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Does democracy contribute to reduce income inequality by fiscal policy in Sub-Saharan African countries?

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ABSTRACT

The objective of the paper is to analyse the contribution of democracy in the reduction of income inequality by fiscal policy. The specification test, of the panel model of 47 Sub-Saharan African countries for the period 1990 to 2018, allows to estimate a fixed and a random effect models. Results from the random and fixed effect models indicate that democracy in Sub-Saharan African countries reduces income inequality only by 1 per cent. With regards to the fiscal policy variables, social expenditure is not significant in the fixed and random effect models and tax revenue is positively significant in the random effect model. The implication is that the tax policy increases income inequality, hence it is regressive. The Gross Domestic Product (GDP) per capita is positively significant in the fixed effect model. It means that more Sub-Saharan African countries become reach, more income inequality increases. In these countries, the distributive policies do not reduce income inequality but increase it.

Keywords: Income inequality, fiscal policy (social expenditure and tax revenue), democracy.

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Abbreviation: SSA countries, Sub-Saharan African countries; **SWIID,** standardized world inequality indicators database; **WIID,** world income inequality database; **UNU-WIDER,** United Nations University World Institute for Development Economics Research; **FDI,** foreign direct investment; **GDP,** gross domestic product; **AfDB,** African Development Bank; **VAT,** value added tax;
WDI, world development indicators; **WGI,** World Governance Indicators; **FHI,** Freedom House Index; **OECD,** Organization for Economic Co-operation and Development.

INTRODUCTION

Sub-Saharan African (henceforth SSA) having chosen democracy as political system, in effect, what could be the contribution of democracy in the attenuating the high level of income inequality?

The Gross Domestic Product (GDP) growth advantage since 2000 in Africa has not yet been widely shared. Out of the ten fastest growing countries in the world, six are in Africa. This growth rate is rebounding from 1.4% in 2009 to 3.4% in 2019. This performance does not contribute significantly to income levelling or wealth redistribution. Poverty fell only by 8.0% between 1990 and 2015 compared to the 28.3% forecast. Today, about half of the population in SSA live with less than $ 1 USD a day (World Bank, 2019).

Africa is the second most unequal region in the world after Latin America and the Caribbean. In all African countries, the richest people earn the lion's share in terms of income (African Development Bank Group 2012): 60.8% of the population is poor and 10.8% share 78.5% of total income. Alvaredo et al. (2018: 18) in world inequality report warn that «global income inequality will also increase if countries prolong the income inequality path they have been on since 1980 even with relatively high income growth predictions in Africa in the coming three decades».

Given this very high level of inequality, Africa could experience a social, humanitarian and economic crisis caused by inequalities. To avoid such a scenario for Africa[1] (Kumhof and Rancière 2010), it must reduce its income inequality. Jim Yong Kim, President of World Bank Group argued during a speech in 2016 that countries that invest smartly in reducing inequality today are likely to see more prolonged economic growth than those that do not. In order not to have SSA countries suffer from consequences of high level of income inequality, they must proceed to reduce it.

Fiscal policies are powerful tools to make a dent in income inequality in Africa (Odusola, 2017: 154). Fiscal policy is the main tool for governments to influence the distribution of income. The purpose of redistribution is to reduce inequality as it result from primary distribution. Tax and expenditure policies, social transfers and public services are the main instruments of fiscal policy to reduce income inequality. Fiscal policy has already proven successful in reducing income inequality (Gupta et al., 2014).

The SSA countries have opted for the democracy in 1990 in the hopes that it could resolve economic crises and reduce income inequality. We expect democracy to lead to inequality reduction, peace, and the stability of the institutions in SSA countries.

The objective of this paper is to analyse the contribution of democracy in the reduction of income inequality within a state by fiscal policy in SSA countries. That notwithstanding, there are also two sub-objectives:

(1) Determine the best mix of social, education, health spending and tax policies that reduce income inequality.
(2) Determine the contribution of democracy in the reduction of income inequality.

Our assumptions are as follows: The SSA countries tax policy is regressive. The redistributive policy and the democracy decrease income inequality.

The central role of fiscal policy in the fight against poverty and inequality has long been recognized in the literature, but empirical research, particularly in Africa, is limited. Odusola (2017) is one of the few to tackle the subject recently. The vast majority of studies analysed how economic growth can reduce income inequality. Concerning the role of democracy in the reduction of income inequality, our research could be the first that investigates it especially in the case of SSA countries. The main contribution of this paper is to examine whether being a democratic country helps fiscal policy to reduce income inequality or not.

The findings of the paper are that democracy reduces very little (1 per cent) income inequality and tax policy is regressive. The distributive policies do not reduce income inequality but increase it.

The remainder of the paper is structured as follow: section 2 reviews the literature, section 3 introduces the methodology, and section 4 provides the concluding remarks.

LITERATURE REVIEW

The debate on redistribution revolves around several questions among which: is it just that some individuals receive aid without compensation? Should we let the market and its price system operate freely the redistribution of income?

Redistribution: A necessity

Morally, redistribution is vital

The optimal allocation of Pareto resources does not guarantee a better distribution of resources at moral level. This is why social justice demands a redistribution of the wealth from the best endowed individuals towards those who are less rich. For example, it is morally unacceptable for 1% of the world's population to have more wealth than the remaining 99% (Oxfam online, 2016). Ethics and morals (religious, cultural, philosophical) consider such a distribution of income as inadmissible (pure redistribution). Effective redistribution refers to situations where market imperfections create the need to improve the allocation of resources to make the economy competitive. We must therefore redistribute wealth. More just and effective redistributive policy is needed.

Approach of Keynesian thought

On the economic front, two theoretical approaches consider income redistribution as a tool to reduce inequality: the Keynesian approach and the endogenous growth theory. The Keynesian approach sustain that taking a tax on a high income household does not reduce its consumption but only the savings. By allocating the amount withdrawn to a low income household, it increases its consumption, thus reducing inequalities. Overall consumption is increasing, which will boost demand for goods and services and production, thereby enhancing growth. In this Keynesian perspective, redistribution reduces income inequality and support economic growth.

The theory of endogenous growth shows that certain expenditures, especially public ones, can have a long term growth enhancing effect. By investing in public health and education services, the government contributes to improve human capital. A well educated person is competitive in terms of productivity and performance. Good human capital training allows to

[1] "The Great Depression starting in 1929 and the Great Recession starting in 2007. Both were preceded by a sharp increase in income and wealth inequality".

reduce income inequality.

Keynes's interventionist recommendations gradually materialized in United States and in England in the post war period, with the "Thirty Glorious". It was the prestigious period of distribution policy in the United States and Europe. However, the opportunity for state intervention in the economy will be largely challenged by the long lasting crisis of the early 1970s. While redistribution mechanisms have failed to correct inequalities, it is for some authors because inequalities are essential for the economy.

Redistribution: An inefficient system

Income redistribution has perverse effects at moral level

There is the stigmatization of beneficiaries of the distribution policy. We will blame them for not having obtained the position they occupy on their own merit. This criticism is even often internalized by those who benefit from the redistribution and they can reject helps. Thus, in the United States black Americans refuse positive discrimination because they want to prove that they can achieve the same results on their own. Redistribution makes some to be satisfied with a position of assisted which could incite them to laziness and inactivity.

Redistribution among anti-Keynesians

The modern version of refuting the intervention of the state in the economy is described as anti- Keynesian or new liberals. The most cited authors are: Milton Friedman and the Monetarists, Arthur Laffer and the School of Supply, Robert Lucas and the New Classics.

Friedman (1970) challenged the Keynesian consumption function by introducing his theory of permanent income. He points out that consumption does not depend on current income, but on permanent income. For Friedman, government spending replaces an approximately equal volume of private spending (including investment). It is the eviction effect.

Arthur Laffer is considered as the leader of the School of Supply, "Supply-side". He is the author of a curve that bears his name, the Laffer curve (Wanniski, 1978), which shows that "Too many taxes kill taxes". Too high tax rate may lead to tax evasion. Depleting the rich kills the incentive to invest and innovate (Schumpeter, 1912), which will reduce economic growth that could benefit the poor through the provision of jobs and income.

In the 1970s, the so called New Classics (Lucas, Barro and Buchanan) introduced a hypothesis: the hypothesis of rational expectations. During the recovery, agents anticipate tax increases by saving as a precautionary measure. Only a surprising policy will have an effect on redistribution.

De Jouvenel (1952) in his redistribution ethic believes that distribution is a process that has led to a huge state bureaucracy. The bureaucratic state absorbs much of the resources. For that, De Jouvenel proposes that it would be better to trust the rich and those who have the capacity to become rich to boost the economy and growth. Inequalities due to work and merit are positive and do not detract from the poor, they are benefit in terms of job creation.

New challenges of the redistribution policy

The beginning of this century is marked by new challenges of redistribution policy. We summarize them in three groups: the crisis of the welfare state; Amartya Sen's approach and Thomas Piketty's thesis.

The crisis of the welfare state

The crisis of the welfare state is the crisis of efficiency and the crisis of legitimacy. During the glory years[2], countries had large financial margins to cope with different social benefits. With the various economic and financial crises that followed, the need for social assistance increased while government revenues declined considerably. The welfare state thus loses its effectiveness. Add to that, the values of caring, community and solidarity are disappearing. We are moving towards more and more values about individualism where nobody wants to contribute in national solidarity. Hence, the loss of the legitimacy of the welfare state.

The thesis of Amartya Sen

Amartya Sen has developed a new theory of social justice that can be understood as an overtaking of John Rawls' theory of justice (Rawls, 1971). Sen (2009) argues that inequalities are just as long as society has offered every means to self-realization. According to Sen (1985), identical rights cannot suffice to constitute "justice based on capability". Social justice consists in giving all individuals the same freedoms, the same rights, but also equal freedom of access to external means and personal abilities by which a person can exercise his freedoms. Equalizing income is not the end goal, because not everyone converts income into well-being and freedom in the same way. The ultimate goal is that the individual has the necessary means to realize himself. This Amartya Sen's capability framework has introduced a new way of thinking about human well-being.

[2] For the countries of Europe it was the period of the thirty glorious post-war and for the African countries it was between 1960 and 1980.

The thesis of Thomas Piketty

Piketty (1993), in "Essais sur la théorie de la redistribution des richesses" suggests the introduction of a progressive tax on the capital to face this new wave of inequality of the end of the XXth and the beginning of XXIst centuries. According to Piketty (2013) taxation of high income up to 80% and progressive taxation is very efficient in reducing income inequality. Taxing capital, not to take revenge on the wealthiest, as some fear, but to prevent the highest assets from progressing, structurally, three or four times faster than the economy. This keeps the world economy under control. The hope of basing wealth on merit alone remains strong in Piketty. In a democracy, however, giving meaning to inequalities is vital: they are acceptable only if they are justified and if they are beneficial for all.

Democracy and income inequality

We present in this part the theoretical and empirical researches concerning the impact of democracy on income distribution.

Democracy reduces income inequality

The seminal paper regarding the capacity of democracy to reduce inequality is Meltzer and Scott (1981). Democracy is supposed to give the power to the majority. So in a population composed in majority by poor, the democracy will give them the power to take decisions[3]. These decisions will naturally be policies for redistribution to reduce poverty and inequality. That is why democracy is considered as a political system which reduces income inequality. Democracy can be disturbed in its application by the elite. It brings democracy not to reach one of its goals which is the reduction of inequality.

"Those who see their de jure power eroded by democratization may sufficiently increase their investments in de facto power" (Acemoglu et al., 2015). In Africa, it can take the form of investment in their own tribute, region, religion or ethnic to increase the facto power in order to not distribute the wealth. Another way used is that the power makes a semblance of distribution giving to the population just a few of their wealth. This part of the revenue is small so that it doesn't change the income of the rich. But people are so poor[4] that they increase the de facto power of the rich. For all these reasons, Menocal (2017) concludes that democracy does not automatically reduce inequality.

[3] This theoretical negative impact of democracy on income inequality is based on the median voter theory: a majority rule voting system will select the outcome most preferred by the median voter. The median voter is the individual with the median level of income.

[4] By 2030, forecasts indicate that nearly 9 in 10 of the extreme poor will live in Sub-Saharan Africa.

Other political system can also reduce income inequality

These political systems are for example: the dictatorship, the apartheid, the racial segregation, the communism, the authoritarian, autocratic and feudalism regimes. The recent development history in countries of East Asia and East Europe justifies this point of view. The implementation of land reform (1949-1953) and economic reforms (1950s, 1960s) have been responsible of Taiwan's economic success during the martial law from 1947 to 1987. It still has a more equitable income distribution than many developed countries such as the United States of America. From 1948 to 1987, South Korea was under an authoritarian regime. During that period, inequality appears to be less. There is also the case of East Europe countries which were communists and since 1989 have chosen democracy regime. These countries, in particularly Bulgaria and Poland, have the highest income inequality (Eurostat) in European Union. We can also mention the case of Malaysia and Singapore. These countries, although being socialist and communist, have succeeded to reduce income inequality through distribution policies. In 1970, the Gini coefficient of Malaysia was 0.51 and in 2014, it was 0.41. In Singapore, the Gini coefficient move from 0.44 in 2007 to 0.40 in 2016.

Empirical results of the impact of democracy on income inequality

The empirical results of the impact of democracy on income inequality are mixed. The most recent paper which has done a large summary of this literature is Acemoglu et al. (2015).

Kenneth and Jackman (1985a) are the first authors who have sustained the positive impact of democracy on income inequality. Alesina and Rodrik (1994) and Persson and Tabellini (1994) using the model of Meltzer and Scott (1981, 1983) find a decrease in inequality over time as the voting franchise is expanded. Rodrik (1999) presents evidence from a panel of countries that democracy is associated with higher real wages and higher labor share in national income. Islam (2016) finds that if the freedom level in a country is 1% higher than another country, its income inequality will be 1.33% lower than that another country. He tests it on data of 83 countries using the General Method of Moments.

Some authors have proven that democracy has no relationship with income inequality (Bollen and Jackman, 1985a; Weede, 1992).

For Simpson (1990), democracy has a curvilinear relationship with income inequality. Felipe (2015) finds the same result with pseudo-panel data built from 9 Latin American countries' household surveys: inequality first increases with the stock of democracy before falling.

One of the earlier important papers which proved the negative impact of democracy on inequality is Perotti (1996). Acemoglu and Robinson (2000) proved this negate relationship between democracy and income inequality in Europe during the nineteenth century and in Latin American during the twentieth century.

Chang (2007) points out that in third-wave democracies, especially in Latin America, Eastern Europe, and Africa, democracy does not reduce income inequality. We have 23.4% increase of the Gini coefficient in Africa in two decades, while on average Western European countries (democratic countries) only witnessed a 6% increase in Gini coefficients. The worst performing European country, the United Kingdom, registered a 10% increase which is less than the half of the African average.

Gradstein et al. (2001) estimated that this negative effect is through the social context and societal values within which democracy takes place and through the type of democracy system. Parliamentary systems are more likely to generate lower inequality than presidential systems.

METHODOLOGY

What is the contribution of democracy in the reduction of income inequality by fiscal policy? To answer this question, we use a linear panel model with which we make different regressions.

Model

The functional form of the model[5]

We use a linear panel model to assess whether the reduction of income inequality by fiscal policy is linked to the fact that the country is democratic or not.

The linear model has the following form:

$$y_{it} = \gamma d_{it-\Delta t} + X'_{it-\Delta t}\beta + \mu_t + \psi_i + u_{it} \ (Eq. 1)$$

The variables of the model are present in Table 1.

The main two variables of the model are: income inequality and democracy. Income inequality is the dependent variable and democracy with other variables specified in X (Taxes, Social expenditure and GDP per capita) are independent variables. Fiscal policy variables are lagged and the income inequality variable is not. So we use income inequality after transfer programs. The model allows us to analyse the impact of fiscal policy and democracy on income inequality five years later.

Income inequality

To measure income inequality in the model, we choose the Gini coefficient of the WIID version 4 for several reasons.

In developing countries, the rural agriculture and informal sectors are large thus it is difficult to gather accurate income data. That is why WIID4 collected observations with reference to both income and consumption. WIID combines information coming from many sources, including historical compilations with updated information from the most salient income inequality data repositories (including LIS, SEDLAC, Eurostat, World Bank, OECD and ECLAC), as well as from national statistical offices, and independent research papers. The majority of the country of our sample, 47 countries of SSA, is present in the database. In many cases UNU-WIDER[6] has recalculated the Gini index so that it is better comparable. Acemoglu et al (2015) and Odusola (2017) use the data of the Standardized World Inequality Indicators Database (SWIID), constructed by Solt (2009).

Measures of inequality will be in log to make interpretation easier and allow the impact of democracy to be proportional to the baseline level.

Democracy

Although a consensus on the definition and measurement of democracy is hard to reach, most researchers agree on some fundamental characteristics of democracy. The government based on the majority and the consent of the governed, the existence of free and fair elections, the protection of minorities and respect for basic human rights.

There are several measures of democracy for SSA countries. The most commonly used are the indices of the Polity IV[7] and of Freedom House[8]. We choose Freedom House Democracy Index to measure the democracy of our sample because its characteristics are necessary for our research. Freedom House's measure of democracy is based on political rights and civil liberties and contains the measure of electoral democracy.

To obtain the democracy index of our model, we calculate the mean of Freedom House's political rights and civil liberties indices and we take the difference of the percentage to 100 to obtain our Democracy Index. The higher the index, the more democratic the country is, and the lower the index, the less democratic the country is. The index is available for all countries of our sample and from 1978 to 2018 and it is annual.

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[5] There are several methods for assessing the impact of fiscal policy on income inequalities. Among these methods is the analysis of tax incidence (Lustig and Higgins, 2013) which is used by Odusola (2017) in the case of SSA countries. We use the linear model in the paper.

[6] UNU-WIDER: United Nations University World Institute for Development Economics Research.

[7] https://www.systemicpeace.org/polity/polity4.htm

[8] https://freedomhouse.org/report-types/freedom-world

Table 1. Variables of the model.

Variables		Origin	Name
y_{it} : Income inequality		WIID	Gini
d_{it-1} : Democracy		FHI	Political rights and Civil liberties
X'_{it-1}	Taxes	WDI	Tax revenue (% of GDP)
	Social expenditure		Government expenditure on education, total (% of GDP) and Domestic general government health expenditure (% of GDP)
	GDP		GDP per capita

Where: i = 1,…, N are the « individual » (countries).
t = 1,…, T is the time (years).
Lags in this specification will always mean 5 year lags (Δt = 5 years).
WIID: World Income Inequality Database. FHI: Freedom House Index. WDI: World Development Indicators.

In our model, this variable is lagged by one period (5 years interval) because we expect its impact on income inequality not to be contemporaneous. We chose 5 years because the elections in SSA countries are each 5 years.

Control variables

The economic theory underline that democracy, tax revenue and social expenditure, are the determinants of income inequality. The tax revenue and social expenditures are expressed in % of GDP.

In the model of the policy effects of democracy on income inequality proposed by Meltzer and Scott (1981), democracy should lead to greater tax revenues and more redistribution (social expenditure). Progressive tax policy decrease income inequality.

We approximate social expenditures to health and education expenditures in percentages of the GDP. These expenses are supposed to decrease income inequality.

As Acemoglu et al. (2015) have done, we include the lagged log GDP per capita as a covariate in the model. They sustain that "democracy is much more likely to suffer from endogeneity concerns when the lagged effects of GDP per capita are not controlled for and democracy has a major effect on GDP per capita and changes in GDP per capita may impact inequality independently of the influence of democracy on this variable"[9].

We put all these controlled variables to avoid problem of endogeneity. These variables are lagged to avoid putting endogenous variables on the right of the equation.

ψ_i denotes a full set of dummies for each country and the μ_t denotes a full set of time effects that capture common shocks and trends for all countries. u_{it} is the error term, capturing all other omitted factors, with $E[u_{it}|d_{it-1}, x'_{it-1}, \mu_t, \psi_i] = 0$ for all i and t.

We rely on economic theory and the situation of SSA countries to do the hypotheses summarised in Table 2.

In Table 3, we do a statistical description of the variables of the model.

The unit root test we conduct for each variable shows that the variables of the model are stationary at level so there is a short and long run relationship between the variables of the model.

The year 1990 is important in the process of democratization of SSA countries. The mutations of the Soviet Union and Eastern Europe following the end of the cold war in 1989[10], the crisis of single party regimes, the rise of liberal democratic demand in SSA in the one hand. In the other hand the devastating effects of the economic crisis and the programs imposed by the international financial institutions during the years 1990s in SSA have been the determining factors for the accession of most African black countries to democracy.

1990 is an important date for democracy in SSA. It is during that period that most of the countries of SSA after lot of years of single party and dictatorship, 30 years in general, adhere to political pluralism, multiparty politics, freedom of expression and the state of law.

Table 2. Expected signs of the variables.

Exogenous variables	Expected sign
Democracy	-
Taxes	-
Social expenditure	-
GDP	-

[9] Acemoglu et al. (2015) p.1910.

[10] During the 16th Conference of 37 African countries and France which took place in La Baule, France, on June 20, 1990, the President François Mitterrand argued that development rhymes with democracy and that French aid would now be towards SSA countries that opt for democracy.

Table 3. Summary statistics.

Variable	Mean	Std. Dev.	Obs.
Income inequality (Gini)	47.31	10.36	206
Democracy (Political rights and Civil liberties)	36.83	23.56	1,360
Tax revenue (% of GDP)	15.86	7.44	544
Social expenditure: Government expenditure on education, total (% of GDP) and Domestic general government health expenditure (% of GDP)	18.76	5.94	462
GDP per capita	4121.43	5489.81	1,274

The consequences of this atmosphere of the 1990s are numerous: (1) The alternative took place at the end of democratic consultancy (Kenneth Kaunda, in Zambia, 1991; André Kolingba in the Central African Republic, in 1993; Didier Ratsiraka, Madagascar, 1993) or following national conferences (Mathieu Kérékou, Benin, 1990; Denis Sassou Nguesso, Republique of Congo, 1991; Ali Saibou, Niger, 1991-1993). In some countries, the power changes hands by force (Chad), even during a bloody civilian wars (Liberia).

(2) Multiparty system is established in lot of countries (Togo, Guinea, Ivory Coast, Cameroon, Senegal, Mauritania, Gabon, Democratique Republique of Congo, Kenya and Tanzania).

In South Africa, Nelson Mandela is free in 1990 and during the same year, Namibia gains independence.

1990 is the year during which the democratization process starts in SSA countries. For this reason, we chose the period from 1990 to 2018 for our analysis. The sample is composed of 47 countries of SSA.

Estimations

Specification tests

One of the first problems that must be solved when working on panel data is that of choosing the model specification. Modelling can be fixed effects (individual effects) and/or random effects (temporal effects) when the sample is heterogeneous; when the sample is homogeneous, it is a pooled model. That's why, before moving to the estimations, we perform specification tests to find out whether specific effects exist or not.

Several strategies make it possible to choose between homogeneous (pooled model) and heterogeneous dimension and how this heterogeneity should be specified (fixed effects and / or random effects). We select a three-step test. We first apply Fisher's test and we apply the Breusch and Pagan test and then we apply the Hausman test. These specification tests and estimations are done with the Stata 15 software.

Fisher's test:

H_0: Absence of fixed effect

H_1: Presence of fixed effect

The test results are as follows: F test that all u_i=0: F(17, 9) = 8.98 Prob > F = 0.00

We reject the null hypothesis, so there is a presence of fixed effect.

Breusch and Pagan LM test:

H_0: Pooled regression model is appropriate

H_1: Random-effect model is appropriate

The test results are as follows: chibar2(01) = 12.28 Prob > chibar2 = 0.00

We reject the null hypothesis, so the random-effect is appropriate.

We can conclude that the sample is heterogeneous. Economically, the heterogeneity means that each country (47) of the sample has its own specific characteristics. Econometrically, the heterogeneity means that the coefficients (μ_t and ψ_i) are not constant.

The Fisher and Breusch and Pagan LM tests show that the fixed effect and the random-effect are both appropriate. But which model is more convenient? The Hausman test allows us to choose.

Hausman test:

H_0: Difference in coefficients is not systematic

H_1: difference in coefficients is systematic

The test results are as follows: chi2(4) = 25.29 Prob>chi2 = 0.00

The fixed effect is more convenient.

The more convenient model is the fixed effect. We estimate the model with fixed effect. We also estimate the model with random effect because it is possible regarding the results of the specification tests. The second estimation allows us to make comparisons.

RESULTS

We summarised in Table 4 the results of the estimations

Table 4. Estimations of Equation (1). Dependent variable: Log of Inequality.

	Fixed effect	Random effect
Constant	3.464*** (0.501)	3.356*** (0.321)
Democracy lagged	-0.006*** (0.002)	–0.003** (0.001)
Taxes lagged	-0.009 (0.012)	0.021*** (0.016)
Social expenditures lagged	-0.003 (0.005)	0.001 (0.005)
GDP per capita lagged log	0.105** (0.042)	0.021 (0.039)
Observations	31	31
Countries	47	47

Standard errors are in parentheses.
***: significant at 1%; **: significant at 5%; *: significant at 10%.

of Equation (1) with fixed and random effects.

In the fixed effect model, it is the variables democracy and GDP per capita which are significant, the other variables (Taxes, and Social expenditures) are not. In the random effect model, there are two significant variables: the Democracy and the Taxes.

In both regressions, the variable democracy is negatively significant. In the 47 Sub-Saharan countries, democracy reduces income inequality. This result is in accordance with the economic theory and with our hypotheses. The remarkable fact of this result is that the coefficient of democracy is very low (0.01). It means that democracy reduce income inequality very little.

This small coefficient of the democracy could be explained by the fact that the SSA countries have opted for the democratic regime only since the 1990s. These countries are new democracy. They are learning how to apply the democracy rules. The good application of the democracy needs time. Acemoglu and Robinson (2001) says that it is in the long term that a country which succeeds in applying democracy rules very well.

The GDP per capita is positively significant in the fixed effect model. It means that more the SSA countries began reach, more income inequality increase. In these countries, the distributive policies do not reduce income inequality but increase it.

The coefficient of the Taxes is significant and positive in the random effect model. In SSA, the tax revenue increases income inequality. It means that the tax policy is regressive. The amount of the taxes is higher for the poor than for the rich. In this case or the rich manage to evade the payment of taxes or it is a state policy to avoid tax evasion. Odusola (2017) confirms that taxation in Africa is mostly regressive, its incidence falls more on the poor than on the rich.

Social expenditures and GDP per capita are not significant in the two regressions.

CONCLUSION

The objective of the research is to analyse the contribution of democracy in the reduction of income inequality by fiscal policy in SSA countries. The model is a panel composed by 47 SSA countries with the time period from 1990 to 2018.

We apply a specification test in three steps: The Fisher test, the Breusch and Pagan LM test and the Hausman test. We find that our sample composed by 47 SSA countries is heterogeneous and we apply the fixed and random effect model. The results indicate that the democracy regime reduce very little (1 per cent) income inequality in SSA countries. Regarding the fiscal policy variables (tax revenue and social expenditure), it is only the tax revenue which is significant with the random effect model. The tax revenue increase income inequality so the tax policy is regressive. When the GDP per capita increases, income inequality also increases.

The distributive system in the current state needs to be improved: raising the level of tax revenue and spend resources more efficiently and equitably. Taxes and receipts must be well targeted and the distribution system of SSA countries must take into account customs and traditions of African countries. Fiscal policy plays an important role in reducing poverty and inequalities through taxes, transfers and public spending. These instruments are needed to reduce poverty and inequality so that everyone benefits fruits of economic growth.

In SSA, the issue of income inequality is closely linked to poverty. To be efficient, the reduction of income must be accompanied by the reduction of poverty. It is therefore necessary that further research be carried out on the relationship between fiscal policy and poverty reduction in SSA countries.

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