Income and Democracy in Sub-Sahara Africa

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Abstract

This paper assesses impact of democracy on per capita income in Sub-Saharan Africa (SSA). Key gaps this paper addresses are two. First, response of per capita income to democracy has not been examined for SSA in empirical terms. Two, we include key drivers of income in SSA as controls which recognise African resource-dependent peculiarity. Data for the study include per capita income (dependent variable), democracy (indicators: DEMO and POLITY2), controls (natural resource rent, labour and gross capital formation). Panel data estimation techniques (Pooled, Fixed Effects and Random Effects and System GMM) were adopted. The results reveal positive but weak impact of democracy on per capita income. However, using system GMM developed by Arellano and Blundell, democratic impact on income becomes stronger as previous level of income is automatically included. Hence, we conclude that certain previous level of income is necessary for sustaining present level of democratic norms and governance to enable it drive present level of per capita income. Our results are robust across different estimates and different indicators of democracy.

Keywords: Per Capita Income, Democracy, Panel Data Estimation Techniques, Sub-Saharan Africa.

JEL Code: N3, C23, N34

1.   Introduction

The idea that institutions matter for sustained economic growth and development, among most institutional economists, has been well established in economic literature. In the words of Avellaneda (2010), "institutions do significantly matter for growth and, by implication, for the policy prescriptions that developing countries should invest in governance-enhancing reforms to foster economic development". Following the arguments of Acemoglu (2009), considerations regarding political economy are crucial in determining current economic performance. More important is the fact that development experts and policy-makers have always viewed good governance as a pre-requisite to sustained increases in living standards (Knack 2003).

Of all institutions, the quality of political institution cannot be over-emphasized. Among the elements of political institution is the system of governance, which varies across geography, country and time space. For instance, most countries in the Asian and African continents were monarchical, though the latter later switched into military dictatorships, until they all began to embrace democracy. Democracy has been generally viewed as a modern and best system to govern, at least in the Western world. Luckily and coincidentally, western countries are model economies in terms of economic growth and development.

In global contexts, it is believed that Africa is the least democratic continent in the world, but democratization appears to be on the increase in the continent at the moment (Bates, Fayad and Hoffler 2012). According to Democracy Index (Economist Intelligence Unit, 2014), about 27 African countries are either ruled by an authoritarian regime or nominal democracy. As a result, both local and international efforts have been directed to democratizing governance and sustaining democracy in Africa. Within the continent, Economic Community of West African States Monitoring Group (ECOMOG under ECOWAS) has helped in a number of occasions to restore democracy in many African countries. United Nations Security and many other international security forces have been mobilized to help stop military dictatorship with a view to bringing in and restoring democracy. At present, most African nations operate democratic system of government while those without it are globally frowned at as being deviants of expected institutional norm.

In developed world and even at global level, it has been established with facts and figures that democracy improves income levels and vice versa (See for example, Heid, Langer & Larch, 2012). Now that African countries are predominantly more and more embracing democratic norms in compliance with global standards and best practices, it is important to see if democracy has impacted on per capita income of African nations; with specific interest in Sub-Sahara Africa (SSA).This becomes important noting that Africa remains the poorest continent in the world. Essentially, this paper seeks to see if increased and more application of democratic tenets matters for rising income in Africa, using SSA as a case study. Following arguments by Chang (2010) which suggest that there are empirical tendencies of reverse causality, with economic growth promoting and breeding more efficient institutions, we would also like to see if income also induces more democratic norms in SSA.

2.   Literature Review

There are a number of relevant existing works that have examined the relationship between income and democracy. While some consider how income impacts on democracy, others have looked at reverse causality by showing how democracy affects income. Hence, tendencies of bidirectional causality have been established.

Evidences that income positively affects democratic institutions are on track in empirical details such as Acemoglu, Johnson, Robinson and Yared, (2008), Barro(1997),Barro (1998), Londregan and Keith (1996). That social and economic factors cause democracy is contained in Lipset (1959). The possibility of reverse causality has also been established with leadership/democratic institutions breeding more income. For example, Benhabib, Corvalan and Spiegel (2011), using new income data and non-linear estimator, find a positive and significant relationship in between democracy and income.

Another study reveals that leaders matter for income growth, mostly in autocratic setting with least constitutional constraints as found in Jones and Benjamin (2005) and sometimes political regime changes, which are a key feature of democracy by means of election, accelerate growth as evident in Hausman, Pritchet and Rodrick (2005). Others including Persson and Tabellini (2007), Przeworki and Limongi(1997) hold that democracy breeds economic growth under certain political conditions. In Moral-Benito and Bartolucci (2012), evidence of positive non-linear effect from income to democracy is found for poor countries but vanishes for rich countries. However, a number of works are of the findings that income reduces democratic tendencies.

3. Methodology

3.1 Nature and Source of Data

The data used in this study is panel data for forty-two Sub-Sahara African countries over the period of 41 years (1975-2015). The choice of the countries and the time span is informed by the availability of data. The detailed description of the data on variables basis is discussed as follows:

3.2 Dependent Variable

The dependent variable for all the models in this study is income per capita. Globally, this is accepted as a measure of the income of a country and wellbeing of its citizenry. So, the income per capita is used here as dependent variable because of its wide acceptance as a measure of average country's wealth. This allows us to easily compare the findings of this study with many others. The data on the income per head is sourced from world development indicators.

3.3 Independent Variables

The main independent variable in this study is democracy. Although measures of democracy and governance abound, the most widely accepted ones are the measures provided by The Polity IV project established by Marshall and Jaggers (2013). Two indicators of democracy in the Polity IV data set are used to ensure robustness. One of these indicators is POLITY2 which measures both the degree of democracy and autocracy with the score ranging from -10 (most autocratic) to 10 (most democratic). The second indicator is DEMOC which represents the level of institutionalized democracy. It is an additive eleven-point scale (0-10) indicator of democracy.

However, natural resource rent, gross fixed capital formation and labour are included as control variables identified by many studies to be prime determinants of income. This is to avoid omission variable bias in the model. Essentially, the inclusion of natural resource rent is to represent African resource-dependent peculiarity tendencies.

3.4 Model Specification

To achieve the objectives of this study, the model was specified on the basis of the theoretical and empirical determinants of income. The model is specified as follows;

$$\text{GDPPC}_{it} = \alpha_0 + \alpha_1 \text{GDPPC}_{it-1} + \beta DEMO_{it} + \gamma CONTROL_{it} + \mu_i + \lambda_t + \varepsilon_{it}$$

GDPPC, DEMO and CONTROL represent the level of income per head, democracy and the control variables (Natural resource rent, capital formation and labour) respectively. Meanwhile GDPPC_{it-1} represents the immediate previous level of income. This is included only in the dynamic model.), α represents the constant parameter, μ_i denotes the unobservable individual effect and λ_t denotes the unobservable time effect and ε_{it} is the remainder stochastic disturbance term.

To ensure robustness in our estimations, democracy as a variable (DEMO) is represented by DEMOC and POLITY2 (included one after the other in the estimation)

3.5 Estimation Techniques and Procedure

Method of estimation of panel data models has undergone an age long modification and improvement. This led to the development and use of alternative estimation techniques by various scholars over time. Some of the techniques are the Within Groups estimator, Arellano-Bond first difference Generalized Method of Moments (GMM) estimator and Blundell – Bond System GMM estimator among others.

Empirical literature earlier has shown the weakness of one estimation technique or the other, hence our choice of adoption of four of these estimators (fixed effect, random effect and dynamic panel models). This enables us to assess the robustness of the result and findings of this study. Also, preliminary analysis with

scatter graphs and descriptive statistics were employed to examine the characteristics of the variables.

4   Presentation and Analysis of Results

4.1   Descriptive statistics

Table 1

| VARIABLES	Observations	Mean	Standard deviation	Minimum	Maximum
YEAR	1,722	1995	11.836	1975	2015
DEMOC	1,603	2.6569	3.3267	0	10
POLITY2	1,716	-1.2209	6.0615	-10	10
GDPPC	1,609	1,355.5	2,026.3	115.44	20,172
NRRENT	1,527	12.563	13.646	0.001161	86.132
LABOUR	253	65.574	12.773	30.500	92.700
CAPITAL	1,021	4.5784e+09	1.1384e+10	-4.1809e+09	8.5507e+10

Source: Authors' Computation 2017.

From the descriptive statistics in Table 1 above, it can be seen that the sample size of the data used in this study is 1722, which derives from cross-sectional units of 42 countries and time period of 41 years (1975-2015). This sample size which stands at 1722 is large enough for our chosen method of analysis; hence the sample size inadequacy problem does not arise.

On average, mean values of democratic measures (democracy: 2.6569 and polity2: -1.2209) suggest that many Sub-Saharan Countries appear to be autocratic (weak on democratic scores, to say the least). These democratic measures have large standard deviations, which imply the presence of highest level of heterogeneities among the countries as many are on the extreme values in both directions (see minimum and maximum values). The same holds for real per capita income, with standard deviation exceeding 2. With minimum and maximum income per head standing at 115.44 and 20,172 respectively, it is obvious that Sub-Saharan African countries differ and vary greatly in per capita income, hence the reason behind huge standard deviation of 2,026.3 obtained for the variable.

Descriptive statistics on all control variables employed in the study (labour, capital and natural resource rent) reveals that there is huge spread (standard deviation larger than 2), which implies that there are individual differences among SSA in terms of resource endowment. A quick look at the table on these variables attests to this assertion. So, we conclude that in all variables considered in this study, SSA Countries differ as there is huge spread in its standard deviation.

Figure 1: Income and Democracy in SSA

Figure 2: Income and Democracy in SSA
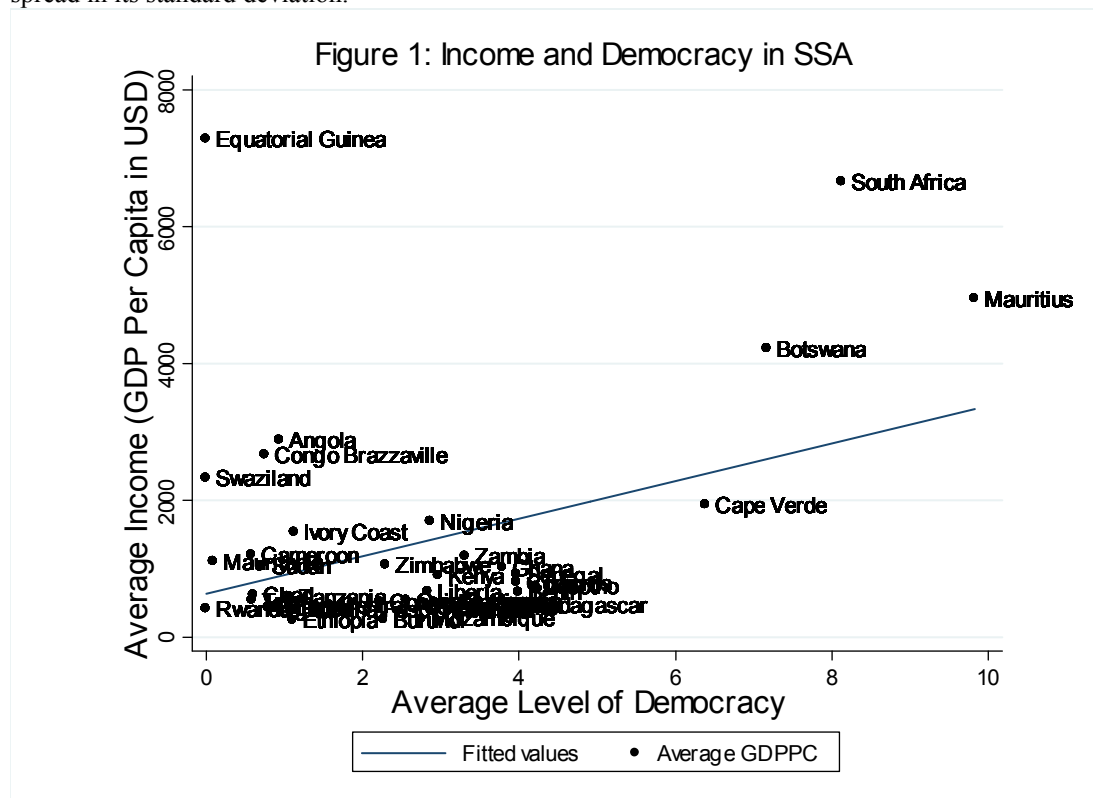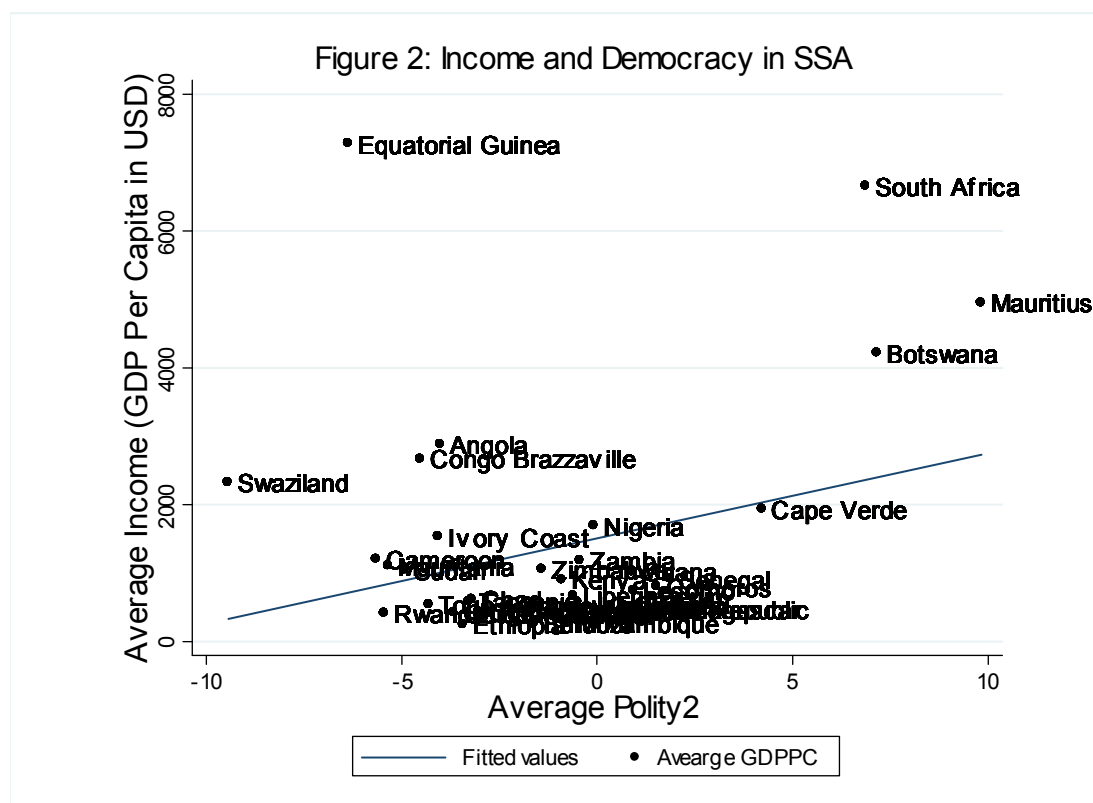
From the above figures (1 and 2), income per head is reasonably and positively proportionate to democratic measures for most countries considered in this study. For example, we found that South Africa, which records impressively high score in democratic measures, also, has high income per head (highest after Equatorial Guinea). Botswana and Mauritius maintain closely similar records with South Africa. In the same vein, Nigeria, which scores relatively low in democratic measures simultaneously, records low income per head. This observation is true for most SSA countries considered in this study.

Surprisingly, it is worthy of note that Mauritius, which appears to be the most democratic nation in SSA does not have the highest income per head. Analogically, Equatorial Guinea which enjoys highest per capita income belongs to the class of the least democratic nations (highest autocratic nations)

4.2 Discussion of Estimation Results

Table 2: Estimates of Regressions for GDPPC and DEMOC without Control Variables

	Dependent Variable: GDP Per Capita (GDPPC)			
Independent variables				System GMM (Arellano Blundell)
	Pooled	Fixed effect	Random effect	
GDPPC$_{t-1}$				0.9815***
				(0.005403)
DEMOCRACY	0.06875***	0.01091	0.01147	0.007698***
	(0.007470)	(0.01256)	(0.01256)	(0.001087)
Constant	6.5508***	6.7111***	6.6959***	0.1169***
	(0.02675)	(0.03480)	(0.1252)	(0.03545)
Observations	1,512	1,512	1,512	1,471
R-squared	0.068	0.006		

Note: Robust standard errors in parentheses and *** indicates 1% level of significance
Source: Authors' Computation 2017.

Table 3: Estimates of Regressions for GDPPC and DEMOC with Control Variables

Independent variables	Dependent Variable: GDP Per Capita (GDPPC)			
	Pooled	Fixed effect	Random effect	System GMM (Arellano Blundell)
GDPPC$_{t-1}$				0.9860***
				(0.006872)
Democracy	0.09113***	-0.006383	-0.001956	0.01046***
	(0.01444)	(0.01524)	(0.01277)	(0.001677)
Natural resource rent	-0.005112	-0.003846*	-0.004069	0.001108***
	(0.005539)	(0.002239)	(0.002509)	(3.560e-04)
Labour	-0.0362***	-0.002322	-0.004249**	0.001525***
	(0.003246)	(0.001722)	(0.001832)	(3.991e-04)
Capital	0.2537***	0.3429***	0.3420***	-0.009301***
	(0.02529)	(0.07267)	(0.06329)	(0.003607)
Constant	3.7411***	0.06690	-0.03033	0.1616**
	(0.6236)	(1.4856)	(1.1929)	(0.08136)
Observations	179	179	179	178
R-squared	0.736	0.661		

Note: Robust standard errors in parentheses while ***, ** and * indicates 1%, 5% and 10% level of significance respectively
Source: Authors' Computation 2017.

Table 4: Estimates of Regressions for GDPPC and POLITY2without Control Variables

Independent variables	Dependent Variable: GDP Per Capita (GDPPC)			
	Pooled	Fixed effect	Random effect	System GMM (Arellano Blundell)
GDPPC$_{T-1}$				1.0004***
				(0.004976)
POLITY2	0.02464***	0.003446	0.003613	0.002960***
	(0.003993)	(0.006499)	(0.006492)	(3.809e-04)
Constant	6.7362***	6.7150***	6.7112***	0.009626
	(0.02300)	(0.006507)	(0.1297)	(0.03348)
Observations	1,605	1,605	1,605	1,564
R-squared	0.029	0.002		

Note: Robust standard errors in parentheses while *** indicates 1% level of significance.
Source: Authors' Computation 2017.

Table 5: Estimates of Regressions with Control Variables for GDPPC and POLITY2

Independent variables	Dependent Variable: GDP Per Capita (GDPPC)			
	Pooled	Fixed effect	Random effect	System GMM (Arellano Blundell)
GDPPC$_{T-1}$				0.9948***
				(0.006314)
POLITY2	0.04300***	-0.004695	-0.003557	0.005354***
	(0.008046)	(0.008680)	(0.007489)	(8.981e-04)
Natural Resource Rent	-0.009225*	-0.003752*	-0.004244*	0.001088***
	(0.005457)	(0.002173)	(0.002442)	(3.618e-04)
Labour	-0.04085***	-0.002567	-0.004305**	0.001429***
	(0.003237)	(0.001744)	(0.001798)	(4.095e-04)
Capital	0.2549***	0.3469***	0.3470***	-0.01085***
	(0.02575)	(0.07583)	(0.06683)	(0.003678)
Constant	4.3888***	-0.03171	-0.1684	0.1736**
	(0.6774)	(1.5937)	(1.2902)	(0.08427)
Observations	181	181	181	180
R-squared	0.715	0.660		

Note: Robust standard errors in parentheses while ***, ** and * indicates 1%, 5% and 10% level of significance respectively
Source: Authors' Computation 2017.

Estimates from the tables above present the results of the panel regressions (pooled, fixed effects, random effects and dynamic) regarding the impact of democracy (measured by demo, polity2) on per capita income in SSA. Four estimates were conducted, involving two measures of democracy with and without control variables. Our preferred estimations are those of Columns 2 (fixed effect) and 4 (dynamic panel).The preference derives from our diagnostics tests, which indicates that random effects are inconsistent(or fixed effects are consistent) and that past income matters for present level of income(Dynamic effects are consistent).

From results presented in Table 2, we found that income per head in SSA Countries respond weakly to democratic measure (demo) as co-efficient in Column 2 is positive but insignificant. However, this impact becomes significant and hence stronger when past income per head is included in the estimation (see results in column 4). With dynamic effect incorporated, we observed that democracy significantly drives income per head only if there was previously sufficient level of income per head (or income level) to operate and sustain democracy in the current period (or regime). Results in Table 3 differ from those in Estimates 1 mainly because the former includes control variables in its estimation which are labour, capital and natural resource rent. While labour and capital are traditionally drivers of income (or income per head), the choice of the inclusion of natural resource rent is intended to represent and acknowledge African resource-dependent peculiarity tendencies. In addition to similar findings as those in Table 2, we found that natural resource rent significantly and positively promotes income per head in SSA. Labour poses a significant impact too but with mixed signs across our preferred estimations, with fixed effects and dynamic panel yielding negative and positive co-efficient respectively. Capital positively impacts on income per head but significance varies across different estimations.

Similar to the results in Table 2, but now with a different measure of democracy (polity2), results from Table 4 reveal a positively weak impact of democracy on per capita income in SSA. This influence, however, becomes significantly stronger with past level of income per head (included in the dynamic panel). With the inclusion of controls in Table 5, natural resource rent still remains a significantly key driver of income per head in SSA, but now with varying signs of impacts. Capital and labour too exhibit varying impacts both in signs and significance.

5.   Conclusion

In sum, democracy positively affects per capita income in SSA (Similar to findings by Bates etal (2012)) but with varying significance. Our findings which are robust across different estimations suggest that the real impacts of democracy on income per head in SSA is conditional on the level of income per head (or income) in the previous period (year or regime). This is partly due to our high cost of running democracy and governments which might imply a break in the transmission of democratic gains to living standards unless previous income stands high enough to sustain present democratic activities and business of governance.

Labour which exhibits both negative and insignificant co-efficient under Fixed Effects yields positive and significant impact under dynamic effects, suggesting that the impact of previous level on income and of course, previous income per head which should have improved workers' living standards is a key to labour-income per head relationship. This is reasonable because what matters in labour is its efficiency, measured in terms of productivity. Without previous income having impact on workers, their productivity might imply a decline and hence declining effect on income per head in SSA. Labour does not therefore promote per capita income in SSA. Capital impacts on income per head in SSA, with varying directions of impact, depending on whether past income per capita is included or not. In fact, results from estimate inform that natural resource rent decides our per capita income and hence our living standards. Could this be why a shock to global market dynamics of natural resources (such as oil price shocks) often destabilizes most SSA Countries?

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