2 SUB \quad (2)$$

Gross capital formation:

$$I = \alpha_0 + \alpha_1 Y + \alpha_2 R \quad (3)$$

Exports of goods and service:

$$EXP = \alpha_0 + \alpha_1 Y + \alpha_2 EXCH \quad (4)$$

Imports of goods and service:

$$IMP = \alpha_0 + \alpha_1 EXCH + \alpha_2 Y \quad (5)$$

Official exchange rate:

$$EXCH = \alpha_0 + \alpha_1 M1 + \alpha_2 INF + \alpha_3 R \quad (6)$$

Government expenditure:

$$GOV = \alpha_0 + \alpha_1 GOV(-1) + \alpha_2 OIL + \alpha_3 GDP \quad (7)$$

The statistical population of this study is associated with the time series of Gross Domestic Product (GDP), capital stock (K), consumption expenditure (C), government expenditures (G), export (EX), imports (IM), receivable subsidy (SUB), short-term bank deposit interest rate (R), exchange rate (EXCH), oil revenues (OR), amount of money (M1) and inflation rate (INF) for a period of time from 1978 to 2011. It should be noted that all research variables are investigated as the growth rates.

**3-1 - Unit root test and cointegration among variables**

This section of research investigated the existence of unit root in research variables in order to avoid the spurious regression in model. The following table indicates the results of testing the Augmented Dickey–Fuller test (ADF) and Phillips Perron (PP) tests. The results indicate that variables, namely, the unemployment rate, inflation, deposit interest, and exchange rate have no unit roots due to the higher values of test statistics than the critical values at the significance level of 95%, and thus the null hypothesis indicating the existence of unit root is rejected, while the null hypothesis, based on the existence of unit root, is not rejected for the other variables since the value of test statistic as the absolute value is less than the critical values and these variables have unit roots at the level and become stationary by one-time differencing; in other words, these variables are integrated with the first order or I(1).

**Table1-Unit root test of research variables**

Variables	Augmented Dickey–Fuller test (ADF)		Phillips Perron test (PP)	
	Test statistics	Critical values at the level of 95%	Test statistic	Critical values at the level of 95%
Gross Domestic Product(GDP)	-3.26	-3.46	-2.57	-3.46
Logarithm of Stock Capital(K)	-3.20	-3.46	-3.12	-3.46
Logarithm of oil revenue(OR)	-2.67	-3.46	-2.10	-3.46
Unemployment rate(UR)	-4.80	-3.46	-4.38	-3.46
Logarithm of consumption expenditures(C)	6.45	-3.46	6.34	-3.46
Logarithm of government expenditures(G)	-2.09	-3.46	-2.32	-3.46
Logarithm of imports(IM)	-3.22	-3.46	-3.12	-3.46
Logarithm of exports (EX)	-3.40	-3.46	-3.43	-3.46
Logarithm of receivable subsidy (SUB)	-2.58	-3.46	-2.99	-3.46
Logarithm of exchange rate (EXCH)	-5.40	-3.46	-5.46	-3.46
Logarithm of amount of money (M1)	-3.07	-3.46	-2.92	-3.46
Logarithm of inflation rate (INF)	-4.87	-3.46	-4.38	-3.46
Bank interest rate (R)	-7.93	-3.46	-7.73	-3.46

**3-2-Long-term relationship test and analyses of empirical research model**

In the next step, since we have encountered with a combination of stationary and non-stationary variables, the existence of long-term relationship between variables is arisen, and thus Johansen cointegration test is utilized to find the long-term relationship between variables based on the test statistics. In investigation of all mentioned equations, its results indicate the long-term equilibrium equation between variables.

Therefore, the target model is estimated for each equation through Johansen test and the two-stage Ordinary Least Squares method (2SLS). Table 2 shows the results of equation for consumption expenditures in cost approach.

**Table (2)- Estimation of consumption expenditure equation according to the cost approach through the simultaneous equation system**

Variables	Coefficients	Standard deviation	T statistics	Prob.
GDP	0.240373	0.012218	19.67367	0.0000
SUB	0.121788	0.023887	5.291340	0.0002
C	-1885.324	123.6453	-15.24843	0.0006
R-squared	0.941722	F-statistic		239.9843
Adjusted R-squared	0.937837	Prob(F-statistic)		0.000000
J-statistic	7.35 E- 36	Durbin-Watson stat		1.474548

According to the results of table above, it is observed that all coefficients of model variables have a significant difference from zero at the significance level of 5%. The statistics of coefficient of determination is equal to 0.94 indicating that 94% of changes in consumption expenditures of households can be explained by these variables. Durbin-Watson statistics indicates the lack of auto-correlation in model and j statistic indicates the lack of auto-correlation between the error terms and tools applied in model. The growth coefficients of income and transfer payments are equal to 0.24 and 0.12, respectively, indicating that under the stability of other conditions, a one percent increase in independent variables will lead to the increase of 0.24% and 0.12% in

growth model for consumption expenditures of households. In the next step, we estimate the investment equation with cost approach.

**Table (3) - Estimation of investment equation with cost approach through the simultaneous equation system**

Variable	Coefficients	Standard deviation	T statistic	Prob.
GDP	0.473621	0.123827	3.82552	0.0000
R	-12.03984	3.983221	- 3.02263	0.0000
C	-52816387	45042800	1.172582	0.2487
<b>Model Statistics</b>				
R-squared	0.793715	F-statistic		69.52494
Adjusted R-squared	0.782255	Prob(F-statistic)		0.000000
J-statistic	0.000000	Durbin-Watson stat		1.896411

According to the results of table above, it is observed that all coefficients of model variables have a significant difference from zero at the significance level of 5%. The statistics of coefficient of determination is equal to 0.79 indicating that 79% of changes in investment changes can be explained by these variables. Durbin-Watson statistics indicates the lack of auto-correlation in model and j statistic indicates the lack of auto-correlation between the error terms and tools applied in model. The coefficients of income and interest rate are equal to 0.47 and -12.03, respectively, indicating that under the stability of other conditions, a one percent increase in independent variables will lead to the increase and decrease of 0.47% and -12.03% in investment growth model. In the next step, we estimate the goods and service exports equation with cost approach.

**Table (4) -Estimation of goods and service exports equation with cost approach through the simultaneous equation system**

Variable	Coefficients	Standard deviation	t statistic	Prob.
GDP	0.037473	0.011830	3.167581	0.0032
EX	0.871676	0.294997	2.954863	0.0056
C	9858.408	2301.190	4.284048	0.0001
<b>Model Statistics</b>				
R-squared	0.813824	F-statistic		5.405967
Adjusted R-squared	0.807471	Prob(F-statistic)		0.008996
J-statistic	1.47 E - 38	Durbin-Watson stat		1.365112

According to the results of table above, it is observed that all coefficients of model variables have a significant difference from zero at the significance level of 5%. The statistics of coefficient of determination is equal to 0.81 indicating that 81% of changes in goods and service exports can be explained by these variables. Durbin-Watson statistics indicates the lack of auto-correlation in model and j statistic indicates the lack of auto-correlation between the error terms and tools applied in model. The coefficients of income and exchange rate are equal to 0.03 and 0.87, respectively, indicating that under the stability of other conditions, a one percent increase in independent variables will lead to the increase of 0.03 and 0.87in goods and service exports. The following table estimates the goods and service imports equation with cost approach.

**Table (5)- Estimation of goods and service imports equation with cost approach through the simultaneous equation system**

Variable	Coefficients	Standard Deviation	T statistics	Prob.
GDP	0.033197	0.007972	4.164314	0.0002
EX	- 0.905586	0.209122	- 4.330416	0.0001
C	9670.783	1537.987	6.287948	0.0000
<b>Model Statistics</b>				
R-squared	0.876017	F-statistic		9.410879
Adjusted R-squared	0.862140	Prob(F-statistic)		0.000583
J-statistic	0.000000	Durbin-Watson stat		1.488313

According to the results of table above, it is observed that all coefficients of model variables have a significant difference from zero at the significance level of 5%. The statistics of coefficient of determination is equal to 0.87 indicating that 87% of changes in goods and service imports can be explained by these variables. Durbin-Watson statistics indicates the lack of auto-correlation in model and j statistic indicates the lack of auto-correlation between the error terms and tools applied in model. The coefficients of income and exchange rate are

equal to 0.03 and -0.90, respectively, indicating that under the stability of other conditions, a one percent increase in independent variables will lead to the changes of 0.03 and -0.90 in goods and service imports. The following table estimates the government expenditures equation with cost approach.

**Table 6- Estimation of government expenditures equation with cost approach through the simultaneous equation system**

Variable	Coefficients	Standard deviation	T statistics	Prob.
OLIREV	1.742344	0.787672	2.212017	0.0331
GOV (-1)	0.408651	0.270628	1.892590	0.0071
GDP	0.020819	0.005074	4.102710	0.0003
C	- 3634.170	10931.64	- 0.332445	0.7414
R-squared	0.961721	F-statistic		493.6211
Adjusted R-squared	0.959706	Prob(F-statistic)		0.000000
J-statistic	0.000000	Durbin-Watson stat		1.295503

According to the results of table above, it is observed that all coefficients of model variables have a significant difference from zero at the significance level of 5%. The statistics of coefficient of determination is equal to 0.96 indicating that 96% of changes in government expenditures can be explained by these variables. Durbin-Watson statistics indicates the lack of auto-correlation in model and j statistic indicates the lack of auto-correlation between the error terms and tools applied in model. The coefficients of government expenditure growth lag, economic growth, and oil revenues are equal to 0.40 and 0.02, and 1.47, respectively, indicating that under the stability of other conditions, a one percent increase in independent variables will lead to the changes of 0.40 and 0.02, and 1.47 in government expenditures. In the final step, the exchange rate equation is estimated with cost approach, thus the target model is estimated through two-stage Ordinary Least Squares method (2SLS) for this equation.

**Table (7) - Estimation of exchange rate equation with cost approach through the simultaneous equation system**

Variable	Coefficients	Standard deviation	T statistics	Prob.
M1	0.024918	0.001139	21.87545	0.0000
INF	0.137880	0.049515	2.795918	0.0000
C	- 506.1199	1145.912	-0.441675	0.6615
R-squared	0.941213	F-statistic		275.6978
Adjusted R-squared	0.937755	Prob(F-statistic)		0.000000
J-statistic	0.000000	Durbin-Watson stat		1.628282

According to the results of table above, it is observed that all coefficients of model variables have a significant difference from zero at the significance level of 5%. The statistics of coefficient of determination is equal to 0.94 indicating that 94% of changes in exchange rate can be explained by these variables. Durbin-Watson statistics indicates the lack of auto-correlation in model and j statistic indicates the lack of auto-correlation between the error terms and tools applied in model. The coefficients of amount of money and inflation are equal to 0.02 and 0.15 indicating that under the stability of other conditions, a one percent increase in independent variables will lead to the changes of 0.02 and 0.15 in exchange rate.

Therefore, according to the obtained results of study, it can be concluded that the research hypotheses indicating the

- Positive significant correlation between exports growth and economic growth is approved in the equation for exports of goods and service with positive coefficient of economic growth rate.
- Positive significant correlation between imports growth of intermediate materials and economic growth is approved in the equation for imports of goods and service with positive coefficient of economic growth rate.
- Positive significant correlation between the Gross Domestic Product and economic growth is approved in the equation for investment with positive coefficient of economic growth rate.
- Positive significant correlation between the government expenditures and economic growth is approved in the equation for government expenditures with positive coefficient of economic growth rate.

#### 4 - Conclusion and Suggestions

This research aims at investigating the economic growth of Iran according to the annual data through the simultaneous equation system and macro-econometrics model during 1978 to 2011. In this regard, it is mentioned that the low economic growth and its high volatility can be considered as the results of factors such as the inappropriate allocation of resources due to the oil and gas sales, high dependency on oil revenues and its volatility in oil global markets, the lack of proper capital markets for efficient transfer of community savings to productive investments, the existence of inefficient public sector in implementing the investment projects and lack of optimal allocation of public sector resources which lead to the prolonged construction plans. The statistical population of this research consists of all time series variables of Gross Domestic Product(GDP) , capital stock (K), consumer expenditure (C), government expenditure (G), exports (EX), imports (IM), subsidy (SUB), short-term bank deposit interest rate (R), exchange rate (EXCH), oil revenues (OR), the amount of money (M1) and inflation rate (INF).

All research hypotheses are confirmed according to the results of estimating the relevant models through simultaneous equation system and the two-stage Ordinary Least Squares method (2SLS). This research accurately defines the correlation between the oil sector and real sector of economy, so that the economic effects of changes in oil sector can be evaluated for variables such as the oil price, oil reserves and production, investment in oil sector, local price of oil products, and local consumption of oil products. According to the importance of this issue, based on the inductive role of oil in national economic growth in the past, the continuity of this role and the amount of its effect on future developments are always considered as the main questions. The current growth trend of domestic consumption of oil and petroleum products and oil limited lifetime have inevitably reduced the local export capacity and earnings and thus will be competing with its exports. On the other hand, the development of oil real price will finally limit the oil revenue considering the adjustment of fluctuations due to the exchange purchasing power. On the other hand, due to the corrosion, depreciation and destruction in the past two decades, the physical assets of oil industry are allocated to maintain the major portion of oil industry to maintain the production level.

According to the results of this study, the following suggestions are offered to promote the growth and development of country and thus the improvement of economic status in the country.

According to the equation of government expenditures, the government revenues and costs indicate the volume of government activity; and the imbalance of government sector is manifested in budget deficit. In the real sector of economy, the production is clearly identified as the supply and the cost as the demand. The difference between the supply and demand of goods and service is identified in changes in assets and discrepancies.

According to the equation of goods and service exports, the current production costs and the current costs of demand components specify the balance of this sector. The changes in production and exchange rate and discipline in monetary policies of country lead to the stability in exchange rate and export dynamics in the country.

Furthermore, according to the unequal results for short and long-term effects on some of the model variables, it is suggested paying attention to both short and long-term effects in adoption of monetary and financial policies in order not imposing the heavy long term effects on community due to a positive effect in the short term.

Given the main role of oil in industry of Iran and involving this variable in equations, it can be concluded that the mechanism of variables and equations is based on the considered extroverted production and oil price in the external sector, so that it leads to the oil exports in terms of barrel and finally the amount of dollar revenue in the oil price and production quota of oil production.

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