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Relationship between democracy and economic growth: A panel data analysis

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This study examined whether there was a relationship between the level of democracy and economic growth. For this purpose, the study took into account developed countries, also developing and some of the Eastern European countries and panel data analysis has been used to observe the relationship. Austria, Belgium, Denmark, France, Italia, Holland and the United States were selected as representative of developed countries. This study considered Argentina, Chile, Egypt, Greece, India and Turkey as developing countries. Also, some of the Eastern European countries which experienced communist regime such as Albania, Bulgaria and Check Republic, Estonia and Romania have been accounted and evaluated in the developing countries category. The results suggested that the level of democracy did not affect economic growth for developed countries, yet the level of democracy negatively affected economic growth of some of the Eastern European countries.

Key words: Panel data, democracy, communist experience, economic growth, polity 2 index.

INTRODUCTION

Wikipedia (the free encyclopedia) defines democracy as a form of government in which all citizens have an equal say in the decisions which affect their lives. Ideally, this includes equal (more or less direct) participation in the proposal, development and passage of legislation into law. It can also encompass social, economic and cultural conditions that enable the free and equal practice of political self-determination. Recent movements which have started from Egypt and then have affected Libya and Syria show that today, the idea of democracy is universally popular and dictators appear to believe that an indispensable ingredient for their legitimacy is to get democracy. Democracy is still unfinished agenda in politics. In this study, we aim to test the effect of the type of regime on economic growth. For this purpose, some specific countries from developed, developing, and

Eastern European countries, which experienced communist experience, have been chosen to observe the effect of democracy on their economic growth. Thus, the literature which is related to democracy and economic growth should be summarized. Olson (1993) argues that democracy provides security of property and contract rights, but an autocrat is not able to commit him credibly. He claims that autocracies will rarely have a good economic performance for more than a generation. Clague et al. (1996) point out that democracy is better to protect property rights and it provides more incentive to investment. Thus, it can be inferred that democracy determines economic well-being.

On the other hand. Gerring et al. (2005) state that the predominant view about the causal relationship between democracy and economic growth is that democracy has either a negative effect on Gross domestic product (GDP) growth or no overall effect. According to Gerring et al. (2005), countries with authoritarian political systems are predicted to grow as rapidly as democracies, perhaps even faster. It may be asserted that democracy may have some positive indirect effects, for example, greater stability or more extensive property rights. But, Gerring et

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al. (2005) suggest that these positives are balanced by negatives such that the net effect of democracy on growth performance cross-nationally over the last five decades is negative or null. In the literature, there is a discussion about mutual relationship between political regimes and economic development. Some of the authors claim that there is an association between the level of democracy and economic growth, but the direction of this relationship is not from democracy to economic growth. For example, Persson and Tabellini (2006) state that richer countries are generally demo-cratic and there is no any evidence that democratizations yield subsequent economic growth is quite weak. Persson and Tabellini argue that political regimes may still influence economic development, but the effects appear difficult to identify from the within-country variation. They consider the concept of democracy as a blunt. They certainly agree that stable and persistent democracy has a stronger effect on development than democracy perse. Helliwell (1992) evaluates the two-way linkages between democracy and economic growth using cross-sectional and pooled data for up to 125 countries over the period from 1960 to 1985.

Helliwell states that the data surveyed his analysis sup-port strongly the notion that countries at higher income levels are more likely to have democratic forms of governments. But, this positive effect does not appear to be the result of reverse causation, meaning from the democratic regime to economic growth. Heo and Tan (2001) examine the direct Granger causality test to tease out the causal directions by using a simple operationali-zation of democracy and economic growth rates in thirty-two developing countries. Their empirical results show that it is as likely that economic growth causes democracy as that democracy causes economic growth. On the other hand, Narayan and Smyth (2006) consider the relationship between democracy and economic growth in China using the error-correction mechanism test for co-integration. Their findings are that in the long-run the lack of democracy in China has had a statistically significant negative effect on real income, while in the short-run democracy has had a statistically insignificant effect on economic growth. Their results suggest that in the long-run growth in capital, labor and democracy granger cause economic growth, while in the short-run there is bi-directional granger causality between democracy and economic growth. Anyiwe and Oziegbe (2006) examine democracy and economic growth for Nigeria during the period 1960 to 2002. They implement statistical time-trend analysis to some Nigerian macro-economic variables. The authors use eleven economic growth variables such as gross domestic product per capita, food production per capita, and discomfort index. They conclude that seven out of eleven variables indicate better performance during democracy compared to military rule. On the other hand, Mahmood et al. (2010) examine the possibility of relationships between

between democracy and economic growth in Pakistan. The authors use the ARDL estimation technique using annually observed democracy index and growth deputy. Their results demonstrate that democracy plays a noteworthy task in the game of economic prosperity in Pakistan. This study aims to find out if the type of regime affects economic growth or not. For this purpose, some specific countries from developed, developing and Eastern European countries, which experienced commu-nist experience, were chosen to observe the effect of democracy on economic growth. The rest of the paper is organized as follows: Data and method, which explain the econometric method employed to assess the effect of the level of democracy on economic growth. Following section gives results and discussion, and final section presents conclusion.

DATA AND METHODOLOGY

In this study, the relationship between economic growth and level of democracy has been examined considering some developed, developing and some Eastern European countries. In this study, for developed countries the annual data for the period from 1971 to 2009; for developing countries, the annual data for the period from 1974 to 2009; and some Eastern European countries, the data for the period of 1993 to 2009 are used. Austria, Belgium, Denmark, France, Italia, Holland and United State are chosen as developed countries. For developing countries, this paper considers Argentina, Chile, Egypt, Greece, India and Turkey as developing countries. Also, some Eastern Eurpean countries which experienced communist regime such as Albania, Bulgaria and Check Republica, Estonia and Romania have been accounted and evaluated in the developing countries category. "The Polity 2" index published by Freedom House and modified by Gurr (1990) has been used to measure the level of democracy. The polity 2 index takes the value from +10 (strongly democratic) to -10 (autocratic). In the analysis, to avoid negative values, +10 have been added to all the polity 2 index. Real GDP variable has been used to represent economic growth of the countries examined in the study. The nominal GDP and CPI variables which are necessary to calculate the real GDP has been taken from IMF's International Financial Statistics data base. The study examines not only some developed and developing countries, but also examines some Eastern European countries because these countries have experienced communism. Thus, in order to obtain sufficient results and to see the effect of the level of democracy on economic growth, these countries should be examined separately.

This study uses panel data analysis which includes dynamic effects of different countries. As stated by Gujarati and Porter (2009) by combining time series of cross-section observations, panel data gives more informative data, more variability, less collinearity among variables, more degrees of freedom and more efficiency. Because of these superiorities, panel data enables us to study more complicated behavioral models when it is compared with pure cross-section or pure time series data. Before panel regression, the panel unit root test has been used to test the order of integration of each variable studied in this study. Because one of the most important topics in the regression analysis is the stationarity of the series used in the models. The assumption underlying the method of least squares is zero mean value of disturbance and the assumption of homoscedasticity, or equal variance. If these two assumptions are violated, any t, F test or values will be unreliable.

Table 1. Results of the unit root tests.

	Im, Pesaran and Shin (2007) unit root tests results					
	Developing countries		**East European countries**		**Developed countries**	
	Level form	**First difference**	**Level form**	**First difference**	**Level form**	**First difference**
IPS test Sta.	7.38	-6.57	3.5	-2.46	4.24	-6.64
Probability	1.00	0.00	0.99	0.00	1.00	0.00

After testing if the series have unit root or not, the following equation is being modeled for this study.

$$y_{it} = \alpha + X_{it}'\beta + u_{it} \quad i = 1,...,N \quad t = 1,...,T \quad (1)$$

Where i denote units, such as households, individuals, firms countries, etc, and t denotes time. The i subscript, therefore, denotes the cross-section dimension whereas t denotes the time-series dimension. α is a scalar, β is $K \times 1$ and X_{it} is the ith observation on K explanatory variables. Most of the panel data applications utilize a one-way error component model for the disturbances, with

$$u_{it} = \mu_i + v_{it}$$

Where μ_i denotes the unobservable individual specific effect and v_{it} denotes the remainder disturbance (Baltagi, 1995; Hsiao, 1986). On the other hand, coefficients which are denoted in the equation 1 may get different values in different time for different units. In this case, the number of parameter predicted will be exceeding the number of observations, meaning the model cannot be estimated. Because of this disadvantage, studies which use panel data analysis make some assumptions in characteristics of the error term and changeability of the coefficients and they form different models. With different assumptions, the fixed effect and the random effect models are formed. In the fixed effect model, the μ_i are assumed to be fixed parameters to be estimated and the remainder disturbances stochastic with v_{it} independent and identically distributed IID $(0, \sigma_v^2)$. But, this assumption is valid for both fixed and random effect models (William et al., 1993). To decide whether the random effects (RE) estimator or fixed effects (FE) estimator is used in the analysis, the relationships between effects and explanatory variables should be examined. If the effects are uncorrelated with the explanatory variables, the RE estimator is consistent and efficient, but the FE estimator is consistent but not efficient. On the other hand, if the effects are correlated with the explanatory variables, the fixed effect estimator is consistent and efficient but the random effects estimator is now inconsistent. In the literature, the Hausman test statistic is used to determine this relationship.

RESULTS AND DISCUSSION

Results of the unit root tests

In this study, we follow Im et al. (1997) model to test the unit root. This test is frequently used in the panel data

analysis nowadays. We can use the unit root test which was developed by Levin et al. (2002), but we use the common unit root test in this study. The results of this test results are presented in the Table 1. According to the IPS unit root test results, categorized three panel data have unit roots. Table 1 shows that IPS test statistic is not significantly negative for all country groups since it is positive and hence greater than critical values; for example, it is 7.38 for developing countries, and we fail to reject the null hypothesis of a unit root. However, these series become stationary after taking first differencing. Thus, in the panel data analyze, first differences of the series are used. In the panel regression, appropriate model must be used. In this study, to use an appropriate model, all possible models have been tested. The Table 2 summarizes the results of the coefficient analysis of the appropriate models. Table 2 summarizes the results of appropriate panel data model for the three different country groups. In this table, the following findings are summed up;

1. The models applied for developed and developing countries have fixed slope coefficients, but constant term for the model is not stable in time and cross-section.
2. The model predicted for the some Eastern European countries has fixed slope coefficient, but constant term is stable in cross-section, even it is not stable in time.

The results of the panel data analysis are given in the Table 3. Here, the effect of the level of democracy on economic growth is tested for three different country groups. The results of the panel data analysis emphasize that there is a negative relationship between the level of democracy and economic growth for some of the developing countries and some Eastern European countries, this relationship is statistically significant at 1% level since t-statistic is -3.70 and -2.66 for Eastern European countries and developing countries, respectively. Nevertheless, this relationship is not significant for the developed countries examined in this study because t-statistic is not significant which is almost 0.40. These results are not surprising because democracy just provides security of property and contract rights, but it does not guarantee good governments. These results raise an obvious question: Are these countries poor because of their bad governments? Weil (2009) asks the same question when he tries to answer the question of why poor countries have bad governments. Weil claims

Table 2. The results of the coefficient analysis.

	Fixed effects test result		
	Developing countries	Eastern European countries	Developed countries
Model	Fixed - Fixed	None - Fixed	Fixed - Fixed
Cross-section F	5.02 (0.00)	_	11.24 (0.00)
Cross-section Chi-square	29.94 (0.00)	_	70.66 (0.00)
Period F	1.77 (0.00)	1.74 (0.06)	1.98 (0.00)
Period Chi-square	65.72(0.00)	27.78 (0.02)	74.34 (0.00)
Cross-Section/Period F	1.78 (0.00)	_	3.45 (0.00)
Cross-Section/Period Chi-square	74. 28(0.00)	_	133.67(0.00)

Table 3. The level of democracy and economic growth.

	Variable	Coefficient	t-Statistic	Prob	R^2	Durbin Watson	F- Probability
Eastern European countries	C	80857.30	4.28	0.00010.	0.36	1.78	0.01
	Polity2	-8521.67	-3.70	0004			
Developed countries	C	243.0227	0.664394	0.5072	0.42	1.17	0.00
	Polity2	-14.79186	- 0.395918	0.6926			
Developing countries	C	139121.5	1.99	0.0486	0.34	0.35	0.00
	Polity2	-12675.5	-2.66	0.0086			

that when the rule of law and corruption is taken as a sign of a good government, poorer countries tend to score poorer countries tend to score much worse in these measures. Table 4 shows the panel data results regarding each developed country specifically. Since t-statistics is not high adequately, they are lower than 2 for all developed countries, we can say that the effect of the level of democracy on economic growth is not significant for developed countries. However, this result is not true for developing countries because of the high t-statistics. Table 5 presents the effect of the level of democracy on developing countries.

The results show that the level of democracy negatively affects economic growth for four developing countries examined here because t-statistics are high for these countries; for example, -3.23, -3.06, -3.17 and -2.53 for Argentina, Chile, Greece and India, respectively. Countries examined in the category of the developing countries, the overall effect of democracy on growth is weakly negative for Egypt, but there is a strongly negative effect for the other countries. In Table 6 the regression results are appeared for some of the Eastern European countries. The sign of the coefficient of the explanatory variable (here the level of democracy) is negative like the sign of the coefficient for developed countries. The overall effect of democracy on economic growth is strongly negative for Bulgaria, Czech Republic, Estonia, and Romania because of the high t-statistics, which are -2.69, -2.71, -2.47 and -2.12, respectively for these four countries, but the effect of democracy on

growth is weakly negative for Albenia since t-statistic is -1.17. The results of the test on economic growth and democracy are expected to have a positive sign, but we have found a negative relationship between them. These results do not mean that democracy is a bad thing, but we can say that we want to have democracy because it gives us a right to involve decision taking and law making process. In the past, all rich countries, at the same time, did not have democracy. For example, Ottoman Empire did not have democracy. This example is true. All of us accept that Greece is a cradle of democracy, but she is not as influential as United States of America which was discovered in 1492 to affect all issues in the world. To overcome economic backwardness, freedom and democracy is necessary, but insufficient condition.

Conclusion

This study discussed the question of whether the type of regime affects economic growth or not. For this purpose, some specific countries from developed, developing, and Eastern European countries, which experienced communist experience, were chosen to observe the effect of democracy on economic growth. In the literature, the predominant view was that democracy had either a negative effect on economic growth or no overall effect. Even, it is alleged that countries with authoritarian political systems are predicted to grow as rapidly as democracies, perhaps even faster. This claim was verified by the results of this

Table 4. The level of democracy and economic growth for developed countries.

	Variable	Coefficient	t-Statistic	Prob
Developed countries	C	325.89	0.952104	0.3421
	Austria	-30.49	0.888804	0.3751
	Belgium	-13.76	0.397388	0.6915
	Denmark	30.34	0.884383	0.3775
	France	15.92	0.401084	0.6888
	Italy	27.75	0.808964	0.4194
	Netherland	30.50	0.889104	0.3749
	United States	12.93	0.376921	0.7066
	Summary of the statistics	R^2	Durbin Watson	Probability
		0.42	1.17	0.00

Table 5. The level of democracy and economic growth for developing countries.

	Variable	Coefficient	t-Statistic	Prob
Developing countries	C	1131527	3.53	0.0005
	Argentina	-21725.78	-3.23	0.0015
	Chile	-18530.64	-3.06	0.0026
	Egypt	-51138.45	-1.28	0.2008
	Greece	-152377.0	-3.17	0.0018
	India	-188075.2	-2.53	0.0125
	Turkey	8249.768	0.707041	0.4805
	Summary of the statistics	R^2	Durbin Watson	F-Probability
		0.40	0.44	0.00

Table 6. The level of democracy and economic growth for Eastern European countries.

	Variable	Coefficient	t-Statistic	Prob
Eastern European countries	C	64068.53	2.87	0.0056
	Albania	-4.02	-1.17	0.2453
	Bulgaria	-7448.23	-2.69	0.0092
	Czech	-6644.52	-2.71	0.0089
	Estonia	-7264.53	-2.47	0.0164
	Romania	-6205.84	-2.12	0.0380
	Summary of the statistics	R^2	Durbin-Watson	F-probability
		0.41	2.18	0.01

study. We found that the overall effect of democracy on growth was strongly negative for developing and some of some of the Eastern European countries which experienced communism and they are in the phase of transition of free market economy. Mostly, economists use life expectancy and education as proxies for human capital, it is logical to expect that democracy will be an important determinant of the level of public services since individuals protect their benefits and they want their reasonable requests, for example good health care system, to be fulfilled by their governments. If governments disregard citizens proper demands, they will lose the next election and the main opposition party will get the power. This time, incumbent government has to

consider the feasible demands of their citizens. Therefore, it is reasonable that the expectation of the effect of democracy on growth is positive. Yet, incumbent government inherently wants to regain the power and for this reason they protect their advocates. In this case, the interests of the pressure groups are preferred to social welfare. We can conclude that the name of the governance is not so important; the important thing is to have justice and equity in all institutions. The crucial problem in developing countries is that individuals, who are not capable, but get the power. In addition to these deficiencies, people struggle with superficial issues in developing countries, but not with genuine matters. When all positions are given to the qualified persons, equity and justice can be provided all citizens who are living in the border of a country. Then, productivity and increasing in economic growth can accelerate.

REFERENCES

Baltagi BH (1995). Econometric Analysis of Panel Data. John Wiley and Sons Ltd., England.
Clague C, Keefer P, Knack S, Olson M (1996). Property and Contract Rights in Autocracies and Democracies. J. Econ. Growth, 1: 243-276.
Hsiao C (1986). Analysis of Panel Data. 2nd Edn., Cambridge University Press, UK: 368.
Gerring J, Bond PJ, Barndt WT, Mareno C (2005). Democracy and economic growth: A historical perspective. World Polit., 57: 323-364
Gujarat ND, Porter DC (2009). Basic Econometrics. 5th Edn., McGraw-Hill, New York, USA.
Gurr TR (1990). Polity II, political structures and regime change, 1800-1986, Ann Arbor: ICPSR.
Helliwell JF (1992). Empirical linkages between democracy and economic growth. NBER Working Papers Series: 4066.
Heo U, Tan AC (2001). Democracy and economic growth: A causal analysis. Compar. Polit., 33: 463-473
Im K, Peseran M, Shin Y (1997). Testing for unit roots in heterogeneous panels. Mimeo, Department of Applied Economics, University of Cambridge, UK.
Levin A, Lin CF, Chu CSJ (2002). Unit root tests in panel data: Asymptotic and finite sample properties. J. Econ., 108: 1-24
Mahmood K, Azid T, Siddiqui MM (2010). Democracy and economic growth. Res. J. Int. Stud., 15: 77-86
Narayan PK, Smyth R (2006). Democracy and economic growth in China: Evidence from cointegration and causality testing. Rev. Appl. Econ. 2: 81-98.
Olson M (1993). Dictatorship, democracy and development. Am. Polit. Sci. Rev., 87: 567-586.
Persson T, Tabellini G (2006). Democracy and development: The devil in the details. Am. Econ. Rev., 96: 319-324.
Weil DN (2009). Economic Growth. The Addison-Wesley Series in Economics, Boston, USA.
William EG, Hill RC, Judge GG (1993). Learning and Practicing Econometrics. John Wiley, New York, USA: 866.