Stagflation and Poverty Incidence in West Africa Sub-Region: A Perspective

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Abstract

The paper investigates stagflation and poverty incidences in the West Africa sub-region in perspective, using panel data analysis. The persistence of high inflation, unemployment and poverty incidences respectively in the sub-region constantly creates growth instability and social digressions is the motivation for this paper. The key objective of this study is to examine the causes of stagflation in West-Africa, the factors responsible for chronic poverty, the effects of stagflation and poverty on the sub-region and the possible remedies. To carry out the empirical study, selected West African countries will be applicable based on the availability of requisite information Data will be sourced from World Bank reports, world economic outlook and IMF report on key variables which includes Poverty rate, Unemployment rates, Inflation rates, Gross Domestic Product, Government expenditure on Health and Education, Foreign debt (specifically from IMF and IBRD), and Gross Domestic Investment. The neoclassical theory is used to explain stagflation and poverty incidence in West Africa. A structural equation model is formulated consisting of three equations with the first two equations formulated to examine the causes of stagflation and poverty incidences and the last equation to examine the effect of stagflation and poverty on the economic growth of the region. The variables were subjected to various statistical and econometric tests to determine their stationarity property. The three stage error correction estimation technique by Baltagi and Li was engaged to estimate the Structural mode while, recommendations and suggestions were proposed based on the findings of this study.

Keywords: *Stagflation, Poverty, West-Africa, Sustainable development, Structural Model*

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Background to the Study

The West Africa sub region is made up of seventeen countries with diverse ethnicities, cultures and traditions despite that there exist common grounds. It consists of an estimated population of 250 million people with above half of its population in Nigeria. The economy of West Africa consists of the trade, industry, agriculture, and human resources of the continent. West Africa is a resource-rich continent but many African people are poor. Recent growth has been due to sales in commodities, services, and manufacturing. West Africa is expected to reach a GDP of $19 trillion by 2050 but its income inequality will be a major deterrent in equitable wealth distribution. In March 2013, Africa was identified as the world's poorest inhabited continent; however, the World Bank expects that most African countries will reach "middle income" status (defined as at least US$1,000 per person/year) by 2025 if current growth rates are sustained. In 2013, Africa was the world's fastest-growing continent at 5.6s% a year and GDP is expected to rise by an average of over 6% a year between 2013 and 2023 ceteris paribus. Growth has been present throughout the continent, with over one-third of African countries posting 6% or higher growth rates, and another 40% growing between 4% to 6% per year.

Essentially, trade has been the driving force of much of the growth in West Africa's economy in the early 21st century. China and India are increasingly important trade partners; 12.5% of Africa's exports are to China, and 4% are to India, which accounts for 5% of China's imports and 8% of that of India. The group of five (Indonesia, Malaysia, Saudi Arabia, Thailand, and the United Arab Emirates) are another increasingly important market for West Africa's exports. West Africa's economy - with expanding trade, English language skills (official in many Sub-Saharan countries), improving literacy and education, availability of natural resources and cheaper labour force - is expected to continue to perform better into the future. According to statistics from the central administration of customs of China, in 2018, China's total import and export volume with Africa was US$204.19b, a year-on-year increase of 19.7%, exceeding the overall growth rate of foreign trade in the same period by 7.1 percentage points (MOC, 2019). West Africa will experience a "demographic dividend" by 2035, when its young and growing labour force will have fewer children and retired people as dependents as a proportion of the population, making it more demographically comparable to the US and Europe. It is becoming a more educated labour force, with nearly half expected to have some secondary-level education by 2020. A consumer class is also emerging in West Africa and is expected to keep booming. West Africa has around 40 million people with household incomes exceeding $5,000, meaning that they can direct more than half of their income towards discretionary spending rather than necessities. This number could reach a projected 68 million by late 2020.

The West African sub region is made up of mostly low income countries with gross national product per capita ranging from 1330 USD in Cape Verde to 130 USD in Sierra Leone in 2005. The international food policy research institute (IFPRI) stated that "the coincidence of severe and persistent poverty and hunger in West Africa indicates the presence of poverty traps condition from which individuals or groups cannot emerge without the help of others".

UNCTAD identifies generalized poverty as a situation in which major parts of the population lives or are below the minimum income level sufficient to meet their living standard. The low per capita income suggests the presence of generalize poverty in West Africa. Basically the West African region produces the highest poverty rate figure, that is, the highest percentage of people living below 2 USD a day. Countries like Niger recorded a high poverty rate about 80.3 percent of its population living less than 8 USD a day in 1992.

The poverty situation is West Africa is quite different from other regions because its cuts across both the rich and poor West African states based on Gross Domestic Product. Nigeria in 2001 had 49.138 billion as its GDP but still about 53.5 percent of its population living below 8 a USD day, whereas Niger with a significant lesser GDP of 1.815 billion dollars had similar poverty rate with Nigeria with about 67.8 percent of its citizens living below 2 USD a day. Thus one can identify that poverty in West Africa is widespread an unresponsive to GDP. Poverty incidences in West African have not been ameliorated despite the emergence and rapid spread of globalization and the increasing flow of aids to the sub-region. Most economies of the sub-region have tended to grow faster in year 2000 than in the 1990's this have not been translated into improvement in living standards of West African population. From open data source majority of West African population as at 2018 resides in the rural areas and subsistence agriculture remains the major occupation. The incidence of poverty in West Africa is generally measured by estimating poverty lines derived from household surveys or using the international poverty line of purchasing power parity (IPPP) of $1 or $2 per day. Poverty is a multi-dimensional phenomenon that encompasses not only the individual physical condition as measured by consumption expenditure or income (Odour and Ayree 2003). Poverty encompasses a person social interaction and state of mental wellbeing.

United nation development program (UNDP) indicator of human development at 2014 ranked West African countries as amongst the bottom 25 percent countries of the human development scale consisting of 183 countries. Over the last ten years the improvement in the human development index for several West African countries may be described as insignificant. However, countries in the sub region such as Mali, Cape Verde and Benin have recorded sustained increase in the human development index.

The high rate of generalized poverty in West Africa have resulted in various regional political and social unrest in many West African states which have cause high mortality rate and loss of resources. In order to tackle and solve the problem of poverty in West Africa policy makers need to clearly identify the causes of the endemic poverty in this region.

Stagflation on the other hand is a special case caused by policy error. Stagflation or shortage-flation occurs when there is high inflation with low output. Basically stagflation as a macroeconomic concept refers to high rate of inflation accompanied by high. Rate of unemployment. The first incidence of Stagflation can be traced to 1973 when the members of organization of Arab petroleum exporting countries (OAPEC) proclaimed oil embargo on October 1973 the price of the oil rose abruptly from 3.87 USD per barrel (1973) to 10.37 USD (1974). This rise in oil price lowered output and consequently raised inflation rate in most

developed economies, Bruno and Sachs (1985) extensively analyzed the causes of stagflation, emphasizing its influence on key economic variable such as productivity, wages, and commodity prices, monetary and fiscal policy.

The West African region is characterized by high unemployment rate especially among vibrant youth which are willing and able to work, and the high rate of unemployment is accompanied by inflation suggesting the presence of stagflation. Ghana at 2013 had 11.04 percent inflation rate with 4.6 percent of its labour force unemployed, Guinea had 12.7 percent inflation rate and 6.8 percent of its labour force unemployed as at 2013, for Niger it was 2.7 percent inflation rate and 5.2 percent unemployment rate, Togo was 3.18 percent inflation rate and 6.9 percent unemployment rate.

Although growth and GDP have continued to increase in this region, this has not been translated to a reduction in unemployment rate thus violating the Okun's law. The Nigerian case is a puzzle considering its resources endowment and its relatively significant larger GDP compared to the other West African countries GDPs, one would expect Nigeria to have one of the highest unemployment rate in the region going by the percentage of labour force redundancy, contrary to this at 2013 Nigeria had 9.87 percent inflation rate and 7.5 percent unemployment rate. The National economic empowerment and development strategy (NEEDS) 2003-2007 was Nigeria's home grown poverty reduction strategy which attempted to build a foundation for the attainment of its long term vision of becoming the largest and strongest African economy (Aluko, 2008)

In the course of the 20th century West Africa went through a revolution consisting of an explosion in population, the rise of huge cities and the rapid integration of the region into the world economy. Despite this the region remains poor when compared to other parts of the world. Decades after decade's politicians and international organization have failed to reduce poverty incidence in West African more or less resolve the peculiar problem of acute unemployment, inflation and stunted economic growth of the region. Worse between 1975 and 2000 the sub region was amongst the only places on earth where poverty has intensified. Over half of West African citizen lives below poverty line of IUSD a day, while the rest of the world grew at an annual rate of close to 2percent from 1960 to 2006. Growth performance in West African has been dismal; in the mid 1990's growth rate of gross domestic product (GDP) have been about 1.5 percent negative, as a consequence millions of West African and vast majority live below poverty line.

Stagflation incidence in West African sub region can be traced to policy error which is largely caused by the failure of most African nations to modify and fine tune the received macro-economic doctrine to suite the regional context and complexities. Macroeconomic policies have been rigorously adopted by many West African countries policies such as exchanging rules devaluation, trade policy, monetary and fiscal policy but these policies have not yielded desirable results. In Nigeria the IMF conditions for the grant of the notable 1986 loans and the devaluation of the naira have been identified to be the cause of Nigeria's economic woes creating inflation, unemployment and poverty.

The evidence of stagflation in West African sub region has made poverty reduction and alleviation programmes ineffective in the region. Niger for instance has 44.5% of its population living below poverty line of 2 USD a day at 2013 accompanied by high inflation and high unemployment (Quartey, 2013). Stagflation and poverty incidence are interrelated in West African and there is likely to be a casual relationship between these two dreaded economic and social phenomenon. Furthermore, poverty and the stagflation being so pronounced in West Africa may have certain influences and impact of economic growth in the sub-region creating constraint to economic growth and development in the region.

The challenge of high poverty incidence in most of West Africa states is of a different order from other regions and will require different strategies to mitigate it. Most of the West African states have not been growing and their income level remains consistently low for any meaningful redistribution to resolve poverty. Hence the region problem is to break out an economic stagnation that has persisted for three decades.

Given that certain West African economies are experiencing noticeable level of GDP growth, countries such as Nigeria, Ghana and Cote d'viore recorded constant increase in GDP from 2005 to 2014, but these has not been translated into reduction in poverty rates and unemployment levels. West African growth failure has attracted competing explanation. During the 1980s, the World Bank diagnosed the problem as inappropriate economic policies, Berg (1981) offering the first clear statement of this position. Collier (2010) argued that cause of generalized poverty in West African is not rooted in the region peculiarities; rather it is based on geographical features of the region.
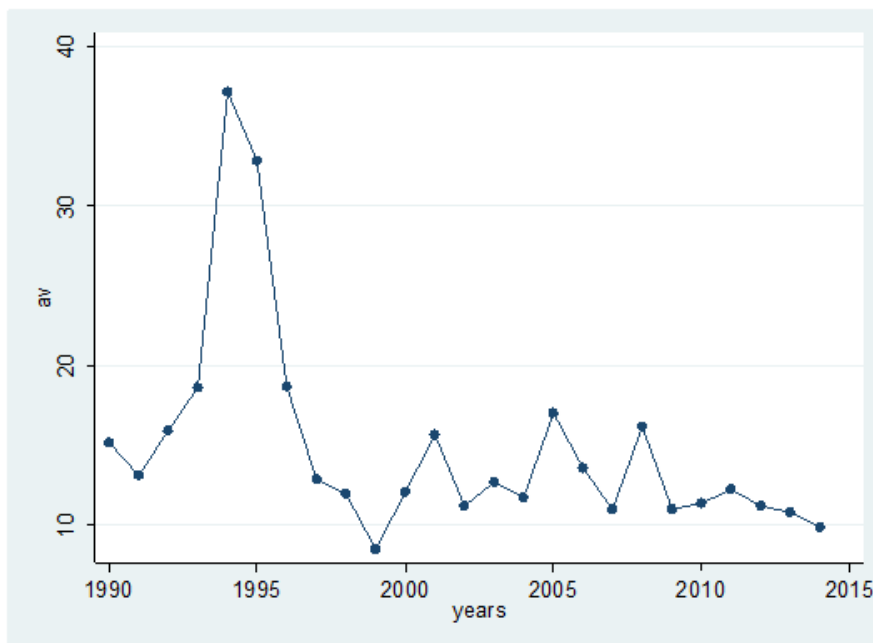
Evidence of Stagflation in West African
Unlike classic definition of inflation, there is not a similar definition of stagflation. While most economists agree that the United States experienced stagflation in the 1970s, there is not agreement on precise start and end dates to the stagflation(s) that occurred neither during that time nor about the precise conditions that characterize stagflation. Blinder's (1979) first sentence reads, "*Stagflation* is a term that describes high inflation and high unemployment rate. It connotes the simultaneous occurrence of economic *stag*nation and comparatively high rates of in*flation*." Bruno and Sachs' (1985) introduction states, "The period of 'stagflation' (stagnation combined with inflation) broke out with a vengeance during 1973–75." Basically stagflation can be described as a portmanteau of stagnation and inflation is a situation in which the inflation rate is high, the economic growth rate slows, and unemployment remains steadily high. It raises a dilemma for economic policy, since actions designed to lower inflation may exacerbate unemployment, and vice versa. Keynes did not use the term, but some of his work refers to the conditions that most would recognize as stagflation. In the version of Keynesian macroeconomic theory that was dominant between the end of World War II and the late 1970s, inflation and recession were regarded as mutually exclusive, the relationship between the two being described by the Phillips curve. Stagflation is very costly and difficult to eradicate once it starts, both in social terms and in budget deficits. One economic indicator, the misery index, is derived by the simple addition of the inflation rate to the unemployment rate.

In West Africa, stagflation is evident in high rate of inflation accompanied by high unemployment rate. In Benin republic, the slowdown observed since the end of 2011 persisted in 2012, due to economic stagnation around the globe, and in the euro area in particular. Reduced foreign aid and sluggish foreign investment resulted in gross domestic product (GDP) growth dropping from 4% in 2011 to an estimated 2.5% in 2012. The country's lack of natural resources and poor conditions for agriculture makes it highly vulnerable to external shocks. The government has therefore been seeking to promote a more balanced economic development. The Third Growth and Poverty Reduction Strategy Paper, adopted in April 2013, reflect the government's attempt to address the country's structural challenges and adapt the country's development model to its new non-Least Developed Country status.

According to the Socio-economic Profile of West Africa in 2014 and Prospects for 2015; Guinea, Nigeria, Niger, Ghana, Togo and Cote d'viore have continued to experience substantial increase in unemployment rate but mild inflation rate since 2010. Several West African countries experienced increased in Gross Domestic Product since 2005 till date but that has not been translated into increase in employment and reduction in unemployment rate. From the misery index in figure 1.0 there is evidence of stagflation in West Africa which was very pronounced in the 90's reaching as high as 38 percent in 1995. In the last decade stagflation have continue to decline in the sub region such that by 2010 it was 12 percent based on the misery index, 13 percent in 2011, 12 percent in 2012, 11 percent in 2013 and 10 percent in 2015 (see Figure 1).

Figure 1: Misery Index for West Africa Sub-Region

Source: Author; Based on Data from World Economic Outlook (WEO, 2015)

Despite this decline stagflation in the period in question, the phenomenon in West Africa based on the Misery Index is still double digit which shows that the region is still engulfed in high inflation and unemployment despite the increase in GDP experienced in some of the countries in the region.

Empirical Review and Theoretical Framework
An appraisal of literatures on stagflation and poverty incidence reveals that several scholars and researchers worldwide have attempted to examine the subject matter with scope ranging from country-specific studies to panel of countries. Some of these empirical literatures are reviewed in this section.

Khan and Senhadji, (2011) examine the issue of the existence of threshold effects in the relationship between inflation, unemployment and poverty, using SVAR econometric techniques that provided procedures for estimation and inference for 140 developed and developing countries covering 1995-2013. They estimated a threshold level of inflation above which inflation and unemployment significantly increases poverty rate at 1–3 percent for developed countries and 11–12 percent for developing countries. The positive and significant relationship between inflation, unemployment and poverty, for inflation rates above the threshold level, is quite robust with respect to the estimation method, perturbations in the location of the threshold level, the exclusion of high-inflation observations, data frequency, and alternative specifications.

Sargsyan, (2013) carried out the threshold effect study in the relationship between inflation, poverty and growth in Armenia from 2000- 2013 using quarterly data estimated using GMM technique. The purpose is to test for a threshold level of inflation at which the effect of inflation on growth changes from negative to positive, as inflation passes that level and also the impact of inflation on poverty rate. The threshold level of inflation is calculated using specific econometric technique as in Khan and Senhadji (2011), which though was primarily used for panel data models, is applicable to time series models as well. The estimation results reveal a 4.5% threshold level. The threshold level of inflation at 4.5% means that this level of inflation is the break-even level of inflation, above which inflation has a negative impact on the growth rate of output. The study also found that inflation has a positive and significant impact on poverty rate. The paper concluded that targeting a level of inflation higher than current but not exceeding calculated threshold level might be beneficial for Armenia.

Lupu (2012), studied the effect of inflation and unemployment on poverty between 1990 and 2011 in the Latin American countries using a Least Square Dummy Variable (LSDV). She argued that Inflation increases poverty in two ways. First, the inflation tax can reduce disposable real income. Second, if nominal wages increase less than the price of goods consumed by wage earners, workers' real income will decline. She found evidence that in Latin America, inflation affected the poor through inflation tax but the effect was very small. Higher rates of inflation had resulted in higher inflation taxes but unless the inflation was extremely high (above 100%) this increase in inflation tax was less than 1%. However, she showed that the main effect of inflation on poverty was manifested through real wages. She

found that accelerating inflation reduces real wages and increases poverty. According to her results, real wages fall by 14 percent when inflation doubles. She also concluded that unemployment has a significant impact on poverty incidence Latin America region.

Fielding (2012) adopted a consumption based approach to measure poverty in West Africa using a random effect model. Analyzing panel data using eight West African countries from 2000 through 2012, she found a robust and relatively large and positive relationship between inflation and the consumption poverty rate. Powers argues that inflation affects the poor directly through a decline in their real wages owing to the short-run rigidity of nominal wages.

Gordon (2013) studied the impact unemployment, poverty and inequality on Gross Domestic Product in developing countries including West African Countries using Population Average estimation technique. They found that regression of the change in poverty on the unanticipated change in GDP produced a small and insignificant coefficient. However, the relationship between the change in unemployment rate and the anticipated change in GDP was significant. The point estimate implies that an anticipated increase in unemployment of one percentage point is associated with a decline in GDP of 0.2 percentage points. According to Gordon, unanticipated inflation reduces the real value of nominal assets and liabilities. It therefore causes real capital losses for nominal creditors and real capital gains for nominal debtors. If the poor are net nominal debtors, these effects benefit them.

Berthod and Grundler (2013), investigated the empirical determinants of Stagflation in a panel of countries which consisted of developed and developing countries. The variables used were inflation, unemployment and output using Random Effect Maximum Likelihood technique to estimate their model. Their results confirm the ambiguity in the influence of supply shock as the major determinant of stagflation.

Ahmed and Mortaza, (2011) postulated that moderate and stable inflation rates promote the development process of a country, and hence economic growth and reduction in poverty. Moderate inflation supplements return to savers, enhances investment, and therefore, accelerates economic growth of the country. They explore the present relationship between inflation, poverty and economic growth in the context of Bangladesh. Using annual data set on real GDP, Poverty rate and CPI for the period of 1980 to 2009, an assessment of empirical evidence has been acquired through the co-integration and error correction models. They also explore what the threshold level of inflation should be for the economy. It is established that there exists a statistically significant long-run negative relationship between inflation, poverty rate and economic growth for the country as indicated by a statistically significant long-run negative relationship between CPI, Poverty rate and real GDP. The estimated threshold model suggests 6-percent as the threshold level (i.e., structural break point) of inflation above which inflation adversely affects economic growth and increase poverty incidence.

Quartey, (2013) put forward that the aim of the policy of price stability is to provide a stable environment for real sector activities to flourish but the outcome of the policy on real sector activities in Ghana has not been subjected to any empirical investigation. He studied

Stagflation and macroeconomic performance in Ghana Using time series data. The study finds that economic performance is higher under low inflation era than when inflation is high. The results are robust and show that the revenue maximizing rate of growth for Ghana is 9.14 per cent using quarterly data over the period 1990-2011 with least square multiple regression analysis. It is also deduced from the study that the single digit inflation target set by the Central Bank Ghana is not growth maximizing.

Sergii, (2011) investigates poverty-growth interaction for Commonwealth of Independent States (CIS) for the period of 2001-2008 using dynamic panel data approach. He is found out that this relation is strictly concave with some threshold level of poverty, which is in line with the previous empirical studies based on earlier sample periods. Poverty rate threshold level is estimated using a non-linear least squares technique, and inference is made applying a bootstrap approach. The main findings are that when poverty level is higher than 8% economic growth is slowed down. The non-linear poverty-growth interaction is quite robust to the estimation method and specification.

Li, (2013) corroborated that high rate of inflation and unemployment causes problems not just for some individuals, but for aggregate economic performance. But less agreement exists about the precise relationship between inflation and economic performance, and the mechanism by which inflation affects economic activity. The study examines the relationship between inflation, unemployment and economic performance by using panel data for 90 developing countries and 28 developed countries over the period 1961-2004 estimated with FEM. The evidence strongly supports the view that the relationship between unemployment and economic growth is nonlinear. For the developing countries, the data suggested two thresholds relating economic growth and inflation. The first and second threshold levels were estimated to be 14% and 38% respectively. At the rates of inflation lower than those of the first threshold, the effect is obscure and positive; at rates between the two threshold levels, the effect is significant and strongly negative; at extremely high rates the impact diminishes but still significantly negative. For the developed countries, only one significant threshold is detected (24%). At rates below this threshold, inflation has a significantly negative effect on economic growth, while the magnitude diminishes as inflation exceeds this threshold.

Gokal and Hanif, (2014) examines the relationship between Inflation, unemployment and Sustainable output performance in the West African sub-region. The variables they use were inflation rate, unemployment rate and GDP using panel data estimated using a dynamic panel analysis. They attempted to provide solution to the debate on the nature of the inflation and growth relationship. Thus, it is tested whether a meaningful relationship holds in West Africa case. The tests reveal that a weak negative correlation exists between unemployment and growth but a positive relationship between inflation and growth, while the change in output gap bears significant bearing. A causality test was also conducted and the results show that causality between the three variables runs one-way from GDP growth to inflation to unemployment.

Lupu, (2012) conducts a study on the correlation between unemployment, poverty rate and economic growth in Romania and highlights the existence of interdependence between the phenomena of unemployment and that of the growth process. Preferences on issues of relationship between poverty and economic growth is necessary because its analysis reveals huge potential for development and for the fact that it promotes the transition process in Romania which was the route to efficient functioning of competitive market economy. The research was conducted using ideological and quantitative approach, and the research results show that the relationship can be seen in two ways, one that reflects the negative aspect of the relationship between poverty rate and growth where an increase in poverty incidence reduces output productivity (at high level of unemployment). Over this period of time (1990-2010), unemployment in Romania was oscillating, high, mainly as a consequence of the effects of the delay in the essential restructuring of the economy; the recurrent cessation of the stabilizing efforts; the inadequate wage policy; the expanded financial disorder; the

Decrease of the domestic output of goods and services. On the other hand, there is the one that reflects the positive aspect of the relationship between the two where stability in unemployment raises output productivity. Over this period of time (2001-2010), unemployment in Romania was reduced drastically to 5.8% in 2009.

Fielding, (2012) uses monthly time-series data on the prices of 96 individual products in the 37 states of Nigeria to analyze the factors that drive inflation volatility and poverty incidence with VAR. Among the significant determinants of volatility are average inflation rates, transport and communication infrastructure, consumer access to credit markets and urbanization. Analysis of the data reveals that there is substantial heterogeneity across products in relative importance of these non-monetary factors that drive inflation volatility and poverty incidence. Accordingly, better transport and communication infrastructure, as captured by road length, literacy and linguistic homogeneity, are associated with lower inflation volatility and poverty rate in a state. However, more extensive access to credit facilities is associated with higher inflation volatility, as is urbanization. Since most changes in inflation are unanticipated, these results apply equally to conditional and unconditional poverty incidence.

Theoretical Framework
The Neoclassical theory of poverty and Stagflation serves as the Theoretical Framework for this study. The neoclassical theory can be used to explain the Stagflation and poverty incidence in West Africa.

The major shift in perspective with respect to neoclassical theory lies in the greater emphasis placed on the *macro* side in liberal theory in comparison with the more *micro* orientation of preceding models. The theory laid emphasis in the promotion of this crucial aspect of human capital which reduces poverty incidence as human capital accumulation creates wealth. Human capital is done through the promotion of human capital accumulation through aggregate investment in public education. The role of the government in the economy therefore takes the centre stage in augmenting human capital. It is contended that government intervention against poverty is needed in a wide variety of economic issues, from tackling

involuntary unemployment to promoting human capital accumulation and through investment in public education, which can both encourage economic growth via the famous multipliers and tackle poverty through the development of abilities it entails. From the set of macroeconomic variables that Neoclassical stress, aggregate investment, with its positive effect in employment, emerges as the key element in generating the type of growth that permits poverty relief.

While growth is likely to reduce absolute poverty, because it will tend to raise the incomes of all members of society, the beneficial effects on relative poverty of the expansion of economic activity will only apply so long as the rise in average income that economic growth permits is accompanied by a reduction in the variance of the income distribution or it is accompanied by an increase in dispersion that does not offset the increase in the average level of income (Granville and Mallick, 2006). As Dickens and Ellwood (2001) indicate, the growth in wages that usually accompanies growth in GDP can cause surges in relative poverty if wage dispersion rises along with it, even if the average wage increases. The effect on absolute poverty is ambiguous provided that the average wage also increases. This hypothesis corresponds to the theory that poverty rates can actually persist and even grow despite economic growth if the deprived are left off the "growth wagon" (Dickens and Ellwood, 2001).

Economists conceptualise this as an elasticity of poverty to growth of around -2. Put more positively in the case of growth, if 35 percent of households are below the poverty line, then per capita growth of 1 percent is likely to reduce the number in poverty by 2 percent, or from 35 percent to 34.3 percent of total households. Thus, the World Bank finds that "On average, every additional percentage point of growth in average household consumption reduces that share [of people living on less than $1 a day] by about 2 percent" (World bank 2010).

The paramount importance assigned to unemployment as a primary source of poverty under the liberal view is based on the logic that if individuals do not receive labour income, they are more likely to be poor. This sensitivity of poverty to unemployment can actually be amplified if poor individuals tend to experience discontinuous, short employment spells throughout the lifetime; if poor people who enroll in a job fail to retain it, no matter their pay, they will likely return to poverty when exiting employment given that the amount of accumulated savings is likely to be insufficient for maintaining the standard of living above the poverty line (Aassve et al, 2005). In some pension and social security systems they are also likely to face poverty in retirement due to gaps in entitlements (Pemberton et al 2013).

Hence, the steadiness of employment is a central feature in preventing poverty persistence, not least because it also enables individuals to envisage better career prospects that allow higher expected future income, thereby facilitating borrowing (leading to longer term consumption-saving decisions) and investment in one's own skills and knowledge (human capital) as well as social capital (Ulimwengu, 2008). In terms of Sen (1983, 1999), it influences ability to transform assets into entitlements. It underlines the importance of distinguishing between transitory (short term) and persistent (lifelong) poverty.

Similarly, Reinstadler and Ray (2010), argue that the regional unemployment rate can have a direct and indirect impact on poverty. The first one is straightforward: a higher aggregate unemployment rate increases the likelihood of individual unemployment. The second effect is an indirect effect through the negative impact of the unemployment rate on the wage bargaining power of the employed, who are at higher risk (since they face higher competition) of being fired or receiving a lower wage when the aggregate regional unemployment rate rises. Importantly, they find that the aggregate factors such as regional employment are significant even after controlling for the main individual characteristics influencing the likelihood of being poor. This gives support to the Keynesian emphasis on factors at the macroeconomic level but partly undermines the efficacy of nationwide fiscal policy, implying a need for regionally focused policies (notably public investment) as well.

Notwithstanding the fact that employment is generally perceived as an anti-poverty tool, in practice employment may conceivably cause poverty under some specific circumstances. For example, this could happen whenever the generation of employment is accomplished via the expansion of part-time, low-paid and temporary jobs (that is, insecure and precarious jobs), which may be linked to drastic supply-side, labour market reforms aimed at bringing flexibility to the labour market48 albeit also linked to technical changes which are reducing the demand for unskilled labour and hence reducing wages for such workers (Machin 2009). Indeed, a process like this took place in Germany during the most recent crisis: despite the reduction in the unemployment rate, poverty has actually increased (Kyzyma, 2013). We also noted at the outset that just over half of the 14 million people in poverty in the UK were from working families. Osterling (2007) also adheres to this view, adding that far-reaching economic restructuring can in some instances become a source of poverty, at least in the short run. Low paid jobs may be disincentive to work when there is a sufficient safety net, or if such jobs are accepted, they may lead to poor health (Pemberton et al 2013).

Inflation especially when the nominal wages on which low earners depend stagnate or grow at a lower rate than prices, inflation can depress workers' real income and generate poverty. This will also be more likely the more the prices of basic goods are affected. Agenor (2002) finds that inflation always increases the poverty rate, using a cross-section of 38 countries. Easterly and Fischer (2000) found that the poor tend to rate inflation as a top concern, using survey data on 31,869 households in 38 countries. On the other hand, the often-cited "inflation tax" reducing the purchasing power of monetary assets may not affect those already below the poverty line, since these individuals hold few liquid balances to begin with (Granville and Mallick, 2006).

Granville and Mallick, (2006) formulated a complete neoclassical model to explain the causes and solutions to poverty using macroeconomic variables such as GDP, Inflation rate, Unemployment rate, Poverty rate (Percentage of population living below 2 USD a day) and government expenditure on human capital development. Their model is given as:

$$Y = f(X_1, X_2, X_3 \text{ and } X_4) \tag{1}$$

Where Y is poverty rate, X_1 is inflation, X_2 is unemployment X_3 GDP and X_4 Government expenditure on human capital development. The model is further expressed as;

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mu \tag{2}$$

Equation two gives the neoclassical equation on Poverty incidence. To derive the neoclassical equation regarding stagflation, a neoclassical equation based on the neoclassical theory of Stagflation can be derived from the (short-run) Lucas (1978) aggregate supply function. The Lucas approach is very different from that the traditional view. Instead of starting with empirical data, he started with a classical economic model following very simple economic principles. Start with the aggregate supply function:

$$Q = Q_n + \delta(P_t - P_{t-1}) \tag{3}$$

Where Q is actual output, δ is a positive constant term, P_t is current price level and P_{t-1} is previous price level. Note that this equation indicates a positive relationship between inflation and GDP. This means that in the Lucas aggregate supply curve, the *only* reason why actual real GDP should deviate from potential—and the actual unemployment rate should deviate from the "natural" rate—is because of a rise in price.

Equation (3) can be further expended to incorporate unemployment; there is also a negative relationship between output and unemployment (as expressed by Okun's law). Therefore, using:

$$Q - Q_n = -\gamma(U - U_n) \tag{4}$$

Where U is unemployment, U_n is natural unemployment rate and γ is a constant term. Equation (4) can be substituted into equation (3) and it gives

$$Q = \delta(P_t - P_{t-1}) - \gamma(U - U_n) \tag{5}$$

Finally, human capital stock is added to the equation, thus

$$Q = \delta(P_t - P_{t-1}) - \gamma(U - U_n) + \tau(K) \tag{6}$$

K is human capital stock and τ is the growth of human capital stock, Tobin (1976) calls this the required capital stock that guarantees growth. Hence equation (6) shows that Economic growth depends on inflation, unemployment and capital Stock, with inflation and unemployment representing stagflation.

Methodology
Model Specification
From the theoretical framework, the Neo-classical theory of stagflation and poverty was adopted; this section will focus mainly on establishing a model to examine the causes and effect of stagflation and poverty incidence in West Africa. For the purpose of this research, a structural equation model will be adopted to estimate stagflation and poverty incidence in West Africa.

A model based on Neo-classical theory of stagflation and poverty is adapted from the work of Granville and Mallick, (2006) and extended to incorporate the effect of poverty incidence on economic growth in West Africa. The three stage least square method is used to examine the

poverty incidence and stagflation in West Africa. The first and second equation examines the causes of poverty and stagflation in West Africa while the last equation examines the effect of stagflation and poverty level on economic growth.

Conventionally, the first structural equation for the causes of poverty is given as follows;

$$POV = f(STA, GHCD, GDP) \tag{1}$$

Where,

POV   is poverty rate (percentage of total population living below 2 USD a day)

STA   is stagflation; based on misery index Stagflation can be measured as unemployment rate plus inflation rate, Hence

GHCD is government expenditure on human capital development (expenditure on health + expenditure on education)

GDP   is Gross Domestic Product

The second structural equation to capture stagflation in West-Africa is given as follows;

$$STA = f(POV, GDP, GFCF) \tag{2}$$

Where,

GFCF is Gross Fixed Capital Formation representing domestic investment.

Equation 3 gives the basis for the last structural equation for the model. The last structural equation is derived from the aggregate supply equation in the theoretical framework.

$$Y = \delta(P_t\text{-}P_{t\text{-}1}) - \gamma(U\text{-}U_n) + \tau(K) \tag{3}$$

Where;

Y = Gross Domestic Product (GDP)

$U\text{-}U_n$ = unemployment rate (UR)

$P_t\text{-}P_{t\text{-}1}$ = Inflation rate (INF)

K = Foreign loan (FL)

Thus, from equation 3 we have

$$GDP = f(UN, INF, FL) \tag{4}$$

Adding poverty rate to the control variables, we have

$$GDP = f(UN, INF, FL, POV) \tag{5}$$

Representing unemployment and inflation with stagflation it becomes

$$GDP = f(STA, FL, POV) \tag{6}$$

Equation 2 and 5 are expanded to form the structural equation for this research and these gives;

$$POV_{it} = \alpha_0 + \alpha_1 STA_{it} + \alpha_2 GDP_{it} + \alpha_3 GHCD_{it} + \mu_{1t} \tag{7}$$

$$STA_{it} = \lambda_0 + \lambda_1 POV_{it} + \lambda_2 GDP_{it} + \lambda_3 FL_{it} + \mu_{2t} \tag{8}$$

$$GDP_{it} = \beta_0 + \beta_1 POV_{it} + \beta_2 STA_{it} + \beta_3 GFCF_{it} + \mu_{3t} \tag{9}$$

μ_{1t}, μ_{2t} and μ_{2t} follows a one way error component (see Baltagi, 2006) such that;

$\mu_{1t} = \mu_i + v_{it}$, $\mu_{2t} = \mu_i + v_{it}$ and $\mu_{2t} = \mu_i + v_{it}$

$\alpha_0 - \alpha_4$, $\beta_0 - \beta_4$ are structural parameters

μ_{1t} and μ_{2t} are error term and;

$\mu_{1t} \sim \text{IID}(0, \sigma_{\mu 1}^2)$, $\mu_{2t} \sim \text{IID}(0, \sigma_{\mu 2}^2)$

Equation 7, 8 and 9 are just identified and thus the equations can be estimated by any panel structural equation methods. From these structural equations the reduced form equations for the endogenous variables can be derived and is given as;

$$POV_{it} = \gamma_0 + \gamma_1 GFCF_{it} + \gamma_2 GHCD_{it} + \gamma_3 FL_{it} + w_{1t} \qquad (10)$$

$$STA_{it} = \theta_0 + \theta_1 GFCF_{it} + \theta_2 GHCD_{it} + \theta_3 FL_{it} + w_{1t} \qquad (11)$$

$$GDP_{it} = \delta_0 + \delta_1 GFCF_{it} + \delta_2 FL_{it} + \delta_3 GHCD_{it} + w_{2t} \qquad (12)$$

Stationarity Model

To test for stationarity, the unit root method is used and will take the form of an Autoregressive model process, with each variable regressed on its own lagged value and a deterministic variable. The model to be adopted is:

$$\Delta y_{it} = \rho y_{i,t-1} + \sum_{L=1}^{pi} \theta_{iL} \Delta y_{it-L} + \alpha_{mi} d_{mi} + \varepsilon_{it}$$
$$m = 1, 2, 3$$

Where;

y represents all the variables under consideration.

ρ represents the unit root coefficient.

Δ is the difference operator.

y_{t-i} represents the lagged terms included

d_{mi} represent deterministic variables

α_{mi} represent the coefficient of the deterministic variable

ε_{it} represents pure white noise error term.

The null hypothesis to be tested is such that the variable possess unit root, and as such is non-stationary.

H_0: $\rho = 1$ Panels contain unit root (non stationary)

H_0: $\rho < 1$ Panels does not contain unit root (stationary)

Source of data

Data collection technique for the study is secondary in nature which consists of longitudinal panel data. The data used are collected from different sources; data for inflation rate, Gross

Domestic Product, foreign loan and government human capital expenditure are derived from World Economic Outlook (WEO). Data for Poverty rate is gotten from Open Data Source specifically from Economic Web Institute and World Bank Data. Data for unemployment is sourced from international financial statistics. The web link to download these data from their various sources will be provided in the appendix of this study. The data collected are made up

of seven panels of countries with interval from 1990-2018. Thus each variable consists of 179 observations. The seven countries under investigation form a sample that represents a population consisting of seventeen West African countries.

Six variables are used to carry out empirical analysis and test the hypotheses for this study. Gross Domestic product used in this study is in billion measured in international dollar and converted to purchasing power parity for each panel of countries. Unemployment rate is given as the percentage of labour force not employment. Government Human Capital Expenditure is measured in billions of international dollar and is given as the addition of expenditure on health and expenditure on education (Todaro and Smith, 2005). Poverty rate is measured as the percentage of total population living below 2 USD a day. Foreign loan is measured in billions of international dollar and given as net external debt. Inflation is measured as percentage index of consumer price index.

Methods of Data Analysis
To estimate the structural equation model stated earlier, the Three Stage Least Square (3SLS) method is adopted. 3SLS is a system estimator and system estimators are more efficient than single equation methods such as 2SLS because they make use of all available information in the system and are consistent in large samples. Furthermore, the error correction three stage least square (EC3SLS) method is adopted. EC3SLS according to Baltagi and Li (1996) is asymptotically more efficient than other panel 3SLS such as within three stage least square (W3SLS) etc.

The stationarity test (unit root test) is carried out using the Harris and Tzavalis stationarity test on each variable to test for stationarity. Harris and Tzavalis (1999) test is more appropriate because of the structure of the panel data used in this study since T>N that is time interval in greater than number of panel. However, non-stationarity in panel data does not usually lead to spurious regression (Im et al. 2003). Some of the distinctive results that are obtained with non-stationary panels are that many test statistics and estimators of interest have normal limiting distributions. This is in contrast to the non-stationary time series literature where the limiting distributions are complicated functions of Weiner processes. Using panel data, one can avoid the problem of spurious regression (see Kao 1999, and Phillips and Moon 1999). Unlike the single time series spurious regression literature, the panel data spurious regression estimates give a consistent estimate of the true value of the parameter as both N and T tend to∞. This is because, the panel estimator averages across individuals and the information in the independent cross-section data in the panel leads to a stronger overall signal than the pure time series case (Maddala and Wu 1999 and Choi 2001). This study is based on large sample size as such large sample statistical test such as chi-square and Z test are engaged. The robust standard errors are used to correct for possible heteroscedasticity of the error term variance

Data Analysis
The results presented are based on Harris and Tzavalis stationarity test on each variable. All results to be analysed are obtained from STATA software statistical packages and R Programming Software. The data used and the results as obtained from STATA and Python andare contained in the appendices.

Stationarity Result

Table 1: Unit Root Stationarity Test Using Harris and Tzavalis Test

Time Series	Harris- Tzavalis Statistics	Critical Value at 5% LOS	P- Value	Stationary Status
GDP	-5.5242	-1.3922	0.0017	I(0)
POV	-3.5263	-2.9620	0.0015	I(0)
UNP	-7.1952	-3.8662	0.0000	I(0)
INF	-8.6112	-5.4581	0.0000	I(0)
GHCD	-4.0681	-2.3349	0.0065	I(0)
FL	-4.0381	-3.3092	0.0065	I(0)

From the Unit root test conducted above using the Harris and Tzavalis unit root test, all the variables are stationary at level at 5% level of significant (LOS). Thus the error correction three stage least squares (EC3SLs) can be carried out since all the variables are all stationary at level. The result of the EC3Sls is presented as follows;

Table 5: Error Correction Three Stage Least Square Result

Dependent Variable	POV			
Independent Variables	Co-efficient	Standard Error	Z-Statistics	P-Value
GDP	-6.24622	1.776110	-3.516798	0.01931
STA	0.02529	0.001290	19.604651	0.00001
GHCD	-1022.96	837.2071	-1.221872	0.19325
Constant	11824.5	945.7305	12.50303	0.00001
R^2	0.660975			
Wald Chi-Square	29.46172			
P-Value of Chi-Sq	0.002316			
Dependent Variable	STA			
Independent Variables	Co-efficient	Standard Error	Z-Statistics	P-Value
POV	0.660645	0.009590	6.888344	0.00392
GDP	-0.218568	0.042864	-5.099131	0.00548
FL	-0.022402	0.008275	-2.707331	0.14834
Constant	0.460023	0.098632	4.664011	0.01583
R^2	0.61097			
Wald Chi-Square	15.9017			
P-Value of Chi-Sq	0.00853			
Dependent Variable	GDP			
Independent Variables	Co-efficient	Standard Error	Z-Statistics	P-Value
POV	-3589.985	1392.158	-5.578720	0.00251
STA	-1384.911	457.0171	-3.030327	0.00942
GFCF	0.001366	0.001114	1.226426	0.49024
Constant	0.111929	0.035809	3.125736	0.00391
R^2	0.86607			
Wald Chi-Square	43.4902			
P-Value of Chi-Sq	0.00001			

From the result obtained, GDP and GHCD has a negative impact on poverty a unit increase in GDP and GHCD will lead to 6.24622 and 1022.96 decrease in Poverty level respectively. On the contrary a unit increase in STA leads to 0.02529 unit increase in Poverty level. GDP and STA are statistically significant while GHCD is statistically insignificant. R^2 is high and the Model is statistically significant following the wald chi-square test.

Also GDP and FL has a negative impact on Stagflation a unit increase in GDP and FL will lead to 0.218568 and 0.022402 decrease in stagflation respectively. On the contrary a unit increase in POV leads to 0.660645 unit increase in Stagflation. GDP and POV are statistically significant while FL is statistically insignificant. R^2 is high and the Model is statistically significant following the wald chi-square test.

POV and STA has a negative impact on GDP a unit increase in POV and STA will lead to 3589.985 and 1384.911 decrease in GDP respectively. On the contrary a unit increase in GFCF leads to 0.001366 unit increase in GDP. POV and STA are statistically significant while GFCF is statistically insignificant. R^2 is high and the Model is statistically significant following the Wald chi-square test.

Conclusion and Recommendations
This study was carried out to empirically examine stagflation and poverty incidence in West-Africa sub - region in perspective. The evidences from the econometrics analyses from this study revealed that foreign loans and government expenditure on human capital did not significantly impact on poverty level and stagflation in West-Africa hence, it is important for the government in various West-African countries to ensure that more attention is given to the utilization of foreign loans to reduce poverty in the sub-region. More funds should be allocated to government expenditure in human capital such as health and education since each has a direct impact on poverty level.

GDP had a significant impact on Stagflation and poverty level in West-Africa thus indigenous government should strive to increase production and output which will reduce poverty in the sub-region. Also the increase in health expenditure will without doubt translate to the expected health outcome if the process of utilizing the fund allocated to the health sector is properly monitored and its efficiency is ensured. Furthermore, the empirical results of this study have revealed a negative relationship between stagflation and growth in West-Africa. Considerably, rising stagflation has resulted in low growth within the period under review. Thus, effective policies to control stagflation should be designed or adopted by the various governments. The first area government should focus on is to create jobs and employ the abundant human and natural resources available in the production process .Possible factors responsible for the stagflation such as; high inflation and unemployment rate in West-Africa include, the overdependence on mono-cultural economy, the existence of unutilized labour surplus in West-African economy which has resulted in rigidities in the labour market and in the wage structure across country the countries, likewise rent seeking and inherent corruption.

It is against the backdrop of inflationary threats, that the study further recommends that the monetary authorities in the region base on each peculiarities considers moderate and inclusive economic policy stance such as lower interest rates and control of the growth of money in order to boost investment and economic growth. These have the possibility to boost small scale businesses emergence such that the incidence of stagflation is reduced. Furthermore, the government should also reduce the excessive reliance on the mono culture economy through diversification of the economy to other productive sectors using modern technology in consonance with globalized economic system.

Expenditure management and budget discipline should be taken seriously by indigenous governments since the monetary authorities engage monetary and fiscal policies measures as tools for tackling stagflation and meeting various macroeconomic objectives.

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