

# Review of Patterns in Income Inequality Across Sub-saharan African Countries, and its Relation to Globalization and Economic Growth: A Cross-Country and Trend Data Analysis

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**Abstract**— The interaction and the mechanism by which income inequality is evolving considering different globalization pattern is a major concern by several studies. The study particularly focus on the idea how globalization has possibly lead to income inequality widening the gap between the poor and rich and limiting growth rate sub-Saharan countries. This will be investigated by taking evidence of cross country data applying panel observation of different income distribution pattern. For this reason the analysis in this study draws on data from 41 sub-Saharan countries over a period of 35 years horizon covering from 1980-2015, pooled together in a panel system and further investigates that income inequality pattern and its relationship with key determinants of globalization (international factor migration and trade) affecting between and within national inequality in the past three decades. Two kinds of evidence supports our test against generalization of the impacts on the income inequality trends within countries participating in the international trade a negative impact on inequality due to growth in import and a significant and positive impact on income inequality due to growth in export during the period.

**Key Words**— economic growth, globalization, income distribution pattern, income inequality,

## 1 INTRODUCTION

Over the past three or four decades, several changes in the pattern of income inequalities among countries and within countries have been taken place due to significant progress made by the interplay of globalization and its various dimensions. In particular technological change and regulatory reforms in trade and financial sector are most notable consequences of globalization which has a major impact on earnings and incomes of many citizens across the globe. Evidence suggest that people with skills in high demand sectors like IT or finance have seen their earnings risen significantly, while on the other hand wages of workers with low skills have not been able to keep the pace up.[4] Moreover the period has shown several reforms of tax systems put in place in many countries to countering the negative effect of inequality in low-income people in many countries.

Similarly over the period in question major significant changes have been taking place within many country that are also likely to have its own impact on income distribution. In this regard the impact of the series of economic and trade reform in the early 1990's and the changes that has taken places afterward represents a major structural drift in those countries. Over more than 11 sub-Saharan countries has undergone series of reforms in their financial and trade sector during the period which has an important bearing to the growth performance of the country in general and the income distribution in particular. Major steps in this regard include trade liberalization reforms and financial sector liberalization.

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The pattern of income inequality has been closely linked with the pattern and pace of growth of per capital gross domestic product as has been the focus of attention in several studies. As a natural extension of the discussion between inequality and growth pattern among countries and following the work of Florence (2008) this piece of work is set to provide empirical evidence of the theory about the relationship between gini index and the growth in per capita GDP and its various determinants by taking a close look at panel sub-Saharan country grouping made based on the evolution of income distribution pattern over last decades.

While economic theory suggest that the relationship between inequality and growth can go either way, empirical evidence have so far been mixed to predict the direction of the relationship and the dominate forces in action. The evidence from cross country finding and the evolution over time was even more inconclusive and more variant. But new and extensive research made for OECD countries presents consistent evidence that the long-term rise in inequality of disposable incomes observed in those countries has indeed put a significant change on long term growth of the economies. Income inequality has increased moderately but significantly over the past two decades, although with differences in the timing, intensity and even direction of these changes across countries. The wide cross-country differences in the overall shape of the income distribution at a particular point in time imply similarly large differences in income levels for people at different points of the distribution.

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## 2 PROBLEM STATEMENT

In general there are two opposing views of how global

/income inequality affects economic growth at a level of cross sectional and temporal/historical observations of individuals within and across countries. According to the incentive hypothesis with increasing gap between rich and poor the rich people are likely to be have strong incentives to working harder, and taking greater risks, which can lead to more efficiency and growth. On the other hand opportunity hypothesis supports the opposing idea, where with more inequality rich people are better able to take advantage of economic opportunities and making it difficult for the poor to take new future opportunities which result in slowing of economic activity.

Substantial evidences can be obtained taking the analysis to cross country comparison of income inequality in developed, emerging or developing and less developing countries. According to Barro [1] the effect of income inequality on economic growth appears to be weak and statistically insignificant and some evidence that inequality is bad for growth in poor countries and good for growth in richer countries. He explained between 1985 and 2005, for example, inequality rose by more than 2 gini points on average across 19 OECD countries, an increase estimated to have knocked 4.7 percentage points off cumulative growth between 1990 and 2010.

From measures of income inequality the channels through which inequality affects the society are explained in many ways namely through the impact of women's employment and, and the extent of wealth concentration and indebtedness and tax and benefits and redistribution[4]. However there are also different forces/factors that need to be considered taking view of different pattern of globalization and various aspects of the policy and institutional environment in the country.

We consider a cross examination of 13 explanatory variables and their corresponding proxies as an important correlates of inequality as identified by the work of Fernandez, Ley and Steel 2001, Sala-i-Martin 2004 and Ciccone *et al.* 2010. The variables of our interest include trade openness measured by Import and/ or Export ratio of GDP, financial openness instrument measured by indirect measure of openness in terms of foreign asset and liability position of the country, and availability of credit to domestic investors and other important macro and socio economic variables such as educational enrolment, labour participation in the economy.

From analysis of various cross-country research on growth versus inequality relationship the dominant force defining income inequality and its relationship is technological innovations. In this study an attempt has also been made to address this factor. In addition net migration and labor factor movements is used as important explanatory variable for our analysis. Similarly taking into account the heterogeneity consideration between countries involved a country and trend fixed effect variable were introduced for civil war and other political stability situation that may have significant impact for growth prospects in those countries during the period under consideration.

### 3 Literature Review

For papers accepted for publication, it is essential that the electronic version of the manuscript and artwork match the hard-copy exactly! The quality and accuracy of the content of the

electronic material submitted is crucial since the content is not recreated, but rather converted into the final published version.

#### 3.1 Trade Expansion and between –Country Distribution of Income

To understand the concept of inequality in the global, regional or nation context there are two pattern / components of inequality. We need to focus in our analysis the inequality between country (group) average incomes, and the inequality within countries (nations) [6]. In the former case we have to focus our attention to the determinants per capita incomes. However in the latter case the determinants of factor prices and their link to the distribution of income has to be discussed.

According to factor-price approach to globalization versus inequality relationship (given the globalization of commodity markets through trade and commodity price convergence) trade openness policies has increasing impact on incomes of countries for the abundant factor of production (land, labor, capital, technology) and reduces incomes for the scarce ones. Similarly factor price approach can be used to explain how the relative factor price trends determined inequality movements in a world where the agricultural sector was big and land was a critical component of total wealth. However trade protection policies and barriers of trade has the opposite effect of benefiting the income from resource scarce countries and reducing income for resource abundant trading partners.

In the discussion of trade liberalization in the third world focusing on the analysis of the effects of country's liberalization on their economies it is important not to ignore the effects of the existing international trade framework. In an inequality versus globalization issues and the subsequent discussion of benefits and gains from participating in international trade it is important to mention the effect of multilateral and bilateral trade agreement and the relative gains achieved by countries from these agreement. In addition in the last decades there has been important developments in several other trading framework that could impact the participation and benefits of trade for the respective countries.

#### 3.2 Migration and the Distribution of Income

The rising world integration has resulted in an influx in migration of labour at different periods in the history of mankind. Currently globalization has prevailed two facet of human migration one is the fact that is considered as a burden to the new economy while in the other case it can be considered an opportunity to take an advantage in terms of cheap labour force availability it provides in their economies and also the resulting income spill over effect to old countries. Thus population emigration reverses diminishing returns of economies, yielding a positive impact on output per capita in new economies; but selectivity assures to take away a disproportionate share of the labour force, lowering output via labour supply losses, yielding a negative impact on output per capita old economies [6]. Those that were able to participate in the new, globally-linked economy prospered faster than ever

before, while the rest were left behind, or at least enjoyed less economic success. The issues of immigration can be intimately linked with the issue of population growth rate where the later has been depressed the former can have a positive and yet stimulating impact on output per capital per se.

### 3.3 Capital Flow/ Formation and between -Country Distribution of Income

There are various factors contributing to convergence of factor price at global level, capital accumulation being one factor. Two different opposing ideas emerge on the extent to which returns on international investment has an effect to widen world inequality. Robert Lucas (1990) made an important contribution emphasizing the importance of capital inflows or outflows given global capital market integration which has also led to a debate on the so-called Lucas Paradox explaining the importance of abundant natural resources, and human-capital than capital as convergence force.

### 3.4 Technological progress and between -Country Distribution of Income

Technological progress, in both developed and developing countries, increases the premium on skills and tends to substitute away low-skill inputs [6]. One of the great consequences of globalization has been capital intensive investments in infrastructure, technological innovation which are easing away the culture of consumption driven cities. Global communication system and openness is basically set to mix the very pillar of social fabric; important place for work and living to play pick in the knowledge science and technology dimension. All these technology and network and the historical role it plays linking the past and future is shaping the speed with which it is further improving the new software of interaction.

### 3.5 Political economy

In most sub-Saharan countries the last four decades has been marked by the political unrest and frequent draught in addition to the occurrence of civil war and instability which in turn has its implication for the growth of their economies. Taking view of all these phenomenon in our cross country examination it has potential impact in dragging the growth of economies and inequality while within countries consideration it can have long-term impact potentially declining their income capability on the poor and vulnerable section of the society and while it can also have to some extent a limiting impact on the growth of wealthy section to middle section of society. Moreover, to the extent that economies are periodically subject to shocks of various kinds and several economic crisis it has led to declining the growth prospect in the short term, creating income gap between the society and making a greater proportion of the population vulnerable to poverty. This evidence has been documented in the work and tried to explained their difference in the economic growth and explaining the income inequality pattern.

## 4 Methodology and Data Analysis

### 4.1 Methodology

In order to understand our analysis on income inequality measure we construct income distribution pattern based on

average income quantile shares directly obtained from the micro data of gross domestic product per capital of sub-Saharan countries. Then the measure of the countries standing with respect to this variable is used together with the corresponding quantile share of population for a specific country to identify country grouping in five major categories of income distribution namely, low income, lower middle income, middle income, upper middle income and high income countries. Similarly a pooled regression on an income inequality measure gini index was made from observation of the different variables to represent cross sectional and over time analysis of income inequality within and across the sub-Saharan African countries to test the effect of macroeconomic fundamental variables using Gretl statistical software package. From a broad range of these variables that can possibly define these relationship (over 125 incumbent variables) we have included the final least of 19 explanatory variables whose effect can be controlled to investigate at length how countries are performing in globalization in terms of trade openness and financial developments and the effect of economic growth on income inequality.

### 4.2 Data and Variable Description

For country grouping of income distribution using quantile classification we rely heavily on economic development indicator obtained from world bank database for per capita GDP. Our observation include 41 sub-saharan countries except 8 countries (south Sudan, Somalia, Soa tome and Princip, Liberia, Eritrea, Zumbabwe, Equatorial Gunea and Nigeria) among all 49 countries for which sufficient data was available for sample period from 1980 to 2015 for at least one important variable of our interest. For observation of those variables for which monetary units of measurement using constant US dollar are not available the current US dollar measure is used over the period in question. For missing observation of the these 41 countries included in our sample for over 10 years period transformation either geometric or linear long term growth was applied over the beginning year or end of year observation for the decade. However for missing observation of less than 10 years period an extrapolation or average method is used for representation of the missing data. These data are further processed using appropriate transformation (logarithmic or percentage or ratio) for our model.

Although there are several statistical measurement of income inequality commonly used in convectional literature, the traditional and the most extensively used instrument is gini coefficient /index. However because income or expenditure measure using gini index from survey report could not be found for adequate cross country examination between Sub-Saharan countries we depend our analysis with limited data available based on one or more observation of the gini index for the countries during the past three or four decades from world bank database. From recent literature increasing evidence can be found that such variables as financial liberalization, technology and trade openness are the most widely used determinant for inequality and growth comparison across or between countries. However each of these variables can not be used in specification of the model and so our analysis use only some of the macroeconomic variables and their

commonly used instrument for measurement.

### 4.3 The model

From methodological point of view if we are interested in panel observation among countries and the contemporaneous relationship of dependent variable with its explanatory variables in a cross sectional pattern (across countries) over time we have to take in to account changes over time in the average value of the dependent variable and the average value of the independent variable. We normally use the pooled OLS model and make some improvement to test the appropriateness of pooled OLS using such models as fixed effect model. For these reason it is essential to include more variables that account not only the variation over time but also the cross-sectional variation using country variables. We could write a time-fixed effects and element in our models where it would be assumed to be the same across entities at each given point in time but will vary over time. Hence with time-fixed effects in our model using the following representation.

$$y_{it} = \alpha + \beta x_{it} + \lambda_t + v_{it} \quad (1)$$

where  $\lambda_t$  is a time-varying variable that captures all of the variables that affect  $y_{it}$  and that vary over time but are constant cross-sectional and  $x_{it}$  is our variables of interest whose effect we want to measure against  $y_{it}$  such as trade openness and financial development.  $v_{it}$  is a disturbance term. The commonly used functional relationship explaining income inequality and economic growth is linear logarithmic function as is used in the work of Florence J. et. al. (2008). However subsequent improvement of the base model for specification of the variables of interest was done because of the measurement or availability problem of the instrument or variables specified in his model in Sub-Saharan countries situations. This model has to be evaluated in terms of accuracy using goodness of fit R-squared estimates. Estimation of the coefficient of slope and direction of relationship has further to be estimated using pooled OLS and fixed effect regression technique that requires cross country data. And the significance of test has to administered using F- test and P values to evaluate the generalizability of those point estimates for periods extending beyond the sample period. The significance of F test evaluate the relative importance of different variables from a range of variables under consideration.

## 5 Result and Empirical Finding

### 5.1 Trend and cross sectional Analysis of Income Inequality and Economic Growth between sub-Saharan countries

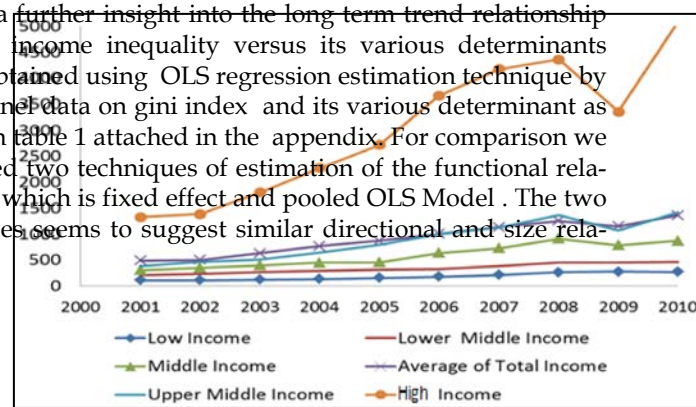
Figures 1 -3 attached on the appendix provides a complementary perspective on the relative size of changes in per capita GDP over the last decade from 2001 - 2010 for all 47 countries. The three different figures seems to suggest similar result in terms of income inequality distribution pattern, an improvement in GDP figures over the period. However the high income country grouping over the decade has shown significant rise in the relative share of per capita income in the total sub-Saharan economy than any other income grouping. Similarly Of all 47 countries under consideration only 8 countries have shown to have an positive/ negative change

/increase/decrease in share of the per capita income during the last decade. Such oil exporting countries namely Sudan and Nigeria who made significant change in their wealth because of their natural resource were included. But it is important to mention this change was not significant enough to move the countries standing from the one income grouping to another. Over the past decade it is observed all other countries have not moved their countries standing based on proportional share of their income in a large part because there has been not much changes in policies reforms or other government measure that can affect in income distribution /inequality across countries over the prior periods or during the period in question. A further look on the countries in question during the episode shows the average per capital income level has not sufficiently increased for almost all countries and thus their share of income remain quite low in the income distribution pattern. During the interim period the largest increase in relative share of per capital income were recorded in Angola where it has improved its standing from low income level to middle level due to their oil resource.

Mechanically, this finding can be further understood by gini index figures that reflects how unequal are the countries' citizen over the decades. A further insight into the long term trend relationship between income inequality and their economies can be obtained using cross sectional and trend observations in figures 4-8 attached in the appendix. The first picture for sub-Saharan countries observation shows the gini index median values are more concentrated in the central region for almost all the countries and only few countries are representing higher median or lower median gini index values representing more unequal and equal countries respectively during the decades. Further investigation of the relationship between gini index and GDP per capital shows that for the countries under review their GDP per capita (log function) is more or less moving in the same direction with gini index as is expected from economic theory. Whereas the squared function of GDP per capita is not showing any pattern over the year and across the countries although opposite movement is expected from economic theory. Similarly figure 7 shows the relationship between economic growth and gini index and this is shown to have more distinct relationship over the period for the Sub-Saharan countries than the other variables we considered formerly. Since the full relationship between an indicator of inequality, such as a gini coefficient, and the level of per capita product is described by an inverted-U, as is expected by Kuznets relationship our analysis is likely to support this line of evidence.

### 5.2 Regression Result of the Income Inequality its relationship with Globalization

Besides a further insight into the long term trend relationship between income inequality versus its various determinants can be obtained using OLS regression estimation technique by using panel data on gini index and its various determinant as shown in table 1 attached in the appendix. For comparison we have used two techniques of estimation of the functional relationship which is fixed effect and pooled OLS Model. The two techniques seems to suggest similar directional and size rela-

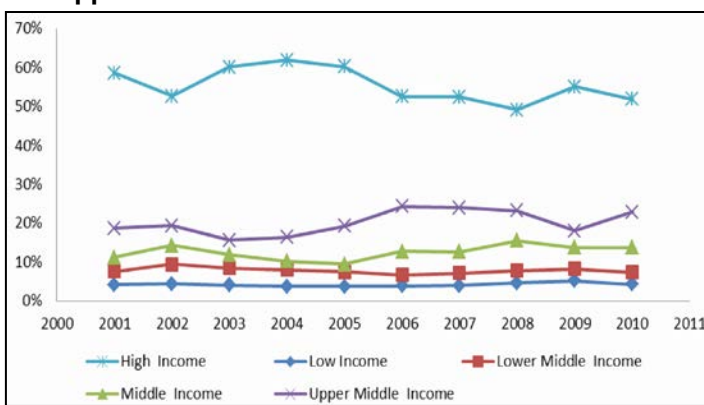


relationship between the variable and gini index explaining globalization and its various dimension in international trade openness, financial Openness and technological (Information and communication) continue to impact income inequality in different manner positively as well as negatively. From evidence of panel data from sub-Saharan countries it holds that all the variables we consider seems to have significant impact on inequality except some variables that consistently become insignificant possibly suggesting better measurement instruments in explaining the variation on income inequality between countries. Similarly our use of fixed effect model result suggests joint mean observation were adequate for use of fixed effect models and its use in Pooled OLS techniques for allowing different intercept across the cross section.

### 6 Conclusion

From result and discussion of trend and regression result it is possible to conclude on the following points. First is the critical value of using data that are appropriate to the question at hand. For instance, the analytical basis for growth effect to income inequality's using percentage change in annual growth of GDP per capital versus income inequality measured by gini index really concerns the income distribution effect of multilateral trade and bilateral trade agreements between countries. In addition there is a need to pay attention on the complicated interconnections across the different variables of interest in income inequality, and the mechanism by which they are incorporated in a joint empirical analysis urging for use of different proxies of their effects. And the final consideration is the need to use appropriate techniques in context of the scarcity of data. In particular, further investigation on the average income and within country income changes across individuals requires looking back far enough to observable comprehensive comparable data obtained from household survey data for each of countries. Against this background, one possible interpretation of our results is that the data simply do not contain enough information to infer a negative (or for that matter a positive) direct effect growth effects on income inequality. Moreover in terms of econometric specification and a correct measurement of the different effects, globalization trends could be underestimated lacking the usefulness for sensible discussion of policy. However restricting our analysis to our sample of Sub-Saharan countries and within a period of the most reliable and recent data the results for average growth hold true and we found some general indication that the relationship between globalization and inequality is sensitive to model specification and type of estimation technique applied.

### 7 Appendix



### 7.1 Figures

Fig 1. GDP per capita level by country grouping

Fig 2. Quantile income share in GDP per capita by country grouping

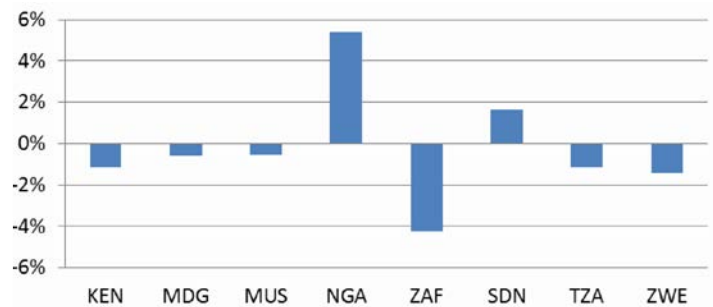


Fig 3. Countries with significant % change of income share (per capita GDP) over the last 10 years

- Countries : KEN -Kenya
- MDG -Madagascar
- MUS-Mauritius
- NGA- Nigeria
- ZAF- South Africa
- SDN- Sudan
- TZA- Tanzania
- ZWE- Zimbabwe

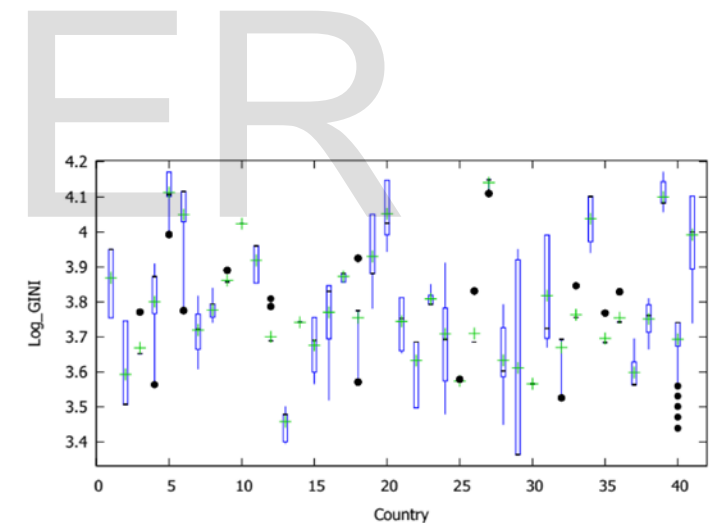


Fig 4. GINI index across Sub- Sharan Countries Median average values taken From 1980 to 2015

\*The Gini coefficients are based on 132 Gini index values obtained for sub-Saharan countries with at least one or more survey observation reported by world bank  
\*\*The countries are numerically represented according to alphabetic order Angola taking Number 1 position and Zambia taking the last 41 rank position and all other countries in the middle position.

growth observed in GDP for sub-saharan countries

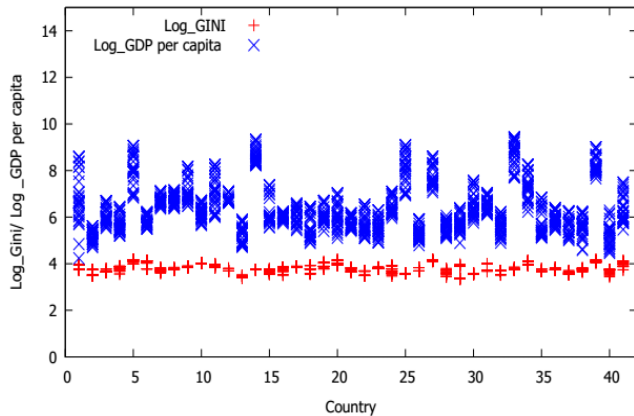


Fig 5. The relationship between log\_Gini and Log GDP per capita for sub-Saharan countries from 1980 - 2015

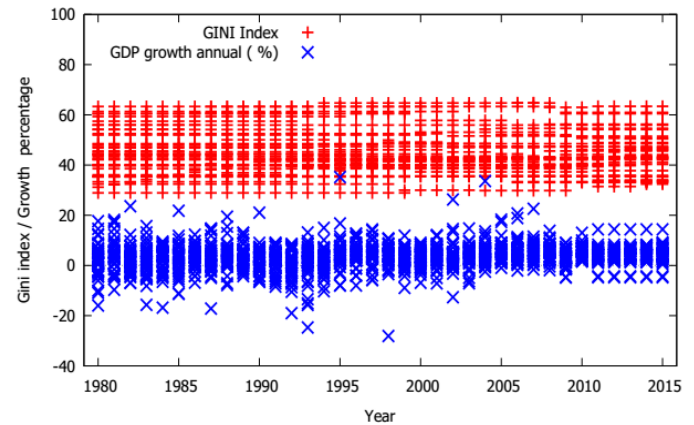


Fig 8. The Gini index and GDP growth relationship over a period extending from 1980 -2015 showing long term trend movements together

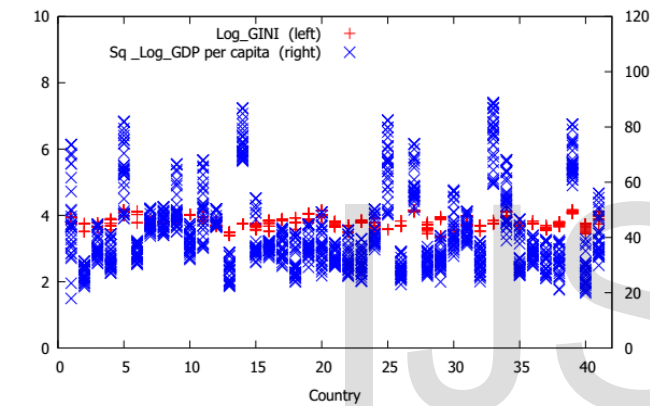


Fig 6. The relationship between log\_Gini and Squared of Log\_GDP per capita for sub-Saharan countries from 1980 - 2015

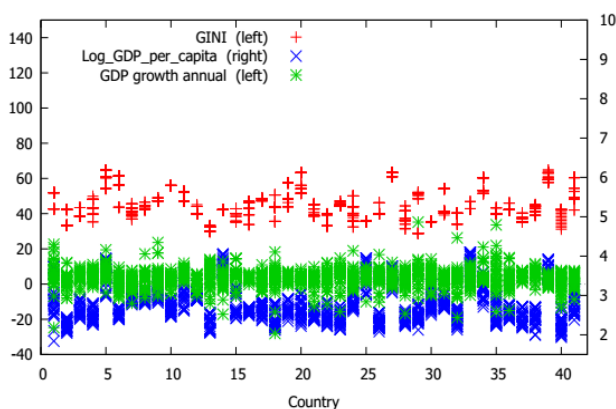


Fig 7. Scatter Plot showing the relationship between annual GDP growth , log GDP per capita and GINI index for Sub-Saharan countries From Year 1980 -2015

### 7.2 Tables

TABLE 1

RESULT OF POOLED OLS (ORDINARY LEAST SQUARE ) AND FIXED EFFECT MODEL REGRESSION BASED ON PANEL 470 OBSERVATION FOR 41 SUB-SAHARAN COUNTRIES TAKEN FOR THE PERIOD 1980 - 2015

|                                       | <i>Pooled OLS Model</i>        | <i>Fixed Effect model</i>      |
|---------------------------------------|--------------------------------|--------------------------------|
|                                       | <i>Coefficient (Std.error)</i> | <i>Coefficient (Std.error)</i> |
| Constant                              | 0.89 (0.07)***                 | 9.2e-027 (0.095)***            |
| Time                                  | -0.004 (0.0005)***             | -0.0005(0.0004)                |
| Trade liberalization                  |                                |                                |
| Ratio of Imports to GDP               | -0.102 (0.021)***              | -0.157 (0.045)***              |
| Ratio of Exports to GDP               | 0.103 (0.019)***               | 0.033 (0.017)*                 |
| (100-Tariff rate) simple average      | 0.007 (0.0005)***              | 0.002 (0.0002)***              |
| Financial Liberalization              |                                |                                |
| Ratio of Inflow FDI stock to GDP      | 0.0081 (0.0024)***             | 0.001(0.002)                   |
| Ratio of Portfolio equity to GDP      | -0.005 (0.002)***              | -0.0062(0.021)***              |
| Ratio of International Reserve to GDP | 0.0075 (0.0027)***             | 0.004(0.098)*                  |
| Macro Economic variables              |                                |                                |
| Share of ICT to Capital               | -0.009 (0.005)***              | 0.0008(0.004)***               |
| Labor participation rate              | 0.0017 (0.0004)***             | 0.004(0.0009)***               |
| School primary enrollment             | -0.0005 (0.0002)***            | -0.0008 (0.0002)***            |
| Political Stability                   | 0.009 (0.011)                  | -0.017(0.11)                   |
| Net migration                         | 5.7e-08 ( 8.87 )***            | 4.1e-08 ( 5.47)***             |
| Domestic credit                       | 0.03 (0.011)***                | 0.067 ( 0.011)***              |
| R-squared                             | 0.503 (0.06)***                | R-squared 0.83(0.04)***        |

\*denotes significance at the 10 percent level,  
 \*\* denotes significance at the 5 percent level, and  
 \*\*\* denotes significance at the 1 percent level.

All explanatory variables are in logarithm function , except tariff rate labor participation and net migration

\*\*\*The Gini index observations / fluctuations are sensitive for

TABLE 2

DEFINITION OF VARIABLES USED IN MODEL SPECIFICATION

| Indicator Name   | Definition/Instrument  |
|--|--|
| <b>Trade Liberalization Indicator</b>                      | Trade as % GDP is the sum of exports and imports of goods and services measured as a share of gross domestic product for our analysis the trade element is treated into its export and import component and this was taken separately in our model specification.  |
| <b>Financial Liberalization Indicator</b>                  | Values expressed as % GDP based on foreign assets and liability components of countries (Foreign direct Investment inflow ,Portfolio investment and Foreign money reserve)   |
| <b>Tariff rate, applied, simple mean, all products (%)</b> | Simple mean applied tariff is the unweighted average of effectively applied rates for all products subject to tariffs calculated for all traded goods. In our model we have used 100 percentage minus given tariff rate to measure income effect of government policies on tax in international trade              |
| <b>Domestic credit to private sector (% of GDP)</b>        | Domestic credit to private sector refers to financial resources provided to the private sector, such as through loans, purchases of non equity securities, and trade credits and other accounts receivable,  |
| <b>GDP growth (annual %)</b>                               | Annual percentage growth rate of GDP at market prices based on constant local currency. Aggregates are based on constant 2000 U.S. dollars. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. |
| <b>GDP per capita, PPP</b>                                 | GDP per capita is converted to international dollars using purchasing power parity rates.  |
| <b>Gini index</b>  | Gini index measures the extent to which the distribution of income (or, in some cases, consumption expenditure) among individuals or households within an economy deviates from a perfectly equal distribution.  |
| <b>Gross fixed capital formation</b>                       | Gross fixed capital formation expressed as % GDP based on data in current U.S. dollars.  |
| <b>Information and communication technology Indicator</b>  | Information and communication technology expenditure expressed as % of Gross fixed capital formation   |
| <b>Labor force participation rate</b>                      | Labor force participation rate is the proportion of the population ages 15 and older that is economically active: all people who supply labor for the production of goods and services during a specified period.  |
| <b>Political Stability/No Violence estimate</b>            | Political Stability/No Violence estimates of destability based on documentation and research using the World Governance Indicators   |
| <b>School enrollment, secondary (% net)</b>                | Net enrollment ratio is the ratio of children of official school age based on the International Standard Classification<br>Urban population annual growth calculated using World Bank population estimates   |

Source: World Bank national data bank

TABLE 3

ABBREVIATIONS FOR SUB-SAHARAN COUNTRIES AND THEIR CODE

| Countries                | Acronym | Code | Countries        | Acronym | Code |
|--------------------------|---------|------|------------------|---------|------|
| Angola                   | AGO     | 1    | Malawi           | MWI     | 26   |
| Burundi                  | BDI     | 2    | Namibia          | NAM     | 27   |
| Benin                    | BEN     | 3    | Niger            | NER     | 28   |
| Burkina faso             | BFA     | 4    | Rwanda           | RWA     | 29   |
| Bostwana                 | BWA     | 5    | Sudan            | SDN     | 30   |
| Central African republic | CAF     | 6    | Senegal          | SEN     | 31   |
| Cote d'Ivoire            | CIV     | 7    | Sierra Leone     | SLE     | 32   |
| Cameroon                 | CMR     | 8    | Seychelles       | SYC     | 33   |
| Congo, Rep.              | COG     | 9    | Swaziland        | SWZ     | 34   |
| Comoros                  | COM     | 10   | Chad             | TCD     | 35   |
| Cape Verde               | CPV     | 11   | Togo             | TGO     | 36   |
| Djibouti                 | DJI     | 12   | Tanzania         | TZA     | 37   |
| Ethiopia                 | ETH     | 13   | Uganda           | UGA     | 38   |
| Gabon                    | GAB     | 14   | South Africa     | ZAF     | 39   |
| Ghana                    | GHA     | 15   | Congo, Dem. Rep. | ZAR     | 40   |
| Guinea                   | GIN     | 16   | Zambia           | ZMB     | 41   |
| Gambia                   | GMB     | 17   |                  |         |      |
| Guinea-Bissau            | GNB     | 18   |                  |         |      |
| Kenya                    | KEN     | 19   |                  |         |      |
| Lesotho                  | LSO     | 20   |                  |         |      |
| Madagascar               | MDG     | 21   |                  |         |      |
| Mali                     | MLI     | 22   |                  |         |      |
| Mozambique               | MOZ     | 23   |                  |         |      |
| Mauritania               | MRT     | 24   |                  |         |      |
| Mauritius                | MUS     | 25   |                  |         |      |

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