Democracy: an opportunity or a threat to Iran's economic structure

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Abstract. The main aim of this study is to evaluate the role of democracy in Iran's economic structure during 1983 to 2012. Iran's economic structure is divided into two oil and non-oil parts and is investigated in the governments of Seyed Ali Khamenei, Ali Akbar Hashemi Rafsanjani, Seyed Mohammad Khatami, and Mahmoud Ahmadinejad. In this context, the government of Mr. Khamenei is selected as the base government and other governments are compared to that. Results of the oil part showed that the government of Mr. Khatami had a better performance in terms of capital, labor and political risk. With regard to oil exports, the two other governments have had the same performance as the base government. Results of the non-oil part showed that the effect of exports on economic growth in the governments of Mr. Hashemi Rafsanjani and Ahmadinejad is like the base government; while it is significantly different from the base government in the government of Mr. Khatami. Labor has had a negative effect in Mr. Hashemi Rafsanjani and Ahmadinejad's governments, while its impact on economic growth is positive in Khatami's government. Political risks had the greatest effect on economic growth in the government of Mr. Ahmadinejad (relative to Mr. Hashemi Rafsanjani and Mr. Khatami's governments).

Keywords. Cabinet changes, Political risks, Oil economy, Non-oil economy.

JEL. G15, G12, F52.

1. Introduction

T oday, belief in democracy and its positive effects on freedom and wealth is common among citizens of different countries (Gründler & Krieger, 2016). The world value survey (2014) covered the preference of the majority of the world's population and found that 79% of the population have the desire to live in a democrat country[1]. Not only this preference is common in countries with a long history of democracy (America 78.8%, Sweden 91.9%), but also it has been prevalent in Islamic (Pakistan 78.3%, Malaysia 86.6%), African (Rwanda 74.1%, Zimbabwe 86.1%), South American (Chile 83.4%, Ecuador 84.2) and Asian (China 80.6%, Korea 86.0%) countries. But the important point is that besides that the majority of citizens all around the world believe that democracy brings about development of living standards, political and economic scientists also cannot disagree over the effects of democracy on economic growth. Gerring *et al.* (2005) concluded that the net effect of democracy on economic growth was negative over

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the past five decades or it didn't have any effect. Recently, some studies have confirmed the positive effect of democracy on the level of income (Acemoglu *et al.,* 2014 and Madsen *et al.,* 2015). In this case, it is said that economic growth in countries with high affinity of destruction or high degrees of political instability is significantly lower (Alesina *et al.,* 1996; Jong-a-Pin, 2009). This is because political instability creates uncertain economic- political environment, increases risk, and reduces investment (Alesina & Perotti, 1995). Political instability also leads to higher inflation as well. Inflation (emanating from political instability) leads to shorter horizons of the government and influences long-term policies of the government to create a better economic performance (Aisen & Veiga, 2006). But other studies have found no positive relationship between them (Murtin & Wacziarg, 2014). In this study, the research hypothesis is existence of a positive relationship between democracy and economic growth. In this regard, there are other sub-hypotheses. The first hypothesis is capital and labor have a positive effect on economic growth. The second hypothesis is that oil and non-oil exports have a positive effect on economic growth.

The present study has three key features that distinguish it from other studies. The first feature is that according to research objectives in other studies, a small number of variables affecting economic growth has been considered (Prochniak, 2011), but this study has entered a comprehensive approximate of 9 variables that have been proved to be the most important factors in economic growth. The second feature is that the present study investigates the structure of economic growth from both oil and non-oil aspects. The third feature is that it is the first study to empirically investigate the effect of political risk and cabinet change on oil and non-oil economic growth.

The study will be continued as follows: the second section reviews literature and the third part presents data, variables, and methodology. Research results are presented in the fourth part and finally, conclusions and policy recommendations are provided.

2. Literature review

Boucekkine *et al.* (2016) examined the change of political regime in resource-dependent economies. They considered a resource-dependent economy that was ruled by the elites. The transition from dictatorial regime to a democratic regime will occur only if the citizens decide to revolt against the elites. The revolution also depends on the level of vulnerability and instability of the dictatorial regime. Their results show that the dictatorial regime is dependent on resources, so that more resources will lead to a shortening of the ruling regime.

Brückner & Gradstein (2015) investigated the effect of countries' national income growth on political risk. The study had two main results. First, income growth, on average, has a negative and significant effect on countries political risk and that the final effect of income growth on political risk is significantly decreasing in countries with different ethnical groups so that higher levels of income growth caused by ethnic differences increase political risk. While, lower levels of economic growth caused by ethnic differences decrease political risk.

Gurgul & Lach (2013) examined the political instability and economic growth in the Central and Eastern European Countries (CEE). Their results indicated the negative impact of political instability (defined as the desire for a change of government) on economic growth. In another study by Aisen & Veiga (2013), the way political instability affects economic growth was studied. To achieve this goal, they used GMM estimator for dynamic linear panel data models. The results of this study suggest that higher degrees of political instability are consistent with lower growth rate of GDP per capita. They found that political instability improperly affects economic growth; so that the reduction of accumulative physical and human capital reduces productivity and ultimately reduces economic growth. The final result is that racial homogeneity is in favor of growth, while democracy may have a small negative effect.

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Jong-a-Pin (2009) used factor analysis to examine the effect of 25 indicators of political instability on the economic growth. The main finding is that a higher degree of political instability will lead to lower economic growth.

Xu & Li (2008) used data from a sample of 104 countries in the period of 1970-2003 and concluded that in the final stages of economic and social development, political freedom has a positive impact on economic growth. They also found evidence to support the idea that economic freedom has greater impact on income convergence in OECD countries and that political freedom encourages convergence.

Some studies have shown that political instability could lead to greater reliance on seigniorage and inflation (Aisen & Veiga, 2006; 2008), reduction of public investment (Darby *et al.,* 2004) and increase in the share of government spending in GDP (Devereux & Wen, 1998). But most studies have focused on the impact of political instability on economic growth, which in total can be divided into four groups. The first group, in the economics literature, argues that economic instability has a negative effect on economic growth, but there is no causality in the opposite direction (Alesina *et al.,* 1996). The other group has confirmed that economic growth leads to political instability, but the reverse is not possible (Borner & Paldam, 1998). Other studies indicate bilateral relationship between political instability and economic growth. Finally, the fourth group confirmed the lack of relationship between these two variables (Campos & Nugent, 2002).

3. Research method

3.1. Methodology

Time series data have been collected from various sources such as the central bank, Management and Planning Organization, the World Bank and International Directory for country risk. All annual data are related to the period of 1983 to 2012 that have been converted on the basis of the natural logarithm.

Given that macroeconomic time series are often non-stationary, using common econometric methods such as using ordinary least squares (OLS) often leads to misinterpretation of results and creation of spurious regression. Unit root test is used to check whether data are stationary or non-stationary. One of the most common unit root tests is Dickey-Fuller test (DF) and Augment Dickey-Fuller test (ADF); however, the results of Augment Dickey-Fuller test (ADF) are more reliable. If the tests show that some or all variables in the model are non-stationary, it does not necessarily mean that the use of these variables in the model leads to the creation of spurious regression, because a non-stationary problem can be solved if the linear combination of non-stationary variables becomes stationary. In this paper, two co-integration tests,commonly used, are used. The two tests are: Augmented Engle-Granger test (AEG) and co-integration Regression Durbin-Watson Test (CRDW).

3.2. Model specification

In this study, variables are selected based on a neoclassical production function that includes variables such as the volume of human capital and government spending. Therefore, neoclassical production function can be written as (Odedokun, 1997; Alodadi & Benhin, 2015):

$$Y=Af(K,L;Z) \tag{1}$$

Where:
Y: is economic growth,
A: is technology,
K: is the volume of capital,
L: is labor, and
Z: is a vector of related variables.

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It should be noted that the bulk of the economy in Iran is based on oil revenues, where oil revenues will be pumped into the economy by the government; according to the oil infrastructure of Iran's economy, Alodadi & Benhin (2015) specified the following neoclassical function:

$$Y=F[(K,L); X,G,R] \tag{2}$$

Where X, G, and R variables represent exports, government spending, and political risk, respectively.

The economy of oil producing countries is generally divided into two oil and non-oil parts. In fact, oil dominates a large part of the economic structure of countries possessing it, which is very different from the non-oil sector. In this regard, equation (2) is rewritten as follows.
• Export (X) is divided into two parts: oil exports (XO), non-oil exports (XN).
• According to studies of Khan & Reinhart (1990), Odedokun (1997), and Alodadi & Benhin (2015), the volume of capital in non-oil sector is divided into two public (PGN) and private (PIN) parts.

To achieve the research objective, two different general models are estimated: 1) oil part and 2) non-oil part. Therefore, equation (2) is extended to equations (3) and (4). It should be noted that in the study period, there have been three changes of regime. The first regime change is delivering government of Mr. Khamenei to Mr. Hashemi Rafsanjani in 1989, which was known as "construction government". The second regime change occurred in 1997 and Mr. Khatami was re-elected in 2001 and became president for 8 years (the reform government). The third regime change happened in 2005 and Mr. Ahmadinejad was re-elected in 2009 and became president for 8 years (justice government). To investigate the power shift and its effects on economic growth, three dummy variable are defined (Clague *et al.,* 1996).

The oil model

$$\ln Y_2 = \alpha_1 + \beta_1 \ln L_O + \beta_2 \ln K_O + \beta_3 \ln X_O + \beta_4 \ln LnR + (\alpha_2 + \beta_5 \ln L_O + \beta_6 \ln K_O + \beta_7 \ln X_O + \beta_8 \ln LnR) d_1 + (\alpha_3 + \beta_9 \ln L_O + \beta_{10} \ln K_O + \beta_{11} \ln X_O + \beta_{12} \ln LnR) d_2 + (\alpha_4 + \beta_{13} \ln L_O + \beta_{14} \ln K_O + \beta_{15} \ln X_O + \beta_{16} \ln LnR) d_3 + \xi \tag{3}$$

The non-oil model:

$$\ln Y_3 = \alpha_0 + \beta_1 \ln L_N + \beta_2 \ln PG_N + \beta_3 \ln PI_N + \beta_4 \ln LnX_N + \beta_5 \ln R + (\alpha_1 + \beta_6 \ln L_N + \beta_7 \ln PG_N + \beta_8 \ln PI_N + \beta_9 \ln LnX_N + \beta_{10} \ln R) d_1 + (\alpha_2 + \beta_{11} \ln L_N + \beta_{12} \ln PG_N + \beta_{13} \ln PI_N + \beta_{14} \ln LnX_N + \beta_{15} \ln R) d_2 + (\alpha_3 + \beta_{16} \ln L_N + \beta_{17} \ln PG_N + \beta_{18} \ln PI_N + \beta_{19} \ln LnX_N + \beta_{20} \ln R) d_3 + \xi \tag{4}$$

Where:
Y_2: is oil sector GDP,
Y_3: is non-oil sector GDP,
X_O and X_N: are variables of oil exports and non-oil exports, respectively,
R: is political risk,
PI_N and PI_G: are private investment and public investment, respectively,
K_O: the volume of oil sector capital,
L_O and L_N: are oil sector labor and non-oil sector labor, respectively,
d_1: is dummy variable related to the government of Mr. Hashemi Rafsanjani,
d_2: is dummy variable related to the government of Mr. Khatami, and
d_3: is dummy variable related to the government of Mr. Ahmadinejad.

4. Results
4.1. Unit root test
Before estimating models, it is necessary to evaluate the stationary order of variables. The results indicated that all variables other than oil sector capital

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volume (K_O) are non-stationary. Therefore, all the other variables are once differentiated and stationary test is carried out again. The results indicated that all variables are stationary in their first difference. Therefore, it is necessary to ensure that co-integration relationship is existed between variables; therefore, co-integration method is used.

4.2. Estimation of oil and non-oil sectors' models

The period of 1983 to 1989 is considered as the base government and changes of next governments are compared to the base government. It should be noted that (3) and (4) estimating equations are from general to specific.
The results of estimating oil sector model are shown in the below table.

Table 1. *The Base Government and the Effect of Dummy Variables on This Government in Oil Structure*

Independent variable	Base government	Effect of construction government	Effect of reform government	Effect of justice government
Capital volume	1.74 (.00)	-	2.35 (.00)	2.13 (.00)
Labor	1.86 (.00)	-	2.38 (.00)	-1.16 (.00)
Exports	.27 (.00)	-	-	-
Political risk	1.62 (.00)	-1.53 (.00)	-1.87 (.00)	-1.75 (.00)
	D-W: 1.76		R^2: .99	

Note: Figures in parentheses show p-value.

To analyze the results of the study, it should be noted that there is no general and public theory about the effect of political risk on production; therefore, issues presented in this regard are all experimental. Lack of democracy (unchanged cabinet) or the existence of an acceptable level of democracy (constant change of cabinet) are both part of the political risk; hence, they should be used simultaneously in the analysis (Erb *et al.,* 1996). Research hypotheses acknowledged the positive relationship between democracy and capital, labor and exports. Based on the results, hypotheses are all rejected and the ambiguous relationship between these factors is confirmed.

Base government: All variables have the expected signs and are significant; labor has a dominant effect[2] as compared to other variables.

Fifth and sixth governments (construction government): During this period, the variables of capital volume, labor and the export have followed the general model; in other words, reconstruction has not taken place in these variables. But it is different in the case of political risk. During this period, political risk has experienced a reduction of 1.53 in the general model. In other words, the overall effect of political risk in this period is equal to .09 (1.62-1.53=.09).

Seventh and eighth governments (reform government): in this period, just the variable of export has not undergone reconstruction. The coefficient of variables of capital volume and labor had an increase of about 2.35 and 2.38 as compared to base government and became 4.09 and 4.24, respectively. The effect of risk also is -.25 (1.62-1.87=-.25). In this period, labor does not have dominant effect on economic growth in oil sector.

Ninth and tenth governments (justice government): In this period, like previous governments, the variable pf export has not undergone structural changes. The coefficient of the variable of capital volume increases by 2.13 as compared to the base government and becomes 3.87 (1.74+2.13=3.87). Dummy coefficient of the labor variable has a different effect as compared to previous governments. The negative coefficient means the reduction of the impact of labor on economic growth compared to the base model in this period. The coefficient of this variable is equal to .7 (1.86-1.16=.7). The overall effect of the variable of risk is equal to -.13 (1.62-1.75=-.13).

The above results suggest that the reform government has performed better than other governments in terms of capital volume and labor in the oil sector.

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Governments under study had a similar performance as the base government in terms of oil exports and no specific transformations have occurred. The reason is that, on the one hand, Iran's quota in OPEC is constant and, on the other hand, during these periods, the amount of oil exported by Iran has had almost a constant growth, which didn't necessarily led to certain developments in oil exports (it should be noted that in this context, the amount of exported oil is considered, not oil revenues).

Greater political risk coefficient means greater effectiveness of this variable on economic growth. However, the operation of these governments should be considered in the interpretation of political risk coefficients. For example, president of the seventh and eighth governments proposed issues such as dialogue among civilizations and thereby tried to détente and reduce political risk, in the its behavioral pattern (this government is also famous for political development); the results of this estimation also confirmed this issue. Since the absolute value of political risk coefficient is greater, in this period, than the other two periods; it can be concluded that the reform government was able to reduce political risk and thus, had the most significant effect on economic growth in its oil sector. The coefficient of political risk in the justice government is in the second place. Political behavior pattern of this government is in the contrary with the reform government; therefore, it can be concluded that the justice government has reduced economic growth of oil sector by increasing the political risk of that period.

The results of estimated model of non-oil sector are presented below.

Table 2. *The Base Government and the Effect of Dummy Variables on This Government in Non-Oil Structure*

Independent variable	Base government	Effect of construction government	Effect of reform government	Effect of justice government
Exports	-	-	5.61 (.00)	-
Political risk	-7.04 (.00)	6.98 (.00)	11.08 (.00)	14.18 (.03)
Private investment	1.15 (.00)	3.39 (.00)	-	-
Public investment	2.71 (.00)	1.53 (.00)	-	-
D-W: 2.74		R^2: .95		

Note: Figures in parentheses show p-value.

As the results of table (2) show, the impact of political risk on production in the oil sector is different from non-oil sector, and it is even in opposition to it. At first, these results may be disputed, but it should be noted that many researchers have evaluated the effects of the cabinet change and political risk on economic growth or production and have found contradictory results; therefore, they concluded that a general rule cannot be followed in this case. The impact of these factors may vary, depending on the social situation or even in different industries (Lehkonen & Heimonen, 2015; Tavares & Wacziarg, 2001; Acemoglu *et al.,* 2008; Docouliagos & Ulubasoglu, 2008; Rodrik & Wacziarg, 2005; Mobarak, 2006). The results of this study also confirmed this point.

Base government: the variable of non-oil exports does not have the expected sign. Labor has dominant effect over other variables. Investment has the expected sign in both sectors and has increased production; the important point is the reverse effect of political risk on production in non-oil sector, which was positive in oil sector.

Construction government: the impact of exports on economic growth is rejected in this period. Compared with the base model, the impact of the variable of labor is reduced, but it still has a positive effect on economic growth (30.02-29.80=.22). The positive sign of the dummy coefficients of public and private investment shows the positive effects of these two variables on economic growth. With regard to political risk, the same sign as the base government is observed.

Reform government: In this period, exports have a prominent role compared with other governments. In this period, export affects economic growth but the effect of this variable is rejected in other governments. Given that the coefficient of

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the variable of labor is greater than other coefficients, it can be said that it plays a dominant role compared with other coefficients (32.02+12.66=42.68). Variables of public and private investment had the same performance as the base government. With regard to political risk, results indicated that it is positive in non-oil sector and is negative in oil sector (contrary to the base and construction governments).

Justice government: In this period, the effect of private investment, public investment, and exports on economic growth was similar to the base pattern. But the effect of variables of labor and political risk is significant in this period. Compared with the base model, the impact of the variable of labor is reduced, but it still has a positive effect on economic growth (30.02-20.90=9.12). Effect of political risk is significant and positive, as the reform government, and a similar analysis as the previous government can be considered.

4.3. Engle-Granger co-integration test

Conducting ADF test on residuals (in both oil and non-oil sectors) showed that the error component of both models is stationary. Therefore, Engle-Granger co-integration test confirms that both patterns are co-integrated and there is a long-term relationship between the specified variables; therefore, the traditional regression method can be used for non-stationary time series data. Durbin-Watson statistic is greater than .511 in both models, which means that CRDW test confirms the results of Engle-Granger co-integration test.

5. Conclusion and political recommendations

People's vote for the cabinet change allows better structures such as the protection of private property and better law enforcement (opportunity). The continuous change of government puts stability of politics at risk (threat). In other words, countries with greater democracy have greater ability to adapt to the political and economic environment. Semi-democratic countries can support the effects of democracy, but suffer from the negative effects of stability. However, in general it can be said that the effects of democracy on economic growth are not the same.

The results of this study also indicated that the effects are different in oil and non-oil sectors. In different governments, political risk increases and decreases the production of oil and non-oil sector. The significant and important point of these results is that political risk is in line with long-term decisions. In fact, if the government adopts long-term decisions for economic development, the relationship between political risk and oil production is reversed; but the relationship between political risk and non-oil production is initially negative and then positive, which is reminder of U-shaped curve (Lehkonen & Heimonen, 2015). Based on the obtained results, the government is suggested to try to make budget independent of oil resources in its future plans so that the effect of political risk on its decisions is reduced. It is also suggested to focus more on non-oil production and attract foreign direct investment. In fact, foreign direct investment is a resource that most countries have tried to attract it towards their country in recent years. Iran, as a developing country, can use long-term plans to improve its productions through reduction of political risk, attraction of more capital, and prevention of capital flight.

Notes

[1] See question V140 of the World Value Survey's 6th Wave, conducted between 2010 and 2014: "How important is it for you to live in a country that is governed democratically? On this scale where 1 means it is not at all important and 10 means absolutely important what position would you choose?" The above numbers refer to all respondents that respond to the question with a value of 7 or higher.

[2] Alodadi & Benhin (2015) government that dominant effect refers to the effect of a variable with the greatest coefficient in terms of its absolute value than other variables.

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