Elephant Chart: The African Experience: A Comparative Analysis Using Twenty Selected Countries in Africa

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Abstract: - **International and Intra-national inequality in income distribution has continued to be a topic of interest to development economists and policy makers over the past three decades. This paper presents data for national income per capita of twenty selected African countries compiled by the World Bank group over a period of twenty years. The purpose of this paper is to study critically the factors that hindered African countries at the tail of the elephant chart from growing using recalculated growth rates and time series data from the World Bank. We employed both descriptive and quantitative analysis in examining the validity of the claim by the proponents of the elephant chart, who claimed that African countries did not benefit from globalization. The selected countries were divided into four income groups - low income, lower middle income, upper middle income and high income groups as classified by the World Bank. Our findings show's that contrary to the claim by the elephant chart authors that countries at the tail (including African countries) did not benefit from globalization. On the contrary, African countries recorded significant growth brought about by globalization.**

Keywords: **Globalization, income Distribution, Inequality, Elephant Chart, Growth Incidence Curve.**

I. BACKGROUND TO THE STUDY

In recent times, there has been a renewed interest in income inequalities across the globe. This is because researchers have found out that disparity of income between nations, different groups or within a society can have negative effects on the development of such places. Economic inequality, sometimes referred to as income inequality, is the unequal distribution of a country's wealth. Inequality causes the under-development of a nation by causing lower long-term Gross Domestic Product (GDP) growth rates, poorer public health, increases political inequality, and reduces average education levels. It was this struggle to reduce or eliminate inequality in income distribution among countries of the world that led to the ground-breaking and thought-provoking discovery of Christoph Lakner and Branko Milanovic's. Elephant chart in 2013**.** The chart is said to be one of the most famous charts in economics in recent times, one that aims to summarize the state of the world economy in the post-Cold War era. Using World Bank data spanning 1988 to 2008, the chart shows how each part of the world's income distribution fared over the years. There are two big winners: the global middle class, in particular people in East Asia (especially China) and South Asia (especially India), and some parts of sub-Saharan Africa who escaped extreme poverty in recent decades; and the ultra-rich, who are overwhelmingly concentrated in rich countries in Europe or North America. But while the elephant diagram contributes to our understanding of global inequality, the common interpretation that upper middle income countries as well as African countries lost grounds due to globalization might be misleading. However, Bourguignon (2011) proved that the Elephant Diagram" remains debatable even among economic experts. Despite acknowledging that the chart does not prove causation; Bourguignon went on to employ the chart to argue that globalization allowed rich countries to grow to the detriment of workers in poor countries. This line of reasoning however maybe flawed. This paper attempts to test Lakner and Milanovic's claims by narrowing the scope to twenty African countries and employing growth incidence curve developed by Bourguignon (2011) for a comparative analysis. We use the growth incidence graph to discuss the dynamic regional composition of income in twenty African Countries.

The objective of this study is to determine what makes the countries captured at the tail of the elephant chart different from the countries that fall on the torso and trunk of the elephant chart. Specifically, the study seeks to:

- Examine the dynamics that exists among the selected African countries used for this study
- Check the validity of the elephant chart conclusions on income growth in African countries
- Draw meaningful, valid and relevant recommendations using a combination of qualitative and quantitative procedures?

II. LITERATURE REVIEW

The dynamics of global inequality have attracted growing attention in recent years. However, relatively little about how the distribution of global income is evolving is still unknown. Income inequality is increasing in many countries, but large emerging countries like India and China are catching up and might drive global inequality down. Recent studies of global inequality combine household surveys and provide valuable estimates (Lakner and Milanovic;2016, Liberati; 2015, Ortiz and Cummins 2011). Surveys, however, are not uniform

across countries, they cannot capture top incomes well, and are not consistent with macroeconomic totals. Extensive work has not been done in an attempt to establish the elephant chart resulting to a scanty or few literature in the subject matter yet with little consensus to date. Some studies have confirmed the future of global income inequality as a result of the elephant chart. Few of those studies carried out are reviewed below. According to Alvaredo, Chancel, Piketty, Saez and Zucman (2018) new estimates of global inequality is been presented in the World Inequality Report 2018. The authors stated that these estimates are based on recent, homogeneous inequality statistics produced for a number of countries in the World and Wealth Income Database (WID.world). The authors found that the global top 1% has captured twice as much total growth than the global bottom 50% between 1980 and 2016. Different projected trajectories for global inequality in the coming decades was analyzed.

Ackland, Dowrick, and Freyens (2013), are of the opinion that the elephant curve has helped shine a light on a number of trends during a period of growing trade, including slight reductions in the high level of global inequality. But the authors also argue that some of the conclusions drawn from it by others need to be revised. They stated that incomes for the lower middle class of the rich Western world have grown and not stagnated. However, they confirm that income gains have indeed flowed disproportionately to the richest within many countries, and beneath the national figures lie many individual and regional losers. There were also of the opinion that despite the challenge of narrowing global inequality, countries must continue to chase growth, especially in more prosperous ones where it has been in short supply.

Mialanovic (2012) carried out a research on Global inequality recalculated and updated: so as to check the effect of new PPP estimates on global inequality. The objective was to determine the real welfare of people and survey respondents in lower income level countries will get a boost in their incomes compared to what they make in nominal dollar terms. The author stated that to calculate global inequality, an adjustment must be made to incomes and price levels which differ between countries. The currency deployed is the US dollar with which, in principle, can be used to purchase the same amount of goods and services in any country of the world. However, the study further states that if adjustments for the differences in price levels were not made, then global inequality would have been even higher. This is because price levels tend to be lower in poorer countries, and these categories of people get a significant increase when Purchasing Power Parity (PPP) dollars are used as the currency of measurement.

In the same vain World Bank (2016), in the study "Poverty and shared prosperity: taking on inequality" stated that the largest increases however were registered around the median end of the survey. It is that category of global income distribution that constitute approximately 200 million Chinese, 90 million Indians, and about 30 million people each from Indonesia, Brazil and Egypt. These two groups, the global top 1% and the middle classes of the emerging market economies, are therefore determined to be the main beneficiaries of globalization. The report according to the World Bank (2016) and that of Mialanovic (2012) also points to the surprising fact that those at the bottom third of the global income distribution have also made significant gains, with their real incomes rising between more than 40% and 70%. The only exception to this is the poorest 5% of the population whose real incomes have remained the same. However, the other category of big losers, or at least the "non-winners are those between the 75th and 90th percentiles of the global income distribution whose real income gains were approximately zero. This category includes those who may be called a global upper-middle class, and includes many from former Communist countries and Latin America, as well as citizens of rich countries, like those from the United States of America, Great Britain, Japan, Germany, and France. It is also comprised of the richest 1% of Euro countries of Italy, Spain, Portugal and Greece and the richest 1% of Brazilians, Russians and South African.

Furthermore, from the report of the World Bank (2016) analysis, it was stated that for India, the improvement was more modest, but still remarkable. A person with a median income went from being at the 10th percentile globally to the 27th. A person at the same income position in Indonesia went from the 25th to 39th global percentile. A person with the median income in Brazil gained as well. She went from being around the 40th percentile of the global income distribution to about the 66th percentile. Meanwhile, the position of large European countries and the United States remained about the same, with median income recipients there in the 80s and 90s of global percentiles. But if the economic crisis that currently affects these countries persists, we should not be surprised to find the median individual in the "rich world" becoming globally somewhat poorer.

Lakner and Milanovic (2015) in their book, Global Inequality: A New Approach for the Age of Globalization created the elephant chart. The chart was developed from study of real incomes across the world population, made possible with data from an average of 600 household surveys from approximately 120 countries in the world covering more than 90% of the world population and 95% of global GDP. It charts the change in income by the absolute value of income on a global basis. According to the authors, there are two big winners: the global middle class, in particular people in East Asia (especially China) and South Asia (especially India), and some parts of sub-Saharan Africa who've escaped extreme poverty in recent decades; and the ultra-rich, who are overwhelmingly concentrated in rich countries in Europe or North America. The simple graph shows income gains at each point of the global income distribution for the 20 years spanning the fall of the Berlin wall to the 2008 financial crisis. The result of their study shows that the two groups that appear to be the big winners of the past

two decades of globalization are the very rich who are at the top of national and global income distributions; and the middle classes of emerging market economies, in particular China, India, Indonesia and Brazil. The report also states that the top 1% has seen their real income rise by more than 60% over the two decades from 1998 to 2008, the period covered by the study

Dabla-Norris, Kocher, Suphaphiphat and Tsounta (2015) in findings on causes and consequences of income inequality argue that the global middle class has risen rapidly as selected developing countries have begun to converge toward rich countries. They stated that countries like China have lifted large impoverished populations into the middle class as can be noticed from the elephant's chart's peak at the elephant's torso. In addition, the global extreme poor have largely been left behind, with several countries stuck in a cycle of poverty and violence as can be seen in the elephant's slumped tail. The authors suggested that to avert the upsurge n poverty and violence, countries in this category should strive to create an enabling environment where the middle class would be form thereby reducing the level of poverty and violence

The study by Chen and Ravallion (2010) stated that the people in the poorest ventile of the global income distribution in 1993 actually experienced relatively rapid income growth. This, they state, is consistent with the general observation that extreme poverty has fallen fast over this period. This group is comprised of Chinese and Indians, whose incomes grew rapidly who constitute a fifth of this group in 1993. Mexicans, Nigerians, and those in other African countries like Ethiopia are also included in this category. They are characterized by rapid growth in these countries which accounts for the high growth at the left of the quasi-anonymous chart. They stated that every version of the elephant's chart that they produced shows higher growth for the poor than is recorded in the original elephant chart. The authors according to the findings suggested that the slumped tail on the original elephant is an artifact of the shifting sample and not necessarily a reflection of individual people's experiences. They also state that trough of the elephant is easily the most misunderstood part of the graph. This is because despite previous studies, many still appear to believe that the proverbial poor populists from the rich world inhabit the trough. They state that Instead, the trough of the original chart contains large populations from Japan, Eastern Europe, and Latin America. Japan's lost decade and the collapse of the Soviet Union are largely responsible for the slow growth of this category. They conclude that although It is possible that incomes in the latter are overestimated in the data, but it is an instructive reminder of the large income losses experienced by these countries in the initial phase of transition to market-oriented economies.

Milanovic (2012) in his paper titled "Global Income Inequality by the Numbers in History presents another perspective on global inequality. The author argues that as the world becomes more integrated, the global dimension of inequality will become increasingly relevant. This is for reasons that include the greater movement of factors of production across borders, as well as a greater influence of other people's standard of living and way of life on perceived income position and aspirations. The study explains that greater movement of capital, goods, technology and ideas across the globe implies greater connectivity with a variety of people from different nationalities, with increased ability to generate income from different geographical locations. Although movements which is a major example of this phenomenon is not as important as the movements of capital, it is nonetheless on the increase. This global interconnectivity is increasing the focus on global inequality.

2.1 The African Experience of Regional Inequality

In highly unequal African societies, most people live in poverty while a minority amasses enormous wealth. McKinsey & Company, a global management consulting firm, predicts that Africa's combined GDP will be $2.6 trillion by 2020 and that "Africa's consumer spending by 128 million households with discretionary income is expected to be around $1.4 trillion. "Among the countries attracting investors are Côte d'Ivoire, Benin, Morocco, Rwanda, Senegal and Togo. But a new report from the United Nations Development Programme (UNDP) finds that Africa's new wealth is increasingly concentrated in a few hands. Disappointingly, 10 of the world's 19 most unequal countries are in sub-Saharan Africa. South Africa, the continent's most developed economy, is also the world's most unequal. Botswana, Namibia and Zambia are also among the top 19.While Ethiopia's economy is growing at 8%, it is impossible to miss its impoverished citizens in the streets of its capital, pulling on donkeys to transport goods while the rich and famous drive around in luxury cars. In Nigeria "the scale of inequality has reached extreme levels," reports Oxfam, a UK-based charity, in a study published in May 2017. Five of Nigeria's wealthiest people, including Africa's richest man, Aliko Dangote, have a combined wealth of $29.9 billion-more than the country's entire 2017 budget. About 60% of Nigerians live on less than $1.25 a day, the threshold for absolute poverty. "Everything [in South Africa is] was skewed racially-education, access to finance, and access to land," maintains Haroon Bhorat, an economics professor at the University of Cape Town.

Several factors drive inequality in Africa, according to the group of economists who authored the UNDP report on Income Inequality Trends in Sub-Saharan Africa: Divergence, Determinants and Consequences. First, under Africa's two-track economic structure, growth often occurs in sectors characterized by low absorption of unskilled labour, high earnings inequality and high capital share in total income. The authors note that growth in those sectors may spur GDP headline growth but will also exacerbate inequality. It's a rising tide that doesn't lift all boats. Second, infrastructure, human labour and land are highly concentrated in Eastern and Southern Africa. Third, authors of the report make reference to the "natural resource curse, an urban bias of public policy and ethnic and gender inequalities." It appears, they note, that

countries with abundant natural resources, such as Botswana and Zambia, are also some of the most unequal. Inequality also results from regressive taxes [tax rate decreases when taxable income increases], unresponsive wage structures and inadequate investments in education, health and social protection for vulnerable and marginalized groups

2.2 Merits of Atlas Method of Income Distribution

Calculating gross national income (GNI) in U.S. dollars is for the purpose of ease of analysis since we are considering different countries with different currencies, we used the GNI gotten through the World Bank's atlas conversion factor instead of simple exchange rates. The purpose of the atlas conversion factor is to reduce the impact of exchange rate fluctuations in the cross-country comparison of national incomes. The atlas conversion factor for any year is the average of a country's exchange rate for that year and its exchange rates for the two preceding years, adjusted for the difference between the rate of inflation in the country and international inflation; the objective of the adjustment is to reduce any changes to the exchange rate caused by inflation.

2.3 Theoretical framework and methodology

The theoretical framework of this study is rooted in the globalization theory. Globalization is the acceleration of the contemporary world and the intensification of the consciousness of the world as a singular entity. It is the notion of the world community being transformed into a global village. The emergence of globalization has brought benefits such as low cost of living, higher standards of living, efficiency in waste reduction, free flow of technology and capital from one country to another, making high quality goods and services more generally available and creation of employment through opening of new industries.

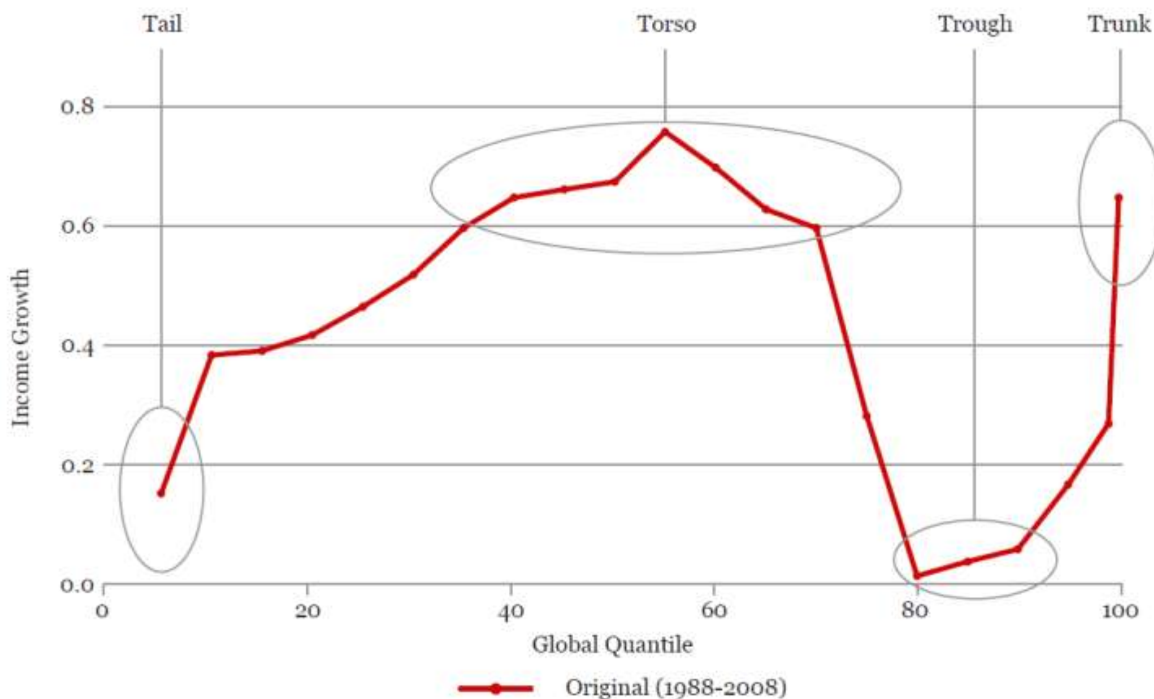

Figure 2.1 The original elephant chart

The elephant chart, represent the income growth of each ventile of the global income distribution over the course of 1988-2018. The chart was used to illustrate global income distribution of most countries in the world.

The tail of the elephant chat consists of the global extreme poor. The income of people in this region declined. The decline and stagnation of income can be attributed to corruption, poverty and violence. Countries in Sub-Saharan Africa are represented in the elephant's tail. The torso of the elephant chart consists of the global middle class. Some selected developing countries experienced strong growth in the middle-class populace such rapid income growth have enabled the select developing countries to catch up with rich countries. Countries like China and India have lifted large impoverished populations into the middle class. South Korea, Brazil and South Africa made significant progress to this regard. China and India's success proves that globalization does improve living standards. On aggregate, the chart shows average income globally grew by 24 percent over this 20-year period. The torso consists of mixed results. While China experienced surge in income growth for the global middle class. Developed countries like the US and Uk's Middle class experienced Income stagnation the chart shows that the parts of the global income distribution around the 80th

percentile of global incomes have seen a stagnation of incomes over this 20-year period. These have been described as the "lower middle class of the rich world. The trough consists of the global upper middle class which comprise of large populations from Japan, Eastern Europe, and Latin America. The slow growth of these countries could be attributed to the economic dynamics of those countries such as Japan's lost decade and the collapse of the Soviet Union which was mostly communist and not market oriented. The elephant trunk consists of the global the top 1 percent. The top 1percent are referred to the global elite; The have experienced enormous income growth. They have captured twice as much total growth than the global bottom 50 percent, this can be seen in the elephant's trunk. They have been able to retain their massive wealth and multiply their earnings. Global development in terms of domestic and global pressures has played a structural role in moving higher income growth for some groups and lower income growth for others.

III. METHODOLOGY

The study compares the Lakner-Milanovic approach with an alternative method by a French Economist François Bourguignon (2010), known as the quasi-non-anonymous growth incidence curve spanning 1999-2018, which holds the country composition of each global decileconstant across time and therefore shows the fate of specific economic classes in specific countries over time. This method is expected to provide better approximations than the way the elephant chart has been understood. The study makes use of data graphs in making comparative analysis of the selected African countries.

TABLE 3.1: SELECTED AFRICAN COUNTRIES BY INCOME GROUP

LOW INCOME	LOWER MIDDLE INCOME	UPPER MIDDLE INCOME	HIGH INCOME
$890<	$900 – 2260	$2300 – 5950	$6000>
Uganda	Cabo Verde	Botswana	Seychelles
Togo	Egypt	Gabon	
Tanzania	Swaziland		
Benin	Morocco	Mauritius	
Burkina Faso	Tunisia	South Africa	
Burundi			
Ethiopia			
Gambia			
Mali			
Central Africa Republic			

SOURCE: Bank Development Indicators

Classification of Countries by Income group

TABLE 3.2: CLASSIFICATION OF SELECTED AFRICAN COUNTRIES BY INCOME GROUP

LOW INCOME	LOWER MIDDLE INCOME	UPPER MIDDLE INCOME	HIGH INCOME
$890<	$900 – 2260	$2300 – 5950	$6000>
UGANDA	CABO VERDE	BOTSWANA	SEYCHELLES
TOGO	EGYPT	GABON	
TANZANIA	SWAZILAND		
BENIN	MOROCCO	MAURITIUS	
BURKINA FASO	TUNISIA	SOUTH AFRICA	
BURUNDI			
ETOPIA			
GAMBIA			
MALI			
CENTRAL AFRICA REPUBLIC			

Source: World Bank Development Indicators.

Table 3.1 shows the classification of selected twenty African countries by their income groups in 1999. As at 1999 ten of the selected African Countries were in the low income group, five in the lower middle income, four in upper middle income and one in the high income group. The selected countries represents the four regions of Africa. Six from West Africa, five from East Africa, three from Southern Africa, two from central Africa and four from north Africa

3.1 Data Analysis

Data for this paper was gotten from the World Bank database. Data for the Gross National Income (GNI) was gotten through the Atlas conversion method which calculates the gross national income GNI in U.S. dollars. This is to reduce the shocks from exchange rate fluctuations when comparing the national incomes of different countries. The data was pulled according to the income levels of the various countries under consideration

IV. EMPIRICAL ANALYSIS AND FINDINGS

TABLE 4.1: GROWTH INCIDENCE IN SELECTED AFRICAN COUNTRIES (1988-2008)

Country	GNI in 2008	GNI in 1988	Growth rate
	$	$	
Uganda	440	400	10%
Togo	480	390	12.8%
Tanzania	600	193	210%
Benin Republic	750	360	108%
Burkina Faso	550	330	66.7%
Burundi	190	250	-24%
Ethiopia	280	270	3.7%
Gambia	500	300	66.7%
Mali	610	290	110%
Central African Republic	420	490	-14%
Cabo Verde	2820	840	236%
Egypt	1840	840	119%
Swaziland	3360	1348	149%
Morocco	2700	1080	150%
Tunisia	3850	1330	189%
Botswana	5570	1980	189%
Gabon	7310	4150	76%
Mauritius	740	2060	-64%
South Africa	5980	3260	83%
Seychelles	11130	3970	180%

SOURCE: Authors' computation from World Bank Development Indicators

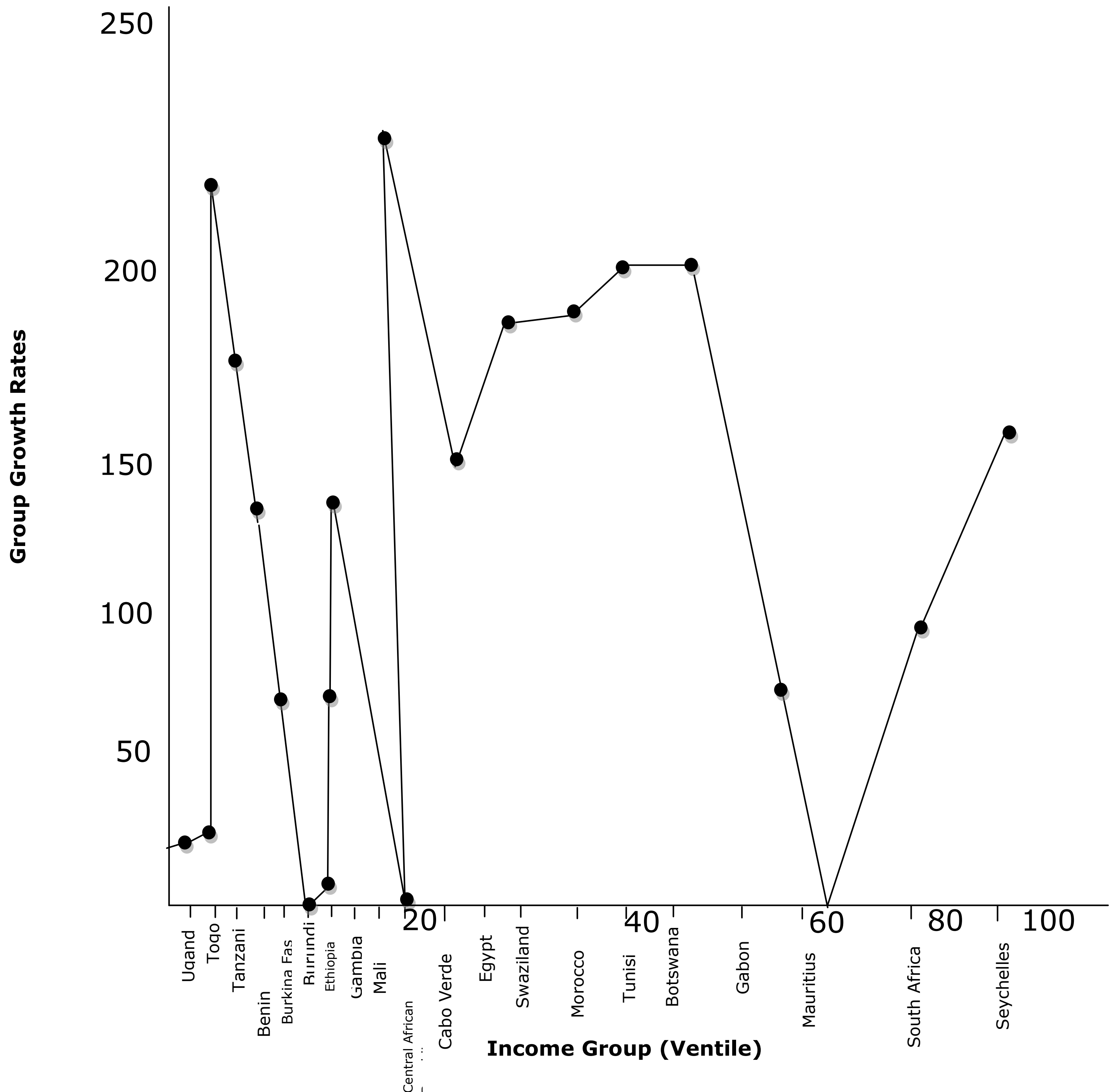

FIGURE 4.1: GROWTH INCIDENCE CURVE (1988 – 2008)

Figure 4.1: Shows growth of the selected twenty African countries on the vertical axis in percentage and income group in ventile on the horizontal axis. The four income groups on the horizontal axis include low income group from the origin to the twentieth percentile, lower middle income group occupy the twentieth percentile to the fortieth percentile. While the upper middle income group and the high income group occupy the fortieth to eightieth percentiles and ninetieth to hundred percentiles respectively. Contrary to the claims of the original elephant chart that African countries are the minority that have not benefited from globalization for reasons like civil war and dictatorship, the figure shows that African countries experienced a high rate of growth within the period under review(1999-2018). Countries like Cabo Verde, Tanzania and Tunisia recorded growth rates as high as 236%, 210% and 189% respectively.

The study finds that the primary narrative is one of convergence: Poorer countries, and the lower income groups within those countries, have grown most rapidly in the past 20 years. Few countries such as Uganda, Togo, Central African Republic and Mauritius recorded low growth rates. The data do not support the idea that the countries are being left behind, nor that the richest are taking all the income gains.

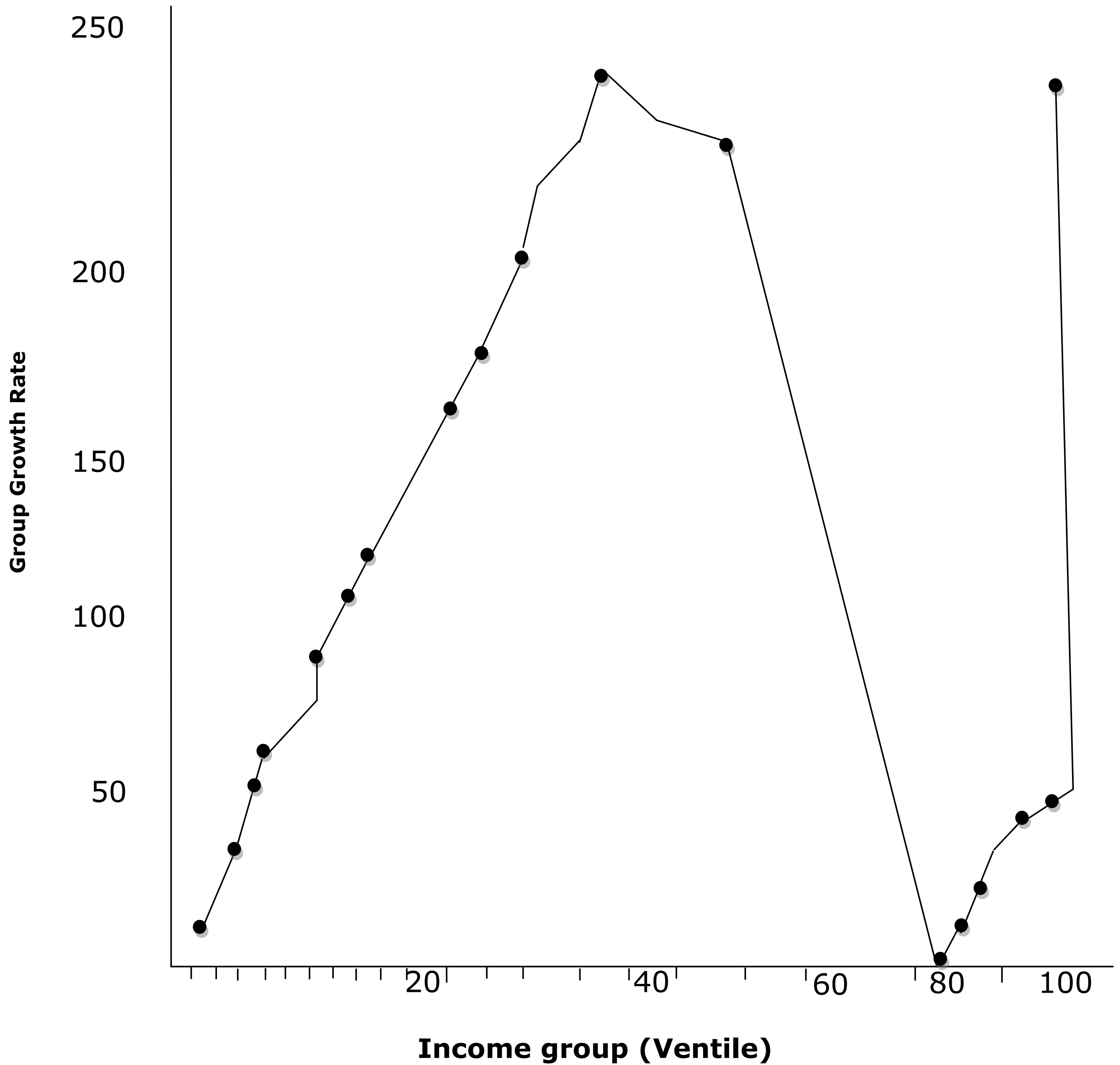

FIGURE 2: African Elephant Chart

The tail of the African Elephant Chart consists of the African extreme poor. The income of people declined. The decline in income can be attributed to poor investment in infrastructure, corruption and political instability. Some selected African countries experienced high growth in the low income class. Such rapid income growth enabled the selected low income countries to catch up with high income African countries.

Countries like Tanzania, Benin republic and Mali graduate to high income African countries. The chart shows that upper middle income countries such as Morocco, Mauritius, Gabon, Botswana and Tunisia recorded significant growth in their gross national income. Tanzania and Benin republic's success proves that globalization does improve living standard. The torso contains mixed results of incomes of Tanzania, cabe Verde and Tunisia.

V. SUMMARY OF FINDINGS

The objectives of this study were to check the validity of the elephant chart conclusions on income growth in African countries. To achieve this, three objectives were raised. The analysis of the result was conducted using growth rate computation and growth incidence curve. The following findings were made; From the growth incidence graph presented in figure one, African countries recorded high growth rate, contrary to the claims of the authors of the elephant chart.

5.1 Conclusions

This study was an attempt to examine the effect of globalization on the growth of African countries. The study suggest that globalization on average has a positive relationship with the growth of the gross national income of African countries used for this study within the period under review.

- Globalization has provided several benefits and advantages to the global economy and the selected African countries used for this study. One of these is increased interconnectivity and sharing of ideas. Fewer barriers to the import and export market have resulted in a reduction in the cost of goods and services. Consumers can ow benefit from the lower prices and consume more. This could result in additional job opportunities in an environment where free trade encourages innovation, creativity, and increased communication and engagement.
- Globalization, however, has its disadvantages. One of these is that studies pint point to the fact that it appears to benefit the wealthy more than the poor nations. The people who have the power to dictate policy appear to be reaping the most significant rewards from globalization. Those more affluent members of society with significant investable funds are witnessing a rise in incomes while households living from paycheck-to-paycheck continue to struggle.

  Some of the factors driving low income fueling inequality amongst developing nations include infrastructure deficit which limits growth in low-income countries. Estimates of infrastructure spending requirement are in the region of 15 percent. Another factor is the role of Government. Governments do not appear to be focusing on education and technology, as well as in other areas which increases skills and boosts productivity, but instead concentrate on financing consumption.
- The effects of globalization and inequality are also being felt in more developed economies. One reason is that because of increasing trade among countries, workers in richer countries face a higher level of competition from those in poorer countries, especially in jobs that do not require a high level of skill.

  If the situation is not addressed by Governments across the globe, the effects of wealth concentration may extend to future generations. Children born rich families will continue to have an economic advantage as a result of their inheritance and access to education, which may increase their chances of earning a higher income than their peers.

5.2 Recommendations

Policy recommendations Based on the growth incidence curve obtained the following recommendations were made

(a) The growth of the gross national income of the selected African countries used for this study calls for policies aimed at improving globalization in the African countries used for this study

(b) The stagnated growth of few African countries used for this study calls for policies aimed at reducing income inequality among African countries. Reducing income gap between the rich and poor countries in Africa is among ways to reduce poverty, illiteracy, crime and racial tensions in Africa. If there is a great disparity between rich and poor African countries, there will always be tension. If the disparity between poor and rich is amplified by being of a different country or race, the tendency towards violence will be much greater. The recent incidence of xenophobic attacks of South African on foreign nationals residing in their country and human trafficking in Libyaare traceable to income inequality which has forced many out of their countries to faraway lands in search of greener pastures.

Quality education may dent poverty but will not close the inequality gap unless accompanied by "progressive taxation [tax rate increases with increases in taxable income] and well-targeted social protection," Also, countries need to focus on growth pattern rather than growth rate, because inequality falls when growth is in labour-intensive sectors, such as agriculture, manufacturing, and construction, and it rises when growth is in sectors high in capital and the use of skilled labour, such as mining, finance, insurance and real estate, according to the UNDP economists. Currently most African countries allocate a significant share of their national budgets

to recurrent overheads and/or debts, leaving little or nothing for other projects. Corruption, mismanagement and illicit financial flows (IFFs) also deplete state coffers.

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