THE RELATIONSHIP BETWEEN DEMOCRACY AND ECONOMIC GROWTH IN MUSLIM MENA COUNTRIES (SPATIAL ECONOMETRIC APPROACH)

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Abstract: *Impact of democracy and governance on the economic growth and development has always been a matter of conflict among researchers. In this research, by using data of 18 Muslim countries of MENA region during 2008-2014 by spatial econometric approach, impact of democracy on the economic growth is studied by democeracy index. The results show that democracy in the surveyed region has had a negative impact on the economic growth. The results of spatial panel data model indicate that there is a spatial relationship between the economic growth of MENA region countries and physical capital has also a spatial spillover effect.*

Key words: Democracy, Economic growth, Spatial econometrics

Jel classification: P26, 047, R11

1 – Introduction

The relationship between democracy and economic growth has always been a matter of conflict in recent decades. By studying different countries the impact of democracy on economic growth has known as a useless relation and the relationship is still vague (Doucouliagos and Ali Ulubasoglu 2008). Studies in different countries have shown different results. Despite causality between democracy and economic growth, evaluation of this relationship has considerable importance. This question is examined to see whether political right development is one of the affecting factors on policy making (Travers and Wacziarg, 2000). However, some believe that democracy and economic growth are complement of each other and act to strengthen each other and also there is a strong solidarity between democracy and growth (Uslu, 2012). Political and economic freedom, political stability and predictability

of economic policies provide growth and development of economic promotion (Heidari, Alinejad and Jahangirzadeh, 2013). Some others believe that democracy has a negative or neutral impact on economic growth. In this viewpoint, despite acceptance of indirect positive impacts of democracy like higher stability property rights on economic growth, there is a belief that results of econometric research indicates that negative effects are adjusted by positive or neutral impacts (Gerring, Bond, Barndt and Moreno, 2005). There are many disputes on this matter that which one of growth and democracy concepts will cause each other `s creation. So, to investigate this issue there is at least five theoretical models (CHEN, 2007): the first viewpoint belongs to modernizations who precedence economic growth over democracy and its factor. (Lipset, 1959) The second approach is from Samuel Huntington who looks at this subject as a process. He believes that economic development output will cause corruption, so political system will move to post institution building democracy. (Huntington, 1968) The third viewpoint on contrary to modernizations, by evaluation of China believes that economic development will not lead to democracy, because authoritarian regimes with autocratic governance plan to show people that it is possible to benefit from economic development without political liberalization (Mesquita & Downs, 2005). The forth viewpoint is on this basis that democratic systems have better economic and social welfare indicators than undemocratic systems, so democracy is prior to development in developing countries. (Siegle, Einstein & Halperin, 2004) Although the fifth viewpoint believes that policy effects economic performance, but the impact of political regimes` type on economic growth is not significant (Przeworski and Limongi, 1993; Przeworski, Alvarez 1950, Cheibub, and Limongi, 2000). In this study, our assumption is on this basis that democracy impacts on economic growth is important. In this study, the effect of democracy index on economic growth is evaluated by using data panel of MENA region member Muslim countries. As surveyed countries are located in the same geographical region and probability of proximity effect exists, spatial econometric models are used to allow us to evaluate the effect of proximity. This study consists of six parts: in the first part introduction of report is presented. In the second part subject literature and in the following sections methodology and data will be examined. In the fifth part of paper experimental results obtained from modeling will be submitted. In the sixth part of paper summary and conclusion will come.

2- Literature

By analyzing countries` data in 1987- 2002 via GMM, the relationship between democracy and per capita income is evaluated. According to their conclusion, square of democracy effects economic growth. This means that at lower levels of democracy, economic growth will rise first, then after it wanes after reaching the maximum point.

Libman 2011 , by studying the areas controlled by Russian federation in 2000 – 2004 , it is concluded that areas with high levels of democracy which are similar to autocratic governments have better economic performance than combined governments. (Democratic and autocratic)

Doucouliagos and Ulubasoglu (2008) in their study conclude that a definite conclusion about democracy effect on economic growth can not be reachable. Although they believe that by indirect effect of democracy on human capital improvement, less inflation, reduction of political instability and creation of more economic freedom, economic growth will be pushed up further, but democracy does not have direct impact on the economic growth.

DRURY, KRIECKHAUS and LUSZTIG (2006) evaluated the effect of corruption and democracy on economic growth in more than a hundred countries in 1982-1997 period. According to the authors while democracy has indirect effect on economic growth but corruption has negative and direct effect on growth. One of the indirect benefits of democracy is ability of decreasing the final effect of corruption on economic growth. It does not mean that there is no corruption in democratic countries, but politician's electoral mechanism prevents them from engaging in corruption to avoid jeopardizing their political life. It will cause better economic performance. Mobarak (2005) has evaluated the effects of economy and democracy fluctuations on economic growth. He concludes that democracy and pluralism will decrease fluctuation and reduction of fluctuation will increase growth. The writer believes that in lack of clear comprehensive consensus relationship between democracy-growth, a strong relationship between democracy and stability is proven.

Heo and Tan (2001) by evaluating 14 developing countries, causality relationship between democracy and economic growth is examined by Granger causality. The results of this study suggest that as economic growth impacts democracy, democracy is also affected by economic growth.

Robinson (2006) who has done many studies on the relationship between economic growth and democracy, in this article concludes that there is a correlation between per capita income and democracy because they are similar factors in a society that simultaneously determine how successful and democratic is a community. But nonetheless he believes that many studies should be done in this regard.

KRIECKHAUS (2006) believes that a region which has democracy is very important. In his article he points that in places like Latin America where there are a lot chirping noise by different groups about redistribution of wealth, usually democracy has become a populism with poor economic performance. This happens for those countries where the political elites are committed to advancing country industrialization either. He believes that democratic pressure may become an obstacle for efficient economic performance. In this regard some Asian countries have had such experiences. On the other hand, in countries such as those who are sub-Saharian line in Africa that have chronic patrimonialism, democracy creates a useful system that can send corrupted politicians out of political scene and facilitate economic growth. By sensitive analysis in different regions of the world, the writer proves his claim.

Abeyasinghe (2004) by examining the developing countries he found that democracy has a negative impact on economic growth but considered political stability as a positive impact.

Rivera – Batiz (200) evaluation of the effect of democracy on long term economic growth is done by improving the quality of government. He believes that stronger democratic institutions will prevent corruption and consequently will cause stimulation of technological change and economic growth. In this paper, democracy is know as an influencing factor on total production factor of productivity growth.

PLUMPER and MARTIN (2002) believe in the existence of a reverse U form relationship between democracy and economic growth. They prove three hypotheses in their study: 1- existence of a no-linear relationship in reversed U form between democracy and per capita income levels. 2-further effects of government expenditures on economic growth at higher levels of democracy. 3-existence of U form relationship between levels of democracy and government expenditures share of GDP.

They believe that government in low levels of democracy use rent for their survival. But by rising democracy in the country, rent will become a costly mean and the state will use costly means of public goods to increase their chance of survival.

3- Methodology and data

3-1- spatial econometric model

Anselin (1988) states that common econometric based on Gaussian-Markov assumption is not appropriate for regional studies. Because in regional data there is two subject of spatial dependence between observation and spatial heterogeneity of relations between model parameters that ignores common econometric of these two disruptive assumption of Gauss-Markov.

Based on Gauss – Markov theorem, regression sample data is as follows:

$$Y = X\beta + \varepsilon \qquad (1)$$

Y= dependent variable

X = independent variable vector

β= regression estimated coefficients

Based on Gauss – Markov assumptions, by moving among observations Y will have fixed values. And covariance between observations will be zero. This is despite the fact that for sample data with spatial dependence such phenomenon will not happen.

3-1-1- spatial dependence and spatial heterogeneity

When some observations are related to a place like i. And this observation is dependent to other place observation like j. (i≠j), then spatial dependence is created. Spatial heterogeneity refers to deviation in relationship between observations in different geographical areas. Despite such relation, Gauss – Markov assumption about stability of mean and sample distribution variance is breached. (Lesage, 1999)

3-1-2- locating in spatial models

In this regard two information sources of coordinate position and proximity can be considered which are in researchers` hand. Position in coordinate page can be measured by measuring the distance of each geographical point from other points or fixed or central observation can evaluate geographical dependence.

Proximity can also reflect the relative position of a regional observation unit to the other units. In this study, the method of spatial proximity and adjacency matrix of MENA region member Muslim countries is used.

3-1-3- Spatial Panel Models

General expression of spatial panel models is as follows:

$$Y_i = \tau Y_{i,t-1} + \rho W Y_{i,t} + X_{i,t}\beta + DX_{i,t}\theta + \alpha_i + \gamma_t + \nu_{i,t} \qquad (2)$$

$$\nu_{i,t} = \lambda E \nu_{i,t} + u_{i,t} \qquad\qquad u_{i,t} \approx N(0,\sigma^2 I_n) \qquad (3)$$

where I, cross, t, time, Y n* vector of dependent variable, X K vector n* of explanatory variables, W spatial weight matrix n* n dependent variable, D spatial weight matrix of independent variable, E spatial weight matrix of residuals, □i, fixed or random effects, Yt, effects of time, are considered.

Given the sircumstances, following spatial models are studied:

1- Spatial Autoregressive Model (SAM)

$$Y_i = \tau Y_{i,t-1} + \rho W Y_{i,t} + X_{i,t}\beta + \alpha_i + \gamma_t + u_{i,t} \qquad (4)$$

2 – Spatial Durbin Model (SDM)

$$Y_i = \tau Y_{i,t-1} + \rho W Y_{i,t} + X_{i,t}\beta + DX_{i,t}\theta + \alpha_i + \gamma_t + u_{i,t} \qquad (5)$$

3- Spatial Error Model (SEM)

$$Y_i = X_{i,t}\beta + \alpha_i + \gamma_t + \nu_{i,t} \qquad (6)$$

4 – Spatial Autocorrelation Model (SAC)

$$Y_i = \tau Y_{i,t-1} + \rho W Y_{i,t} + X_{i,t}\beta + \alpha_i + \gamma_t + \nu_{i,t} \qquad (7)$$

5- Generalized Spatial Panel Random Effects model(GSPRE)

$$Y_i = X_{i,t}\beta + \alpha_i + \gamma_t + \nu_{i,t} \quad , \quad \alpha_i = \emptyset W\alpha_i + u_i \qquad (8)$$

In this study SAR, SAC, SEM and SDM models have been used according to appropriate results which are related to theoretical and statistic expectations.

2-3- Data

In this study, study of Ahmad and Qureshi (2012) is modeled by using following variables for 81 MENA region member countries in 2008 – 2014 period:

A) Output per work force (Yit): This ratio is reached by dividing of countries revenue to current prices of work force in each country. This variable is entered into model in logarithmic form.

B) Per capita capital formation (Kit): This ratio is reached by dividing the capital formation in each country t workforce. This variable is entered into model in logarithmic form.

C) Democracy index (diit): Democracy index is reached out by five indicators as selection mode and pluralism, government performance, political participation, political culture and civil liberties that is published by Economist magazine for all countries every year. According to this index, countries are divided into four classifications: full democracy (point:8-10) fragile democracy (point: 6 – 8), the intermediate (point:4 – 6) and tyranny (point:2 – 4) Maximum score of this index is 10.

D) Trade openness (troit): this index is reached by dividing te sum of imports and exports of each country t its GDP and indicates trade openness in each country` s economy.

E) Government expenditure (govexpit): this index shows government annual expenditures. This variable is entered into model in logarithmic form.

F) Human capital index (Leit): according to the fact that in growth models human capital factor is known as an effective one, in this utilized model life expectancy index proxy is used as a human capital explanatory variable, above mentioned factor is entered into model.

Table 1 – Descriptive statistics of used variables by 81 MENA region member countries.

	variable	mean	medium	max	min	sd	source
Dependent variable	Inyit	9.94	9.87	11.8	8.22	0.95	www.sesric.org
independent variables	Kit	8.57	8.69	10.76	6.27	1.01	www.sesric.org
	Indiit	1.19	1.23	1.84	0.57	0.28	www.eiu.com
	troit	0.91	0.92	1.78	0.39	0.28	www.sesric.org
	Ingovexpi	23.25	23.55	26.01	19.21	1.31	www.sesric.org
	Leit	72.69	59.3	80	74.25	72.69	Hdr.undp.org

4- Specifying model and experimental results:

The aim of this study is to explain the effects of democracy on economic growth. We use Cobb-Douglas standard production function model with constant returns to scale as Qureshi and Ahmad (2012) study.

$$Y_{it} = A_{it}K_{it}^{\alpha}L^{\beta}\ H^{\delta} \qquad\qquad (10)$$

Y= GDP in Current Prices

A= Total Factors of Productivity (TFP)

K= Physical Capital

L = Labor

H= Human Capital

$\delta \cdot \beta \cdot \alpha = \Box$ Elasticity of Production

i=Cross Section

t= Time Period

Now by dividing both sides to labor, variable will be per capita:

$$\frac{Y_{it}}{L_{it}} = A_{it} \left(\frac{K_{it}}{L_{it}}\right)^{\theta} \left(\frac{H_{it}}{L_{it}}\right)^{\tau} \tag{11}$$

$$y_{it} = A_{it} k_{it}^{\theta} (h_{it})^{\tau} \tag{12}$$

By taking logarithm of both sides of equation (120, equation (13) will be obtained:

$$\ln y_{it} = \ln A_{it} + \theta \ln k_{it} + \tau \ln h_{it} \tag{13}$$

$$\log y_{it} = \Phi + \theta \ln k_{it} + \tau \ln h_{it} \tag{14}$$

Equation (14) shows that economic growth is a function of physical and human capital. According to equation (14) our spatial general model will be written as below:

$$\ln y_{it} = \beta_0 + \beta_1 \ln k_{it} + \beta_2 \ln di_{it} + \beta_3 \ln tro_{it} + \beta_4 \ln govexp_{it} + \beta_5 \ln hc_{it} + \beta_6 \sum_t w * \ln y_{it} + \beta_7 \sum_t w * \ln k_{it} + \eta_i + u_{it} \tag{15}$$

$$u_{it} = \lambda \sum_t w * u_{it} + \varepsilon_{it} \tag{16}$$

In general situation of spatial lag existence, above equation is considered as distributing U and explanatory variable.

β and λ are model estimated coefficients, w is matrix of standard proximity and η is periodic fixed effects of imperceptible points.

It is included in U model and if the estimation is by SEM model, it is included in ε. The reason for taking a break room for explanatory variable capital per capita is that mobility of capital production factors and workforce and its overflow into the contiguous countries is possible and it can play a role in their production and development levels but for other explanatory variables such an impact is less expected.

In table (2) all estimated results are presented by using two Stage Least Squares method. It should be noted that in order to perform calculations designed toolbox in MATLAB software- Alvarez Zofio and Barbero (2013) - is applied. In table (2) results of six spatial econometric model is presented by using panel data.

Table 2 – results of model estimation

	Model	Dependent variable: **Inyit**					
		Model1	Model2	Model3	Model4	Model5	Model6
		SAR	SEM	SAC	Durbin SAR	Durbin SEM	Durbin SAC
Independent Variables	In (k)	0.11** (0.05)	0.08* (0.05)	0.11** (0.05)	0.15** (0.05)	0.09 (0.05)	0.15 (0.05)
	In (di)	-0.13* (0.05)	-0.16* (0.09)	-0.13* (0.07)	-0.17** (0.08)	-0.17** (0.09)	-0.16* (0.09)
	Tro	-0.22 (0.16)	-0.30* (0.17)	0.22 (0.015)	0.12 (0.17)	-0.25 (0.18)	0.12 (0.16)
	In(gexp)	0.32*** (0.06)	0.42** (0.06)	0.32*** (0.06)	0.29*** (0.07)	0.39*** (0.07)	0.28*** (0.06)
	Le	-0.01*	-0.01*	-0.01*	-0.01*	-0.01*	-0.01*
	Spatial lagged in(y)	0.53** (0.24)	---	0.56** (0.23)	0.44* (0.23)	---	0.45** (0.22)
	Spatial lagged in (k)	---	---	---	-0.22* (0.11)	-0.12 (0.13)	-0.22* (0.11)
	Spatial lagged u	---	0.45***	0.045** (0.11)	0.005 (0.12)	---	0.41*** (0.12)
	Observation	126	126	126	126	126	126
	R^2	0.45	0.19	0.44	0.42	0.15	0.44
	χ2 Wald	62.43***	63.87***	67.23***	65.74***	64.13***	72.11***
	F (poolability)	64.54***	158.19***	75.86***	80.30***	154.32***	181.84
	χ2 (hausman)	---	31.97***	---	---	31.97***	---
	cross section effects	fixed	fixed	fixed	fixed	fixed	fixed
	χ2 (bsjk)	148.79***	148.79***	148.79***	148.79***	148.79***	148.79***

Source: Author's calculations. *, ** and ***respectively represent significance at 10%, 5% and 1%.

In table (2) all estimation results are presented by using two stage least square method. In all investigated models capital per capita variable has positive and significant impact oncountries per capita income. In all models test results of Baltagi, Song, Jung & Kohs (2007) show a spatial autocorrelation in the model. This means that there is spatial correlation and local proximity effects between MENA region countries. Trade openness variable (tro) (only in spatial error models) is significant and has negative effect. In all other models this variable is not significant but has negative ratio.

Government expenditure variables in all six models has significant and positive effects on countries economic growth. This confirms that considering the fact that government administration in most evaluated region countries is high, yet governmental expenditures is one of the main effective factors on economic growth.

In (4) and (6) models effects of capital variable overflow to neighboring countries is significant, e.g. it has spatial effect. Using Hausman test in all evaluating models, appropriate model is of fixed effects.

Significance of Wald test in all studied models suggests a link between considered explanatory variables with dependent variables.

In (1), (3), (4) and (6) models dependent spatial lagged variable is positive and significant which suggest the positive effect of one country`s development on neighbor country` s development. For example, in accordance with (1) and (3) models, 1 % increasee in real production of each country, will cause %0.53 growth in production of its contiguous country. It shows the importance of neighboring and proximity to developed countries by spatial econometric models.

In SEM models – (2) and (5), spatial error ratio is significant which indicates proximity effects between MENA region member countries.

The aim of this article is evaluation of democracy existence on economic growth. In all evaluated models economic growth has significant but negative impact on economic growth. By using democracy index variable in all models it can be clearly seen that democracy has negative effect on economic growth. The results of evaluated models support a viewpoint that believes economic development will not lead to democracy. (Mesquita and Downs 2005)

Study of countries shows mean democracy index of 3.45 which indicates majority of surveyed countries are amongst authoritarian governments. But the remarkable point is that

the majority of countries are located in oil-rich region of middle – east that makes considerable revenues for them but at the same time they are not enjoying from a proper democracy index.

Therefore, the specific prevailing conditions of region countries econmy shows that being a democratic country has negative impact on their economic growth.

4- Summary and conclusion

In present study in order to evaluate the effect of democratic government on economic growth and development of countries, related indices in 81 MENA region member countries in 2008-2014 were studied. By studying subject literature it was quite clear that there are different theories about causal relationships between democracy and economic growth. Some studies concluded positive relation, some negative and some neutral relation between democracy and economic growth.

In this study by evaluation of various studies in this area and by using spatial econometric models, the model is estimated. According to the results obtained from estimated models, democracy index has significant but negative effect on economic growth of studied countries. On the other hand by using spatial econometric model this point is visible that economic growth of each country affects its contigious country and on the other hand there is capital over flow between neighbor countries that overflow of capital is also a significant factor on economic growth of neighboring countries.

Finally it is concluded that in MENA region member countries mainly having lower levels of democracy index, the effect of democracy index on economic growth is negative. The reason is in existence of oil exporting governments in the region. Governments enjoying from full income of oil purchasing, feel needless of democratic interactions with their people and rely on foreign incomes. In non-oil exporting countries governments have to collect taxes to secure the expenditures, so they have to interact with their people in more democratic ways. But in oil – rich countries economic growth is mainly based on oil revenue, so the governors are largely exempt to pay attention to their people.

So dependence on foreign income can be one of the main factors of low democracy index in these countries. Therefore democracy has negative results for economic growth of these countries.

References

1. Abeyasinghe, R. (2004). Democracy, Political Stability, and Developing Country Growth: Theory and Evidence. Democracy, Political Stability, and Developing Country Growth, 1.

2. Álvarez, Inmaculada C., Barbero, Javier and Zofío, José Luis (2013), A Panel Data Toolbox for Matlab, Working Papers in Economic Theory 2013/5, Department of Economics, Universidad Autónoma de Madrid, Spain.

3. Anselin L (1988). Spatial Econometrics: Methods and Models. Kluwer Academic Publisher,

4. Dordrecht.Bueno de Mesquita, B., & Downs, G. W. (2005). Development and democracy. Foreign Aff., 84, 77

5. Baltagi BH, Song SH, Jung BC, Koh W (2007). Testing for serial correlation, spatial auto-correlation and random effects using panel data." Journal of Econometrics, 140(1), 5 -51.Analysis of spatially dependent data.

6. Doucouliagos, H., & Ulubaşoğlu, M. A. (2008). Democracy and economic growth: a meta-analysis. American Journal of Political Science, 52(1), 61-83.

7. Drury, A. C., Krieckhaus, J., & Lusztig, M. (2006). Corruption, democracy, and economic growth. International Political Science Review, 27(2), 121-136.

8. Elhorst P. (2010). Spatial Panel Data Models. Handbook of applied spatial analysis. Edited by Fisher, M.M., Getis, A.

9. Elhorst, J. P. (2012). Matlab software for spatial panels. International Regional Science Review, 0160017612452429.

10. Gerring, J., Bond, P., Barndt, W. T., & Moreno, C. (2005). Democracy and economic growth: A historical perspective. World Politics, 57(03), 323-364.

11. Gohar Qureshi, M., & Ahmed, E. (2012). The Inter-linkages between Democracy and Per Capita GDP Growth: A Cross Country Analysis (No. 2012: 85). Pakistan Institute of Development Economics.

12. Hen, L. C. E. (2007, January). Development first, democracy later? Or democracy first, development later? The controversy over development and democracy. In The annual meeting of the Southern Political Science Association, New Orleans (Vol. 16).

13. Heo, U., & Tan, A. C. (2001). Democracy and economic growth: A causal analysis. Comparative Politics, 463-473.

14. Krieckhaus, J. (2006). Democracy and economic growth: how regional context influences regime effects. British Journal of Political Science, 36(02), 317-340.

15. Lesage, James P. (1999). The Theory and Practice of Spatial Econometrics. Department of Economics, University of Toledo.

16. Lesage, James P. (1999). The Theory and Practice of Spatial Econometrics. Department of Economics, University of Toledo.

17. Libman, A. (2012). Democracy, size of bureaucracy, and economic growth: evidence from Russian regions. Empirical Economics, 43(3), 1321-1352.

18. Limongi, F., & Przeworski, A. (1993). Political regimes and economic growth. Journal of Economic Perspectives, 7(3), 51-69.

19. Mattli, W., & Plümper, T. (2002). The demand-side politics of EU enlargement: democracy and the application for EU membership. Journal of European Public Policy, 9(4), 550-574.

20. Mobarak, A. M. (2005). Democracy, volatility, and economic development. Review of Economics and Statistics, 87(2), 348-361.

21. Przeworski, A., & Alvarez, M. E. (1950). Jose Antonio Cheibub, and Fernando Limongi. 2000. Democracy and development: political institutions and well-being in the World, 1950-1990.

22. Rivera Batiz, F. L. (2002). Democracy, governance, and economic growth: theory and evidence. Review of Development Economics, 6(2), 225-247.

23. Robinson, J. A. (2006). Economic development and democracy. Annu. Rev. Polit. Sci., 9, 503-527.

24. Siegle, J. T., Weinstein, M. M., & Halperin, M. H. (2004). Why democracies excel. FOREIGN AFFAIRS-NEW YORK-, 83(5), 57-71.

25. Tavares, J., & Wacziarg, R. (2001). How democracy affects growth. European Economic Review, 45(8), 1341-1378.

26. Uslu, H. (2012). Democracy and Economic Growth (Doctoral dissertation, Auburn University).