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# Effect of Income Inequality on Economic Growth in **Selected West Africa Countries: An Empirical Analysis**

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Received: 24.03.2019 Revised: 21.04.2019 Accepted: 21.04.2019	
Available Online: 08.07.2019	The paper empirically investigates the effect of income inequality on economic growth in the selected Western African countries for the period of 1969-2016 by using panel data analysis. The
JEL Code: 130, 055, 015	results of panel data method indicates that poverty has positive and statistically significant effect; openness has a negative, and also significant effect on economic growth. On the other hand, inequality and human capita have negative effect on economic growth and slightly statistically significant.
Keywords: : Income inequality, Economics growth, Poverty, Panel data.	The results of this study show that the policy makers should focus on reinvestment in human capital, poverty reduction, land reforms, and infrastructure development as the dynamics of economic arowth for these countries.

# **1. Introduction**

Economic growth is considered to be a powerful force for reducing poverty, inequality and promote sustainable development goals. High and sustainable economic growth increases demand for labour and wages which in return reduces poverty. Similarly, better earnings as a result of reduction in poverty lead to increased productivity and growth. But the extent to which poverty reduction results from economic growth depends on how disparity in income distribution changes with economic growth and on initial inequalities for income. If income inequality increases, then economic growth does not lead to a significant poverty reduction. Many developing countries achieved high growth rate in different periods with no corresponding reduction in their poverty indices due to increased income inequality. Most South and East Asian economies grew at higher per capita rates since early 1970s along with rise in income inequality over time. The high level of inequality in income distribution requires that efforts to stimulate growth are not sufficient in reducing poverty without being complemented by policies to reduce income inequalities (Tabassum, 2005).

During the 1950's and 1960's attention shifted to the relationship between inequality and economic growth. Most of this literature focused on the impact of income distribution on consumption and saving. During the 1970's and the 1980's, macroeconomic theory lost interest on issues of distribution, partly due to the decline of interest in growth. But the relationship is guite important because policy makers need to understand the way in which increase in output will be shared among heterogeneous agents within an economy, and the constraints that this sharing may put on future growth (Kamila and Samih, 2011). According to World Bank annual statistical reports, poverty has declined significantly in developing countries over the past twenty years but the progress has been uneven. The number of people living in poverty fell from 1.5 billion in 1982 to 1.1 billion in 2001. However, many low-income developing countries are still trapped in vicious circle of poverty. In sub-Saharan Africa, the number of the poor rose from 41% to 46% between 1981 to 2001. while in Eastern Europe and Central Asia, the numbers have risen to around 20% in 2001. Therefore, reduction of widely scattered poverty is the most challenging goal for low income developing countries (Tabassum, 2005).

There is disagreement among development economists on the relationship between inequality and economic growth. This controversy derives from the fact that it has been difficult to reconcile the different theories, and the empirical evidences have been largely inconclusive (e.g.Perroti, 1996; Alesina and Rodrick 1994; Clark and Lawson, 2008; Forbes, 2000; Garbis, 2005; and Oguns, 2004). It is against this background that this study examined the relationship between income inequality and economic growth with particular reference to West African region.

The purpose of the study is to empirically identify the factors affecting income inequality in mixed evidence of West African countries. With this aim, it will helps us to identify the relationship between income inequality and growth in Western African countries. The rest of the paper is organized as follows; section 2 literature reviews, section 3, Methodology, Section 4, Conclusion and Recommendation.

# **2. Literature Review**

## 2.1. Conceptual Issues

Inequality refers to the unequal distribution of Household or individual income across the various participants in an economy. Income inequality is often presented as the percentage of income to a percentage of population. It is often associated with the idea of income "fairness". It is generally considered "unfair" if the rich have a disproportionally larger portion of a country's income compared to their population (Rodriguez, 2000).

Economic growth on the other hand is defined by Kuznets () as a long-term rise in the capacity of an economy to supply increasingly diverse economic goods and services to its population; this growth capacity is based on advancing technologies, and institutional and ideological advancement. Anyanwu and Oaikhenan (1995) stated that economic growth refers to the increase over time, of a country's economic capacity to produce those goods and services needed to improve the wellbeing of the citizens in increasing numbers and diversity. Economic growth is therefore a sustained increase in the per capita income over a period of time.

## 2.2. Theoretical Issues

The research of Simon Kuznets titled "Economic growth and income inequality" laid foundation of studying the relationship between economic growth and income inequality. He was the first person to introduce the idea of a link between inequality and development. The main idea of his theory is that the relationship between economic growth level and income inequality is likely to show an inverted U-shape, which is known in economic literature as Kuznets hypothesis. This hypothesis suggests that at low levels of income, inequality increases with rising per capita income and decreases only in the later stage of development with industrializationresulting in an inverted U-shaped relationship between per capita income and income inequality-based on a model where individuals migrate from a low-wage rural sector with little inequality to an urban sector characterized by high income inequality and high average income (Kuznets, 1995).

The Marxist view is that inequality is inherent in the capitalist mode of production. It is inevitably produced during the normal operation of capitalist economies, and cannot be eradicated without fundamentally altering the mechanism of capitalism. In addition, it is functional to the system, which means that power holders have a vested interest in preserving social inequality. There is little point, therefore, in

devoting political energies to the advocacy of policies which deal only with the symptoms of inequality without altering its basic generating forces. Hence, the call for social and economic revolution, the overthrow of capitalism, and the substitution of a method of production and an associated way of life designed around the principles of equality and social justice. Marxism favours an eventual society where distribution is based on an individual's need rather than his ability to produce, inheritance, or other such factors. In such a system, inequality would be minimal. Marxists believe economic equality is necessary for political freedom; that when there is economic inequality then political inequality is assured (Peet, 1975). Marxists are of the view that the more the distribution of resources in favour of the rich, the more the tendency for overinvestment and under consumption and this will result in economic crisis and will have negative implication on economic growth (Anyanwu and Oaikhenan, 1995).

However, Gupta (1990), Alesina and Perotti (1993) also offered a new explanation for the relationship between income inequality and economic growth. According to them, increasing income inequality has the potential to cause political or social instability or revolutions. And this instability eventually will discourage investment and strong establishment of property right which will lead to declining economic growth.

Galov and Moav (2004) developed a growth theory that captures the replacement of physical capital accumulation by human capital accumulation as a prime engine of growth along the process of development. They argued that the positive impact of inequality on the growth process was reversed in this process. In early stages of the Industrial Revolution when physical capital accumulation was the prime source of growth, inequality stimulated development by channeling resources towards individuals with a higher propensity to save. As human capital emerged as a growth engine, equality alleviated adverse effects of credit constraints on human capital accumulation, stimulating the growth process.

Galor (2000) argues that the classical approach holds at low-income levels but not at later stages of development. In the early stage of development, inequality would promote growth because physical capital is scarce at this stage and its accumulation requires saving. Inequality in income would then result in higher savings and rapid growth. In later stages of economic development, however, as the return to human capital increases owing to capital-skill complementarily, human capital becomes the main engine of growth. Credit constraints, however become less binding as wages increases and adverse effect of income inequality on human capital accumulation subsides, and thus the effect of inequality on growth process becomes insignificant.

The classical approach advanced the hypothesis that inequality is beneficial for economic development in the post-industrialization period (Keynes, 1920; Kaldor, 1957). It argue that since the marginal propensity to save increases with wealth, inequality channels resources towards individual whose marginal propensity to save is higher, increasing aggregate savings, capital accumulation, and economic growth. This means that income inequality is a necessary ingredient for economic growth; that countries cannot grow without inequality because inequality guarantees continuous supply of savings by capitalist who have high marginal propensity to save and invest while on the other hand the poor have high marginal propensity to consume. Therefore, redistributing income in favour of the poor will only result in increase in consumption of consumer goods and not savings and investment.

## **2.3. Empirical Review**

Several researchers have conducted the studies on the relationship between income inequality and economic growth. The estimated coefficients imply that both variables have a negative impact on growth. Greater inequality in the distribution of income and land thus appears to slow down economic growth. Symmetrically, equality seems to be growth enhancing.



## Figure 1: Economics Growth of the Selected West African Countries

Source; Authors' Computation by using stata 13 for window.

On the impact of economic growth, tax policy and economic freedom on income inequality using data from 1990-2000 and capturing variables such as the Gini coefficient as a proxy for the degree of income inequality, gross capital formation (investment) as a share of GDP, human capital investment, GDP per capita as a proxy for economic growth, changes in the marginal tax rate, and Economic

Freedom of the World (EFW) as the measure of institutional and policy environment. The research employed Two Stage Least Squares (2SLS) model. The findings generally indicate that increased economic growth corresponds with lower Gini-coefficient i.e. more income equality. A two percentage point increase in economic growth correlates with a three unit decrease in the Gini coefficient. The results of the study also revealed that progressive taxation as measured by high top marginal tax rate increased income equality and increases in the level of economic freedom corresponds to increased income equality.

Liu and Wanshun (2006) examined the interaction between income distribution and economic growth in China from 1982-2001 using Granger causality test. The results indicate that there exists causality from income distribution to economic growth; and that the gap in income distribution promotes economic growth.

Forbes (2000) found positive effects of income inequality on growth. The author argued that country-specific effects and omitted variables are the cause of significant negative bias in the estimations of the effect of inequality on growth. She also concluded that fixed-effect estimations yield the consistent result of a positive short and medium term correlation between inequality and growth.

Perotti (1996) conducted a careful examination of the various channels through which inequality may affect economic growth, as proposed by the modern theoretical perspective. His study provides support for the Galor-Zeira hypothesis, showing that inequality is indeed associated with lower level of human capital formation, and lower human capital formation is associated with lower levels of economic growth.

Dollar and Kraay (2001) using data on trade liberalization as a share of GDP in constant prices for 101 countries including 73 developing countries from 1975 to 1997 found that trade openness leads to declining inequality between countries and declining poverty within countries. The poor countries that have reduced trade barriers and participated more in international trade over the past 20 years have their growth rate accelerated. In the 1990s they grew far more rapidly than the rich countries, and hence reduced the gap between themselves and the developed countries. At the same time the developing countries that are not participating in globalization are falling further behind. Within the globalizing developing countries there has been no general trend in inequality. Thus, rapid growth has translated into dramatic declines in absolute poverty in countries such as China, India, Thailand and Vietnam. OLS estimation results showed that in the 1990s the globalizing developing countries grew at 5.0% per capita, rich countries at 2.2% per capita and non globalizing developing countries at only 1.4% per capita while 100% increase in the trade share would have the cumulative effect of raising income by 25% over a decade.

In a study on Turkish economy, Oguns (2004) did not find a statistically significant relationship between inequality and growth for the period of 1960-1999 using regression method. She concludes that, income distribution has not deteriorated in this period to other economies, where a change for the benefit of the upper quartile at the cost of the rest of the population has taken place, but substantial losses in real incomes have been realized. Hiranya and Abdullahi (2004) found some evidence of trade liberalization accelerating growth in Bangladesh and also found evidence affecting income distribution or, of income distribution affecting growth or investment. Data on income inequality used in this study has poor quality.



#### Figure 2: Panel Graph for Poverty

Sources: Authors' Computation By using stata 13 for window.

Garbis (2005) examined the empirical relationship between inequality and economic growth. A panel data set for 82 countries for the period 1965-2003 was assembled with the data averaged over period of three to seven years, depending on the availability of data. The empirical results challenge the belief that income inequality has a negative effect on growth and confirm the validity of the Kuznets curve. Credit market imperfections in low and medium income countries are identified as the likely reason for the positive link between inequality and growth over the short to medium term. In the long term, inequality may have an adverse impact on growth.

Zouhier and Imen (2012) examines the empirical relationship between growth and income inequality for three countries of north Africa over the period 1970-2004 and the result indicate that the long-run growth elasticity of income inequality is negative and significant. The results also show negative and highly significant

relationship between growth and initial income per capita. Physical capital investment has positive effect on economic growth. The results also suggest that coefficients of openness to trade and human capital investment are positively and robustly significant indicating that both factors have strong impact on economic growth.

Hall (2007) examined the impact of poverty on innovation capacity and economic growth using data from 1980-1999 and used the methodology of pooled cross-sectional time-series analysis with panel corrected standard errors with lags. The findings revealed that poverty impact economic growth negatively through its effect on the components of capacity that leads to economic growth; there is weak support of the negative direct effects of poverty on economic growth; and mixed results for the effects of poverty on innovation capacity formation.

The study by Fosu (2010) used data from 1981-2005 and examined the transformation of economic growth to poverty reduction in developing countries with emphasis on the role of income inequality. The study used Fixed Effect (FE), Random Effect (RA) and the Generalized Method of Moment Estimation. Using both regional and country-specific data the study found that on average, income growth has been the major driving force behind both the declines and increases in poverty and that high initial levels of inequality limit the effectiveness of growth in reducing poverty.



## Figure 2: Panel Graph for Inequality

Sources: Authors' Computation By using stata 13 for window.

Ncub.(2013) examined the patterns of inequality, growth and income inequality in the MENA region. Using cross sectional time series data of MENA countries for the

period 1985-2009, the study also investigated the effect of income inequality on key societal development, namely economic growth and poverty in the region. The findings showed that income inequality reduces economic growth and increases poverty in the region. Other factors having significant negative effect on economic growth in the MENA region include previous growth rate, exchange rate, government consumption expenditure, initial per capita GDP, inflation and primary education.

# 3. Methodology

# 3.1. Variables Measurement

In conformity with the literature, the variables in the model consist of both the dependent and independent variables. Economic grow is the dependent variable and is measured as gross domestic product (GDP) in line with Kamila and Semih, (2011). The explanatory variables are; population, total as a measure of total population in a country, life expectancy is one of the potential proxy of Gini coefficient which is the measure of inequality following Kamila and Semih, (2011) Tabassum (2005); Human capital is measured as secondary school enrolment rate gross in line with Tabasum (2005); Poverty is also treated as an independent variable following the work of Hall (2007) and it is measured as the percentage of population living on less than 1.25 dollars per day following the work of Fosu (2010); openness is measured as a simple trade shares, which is exports plus imports divided by GDP and is used as proxy for the level of trade between a particular country's economy and the rest of the world as used by Dollar and Kraay (2001), Zouheir and Imen (2012). (Sara Hertog, 2013)wrote Association between Two Measures of Inequality in Human Development: Income and Life Expectancy and uses lifespan as a proxy for inequality. The potential proxies for inequality as suggested by one of the reviewers are found here; https://www.guora.com/Whatproxies-can-be-used-to-determine-the-income-inequality-of-a-specific-region-Forexample-instead-of-finding-a-Gini-coeffient-what-other-measurements-and-datacould-be-used-to-determine-this-income-disparity.

## 3.2. Model specification

The paper used panel data for the periods from 1969-2016 to study the relationship between economics growth and income inquality.

At the beginning of the paper we started to build the models as follows;

$$\begin{split} EGrowth_{it} &= \theta_0 + \theta_1 HCapital_{it} + \theta_2 Op_{it} + \theta_3 LProxyforGINI_{it} + \theta_4 X_{it} + \vartheta_i \\ &+ \epsilon_{it} - -(1) \end{split}$$

Where, the subscript i (=1,..., n) represents country and t (= 1,...,T) the period (years). *EGrowth*<sub>it</sub> Indicates Economics growth as a good proxy for gross domestic product of the individual countries a time t (fosu 2010), *HCapital*<sub>it</sub> represents human capita as a proxy for secondary enrollment  $Op_{it}$  denotes openness that is average of export and import, *LProxyforGINI*<sub>it</sub> is the life expentancy as a proxy of inequality measured by gini coeffiencts. Xit denotes control variable, which is poverty,;  $\vartheta_i$  represents the unobserved country-specific fixed-effects such as country's location, demography, culture that needs to be controlled before we explore the impact of explanatory variables on economic growth to avoid misspecification of the model; and  $\epsilon_{it}$  stands for the error term.

Furthermore, economics growth which is a proxy of the gross domestic product might affect income inequality by different channels. In this paper, we try to discover whether economics growth affect income inequality through Human capita, openness, Gini coefficient and poverty.

## **3.3. Estimation**

Our model can be estimated using different methods, such as fixed effect and random effect. However, a country-specific effect that affects economic growth are difficult to be explored. If the unobserved country specific variables are correlated with the regressors, our models will produce biased results. To solve this problem, one can use either fixed effect, random effect. However, utilize economic rationality and statistical insights to choose the right model. After using Hausman test, our findings suggest that the fixed-effect model performs better than the random-effect model. Therefore, our models look as follows:

$$EGrowth_{it} = \theta_0 + \theta_1 HCapital_{it} + \theta_2 Op_{it} + \theta_3 LProxyforGINI_{it} + \theta_4 X_{it} + U_{it} - -(2)$$

#### **3.4. Method of Data Analysis**

This research work employs the use of panel data approach using Fixed Effect and Random Effect model following the worked of Fosu (2010). The choice between Fixed Effects and Random Effects models will be influenced by result of Hausman test (1978) which is commonly used as a way of choosing between fixed and random effects (Gujarati and Sanjeetha, 2007). We used fixed effect model as detected by Hausman specification test results below.

# 4. Analysis of the results

Table 1: Descriptive Statistics						
Variables	Mean	Standard Deviation				
Economics Growth	1.49e+10	5.58e+10				
Human Capital	59.11757	32.96523				
Openness	59.16464	26.11772				
Inequality	50.28852	7.353091				
Poverty	7488232	1.40e+07				

#### Table 2: Results of the Hausman Specification Test

Variables		Coeffic	ients	
		Random	Effect	
	Fixed Effect	ct (b) (B)	Difference (b-B)	
Human Capital	-8.08e+07	-1.56e+08	7.52e+07	
Openness	-1.62e+08	1.12e+08	-2.74e+08	
Inequality	-4.21e+08	-4.21e+08 7.73e+08		
Poverty	7084.599	3454.817	3629.782	
chi2(3) = 149.02		Prob>chi2	=	
(V_b-V_B is not	positive	0.0000		
definite)				

Source: Computed by Authors Using Stata/ for SE-64.exe 13 for Windows

## 4.1. Hausman test

The results for hausman test was used at table 1 above to check which model is more appropriate for our analysis. From the result generated indicated that the probability values of F- statistics is significant at 5% level of alpha, which is the decision of favored fixed effect to random effect model i.e Prob>chi2 = 0.0000.In other words, fixed effect is more accurate or accepted and random effect is rejected or is not appropriate for our analysis.

Independe nt Variables	Fixed Effect Regression				Random Effect Regression			
	Coeff.	Std error	t- ratios	P(t)	coef.	Std error	z- ratios	P(Z)
Human Capital	-8.1e+07	4.74e+07	-1.7	0.089*	-1.6e+08	5.2e+07	-3.00	0.003**
Openness	-1.6e+08	5.57e+07	-2.92	0.004**	1.1e+08	5.5e+07	2.05	0.041*
Inequality	-4.2e+08	2.41e+08	-1.8	0.081*	7.7e+08	2.4e+08	3.25	0.001**
Poverty	7084.599	186.7508	37.94	0.000** *	3454.82	95.9569	36.00	0.000** *
	N = $624$ F(4,607) = 381.76 Prob > F = 0.0000 R-squared = 0.6803				N = $624$ Wald chi2(4)=1457.93Prob > chi2=0.0000R-squared=0.7020			

## Table 3: Regression Results for West Africa Countries

Dependent variable: Economic growth.

Standard errors between parentheses

\* p=0.10, \*\* p=0.05, \*\*\* p=0.01

Source: Computed by Authors Using Stata/ for SE-64.exe 13 for Windows.

From the above table 2, the result for the fixed effect model indicated that the explanatory variables; poverty and openness are highly significant at 1% and 5% respectively. In contrast, the coefficient for poverty level is also economically significant, meaning positive correlation between poverty and economics growth of the selected West African countries under analysis. Openness to international trade from 1969-2016 have negative impact on the rate of change of economics growth. For instance, human capita and inequality are slightly significant and both have negative slope. Meaning both human capita and income inequality moved inversely with economics growth. It is also important to know that the overall R-squared value for fixed effect is good and the f-statistics also prove the model is good and adequate for our analysis.

Further, the results for random effect presented in the same table also revealed that poverty, human capita and inequality all are statistically significant at 1% and 5% respectively, except human capita which is significant at 10%. Poverty and

inequality have positive sign on economics growth, while human capita as indicated in the fixed effect have negative correlation with growth. Openness, average of export and import is slightly significant and associated with positive sign. This is true , because countries with high export, expected high growth. The overall R-squared is 70%.

# **5.** Discussion of Finding

The results for fixed and random effect are interchange of coefficient and p-ratios, because of the fixed the error term at time t may be correlated with all the regressors while the opposite is the case of random effect. Human capital is slightly significant for fixed effect and negative sign and highly significant for random effect with negative sign respectively. Trade openness is highly significant for fixed effect and negative coefficient in the random effect regression. Inequality is highly significant and negative for fixed effect model and negative for fixed effect model and slightly significant and negative for fixed effect model and negative for fixed effect regression. Inequality is highly significant and negative for fixed effect model.

The results for poverty is significant related to economics growth are not in line with the work of Hall(2007). In the West African countries, poverty from 1969-2016 reduces growth and development. This means most of the variables like inflation, crime rate, Mental illness, family breakdown, civil war, unemployment, interest rate are high, while investment, consumption and saving becomes low.

Inequality in which life expectancy as a proxy of in equality and which in turn measured by gini coefficients have negative coefficient and slightly significant with growth as proposed by the model of fixed effect. This result is in line with the classical theory used as the theoretical framework of the study and conformity with economics a priori expectation. The finding of inequality also provide support of the Kuznets' inverted U-shape hypothesis, which explains that at the early of industrialization and development, inequality increases with rising per capita income and decreases only at the later stages of development. The fixed effect regression results is that inequality reduces economics growth and is consistent with the result of the works of Alesina and Rodrick (1994);Ncubeet al.(2013) and Wheelan (2002), which show that inequality slows down economic growth; and the work of Perotti (1996) which revealed that inequality is associated with lower levels of human capital formation, and lower levels of human capital formation is associated with lower levels of economic growth.

Our fixed effect regression results also in in conformity with the work of Gupta (1990) and Alesina and Peroti (1993) which explain that increasing income inequality has the potential to cause political or social instability or revolutions or

crime rate, civil war, which could discourage investment and lead to declining output and employment. The result contrasts with the work of Forbes (2000) and Garbis (2005) who found that inequality is positively related to economic growth.

The findings also reveal that human capital has negative and statistically significant effect on economic growth. This is in contrast with the previous studies conducted by Zouhier and Imen (2012) and Wheelan (2002), which found that human capital has positive impact on economic growth; and the result does not conform with the a priori expectation of the study.

The findings on trade show that openness is negative and significantly related to economic growth for fixed effect model and positive sign and significant for random effect.. This is in conformity with the works of Romer (1999), Frankel and Romer (1999), Ekpo (2005), Dollar and Kraay (2001) which found that openness or trade liberalization have positive and statistically significant effect on economic growth for random effect regression but opposite results for fixed effect regression.. The result is also in conformity with the a priori expectation of the study for random effect regression, but not in fixed effect regression.

For the adequacy of the model, the results reveal that all the models were adequate based on the F-values that were statistically significant at 1% and Prob > F = 0.0000 is also significant at 1% level meaning that the fixed effect model is adequate to explain the effect of income inequality on economics growth of the selected West African countries.

# 6. Conclusion and Recommendations

On the basis of the findings of the study, we draw conclusion that human capita, openness and income inequality slow down economic growth of the West African region and poverty rises with growth. poverty translate into boosting the growth of West Africa. Poverty and openness are highly significant, but human capita and income inequality are slightly significant and negative signs respectively.

These suggest the need for the sub-region to pursue policies that will bring economic development with an immediate decrease in inequality through immediate re-investment of the proceeds of economic growth into land reforms, poverty reduction, human capital and infrastructural development. Ownership rights to land should be redistributed in areas where traditional institutions have high access to land at the expense of the farmers by acquiring the lands and making available to farmers who engage in large scale agriculture. High property tax should

be imposed on those with ownership of large areas of lands without being engaged in economic activities.

West African governments should ensure sound macroeconomic management through budget tracking, financial sector reform, economic planning, project monitoring and evaluation as well as ensuring that projects being embarked upon by the government are prioritized and reprioritized based on their contribution to the long term plan and goals of the economy and not just on the basis of their linkage with the financial statements in the budgetary provisions. The fight against corruption, poverty and insecurity in West Africa should be taken to the sub regional level through the Economic Community of West African States (ECOWAS) to create synergy among West African leaders in tackling the problems effectively.

There is need for redesign of industrial policies to distribute income more equally by ensuring high and increasing wages for workers as profits of the entrepreneurs increase. Also, a holistic tax reform should be carried out to ensure a more progressive tax system and strengthening of the tax enforcement agencies to reduce tax evasion and tax avoidance and the revenues used to close the income gaps and poverty alleviation in the region.

Finally, we recommend that further researchers' on the relationship between income inequality and economic growth included the following control variables; institutional quality, FDI, political stability, control of corruption, resources intensity, voice of the people, soft and digital skills.

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