Comparative Study between Democracy and Autocracy Based on Social Indicators

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Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

Democracy and autocracy are measured by democracy index which is introduced by Economist Intelligence Unit and has been calculated since 2006 for 167 countries covering almost the entire population of the world. The Democracy index is based on five factors: Electoral process and pluralism; civil liberties; the functioning of government; political participation; and political culture. These 167 countries are divided into one of four categories: Full democracy; flawed democracy; hybrid regime; and authoritarian regime or autocracy. This paper deals with comparative study between full democracy and autocracy based on different social indicators such as literacy rate, unemployment rate, per capita GDP, birth rate, death rate, fertility rate, divorce rate, murder rate etc. It is observed that per capita GDP and literacy rate of full democratic countries are significantly higher than that of autocratic countries. Unemployment rate, murder rate, fertility rate and crude birth rate of full democratic countries are significantly lower than that of autocratic countries. No significant difference was observed for crude death rate and divorce rate between democratic and autocratic countries.

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1. INTRODUCTION

The Economist Intelligence Unit introduced Democracy Index which is used to measure Democracy and Autocracy. The Democracy Index is based on the ratings for 60 indicator variables grouped in 5 categories: Electoral process and pluralism; civil liberties; functioning of government; political participation; and political culture. Each category has a rating on a 0 to 10 scale. Overall index is the simple average of the 5 category indexes. Index values are used to place countries in one of 4 types of regimes: Full democracies--scores of 8-10, Flawed democracies--score of 6 to 7.9, Hybrid regimes--scores of 4 to 5.9 and Authoritarian regimes--scores below 4. The Democracy Index was first produced for 167 countries in 2006, with updates in 2008, 2010, 2011, 2012, and 2013. All 167 countries are divided into four types of regimes using the democracy indices of the year 2012 and presented in Table 1.

World Bank data for literacy rate, unemployment rate, per capita income, birth rate, death rate, fertility rate, divorce rate, and murder rate are used to compare between full democratic countries and autocratic countries. These data have been described and presented in Section 3. Section 4 deals with the Method used to analyze the data. Statistical analysis and test results are presented in Section 5. Section 2 is the literature review. Section 6 is the conclusion.

2. LITERATURE REVIEW

Democracy can be defined in numerous ways [2]. However, all definitions can be classified into four major categories: social, economic, communitarian, or political democracy. Social, economic and communitarian democracies are defined as the equalization of wealth, income and status or the creation and maintenance of a feeling of belonging in a community or communities and the promotion of participation within them. Political democracy doesn't indicate economic equality or, social justice or a feeling of community. Political democracy is a system that is followed as long as proper procedures produced it but not giving importance on the outcomes.

Diamond [3,4] believes before spreading democracy to other countries it must improve where it originally established. Democratic countries should be responsible for good governance, not just when it suits them.

Sustainable economic growth depends on good governance. Democratic government should listen to the voices of their citizens, engage their participation, tolerate their protests, protect their freedoms, and respond to their needs. Diamond states that the main reason for the recession in democracy is a surge of young democratic countries whose employ rigged elections, intense intimidation of opposing political party, and unstoppable expansion in executive power. The worst thing is that many of these countries are still considered as democratic countries by western states for political reason. Diamond calls these corrupted semi-democracies as electoral authoritarianism. Due to the growth of electoral authoritarianism, a worldwide fall in the confidence in democracy is observed especially in developing countries. Diamond believes people will turn to authoritarian regimes if governance is not improved in democratic countries.

In Greece there is two parties system. Anastasakis [5] pointed out that favoritism of public administration in Greece has been decreased and recent economic crisis increased democratic deficit. The Economist intelligent unit identified that confidence in political institution has been declining in many democratic countries. Miller and Listhaug [6] compared between Norway, Sweden and USA to examine the trends in political trust for the period from 1964 to 1986. Their observation is during the early part of that period public trust declined in all these 3 countries, later on there is some recovery of public trust in Norway but it continued to decline in Sweden and USA. One important finding in Norway was that new parties provided the disaffected people with a means of representation, thus connecting dissatisfaction back into the electoral arena. In Sweden and USA, where more rigid party systems, accumulating dissatisfaction was directed at the regime more generally because many people failed to see any of the parties as a viable alternative. In many countries have mainly two party systems and usually one of the two main parties has been ruling the country for decades.

Rahman [7] analyzed democracy index data of 167 countries for the period 2006 to 2012. They showed that democracy is not making any significant progress in the study period. Popular confidence in political institutions continues to decline in many full democratic countries. Violence and drug-trafficking have a negative impact on democracy in some countries. Some

countries had democratic progress while some other countries had regression. However, these changes in democratic performances are not statistically significant. As a result, democracy becomes stagnant all over the world. They have suggested some implications for future progress of democracy.

Rigobon and Rodrik [8] studied the interrelationships between economic institutions, political institutions, openness and income levels. Their observation is, democracy and the rule of law are both good for economic performance, but the rule of law has a stronger impact on incomes. Openness has a negative impact on income levels and democracy, but a positive effect on rule of law. Higher income produces greater openness and better institutions, but these effects are not very strong. Rule of law and democracy are mutually reinforcing.

It is well known that literacy rate, unemployment rate, per capita income, birth rate, death rate, fertility rate, divorce rate, and murder rate are social, demographic, and economic indicators. Democracy and political institutions may be affected with the change of these indicators. Question may arise whether these social, demographic, and economic indicators affecting different types of regimes or democracies in a similar way? Keeping this question in mind, we made a comparative study between democratic and autocratic countries based on literacy rate, unemployment rate, per capita income, birth rate, death rate, fertility rate, divorce rate, and murder rate.

3. DATA

We have used the democracy index data from Economist Intelligence Unit Report, 2012 and the data on eight social indicators namely literacy rate, unemployment rate, per capita GDP, crude birth rate, crude death rate, fertility rate, divorce rate and murder rate from World Bank web side. These data for 25 full democratic countries are given in Table 2 and 25 autocratic countries are given in Table 3.

4. METHODOLOGY

Average literacy rate, unemployment rate, per capita GDP, crude birth rate, crude death rate, fertility rate, divorce rate and murder rate for both democratic and autocratic countries are calculated and compared with the help of statistical tests. The following null and alternative hypotheses are considered for testing the

significant difference between the average literacy rates of Democratic countries with that of autocratic countries.

H_0: There is no significant difference between the average literacy rates of Democratic countries with that of autocratic countries.

H_a: There is significant difference between the average literacy rates of Democratic countries with that of autocratic countries.

The test statistic to test the above hypotheses is $t = \dfrac{(\bar{x}_1 - \bar{x}_2)}{\sqrt{\left(\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}\right)}}$ which follows Student's

t-distribution with degrees of freedom =

$$\frac{\left(\dfrac{s_1^2}{n_1} + \dfrac{s_2^2}{n_2}\right)^2}{\dfrac{1}{n_1 - 1}\left(\dfrac{s_1^2}{n_1}\right)^2 + \dfrac{1}{n_2 - 1}\left(\dfrac{s_2^2}{n_2}\right)^2} .$$

Similar hypotheses are considered for testing the average fertility rate, unemployment rate, per capita GDP, crude birth rate, crude death rate, divorce rate and murder rate.

5. RESULTS AND DISCUSSION

Data analysis program of excel is used to analyze the data and testing the hypotheses mentioned in section 4. One can use Minitab, SPSS, SAS, or, any other Statistical package instead of excel but the results will be exactly same. Excel is a part of Microsoft which is commonly used and very easy to understand. Considering the expected reader of the paper Statistical analysis has been done in excel and presented in a simple way.The excel output and analysis are given below (See Table 4).

This result indicates that there exists significant difference between the average literacy rates of Democratic and Autocratic countries. It also indicates that the average literacy rate of democratic countries is significantly higher than that of autocratic countries (Then see Table 5).

This result indicates that there exists significant difference between the average unemployment rates of Democratic and Autocratic countries. It also indicates that the average unemployment rate of democratic countries is significantly lower than that of autocratic countries.

Table 1. Category of countries based on 2012 democracy index

Category	Number of countries	% of countries	% of world populations
Full democracy	25	15.0	11.3
Flawed democracy	54	32.3	37.2
Hybrid regimes	37	22.2	14.4
Autocracy	51	30.5	37.1
Total	167	100	100

Source: economist intelligence unit report, 2012 [1]

Table 2. Data on democracy index and 7 indicators for 25 full democratic countries

Country	D index	Fertility	Birth	Death	Unemploy	Literacy	GDP	Divorce	Murder
Australia	9.22	1.9	14.0	6.4	6.4	96.0	67436.0	2.5	1.0
Austria	8.62	1.4	9.0	9.3	4.8	98.0	46792.2	2.0	0.6
Belgium	8.05	1.8	11.0	9.8	8.5	99.0	43395.7	2.5	1.7
Canada	9.08	1.6	11.0	7.1	7.1	99.0	52409.2	2.1	1.6
Costa Rica	8.10	1.8	15.0	4.4	7.8	96.5	9442.7	2.5	10.0
Czech Rep	8.19	1.5	11.1	10.0	6.7	99.0	18690.0	2.5	1.7
Denmark	9.52	1.7	11.4	9.6	7.0	99.0	56364.2	2.8	0.9
Finland	9.06	1.8	11.2	9.4	7.0	100.0	45649.2	2.4	2.2
Germany	8.34	1.4	8.4	10.5	5.1	99.0	42597.7	2.2	0.8
Iceland	9.65	2.0	14.6	6.2	5.4	99.0	42362.1	1.8	0.3
Ireland	8.56	2.0	15.6	5.9	10.5	99.0	45921.7	0.6	1.2
Japan	8.08	1.4	8.4	9.4	3.9	99.0	46548.3	1.8	0.4
Luxembourg	8.88	1.6	11.6	6.8	6.1	100.0	103858.9	2.1	0.6
Malta	8.28	1.4	9.3	7.0	6.9	93.9	20838.9	1.1	1.0
Mauritius	8.17	1.4	11.5	7.3	7.9	87.3	8861.8	1.4	2.5
Netherlands	8.99	1.7	10.8	8.4	7.3	99.0	45960.5	2.1	1.1
New Zealand	9.26	2.1	14.0	6.3	5.6	99.0	38679.7	1.9	0.9
Norway	9.93	1.9	12.5	8.3	3.5	100.0	99635.9	2.0	0.6
South Korea	8.13	2.0	14.0		2.7	96.6	24454.0		2.6
Spain	8.02	1.3	10.6	8.5	25.6	97.0	28281.6	2.2	0.8
Sweden	9.73	1.9	12.0	9.6	8.1	99.0	55039.4	2.5	1.0
Switzerland	9.09	1.5	10.3	7.7	3.1	99.0	78928.9	2.2	0.7
UK	8.21	1.9	12.3	8.9	6.4	99.0	38648.9	2.1	1.2
Uruguay	8.17	2.1	14.6	9.1	5.3	98.4	14727.7		5.9
US	8.11	1.9	13.3	8.4	6.1	99.0	51755.2	2.8	4.7
Average	8.7	1.7	11.9	8.1	7.0	98.0	45091.2	2.1	1.8

Source: economist intelligence unit report, 2012 and World Bank

Table 3. Data on democracy index and 7 social indicators for 25 autocratic countries

Country	Dindex	Fertility	Birth	Death	Unemploy	Literacy	GDP	Divorce	Murder
Afghanistan	2.48	5.1	35	8	35.0	28.1	687.6		2.4
Central Africa	1.99	4.5	34	15	8.0	44.2	479.5		29.3
Chad	1.62	6.4	46	15	22.6	25.4	1035.3		15.8
Congo DRC	1.92	6.0	43	16		57.0	417.8		21.7
Djibouti	2.74	3.5	28	9	59.0	70.0	1574.6		3.4
Equator Guinea	1.83	4.9	36	14	22.3	91.1	22391.5		20.7
Eritrea	2.40	4.8	37	7		80.0	504.3		17.8
Guinea	2.79	5.0	37	12	9.0	30.0	493.5		22.5
Guinea Bissau	1.43	5.0	38	13		42.1	494.3		20.2
Iran	1.98	1.9	19	5	16.0	80.7	6578.1	1.9	3.0
Laos	2.32	3.1	27		2.5	63.0	1412.5		4.6
Libya	5.15	2.4	21	4	13.0	90.7	13302.8	3.7	2.9
Myanmar	2.35	2.0	17	9					10.2

Country	Dindex	Fertility	Birth	Death	Unemploy	Literacy	GDP	Divorce	Murder
North Korea	1.08	1.3	10	5		100.0		2.3	15.2
Saudi	1.71	2.7	20	3.2	12.1	81.3	25946		1.0
Sudan	2.38	5.0	34	12	20.0	63.2	974.4		24.2
Syria	1.63	3.0	24	4	18.0	73.6			2.3
Tajikistan	2.51	3.8	33	7	60.0	99.6	953.1	0.9	2.1
Togo	3.45	4.7	37	11		46.9	589.5		10.9
Turkmenistan	1.72	2.4	22	8	70.0	98.3	6797.7		4.2
UAE	2.58	1.8	15	1	4.3	81.7	41691.7		0.8
Uzbekistan	1.72	2.5	21	5	8.0	99.0	1719	0.6	3.1
Vietnam	2.89	1.8	16	6	3.2	92.0	1755.3		1.6
Yemen	3.12	4.2	31	7	35.0	46.8	1341.3		4.2
Zimbabwe	2.67	3.6	32	10	70.0	87.2	908.8		14.3
Average	2.3	3.7	28.5	8.6	25.7	69.7	6002.2	1.9	10.3

Source: economist intelligence unit report, 2012 and World Bank

Table 4. Test results for comparing literacy rates of democratic and autocratic countries

	Democratic	Autocratic
Mean	97.988	69.663
Variance	6.944	595.035
Observations	25	24
Hypothesized mean difference	0	
Degrees of freedom	24	
t-Statistic	5.657	
P-Value for one-tailed test	0.000	
t Critical one-tailed	1.711	
P-Value for two-tailed test	0.000	
t Critical two-tailed	2.064	

Table 5. Comparing unemployment rates of democratic and autocratic countries

	Democratic	Autocratic
Mean	6.992	25.684
Variance	18.212	519.141
Observations	25	19
Hypothesized mean difference	0	
Degrees of freedom	19	
t-Statistic	-3.529	
P-Value for one-tailed test	0.001	
t Critical one-tailed	1.729	
P-Value for two-tailed test	0.002	
t Critical two-tailed	2.093	

Table 6. Comparing fertility rates of democratic and autocratic countries

	Democratic	Autocratic
Mean	1.72	3.656
Variance	0.063	2.081
Observations	25	25
Hypothesized mean difference	0	
Degrees of freedom	25	
t-Statistic	-6.611	
P-Value for one-tailed test	0.000	
t Critical one-tailed	1.708	
P-Value for two-tailed test	0.000	
t Critical two-tailed	2.060	

Result in Table 6 indicates that there exists significant difference between the average fertility rates of Democratic and Autocratic countries. It also indicates that the average fertility rate of democratic countries is significantly lower than that of autocratic countries.

Result in Table 7 indicates that there exists significant difference between the average per capita GDP of Democratic and Autocratic countries. It also indicates that the average per capita GDP of democratic countries is significantly higher than that of autocratic countries.

Result in Table 8 indicates that there exists significant difference between the average crude birth rates of Democratic and Autocratic countries. It also indicates that the average crude birth rate of democratic countries is significantly lower than that of autocratic countries.

Result in Table 9 indicates that there is no significant difference between the average crude death rates of Democratic and Autocratic countries.

Result in Table 10 indicates that there is no significant difference between the average divorce rates of Democratic and Autocratic countries.

Table 7. Test results for comparing per capita GDP of democratic and autocratic countries

	Democratic	**Autocratic**
Mean	45091.216	6002.209
Variance	583415060.522	114507884.835
Observations	25	22
Hypothesized mean difference	0	
Degrees of freedom	34	
t-Statistic	7.317	
P-Value for one-tailed test	0.000	
t Critical one-tailed	1.691	
P-Value for two-tailed test	0.000	
t Critical two-tailed	2.032	

Table 8. Test results for comparing crude birth rate of democratic and autocratic countries

	Democratic	**Autocratic**
Mean	11.900	28.520
Variance	4.249	90.593
Observations	25	25
Hypothesized mean difference	0	
Degrees of freedom	26	
t-Statistic	-8.533	
P-Value for one-tailed test	0.000	
t Critical one-tailed	1.706	
P-Value for two-tailed test	0.000	
t Critical two-tailed	2.056	

Table 9. Test results for comparing crude death rate of democratic and autocratic countries

	Democratic	**Autocratic**
Mean	8.096	8.592
Variance	2.460	17.376
Observations	24	24
Hypothesized mean difference	0	
Degrees of freedom	29	
t-Statistic	-0.545	
P-Value for one-tailed test	0.295	
t Critical one-tailed	1.699	
P-Value for two-tailed test	0.590	
t Critical two-tailed	2.045	

Table 10. Test results for comparing divorce rate of democratic and autocratic countries

	Democratic	Autocratic
Mean	2.091	1.878
Variance	0.267	1.513
Observations	23	5
Hypothesized mean difference	0	
Degrees of freedom	4	
t-Statistic	0.381	
P-Value for one-tailed test	0.361	
t Critical one-tailed	2.132	
P-Value for two-tailed test	0.723	
t Critical two-tailed	2.776	

Table 11. Test results for comparing murder rate of democratic and autocratic countries

	Democratic	Autocratic
Mean	1.840	10.336
Variance	4.594	80.272
Observations	25	25
Hypothesized mean difference	0	
Degrees of freedom	27	
t-Statistic	-4.611	
P-Value for one-tailed test	0.000	
t Critical one-tailed	1.703	
P-Value for two-tailed test	0.000	
t Critical two-tailed	2.052	

Last result indicates that there exists significant difference between the average murder rates of Democratic and Autocratic countries. It also indicates that the average murder rate of democratic countries is significantly lower than that of autocratic countries.

6. CONCLUSION

The test results indicate that literacy rate & per capita GDP of full democratic countries are significantly higher than that of autocratic countries. The average literacy rate of 25 democratic countries is 98 and that for 25 autocratic countries is 69.7. The average per capita GDP of 25 full democratic countries is 45091.2 and that for 25 Autocratic countries is 6002.2 in USD. That is the average per capita GDP of democratic countries is nearly eight times of that of autocratic countries. Unemployment rate, murder rate, fertility rate and crude birth rate of full democratic countries are significantly lower than that of autocratic countries. The average unemployment rate, murder rate, fertility rate and crude birth rate of full democratic countries are 7, 1.8, 1.7, 11.9 respectively and that for autocratic countries are 25.7, 10.3, 3.7, 28.5 respectively. It is evident that the average unemployment rate of autocratic countries is nearly four times of that of democratic countries. The average murder rate of autocratic countries is nearly six times of that of democratic countries. The average fertility rate and crude birth rate of autocratic countries is more than double of that of democratic countries. No significant difference was observed for crude death rate and divorce rate between democratic and autocratic countries. Therefore people in democratic countries with significantly higher literacy rate and GDP and significantly lower unemployment rate and murder rate leading a better life than that of autocratic countries. This could be one of the main reasons of struggle for democracy, and immigration from autocratic countries to democratic countries.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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