

MRP final

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CHAPTER 1 INTRODUCTION

⁶ The impact of Income inequality on economic development has been highlighted in many researches. Initially it was the inequality factor in a country which provided strong incentives to succeed while promoting the growth. This concept was studied and it provided a large ⁵ number of empirical studies which were based on cross-country regressions of GDP growth on income inequality. The limit of inequality is proportional with the level of education. Most of the developed countries have higher education level and less inequality. [1] Income Inequality has existed majorly due to two factors: Poverty and Corruption. Also, these two are highly related in terms of causality. Corruption reduces the growth and slows the poverty reduction process whereas Income Inequality leads to corruption. Congregation of income within few hands leads to initiation of imbalance between the human and physical capital.

Determinants of Income Inequality

- Limited household Consumption
- Poverty
- Rampant Corruption
- Inflation
- Reduced growth due to unskilled labour
- Concentration of wealth within few
- Labour, Infrastructure and land are mostly concentrated in eastern regions.
- An urban bias of public policy, natural resource curve, ethnic and gender inequality.
- Regressive taxes, (inequitable tax system)
- Unequal wages structures
- Less investment for improving the Literacy rate and Education system
- Stage of the economic cycle
- Unemployment

The major determinants are corruption and tax system .One of the examples is Nigeria as its wealthiest people have asset of approximately \$29.9 billion where other people are living with less than \$1.25 per day it shows the income inequality. [2]

During 1980s -1990s, International Monetary Fund, World Bank put pressure over the various African countries for the implementation of Structural Adjustments Programs (SAPS) that ultimately lead to decrement in subsidies for poor people segment in health sector, education field, transportation etc. In 1991, most of the African countries registered an increase in income inequality whereas Sub-Saharan countries showed some decrease in income inequality during the same period of time. Southern and Central Africa are main countries with higher income inequality. From the historical data it has been concluded that the main causes of income inequality are not same in all the countries as there are different political, economic and social factors which affects the income inequality in one or other way. To understand the factors associated with income inequality other than poverty, we consider few macroeconomic indicators and analyze their joint impact on the GINI coefficient of African countries.

CHAPTER 2

LITERATURE REVIEW

Gupta, Davoodi and Terme (1998) conducted a study to find whether corruption affects the income inequality or not. This paper concluded that income inequality rises when there is a rise in the corruption level. It also reduces economic growth, social spending, tax system effectiveness by explaining the unequal wealth and asset distribution with limited education accessibility to the people. This study used different countries with different economic growth and by the help of various corruption indices. A study of 38 countries cross country data concluded that corruption has a significant impact on income inequality. Another outcome explained the worsening of the corruption index by single standard deviation is directly proportional to the GINI coefficient. [3]

Hongyi Li and Heng-fu Zou (2002) studied how inflation is related to income inequality. This paper did the analysis of cross-country data to find out the significant impact of inflation over income inequality as well as economic growth [4]. The study shows that the inflation has different impact over every factor as follows:

- It worsens income inequality
- It illustrates the increased income share of the upper segment of the country
- It has negative but somewhat insignificant effect on the poor and middle class income share
- It reduces economic growth

Jong Sung, Khagram (2004) in his study on Inequality and Corruption shows that income inequality is directly proportional to the level of corruption as rich will have a huge wealth share and they can use it for buying the influence by any means that is legally or illegally. There will be more cases of bribery and favoritism in the law implementation which is known as bureaucratic corruption and they can interpret or mold law according to their need that is generally called judicial corruption [5].

Milanovic (2013) studied about the income inequality globally. This article is related to the method used for calculating global inequality of 150 countries over a period of time.

It also included other implications like political, philosophical and controversies too. As globalization was happening from 1988-2008, it explained that the first decline in income inequality was registered during that particular period of time since the last industrial revolution. It also elaborated the mean incomes concept and concluded that if internal inequalities are high we need to keep a check. It also helps in the reduction of the huge premium of citizenship that rich countries are currently enjoying. [6]

Shimeles and Nabassagaa (2017) studied about the reasons of high Income inequality in African countries. An asset-based inequality study of 44 African countries and used a large amount of data from the history. This study was based on inequality within and between the different countries. It shows that the inequality between countries is negatively correlated with households who have completed tertiary education; the lower income inequality can be seen in the countries having high remittance. The findings from the study were that 40% proportion of income inequality within countries was due to the opportunities differences across various countries. The other factors like political governance also explained that 25% proportion of inequality is due to the level of development. Inequality in opportunity has been strongly correlated with child and maternal mortality. [7]

Barney Warf, (2017) did a thorough study of corruption in African countries. According to this study, African countries have the most corrupt governments. There are various factors for this much high level of corruption as high illiteracy rate, high poverty, bribery in political & legal system, highly dependent on the export, less developed society's lack of proper media to expose corruption. This analysis shows that standard of living and literacy are the significant variables means wealthy well informed as well as educated people do not tolerate corruption. [8]

Agyemang-Badu and Albert (2018) studied about the various evidences to prove that there is a notable relationship between financial inclusion and income inequality. The researchers in this study calculated their own index for the financial inclusion for the analysis of the specific variables to indicate the state of financial inclusion at various stages. They analyzed data of 48 countries of Africa .This study investigated the impact over various macroeconomic determinants with fixed effect. The study concluded that Income inequality and financial inclusion are inversely. [9]

Bargain, Jara, Prudence Kwenda and Ntuli (2019/2) did a thorough study of newly designed tax-benefit system and its impact in Africa. This study explained the tax benefit system in African countries. They are still not having efficient redistributive system for tax. This paper particularly focused on the countries of Africa namely Ghana, Ethiopia, South Africa, Tanzania and Mozambique. It included the study of role of tax benefit process and how the new tax- benefit system is producing counterfactual simulations. This analysis is done to reflect the impact of new system on the fiscal policies of developing countries and how they can learn from each other to contribute in the reduction of income inequality [10].

CHAPTER 3

RESEARCH METHODOLOGY

Description of the variables

For the analysis we have taken an unbalanced panel data of only 24 African Countries for the period 1990–2015 to avoid any discrepancy in the analysis. The development of African Countries depends on the data which must be accurate, complete, integrated and updated. The African countries are: Algeria, Botswana, Burkina Faso, Cameroon, Central African Republic, Egypt, Ethiopia, Guinea, Kenya, Lesotho, Madagascar, Mali, Mauritius, Morocco, Namibia, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Togo, Tunisia, Uganda and Zambia.

For the detailed study of African countries we have taken various independent variables and their impact on the dependent variable. The economic development of every country is represented by GDP per capita (current US\$). The GINI coefficient or GINI index or GINI ratio is a measure which represents income/wealth distribution between countries individual citizens, and is the mostly used measurement of inequality.

In this study we have taken annual percentage of inflation and tax variable as a percentage of GDP to measure their impact on the dependent variable. Control of corruption is one of the most significant variables as corruption is prevailed in most of the African countries at a large scale. Due to the high severity of corruption few African countries people are negatively impeded. The size of the population influences income inequality. If there is a rise in population of the country than other countries it means the relative weight is increasing. In most of the cases, where countries are having consistent population growth led to increasing income inequality even if GDP is similar (Rougooor and Charles, 2014). Literacy is one of the significant determinants of the income inequality. It can be measured by the number of schooling or as a total percentage of adult above 15+. Barro(1991), also did a study of cross-country panel data using cross-country found that adult literacy rates, as well as school enrolment rates, exert a positive impact on growth. (Table 3.1 illustrates description of all the variables and data sources).

The data of all the variables is averaged over 5 years to avoid any short-term fluctuations and to get the long term effects on the dependent variables due to the independent variables. For the analysis purpose, we usually take averaged data over the appropriate years for the long-term effects of growth determinants [11, 12, and 13]. Data is averaged over 1990-1995, 1995-2000 and so on providing us observations within a range (i.e. 66-120) per variable for 24 countries. The measures are taken from World Bank Economic Indicators.

VARIABLE	VARIABLE DESCRIPTION	DATA SOURCE
GINI	Measure of Income Inequality	¹³ World Bank Database
GDP Growth	Current US\$	⁷ World Bank Database
Inflation	Inflation, GDP deflator (annual %)	World Bank Database
Literacy	Literacy rate, adult total (% of people ages 15 and above)	World Bank Database
¹⁴ Total Employment	Total employment, total (ages 15+)	World Bank Database
Control of Corruption	Estimated	World Bank Database
Household Consumption	³ Household final consumption expenditure per capita growth (annual %)	World Bank Database
External Debt	³ External debt, end year (current US\$)	World Bank Database
Tax Revenue	% of GDP	World Bank Database
Population	Total Population (male + female)	World Bank Database

Table 3.1: Description of Macroeconomic Indicators and respective data sources

As for most of the variables of all 54 nations the data was available in irregular frequency or not available at all. Hence, we first averaged the data for five year duration and then eliminated countries with less data for in appropriate input in the models. We have also used natural logarithm for data points for Total Employment Rate, Population and External Debt as few extremely large and small values existed for the time period. Poverty data was not incorporated for African nations due to two reasons. First, majority research took place with poverty and income inequality causality. Second, data points were available in too irregular patterns and for fewer nations. Table 3.2 illustrates the

Descriptive Statistics of all the variables. No. of observations differ due to unavailability of data.

Variables	No. of Obs.	Mean	Std. Dev.	Min.	Max.
GDP Growth	120	3.64353	2.941	-11.4795	15.651
Employment	120	6.5255	0.490	5.505	7.546
Inflation	120	10.46483	15.430	0.571	114.728
External Debt	94	7.43E+10	3.32E+11	27534968	2.12E+12
Population	120	7.004	.495	5.932	7.890
Household Consumption	107	1.44099	3.224	-10.634	11.135
Literacy	66	14.9380	7.222	2.569	30.950
GINI Coefficient	84	10.788	4.405	5.520	25.56
Control of Corruption	96	-.29535	.4330	-1.330	.972
Tax Revenue	75	14.697	9.519	1.242	44.591

Table 3.2: Descriptive Statistics

Income Inequality as an indicator of Economic Growth

In the Post-2000 period, the economic growth has been robust in African countries. Although it has a favorable macroeconomic environment, there has been a slow reduction in poverty and the level of income inequality is high. Increased level of Income inequality effects the growth in poor nations but strengthen growth in rich nations (Barro, 1991). For the better understanding of high level of income inequality we must know the notion of high income inequality African countries cluster. We need to analyze the impact of Inflation, Literacy, and Total employment, Control of Corruption, GDP Growth, Household Consumption, External Debt, Tax and Population over Income inequality.

Econometric methodology

The basic regression model which we have used is based upon the Barro-type [15] growth regression model. The Regression equation is specified below:

$$Y_i = \beta_1 + \beta_2 X + \varepsilon_i \quad \text{-- (1)}$$

Where,

i = represents indexes of cross-sections

Y_i = income inequality of i^{th} cross-section,

X = vector of income inequality determinants (independent variables)

ε_i = stochastic error term.

This Regression model has few limitations:

- It does not take care of individual heterogeneity. If we ignore country specific fixed effects then the assumption of similar production functions result in biasness of the γ coefficients. This is due to the fact that they may be correlated with regressors.
- The time period dimension is not exploited.

Both the limitations can be taken care by the Panel estimation as it helps in relaxing restrictive assumption of identical production function. According to the equation (1), we have the following equation for each model according to our study.

$$GINI = \beta_0 + \beta_1 CC + \beta_2 HC + \beta_3 L + \beta_4 I + \beta_5 LogED + \beta_6 G + \beta_7 LogTE + \beta_8 LogP + \mu \quad \text{-- (2)}$$

Where,

$GINI$ = Income inequality (GINI Index),

CC = Control of Corruption,

HC = Household Consumption,

L = Literacy,

I = Inflation,

ED = External Debt,

G = GDP Growth,

TE = Total Employment,

P = Population,

μ = Error Term

β_i = Parameter Estimates.

MODEL I

$$GINI = \beta_0 + \beta_1 \text{Control of Corruption} + \beta_2 \text{Household Consumption} + \mu$$

MODEL II

$$GINI = \beta_0 + \beta_1 \text{Control of Corruption} + \beta_2 \text{Household Consumption} \\ + \beta_3 \text{Literacy} + \mu$$

MODEL III

$$GINI = \beta_0 + \beta_1 \text{Control of Corruption} + \beta_2 \text{Household Consumption} \\ + \beta_3 \text{Literacy} + \beta_4 \text{Inflation} + \beta_5 \text{Log External Debt} + \mu$$

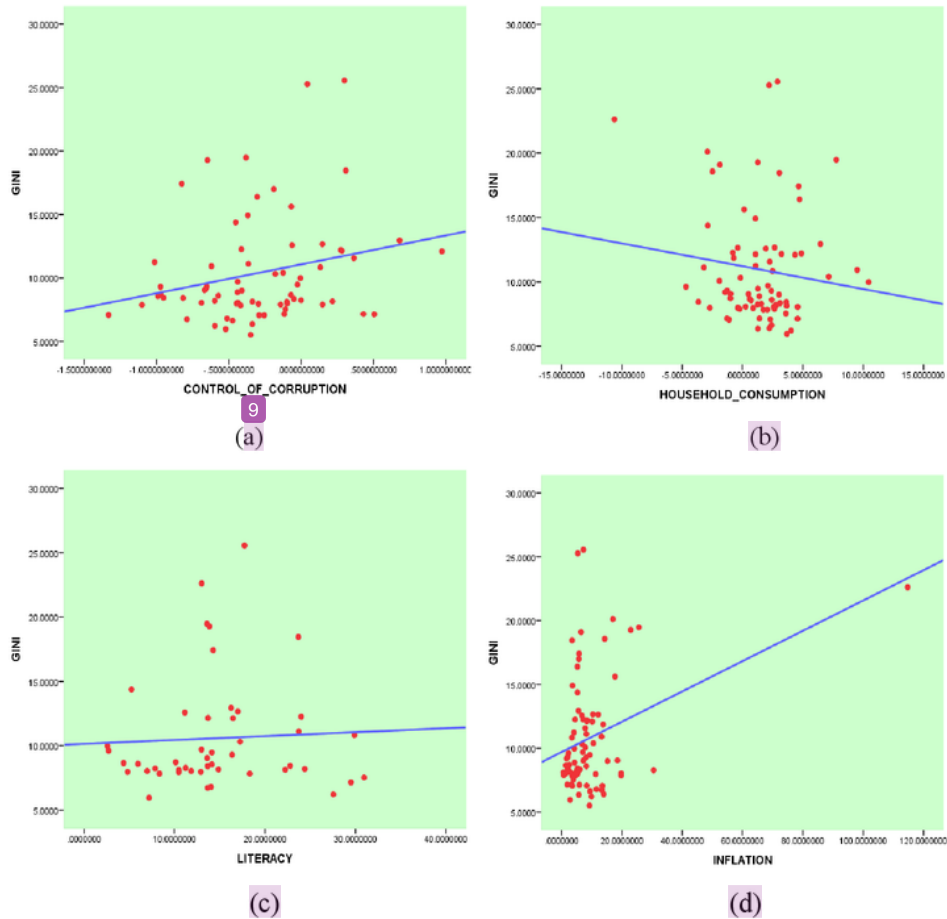
MODEL IV

$$GINI = \beta_0 + \beta_1 \text{Control of Corruption} + \beta_2 \text{Household Consumption} \\ + \beta_3 \text{Literacy} + \beta_4 \text{Inflation} + \beta_5 \text{Log External Debt} \\ + \beta_6 \text{GDP Growth} + \beta_7 \text{Log Total Employment} + \mu$$

CHAPTER 4 RESULTS

Preliminary observations

We have considered data of 24 African countries for nine macroeconomic indicators for time period 1990 to 2015. Fig 4.1 represents the bivariate relation between GINI Index and all independent variables (Control of Corruption, Household Consumption, Literacy, Inflation, Log External Debt, GDP Growth and Log Total Employment). Scatter plots with fitted line display that GINI Index exhibits positive relation with Inflation, Control of Corruption, Tax and Literacy whereas negative relation with Total Employment Rate, GDP Growth, Household Consumption and External Debt. For further depiction Fig 4.2 illustrates movements of main variables for each individual country for the given timeline.



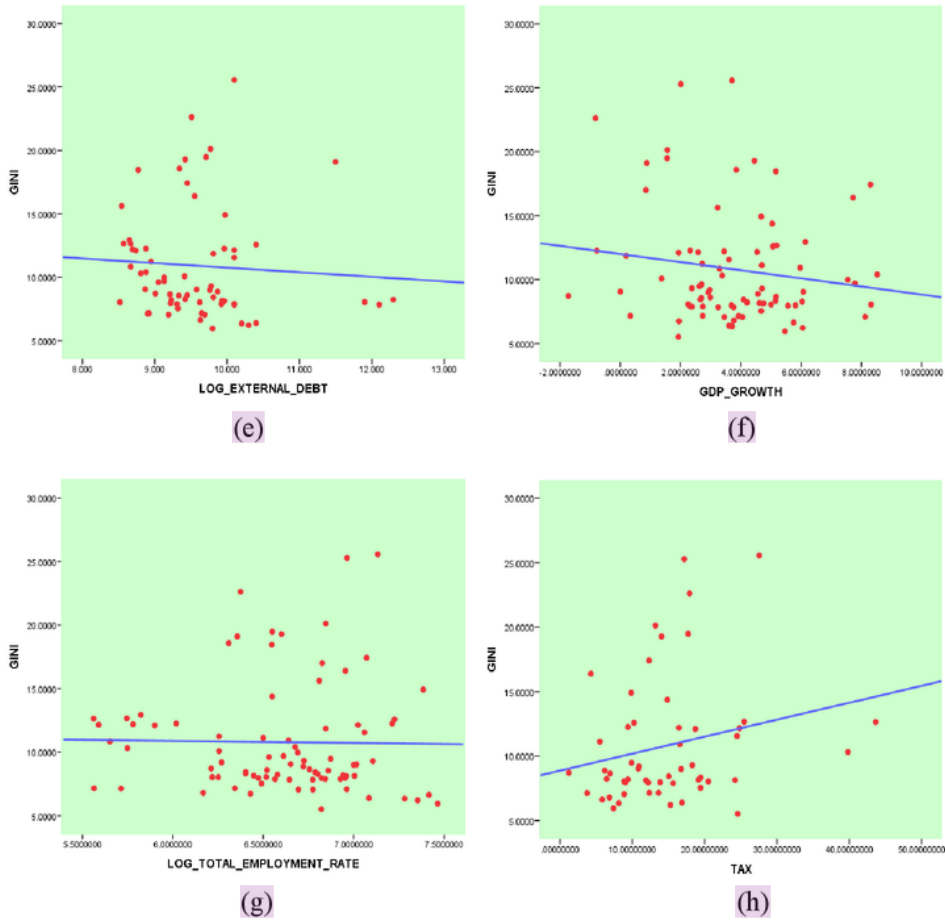
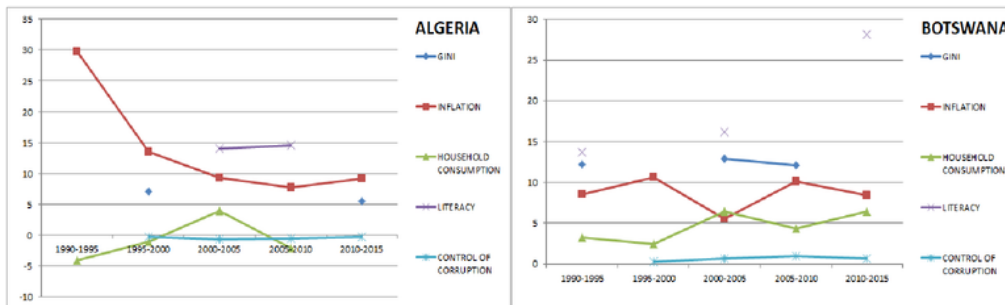
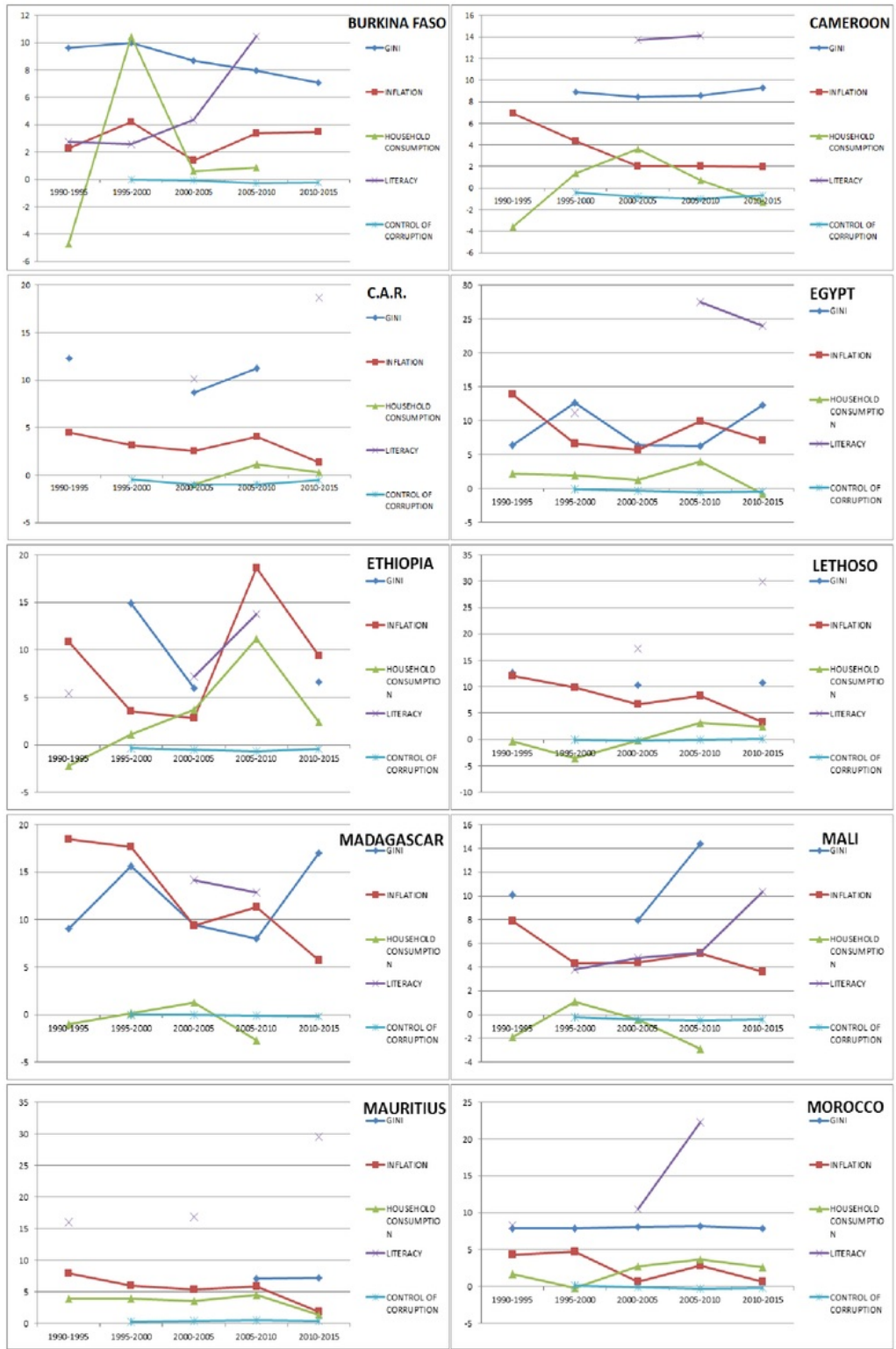


Figure 4.1: Relationship between GINI and other Macroeconomic Indicators. (a) Scatter Plot between GINI and Control of Corruption shows positive relationship. (b) Scatter plot between GINI and Household Consumption shows negative relationship. (c) Scatter plot between GINI and Literacy shows positive relationship. (d) Scatter plot between GINI and Inflation shows positive relationship. (e) Scatter plot between GINI and Log External Debt shows negative relationship. (f) Scatter plot between GINI and GDP Growth shows negative relationship. (g) Scatter plot between GINI and Log Total Employment Rate shows negative relationship. (h) Scatter plot between GINI and Tax shows positive relationship.





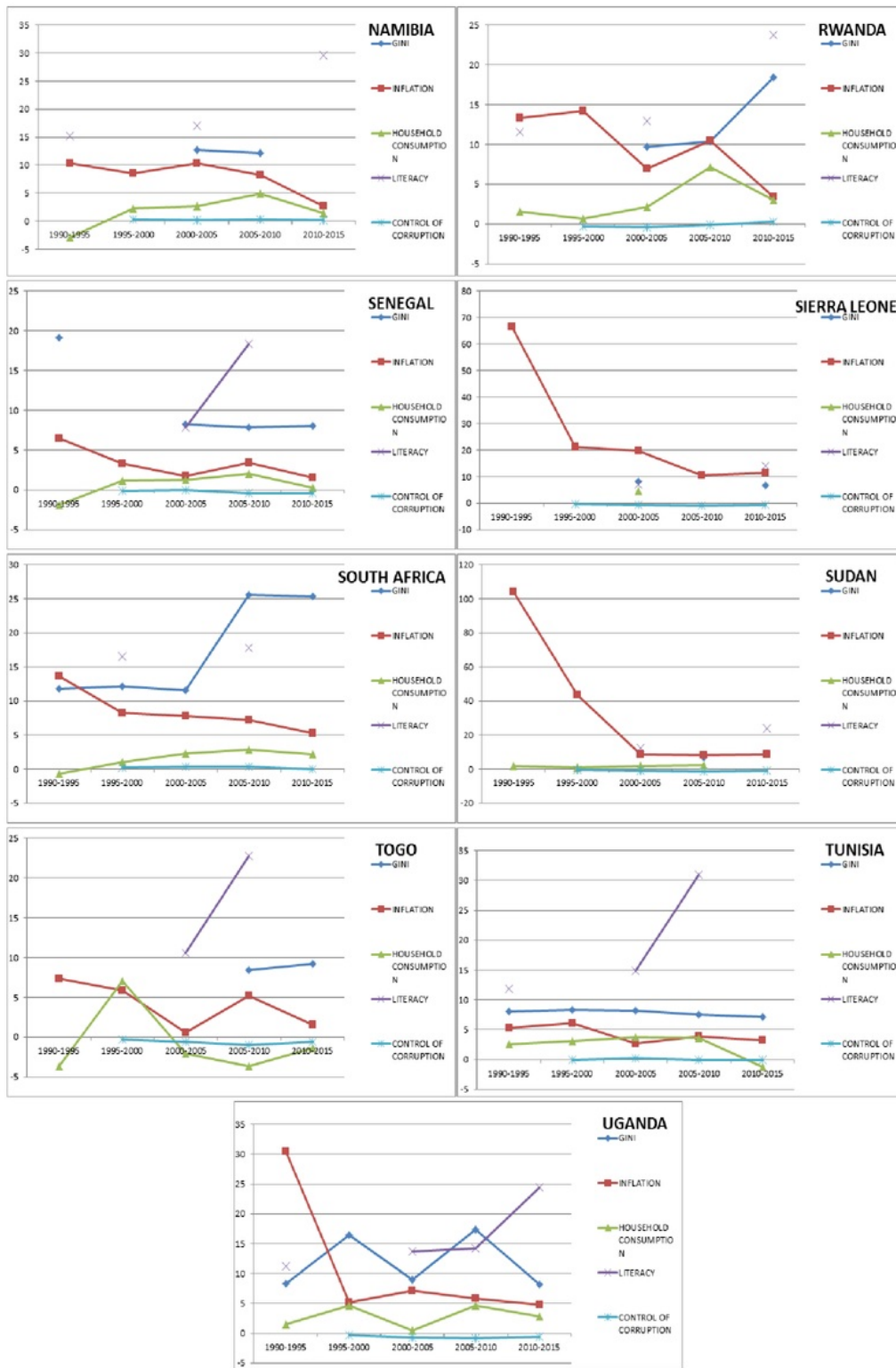


Fig 4.2: Movement of GINI Coefficient, Inflation, Household Consumption, Literacy and Control of Corruption for 24 African nations from 1990 to 2015 (five year averages)

Testing for Multicollinearity

Before we analyze the relationship between GINI and other variables, it is instructional to review if multicollinearity exists between the explanatory variables. Presence suggests that the explanatory variables are correlated with each other and hence it disregards the assumption of OLS. Table 4.1 illustrates VIF and Tolerance for all the explanatory variables. VIF and Tolerance are closely associated statistics which are used to detect correlations between variables. Both are calculated using coefficient of correlation value which is obtained by regression between one explanatory variable with all other explanatory variables in model. Value of VIF between 1-10 indicates no multiple correlations. Here, we have all the values in this range, nearing 1. It indicates that the regression model is not disregarding the assumption of no multicollinearity in variables.

MODELS	INDEPENDENT VARIABLES	TOLERANCE	VIF
MODEL 1	CONTROL_OF_CORRUPTION	.949	1.053
	HOUSEHOLD_CONSUMPTION	.949	1.053
MODEL 2	CONTROL_OF_CORRUPTION	.907	1.102
	HOUSEHOLD_CONSUMPTION	.930	1.076
	LITERACY	.954	1.048
MODEL 3	CONTROL_OF_CORRUPTION	.849	1.178
	HOUSEHOLD_CONSUMPTION	.849	1.178
	LITERACY	.903	1.107
	INFLATION	.867	1.154
	LOG_EXTERNAL_DEBT	.955	1.048
MODEL 4	CONTROL_OF_CORRUPTION	.685	1.460
	HOUSEHOLD_CONSUMPTION	.693	1.443
	LITERACY	.881	1.136
	INFLATION	.848	1.179
	LOG_EXTERNAL_DEBT	.691	1.446
	GDP_GROWTH	.710	1.409
	LOG_TOTAL_EMPLOYMENT_RATE	.564	1.772

Table 4.1: Variance Inflation Factor and Tolerance for all the explanatory variables

Also, Table 4.2 represents Correlation Matrix which explores correlation among the variables. Result which indicates that we can eliminate the proof of perfect multicollinearity expects Log Population which has a high correlation (0.97) with Log Total Employment Rate, which is not suitable. Hence, we eliminate Log Population from our models for regression estimation.

	GINI	G	Log TE	I	CC	T	L	HC	Log ED	Log P
GINI	1									
G	-.151	1								
Log TE	-.17	.124	1							
I	.349	-.167	-.001	1						
CC	.240	-.034	-.426	-.119	1					
T	.221	.071	-.360	.002	.261	1				
L	.050	-.034	-.189	-.58	.202	.270	1			
HC	-.126	.474	.033	-.229	.217	-.065	.79	1		
Log ED	-.65	-.034	.526	-.021	-.155	-.291	-.120	-.063	1	
Log P	-.002	.087	.977	.046	-.401	-.270	-.195	-.023	.539	1

Table 4.2: Correlation Matrix. Variables are: GINI; GDP Growth: current US\$; Log total employment: logarithm of total employment above ages 15+; Inflation: annual % as a GDP deflator; Control of Corruption: estimated by WBD; Tax: as % of GDP; Literacy: includes adults above ages 15+; Household Consumption ; Log External Debt: Current US\$; Log Population: logarithm of total number of males and females.

OLS Results

Ordinary Least Square Regression (linear regression) is run on the four models we framed for Income Inequality. After estimation of output via Fixed and Random Effects for all the four models (Table 4.3), we perform Hausman Test (Test for Model Misspecification). For this test, the Null hypothesis is specified as that the Random effects model is appropriate whereas the Alternate Hypothesis is specified as that the Fixed effects model is appropriate. Test is done to see if there exist a correlation-ship between the distinct residuals and the regressors, where Null hypothesis depicts that no correlation exists between the two.

MODELS	I	I*	II	II*	III	III*	IV	IV*
CC	0.660048 (3.608213)	1.841284 (1.341034)	8.784665 (5.461974)	2.111382 (1.777965)	9.019717 (6.855269)	3.709003 (1.841841)	10.23575 (9.789894)	5.302080 (1.768511)
HC	0.058574 (0.238404)	0.135807 (0.189901)	0.771992 (0.304989)	0.186925 (0.253452)	0.485301 (0.367896)	-0.039812 (0.342430)	0.4792989 (0.794504)	0.025477 (0.316224)
L			-0.526284 (0.230044)	-0.009072 (0.097438)	-0.794976 (0.309287)	0.006480 (0.103886)	-0.760331 (0.400067)	-0.002776 (0.090030)
I					0.055227 (1.030492)	0.404990 (0.135484)	0.175069 (1.756483)	0.418882 (0.119068)
Log ED					1.227896 (7.750552)	0.095184 (0.890037)	-1.585743 (10.68843)	-0.885786 (0.911737)
G							-0.431835 (1.831249)	-0.427731 (0.369834)
Log TE							-116.0594 (184.0651)	3.393459 (1.696694)
Intercept	10.63732 (1.198805)	10.65806 (0.869118)	19.85858 (3.123995)	10.97346 (1.997443)	12.64525 (72.87473)	8.402345 (9.160992)	812.8759 (1277.449)	-2.513752 (10.34749)
Fixed Effects	Yes	NO	Yes	NO	Yes	NO	Yes	NO
No. of Obs.	63	63	63	63	63	63	63	63
Adj. R ²	0.237287	0.017633	0.499270	-0.00638	0.646071	0.203993	0.481158	0.232086
F Value	1.688884	1.556419	2.403303	0.916468	3.176465	2.588878	2.026730	2.338446
R square	0.581738	0.15932	0.855052	0.2359	0.929915	0.332381	0.949789	0.455486

Table 4.3: Dependent variable is GINI. The explanatory variables are GDP Growth, Log total employment, Inflation, Control of Corruption, Tax, Literacy, Household Consumption, Log External Debt, Log Population. I*, II*, III*, IV* represent Random Effect Models where are I, II, III, IV represent Fixed Effect Models. Standard errors are presented in parentheses.

For all the four models specified, the test output is that the p value is more than required >0.05(Table 4.4).

Thus, we do not reject the (H_0) Null hypothesis and hence we'll be using Random effects models for further analysis.

MODELS	P VALUE	RESULT
MODEL I	0.8989 > 0.05	Do not reject H_0
MODEL II	0.6805 > 0.05	Do not reject H_0
MODEL III	0.4085 > 0.05	Do not reject H_0
MODEL IV	0.0727 > 0.05	Do not reject H_0

Table 4.4: Hausman Test Output.

Now, further considering the results mentioned in Table 4.3 by regressing the independent variables on the dependent variable for each of the cases.

Model I*

$$GINI = \beta_0 + \beta_1 \text{Control of Corruption} + \beta_2 \text{Household Consumption} + \mu$$

Here, β_0 (intercept) is 10.65, β_1 is 1.841 and β_2 is 0.135. In this model, 15.9% of GINI is explained by Control of Corruption and Household Consumption.

MODEL II*

$$GINI = \beta_0 + \beta_1 \text{Control of Corruption} + \beta_2 \text{Household Consumption} + \beta_3 \text{Literacy} + \mu$$

Here, β_0 (intercept) is 10.97, β_1 is 2.111, β_2 is 0.1869 and β_3 is -0.5262. In this model, 23.59% of GINI is explained by Control of Corruption, Household Consumption and Literacy.

MODEL III*

$$GINI = \beta_0 + \beta_1 \text{Control of Corruption} + \beta_2 \text{Household Consumption} + \beta_3 \text{Literacy} + \beta_4 \text{Inflation} + \beta_5 \text{Log External Debt} + \mu$$

Here, β_0 (intercept) is 8.40, β_1 is 3.70, β_2 is -0.039, β_3 is 0.006, β_4 is 0.404 and β_5 is 0.095. In this model, 33.23% of GINI is explained by Control of Corruption, Household Consumption, Literacy, Inflation and Log External Debt.

MODEL IV*

$$\begin{aligned} GINI = & \beta_0 + \beta_1 \text{Control of Corruption} + \beta_2 \text{Household Consumption} \\ & + \beta_3 \text{Literacy} + \beta_4 \text{Inflation} + \beta_5 \text{Log External Debt} \\ & + \beta_6 \text{GDP Growth} + \beta_7 \text{Log Total Employment} + \mu \end{aligned}$$

Here, β_0 (intercept) is -2.51, β_1 is 5.30, β_2 is 0.025, β_3 is -0.0027, β_4 is 0.4188, β_5 is -0.008, β_6 is -0.427 and β_7 is 3.393. In this model, 45.54% of GINI is explained by Control of Corruption, Household Consumption, Literacy, Inflation, Log External Debt, GDP Growth and Log Total Employment rate.

Restricted F test

We have different number of variables in every regression model. As, addition of a variable in the model can lead to invalid outputs, Restricted F test is conducted to analyze whether the additional variable is making the regression model spurious or not. We calculate F statistic as:

$$F_{stat} = \frac{(R_{ur}^2 - R_r^2) / q}{(1 - R_{ur}^2) / (n - k - 1)}$$

Where,

R_r^2 = restricted r^2 (Coefficient of correlation of the model with less variables, hence restricted)

R_{ur}^2 = unrestricted r^2 (Coefficient of correlation of the model with all variables, hence unrestricted)

n = no. of observations

k = total no. of parameters in the model (including beta0)

q = no. of restricted variables (difference between the no. of variables in restricted and unrestricted model)

F statistic is calculated for all the model combinations in three different cases as follows:

CASE 1: Model I* and II*

$H_0: \beta_3 = 0$ (Additional Variables are spurious)

$H_1: \beta_3$ is different from 0 (Additional Variables are not spurious)

$$F_{stat} = \frac{(0.2359 - 0.154932) / 1}{(1 - 0.2359) / (63 - 4 - 1)} = \frac{0.07658}{0.01317} = 5.8147$$

CASE 2: Model II* and III*

$H_0: \beta_3=0, \beta_4=0$ (Additional Variables are spurious)

H_1 : At least one is different from 0 (Additional Variables are not spurious)

$$F_{stat} = \frac{(0.332381-0.2359)/2}{(1-0.332381)/(63-6-1)} = \frac{0.04824}{0.01192} = 4.046$$

CASE 3: Model III* and IV*

$H_0: \beta_6=0, \beta_7=0$ (Additional Variables are spurious)

H_1 : At least one is different from 0 (Additional Variables are not spurious)

$$F_{stat} = \frac{(0.455486-0.332381)/2}{(1-0.455486)/(63-8-1)} = \frac{0.0615525}{0.010083} = 6.10458$$

CASE	<i>df</i>	F_{stat}	$F_{critical}$	Reject / Do not Reject H_0
CASE 1	(1,58)	5.8147	4.0068 (@0.05)	Reject H_0
CASE 2	(2,56)	4.046	3.1618 (@0.05)	Reject H_0
CASE 3	(2,54)	6.10458	3.16824 (@0.05) & 5.0212(@0.01)	Reject H_0

Table 4.5: Result Table

Further, by comparing F statistic with F critical which is as per the degree of freedom of the model, for each Case we accept or reject the Null hypothesis. From Table 4.5 we conclude that none of the variables are spurious in the models. Model IV represents the highest level of unrestricted model with all non-spurious explanatory regression variables.

CHAPTER 5

CONCLUSION & POLICY IMPLICATIONS

CONCLUSION

African nations are under a severe turmoil due to several factors. In several Corruption index African nations mark highest level. Inflation rate ranges from less than 1% to more than 11%. Human capital is not being taken into consideration for policy making. Unequal access to schooling is limiting the growth of awareness and productivity. In this report we analyzed nine variables relationship with income inequality. We conclude that other than Poverty, all the independent variables are making a statistically significant impact on the GINI Index. Nearly 45% of the dependent variable is explained by the independent variables. As these factors do impact the Inequality issue, we recommend that the Government should tend to improvise policies and regulations in those areas to improve on the GINI Index ratio for all the African nations. Major concern marked has been of Corruption. Though Inflation as influences significantly, it could be due to global uncertainties as well.

POLICY IMPLICATIONS

The study of 24 African Countries Panel data shows that the specific changes in the policies and programs can improve the income inequality. We must try to make such policies which helps in bringing the highest income percentile to the most favorable level. Income inequality is high as only few people are having high wealth share which does not contribute in the development of the country.

There should be an effective tax distributive system to reduce the income inequality in the selected African countries. There must be a specified optimum level for the tax that can be leveraged to some extent. African countries need to focus on the redistribution process for not only tax but also fund transfers and public expenditures.

Poverty and income inequality reduction both do not necessarily have same ways , as income inequality may not be much affected by the quality of education(which have a significant impact on poverty) until and unless there is a progressive taxation system. Therefore, poverty and income inequality have their own significance in the economic growth of the country.

By the appropriate changes in the fiscal policies we can improve the low level of income households which helps in the reduction of income inequality as well as in the enhancement of economic growth of the country.

Some of the African countries favor adult males in disproportionately manner. Mauritius, Chad have low and high level of gender inequality respectively.. There must be some policies which ensure equal distribution of wealth regardless of gender and power in the society. The main determinant of income inequality other than tax is corruption also increases income inequality level.

Instead of focusing on the growth rate African countries must focus on growth pattern as there could be a possibility that income inequality rises when growth is recorded in high capital sectors along with the use of skilled people in mining, finance and other working sectors or vice versa.

CHAPTER 6

LIMITATIONS

The major limitation of this report is that the analysis is not considering Poverty data which is a major factor for Income Inequality. The paper studies the effect of variables other than Poverty. Another limitation is missing data values of few variables from the time span of 1990 to 2015. For many countries the data was unavailable at public sources for variables used, thus we have taken 5 year averages of data points. Also, Control of corruption data is not accurate due to untapped black markets, partial analysis of big scandals and incompetent governance.

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