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Journal of Policy Modeling 45 (2023) 10–30

www.elsevier.com/locate/jpm

Is democracy pro poor in Sub-Saharan Africa?☆

Ariel Herbert Fambeu *, Patricia Tchawa Yomi

University of Douala, 4032, FSEGA, Cameroon

Received 23 September 2022; Received in revised form 28 December 2022; Accepted 9 January 2023
Available online 14 February 2023

Abstract

This study examines if democracy reduces poverty in 40 Sub-Saharan African countries for the period 1999–2018. For this purpose, we employ the Generalised Method of Moments. The results show that democracy is not directly associated with poverty reduction in sub-Saharan Africa. However, this observation hides important non-linearities and an interesting pattern of policy complementarities. Indeed, democracy is associated with poverty reduction in countries where economic growth is strong and human capital high. The robustness tests carried out do not change these results. This means that poor economic growth and weak human capital not only have a direct negative effect on the well-being of SSA countries, but also prevent the poor in those countries from benefitting the gains of democracy. Therefore, in order to reduce poverty in SSA, policy makers should continue the process of democratization while simultaneously adopting policies of economic development and human capital building. Democracy in isolation is useless for the poor in SSA.

JEL classification: C23; I32; O10; O55; P16

Keywords: Democracy; Poverty; Sub-Saharan Africa

☆ We would like to thank the four anonymous referees of the JPM for their helpful comments. The views expressed here are those of the authors.
* Corresponding author.
E-mail addresses: afambeu@yahoo.fr (A.H. Fambeu), tchawap@yahoo.com (P.T. Yomi).

https://doi.org/10.1016/j.jpolmod.2023.02.005

1. Introduction

At the beginning of this millennium, world leaders met at the United Nations Millennium Summit to undertake the momentous task of eradicating poverty in its various forms. The outcome of this summit was the Millennium Development Goals (MDGs), which set the development agenda through 2015. Replacing the MDGs, the Sustainable Development Goals (SDGs) have as their primary goal the end of poverty in all its forms everywhere in the world by 2030. In particular, the goal of halving the poverty rate that prevailed in 1990 was achieved six years ahead of the deadline that had been set by the Millennium Development Goals. Since 1990, the proportion of the world's population living below the international poverty line has been reduced from 35.9 % to 10 %, a reduction of more than 70 % (World Bank, 2018).

However, between 1990 and 2015, the regional distribution of poverty clearly changed. In 2015, more than half of the poor lived in sub-Saharan Africa, and more than 85 % lived in sub-Saharan Africa and South Asia.

The number of people living in extreme poverty outside of sub-Saharan Africa fell from 708 million in 2010–240 million in 2021, while in sub-Saharan Africa, the number of people living in extreme poverty significantly increased between 1990 and 2002 and has remained almost level since then (World Bank, 2022). In 2010, 416 million people in countries in sub-Saharan Africa were living below the extreme poverty line – this was 37 % of the global population living in extreme poverty. By 2021, the region is still home to more than 457 million people living in extreme poverty. As poverty has reduced elsewhere around the world, extreme poverty in countries in sub-Saharan Africa now represents a global share of over 66 % of the people who live in extreme poverty around the world. It therefore becomes important to understand why Africa's poverty rate is not only higher than most other low- and middle-income countries, but also why its reduction is slower.

It is with this in mind that this research attempts to explain poverty in sub-Saharan Africa through the prism of democracy. Indeed, among the findings of the World Bank, the poor have weak ties to the state. They have limited access to public goods (infrastructure) and quality services, and their voice counts for little in public policymaking (Calderon et al., 2019). Many studies claim to show that democracies are more successful than non-democracies in improving the welfare of the poor (Bueno de Mesquita et al., 2003; Dasgupta, 1993; Lake & Baum, 2001; Moon & Dixon, 1985; Sen, 1981, 1999). These claims are consistent with mainstream political economy models, which suggest that democracies produce more public goods and more income redistribution than non-democracies (Bueno de Mesquita et al., 2003; Meltzer & Richard, 1981; McGuire & Olson, 1996; Niskanen, 1997). But it is not clear that democracy actually reaches the poor by producing better social outcomes. This is because democratic institutions are generally slow to respond to external shocks, and for politicians seeking re-election as the deadline approaches, they may engage in suboptimal short-term policies. In addition, the expansion of civil liberties may lead to increased conflict over income distribution. From this point of view, we should observe a negative impact of democracy on the process of wealth production and redistribution. This negative impact can thus cancel out the positive effect of democracy on poverty reduction.

The objective of this paper is to examine the effect of democracy on poverty reduction using a sample limited to sub-Saharan African countries. Our contribution is empirical, mainly due to the relevance of the SSA context. Indeed, as mentioned above, SSA is the poorest region in the world, despite significant progress in terms of democracy. However, a key feature of the democratization of SSA is that democratic progress has been unevenly distributed across it, with

clusters of regimes emerging in certain sub-regions: West Africa and Southern Africa have been the most democratic sub-regions; progress in East Africa has known ups and downs, while Central Africa continues to be dominated by autocratic regimes (Freedom House, 2018). If the studies present contradictory results on the effect of democracy on poverty, it is above all because of the differences in samples, periods and estimation techniques, including the indicators of poverty and democracy. In addition to the direct effect of democracy on poverty reduction, we examine potential transmission channels such as economic development and human capital. In this paper, we use two indicators of democracy (electoral democracy and institutionalized democracy) and two indicators of poverty (poverty index and depth of poverty). Then we employ the System Generalized Method-of-Moment (GMM), which we apply on a sample of 40 sub-Saharan African countries over the period 1999–2018. This technique allows us to correct for endogeneity problems and to account for unobservable and time-invariant country-specific effects. The use of this approach was possible thanks to an interpolation technique that fills in missing observations on the poverty variables. Finally, we check the robustness of our results by assessing their sensitivity to the interpolation, the sample and the specification of the model.

Our results show that democracy is not directly associated with poverty reduction in Sub-Saharan Africa. However, this observation hides important non-linearities and an interesting pattern of policy complementarities. Indeed, democracy is associated with poverty reduction in countries with high economic growth and high human capital. The robustness tests conducted do not alter these results.

In what follows, we briefly discuss the literature on the effect of democracy on poverty. In Section 3, we present the methodology and data. Section 4 presents and discusses the results, and Section 5 concludes with the policy implications of the study.

2. Literature review

Sen's (1981, 1999) work on the causes of famine is often extended to cover the causes of poverty more generally. First, Sen suggests that democracies, through the electoral process, allow the poor to penalize governments that have created famines; and political leaders, acting strategically, will therefore try to avoid famines. Second, Sen argues that democracies are better than non-democracies at transmitting information from poor and remote regions to the central government, thanks to freedom of the press. Therefore, even when democratic and non-democratic leaders are equally committed to ending famine, democracies are more likely to know when action is needed. Other researchers suggest that democracies tend to help the poor by producing more public goods and more income redistribution than non-democracies, because non-democratic governments do not face the electoral process (Bueno de Mesquita et al., 2003; Deacon, 2009; Lake & Baum, 2001; McGuire & Olson, 1996; Niskanen, 1997).

Perhaps the most influential version of this argument comes from Meltzer and Richard (1981), who developed a seminal model on the distributional effects of democracy. In the model, democratization occurs when political rights are extended from a wealthy elite to the rest of the citizenry. As suffrage expands, the position of the median voter - whose preferences determine government policy - shifts down in the income distribution. Under universal suffrage, the median voter will earn the median income; when income is unequally distributed, however, the median income is less than the mean income. Since the decisive voter now earns a below-average income, she favors a higher tax rate (since it will fall most heavily on the wealthy) and more economic redistribution. In short, democracy brings more people with below-average

incomes to the polls, and they collectively force the government to redistribute income downwards.

A more nuanced approach could be anchored in Fukuyama's work for instance, arguing that a well-functioning democratic system depends on the emergence of a middle-class, fostering inclusive policies (Fukuyama, 2012). In the absence of such a class, political parties would cater for a narrow base and provide only for these interests. In this context, a democracy would not be inclusive and cater only for the politically affluent groups, which usually does not include the poor. The middle class appears requires private property, freedom and democracy. The poor do not need these values, as they do not help them to become better off. At the other extreme, the rich may not need freedom and democracy, as they can protect their property themselves. In this regard, the middle class becomes an essential link.

Empirically, tests by Moon and Dixon (1985) show that democracy in general, and left-wing democratic governments in particular, produce better welfare outcomes. Dasgupta (1993) finds a simple correlation between measures of political and civil rights and improved living standards in 51 poor countries between 1970 and 1980. Democracy is often conceived as a distributional game. Much of the evidence supporting this possibility is based on the World Bank's 1996 inequality data set. Using this updated and revised 2007 data, Timmons (2010) revisits these results. Using similar specifications to previous studies, as well as a larger country sample (4982 observations from 143 counties) with more appropriate econometric models (2SLS, 3SLS, and ECM), he found no relationship between democracy/civil liberties and aggregate measures of economic inequality. He concludes by saying that the question of whether and how democracy reduces economic inequality thus remains an open question.

Fabella and Oyales (2008) explore the influence of democratic and political freedom on poverty reduction. Their goal is to determine the conditions required for a functioning democracy in the context of developing countries that will allow it to reduce poverty. Using two-stage least squares estimation, their results suggest that democracy, in general, has a negative influence on poverty reduction for developing countries. However, when complemented by trade openness, primary education, regulatory quality, effective governance, voice and accountability, the result becomes positive. In a similar vein, Anyanwu and Anyanwu (2017) show that institutional democracy is bad for poverty reduction in sub-Saharan African countries and for achieving the MDG on poverty, if the current state of democratic practices continues. The authors apply the instrumental variables method (2SLS) on data from 44 sub-Saharan African countries from 1980 to 2013. They find that institutional democracy has a positive and highly significant coefficient on both the incidence of poverty and the depth of poverty in the region, consistent with the results of Fabella and Oyales (2008). Governments sometimes voted in dubiously free and transparent elections use the outward signs and rhetoric of democracy as a facade, while behind the scenes they engage in rent-seeking practices that can lead to a systemic entrenchment of corruption (Anyanwu & Anyanwu, 2017). In such a democratic system, political power is used for personal economic ends, which are used to gain political influence and perpetuate themselves in power. In such a climate, little or no dividends go to the general population, resulting in a persistent incidence of poverty and depth of poverty among a large percentage of the population.

Furthermore, Aloui (2019) explores the relationship between governance and poverty reduction in sub-Saharan Africa. In this framework, the basic hypothesis was the existence of a direct effect of governance on poverty reduction. The study of this hypothesis was formulated in a static model applied to available data on Sub-Saharan African countries between 1996 and 2016. The results imply that governance factors play an important role in poverty reduction.

However, the relationship between governance and poverty reduction varies by stage of development. The results support the hypothesis that governance has a greater impact on poverty reduction in the poorest regions of Sub-Saharan Africa. For example, the relationship between government effectiveness and poverty reduction is positive and significant for Central and East Africa, while it is not significant in Southern Africa and is negative and significant in West Africa. This differential effect of governance on poverty is also found in Coccia (2021) and Jindra and Vaz (2019). Jindra and Vaz (2019) find evidence of a beneficial effect of good governance for middle-income countries but not for low-income countries. Central findings of Coccia (2021) suggest that a good governance of institutions supports a reduction of poverty and income inequality in society. In particular, results show that the critical role of good governance for reducing inequality and poverty has an effect in countries with stable economies higher than emerging and fragile economies. Khodaverdian (2021) showed that unlike other countries, democracy does not improve welfare (reduction in child mortality) in Africa. The evidence suggests that without improvements in health, democracy puts Africa on a path toward a Malthusian trap. However, Aracil et al. (2021) find that institutional quality intensifies the beneficial effects of financial inclusion on poverty rates. This effect is more pronounced in poorer economies than in wealthier ones. Otherwise, Appiah-Otoo et al. (2022) found that the weak institutional quality reduces the positive effect of finance on poverty reduction in West Africa. In the same wake, Kouadio and Gakpa (2022) showed that economic growth remains a necessary condition for poverty reduction and that the overall improvement in the quality of institutions contributes significantly to reducing poverty and income inequality in the long term.

3. Methodology and data

3.1. Model

This study uses the growth-poverty model proposed by Ravallion (1997, 2008) and Ravallion and Chen (1997), and previously used by Adams and Page (2005) and Anyanwu and Anyanwu (2017). Adams and Page (2005) used the model to study the impact of international migration and remittances on poverty in developing countries. Using this model, Anyanwu and Anyanwu (2017) determine the main factors that significantly drive the incidence of poverty and the depth of poverty in sub-Saharan Africa.

We take a similar approach, controlling for income and its distribution, to study the effect of democracy on poverty reduction in sub-Saharan African countries.

The general empirical model is given by the following equation:

$$P_{it} = \beta_1 G_{it} + \beta_2 Y_{it} + \beta_3 DEMO_{it} + \beta_4 X_{it} + \gamma_t + \tau_i + \varepsilon_{it} \quad (1)$$

$$(i = 1, ..., N; t = 1, ..., T)$$

Where P_{it} is poverty in country i at time t; G is Gini income inequality; Y is average per capita income (GDP); $DEMO$ is democracy; X is the vector of control variables such as education ($EDUC$), inflation rate ($INFL$), trade openness ($TRADE$), foreign direct investment (FDI), government spending (GVT), and population growth rate (POP); γ_t, τ_i and ε_{it} are the time fixed effect, the country fixed effect and the error term, respectively; the β_i are the elasticities of poverty with respect to the explanatory variables.

There are many definitions and measures of poverty, but the most popular indicator is the poverty index, which measures the percentage of the population living with consumption or

income per capita below a certain poverty line. It is a measure of absolute poverty. Another popular measure is the poverty gap (depth of poverty), which measures the average distance below the poverty line. Thus, as a dependent variable, we use the poverty index (POV) and the poverty gap (POVG) considering the international poverty line at USD 1.90 per day.

Two indices are used to measure democracy: the Electoral Democracy Index (FREEDOM) and the Institutionalized Democracy Index (POLITY2). The Electoral Democracy Index (produced by the Freedom House Foundation) measures the degree of political rights and civil liberties. The Political Rights Index captures the status of elections, the constitutional role of elected government in decision-making, and the rights of individuals to participate in political processes; while the Civil Liberties Index measures an individual's freedom of expression, belief, and association, judicial independence and fairness, and personal autonomy. Each index is scored from 1 to 7, with a score of 1 for countries whose political and civil liberties are closest to the ideal and 7 for countries where there are no democratic rights. A letter dependent on the average of the previous two scores (political rights and civil liberties) summarizes their situation: countries with an average of the two scores below 2.5 are called democratic (F)[1]; those with an average of the two scores above 5.5 are called autocratic (NF); those with an average of the two scores between 2.5 and 5.5 are called partially democratic (PF). In this paper the variable "FREEDOM" will be the average of the political rights and civil liberties scores.

The Institutionalized Democracy Index (POLITY2) comes from Polity IV data conducted by the University of Maryland. This index by country is a function of their characterizations of authority in terms of institutionalization of democracy, authoritarianism, and the difference between the two on a score ranging from – 10 (highly autocratic) to 10 (highly democratic). The democracy indicator captures competition in political participation, competition and openness (equal opportunity) in executive recruitment, and institutional constraints on executive power. The impact of democracy on poverty reduction is ambiguous. Indeed, this impact is positive or null depending on the region of study, the indicators used or the methodology adopted (Aloui, 2019; Timmons, 2010). The question of whether and how democracy reduces economic inequality therefore remains an open question. Table 1 presents the coding and definition of all other variables in this study.

3.2. Data

The study focuses on an unbalanced panel of 40 countries in sub-Saharan African countries with annual data for the period 1999–2018. The periodicity and scope of the study are motivated by data availability constraints at the time of the study. The data is obtained from three main sources: (i) World Development Indicators (WDI) for the poverty indicators and the control variables; (ii) Polity IV for institutionalized democracy; (iii) Freedom House for electoral democracy. The definitions and sources of variables are provided in Table 1 whereas the descriptive statistics are disclosed in Table 2 (in Appendix). The correlation matrix is covered by Table A.1 (in Appendix).

Table 2 presents the descriptive statistics. Looking at the values of the two variables that capture the level of poverty, we observe that: on average, 43.36 % of the population in our sample lives on less than $1.90 per day; on average, it is necessary to transfer 17.67 to the poor to bring their income up to the poverty line.

[1] F for "Free", NF for "Not Free" and PF for "Partially Free".

Table 1
Definition of variables.

Variables	Definitions	Sources
POV	Ratio of poor population at $1.90 per day (2011 PPP) (% of population)	WDI
POVG	Poverty gap at $1.90 per day (2011 PPP) (%)	WDI
POLITY2	Level of democracy in a country (−10; 10). - 10 for highly autocratic to 10 for very democratic	Polity IV Project
FREEDOM	Average political rights and civil liberties index (1; 7)	Freedom House
GINI	Gini Index (%). Measures income inequality. An index of 0 represents perfect equality, while an index of 100 implies perfect inequality.	WDI
INFL	Inflation rate, consumer prices (annual %)	WDI
GVT	General government final consumption expenditure (% of GDP)	WDI
TRADE	Sum of exports and imports in relation to GDP (%)	WDI
EDUC	Primary school enrollment (% gross)	WDI
POP	Population growth rate (% annual)	WDI
GDP	GDP per capita (gross national income/total population), PPP (constant 2011 international dollars) (log)	WDI
FDI	Foreign direct investment, net inflow (% of GDP)	WDI

Table 2
Descriptive statistics.

Variable	Obs	Mean	Std. Dev.	Min	Max
POV	800	43.36283	23.35659	5.14	98
POVG	800	17.66987	12.92446	1.20	79.225
POLITY2	860	2.451163	4.917355	-7	10
FREEDOM	867	4.346597	1.654687	1	7
GINI	799	43.91795	8.723931	15.26	81.4
INFL	810	10.01697	32.76014	-9.616154	513.9069
TRADE	816	70.87541	33.65345	19.1008	311.3541
EDUC	790	100.0607	22.47713	23.36354	149.3075
GVT	834	14.88696	7.153561	0.9517466	79.16875
POP	873	2.583958	0.9188861	-0.6166576	7.448556
GDP	838	4107.807	5519.947	545.2958	40,368.08
FDI	842	4.585254	8.58943	-6.057209	103.3374

A negative link between democracy and poverty is observed through the correlation matrix (Table A.1 in the Appendix). In other words, democracy would reduce the incidence of poverty and its depth in Sub-Saharan Africa. The multicollinearity test (Collin's test) was conducted to check for multicollinearity between our explanatory variables (Appendix Table A.2). The results show that all the values of the VIFs are much less than 10, which confirms the non-existence of multicollinearity (Chatterjee & Hadi, 2012).

3.3. Estimation strategy

As noted earlier, this study uses panel data for 40 sub-Saharan African countries over the period 1999–2018. Thus, our data have both a time-series and cross-sectional dimension. Over the past three decades, there has been an immense development in the methods used to analyze panel data that are dynamic in nature. The application of ordinary least squares (OLS) has been

criticized since the nature of the data may lead to the violation of some of the assumptions of these methods. Fixed effects estimation has been used to model panel data, which corrects for problems such as omitted variable bias that can result from pure cross-sectional regressions. The fixed effects model accounts for unobservable country-specific effects that are assumed to be fixed parameters to be estimated. However, given the nature of our model and the variables included, there is a possibility of reverse causality between poverty and the explanatory variables, and such endogeneity problems could arise from a variety of channels.

For example, as more and more people move out of poverty, they begin to demand better institutions and more accountability from government. Thus, poverty may also affect the quality of institutions and democracy. On the other hand, the poorest people tend to have low human capital, and lower life expectancy at birth and schooling. If poverty decreases, life expectancy will increase and school enrollment will increase. In this sense, poverty influences human capital development. There may also be feedback effects between poverty and foreign direct investment. Indeed, as poverty decreases, households will increase their spending on goods and services, and this increased spending will in turn increase production, which will attract more investment (domestic and foreign). Thus, poverty could also affect foreign direct investment.

The examples presented above show that reverse causality could be a serious problem in estimating the model presented in Eq. (1). The fixed-effects model is not able to capture these simultaneity problems and so we use dynamic panel data estimators. This study relies primarily on the GMM system estimator rooted in the work of Arellano and Bond (1991), Arellano and Bover (1995), Blundell and Bond (1998), Holtz-Eakin et al. (1988). This estimator is suitable for regressions with independent variables that are not strictly exogenous, fixed effects, heteroskedasticity, and serial correlation within but not between individuals (Roodman, 2009a). While the difference-GMM estimators developed by Arellano and Bond (1991) are based on the transformation of independent variables via differentiation and the use of GMM, the system-GMM augments this approach by assuming that the first-difference instruments are uncorrelated with fixed effects. This allows for the introduction of more instruments and can significantly improve efficiency (Roodman, 2009b). Using first difference for a transformation, Eq. (1) becomes:

$$\Delta P_{it} = \beta_0 \Delta P_{it-1} + \beta_1 \Delta G_{it} + \beta_2 \Delta Y_{it} + \beta_3 \Delta DEMO_{it} + \beta_4 \Delta X_{it} + \Delta\gamma_t + \Delta\mu_{it} \quad (2)$$

With $\mu_{it} = \tau_i + \varepsilon_{it}$.

Eq. (2) implies that country-specific effects are neutralized because they do not vary with time. For an adequate estimation of Eq. (2), Arellano and Bond (1991) proposed to estimate the model in first difference by instrumenting the differences by lagged levels (GMM in difference). However, the problem with this estimator is that it suffers from weak instruments (Blundell & Bond, 1998). To limit the effects of instrument weakness and increase the efficiency of our estimates, we use the system generalized moments estimator (system GMM) of Arellano and Bover (1995) and Blundell and Bond (1998).

Blundel and Bond (1998) show using Monte Carlo simulations that the GMM first difference estimator gives biased results in finite samples when the instruments are weak. To solve these problems, they propose the use of the system-GMM approach that estimates the difference model jointly with the level equation, as proposed by Arellano and Bover (1995). Using the Monte Carlo experiment, Blundell and Bond (1998) show that this system estimator reduces the

potential bias in finite samples and the asymptotic imprecision associated with the difference estimator. According to this approach, if the first differences of an explanatory variable are not correlated with the individual effects, the lagged values of the first differences can be used as instruments in the level equation. Also, lagged first differences of the dependent variable can also be valid instruments for the level equations. Although the system GMM is asymptotically more efficient than the first difference-GMM, it produces biased results. To overcome this problem, we use the two-step estimation method proposed by Windmeijer (2005) for variance correction in finite sample size.

In the light of this identification process, the assumption of exclusion restriction is examined by assessing whether the identified strictly exogenous variables influence inequality exclusively via the suspected endogenous or predetermined channels. Therefore, given the adopted GMM strategy, the assumption of exclusion restrictions is confirmed if the Difference in Hansen Test (DHT) on the exogeneity of instruments is not valid. Accordingly, a rejection of the null hypothesis is an indication that the adopted strictly exogenous variables or instruments are not valid. In the results disclosed in Section 4, the assumption of exclusion restriction is confirmed when the null hypotheses of the DHT in the bottom left- hand side of the tables are not rejected. It is relevant to also highlight that the discussed criterion is broadly consistent with a standard instrumental variable (IV) approach, in which failure to reject to null hypothesis of the Sargan Overidentifying Restrictions (OIR) test is a reflection of the fact that the instrumental variables affect the outcome variables exclusively through the adopted mechanisms or channels (see Asongu and Nwachukwu, 2016, Beck et al., 2003).

4. Results and discussion

The poverty data generally have significant missing observations (Table A.3 in Appendix). We decided to fill in the missing observations using an interpolation method based on the growth rate of the variables. If poverty data are missing between two years (Year (n) and Year (n + k)), we calculate the growth rate (g) of the variables over that interval and then use this (g) to determine the missing data in the interval. We assume in this process that the variables change at a constant rate over the corresponding interval. This growth rate is specific to each interval. This interpolation method allows us to have enough observations to apply the GMM in a system. We then check the robustness of our results, notably by evaluating their sensitivity to interpolation.

4.1. System-GMM results

The results of the poverty model estimates on a sample of 40 SSA countries are presented in Table 3. The estimation of the effect of democracy on poverty is done using a system GMM. Columns (1) and (2) present the results of the poverty models with institutionalized democracy as the main explanatory variable, while columns (3) and (4) present the results with electoral democracy as an indicator of democracy.

The lower part of Table 3 reports the results of the Hansen and Sargan overidentification and Arellano and Bond autocorrelation tests. These tests show that our model is satisfactory. The statistics of the AR (2) test of the residuals do not reject the error term specification while the Hansen test does not indicate a rejection of the model's over-identification restrictions. In other words, the instruments used are valid. Specifically, in all models (1, 2, 3, and 4), we do not reject the null hypothesis of the Hansen test (the assumption that the lagged variables in level

Table 3
Democracy and poverty in Sub-Saharan Africa - syst-GMM (total sample).

Variables	(1) POV	(2) POVG	(3) POV	(4) POVG
L.POV	0.929***		0.961***	
	(0.026)		(0.040)	
L.POVG		0.907***		0.947***
		(0.042)		(0.052)
POLITY2	-0.858	-0.841		
	(0.650)	(0.537)		
FREEDOM			1.185	2.621
			(2.167)	(1.507)
GINI	0.130	0.129*	0.122	0.129*
	(0.099)	(0.091)	(0.114)	(0.073)
INFL	0.019	0.014	-0.034	-0.023
	(0.052)	(0.067)	(0.057)	(0.026)
TRADE	-0.032**	-0.016	-0.037**	-0.017
	(0.024)	(0.013)	(0.015)	(0.011)
EDUC	-0.038	-0.015	-0.034	-0.107
	(0.035)	(0.025)	(0.076)	(0.056)
GVT	-0.066	-0.059	-0.045	-0.037
	(0.075)	(0.069)	(0.074)	(0.046)
POP	0.283**	0.405**	0.262**	0.105**
	(0.850)	(0.800)	(0.824)	(0.650)
GDP	-0.007**	-0.068*	-0.055**	-0.009*
	(0.051)	(0.003)	(0.004)	(0.070)
FDI	-0.046**	-0.017*	-0.043**	-0.020*
	(0.018)	(0.009)	(0.020)	(0.010)
POLITY2*GDP	-0.0005**	-0.0002**		
	(0.0017)	(0.009)		
POLITY2*EDUC	-0.009	-0.008*		
	(0.007)	(0.005)		
FREEDOM*GDP			0.0007**	0.0012*
			(0.004)	(0.010)
FREEDOM*EDUC			0.010	0.026**
			(0.020)	(0.014)
Constant	-27.039	-29.777	-44.318	-47.253
	(93.403)	(70.363)	(159.188)	(105.137)
Year	Yes	Yes	Yes	Yes
Observations	686	686	692	692
Number of country	40	40	40	40
Number of instruments	28	28	28	28
AR1 P-value	0.037	0.087	0.025	0.087
AR2 P-value	0.501	0.918	0.923	0.762
Hansen P-value	0.109	0.238	0.597	0.654
Sargan P-value	0.230	0.351	0.521	0.421

Note: ***, **, and * significative at the 1 %, 5 %, and 10 % thresholds, respectively. Windmeijer (2005) adjusted standard deviations are in parentheses. Estimates are performed on data during the period 1999–2018. Time dummies are included in all equations. The estimated coefficients of these time dummies as well as the constants are not reported. The size of the instrument matrix is reduced (collapsing intruments). For the Arrelano and Bond first-order auto-correlation (AR1) test, the null hypothesis is the absence of first-order correlation of the errors in the first-difference equation. The Arrelano and Bond (AR2) test has as a null hypothesis the lack of the second order auto-correlation of the errors of the first difference equation. The Sargan test of instrument validity has the null hypothesis of instrument exogeneity. For Hansen's test, the null hypothesis is the absence of correlation of the instruments with the residuals, i.e. the validity of the instruments.

and difference are valid as instruments), and as expected, there is high first-order autocorrelation and no evidence of significant second-order autocorrelation. Regardless of the model, there is strong significance in the autoregressive poverty term, which supports our choice for estimating a dynamic panel model.

The estimation results of all these models show that the level of democracy is no directly associated with poverty. These results should not be a surprise as most countries in Sub-Saharan Africa are anocracies (neither fully democratic nor fully autocratic but, rather, combine an often inconsistent mix of democratic and autocratic traits and practices), characterized by institutions and political elites that are much less capable of basic performance but very often reflect intrinsic qualities of instability or inefficiency (Anyanwu & Anyanwu, 2017). Fosu (2008) suggests that at lower levels of democracy, the growth impact of electoral competitiveness tends to be adverse - negative "intermediate" - level effect. With greater democratic advancement, however, these reforms can raise growth - positive "advanced" - level effect. The electoral competitiveness threshold between these two regimes is estimated by Fosu at 4.4, which is just above the 1975–2004 sample mean value of 4.2 in Africa. As shown in Table 2 (in appendix), the average value in sub-Saharan Africa is less than 3. Thus, our results contradict theoretical predictions.[2] This finding underscores the importance of understanding why democracies perform poorly on the income of the poorest citizens and what can be done to improve their situation. Keefer and Khemani (2005) argue that the failure of democracies to help the poor is largely due to incomplete voter information, politicians' difficulty in making credible promises, and social polarization. For example, Stasavage's (2005a) study of Uganda found that its democratic transition had a significant impact on the government's decision to support universal primary education, but that this outcome depended on the availability of information about government policy and social polarization. Habyarimana et al. (2007) suggest that ethnic polarization in Africa tends to impede public service delivery.

However, the results show that democracy is indirectly associated with poverty through economic growth and human capital. Indeed, the results of the interaction variables show that democracy reduces poverty (the incidence and the poverty gap) in countries with high economic growth. In addition, democracy reduces poverty gaps in countries with high education rates. There is thus a complementarity between democracy and the wealth of a country on the one hand, and between democracy and human capital on the other. Following Acemoglu et al. (2019), we highlight education as a channel through which democracy affects poverty. These results corroborate the existing literature in developing countries. Fambeu (2021) showed that imports improve household living conditions in oil-producing democratic countries. According to Doces (2020), democracy indirectly contributes to economic growth, education, and development in SSA. In Latin America, Brown and Hunter (2004) found that democracies devote a higher percentage of their educational resources to primary education and that they maintain higher absolute spending levels on education in the aggregate, thereby enhancing the prospects of human capital formation and poverty. While the quality of the education might not be better in democratic than authoritarian regimes (Dahlum & Knutsen, 2017), it is clear from research that democracies provide more education than authoritarian regimes including in Africa (Harding & Stasavage, 2014, 2005b).

[2] Bueno de Mesquita et al. (2003), Lake and Baum (2001), Meltzer and Richard (1981), McGuire and Olson (1996), Niskanen (1997) and Sen (1981, 1999).

Regarding the control variables, positive and significant Gini Index (GINI) coefficients for the poverty gap indicate that higher inequality is associated with higher poverty depth in sub-Saharan African countries. This is consistent with the results of Anyanwu and Anyanwu (2017), Cheema and Sial (2012) and Ncube et al. (2014). Trade openness (TRADE) reduces poverty (poverty rate) in SSA. Trade liberalization provides greater incentives for investment, the benefits of scale and competition, the limitation of rent-seeking activities fostered by trade restrictions, and openness to new ideas and innovations (Grossman & Helpman, 1991; Krueger & Berg, 2003; Lucas, 1988). Population growth increases poverty levels in SSA. The Malthusian thesis states that population grows in terms of a geometric progression, while subsistence (agricultural production) grows in terms of an arithmetic progression (Coale & Hoover, 1958). This can lead to resource shortages and even conflicts within the population, as population growth absorbs a quantity of resources that could be used to grow investment. Given the characteristics of Sub-Saharan African countries (high birth rate, low capacity of firms to absorb labor, low GDP per capita, lack of industries), population has an impoverishing effect. Economic development is good for poverty reduction in SSA countries. Real per capita income has negative and significant coefficients for both poverty headcount and poverty gap estimates. This indicates that any strategy to attain the poverty SDG[3] in the region has to be one that ensures that countries "climb the ladder" of economic development. This result confirms recent findings by Cerra et al. (2021), Fosu (2018) and Ho and Iyke (2018). The coefficient on foreign direct investment (FDI) is negative and significant, implying that FDI contributes significantly to poverty reduction in SSA. This result of FDI agree with those of Dhrifi et al. (2020), Fowowe and Shuaibu (2014) and Gohou and Soumare (2012).

4.2. Further robustness tests

We perform two additional robustness tests to analyze the sensitivity of our results. First, the results obtained by the baseline model could be invalidated if we include "developed" SSA countries such as South Africa in the overall sample. To address this issue, we now consider only SSA countries without South Africa (Table 4). The results, reported in Table 4, are economically and statistically significant and comparable to those in Table 3. These results confirm the absence of a direct effect of democracy on poverty in SSA. On the other hand, we find the indirect effect of democracy through economic development and education.

Next, we check the robustness of our results by assessing their sensitivity to interpolation. To this end, we estimate all the previous models (models with global sample and models without South Africa) with the data without interpolation using the instrumental variables method (2SLS) (Table 5). The difficulty then lies in the fact that one or more instruments must be found. In other words, one must find one or more variables that are correlated with the variable of interest (rank criterion) and that affect the dependent variable only through this endogenous variable (exclusion criterion). The literature on the determinants of democracy identifies several potential instruments. Demographic factors, such as population size, growth, and characteristics (Dahl & Tufte, 1973), or ethnic, linguistic, and religious heterogeneity of the population (Alesina et al., 2003; Gerring et al., 2018; Merkel & Weiffen, 2012), could influence the democratization and survival of democracy. Cultural factors relevant to democracy are often linked to particular religions, including

[3] Sustainable Development Goals.

Table 4
Democracy and poverty in Sub-Saharan Africa - syst-GMM (without South Africa).

Variables	(1) POV	(2) POVG	(3) POV	(4) POVG
L.POV	0.926***		0.962***	
	(0.028)		(0.045)	
L.POVG		0.903***		0.942***
		(0.045)		(0.053)
POLITY2	-0.937	-0.928		
	(0.708)	(0.550)		
FREEDOM			1.878	2.991
			(1.968)	(1.551)
GINI	0.138	0.119*	0.133	0.139*
	(0.100)	(0.094)	(0.112)	(0.077)
INFL	0.021	0.023	-0.043	-0.026
	(0.050)	(0.072)	(0.052)	(0.026)
TRADE	-0.028**	-0.013	-0.032**	-0.015
	(0.021)	(0.014)	(0.015)	(0.011)
EDUC	-0.039	-0.016	-0.065	-0.120
	(0.038)	(0.025)	(0.063)	(0.056)
GVT	-0.076	-0.069	-0.043	-0.037
	(0.080)	(0.072)	(0.075)	(0.051)
POP	0.255**	0.336**	0.286*	0.085**
	(0.855)	(0.919)	(0.848)	(0.645)
GDP	-0.005**	-0.072*	-0.063**	-0.012**
	(0.036)	(0.018)	(0.022)	(0.020)
FDI	-0.044***	-0.016*	-0.042**	-0.018*
	(0.016)	(0.008)	(0.017)	(0.010)
POLITY2*GDP	-0.0006**	-0.0004*		
	(0.014)	(0.023)		
POLITY2*EDUC	-0.010	-0.008*		
	(0.007)	(0.005)		
FREEDOM*GDP			0.0004**	0.0065**
			(0.008)	(0.018)
FREEDOM*EDUC			0.018	0.029**
			(0.018)	(0.015)
Constant	-16.955	-26.867	-40.388	-45.080
	(106.577)	(74.878)	(184.165)	(119.059)
Year	Yes	Yes	Yes	Yes
Observations	669	669	675	675
Number of country	39	39	39	39
Number of instruments	28	28	28	28
AR1 p-value	0.441	0.991	0.270	0.814
AR2 p-value	0.458	0.959	0.894	0.775
Hansen p-value	0.118	0.254	0.880	0.174
Sargan p-value	0.222	0.344	0.521	0.320

Note: ***, **, and * significative at the 1 %, 5 %, and 10 % thresholds, respectively. Windmeijer (2005) adjusted standard deviations are in parentheses. Estimates are performed on data during the period 1999–2018. Time dummies are included in all equations. The estimated coefficients of these time dummies as well as the constants are not reported. The size of the instrument matrix is reduced (*collapsing* intruments). For the Arrelano and Bond first-order auto-correlation (AR1) test, the null hypothesis is the absence of first-order correlation of the errors in the first-difference equation. The Arrelano and Bond (AR2) test has as a null hypothesis the lack of the second order auto-correlation of the errors of the first difference equation. The Sargan test of instrument validity has the null hypothesis of instrument exogeneity. For the Hansen test, the null hypothesis is the absence of correlation of the instruments with the residuals, i.e. the validity of the instruments.

Protestantism, Catholicism, and Islam (Rowley & Smith, 2009; Potrafke, 2011). Aggregate results indicate that Islam hinders democratization (Rod et al., 2019).

Based on this literature, we identify three (3) instruments that do not affect poverty. These are the male population (as a % of the total population),[4] the most dominant imported religion[5] (Christianity, Islam and even Hinduism in Mauritius), and the most spoken imported[6] official language. The results are reported in Table 5. The results of the Sargan over-identification tests are presented to ensure their validity (the instruments are not correlated with the error term). The statistically insignificant Sargan test results indicate that the instruments used are appropriate. We also present the "Cragg-Donald" statistic to ensure the strength of the instruments (instruments significantly correlated with the endogenous variable). The sufficiently high Cragg-Donald statistic shows us that at a 5 % threshold our instruments are not weak.

The results in Table 5 are consistent with those in the previous tables: first, the lack of a direct association between democracy and poverty reduction in sub-Saharan Africa; and second, the indirect association of democracy with poverty through economic development and education.

5. Conclusion and policy implications

This paper analyzed the effects of democracy on poverty in Sub-Saharan African countries. While poverty remains high in Sub-Saharan Africa, very little research has been conducted to examine how democracy has affected poverty. Most research has focused on the democracy-economic growth relationship. Empirical research on the link between democracy and poverty has become important because it is essential to understand the factors or policies that can help reduce poverty. Knowledge of these factors can help focus efforts to stimulate an enabling environment for poverty reduction.

To assess the effect of democracy on poverty in Sub-Saharan Africa, we used panel data for 40 countries over the period 1999–2018. The results of the system Generalized Moment Method (GMM) estimates showed that democracy has no direct effect on poverty in Sub-Saharan Africa. While on average democracy does not seem to be associated with lower poverty, this observation hides important non-linearities and an interesting pattern of policy complementarities. Indeed, the results show that democracy reduces poverty in countries with high economic growth and high human capital. Our results are robust to the alternative indicators used for both democracy (Freddom House and Polity IV indicators) and poverty (the poverty index and depth of poverty). In addition, we tested the sensitivity of our results to the sample and the type of model specification. In other words, we reran the estimates without including South Africa, and then, using the Two-Stage Least Squares (2SLS) method on raw data (without interpolations). These robustness tests confirmed our results.

Thus, democracy would not yet be a powerful way for sub-Saharan populations to compel their governments to be more responsive to the needs of the poor. To help reduce poverty, countries in the region need to move their democracy from a mere electoral level to a more

[4] Data are from *WDI*.

[5] Data on religion are from the *Pew Research Center* (Pew Forum on Religion & Public Life).

[6] This clarification is made because in some countries like Cameroon there are two official languages (French and English). These languages are all imported and French is the language most used in the administration and also the language spoken by the vast majority of the population.

Language data is from the *CIA World Factbook.*

Table 5
Democracy and poverty in Sub-Saharan Africa - 2SLS.

Variables	All				Without South Africa			
	(1) POV	(2) POVG	(3) POV	(4) POVG	(5) POV	(6) POVG	(7) P OV	(8) POVG
POLITY2	-0.742	-0.153			-0.913	-0.0172		
	(4.543)	(2.736)			(4.590)	(2.756)		
FREEDOM			0.434	2.157			-0.0604	2.459
			(7.393)	(4.398)			(7.518)	(4.461)
GINI	0.310	0.280**	0.363*	0.308**	0.377*	0.337**	0.417*	0.353***
	(0.211)	(0.127)	(0.208)	(0.124)	(0.228)	(0.137)	(0.227)	(0.135)
INFL	0.292	0.0951	0.143	0.0412	0.304	0.0999	0.135	0.0331
	(0.311)	(0.187)	(0.249)	(0.148)	(0.318)	(0.191)	(0.255)	(0.151)
TRADE	-0.127**	-0.0456	-0.118*	-0.0419	-0.141**	-0.0581	-0.132**	-0.0537
	(0.0640)	(0.0385)	(0.0616)	(0.0367)	(0.0676)	(0.0406)	(0.0656)	(0.0389)
EDUC	-0.218	-0.104	-0.0524	-0.0981	-0.212*	-0.0990	-0.0621	-0.106
	(0.110)	(0.0662)	(0.310)	(0.185)	(0.113)	(0.0676)	(0.316)	(0.188)
GVT	-0.225	-0.277	-0.243	-0.252	-0.196	-0.253	-0.218	-0.231
	(0.289)	(0.174)	(0.294)	(0.175)	(0.296)	(0.178)	(0.301)	(0.178)
POP	10.05***	4.671***	11.05***	5.413***	10.02***	4.613***	11.04***	5.392***
	(2.835)	(1.707)	(2.593)	(1.543)	(2.876)	(1.727)	(2.641)	(1.567)
GDP	-0.0036***	-0.0017***	-0.000484*	-0.00055**	-0.0035***	-0.0016***	-0.000635**	-0.000679*
	(0.00059)	(0.00035)	(0.00090)	(0.00054)	(0.00060)	(0.00036)	(0.00094)	(0.00056)
FDI	-0.325*	-0.175	-0.293*	-0.150	-0.341*	-0.191	-0.305**	-0.161
	(0.282)	(0.170)	(0.268)	(0.159)	(0.286)	(0.172)	(0.273)	(0.162)
POLITY*GDP	-0.0002***	-0.00010**			-0.0002***	-0.00011**		
	(8.11e-05)	(4.89e-05)			(8.30e-05)	(4.99e-05)		
POLITY*EDUC	-0.00972	-0.00053**			-0.0112	-0.00121*		
	(0.0413)	(0.0249)			(0.0418)	(0.0251)		
FREEDOM*GDP			0.00095***	0.00059***			0.00097***	0.00054***
			(0.000243)	(0.000145)			(0.000248)	(0.000147)
FREEDOM*EDUC			0.0357	0.00220**			0.0319	0.000976*
			(0.0691)	(0.0411)			(0.0703)	(0.0417)

(*continued on next page*)

Table 5 (*continued*)

Variables	All				Without South Africa			
	(1) POV	(2) POVG	(3) POV	(4) POVG	(5) POV	(6) POVG	(7) P OV	(8) POVG
Constant	1614**	961.1**	1484**	877.7**	1585**	948.4**	1476**	875.8**
	(664.5)	(400.2)	(609.3)	(362.5)	(683.4)	(410.3)	(628.5)	(372.9)
Country	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	107	107	108	108	103	103	104	104
R-squared	0.623	0.507	0.634	0.531	0.609	0.497	0.619	0.519
Cragg-Donald Stat.	18.330	18.330	50.610	50.006	18.098	18.098	48.019	48.019
Sargan P-value	0.340	0.379	0.281	0.579	0.342	0.378	0.264	0.541

Note: ***, **, and * significative at the 1 %, 5 %, and 10 % thresholds, respectively. Standard deviations are in parentheses. Estimates are performed on data during the period 1999–2018. Country and time fixed effects are included in all equations. Results from first-stage regressions are not reported.

liberal level (Anyanwu & Anyanwu, 2017). What is needed, therefore, is deep introspection and political reform of the various institutions and political parties seeking to govern in ways that promote a sustained commitment to democracy. This democracy will ensure equal citizenship, political pluralism, freedom and the rule of law, political rights, general respect for others, and socio-political and economic inclusion that ensures an economic dividend for all citizens.

The benefits of democracy are not automatic and accompanying policies are needed. Specifically, these policies would aim to enhance economic growth and human capital. Democracy should therefore not be considered in isolation and additional policies will be needed to enhance its impact on poverty. This also means that poor economic growth and low human capital not only have a direct negative effect on the welfare of SSA countries, but also prevent the poor in these countries from benefiting from the gains of democracy.

Appendix

See in Tables A.1–A.3.

Table A.1
Correlation coefficients.

	POV	POVG	POLITY2	FREEDOM	GINI	INFL	TRADE
POV	1.0000						
POVG	0.9473	1.0000					
POLITY2	-0.0239	-0.0157	1.0000				
FREEDOM	0.1287	0.1563	-0.7806	1.0000			
GINI	0.0026	0.1203	0.1467	-0.1601	1.0000		
INFL	0.1268	0.2413	-0.0762	0.1373	0.0087	1.0000	
TRADE	-0.2885	-0.2535	-0.0141	-0.0827	0.0573	-0.0133	1.0000
EDUC	-0.0694	-0.0532	0.0634	-0.1289	0.2367	-0.0556	0.1910
GVT	-0.1613	-0.1555	0.1421	-0.2229	0.2363	-0.1284	0.3150
POP	0.3897	0.3033	-0.1974	0.2033	-0.2685	0.0455	-0.1945
GDP	-0.6159	-0.5113	0.1820	-0.2870	0.2468	-0.0549	0.3040
FDI	-0.0015	-0.0089	-0.0621	0.0364	-0.0461	0.0555	0.3379
	EDUC	**GVT**	**POP**	**GDP**	**FDI**		
EDUC	1.0000						
GVT	0.2046	1.0000					
POP	-0.1510	-0.3411	1.0000				
GDP	0.2345	0.1737	-0.3624	1.0000			
FDI	0.0439	0.0513	0.1089	-0.0472	1.0000		

Table A.2
Multicollinearity diagnosis.

Variable	VIF	SQRT VIF	Tolerance	R-Squared		Eigenval	Index
POLITY2	2.65	1.63	0.3774	0.6226	1	9.4347	1.0000
FREEDOM	2.80	1.67	0.3572	0.6428	2	1.2231	2.7773
GINI	1.94	1.39	0.5147	0.4853	3	0.7952	3.4445
INFL	1.15	1.07	0.8704	0.1296	4	0.6975	3.6779
GVT	1.14	1.07	0.8766	0.1234	5	0.3923	4.9042
TRADE	1.27	1.13	0.7849	0.2151	6	0.1470	8.0114
EDUC	1.42	1.19	0.7040	0.2960	7	0.1245	8.7057
POP	1.37	1.17	0.7316	0.2684	8	0.0679	11.7871
GDP	1.90	1.38	0.5252	0.4748	9	0.0538	13.2430
FDI	1.27	1.13	0.7901	0.2099	10	0.0302	17.6769
					13	0.0017	58.5236
Mean VIF	1.89						
						Condition Number	58.5236
					Eigenvalues & Cond Index computed from scaled raw sscp (w/ intercept) Det (correlation matrix) 0.0330		

Table A.3
Available data on poverty (1999–2018).

Countries	Number of observations	Observation rate (%)	Countries	Number of observations	Observation rate (%)
Angola	3	15	Liberia	3	15
Benin	3	15	Madagascar	5	25
Botswana	3	15	Malawi	3	15
Burkina Faso	3	15	Mali	3	15
Burundi	3	15	Mauritania	4	20
Cameroon	3	15	Mauritius	3	15
Cape Verde	3	15	Mozambique	3	15
Central African Republic	2	10	Namibia	3	15
Chad	2	10	Niger	4	20
Comoros	2	10	Nigeria	2	10
Congo, Dem. Rep.	2	10	Rwanda	5	25
Congo, Rep.	2	10	Senegal	3	15
Ivory Coast	3	15	Sierra Leone	3	15
Ethiopia	4	20	South Africa	5	25
Gabon	2	10	Sudan	2	10
Ghana	3	15	Tanzania	4	20
Guinea	3	15	Togo	3	15
Guinea-Bissau	2	10	Uganda	6	30
Kenya	2	10	Zambia	5	25
Lesotho	2	10	Zimbabwe	2	10

References

Acemoglu, D., Naidu, S., Restrepo, P., & Robinson, J. A. (2019). Democracy does cause growth. *Journal of Political Economy, 127*(1), 47–100.

Adams, R. H. Jr, & Page, J. (2005). Do international migration and remittances reduce poverty in developing countries? *World Developement, 33*(10), 1645–1669.

Alesina, A., Devleeschauwer, A., Easterly, W., Kurlat, S., & Wacziarg, R. (2003). Fractionalization. *Journal of Economic Growth, 8*(June), 155–194.

Aloui, Z., 2019. *The impact of governance on poverty reduction: Are there regional differences in Sub-Saharan Africa?. MPRA Paper, No. 94716*.

Anyanwu, J. C., & Anyanwu, J. C. (2017). The key drivers of poverty in sub-Saharan Africa and what can be done about it to achieve the poverty sustainable development goal. *Asian Journal of Economic Modelling, 5*(3), 297–317.

Appiah-Otoo, I., Chen, X., Song, N., & Dumor, K. (2022). Financial development, institutional improvement, poverty reduction: the multiple challenges in West Africa. *Journal of Policy Modeling, 44*(6), 1296–1312.

Aracil, E., Gomez-Bengoechea, G., & Moreno-de-Tejada, O. (2021). Institutional quality and the financial inclusion-poverty alleviation link: Empirical evidence across countries. *Borsa Istanbul Review*. https://doi.org/10.1016/j.bir.2021.03.006

Arellano, M., & Bond, S. (1991). Some tests for panel data: Monte Carlo evidence and an application to employment equations. *The Review of Economic Studies, 58*(2), 277–297.

Arellano, M., & Bover, S. (1995). Another look at the instrumental variable estimation of error component models. *Journal of Economics, 68*, 29–51.

Asongu, S. A., & Nwachukwu, J. C. (2016b). The Mobile Phone in the Diffusion of Knowledge for Institutional Quality in Sub Saharan Africa. *World Development, 86*, 133–147.

Beck, T., Demirgüç-Kunt, A., & Levine, R. (2003). Law and finance: why does legal origin matter? *Journal of Comparative Economics, 31*(4), 653–675.

Blundell, R., & Bond, S. (1998). Initial conditions and moment restrictions in dynamic panel data models. *J Econom, 87*, 115–143.

Brown, D. S., & Hunter, W. (2004). Democracy and human capital formation: Education spending in Latin America, 1980-1997. *Comparative Political Studies, 37*(September), 842–864.

Bueno de Mesquita, B., Smith, A., Siverson, R. M., & Morrow, J. D. (2003). *The logic of political survival.* Cambridge: MIT Press.

Calderon, C., Kambou, G., Cantu C.C., Korman, V., Kubota, M., 2019. Africa's Pulse, No. 20, October 2019: *An analysis of issues shaping Africa's economic future*. Washington, DC: World Bank. World Bank. https://openknowledge.worldbank.org/handle/10986/32480 License: CC BY 3.0 IGO.

Chatterjee, S., & Hadi, A. S. (2012). *Regression analysis by example* (5th ed.). New York: Hoboken, NJ.

Cheema, A. R., & Sial, M. H. (2012). Poverty, income inequality, and growth in Pakistan: A pooled regression analysis. *Lahore Journal of Economics, 17*(2), 137–157.

Cerra, V., Lama, R., Loayza, N.V., 2021. *Links between growth, inequality, and poverty: A survey. policy research working paper*;No. 9603. World Bank, Washington, DC.

Coale, A. J., & Hoover, E. M. (1958). *Population growth and economic development in low-income countries.* Princeton: Princeton University Press6–25.

Coccia, M., 2021. How a good governance of institutions can reduce poverty and inequality in society? In Faghih, N. and Samadi A.H. (eds.), *Legal-economic institutions, entrepreneurship, and management, contributions to management science*. ⟨https://doi.org/10.1007/978-3-030-60978-8_4⟩.

Dahl, R. A., & Tufte, E. R. (1973). *Size and democracy.* Stanford: Stanford University Press.

Dahlum, S., & Knutsen, C. H. (2017). *Do democracies provide better education? Revisiting the democracy-human capital link. world development*, *94*, Elsevier186–199.

Dasgupta, P. (1993). *An inquiry into well-being and destitution.* New York: Oxford University Press.

Deacon, R. (2009). Dictatorship, democracy, and the provision of public goods. *Public Choice, 139*(1/2), 241–262.

Dhrifi, A., Raouf, J., & Saleh, A. (2020). *Does foreign direct investment and environmental degradation matter for poverty? Evidence from developing countries. Structural Change and Economic Dynamics. 52*, Elsevier13–21.

Doces, J. A. (2020). Democracy, consumption, and growth in sub-Saharan Africa. *International Area Studies Review, 23*(1), 28–48.

Fabella, V. M. B., & Oyales, C. E. I. (2008). Democracy and poverty reduction. *Philippine Review of Economics, 65*(2), 235–269.

Fambeu, A. H. (2021). Poverty reduction in sub-Saharan Africa: the mixed roles of democracy and trade openness. *The Journal of International Trade & Economic Development, 30*(8), 1–19. https://doi.org/10.1080/09638199.2021.1946128

Fosu, A. K. (2018). The recent growth resurgence in Africa and poverty reduction: the context and evidence. *Journal of African Economies, 27*(1), 92–107.
Fosu, A. K. (2008). Democracy and growth in Africa: Implications of increasing electoral competitiveness. *Economic Letters, 100*(3), 442–444.
Fowowe, B., & Shuaibu, M. (2014). Is foreign direct investment good for the poor? New evidence from African countries. *Economic Change and Restructuring, 47*(4), 321–339.
Freedom House (2018). *Freedom in the World 2018: Democracy in crisis*. ⟨https://freedomhouse.org/report/freedom-world/freedom-world-2018⟩.
Fukuyama, F. (2012). The future of history: Can liberal democracy survive the decline of the middle class? *Foreign Affairs, 91*(1), 53–61.
Gerring, J., Hoffman, M., & Zarecki, D. (2018). The diverse effects of diversity on democracy. *British Journal of Political Science, 48*, 283–314.
Gohou, G., & Soumare, I. (2012). Does foreign direct investment reduce poverty in Africa and are there regional differences. *World Development, 40*(1), 75–95.
Grossman, G. M., & Helpman, E. (1991). *Innovation and growth in the global economy*. Cambridge, MA and London: MIT Press.
Habyarimana, J., Humphreys, M., Posner, D. N., & Weinstein, J. M. (2007). Why does ethnic diversity undermine public goods provision? An experimental approach. *American Political Science Review, 101*(4), 709–725.
Harding, R., & Stasavage, D. (2014). What democracy does (and doesn't do) for basic services: School fees, school inputs, and African elections. *Journal of Politics, 76*(1), 229–245.
Ho, S. Y., & Iyke, B. N. (2018). Finance-growth-poverty nexus: a re-assessment of the trickledown hypothesis in China. *Economic Change and Restructuring, 51*(3), 221–247.
Holtz-Eakin, D., Newey, W., & Rosen, H. (1988). Estimating vector autoregressions with panel data. *Econometrica, 56*, 1371–1395.
Jindra, C., & Vaz, A. (2019). Good governance and multidimensional poverty: A comparative analysis of 71 countries. *Governance,* 1–19. https://doi.org/10.1111/gove.12394
Keefer, P., & Khemani, S. (2005). Democracy, public expenditures, and the poor: Understanding political incentives for providing public services. *The World Bank Research Observer, 20*(1), 1–27.
Khodaverdian, S. (2021). The African tragedy: The effect of democracy on economic growth. *Empirical Economics*. https://doi.org/10.1007/s00181-021-02049-9
Kouadio, H. K., & Gakpa, L. L. (2022). Do economic growth and institutional quality reduce poverty and inequality in West Africa? *Journal of Policy Modeling, 44*(1), 41–63.
Krueger, A., Berg, A., 2003. *Trade, growth, and poverty: a selective survey*. IMF Working Paper. No. 03/30, 1–51, Washington.
Lake, D. A., & Baum, M. (2001). The invisible hand of democracy: Political control and the provision of public services. *Comparative Political Studies, 34*(6), 587–621.
Lucas, R. E. (1988). The mechanics of economic development. *Journal of Monetary Economics, 22*, 3–42.
McGuire, M. C., & Olson, M. (1996). The economics of autocracy and majority rule: The invisible hand and the use of force. *Journal of Economic Literature, 34*(1), 72–96.
Meltzer, A. H., & Richard, S. F. (1981). A rational theory of the size of government. *Journal of Political Economy, 89*(5), 914–927.
Merkel, W., & Weiffen, B. (2012). Does heterogeneity hinder democracy? *Comparative Sociology, 11*(3), 387–421.
Moon, B. E., & Dixon, W. J. (1985). Politics, the state, and basic human needs: A cross-national study. *American Journal of Political Science, 29*(4), 661–694.
Ncube, M., Anyanwu, J. C., & Hausken, K. (2014). Inequality, economic growth and poverty in the Middle East and North Africa MENA. *African Development Review, 26*(3), 435–453.
Niskanen, W. A. (1997). Autocratic, democratic, and optimal government. *Economic Inquiry, 35*(3), 464–479.
Potrafke, N. (2011). Islam and democracy. *Public Choice, 151*(1), 185–192.
Ravallion, M. (1997). Can high-inequality developing countries escape absolute poverty? *Economics Letters, 56*(1), 51–57.
Ravallion, M. (2008). Can high-inequality developing countries escape absolute poverty? *Economics Letters, 56*, 51–57.
Ravallion, M., & Chen, S. (1997). What can new survey data tell us about recent changes in distribution and poverty? *World Bank Economic Review, 11*(2), 357–382.
Rod, E. G., Knutsen, C. H., & Hegre, H. (2019). The determinants of democracy: A sensitivity analysis. *Public Choice*. https://doi.org/10.1007/s11127-019-00742-z
Roodman, D. (2009a). How to do xtabond2: An introduction to difference and system GMM in stata. *The Stata Journal, 9*(1), 86–136.
Roodman, D. (2009b). A note on the theme of too many instruments. *Oxford Bulletin of Economics and Statistics, 71*(1), 0305–9049.

Rowley, C., & Smith, N. (2009). Islam's democracy paradox: Muslims claim to like democracy, so why do they have so little. *Public Choice, 139*(3), 273–299.
Sen, A. (1981). *Poverty and famines: An essay on entitlement and deprivation.* New York: Oxford University Press,.
Sen, A. (1999). *Development as freedom.* New York: Alfred A. Knopf.
Stasavage, D. (2005a). The role of democracy in uganda's move to universal primary education. *Journal of Modern African Studies, 43*(1), 53–73.
Stasavage, D. (2005b). Democracy and education spending in Africa. *American Journal of Political Science, 49*(2), 343–358.
Timmons, J. F. (2010). Does democracy reduce economic inequality? *British Journal of Political Science, 40*, 741–757.
Windmeijer, F. (2005). A finite sample correction for the variance of linear efficient two-step GMM estimators. *Journal of Econometrics, 126*, 25–51.
World Bank, 2022, data.worldbank.org/country/ZG.