RELATION OF RESOURCE CURSE AND GREY ECONOMY IN IRAN

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ABSTRACT

This paper is to show that mismanaged of oil revenues can turn this valuable resource to a curse resource in Iran's economy through decreasing economic growth rate. The results of model estimation confirm the positive relationship between oil revenue and economic growth, negative relationship between hidden economy volume and economic growth, negative effect of government size variable on economic growth and positive relationship between economic freedom and labor force growth rate on one hand and economic growth on the other hand.

KEYWORDS: Economic Growth, Resource Curse, oil revenue, Size of Government, Economic Freedom

Resource curse, explains the persistent inverse relationship between natural resource abundance on one hand and economic growth, good governance, and political stability on the other (Firger,2010).Analysis of various stages of oil rent-seeking competition cycle in Iran clearly shows that during the past century, oil has played a significant role in formation of Iran's economic-political structure and destiny. On one hand oil revenue provides the required capital for renovation and development of Iran and permits Iran to accelerate its socioeconomic development pace; and on the other hand, by turning to the arena of international geopolitical competitions, Iran witnesses weakening of political independence, deepening segregation of government and civil society and weakening democracy as a result, strengthening government crowding-out effects on the economy, creating rent-seeking relations, weakening motivation of work and creativity and as a result expanding hidden economy and increasing inflation and dependency on imports, weakening domestic products, decreasing economic growth and in general by what is called as Dutch Disease impede normal development.

Some points are important when summing up political and economic mechanisms of resource curse. First, affluence of natural resources causes short-run perspectives predominate politicians, resulting in making unsuitable and inefficient policies. Second, export of natural resources strengthens such beneficiary sectors, classes and groups who are benefited from growth decelerating policies. Third, in such conditions government gets centralized and development process is negatively affected due to government's failure in fulfilling her development duties and weakening of

democracy as when government earns enough from export of natural resources, she will get less taxes and people demands less responsiveness from government. Also, government spends and uses rent out of natural resources to deepen her mandate and prevents pressures of the people for democracy and formation of social groups. Fourth, in exporting natural resources countries, government is not so concerned with quality of education. Fifth, regarding to the importance and role of institutions in economic development it has been shown that rent of natural resources has negative effects on ability of institutions for encountering the initiated shocks from fluctuations in resources prices (Isham et al, 2003).

Although Iran is a forerunner in devising development plans, but neither the academic centers nor government have devised methodological studies within acceptable theoretical framework to show how oil revenue may generate vicious cycles in the economy and society. Regard undeniable importance of oil in Iran's economy and the fact that Iran has experienced oil-oriented development in 1970s, repetition of unpleasant oil-oriented effects is due to mismanagement. This paper shows that mismanaged oil revenues can turn this valuable resource into a curse resource in Iran's economy through decreasing economic growth rate due to increase of hidden economy and enlargement of government.

LITERATURE REVIEW

Various studies have been done on the subject matter of this paper in Iran and other countries. Garmaroudi (1998) used regression analysis for application of monetary method to estimate the volume of underground economy in Iran. He used note and currency

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to liquidity ratio as a suitable monetary index and in estimating the regression equation he attempted not only to estimate the volume of underground economy, but also its components. He covers Iran's economic changes during 1971-1995 and calculated the volume of underground economy. According to his findings, on average, size of Iran's underground economy in the cited period was equal to 23% of the legal economy.

Ashrafzadeh and Mehregan (1999) used the same method to estimate the volume of Iran's underground economy during 1969-1995. They used regression to estimate the volume of illegal imports and exports during the period. The mean of the time series of the estimated underground economy is reported as 12% of legal economy.

Arab Mazar Yazdi (2001) studied the trend of black economy in Iran during the past three decades in three time intervals of 1968-1978, 1978-1979 and 1989-1988. Multiple indices were used to measure black economy. The results showed that changes in per capita income and openness of the economy play significant roles in the size of black economy in Iran, though from theoretical point of view, direction of effectiveness of the variables is not clear. The estimated results show high positive significant relations of the two cited variables on the size of hidden and illegal products.

Azarmand (2007) used Tanzi method to estimate cash demand for estimating the size and trend of changes in hidden economy and tax evasion in Iran. On the basis of the results, the mean of hidden economy to GNP during the First, Second and Third 5-years Development Plans were 14.7%, 14.4% and 14.9% respectively. The correlation between the size of hidden economy and government's budget deficiency was estimated about 94%. The amount of tax evasion, based on this estimation, amounted to 23 thousand billion Rials in 2005.

Esfandiari and Jamalmanesh (2002) analyzed underground economy and its effect on national economy using money demand regression. On the basis of the results, increase of some limitations such as commercial limitations will increase underground economy. Commercial liberation or decrease of other legal limitations without preparing necessary social, economic and cultural backgrounds do not decrease illegal trade and other illegal activities; and even can pave the way for their growths in absence of an efficient and capable government.

Damania and Bulte (2003) concentrated the relationship between resource curse and democracy, but the relationship between resources poverty and economic growth has been also been studied. Moreover, this study also deals with non-governmental aspects that determine regulations and limitations over the economy. All in all, this research provides a socioeconomic model emphasizing on mutual effects of the two. Existence of political competition is found to be very important in maintaining resources and social welfare. When political competition is missing not only natural resources are destroyed, but also social welfare deteriorates. One of the most important aspects studied in this paper is the role of degrees of democracy versus dictatorship on other factors.

Hafmester and Roldos (1997) compared trade cycles in Latin America and Asia using a structural VAR model. The results show that the main source of production fluctuations, even in the short-run, is the impulses of supply side such as productivity (structural reforms) and manpower supply.

Bjornland (2000) analyzes the effects of oil price, supply and demand impulses on GDP and unemployment in Germany, England, Norway and USA. The results show that in all countries except Norway, oil price shock negatively affects short run production. In Germany, England and USA oil price shock in 1973-1974 played a significant role in depression in mid 1970s but the depression experienced in the beginning of 1980s were mostly due to supply and demand shocks in these countries. Demand (temporal)shocks were more important in explaining short-run production fluctuations in USA, England and Norway but after two to three years supply (permanent) shocks played the main role in production fluctuations. In Germany supply shocks played the main role in production fluctuations in all time spans.

METHODOLOGY

To find the causes and analyzing the relationship between increase of oil revenue and black economy growth and finally decrease of economic growth we used correlational and descriptive approach. We try to interpret what the past trends are related to the existing cond.

Collected data relates to the time span 1959-2009 from Economic Report and Balance Sheet of Central Bank of Iran for the variables of economic growth rate, governmental expenses, oil revenues and active population. For making sure the reliability of data, they

were compared by the statistics of Asian Productivity Organization. Economic freedom index data was derived from Heritage Institute. This institute issues annual reports on economic freedom and in 2009 ranked different countries in terms of economic freedom in Wall Street Journal. This index is between 0 and 100, and 100 being the best status in terms of economic freedom. Hidden economy variable data were extracted from several studies done in Iran cited before. In most of these studies indirect methods have been used. Some of them supply some measures and data. Such researches have used exchange data, cash ratio, cash demand, latent variables, income gap, expenses data, fuzzy logic, etc. Direct method for estimation hidden economy variables needs special statistical data collection through polling, sampling, questionnaires, etc. which have not been done in Iran yet.

The data supplied by Strategic Researches Center was used to estimate the size and trend of changes in Iran's hidden economy. This organization used Tanzi method to estimate cash demand. In Tanzi method, change in cash demand is supposed to be due to changes in underground economy due to changes in tax and

government regulations. Regarding the specifications of Iran's economy, using Tanzi method and suitable regression models, supposed values for money demand in no-tax-condition were estimated. Total cash circulating in hidden economy is the difference between supposed values and true values. Assuming that speeds of velocity of circulation of money in legal and hidden economies are equal, the size of hidden economy is estimated.

Empirical Investigation

First of all, stationary status of variables was studied. A time series variable is stationary when its mean, variance and covariance are independent from time factor. Dickey-Fuller Unit Root Test and autocorrelation function were used to study stationary status of variables.

ADF (Augmented Dickey-Fuller)statistic (t) is compared with Mackinnon Critical Values for Unit Root Test. If the t value is smaller than the critical value then the variable is stationary. The following table shows the results of unit root test for economic growth variable. Since the value (-3.6890) is less than the critical value it can be concluded that the variable is stationary:

Table 1: Stationary test for economic growth variable

Null Hypothesis: G has a unit root

Exogenous: Constant

Lag Length: 0 (Automatic based on SIC, MAXLAG=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.68903	0.0088
Test critical values:	1% level	-3.63941	
	5% level	-2.95113	
	10% level	-2.6143	

*MacKinnon (1996) one-sided p-values.

The following table shows the summary of the results of Dickey-Fuller test for the model variables. Regarding to the results, economic growth, economic

freedom and population growth rate are stationary and government size variable and oil revenue variables are stationary in first and second orders respectively.

Table 2: Dickey-Fuller Test of variables

Variable	Dickey-Fuller Statistic	Maximum Mackinnon Value	Result
GOE	-3.6394	-0.5953	Non-Stationary
D(GOE)	-3.6463	-5.8434	Stationary
EF	-3.6394	-4.2314	Stationary
NOE	-3.6891	-6.9624	Stationary
OI	-3.6998	3.4948	Non-Stationary
D(OI)	-3.7240	2.9552	Non-Stationary
DD(OI)	-3.7114	-3.8900	Stationary
GWP	-3.6394	-4.2345	Stationary

Limi's Model (2007) was used from among the models on resource curse. In Limi's model the phenomenon of resource curse is studied using an economic growth model. Within the framework of ecological-economic theories, in this model, energy (here oil) is the main factor affecting production and capital is used as the main intermediate factor that needs energy. Limi uses the applied method of Mankiw, Romer, and Weil (1992); Barro and Sala-i-Martin, (1995); Barro (1997) to test the relationship between resource curse and the above variables. The model on the basis of which he commences his analysis is as follows:

$$g = \alpha_\circ + \alpha_1 \theta + \alpha_2 MIN + \alpha_3 TRA + \alpha_4 N + \alpha_5 X$$

Where:

G: Annual increase in GDP

θ: Volume of unofficial or out-of-law economy which, according to Kalinga's definition are those activities which are not included in GDP. For calculating the volume of the out-of-law economy he used the statistics of International Transparency Organization.

MIN: Income of natural resources which is an indicator of accessible resources.

TRA: Economic freedom index

N: Active population growth rate

X: Amount of government's supervision on the economy or the size of government. There are different indicators for government interference. Here the share of government expenditures in GNP has been used as an indicator for measuring government interference in the economy.

In this model economic growth is dependent variable and hidden economy, oil income, economy freedom degree, active population growth rate and the size of government are as dependent variables. Within the framework of Kalinga's resource curse model the following equation was specified and estimated for Iran economy.

$$G = \alpha + \alpha_1.NOE + \alpha_2.OI + \alpha_3.EF + \alpha_4.GWP + \alpha_5.GOE + u$$

G: Economic growth

NOE: Hidden economy

OI: Oil revenue

EF: Economic Freedom

GWP: Labor force growth rate

GOE: Size of government

u: Disturbance term

The model was estimated using ordinary least squares. R^2 of the estimated model is about 64%. That is 64% of changes in economic growth can be explained by hidden economy, population growth rate, size of government, economic freedom and oil revenue. At level of significance of 95%, the F statistic of the model should be over 3.8. The F statistic of the model is 8.42 and the fitted model is totally significant. Durbin–Watson statistic is 1.91 and there is no serial correlation in error term.

$$G = 34.12 - 0.00076NOE + 0.0034OI + 0.0823EF + 0.0013GWP - 0.915GOE$$

(99.2)   (-6.47) (18.59)   (6.22)   (10.94) (-2.67)
R^2=0.64F=8.41

Four hypotheses of were tested by the above equation:

1. Increase of oil revenue has a positive effect on economic growth by providing capital and intermediate equipment and materials needed in production.
2. Increase of hidden economy volume results in decrease of economic growth.
3. Increase of the size of government has a positive effect on economic growth.
4. Increase of active population has positive effect on economic growth.
5. Increase of active population has positive effect on economic growth.

Based on the results the first hypothesis on existence of a significant relationship between oil revenue and economic growth is confirmed. The t statistic of oil revenue variable is estimated 18.59 (more than 1.96); thus, at 95% level of significance there is a positive relationship between oil revenue and economic growth. In other words, one unit of increase in oil revenue causes an increase of 0.0034 units in economic growth. In other words, oil revenue is not a curse for Iran's economy.

The t-statistic of hidden economy volume was estimated -6.47; thus, at 95% significance level the relationship between hidden economy volume and economic growth and the second hypothesis is accepted. The hidden economy variable has negative effect on

economic growth and one unit increase in hidden economy causes a decrease of 0.00076 units in economic growth.

On the basis of the third hypothesis, the expansion of the size of government has a negative effect on economic growth. The t statistic of government size variable is estimated to -2.67. Therefore, at 95% significance level there is a relationship between size of government and economic growth. Also, the results show that the size of government has a negative effect on economic growth that confirms crowding-out effect. One unit increase in size of government decreases economic growth equal to 0.915 units.

The t statistic of economic freedom variable is estimated to be 6.22. At 95% significance level there is a significant relationship between economic freedom and economic growth. Also, economic freedom has a positive effect on economic growth with the estimated coefficient of 0.82.

For the fifth hypothesis, increase of active population shows a significant positive effect on the economic growth as well. T statistic of active population growth rate is estimated to 10.94 and is significant at 95% level. Active population growth rate has a positive effect on economic growth and with the estimated coefficient of 0.0013.

To check autocorrelation and heteroscedasticity we used LM test and White Test. The results of tests show that the estimated equation has no problem of autocorrelation and heteroscedasticity. Normality of residuals were checked by looking at kurtosis, skewness and Jarque-Berastatistics. Regarding the values of kurtosis, skewness and Jarque-Bera (0.39) which are not so high it can be concluded that the null hypothesis of normal residual term is not rejected.
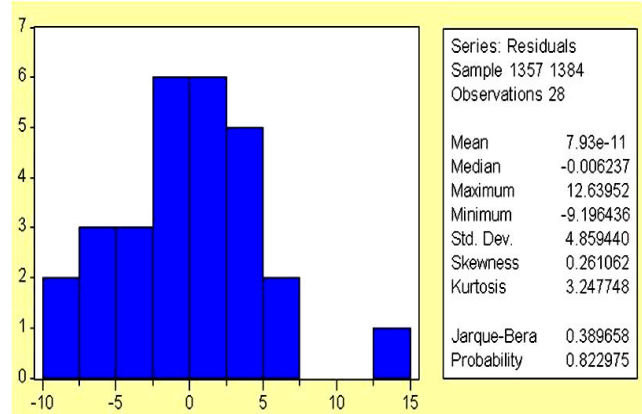

Figure 1: Residual term normal distribution test

CONCLUSION AND DISCUSSION

In order to use oil revenue correctly we need to look at oil as a wealth not as a source for paying current expenses of the government. Along this purpose, we need to turn this natural exhaustive resource to other sustainable and renewable forms of wealth. Oil reserves are limited and not renewable and technological developments can decrease the usages of this natural wealth by increasing the efficacy of machinery and equipment and creating alternatives for oil and through assessed investment on manpower, suitable projects and development of technology. Part of oil revenue spent on current expenses of government should be limited within strict sustainable regulations.

Direct distribution of oil revenue among the people of the society, such as the policy followed in Venezuela and to somehow in Iran (as energy subsidies), or indirect distribution of it through subsidized goods and services or free-of-charge grant to supporters of government, such as the policy run in Iran, result in promotion of anomalous consumption and dependency of the people on governmental alms. This exacerbates oil-oriented and rent-seeking problems and destroys work motivation, wealth production, competition and economic efficacy.

Establishment of Oil Reserve Fund in order to save surplus oil revenue and its use when oil prices fall low in global markets plays a significant role in controlling and managing oil-revenue initiated crises due to oil price fluctuations, and creates economic and political stability and helps correct exploitation of oil revenue. Right use of Oil Reserve Fund should be institutionalized in administrative regulations. For

example, passing suitable laws to parliament can limit withdrawal of the fund only for investment and development infra-structural projects which are economically justifiable. Use of this fund for financing current expenses of government should be illegal except in exceptional predetermined cases.

Management of an oil-oriented development program calls for a powerful and efficient private sector. In oil-producing countries like Iran, the government plays a significant role in establishment and development of private sector. Regard to the risks of rent-seeking structure of the economy, this was resulted in emergence of a government-dependent private sector which is non-competitive and inefficient. In order to prevent this risk, government needs to restricts and abolish pseudo-governmental agencies and fairly support private sector for a definite time and as the private sector were developed, the governmental supports should be deceased.

Private sector and democracy burgeon in a society that enjoys domestic and international stability. Therefore, solving the problems of oil dependence and oil-oriented development requires political stability in domestic and international arenas.

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