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Democracy, Income Inequality and Economic Growth Nexus: The Case of Pakistan

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Abstract

Democracy, income inequality and economic development are considered to be interlinked with one another in a complex way. The weak growth of political institutions and uncertainty about the continuity of democratic regimes in Pakistan has important consequences for the economic growth and level of income inequality. We analyzed the interaction among democracy, income inequality and economic growth during 1963-2016 using 3SLS and alternative estimation methods. Our findings suggest that democracy, income inequality and economic development are endogenously interlinked in Pakistan. The significance of this study lies in the fact that it highlights the intrinsic value of the political institutions and their benign role in promoting economic growth and reducing inequality. The level of inequality affects the economic growth negatively but conversely economic growth rate does not have a significant impact on inequality thus rejecting the trickle down hypothesis. Inequality is also found to have a significant negative impact on the democracy. Democracy and public expenditures on community, social and public services also reduce inequality.

Keywords: democracy, income inequality, economic growth, political rights, political institutions, fiscal policy.

1. Introduction

Democracy as a political system in Pakistan has been an elusive goal since 1947. Repeated occurrences of martial laws have been alternating with democratic regimes which have suffered from instability and uncertainty. The rights groups, politician and opinion makers at all levels seem to sell the idea of democracy as a panacea for all the ills of the nation. It is often claimed that continuous administration of "larger" doses of democracy will strengthen the institutions and help realize the ideal of fairness and justice in the society. In this respect, the interaction between democracy, inequality and economic development has received heightened attention from the theoretical and empirical perspectives (Alesina, et. al. 1996; Alesina and Rodrik 1994). The focus of the existing studies on the relationship between economic growth, income inequality and democracy can be classified into two directions. First, they examined the impact of certain existing levels of "collective

wellbeing" and "education" in a given time on the process of democratization. Second, they studied the impact of adoption of democratic institutions on the economy of the country (Muller, 1988).

Historically, the correlation between democracy and income inequality has been a subject to which social sciences have given singular attention, and has achieved an added interest in recent times against the background of intense demands for democratic rights in many parts of the world. The conventional wisdom suggests that smoothing the angularities in the distribution of political power leads to a more equitable distribution of income. Aristotle way back in (1111) held that in democratic systems "the poor have more sovereign power than the men of property, for they are more numerous and the decisions of the majority prevail".

However, in recent times, a lot of effort is being spent on exploring the effect of the democratization process on the growth of national economy. For example, Roll and Talbolt (2001) interpret democracy as an "information mechanism" which enables the rulers to get a feedback from the electorate about the success or otherwise of different economic policies which they have pursued during the period of their incumbency. Similarly, Tavares and Wacziarg (2001) developed a channel through which democracy affects economic growth. They have traced a definite link between the level of democracy and the accumulation of human capital and the distribution of income, the latter two being considered important factors for economic growth.

Democracy is ascribed the virtue of changing the political power structure along the lines which are conducive for bringing about egalitarian changes in the society. Democracy is also known to tone down the inequalities left in the wake of autocratic governments (for more details see Bollen and Jackman, 1985 and Lenski 2013). Recording empirical evidence, although a massive amount of research has focused on the interaction between democracy and growth, it is difficult to establish definitively whether democracy has a positive or negative effect on growth. This difficulty derives partly from the fact that democratic dispensations at times generate diverging effects on the factors on which economic activity largely depends. Thus democratic system, believed to lower the rate of physical capital investment, is also considered as notoriously susceptible to the arm-twisting of various lobby groups. Similarly, La Porta, et. al. (1999) say that the democratic system, though known to reduce political instability, is also considered responsible for a skewed income distribution.

Theoretically, the relationship between democracy and income inequality has been established in the median-voter models of Persson and Tabellini (1994) and Alesina, et. al. (1996), who taking a cue from Meltzer and Richard (1981), suggest that democracies generate redistribution policies based on the median-voter's income. In autocracies, on the other hand, the rulers are by no means constrained to meet the public demands for redistributive policies. Thus, following the well-known existing literature, we examine the dynamic influence of democracy on income inequality, economic growth in Pakistan.

2. Literature Review

In the earlier literature on democracy, distribution of resources and economic development Lipset (1959) stated that in democracies, elections serve as a vehicle for enabling the electorate to vote for the proponents of working class interests. It is stated that over the past one hundred years, political lines are so drawn that the political parties have started

showing leftist tendencies with the explicit aim of reducing inequalities. The study assumed that in the countries where a certain level of "collective wellbeing" exists, the electorate will not favor excessively redistributive policies, and secondly, a certain level of education is a prerequisite for the prosperity of the country.

In an extreme case, the democracy has been found to be positively related to inequality, the reason of which may lie in the fact that despite the claims of democracy as catering to the demands of the public, democratic dispensations can rarely assuage the claims of the poorer segments of society when they are faced with a vast range of competing claims (Beitz, 1982).

Borner, et. al. (2016) pointed out a shift in the attitude towards democracy in the research literature in 1980, before which the discussion about compatibility between democracy and development was largely carried out in terms of a "cruel choice" between the two. Democracy was considered to single out consumption as a target of policy instead of investment (crucial for development in its own right), with the result that investment on physical capital could never reach such a level as to ensure economic growth in subsequent periods.

In terms of the link between democracy, growth, inequality and fiscal policy, democracy has been found out to be a major element for government size in various models, where the governments which are too unwieldy to be efficient correspond to non-democratic forms of governance (Barro, 1996). The reason is not difficult to assess because the autocracies tend to maximize the tax rate so that highest amount of resources could be earmarked for their private interests like "ostentatious consumption" and "military expenses" (Olson, 1991).

The economic successes in the countries of Soviet bloc and South-East Asia as well as Chile in South America, all run by autocratic governments, led researchers like Przeworski and Limongi (1993) to establish a relation between "ideology and statistics" which explains the diversity in results in earlier literature. There is also evidence related to the growth-promoting and egalitarian tendencies of autocratic regimes in East Asia. The remarkable reduction in inequality in countries like Taiwan and South Korea under dictatorial regimes is a case in point Gradstein and Milanovic (2004).

Efforts are underway recently to explain the apparent dichotomy in the effects of democracy on inequality. An inverse U-shaped relationship between democracy and inequality has been discovered. In fact, a unique historical experience in Europe, especially in Germany, the United Kingdom, France, and Sweden has informed most of the discussion about the interaction of democracy and inequality in Kuznets curve framework. In these countries, enfranchisement was preceded by gross inequality, which in its part led to social conflicts and tussles. Democratization process ensued only through redistribution and education. These historical undercurrents have been captured in the models of Bourguignon and Verdier (2000) and Acemoglu and Robinson (2000, 2002).

Acemoglu and Robinson (2002) contend that the poor are unable to invest in human capital, when the few rich individuals accumulate resources following heavy investment in industrialization. This is precisely the discrepancy which leads to an intensified inequality. Once the poor sections of the society are pushed to the wall, they take desperate measures to break out of the vicious circle of deprivation. In the face of a threatening posture of the poor sections, where revolution begins to seem like a distinct reality, the power brokers are

compelled to share the political powers with these sections with the result that there would be an increased redistribution and higher investment in human capital. Thus inequality will begin to subside.

A competing view of democracy being determined by inequality is presented by Acemoglu and Robinson (2000) who argue that development is responsible for widening income disparities, and the increased income disparity in its turn leads towards political violence and instability. In such a situation there is a heightened pressure on jittery political elite for decentralization in the political power. The democratization thus achieved encourages institutional reforms which lead to a decrease in inequality.

However, the impact of institutional reforms is not invariably positive for the economy in terms of the income inequality. The institutional reforms may also result in greater income inequality. Certain informal sectors in the economy, especially of the developing countries, may have to bear the initial cost of institutional changes. As most of the members of the informal economy are already marginalized, a sharp decrease in the income may deepen the problem of income inequality (Chong and Calderon 2000).

In the case of Pakistan, no systematic research has been undertaken regarding the impact of democracy on economic growth and income distribution. This is the area which is still not covered. The current study attempts to fill this gap.

3. Methodology

3.1 Empirical Model

There is an empirical challenge in estimating interaction among the democracy, inequality and economic growth. Muller (1988) suggests that these variables influence one another and therefore must be simultaneously determined as equilibrium outcome. In particular, if democracy is influenced by inequality and economic growth, it also influences inequality and economic growth (Alesina and Rodrik 1994; Alesina, et. al. 1996). Since the simultaneous dependence between a set of dependent variables and many independent variables creates a contemporaneous correlation between the error terms and independent variables which in turn makes OLS inconsistent. We therefore empirically estimate the interaction of democracy, inequality and economic growth by using a simultaneous equation model to account for the endogeniety of democracy, inequality and economic development.

$$Democracy_t = \alpha_0 + \alpha_1 Gini_t + \alpha_2 GDP\ Growth_t + \alpha_3 Revenues_t + \alpha_4 Expenditure_t + \alpha_5 CSPS_t + \epsilon_{1t} \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

$$Gini_t = \beta_0 + \beta_1 Democray_t + \beta_2 GDP\ Growth_t + \beta_3 Age\ Dependancy\ Ratio_t + \beta_4 Expenditure + \beta_5 CSPS + \beta_6\ Revenue_t + \epsilon_{2\,t} \quad \ldots\ldots\ldots \quad (2)$$

$$GDP\ Growth_t = \gamma_0 + \gamma_1 Democray_t + \gamma_2 Gini_t + \gamma_3 Age\ Dependancy\ Ratio_t + \gamma_4 Expenditure + \gamma_5 CSPS + \gamma_6\ Revenue_t + \gamma_7\ Deficit_t + \epsilon_{3\,t} \quad (3)$$

Equation (1) hypothesizes that democracy (Democracy) depends on the economic inequality (Gini), economic growth (GDP Growth), fiscal variables like total public revenues (Revenue) and total public expenditures (Expenditure). We have also included in this specification the expenditure of the government on community, social and public services (CSPS) as a ratio of GDP because this expenditure is considered to strengthen the democratic values by promoting redistributive policies. Table 1 summarizes how each independent variable is expected to affect the outcome variable.

Table 1: Expected Effect of the Independent Variables on Three Outcome Variables

	Democracy	Gini	GDP Growth
Democracy		-	+
Gini	-		-
GDP Growth	+	-	
Revenue (Total Revenues as % of GDP)	-	+	+
Expenditure (Total Expenditures % of GDP)	+	-	+
Deficit (Total Budgetary Deficit % of GDP)	-	+	-
CSPS (Expenditures of Government on Community, Social and Public Sector % of GDP)	+	-	+
Age Dependency Ratio	-	+	-

Equation (2) hypothesizes that income inequality (Gini) is affected by democracy, GDP growth rate, age dependency ratio, the total public revenue (Revenue) and total public expenditures (Expenditures) and expenditure of the government on community, social and public services (CSPS).

Equation (3) hypothesizes that GDP growth rate depends on the fiscal policy proxied by total public revenue (Revenue) and total public expenditures (Expenditures) including the expenditure of the government on community, social and public services (CSPS), and budgetary deficit (Deficit).

We carried out a two-step endogeneity test as suggested by Woolridge (2015) to find the presence of endogeniety in the democracy equation (*P=0.000)*, inequality equation (*P=0.04)* and democracy equation (*P=0.001)*. To simultaneously estimate the system of equations, we have used 3SLS method. The 3SLS method is considered more efficient than 2SLS (Belsley 1988) especially when the sample size is not large. The first step in 3SLS estimation method involves obtaining 2SLS estimates of the system of equations by regressing all endogenous variables separately on all the exogenous variables. In the second step, the errors from the 2SLS regression are used as instruments to estimate the errors of the system of equation and the contemporaneous correlation among the error terms. In the final step, GLS estimation method is used to estimate the coefficients by using the contemporaneous variance-covariance matrix of error terms (Zellner and Theil 1962). To make sure that the system of equations is identified, we dropped at least *n-1* explanatory variables from equation (1) to (3) (Baum, 2007; Greene, 2012).

3.2 Data and Variable Construction

As we want to see the interaction of the democracy, inequality and economic growth, we choose a set of three dependent variables and a few independent variables which are found in the literature to affect the dependent variables.

Democracy is one of the dependent variables. The democracy – as defined by Schumpeter (1947) – is formally defined as a corpus of laws and procedures which regulate the transfer of political authority in conjunction with freedom of expression at all levels of public life. A competing view of democracy also takes in its purview civil liberties like freedom of speech and freedom of press (Huntington, 1993)[1]. An analysis based on a formalist

[1] Huntington suggests that civil liberties are essential elements of an effective democracy.

definition of democracy consisting only of constitutional rules and procedures gives results quite different from those which do not limit democracy to constitutional rules and procedures[2].

In this study, two different variables are used as a proxy for democracy: Democracy and Gastil[3]. So the set of simultaneous equations given in section 3.1 is used twice, i.e. once with Democracy and secondly with Gastil. The DEMOC variable is adopted from the Polity IV Project which sees democracy as a combination of institutions, institutionalized constraints on the power of the executive and guarantee of civil liberties in the exercise of their right to political participation (Marshall, et. al. 2014). The second variable Gastil used as a proxy of democracy is a democracy index, which is average of two indicators of political rights and civil liberties. The source of this variable is Freedom House, which has covered almost all countries of the world since 1972 through its Freedom in the World survey. Figure 1 below shows the relationship between democracy and Gastil which are two different measures of the quality of the democratic institutions. We can see that the least democratic periods (0 value on the x-axis) and highly democratic periods (the value of democracy variable is 8 on the x-axis) can be consistent with widely different levels of Gastil values. However, nearly 82% correlation between democracy and Gastil shows a high degree of association between these two definitions of democracy.

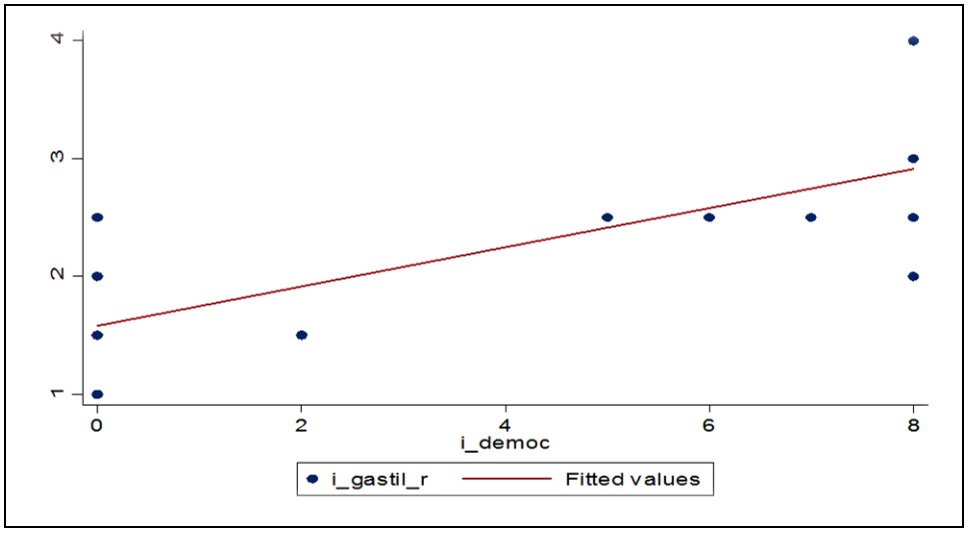

Figure 1: Gastil and Democracy

Then there are some alternative measures of democracy which will be used as instruments of democracy: Polity and Polity2. Democ, Polity and Polity2 are taken from Polity IV Project data set by Marshall and Jaggers (2004) that contains data for all those countries where the population is above half million individuals since 1800.

[2] These differences, however, characterize all the empirical studies in which the categorical variable democracy is used for empirical analysis. Different notions of democracy lead to different results (Persson and Tabellini, 1994).

[3] The purpose of using the two different measures of democracy is to see if differences in the estimated effects of democracy arise from the different definitions of it.

Polity is computed by subtracting Autocracy score from the Democracy score. The resulting unified polity scale ranges from +10 (strongly democratic) to -10 (strongly autocratic). So this variable measures the degree of political activity, the openness of the executive authority to new candidates and the limitations imposed on the executive. The score -88 indicates a transition period in which new political paradigms are preceded by a transition period, the latter being guided by some executive authority or some other legislative measures.

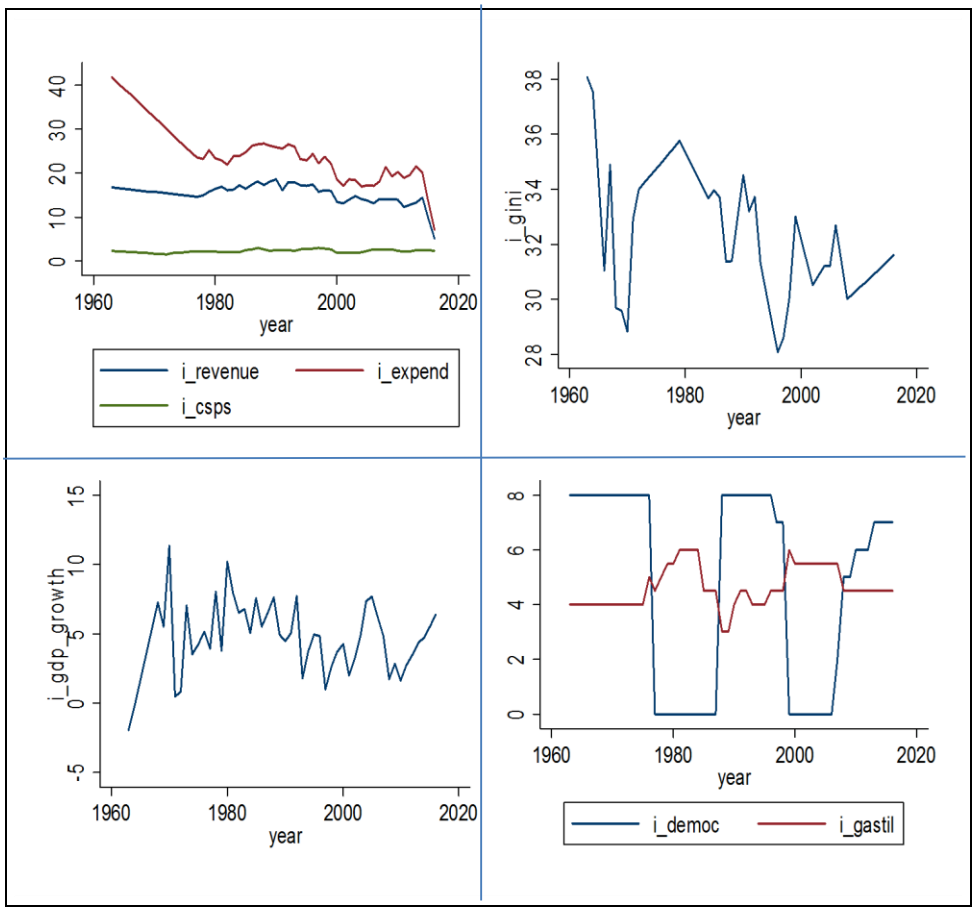

Figure 2: Revenue, Expenditure, CSPS, Gini, GDP growth and Democracy in Pakistan (1960-2016)

The second dependent variable is Gini which measures the degree of income concentration in the economy. It is available in the World Income Inequality Database. However, the problem with this dataset is that the data for Gini is available only for 29 years during our sample period of 1963-2016. The missing values are filled by using STATA "ipolate" command (Table 5 in Appendix A). The third dependent variable is the GDP growth rate which captures the level of economic growth in Pakistan.

The independent variables include Expenditure and Revenue. The Olson's hypothesis links democracy and government size. Government size has been measured with two variables:

the size of overall public expenditures and overall revenues of the economy and both are measured as a percentage of GDP. We have also included in the analysis, the size of social expenditure that helps to implement redistributive policies in the framework of median voter models. Therefore, we use the variable of CSPS, i.e. expenditure of the government on community, social and public services as a ratio of GDP. The central government's budget deficit as a variable Deficit has also been included in the analysis. It merits high attention in any fiscal policy analysis. Budget deficit has important ramifications for a level of democracy. Figure 2 shows how these variables evolve over the time from 1960 to 2016. The data of Expenditure, Revenue and Deficit has been obtained from State Bank of Pakistan (SBP, 2015). The data of GDP growth rate is taken from World Development Indicators (WDI) (WDI 2016).

We have utilized the annual time series data from 1963 to 2016. The missing values are filled in by using the "ipolate" command of STATA. The summary statistics of the raw data and the transformed data is given in Table 5 in the Appendix A and source of data of relevant variables has been given in table 2.

Table 2: Variables of the Analysis and their Data Sources

Variable	Source
Revenue (Total revenue % of GDP)	SBP
Expenditure (Total expenditure % of GDP)	SBP
Deficit (Total budget deficit % of GDP)	SBP
Government expenditure on education, total (% of GDP)	WDI
Age dependency ratio (% of working-age population)	WDI
Claims on private sector (Annual growth as % of broad money)	WDI
GDP Growth rate	WDI
Gini	WIID*
Democracy	Polity IV Project
Autocracy	Polity IV Project
Polity	Polity IV Project
Polity2	Polity IV Project
Civil Liberties	Freedom House
Political Rights	Freedom House
Gastil	Freedom House

*WIID: World Income Inequality Database

4. Empirical Results

The results of simultaneous system of equation (3SLS, SUR) by using the variable of Democracy and Gastil are given in table 3 and 4 respectively.

4.1 Democracy

The results of equation (1) demonstrate that democracy is positively influenced by GDP growth and expenditure while it is negatively related with Gini through three-stage estimation for systems of simultaneous equations with 3SLS estimation method. However, when the system of simultaneous equation using seemingly unrelated regression method (SUR) is estimated, the total revenue (% of GDP) also negatively influences the democracy. It is interesting to note that the coefficient signs exactly match the hypothesized signs. By far the strongest negative effect on democracy is exerted by the level of inequality

in Pakistan as is captured by Gini variable. A unit increase in the Gini value brings down institutionalized democracy by nearly 5 units (Table 3). This is huge impact given that the democracy values range from 0 to 10 in the sample. However, when we used an alternative measure of democracy, that is, Gastil, the impact of Gini is positive (Table 4). As the positive impact of inequality on democracy is counterintuitive, we feel assured that institutionalized democracy measured developed by Polity IV Project is more reliable.

Apart from 3SLS, we also used alternative estimation methods such as 2SLS, OLS, SUR and MVREG. The basic idea of using a set of alternative estimation techniques is to see how sensitive our estimates are to the change in the estimation technique. 3SLS and 2SLS differ in that while the former estimates the full system of equation simultaneously, the latter performs equation-by-equation estimation and does not allow cross-equation testing because no covariance is estimated between the parameters of the equations. 3SLS is useful if we expect cross-correlations in the residuals of the equations which is not possible in 2SLS and is more efficient than 2SLS. 2SLS is however better than 3SLS in case the any equation of the system is mis-specified because 2SLS can handle violations of i.i.d assumptions of the errors. OLS estimation method also performs equation-by-equation estimation based on the assumption that all variables on the right hand side of all the equations in the system are exogenous. SUR (seemingly unrelated regression) is also used to estimate a system of multiple equations when we suspect our error terms to be correlated (Zellner, 1962). Baum (2006) suggests use of SUR to allow testing the cross-equations restrictions. MVREG (multivariate regression) is identical to SUR with the difference that errors covariance matrix is estimated with OLS degrees of freedom adjustment (StataCorp, 2014). It is to be stressed that SUR estimates the equation system based on the assumption that all variables on the right hand side of all the equations in the system are exogenous. However, we suspect the relationship between multiple equation systems when the error terms of these equations correlate. Estimates based on OLS and SUR and by extension MVREG are given here to see how they differ when we employ an estimation method not consistent with the theoretical structure of the relationship among inequality, growth and democracy.

Table 3: Results of Simultaneous System of Equations for Democracy, Income Inequality and Economic Growth by Using Democracy as Measure Of Democracy

	(1)	(2)	(3)	(4)	(5)
	OLS	2SLS	3SLS	SUR	MVREG

Democracy					
Gini	-0.525**	-2.824	-4.848***	-0.676***	-0.678***
	(-2.82)	(-1.77)	(-5.65)	(-3.88)	(-3.67)
GDP Growth	-0.159	2.127	2.753**	-0.305*	-0.305
	(-0.98)	(1.11)	(3.06)	(-2.01)	(-1.89)
Revenue	-0.704**	-1.463	-0.940	-0.590*	-0.590*
	(-2.81)	(-1.50)	(-1.62)	(-2.51)	(-2.36)
Expenditures	0.467***	1.091*	0.894**	0.429***	0.428***
	(5.34)	(2.05)	(3.11)	(5.23)	(4.93)
CSPS	2.512	2.827	-0.691	1.905	1.901
	(1.95)	(0.71)	(-0.49)	(1.58)	(1.49)
Constant	16.08*	75.52	143.1***	22.25***	22.30**
	(2.25)	(1.76)	(5.88)	(3.33)	(3.15)
Gini					
Democracy	-0.128	-0.0412	-0.139	-0.206**	-0.205*
	(-1.54)	(-0.38)	(-1.87)	(-2.62)	(-2.48)
GDP Growth	-0.183	0.236	0.181	-0.304**	-0.303*
	(-1.50)	(0.79)	(0.76)	(-2.65)	(-2.51)
CSPS	-1.641*	-1.596	-1.289	-1.626*	-1.626*
	(-1.99)	(-1.73)	(-1.87)	(-2.08)	(-1.98)
Age dependency ratio	0.0928*	0.0660	0.0468	0.0909*	0.0909*
	(2.47)	(1.46)	(1.35)	(2.56)	(2.44)
Constant	30.05***	29.77***	31.36***	31.10***	31.09***
	(8.06)	(7.16)	(9.66)	(8.81)	(8.39)
GDP Growth					
Democracy	-0.0936	0.0738	0.330***	-0.202*	-0.202
	(-0.86)	(0.46)	(5.28)	(-1.98)	(-1.87)
Gini	-0.314	0.537	1.591***	-0.478**	-0.479**
	(-1.84)	(1.07)	(5.87)	(-3.00)	(-2.83)
Expenditures	-1.166***	-0.752	-0.369	-1.070***	-1.070***
	(-3.76)	(-1.70)	(-1.68)	(-3.70)	(-3.49)
Revenue	1.584***	0.985	0.421	1.479***	1.479***
	(3.72)	(1.60)	(1.29)	(3.72)	(3.51)
Deficit	-1.018***	-0.479	-0.0414	-0.968***	-0.968***
	(-3.64)	(-1.06)	(-0.20)	(-3.71)	(-3.50)
Constant	14.80*	-12.01	-46.08***	20.11***	20.15***
	(2.54)	(-0.75)	(-5.35)	(3.70)	(3.49)
Observations	54	54	54	54	54
R^2	0.460			0.443	0.443
F	8.177	1.479			9.122
χ^2			38.07	51.27	
p-value	0.000	0.200	0.000	0.000	0.000

t statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$
Model estimated with Stata 13's "reg3" command with alternative options such as OLS, 2SLS, 3SLS, SUR and MVREG.

4.2 Inequality

For the equation (2), the results have shown that the level of inequality is influenced negatively by democracy, GDP growth and CSPS while positively by age dependency. The

coefficient signs largely match the hypothesized signs except the expected positive impact of GDP growth on inequality. The negative impact of democracy and CSPS on inequality is estimated slightly less precisely and is significant at 10% confidence level (P<0.01). However, the negative impact of GDP growth on inequality is consistent with the findings of a number of existing studies which fail to confirm that economic growth per se trickles down to the lower socioeconomic groups of society (Kuznets, 1955; Aghion, et. al. 1999; Cingano, 2014; Ncube, et. al. 2014). Using alternative estimation methods such as 2SLS, SUR and MVREG gives the same coefficient signs. The positive impact of age dependency ratio explain that rising age dependency ratio exacerbates inequality (P<0.05 in SUR and MVREG method) because increase in the number of dependents may mean smaller access to resources for the low socioeconomic subgroups compared with the high socioeconomic subgroups. Using the SUR method, we see a significant impact of GDP growth, democracy, CSPS and age dependency ratio. The democracy and CSPS have expected negative impact on inequality and age dependency ratio also has positive impact on inequality. The negative impact of growth rate is not consistent with our expectations. Using Gastil as an alternative definition of democracy, the impact of democracy on the inequality is positive but insignificant (Table 4).

4.3 GDP Growth

For equation (3) the results show that the GDP growth is positively and significantly influenced by Gini and democracy. Democracy has shown an expected positive impact on the economic growth but negative coefficient of Gini suggests that the rising inequality is better for economic growth in Pakistan. It is interesting to note that the largest impact on the GDP growth is exerted by the level of inequality in the country. A unit increase in the Gini variable nearly doubles the growth rate. The expected negative impact of inequality on the GDP growth rate is seen when we estimate the system of equations using the SUR method. Though SUR is based on the assumption that all variables in all equations on the right hand side are exogenous that is violation of our theoretical model. The fact that these equations are correlated is established only because of the correlation among the errors of these equations. In this respect, SUR gives theoretically consistent results using only the properties of the data even if the endogeniety assumption is violated. Again using SUR, we see that the revenue and deficit have a positive and negative effect on GDP growth rate respectively which is consistent with our expectations. However, the total expenditures have an unexpected negative impact on the GDP growth rate. Using the Gastil variable as an indicator of democracy, we see it has a positive impact on GDP growth while Gini has a positive impact on the GDP growth (Table 4). The SUR method shows the negative impact of Gini on the GDP growth which is again more consistent with the theory though empirical evidence also shows the negative relationship between equality and growth (Persson and Tabellini 1994; Li and Zou 1998; Ostry and Berg 2011; Marrero and Rodriguez 2013).

Table 4: Result of Simultaneous System of Equations for Growth, Democracy and Income Inequality by Using Gastil as an Alternative Measure of Democracy

	(1)	**(2)**	**(3)**	**(4)**	**(5)**
	OLS	2SLS	3SLS	SUR	MVREG

Gastil					
Gini	-0.0869*	-0.686	-1.248***	-0.107**	-0.0869*
	(-2.25)	(-1.58)	(-5.65)	(-2.94)	(-2.25)
GDP Growth	-0.00762	0.661	0.807***	-0.0172	-0.00762
	(-0.23)	(1.28)	(3.82)	(-0.54)	(-0.23)
Revenue	-0.108*	-0.336	-0.213	-0.0979*	-0.108*
	(-2.07)	(-1.26)	(-1.40)	(-2.00)	(-2.07)
Expenditure	0.0952***	0.271	0.228**	0.0924***	0.0952***
	(5.25)	(1.88)	(3.03)	(5.42)	(5.25)
CSPS	0.631*	0.834	-0.0825	0.569*	0.631*
	(2.36)	(0.77)	(-0.30)	(2.26)	(2.36)
Constant	3.102*	18.09	36.92***	3.851**	3.102*
	(2.09)	(1.55)	(5.89)	(2.76)	(2.09)
Gini					
Gastil	-0.458	-0.0926	-0.355	-0.699	-0.458
	(-1.12)	(-0.18)	(-1.00)	(-1.79)	(-1.12)
GDP Growth	-0.160	0.278	0.262	-0.250*	-0.160
	(-1.32)	(0.98)	(1.16)	(-2.18)	(-1.32)
Age dependency ratio	0.0967*	0.0644	0.0465	0.0981**	0.0967*
	(2.52)	(1.37)	(1.32)	(2.69)	(2.52)
CSPS	-1.600	-1.589	-1.252	-1.556	-1.600
	(-1.91)	(-1.68)	(-1.84)	(-1.95)	(-1.91)
Constant	30.01***	29.71***	31.11***	30.78***	30.01***
	(7.95)	(6.99)	(9.50)	(8.59)	(7.95)
GDP Growth					
Gastil	-0.286	0.527	1.257***	-0.467	-0.286
	(-0.55)	(0.68)	(5.11)	(-0.95)	(-0.55)
Gini	-0.297	0.600	1.535***	-0.409*	-0.297
	(-1.74)	(1.19)	(6.23)	(-2.55)	(-1.74)
Expenditure	-1.218***	-0.711	-0.279	-1.195***	-1.218***
	(-4.04)	(-1.56)	(-1.67)	(-4.23)	(-4.04)
Revenue	1.663***	0.907	0.264	1.657***	1.663***
	(4.04)	(1.41)	(1.00)	(4.29)	(4.04)
Deficit	-1.052***	-0.425	0.00923	-1.044***	-1.052***
	(-3.80)	(-0.90)	(0.06)	(-4.02)	(-3.80)
Constant	14.39*	-14.50	-45.24***	18.03**	14.39*
	(2.41)	(-0.88)	(-5.77)	(3.22)	(2.41)
Observations	54	54	54	54	54
R^2	0.439	-7.134	-18.05	0.435	0.439
F	7.514	0.951			7.514
χ^2			43.34	43.53	
p-value	0.0000	0.450	0.0000	0.0000	0.0000

t statistics in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Model estimated with reg3 command of STATA 13 with alternative options such as OLS, 2SLS, 3SLS, SUR and MVREG

Finally it may be argued that the Democracy variable of the Polity IV Project is a better measure of democracy because it gives the results which are generally consistent with expectations and economic theory.

5. Conclusion

Democracy, inequality and economic development are endogenously interlinked in Pakistan. GDP growth and total public expenditures (% of GDP) positively and significantly affect democracy while inequality adversely affects democracy in Pakistan. Using SUR estimation method, total revenues (% of GDP) negatively and significantly affect democracy. In quantitative terms, the strongest effect on democracy is exerted by the level of inequality in Pakistan as is captured by Gini variable.

As regards the determinants of inequality, GDP growth rate is found to have no significant impact on inequality. This is consistent with the findings of a number of existing studies which fail to confirm that economic growth per se trickles down to the lower socioeconomic groups of society. Higher doses of democracy as well as the public expenditures on community, social and public services (% of GDP) reduce inequality.

Regarding the determinants of GDP growth rate, both democracy and inequality are positively and significantly associated with economic growth. It is interesting to note that the largest impact on the GDP growth is exerted by the level of inequality in Pakistan. Using an alternative SUR estimation method, we find a negative impact of inequality on the GDP growth rate. While public expenditures (% of GDP) positively affect the GDP growth rate, the public revenues (% of GDP) negatively affects economic growth.

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Appendix A

Table 5: Summary Statistics of the Raw Variables with Missing Values and Transformed Variables after Missing Values Filled In By Extrapolation

		Raw Data					Missing Data After Extrapolation				
		COUNT	MEAN	SD	MIN	MAX	COUNT	MEAN	SD	MIN	MAX
Age Dependency Ratio	agedep	49	82.27	7.94	65.30	88.91	54	81.70	7.97	64.81	88.91
Institutionalized autocracy	autoc	43	2.58	3.03	0	7	54	2.06	2.90	0	7
Civil Liberties	civlib	44	4.86	0.46	3	5	54	4.89	0.42	3	5
Claims on private sector (annual growth as % of M2)	claims_ private	49	7.72	4.77	-0.99	19.72	54	8.45	5.79	-0.99	26.26
Public expenditures on community,	csps	39	2.32	0.36	1.58	3.02	54	2.27	0.35	1.58	3.02

social and public services (% of GDP)											
Total budgetary deficit (% of GDP)	deficit	40	-1.93	2.50	-7.69	1.91	54	-4.92	6.14	-20.36	1.91
Institutionalized Democracy	democ	43	3.93	3.70	0	8	54	4.74	3.67	0	8
Regime Durability	durable	44	3.36	2.75	0	10	54	2.89	2.87	0	10
Executive Constraints	exconst	43	4.26	2.54	1	7	54	4.80	2.51	1	7
Total Expenditures (% of GDP)	expend	40	22.04	3.37	13.63	26.71	54	24.64	6.82	7.20	41.86
Executive Recruitment	exrec	43	6.23	1.74	4	8	54	6.59	1.71	4	8
Gastil	gastil	44	4.77	0.76	3	6	54	4.63	0.75	3	6
GDP Growth rate	gdp_ growth	49	4.95	2.35	0.47	11.35	54	4.67	2.56	-1.93	11.35
GINI	gini	29	32.24	2.53	28.06	38.08	54	32.45	2.30	28.06	38.08
The Competitiveness of Participation	parcomp	43	2.37	0.79	1	3	54	2.50	0.75	1	3
Regulation of Participation	parreg	43	2.88	1.00	2	4	54	2.70	0.96	2	4
Political Competition	polcomp	43	4.60	2.74	1	7	54	5.09	2.63	1	7
Combined Polity Score	polity	43	1.35	6.61	-7	8	54	2.69	6.46	-7	8
Revised Combined Polity Score	polity2	44	1.41	6.54	-7	8	46	1.50	6.45	-7	8
Political Rights	polright	44	4.68	1.34	3	7	54	4.37	1.38	3	7
Total Revenue (% of GDP)	revenue	40	15.39	1.94	9.80	18.55	54	15.30	2.21	5.08	18.55
Executive Constraints (Decision Rules)	xconst	43	4.26	2.54	1	7	54	4.80	2.51	1	7
Competitiveness of Executive Recruitment	xrcomp	43	1.49	1.44	0	3	54	1.80	1.42	0	3
Openness of Executive Recruitment	xropen	43	2.14	2.02	0	4	54	2.52	1.95	0	4
Regulation of Chief Executive Recruitment	xrreg	43	2.16	0.81	1	3	54	2.33	0.80	1	3