



Interlinkage between Democracy and Sustainable Development

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ABSTRACT

Purpose: This research project examines the directional relationship between democracy and sustainable development. Panel studies over 31 cross countries from 1990 to 2016 finds that improvements in sustainable development predict increase in democracy. Democracy has been measured by the subjective indicators such as civil liberties and political rights. The data has been collected from world development indicator and world governmental indicator. Unit root test has been performed to check for stationarity. Two stage least square methods have been used to explain the dependency of each variable. This study explains that tendency for rise in democracy urbanization tends to fall. The propensity for democracy rises with development, a smaller gap between female and male primary and secondary education accomplishment. The results suggest that gross domestic product have negative impact on democracy. It also attempts the effect of political stability and democracy on sustainable development.

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1. Introduction

The word democracy originates from the Greek word democratic, which means rule of the people. Modern definition of democracy associates it with the procedure of elections. For Joseph Schumpeter (1947), “the democratic method is that institutional arrangement for arriving at political decision in which individuals acquire the power to decide by means of a competitive struggle for the people’s vote. However, it was deliberated that that without protection of civil liberties evens the electoral process is vitiated. Hence, a comprehensive definition of democracy is fictitious as a political system which sponsors free and fair competitive elections for the government and administrative; allows for inclusive adult citizenship; defends civil liberties and political rights; and in which the elected governments really govern and military is under civilian control.

Sustainable development is the organized principle for meeting human development goals while at the same time sustaining the ability of natural systems to provide the natural resources and ecosystem services upon which the economy and society depends. The desirable end result is a state of society where

living conditions and resource use continue to meet human needs without undermining the integrity and stability of the natural systems.

The concept of sustainable development came from the Brundtland report 1987; it is also concerned with initial ideas about sustainable forest management. The modern concept has shifted to focus more on economic development, social development and environmental protection for future generations.

Common to both sustainable development and democracy is contribution – the ability of all people to come together and be involved in decisions about how we live and the goals we want to achieve as societies.

2. Objectives

The principal aim of this study is to obtain the exact relationship between democracy and sustainable development. There are following objectives of the study for investigating inter linkages between democracy and sustainable development.

- To investigate whether democracy affects sustainable development.
- To analyse the impact of economic growth on the propensity to experience democracy and vice versa.

3. Literature Review

The review of literature showed that there had been extensive works, both theoretical and empirical, on the issue relating to interlinkage between sustainable development and democracy.

Joseph and Romain (2000) surveyed the empirical relationship between democracy and economic growth. The simple correlation between an index of democracy and economic growth was positive but weak over the period 1970 to 1989. The democracy equation was estimated along with the channel and growth equations, using three stage least squares. The model consists of a cross-country growth equation and seven channels which were Physical capital accumulation, Trade openness, Human capital, Income inequality, Government size, Distortions and Political instability. Democratic institutions were assumed to affect growth through a series of channels. This study estimated a full system of equations determining growth and the channel variables. Results suggested that democracy fosters growth by improving the accumulation of human capital and, less robustly, by lowering income inequality. On the other hand, democracy hinders growth by reducing the rate of physical capital accumulation and, less robustly, by raising the ratio of government consumption to GDP. Once all of these indirect effects were accounted for, the overall effect of democracy on economic growth was moderately negative. These results indicated that democratic institutions were responsive to the demands of the poor by expanding access to education and lowering income inequality, but do so at the expense of physical capital accumulation. This may prevent us from making statements about the effects of democracy in any country. Helliwell (1994) also estimated the effect of democracy on physical capital accumulation, but found instead a positive and significant coefficient. Perotti (1996). In his study of income inequality and growth, he found that democracy does not significantly affect political instability.

Halil and Yunus (2011) examined the association between economic growth and democracy in Turkey between 1980 and 2010 by using the Johansen co-integration model and Vector Error-Correction Model (VECM). The data used in this study are obtained from Turk Stat for GDP growth and POLITY IV Project for democracy index. The main objective of this study was to see if there was a significant relationship between economic growth and democracy in Turkey. By using the models, we find that there was a significant relationship between these variables. Prospect research on Turkey can observe causality effects as well. Co-integrating coefficients indicated the positive relationship between growth and democracy. This paper suggested that one should take the important determinants such as inflation, political institutions, economic institutions, social structures, and even education into account in order to analyze the causality. Inglehart said that economic structure of a society had a positive effect on its democratization. Barro found that the countries at low level of economic development did not sustain

democracy, but if a poor country can establish liberal economy, then this country would tend to become more democratic on it's on.

Minier (1998) analyzed the democracy and growth: alternative approach. The objective of the study was to focus on two previously unexamined aspects of the relationship between economic growth and democracy. Secondary data was used in this study. The dependent variable in this model was GDP per capita. The independent variable in this model was investment, education, and democracy levels. Cobb Douglas model was used. The result showed that the democracy, along with initial income and literacy, contributes to the identification of regimes of countries facing similar aggregate production functions.

Mahmood et. al (2010) analyzed democracy and economic growth in Pakistan. The objective of the study was revealed that association between economic growth and democracy is much composite and disordered. Secondary data was used in the study. The dependent variable in this model was gross domestic product volume (GDPV). The independent variable in this model was democracy index. Co-Integration and long run elasticity model was used. The result showed that democracy had Significant direct connection with GDPV during study period. Positive correlation between democracy and national income is not unpredicted.

Subhani et. al (2009) analyzed the Structure and Performance of Economy of Pakistan (Comparative Study between Democratic and Non-Democratic Governments). The objective of the study was to investigate the impact of Democratic Government or Autocratic (Non-democratic) Government on economic growth of Pakistan by examining the factors that help in measuring the countries performance in different Governmental Regime. Secondary data was used in the study. The dependent variable in this model was GDP Market Price, GDP Per Capita. The independent variable in this model was Exchange Rate, Unemployment Rates, Exports and Imports, FDI and Government Expenditures on Health. Linear Regression model was used. The result showed that there was a need for relentless efforts on the part of authorities and people to start and/or accelerate a method of setting up preconditions for the emergence of good governance.

Sharma (2007) analyzed the Democracy, Good Governance, and Economic Development. The objective of this study was that what types of policies and institutions have the most positive and measurable effects on improving governance? What kinds of institutional arrangements are associated with economic growth and poverty reduction? Secondary data was used. The dependent variable in this model was democracy and independent variables were good governance and economic growth. The result showed that good governance was not only the key to the promotion of human rights and protection of civil liberties, but also good governance was highly correlated with economic development and the potential to deliver significant improvements in living standards. Although a number of countries had improved the quality of their governance, much still needs to be done.

Dani (1997) described the democracy and economic performance. The data collected from UNIDO, via the World Bank's Labor Market Data Base. Democracy cured as an endogenous variable. This paper concluded five-year averages of the data lid a maximum of five sub-periods for each country, namely 1970-74, 1975-79, 1980-84, 1985-89, and 1990-94. That consider total of 388 observations. Unit labor cost is dependent variable. Democracy, trade openness, price level and gross domestic product used as independent variables. Two stage least square methods were applied. That show four results, Democracies yield long-run growth rates that were more expectable.it create greater stability in economic performance.it controlled adverse shocks much better and it paid higher wages. These results provided a clear message: risk-averse not consecrated with lot of capital. Democracy was negative and statistically significant in all cases. Democracies had more difficulty without the losers in political competition from economic rewards. This decreases the inducements for social groups to participate in non-cooperative and disruptive behavior extant.

4. Data and Methodology

For this study, the time horizon of the study covers a period of 27 years commencing from 1990 to 2016 which uses annually data comprising 31 cross country observations about some macro-economic variables chosen, namely: democracy index, sustainable development index, urbanization, gender parity index, gross domestic product growth rate, and political stability and CO₂ emissions.

○ Description of Study Variables

- Democracy index (DEM) is constructed using political rights (PR) and civil liberties (CL). Freedom house defines political rights (PR) as rights that empower people to contribute freely in political process, including the right to vote, compete for the public office and elect representatives who have influential impact on public policies and are accountable to the electorate. Civil liberties (CL) permit for the freedom of expression and organizational rights, rule of law, and personal autonomy without interference from the state. Both political rights and civil liberties indices range from 1 to 7, with higher values indicating more authoritarian regimes and lower values reflecting stronger democratic institutions.

$DMC = (14 - (PR + CL))/12 = 0$ for pure dictatorship (no PR and CL freedoms) = 1 for pure democracy (full PR and CL freedoms)

- Sustainable development is measured as

$$SD = (ANS * WR) - PG \quad \text{Where}$$

ANS = growth in genuine wealth per capita i.e. adjusted net saving, excluding particulate emission damage, % of GNI

WR = wealth ratio (0.125 for low income countries, 0.15 for lower middle income countries, 0.175 for upper middle income countries and 0.2 for high income countries)

PG = population growth (in %)

- Gender parity index is the ratio of gap between male and female primary schooling.
- Political stability is measured by absence of violence & terrorism estimate
- Urbanization is measured as urban population growth rate in percentage
- CO₂ omission is measured as kt per meter.

A heavy colorless gas CO₂ that does not support combustion, dissolves in water to form carbonic acid, is formed especially in animal respiration and in the decay or combustion of animal and vegetable matter, is absorbed from the air by plants in photosynthesis, and is used in the carbonation of beverages.

○ Model Selection

By applying the unit root test we estimate that ordinary least square method is applied. But most of the variables have endogeneity and dependency between them. So, the two stage least square method has been selected for regression.

○ Model Description

Two models have been designed here.

$$1) \quad DMC = \beta_1 + \beta_2 SD + \beta_3 GDP + \beta_4 \ln GPI + \beta_5 URB + u_p \text{-----}$$

DMC = Democracy

SD= Sustainable Development

GDP= Gross domestic product

GPI= Gender parity index

URB= Urbanization

u_p= Error term

$$2) SD = \beta_1 + \beta_2 DMC + \beta_3 GDP + \beta_4 PST + \beta_5 CO_2 + u_p \text{ -----}$$

SD= Sustainable Development

DMC= democracy

GDP= Gross domestic product

PST= political stability

CO₂= CO₂ emissions

u_p= Error term

○ Estimation Techniques

Since our study involves time series data. We will have to enter into panel econometric techniques for estimation.

○ Econometric Equation of 2SLS

$$Die_t = \alpha_1 + \alpha_2 SD_{it} + \alpha_3 GDP_{it} + \alpha_4 GPI_{it} + \alpha_5 URB_{it} + \epsilon_{it}$$

$$Si_t = \alpha_1 + \alpha_2 DMC_{it} + \alpha_3 GDP_{it} + \alpha_4 CO_{2it} + \alpha_5 PST_{it} + \epsilon_{it}$$

○ Unit Root Test

Before the econometric analysis on panel data, first we have to consider the nature of the data and check the stationary properties of the variables. The basic property for the stationarity is the series oscillate over the constant mean and variance. It does not be determined by on the time variations, on the other hand non stationary series influence the random shocks and the series keeps on the random walk.

○ Two Stage Least Square

The three-stage least-squares method generalizes the two-stage least-squares method to take account of the correlations between equations in the same way that SUR generalizes OLS. Three-stage least squares require three steps: first-stage regressions to get predicted values for the endogenous repressors; a two-stage least-squares step to get residuals to estimate the cross-equation correlation matrix; and the final 3SLS estimation step.

5. Result and Discussion

The econometric analysis starts by checking the stationarity of the data to find the directional relationship between democracies, sustainable development. Unit root has been applied. Although all variables are stationary at level, endogeneity are contemporaneous between the variables, so 2SLS has been applied.

○ Unit Root Tests

To test the Stationarity of panel data from 1990 to 2016 Im , Pesaran and shin w-stat test are performed and table 1 shows the results of all variables at level. The results of Im , Pesaran and shin w-stat test indicate that are stationary at level.

Table 1 unit root test (LLC & IPS)

Variables	Im , Pesaran and shin w-stat		Levin , lin & chu test	
Democracy index	-8.73786	(0.000)	-2.65667	(0.000)
Sustainable development	-0.57241	(0.002)	-0.28441	(0.029)
Political stability	-1.5867	(0.000)	-3.2885	(0.000)
GDP growth	-8.56717	(0.000)	-4.18504	(0.000)
Urbanization	-3.84841	(0.006)	-2.45679	(0.070)
CO2 Emissions	-6.74328	(0.000)	-2.40629	(0.000)

All the variables stationary at level so we apply 2SLS model.

Table 2 Two Stage Least Square Method

Dependent Variable: Democracy & sustainable development			
Regressor	Co-efficient	t-Values	p-Values
C(1)	0.023475	3.179960	0.0015
C(2)	-1.16E-05	-3.830769	0.0001
C(3)	0.575602	40.07159	0.0000
C(4)	-0.009393	-5.132541	0.0000
C(5)	3.264861	8.931212	0.0000
C(6)	0.000155	3.567070	0.0004
C(7)	0.776259	7.541248	0.0000
C(8)	-0.024267	-5.148697	0.0000

Democracy = (C(1)Sustainable development - C(2)GDP growth + C(3)GPI - C(4) Urbanization
Sustainable development=C(5)democracy + C(6)GDP growth + C(7)political stability - C(8)CO₂ emissions

The table 2 shows that democracy and sustainable development has a positive and significant relationship. We find that sustainable development have positive effect on democracy. For every one percent increase in sustainable development, democracy increases by 0.023475 percent. This shows that as wealth ratio increase, political rights and civil liberties are affected positively. These results are consistant with (Borner, et al. (1995) and inconsistent with Brunetti (1997).

GDP growth has negative and significant relationship with democracy. As GDP growth increase in a society, democracy falls. For every one percent increase in GDP Growth, democracy falls by 1.16E-05. Growth is initially increasing in an index of electoral rights, but the relation turns negative once a moderate amount of rights has been attained. One way to interpret these results is that, in the worst dictatorships, an increase in democracy tends to stimulate growth because the benefit from limitations on governmental power is the key matter. These results are consistant with Barro (1997) and incosistant with Borner (1995) .

Gender parity index have positive and significant effect on democracy that shows the female education is more effective for democracy. For every one percent increase in gender parity index, democracy would increase by 0.575602 percent. As gender parity index increase that shows the female to male education ratio increase. When female education increases, awareness increase among women about voting . These results are consistent with Lipset (1959).

Urbanization have negative and significant effect on democracy. For every one percent increase in urbanization leads to 0.009393 percent fall in democracy . The urbanization rate is often mentioned as a determinant of democracy, although the sign of this influence is not clear on theoretical grounds. Some observers argue that the rural population has limited ability to organize and is therefore easy for a dictator to suppress. This result means that, for a given standard of living, it is not true that more rural places are less likely to be democratic. ourresults are consistant with Barro(1999) .

We find that democracy index have positive effect on sustainable development. As democracy turns good the development of an economy must turns to good. If there is one percent increase in democracy, sustainable development would increases by 3.264861 percent. Our results are inconsistent with Keech (1995) and Comeau (2003) and consistent with Przeworski and Limongi (1993).

Gross domestic product growth has positive and significant effect on sustainable development. As GDP Growth rate increase in the economy development must sustain. One percent increase in GDP Growth,

will lead sustainable development to increase by 0.000155 percent. It shows the 100 percent significant results for sustainable development. Political stability has positive and significant effect on sustainable development. As government is more stable in the economy, it will concentrate more on development. If there is one percent increase in political stability, sustainable development would increase by 0.776259 percent

CO₂ emission has negative relationship with sustainable development. For every one percent increase in CO₂ emission; sustainable development would fall by 0.024267 respectively due to negative relation. This result shows the 100 percent significant results for sustainable development. Our results are consistent with World Commission on Environment (WCED) in 1987.

6. Conclusion

This study attempts to test the directional relationship between democracies, sustainable development including the 31 observations of cross country analysis over the period, 1990 to 2016. This paper therefore employs unit root test in order to judge stationarity of the series. All the variables are stationary at level but endogeneity are present between the variables. So we apply the two stage least square econometric model.

We find that Democracy is positively related to sustainable development and gender parity index and negatively related to gross domestic product and urbanization. Sustainable development is positively related to democracy, political stability, gross domestic product and CO₂ emissions is negatively linked. This study suggested that it is necessary to maintain persistent level of sustainable development for the improvement of democracy. Government should control CO₂ omission to improve human resource. Government should take steps to increase the education of male and female for enhancing democracy.

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