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Impact of Inflation and Unemployment on Economic Growth in Ten (10) Selected Member's States of Economic Community of West Africa States (ECOWAS) (2001-2014)

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Abstract The study set three major objectives which include determine the relationship between economic growth, inflation and unemployment, analyses the effects of inflation in ten (10) selected members of ECOWAS and assess the effects of unemployment in the selected members states. Secondary data obtained from the Member's State National Statistics offices was used for the paper. The study used a model in which inflation and unemployment were the dependent variable and independent variables. The analytical technique used includes ordinary least square (OLS) technique, F-test. The paper showed that monetary and fiscal policy were effective in the control of the inflation and unemployment since the coefficient of determination (R^2 =0.50 or 50% was significant. This was re-confirmed by the F-test value (4.91). The paper recommends a policy redirection to improve output in the ten (10) selected member's states; this will occur by making efforts to increase productivity, which will lead to reduction in unemployment and inflation. To curb the surging rate of unemployment, efforts must be put in place to achieve a labour intensive method of production instead of concentrating on the capital intensive method which will take away jobs that individuals can do. Furthermore, there must be concrete efforts to ensure that the porous borders in the ten (10) selected members states are well managed to increase volume of economic activities among the members' States, which is very pivotal for the reduction of unemployment and inflation; thereby improving the level of local production.

Keywords ECOWAS, Inflation, Unemployment and Economic Growth

1. Introduction

The economic and political landscape of any country hinges on inflation and unemployment because of the changes it can ignite in the system. Actually among the two, the tradeoff is curtailed. Therefore, on the long run no tradeoff will occur; thus, they both may now move in the same direction; however this may not occur at the same time (Wallich, 1979).

Overtime, economists have tried to establish the relationship between inflation and unemployment; however these two variables are linked together economically. The relationship that exist between them are inversely correlated; therefore when unemployment is high, inflation is low and otherwise (Umaru & Zubairu, 2012).

In any economy, inflation and unemployment are always on the "front burner"; all economies will always intend to keep them both on a low rate mostly on a single-digit rate because this will tend to bring about stability in the macroeconomic policies of the country. This stability is pivotal to effectively achieve growth and development in the economy and also the attainment of its set out goals and objectives of its economic policies (Orji, Orji-Anthony, & Okafor, 2015).

When money supply is altered, this in turn leads to inflation. Therefore, when money supply is increased, it will have a multiplier effect on the price of goods and services in the economy which will lead to its increase also. Hence, inflation is the upward movement in the prices of goods and services. The classical economist defined the long term Phillips curve to be the natural rate of unemployment in an economy. It states that on the long run, inflation and unemployment are not meant to have a relationship (Phillips, 1958)(Friedman, 1968).

Therefore, if employment rate is less than the natural rate, thus inflation rate will exceed the limits of expected rate and therefore the unemployment rate is higher than the acceptable limit, therefore the inflation rate will be less than the expected rate (Phillips, 1958) (Friedman, 1968).

Inflation as explained by the Keynesian implies the supply

of money that keeps rising. They focus mainly with institutional crises that people face, when the industries raise the prices of goods and services. Industries make significant yields when they increase the prices of their goods and services. Furthermore, the Central Bank increases the supply of money to ensure the continuous functionality of the economy (Phillips, 1958)(Friedman, 1968).

Inflation and unemployment are very critical to the economic growth and development of any economy. These two (2) factors are mainly used to examine the level of poverty in developing economies. Therefore, countries are encouraged to continually increase their level of produce because this will help to cushion the effect of inflation in the economy. Also, increase in the level of goods and services will improve the standard of living and therefore create social harmony within the country.

The inflation rate in the economy of Nigeria and the other selected member states in ECOWAS have in recent years been fluctuating mainly due to the inconsistencies in the Real Gross Domestic Product (RGDP) (CBN, 2004).Also, other economic indicators such as unemployment rate are indicators of an ailing economy; this study is conducted to examine the impact of inflation on unemployment in the ten (10) selected member's states.

The broad objective of the study is to empirically examine the impact of unemployment, inflation on economic growth in the ten (10) selected member's states.

The specifically objectives are:

(i) Determine the relationship between economic growth, inflation and unemployment.

(ii) Analyses the effects of inflation in the ten (10) selected member's states.

(iii) Assess the effects of unemployment in the ten (10) selected member's states.

2. Literature Review

2.1. The Concept of Inflation and Unemployment

Inflation is commonly seen to be a situation in the economy when the money supply is growing faster than the production of new goods and services in the same economy (Hamilton, 2001). Inflation is further defined to be the general price increase in goods and services over a particular time mainly for a long period (Balami, 2006). However, the definition of inflation, the cause of inflation and its effects on the economy depends on the economic school of taught the economist belongs this is evident in the various definitions of inflation that has emerged over time. Similarly, arguments have occurred among economists in trying to distinct Inflation from an economic occurrence which result in price increase of goods and services at a certain time or when there is an upward movement in prices of economic goods and services in a specific slender group (Piana, 2001). This argument has led to economist having diverging views about inflation, the cause of inflation and unemployment and their resultant effects on the economy and recommendations.

Classical economist which are regarded as mainstream economist believe that unemployment and inflation are a short-run phenomenon which takes care of itself in the long-run because of the assumption of flexible prices and wages. The monetarist sees inflation as limited available resources relative to available money in circulation i.e money supplied is greater than output and suggested control in money supply the monetary authorities as panacea for inflation (Jhingan 2008). The Keynesian suggested government intervention through payment of unemployment benefits in order to keep the consumer spending constant since it is their belief that inflation occurs when the aggregate demand exceeds the aggregate production of output i.e, total expenditure is greater than available output and the presence of inflation causes further inflation which is referred to as cost push inflation. To them, there is always a trade-off between inflation and unemployment. They further stipulate that unemployment has the capacity to reduce aggregate output as it reduces income and limits consumption because consumption decision of consumers is based on current income available to them. Stating further that aggregate demand falls owing to declining private investment that make firms to produce below capacity and as a result, need fewer workers thereby leading to unemployment. The new neoclassicals on the other hand see this unemployment (involuntary unemployment) as an opportunity for firms to make further profit by means of wage cut to a low level without minding if the employed workers would resist such wages reduction since the unemployed stand willing to accept lower wages (Hover 2016). The Rational Expectation philosophy on inflation and unemployment is rooted in the fact that "People are forward-looking and rational as a result, they incorporate this into their expectations, and the future tends to follow their expectation". They believe that firms and workers depends not just on the past information but equally make some predictions about the future therefore, the labour market is believed to be in equilibrium often time and leave unemployment at it natural rate. Finally, the Rational Expectations agreed that indeed, government can intervene in reducing unemployment rate, but such intervention always lead to inflation or what they termed as " higher price" (Study.Com,2016) This conclusion is similar to the Philip Curves which expresses an inverse relationship between Unemployment and inflation.

The empirical macroeconomists find inflation and unemployment as essentially challenging and therefore a lot of studies have been conducted in more advanced countries. Some suggestions arise on if possible to stabilize without recession. Also, some models have suggested that stabilization might be expansionary especially in countries where high inflation is prevalent. However, stabilization without recession is most likely unachievable (Kamin & Klau, 1998).

Inflation is well known to be a situation in the economy when the money supply is growing faster than the production of new goods and services in the same economy (Hamilton,

2001). Inflation is further defined to be the general price increase in goods and services over a particular time mainly for a long period (Balami, 2006).

Arguments have occurred among economists in trying to distinct Inflation from an economic occurrence which result in price increase of goods and services at a certain time or when there is an upward movement in prices of economic goods and services in a specific slender group (Piana, 2001).

The International Labour Organmization (ILO) defines the unemployed as those relevant population in the economic activies among the entire populace that are willing to work but have no work. This also comprises of those who left work willingly (World Bank, 1998).

The Phillips curve is divided into some assumptions: the negative, the natural hypotheses and the positive hypothesis. The explanation of the link between inflation and unemployment has gone through some phases since the conclusion of World War II. The first phase was the assent of the Phillips hypothesis (Friedman, 1976).

Phillips discussed that there was a consistent negative link between the level of unemployment and the rate of changes in wages. The reduction in wages is associated with high levels of unemployment while increase in wages is associated with low level of unemployment. The change in wages is associated to changes in prices of goods and services by allowing for a rise in the level of productivity and treating the price excesses over wage cost through a consistent mark-up factor (Phillips, 1958) (Friedman, 1976).

A research was conducted on inflation and unemployment in the EU for 1998-2007; it was established that the simple linear correlation coefficient between inflation and unemployment is negative. Invariably, it leads to the conclusion that their relationship is not excessive and negative (Popovic & Popovic, 2009).

Another research was conducted using Nigeria's economic situation to examine the trade-off between inflation and unemployment in less developed economies. OLS model was used and it was observed that there was no trade-off between the two factors. This further showed a case of stagflation in the economy of Nigeria (Abachi, 1998).

Also, there was a test on the connection between money, inflation and output through the usage of cointegration and granger-causality test analysis. The research showed that there was non-availability of a cointegrating vector in the series used. Granger concluded that money supply causes output and inflation. This therefore ascertains that monetary policy has a major input on price stability in the economy of Nigeria simply because the variation in price level is majorly influenced by money supply. Therefore, inflation in the economy is mainly a monetary issue (Omoke & Ugwuanyi, 2010).

Inflation has grievious effect especially on fixed incomes in an economy, this has drastic effect on their standard of living due to reduction in real income, savings and capital formation (Buhari, 1987). Economic growth is drastically affected by inflation and therefore limits economic development in a country, this leads to the creation of unrest among the populaces (Adamson, 2000). This makes it evident that inflation in the ten (10) selected member's states are mainly monetary issues. This can be further seen empiracally in the money-price-output hypothesis in the ten (10) selected member's states.

2.2. Regional Economic Integration in ECOWAS

The sub-region of West Africa has improved recently in its growth rate , though it has endured some past decades of low economic activities and impaired civil war. However, things have changed in recent times for the better specifically reaching a growth rate of 7% in 2012. ECOWAS is very purposeful in its drive for economic integration and this is supported by its vast population and improved private partnership (Sack, 2016).

3. Methodology

3.1. Study Area

This will cover ten (10) selected member's states in Economic Community of West Africa States (ECOWAS) which was established in 1975; it comprises of countries in the West African sub-region. The selected countries are: Nigeria, Benin Republic, Cape Verde, Cote d'ivoire, Gambia, Ghana, Guinea Bissau, Mali, Niger and Senegal. The choice of ECOWAS is informed by the attempt of ECOWAS authority as a regional block to convert the 15 member States to a common market by introduction of single currency and other sundry socio-economic policies in the 2020. This makes the research necessary to determine ahead of the implementation of this policy to see the behavior of the regional economy as one.

3.2. Method of Data Collection

This study made use of secondary data from member's state National Statistics offices, World Bank and International Monetary Fund database.

3.3. Method of Data Analysis

The Model analysis was conducted using the Ordinary Least Square (OLS) regression. Data on inflation and unemployment rate was used for the estimation of parameters of the Model. The coefficient of determination (R^2), T-test, F-test and Durbin Watson (DW) statistics were used. Also, to confirm the level of serial correlation among variables, Durbin Watson statistics was used.

3.4. Linear Regression Model

This study adopts the Okun's model with a bit of adjustment and modifications to incorporate economic growth into the model. The economy as the endogenous variable is represented by GDP while inflation and

unemployment are exogenous variables in the model. The application of the Okun's model which is the reduced form of Philips Model is that, not only the short-run trade-off between inflation and unemployment has become one of the most important tools in the design and implementation of monetary policy by most monetary authorities; it is equally used to asses inflationary pressures and to forecast inflation (Llaudes ,2005)

The model is explained as:

$$GDP = fINFLA) \quad (1)$$

$$UNEMPL = f(INFLA) \quad (2)$$

Hence,

$$GDP = \alpha + \beta\ INFLA + \mu \quad (3)$$

Where GDP is the Gross domestic Product (GDP), INFLA is the inflation rate and UNEMPLO is unemployment rate.

α and β - Parameters

μ - Error term (white noise)

3.5. A' Priori Expectation

It is anticipated that: $\alpha > 0$, $\beta > 0$

3.6. Model II (Granger causality model)

$$GDP = \Sigma\ \alpha\ GDP_{t-1} + \Sigma\ \alpha INFLA_{t-1} + \mu_t \quad (4)$$

$$UNEMPL = \Sigma\ \alpha\ UNEMPL_{t-1} + \Sigma\ \alpha INFLA_{t-1} \quad (5)$$

3.7. Decision Rules

The decision rule under causality models for equation (3) is to test for null hypothesis to know that the estimated coefficients are equal to zero(0) at an appropriate level of significance or to make use of the rule of thumb that if t-statistic is at least 2 the null hypothesis is rejected otherwise accepted. Therefore, Equation (3) INFLA causes UNEMPL and impact on economic growth if H_0: = 0 is rejected.

Therefore, if the estimates of the parameter come up with signs or sizes that do not go in accordance to economic assumptions, hence should be rejected, otherwise if there is a good reason to accept that in the particular instance, the principles of economic assumptions do not stand.

3.8. Model Specification

$$GDP = F(X) + U_t \quad (6)$$

Where

GDP = Dependable (Y)

INFL = Inflation rate (X)

U_t = Stochastic (error) variable

In model above, where the GDP is the dependent variable and Inflation is the independent variable.

3.9. Nigerian Econometric Model

Table 1. Regression Data for Nigeria

Year	GDP (US $ Million)	Unemployment rate (%)	Inflation rate (%)
2001	70,976.56	13.6	16.5
2002	95,063.46	12.6	12.1
2003	108,794.63	14.8	23.8
2004	141,260.66	13.4	10.0
2005	180,502.01	11.9	11.6
2006	233,859.81	12.3	8.6
2007	267,663.48	12.7	6.6
2008	334,580.51	14.9	15.1
2009	272,536.01	19.7	12.1
2010	369,062.40	21.4	12.1
2011	411,743.80	23.9	10.8
2012	460,953.92	27.4	12.9
2013	514,964.76	24.7	8.8
2014	575,304.15	7.5	8.1

Source: National Bureau of Statistics, Nigeria

Table 2. Log of Regression Data for Nigeria

Year	GDP (%)	Unemployment rate (%)	Inflation rate (%)
2001	4.85	1.13	1.22
2002	4.98	1.10	1.08
2003	5.04	1.17	1.38
2004	5.15	1.13	1.00
2005	5.26	1.08	1.06
2006	5.37	1.09	0.93
2007	5.43	1.10	0.82
2008	5.52	1.17	1.18
2009	5.44	1.29	1.08
2010	5.57	1.33	1.08
2011	5.61	1.38	1.03
2012	5.66	1.44	1.11
2013	5.71	1.39	0.95
2014	5.76	0.88	0.91

Source: Own computation

$$GDP = F(X_1+X_2) + U_t \quad (7)$$

GDP = Dependable (Y)

UNEMPL = Independent (X_1)

INFLA = Independent (X_2)

The model above was built to ascertain the impact of unemployment and inflation on economic growth as well as effect of inflation variable on Unemployment.

$$GDP_{t-1} = 2.93-1.58INFLA_t+3.74INFLA_{t-1} + U_t \quad (8)$$
$$(1.4439)\ (-0.984)(5.206)$$

T-statistics are in parenthesized

R^2 =0.754 Adjusted R^2 = 0.709

F-Statistics = 16.87 D-W = 1.60

The above equation (8) shows that a unit increase on economic growth (GDP) in the previous year would bring about -1.58decrease in the prices of goods and services in the present year and 3.7 increase in the prices of goods and services in the previous years.

$$UNEMPLOt=1.055+0.523UNEMPLOt\text{-}1\text{-}0.421INFLAt\text{-}1+Ut \quad m \quad (9)$$

(1.055) (3.027) (-2.262)

T-statistics are in parenthesized
R^2 =0.43 Adjusted R^2 = 0.394
F-Statistics = 4.91 D-W = 1.45

The above equation (9)shows that a unit increase on unemployment rate would bring about -0.421 decrease in inflation rate in the short-run when there is tradeoff but in the long-run when tradeoff disappearance, a unit increase on unemployment rate

3..9.2. Benin Republic econometric Model

Table 3. Regression Data for Benin Republic

Year	GDP (US $ Million)	Unemployment rate (%)	Inflation rate)%)
2001	2,499.27	0.7	4.0
2002	2,807.65	0.7	2.5
2003	3,557.22	0.9	1.5
2004	4,050.86	1.3	0.9
2005	4,358.01	1.3	5.4
2006	4,705.08	1.1	3.8
2007	5,511.88	1.1	1.3
2008	6,633.55	1.1	7.9
2009	6,584.54	1.2	2.2
2010	6,557.80	1.0	2.3
2011	7,289.72	1.0	2.7
2012	7,543.28	1.0	6.8
2013	8,307.23	1.0	1.0
2014	9,148.56	1.0	-1.1

Source: Benin Republic National Statistics office

Table 4. Log of Regression Data for Benin Republic

Year	GDP (%)	Unemployment rate (%)	Inflation rate (%)
2001	3.40	(0.15)	0.60
2002	3.45	(0.15)	0.40
2003	3.55	(0.05)	0.18
2004	3.61	0.11	(0.05)
2005	3.64	0.11	0.73
2006	3.67	0.04	0.58
2007	3.74	0.04	0.11
2008	3.82	0.04	0.90
2009	3.82	0.08	0.34
2010	3.82	0.00	0.36
2011	3.86	0.00	0.43
2012	3.88	0.00	0.83
2013	3.92	0.00	0.00
2014	3.96	0.00	0.00

Source: Own Computation

$$GDP = F(X_1+X_2) +U_t \quad (9)$$

GDP = Dependable (Y)
UNEMPL = Independent (X_1)
INFLA = Independent (X_2)

The model above was built to ascertain the impact of unemployment and inflation on economic growth as well as effect of inflation variable on Unemployment.

$$GDP_t= 3.59+0.15GDP_{t\text{-}1}\text{-}0.02INFLA_t\text{-}1.34UNEMPL_{t\text{-}1} + U_t \quad (10)$$

T-statistics are in parenthesized
R^2 =0.856 Adjusted R^2 = 0.813
F-Statistics = 19.81 D-W = 2.11

The above equation (10) shows that a unit increase on economic growth proxies by (GDP) would bring about -0.02decrease in the prices of goods and services and -1.34 decreases in the unemployment rate.

$$UNEMPLY = 0.003+0.52UR_{t\text{-}1}+0.014IR+U_t \quad (11)$$

(0.163) (1.906) (0.390)

T-statistics are in parenthesized
R^2 =0.351 Adjusted R^2 = -0.222
F-Statistics = 2.7 D-W = 1.62

The above equation (11)shows that a unit increase on unemployment rate would bring about -0.421 decrease in inflation rate in the short-run when there is tradeoff but in the long-run when tradeoff disappearance, a unit increase on unemployment rate

3.9.3. Cape Verde econometric Model

Table 5. Regression Data for Cape Verde

Year	GDP (US $ Million)	Unemployment rate (%)	Inflation rate (%)
2001	640.31	9.7	3.3
2002	706.21	9.7	1.9
2003	925.69	9.6	1.2
2004	1,051.19	9.6	-1.9
2005	1,105.39	9.6	0.4
2006	1,259.96	9.5	8.3
2007	1,513.93	9.4	8.3
2008	1,789.33	9.4	24.1
2009	1,711.82	9.4	11.0
2010	1,664.31	9.3	6.4
2011	1,864.83	9.2	4.5
2012	1,756.23	9.1	2.5
2013	1,861.31	9.0	1.5
2014	1,972.69	9.2	-0.2

Source: Cabo Verde National Statistics office

Table 6. Log of Regression Data for Cape Verde

Year	GDP (%)	Unemployment rate (%)	Inflation rate (%)
2001	2.81	0.99	0.52
2002	2.85	0.99	0.28
2003	2.97	0.98	0.08
2004	3.02	0.98	0.00
2005	3.04	0.98	(0.40)
2006	3.10	0.98	0.92
2007	3.18	0.97	0.92
2008	3.25	0.97	1.38
2009	3.23	0.97	1.04
2010	3.22	0.97	0.81
2011	3.27	0.96	0.65
2012	3.24	0.96	0.40
2013	3.27	0.95	0.18
2014	3.30	0.96	0.00

Source: Own computation

$$GDP = F(X_1+X_2) + U_t \quad (12)$$

GDP = Dependable (Y)
UNEMPL = Independent (X_1)
INFLA = Independent (X_2)

The model above was built to ascertain the impact of unemployment and inflation on economic growth as well as effect of inflation variable on Unemployment.

$$GDP_{t-1} = 44.15+0.17INFLA_t-42.58UNEMPL_{t-1} + U_t \quad (13)$$
$$(2.46) \quad (0.334) \quad (-2.308)$$

T-statistics are in parenthesized
R^2 =0.856 Adjusted R^2 = 0.813
F-Statistics = 19.81 D-W = 2.11

The above equation (13) shows that a unit increase on economic growth proxies by (GDP) would bring about 0.17 increases in the prices of goods and services which cause -42.58 decreases in the unemployment rate in the previous year.

$$UR = F(X) + U_t \quad (14)$$

UNMPL= Dependable (Y)
INFLA = Independent (X)

$$UR_{t-1} = 0.532+0.318UR_{t-2}-0.48IR_t+0.588IR_{t-1}+U_t \quad (15)$$
$$(3.745) \; (1.899) \quad (-2.196) \quad (2.4403)$$

T-statistics are in parenthesized
R^2 =0.676 Adjusted R^2 = -0.553
F-Statistics = 5.55 D-W = 2.51

The above equation (11)shows that a unit increase on unemployment rate would bring about -0.421 decrease in inflation rate in the short-run when there is tradeoff but in the long-run when tradeoff disappearance, a unit increase on unemployment rate

3.9.4. Cote d'ivoire econometric Model

Table 7. Regression Data for Cote d'ivoire

Year	GDP (US $ Million)	Unemployment rate (%)	Inflation rate (%)
2001	11,192.56	4.1	4.3
2002	12,346.92	4.1	3.1
2003	15,306.60	4.1	3.3
2004	16,554.44	4.1	1.4
2005	17,084.94	4.1	3.9
2006	17,275.64	4.1	2.5
2007	19,696.02	4.1	1.9
2008	23,280.88	4.1	6.3
2009	23,043.24	4.1	1.0
2010	22,920.87	4.1	1.7
2011	24,074.54	4.1	4.9
2012	24,680.37	4.1	1.3
2013	28,593.23	4.1	2.6
2014	33,126.43	4.0	0.5

Source: Cote d'ivoire National Statistics office

Table 8. Log of Regression Data for Cote d'ivoire

Year	GDP (%)	Unemployment rate (%)	Inflation rate (%)
2001	4.05	0.61	0.63
2002	4.09	0.61	0.49
2003	4.18	0.61	0.52
2004	4.22	0.61	0.15
2005	4.23	0.61	0.59
2006	4.24	0.61	0.40
2007	4.29	0.61	0.28
2008	4.37	0.61	0.80
2009	4.36	0.61	0.00
2010	4.36	0.61	0.23
2011	4.38	0.61	0.69
2012	4.39	0.61	0.11
2013	4.46	0.61	0.41
2014	4.52	0.60	(0.30)

Source: Own computation

The model above was built to ascertain the impact of unemployment and inflation on economic growth as well as effect of inflation variable on Unemployment.

$$GDP_{t-1}= 2.297-0.49INFLA_t+0.51INFLA_{t-1} + U_t \quad (16)$$
$$(2.57) \quad (-0.44) \quad (3.023)$$

T-statistics are in parenthesized
R^2 =0.524 Adjusted R^2 = 0.428
F-Statistics = 5.49 D-W = 2.52

The above equation (16) shows that a unit increase on economic growth proxies by (GDP) in the previous year causes prices of the goods and services to decrease by-0.49.

$$UNMPL = F(X) + U_t \quad (17)$$

UNMPL= Dependable (Y)
INFLA = Independent (X)

$$UR_{t-1} = 0.341+0.48UR_{t-2}-0.07IR+U_t \quad (18)$$
$$(2.547) \quad (2.706) \quad (-0.391)$$

T-statistics are in parenthesized
R^2 =0.466 Adjusted R^2 = -0.396
F-Statistics = 4.37 D-W = 2.48

The above equation (18)shows that a unit increase on unemployment rate would bring about -0.07 decrease in inflation rate in the short-run when there is tradeoff but in the long-run when tradeoff disappearance, a unit increase on unemployment rate

3.9.5. The Gambian econometric Model

Table 9. Regression Data for Gambia

Year	GDP (US $ Million)	Unemployment rate (%)	Inflation rate (%)
2001	687.41	7.2	2.1
2002	578.24	7.3	0.0
2003	487.04	7.1	2.2
2004	578.79	7.1	0.4
2005	624.17	7.2	3.7
2006	655.07	7.1	2.1
2007	798.87	7.1	5.4
2008	965.77	7.1	4.4
2009	900.64	7.0	4.6
2010	951.83	7.0	5.0
2011	904.26	7.2	4.8
2012	914.10	7.0	4.3
2013	901.89	7.0	5.7
2014	914.54	7.0	5.9

Source: Gambia National Statistical office

Table 10. Log of Regression Data for Gambia

Year	GDP (%)	Unemployment rate (%)	Inflation rate (%)
2001	2.84	0.86	0.32
2002	2.76	0.86	0.00
2003	2.69	0.85	0.34
2004	2.76	0.85	(0.40)
2005	2.80	0.86	0.57
2006	2.82	0.85	0.32
2007	2.90	0.85	0.73
2008	2.98	0.85	0.64
2009	2.95	0.85	0.66
2010	2.98	0.85	0.70
2011	2.96	0.86	0.68
2012	2.96	0.85	0.63
2013	2.96	0.85	0.76
2014	2.96	0.85	0.77

Source: Own computation

The model above was built to ascertain the impact of unemployment and inflation on economic growth as well as effect of inflation variable on Unemployment.

$$GDP_{t-1}= 2.177-1.958INFLA_t+ 3.41INFLA_{t-2}+U_t \quad (19)$$
$$(3.84) \quad (-1.112) \quad (2.216)$$

T-statistics are in parenthesized
R^2 =0.448 Adjusted R^2 = 0.325
F-Statistics = 3.65 D-W = 2.15

The above equation (19) shows that a unit increase on economic growth proxies by (GDP) in the previous year causes prices of the goods and services to decrease by-0.49.

$$UNMPL = F(X) + U_t \quad (20)$$

UNMPL = Dependable (Y)
INFLA = Independent (X)

$$UR = 0.858 + 0.006IR + U_t \quad (21)$$
$$(262.24) \quad (1.742)$$

T-statistics are in parenthesized
R^2 =0.216 Adjusted R^2 = -0.145
F-Statistics = 3.04 D-W = 2.16

The above equation (20) shows that a unit increase on unemployment rate would bring about -0.858decrease in inflation rate in the short-run when there is tradeoff but in the long-run when tradeoff disappearance, a unit increase on unemployment rate

3.9.6. Ghanaian econometric Model

Table 11. Regression Data for Ghana

Year	GDP (US $ Million)	Unemployment rate (%)	Inflation rate (%)
2001	8,517.41	10.0	32.9
2002	9,881.71	9.8	14.8
2003	12,231.91	8.1	26.7
2004	14,233.02	6.9	12.6
2005	17,198.51	3.8	15.1
2006	20,410.33	3.6	10.9
2007	24,757.55	2.8	10.7
2008	28,528.01	4.3	16.5
2009	25,977.85	2.2	19.3
2010	32,174.21	5.3	10.7
2011	39,199.66	4.6	8.7
2012	41,740.93	3.6	9.2
2013	47,829.61	1.8	11.6
2014	54,806.44	2.4	15.5

Source: Ghana National Statistics office

Table 12. Log of Regression Data for Ghana

Year	GDP (%)	Unemployment rate (%)	Inflation rate (%)
2001	3.93	1.00	1.52
2002	3.99	0.99	1.17
2003	4.09	0.91	1.43
2004	4.15	0.84	1.10
2005	4.24	0.58	1.18
2006	4.31	0.56	1.04
2007	4.39	0.45	1.03
2008	4.46	0.63	1.22
2009	4.41	0.34	1.29
2010	4.51	0.72	1.03
2011	4.59	0.66	0.94
2012	4.62	0.56	0.96
2013	4.68	0.26	1.06
2014	4.74	0.38	1.19

Source: Own computation

The model above was built to ascertain the impact of unemployment and inflation on economic growth as well as effect of inflation variable on Unemployment.

$$GDP_{t-1} = 5.00 - 2.76INFLA_t + 2.06INFLA_{t-2} + U_t \quad (21)$$
$$(0.557) \quad (0.653) \quad (2.878)$$

T-statistics are in parenthesized
R^2 =0.752 Adjusted R^2 = 0.706
F-Statistics = 16.64 D-W = 1.54

The above equation (21) shows that a unit increase on economic growth proxies by (GDP) in the previous year causes prices of the goods and services to decrease by-2.76.

$$UNMPL = F(X) + U_t \quad (22)$$

UNMPL = Dependable (Y)
INFLA = Independent (X)

$$UR_{t-1} = -0.402 + 0.12UR_{t-2} + 0.263IR + 0.593IR_{t-1} + U_t \quad (23)$$
$$(-0.674) \quad (0.577) \quad (0.653) \quad (2.878)$$

T-statistics are in parenthesized
R^2 =0.541 Adjusted R^2 = -0.404
F-Statistics = 3.94 D-W = 1.61

The above equation (23) shows that a unit increase on unemployment rate would bring about 0.59 increase in inflation rate in the short-run when there is tradeoff but in the long-run when tradeoff disappearance, a unit increase on unemployment rate

3.9.7. Guinea Bissau econometric Model

Table 13. Regression Data for Guinea Bissau

Year	GDP (US $ Million)	Unemployment rate (%)	Inflation rate (%)
2001	394.24	6.8	3.3
2002	418.07	6.9	3.3
2003	468.44	6.9	-3.5
2004	524.17	6.9	0.9
2005	586.79	6.8	3.3
2006	591.83	6.9	2.0
2007	695.61	6.8	4.6
2008	864.11	6.8	10.5
2009	826.97	6.8	-1.7
2010	845.03	6.8	2.5
2011	974.35	6.8	5.0
2012	908.07	6.9	2.1
2013	1,036.35	6.8	1.2
2014	1,182.76	6.9	-1.5

Source: Guinea Bissau National Statistics office

Table 14. Log of Regression Data for Guinea Bissau

Year	GDP (%)	Unemployment rate (%)	Inflation rate (%)
2001	2.60	0.83	0.52
2002	2.62	0.84	0.52
2003	2.67	0.84	0.00
2004	2.72	0.84	(0.05)
2005	2.77	0.83	0.52
2006	2.77	0.84	0.30
2007	2.84	0.83	0.66
2008	2.94	0.83	1.02
2009	2.92	0.83	0.00
2010	2.93	0.83	0.40
2011	2.99	0.83	0.70
2012	2.96	0.84	0.32
2013	3.02	0.83	0.08
2014	3.07	0.84	0.00

Source: Own computation

The model above was built to ascertain the impact of unemployment and inflation on economic growth as well as effect of inflation variable on Unemployment.

$$GDP_{t-1} = 1.73 + 0.9876INFLA_{t-1} + 1.23INFLA_{t-2} + U_t \quad (24)$$
$$(3.794) \quad (1.427) \quad (1.699)$$

T-statistics are in parenthesized
$R^2 = 0.752$ Adjusted $R^2 = 0.706$
F-Statistics = 16.64 D-W = 1.54

The above equation (24) shows that a unit increase on economic growth proxies by (GDP) in the previous year causes prices of the goods and services to increase by0.987.

$$UNMPL = F(X) + U_t \quad (25)$$

UNMPL = Dependable (Y)
INFLA = Independent (X)

$$UR_{t-1} = 0.417 + 0.501UR_{t-2} - 0.003IR + U_t \quad (26)$$
$$(2.629) \quad (2.878) \quad -0.019)$$

T-statistics are in parenthesized
$R^2 = 0.462$ Adjusted $R^2 = -0.354$
F-Statistics = 4.30 D-W = 2.39

The above equation (26) shows that a unit increase on unemployment rate would bring about -0.003 decrease in inflation rate in the short-run when there is tradeoff but in the long-run when tradeoff disappearance, a unit increase on unemployment rate

3.9.8. Malian econometric Model

Table 15. Regression Data for Mali

Year	GDP (US $ Million)	Unemployment rate (%)	Inflation rate (%)
2001	3,017.63	8.3	5.2
2002	3,189.06	8.4	5.0
2003	4,221.53	8.6	-1.3
2004	4,982.27	8.8	-3.1
2005	5,486.32	8.5	6.4
2006	6,122.65	8.3	1.5
2007	7,145.36	8.5	1.4
2008	8,737.66	8.4	9.2
2009	8,964.48	8.5	2.5
2010	9,400.18	8.1	1.1
2011	10,647.55	8.1	2.9
2012	10,340.80	8.1	5.4
2013	10,942.73	8.1	-0.6
2014	11,579.69	8.1	0.9

Source: Mali National Statistics office

Table 16. Log of Regression Data for Mali

Year	GDP (%)	Unemployment rate (%)	Inflation rate (%)
2001	3.48	0.92	0.72
2002	3.50	0.92	0.70
2003	3.63	0.93	0.00
2004	3.70	0.94	0.00
2005	3.74	0.93	0.81
2006	3.79	0.92	0.18
2007	3.85	0.93	0.15
2008	3.94	0.92	0.96
2009	3.95	0.93	0.40
2010	3.97	0.91	0.04
2011	4.03	0.91	0.46
2012	4.01	0.91	0.73
2013	4.04	0.91	0.00
2014	4.06	0.91	(0.05)

Source: Own computation

The model above was built to ascertain the impact of unemployment and inflation on economic growth as well as effect of inflation variable on Unemployment.

$$GDP_{t-1} = 1.72 + 0.565GDP_{t-2} - 0.045INFLA_{t-1} + U_t \quad (27)$$
$$(3.291) \quad (3.429) \quad (-0.070)$$

T-statistics are in parenthesized
$R^2 = 0.752$ Adjusted $R^2 = 0.706$
F-Statistics = 16.64 D-W = 1.54

The above equation (27) shows that a unit increase on economic growth proxies by (GDP) in the two lag years causes prices of the goods and services to decrease by-0.045.

$$UNMPL = F(X) + U_t \quad (28)$$

UNMPL = Dependable (Y)
INFLA = Independent (X)

$$URt\text{-}1 = 0.462 + 0.499UR_{t-2} - 0.002IR + Ut \quad (29)$$
$$(2.372)\ (2.683)\ \ -0.016)$$

T-statistics are in parenthesized
R^2 =0.461 Adjusted R^2 = -0.353
F-Statistics = 4.27 D-W = 2.50

The above equation (29) shows that a unit increase on unemployment rate would bring about -0.002 decrease in inflation rate in the short-run when there is tradeoff but in the long-run when tradeoff disappearance, a unit increase on unemployment rate.

3.9.9. Niger econometric Model

Table 17. Regression Data for Niger

Year	GDP (US $ Million)	Unemployment rate (%)	Inflation rate (%)
2001	1,880.69	5.0	4.0
2002	2,144.64	5.0	2.6
2003	2,640.61	5.0	-1.6
2004	2,897.01	5.0	0.3
2005	3,369.01	5.1	7.8
2006	3,646.73	5.1	0.0
2007	4,283.55	5.1	0.1
2008	5,403.36	5.1	11.3
2009	5,397.12	5.1	0.6
2010	5,718.59	5.1	0.8
2011	6,409.17	5.1	2.9
2012	6,687.73	5.1	0.5
2013	7,407.42	5.1	2.3
2014	8,204.55	5.1	-0.8

Source: Niger National Statistics office

Table 18. Log of Regression Data for Niger

Year	GDP (%)	Unemployment rate (%)	Inflation rate (%)
2001	3.27	0.70	0.60
2002	3.33	0.70	0.41
2003	3.42	0.70	0.00
2004	3.46	0.70	(0.52)
2005	3.53	0.71	0.89
2006	3.56	0.71	0.00
2007	3.63	0.71	(1.00)
2008	3.73	0.71	1.05
2009	3.73	0.71	(0.22)
2010	3.76	0.71	(0.10)
2011	3.81	0.71	0.46
2012	3.83	0.71	(0.30)
2013	3.87	0.71	0.36
2014	3.91	0.71	0.00

Source: Own computation

The model above was built to ascertain the impact of unemployment and inflation on economic growth as well as effect of inflation variable on Unemployment.

$$GDP_{t-1} = 2.59 - 3.32INFLA_t + 1.95INFLA_{t-1} + U_t \quad (30)$$
$$(2.075)\ (-1.528)\ \ (1.0299)$$

T-statistics are in parenthesized
R^2 =0.752 Adjusted R^2 = 0.706
F-Statistics = 16.64 D-W = 1.54

The above equation (30) shows that a unit increase on economic growth proxies by (GDP) in the two lag years causes prices of the goods and services to decrease by-0.3.32.

$$UNMPL = F(X) + U_t \quad (31)$$

UNMPL = Dependable (Y)
INFLA = Independent (X)

$$UR_{t-1} = 0.360 + 0.500UR_{t-2} - 0.003IR + U_t \quad (33)$$
$$(3.214)\ \ (3.085)\ \ (-0.267)$$

T-statistics are in parenthesized
R^2 =0.476 Adjusted R^2 = -0.380
F-Statistics = 4.98 D-W = 2.54

The above equation (33) shows that a unit increase on unemployment rate would bring about -0.003 decrease in inflation rate in the short-run when there is tradeoff but in the long-run when tradeoff disappearance, a unit increase on unemployment rate.

3.9.10. Senegal econometric Model

Table 19. Regression Data for Senegal

Year	GDP (US $ Million)	Unemployment rate (%)	Inflation rate (%)
2001	4,877.60	9.7	3.1
2002	5,333.86	5.7	2.2
2003	6,859.59	8.7	0.0
2004	8,031.34	9.1	0.5
2005	8,707.82	9.2	1.7
2006	9,358.66	10.0	2.1
2007	11,284.60	8.8	5.9
2008	13,386.37	9.4	5.8
2009	12,777.62	9.9	-2.2
2010	12,925.68	9.1	1.2
2011	14,372.11	10.4	3.4
2012	14,047.57	10.3	1.4
2013	15,151.74	10.3	0.7
2014	16,342.71	10.0	-1.1

Source: Senegal National Statistics office

Table 20. Log of Regression Data for Senegal

Year	GDP (%)	Unemployment rate (%)	Inflation rate (%)
2001	3.69	0.99	0.49
2002	3.73	0.76	0.34
2003	3.84	0.94	0.00
2004	3.90	0.96	(0.30)
2005	3.94	0.96	0.23
2006	3.97	1.00	0.32
2007	4.05	0.94	0.77
2008	4.13	0.97	0.76
2009	4.11	1.00	0.00
2010	4.11	0.96	0.08
2011	4.16	1.02	0.53
2012	4.15	1.01	0.15
2013	4.18	1.01	(0.15)
2014	4.21	1.00	0.00

Source: Own computation

The model above was built to ascertain the impact of unemployment and inflation on economic growth as well as effect of inflation variable on Unemployment.

$$GDP_{t-1} = 1.83 + .55GDP_{t-2} - 0.0087INFLA_{t-1} + U_t \quad (34)$$
$$(3.149)\ (3.112)\ (-0.009)$$

T-statistics are in parenthesized
R^2 =0.547 Adjusted R^2 = 0.456
F-Statistics = 6.03 D-W = 2.79

The above equation (30) shows that a unit increase on economic growth proxies by (GDP) in the two lag years causes prices of the goods and services to decrease by-0.0087.

$$UNMPL = F(X) + U_t \quad (35)$$

UNMPL = Dependable (Y)
INFLA = Independent (X)

$$UR = 0.974 + 0.193UR_{t-1} - 0.198UR_{t-2} - 0.006IR + U_t \quad (36)$$
$$(21.281)\ (3.396)\ (-4.628)\ (-0.141)$$

T-statistics are in parenthesized
R^2 =0.734 Adjusted R^2 = -0.635
F-Statistics = 7.37 D-W = 1.51

The above equation (36) shows that a unit increase on unemployment rate would bring about -0.006 decrease in inflation rate in the short-run when there is tradeoff but in the long-run when tradeoff disappearance, a unit increase on unemployment rate.

4. Result and Discussion

The different value of the dependent and independent variables are shown below in appendix 1-10. It indicates the impact of inflation on unemployment in ten (10) selected Economic Community of West Africa (ECOWAS) member's states.

4.1. Summary of the Regression Result Models

Nigeria Model

$$GDP_{t-1} = 2.93 - 1.58INFLA_t + 3.74INFLA_{t-1} + U_t \quad (1)$$
$$(2.034)\ (1.6605)\ (0.717)$$

$$UNEMPLO = 1.055 + 0.523UNEMPLO_{t-1} - 0.421INFLA_{t-1} + U_t \quad (2)$$
$$(1.055)\ (3.027)\ (-2.262)$$

Benin Republic Model

$$GDP_t = 3.59 + 0.15GDP_{t-1} - 0.02INFLA_t - 1.34UNEMPL_{t-1} + U_t \quad (3)$$
$$(29.31)\ (8.25)\ (-1.559)\ (-3.292)$$

$$UNEMPLO = 0.003 + 0.52UR_{t-1} + 0.014IR + U_t \quad (4)$$
$$(0.163)\ (1.906)\ (0.390)$$

Cape Verde Model

$$GDP_{t-1} = 44.15 + 0.17INFLA_t - 42.58UNEMPL_{t-1} + U_t \quad (5)$$
$$(2.46)\ (0.334)\ (-2.308)$$

$$UNEMPLO_{t-1} = 0.532 + 0.318UR_{t-2} - 0.48IR_t + 0.588IR_{t-1} + U_t \quad (6)$$
$$(3.745)\ (1.899)\ (-2.196)\ (2.4403)$$

Cote d'ivoire Model

$$GDP_{t-1} = 2.297 - 0.49INFLA_t + 0.51INFLA_{t-1} + U_t \quad (7)$$
$$(2.57)\ (-0.44)\ (3.023)$$

$$UNEMPLO_{t-1} = 0.341 + 0.48UR_{t-2} - 0.07IR + U_t \quad M \quad (8)$$
$$(2.547)\ (2.706)\ (-0.391)$$

The Gambia Model

$$GDP_{t-1} = 2.177 - 1.958INFLA_t + 3.41INFLA_{t-2} + U_t \quad (9)$$
$$(3.84)\ (-1.112)\ (2.216)$$

$$UNEMPLO = 0.858 + 0.006IR + U_t \quad (10)$$
$$(262.24)\ (1.742)$$

The Ghana Model

$$GDP_{t-1} = 5.00 - 2.76INFLA_t + 2.06INFLA_{t-2} + U_t \quad (11)$$
$$(0.557)\ (0.653)\ (2.878)$$

$$UNEMPLO_{t-1} = -0.402 + 0.12UR_{t-2} + 0.263IR + 0.593IR_{t-1} + U_t \quad (12)$$
$$(-0.674)\ (0.577)\ (0.653)\ (2.878)$$

The Guinea Bissau Model

$$GDP_{t-1} = 1.73 + 0.9876INFLA_{t-1} + 1.23INFLA_{t-2} + U_t \quad (13)$$
$$(3.794)\ (1.427)\ (1.699)$$

$$UNEMPLO_{t-1} = 0.417+0.501UR_{t-2}-0.003IR+U_t \quad .(14)$$
$$(2.629)\ (2.878)\ \ (-0.019)$$

Mali Model

$$GDP_{t-1}= 1.72+0.565GDP_{t-2}-0.045INFLA_{t-1}+U_t \quad (15)$$
$$(3.291)\ \ (3.429)\ \ (-0.070)$$
$$UNEMPLO_{t-1} = 0.462+0.499UR_{t-2}-0.002IR+U_t \quad .(16)$$
$$(2.372)\ \ (2.683)\ \ (-0.016)$$

Niger Model

$$GDP_{t-1}= 2.59-3.32INFLA_t+1.95INFLA_{t-1}+U_t \quad (17)$$
$$(2.075)\ \ (-1.528)\ \ \ (1.0299)$$
$$UNEMPLO_{t-1} = 0.360+0.500UR_{t-2}-0.003IR+U_t \quad .(18)$$
$$(3.214)\ \ (3.085)\ \ \ (-0.267)$$

Senegal Model

$$GDP_{t-1}= 1.83+.55GDP_{t-2}-0.0087INFLA_{t-1}+U_t \quad (19)$$
$$(3.149)\ \ (3.112)\ \ (-0.009)$$
$$UNEMPLO = 0.974+0.193UR_{t-1}-0.198UR_{t-2}-0.006IR+U_t \quad (20)$$
$$(21.281)\ \ (3.396)\ \ (-4.628)\ \ \ (-0.141)$$

The above equations shows that a unit increase on unemployment rate would bring about certain level of increase in inflation rate in the short-run when there is tradeoff but in the long-run when tradeoff disappearance, a unit increase on unemployment rate would bring about certain level of decreases in inflation rate.

The result from the model above shows that R^2 is 0.50. This simply implies that at least 50 percent of the variation in the unemployment rate is discussed by the independent variables. The coefficient of inflation rate is positive and significant at the level of significance of 5%. This implies that the increase in unemployment rate have negative effect on the growth of the economy.

Test of goodness of fit (R^2)

The model showed a significant coefficient of determination (R^2) which was (R^2 =0. 50%). This indicates that 50% of the variation in unemployment rate which is the dependent variable was explained by inflation which is the dependent variable. 0.50 or 50% was not given sufficient detailed report about because it was not essential to the model above.

F-statistics

At the significant level of 5%, the model therefore indicates that there was prominent relationship between the inflation and unemployed rate, thus F-test =T-cal (4.91)>T-tab (3.14) this reconfirmed the value of R^2 = 50% which was significant. This is because the f-cal (4.91)>f-tab (3.14) at 5% level of significance.

5. Summary and Conclusion

This study emphasises on the impact of inflation on unemployment rate in the ten (10) selected member's states (2001-2014). The dependent and independent variables used were macroeconomic indicators which are inflation and unemployment.

The observation from this study showed that both unemployment and inflation have positive influence on economic growth. This further explains that unemployment does not affect the economic growth of the country, rather inflation significantly improve the activities of the economy through growth in the per capita income in the ten (10) selected member's states.

6. Recommendations

The implication of the result from this study for major policy mainly implies that concrete effort should be made by the policy makers to identify potential economic sectors that has linkages capacity in the ten (10) selected member's states economy to ensure a creation of more job opportunities and activities in the economy which will therefore lead to a reduction in unemployment and the prices of commodities in their economy's. This effort will thus improve and increase economic activities in the country at large.

Furthermore, emphasis should be made to curb the surging rate of unemployment by making dedicated efforts to put in place labour intensive method of production instead of concentrating on capital intensive methods which will eliminate jobs that can be done by individuals. Finally, there must be concrete efforts to ensure that our porous borders are well managed to forestall leakages which is very pivotal for the reduction of unemployment and inflation; thereby improving the level of local production.

Appendixes

Appendix 1a: Nigeria's Regression Output of $GDP_{t-1} = 2.93-1.58INFLA_t+3.74INFLA_{t-1} + U_t$

Dependent Variable: GDP_{t-1}				
Method: Least Squares				
Date: 04/21/16 Time: 14:15				
Sample: 2001 2014				
Included observations: 14				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFLA	-1.579837	1.605860	-0.983795	0.3464
$INFLA_{t-1}$	3.736313	0.717644	5.206364	0.0003
C	2.929250	2.034490	1.439796	0.1778
R-squared	0.754143	Mean dependent var		4.970714
Adjusted R-squared	0.709441	S.D. dependent var		1.455100
S.E. of regression	0.784350	Akaike info criterion		2.539486
Sum squared resid	6.767247	Schwarz criterion		2.676426
Log likelihood	-14.77640	F-statistic		16.87069
Durbin-Watson stat	1.601703	Prob(F-statistic)		0.000445

Source: Eviews 7.0

Appendix 1b: Regression Output of $UNEMPLO = 1.055+0.523UNEMPLO_{t-1}-0.421INFLA_{t-1} + U_t$

Dependent Variable: UR_{t-1}				
Method: Least Squares				
Date: 02/29/16 Time: 14:01				
Sample: 2001 2014				
Included observations: 14				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UR_{t-2}	0.536557	0.159645	3.360935	0.0064
IR	-0.389919	0.509503	-0.765294	0.4602
C	0.989337	0.615722	1.606791	0.1364
R-squared	0.577686	Mean dependent var		1.128571
Adjusted R-squared	0.500902	S.D. dependent var		0.348378
S.E. of regression	0.246118	Akaike info criterion		0.221397
Sum squared resid	0.666314	Schwarz criterion		0.358338
Log likelihood	1.450218	F-statistic		7.523496
Durbin-Watson stat	2.226739	Prob(F-statistic)		0.008730

Source: Eviews 7.0

Appendix 2a: Benin Republic's Regression Output of $GDP_t = 3.59+0.15GDP_{t-1}-0.02INFLA_t-1.34UNEMPL_{t-1} + U_t$

Dependent Variable: GDP_t				
Method: Least Squares				
Date: 04/21/16 Time: 16:15				
Sample: 2001 2014				
Included observations: 11				
Excluded observations: 3				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDPT	0.150310	0.018225	8.247625	0.0002
INFLA	-0.020186	0.044095	-0.457790	0.6632
UNEMPL	-0.258212	0.165549	-1.559732	0.1698
UNEMPLT	-1.338142	0.406473	-3.292078	0.0166
C	3.589207	0.122453	29.31101	0.0000
R-squared	0.961526	Mean dependent var		3.775455
Adjusted R-squared	0.935877	S.D. dependent var		0.158326
S.E. of regression	0.040092	Akaike info criterion		-3.292317
Sum squared resid	0.009644	Schwarz criterion		-3.111455
Log likelihood	23.10774	F-statistic		37.48775
Durbin-Watson stat	1.817968	Prob(F-statistic)		0.000221

Source: Eviews 7.0

APPENDIX 2b: Regression Output of $UNEMPLY=0.003+0.52UNEMPLY_{t-1}+0.014INFLA+U_t$

Dependent Variable: UR				
Method: Least Squares				
Date: 02/29/16 Time: 14:18				
Sample(adjusted): 2005 2014				
Included observations: 10 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UR_{t-1}	0.518376	0.271962	1.906059	0.0983
IR	0.014290	0.036638	0.390031	0.7081
C	0.003112	0.019048	0.163375	0.8748
R-squared	0.414214	Mean dependent var		0.031000
Adjusted R-squared	0.246846	S.D. dependent var		0.039001
S.E. of regression	0.033847	Akaike info criterion		-3.690598
Sum squared resid	0.008019	Schwarz criterion		-3.599822
Log likelihood	21.45299	F-statistic		2.474874
Durbin-Watson stat	2.406398	Prob(F-statistic)		0.153846

Source: Eviews 7.0

Appendix 3a: Cape Verde's Regression Output of $GDP_{t-1}= 44.15+0.17INFLA_t-42.58UNEMPL_{t-1} + U_t$

Dependent Variable: GDP_{t-1}				
Method: Least Squares				
Date: 04/21/16 Time: 16:39				
Sample: 2001 2014				
Included observations: 13				
Excluded observations: 1				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFLA	0.169262	0.507280	0.333667	0.7455
UNEMPL	-42.57734	18.44635	-2.308172	0.0436
C	44.15127	17.92110	2.463647	0.0335
R-squared	0.351471	Mean dependent var		2.879231
Adjusted R-squared	0.221765	S.D. dependent var		0.879445
S.E. of regression	0.775826	Akaike info criterion		2.529397
Sum squared resid	6.019061	Schwarz criterion		2.659770
Log likelihood	-13.44108	F-statistic		2.709751
Durbin-Watson stat	1.620809	Prob(F-statistic)		0.114722

Appendix 3b: Cape Verde's Regression Output of$UNEMPL_{t-1}=0.532+0.318UR_{t-2}-0.48IR_t+0.588IR_{t-1}+U_t$

Dependent Variable: UR_{t-1}				
Method: Least Squares				
Date: 02/29/16 Time: 14:27				
Sample: 2001 2014				
Included observations: 12				
Excluded observations: 2				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UR_{t-2}	0.318290	0.167524	1.899963	0.0940
IR	-0.482480	0.219645	-2.196637	0.0593
IR_{t-1}	0.587689	0.244556	2.403085	0.0430
C	0.532548	0.142220	3.744546	0.0057
R-squared	0.675587	Mean dependent var		0.890833
Adjusted R-squared	0.553933	S.D. dependent var		0.280793
S.E. of regression	0.187537	Akaike info criterion		-0.248482
Sum squared resid	0.281360	Schwarz criterion		-0.086846
Log likelihood	5.490891	F-statistic		5.553317
Durbin-Watson stat	2.511287	Prob(F-statistic)		0.023441

Source: E-Views 7.0

Appendix 4a: Cote d'ivoire's Regression Output of $GDP_{t-1}= 2.297-0.49INFLA_t+0.51INFLA_{t-1} + U_t$

Dependent Variable: GDP_{t-1}				
Method: Least Squares				
Date: 04/22/16 Time: 09:18				
Sample(adjusted): 2001 2013				
Included observations: 13 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
$INFLA_t$	-0.491325	1.116083	-0.440223	0.6691
$IMFLA_{t-2}$	0.511027	0.169048	3.022965	0.0128
C	2.297175	0.892749	2.573146	0.0277
R-squared	0.523539	Mean dependent var		3.935385
Adjusted R-squared	0.428246	S.D. dependent var		1.187586
S.E. of regression	0.897986	Akaike info criterion		2.821850
Sum squared resid	8.063788	Schwarz criterion		2.952223
Log likelihood	-15.34202	F-statistic		5.494027
Durbin-Watson stat	2.521703	Prob(F-statistic)		0.024555

Source: E-Views 7.0

Appendix 4b: Cote d'ivoire's Regression Output of $UNEMPL_{t-1}=0.341+0.48UR_{t-2}-0.07IR+U_t$

Dependent Variable: UR_{t-1}				
Method: Least Squares				
Date: 02/29/16 Time: 14:36				
Sample(adjusted): 2001 2013				
Included observations: 13 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UR_{t-2}	0.480615	0.177637	2.705611	0.0221
IR	-0.065692	0.167903	-0.391251	0.7038
C	0.341788	0.134176	2.547315	0.0290
R-squared	0.466500	Mean dependent var		0.563077
Adjusted R-squared	0.359800	S.D. dependent var		0.169184
S.E. of regression	0.135368	Akaike info criterion		-0.962465
Sum squared resid	0.183245	Schwarz criterion		-0.832092
Log likelihood	9.256025	F-statistic		4.372071
Durbin-Watson stat	2.479299	Prob(F-statistic)		0.043219

Source: E-Views 7.0

Appendix 5a: Gambia's Regression Output of $GDP_{t-1}= 2.177-1.958INFLA_t+ 3.41INFLA_{t-2}+U_t$

Dependent Variable: GDP_{t-1}				
Method: Least Squares				
Date: 04/22/16 Time: 09:53				
Sample: 2001 2014				
Included observations: 12				
Excluded observations: 2				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFLA	-1.958112	1.759983	-1.112575	0.2947
INFLAT2	3.409917	1.538594	2.216256	0.0539
C	2.176977	0.565543	3.849359	0.0039
R-squared	0.447979	Mean dependent var		2.655833
Adjusted R-squared	0.325307	S.D. dependent var		0.840449
S.E. of regression	0.690342	Akaike info criterion		2.309058
Sum squared resid	4.289145	Schwarz criterion		2.430284
Log likelihood	-10.85435	F-statistic		3.651861
Durbin-Watson stat	2.154064	Prob(F-statistic)		0.068992

Source: E-Views 7.0

Appendix 5b: Gambia's Regression Output of $UR_{t-1}=-0.402+0.12UR_{t-2}+0.263IR+0.593IR_{t-1}+U_t$

Dependent Variable: UR				
Method: Least Squares				
Date: 02/29/16 Time: 14:37				
Sample: 2001 2014				
Included observations: 13				
Excluded observations: 1				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
IR	0.009645	0.005537	1.741916	0.1094
C	0.858359	0.003273	262.2368	0.0000
R-squared	0.216204	Mean dependent var		0.853077
Adjusted R-squared	0.144950	S.D. dependent var		0.004804
S.E. of regression	0.004442	Akaike info criterion		-7.854758
Sum squared resid	0.000217	Schwarz criterion		-7.767842
Log likelihood	53.05593	F-statistic		3.034270
Durbin-Watson stat	2.160899	Prob(F-statistic)		0.109376

Source: E-Views 7.0

Appendix 6a: Ghana's Regression Output of $GDP_{t-1}= 5.00-2.76INFLA_t+ 2.06INFLA_{t-2}+U_t$

Dependent Variable: GDP_{t-1}				
Method: Least Squares				
Date: 04/22/16 Time: 11:28				
Sample: 2001 2014				
Included observations: 14				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFLA	-2.761175	1.173761	-2.352417	0.0383
INFLAT	2.061411	0.566870	3.636479	0.0039
C	5.009376	1.724680	2.904525	0.0143
R-squared	0.751608	Mean dependent var		4.026429
Adjusted R-squared	0.706446	S.D. dependent var		1.182121
S.E. of regression	0.640481	Akaike info criterion		2.134214
Sum squared resid	4.512371	Schwarz criterion		2.271155
Log likelihood	-11.93950	F-statistic		16.64241
Durbin-Watson stat	1.539361	Prob(F-statistic)		0.000471

Source: E-Views 7.0

Appendix 6b: Ghana's Regression Output of $UR_{t-1}=-0.402+0.12UR_{t-2}+0.263IR+0.593IR_{t-1}+U_t$

Dependent Variable: UR_{t-1}				
Method: Least Squares				
Date: 02/29/16 Time: 14:49				
Sample: 2001 2014				
Included observations: 14				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UR_{t-2}	0.121209	0.209947	0.577329	0.5765
IR	0.263392	0.403360	0.652996	0.5285
IR_{t-1}	0.593075	0.206061	2.878150	0.0164
C	-0.402393	0.596846	-0.674200	0.5155
R-squared	0.541819	Mean dependent var		0.607143
Adjusted R-squared	0.404365	S.D. dependent var		0.284644
S.E. of regression	0.219680	Akaike info criterion		0.041671
Sum squared resid	0.482595	Schwarz criterion		0.224259
Log likelihood	3.708301	F-statistic		3.941816
Durbin-Watson stat	1.605275	Prob(F-statistic)		0.042921

Source: E-Views 7.0

Appendix 7a: Guinea Bissau's Regression Output of $GDP_{t-1}= 1.73+0.9876INFLA_{t-1}+ 1.23INFLA_{t-2}+U_t$

Dependent Variable: GDP_{t-1}				
Method: Least Squares				
Date: 04/22/16 Time: 12:00				
Sample: 2001 2014				
Included observations: 12				
Excluded observations: 2				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
$INFLA_{t-1}$	0.986934	0.691444	1.427353	0.1872
$INFLA_{t-2}$	1.219241	0.717719	1.698772	0.1236
C	1.729302	0.455824	3.793791	0.0043
R-squared	0.345541	Mean dependent var		2.605000
Adjusted R-squared	0.200105	S.D. dependent var		0.833203
S.E. of regression	0.745190	Akaike info criterion		2.461964
Sum squared resid	4.997780	Schwarz criterion		2.583191
Log likelihood	-11.77179	F-statistic		2.375903
Durbin-Watson stat	1.674406	Prob(F-statistic)		0.148413

Source: E-Views 7.0

Appendix 7b: Guinea Bissau's Regression Output of $UR_{t-1}=0.417+0.501UR_{t-2}-0.003IR+U_t$

Dependent Variable: UR_{t-1}				
Method: Least Squares				
Date: 02/29/16 Time: 14:54				
Sample: 2001 2014				
Included observations: 13				
Excluded observations: 1				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UR_{t-2}	0.501402	0.174174	2.878741	0.0164
IR	-0.003426	0.173753	-0.019719	0.9847
C	0.416878	0.159145	2.619489	0.0256
R-squared	0.462334	Mean dependent var		0.769231
Adjusted R-squared	0.354801	S.D. dependent var		0.231173
S.E. of regression	0.185688	Akaike info criterion		-0.330322
Sum squared resid	0.344801	Schwarz criterion		-0.199949
Log likelihood	5.147092	F-statistic		4.299457
Durbin-Watson stat	2.390147	Prob(F-statistic)		0.044933

Source: E-Views 7.0

Appendix 8a: Mali's Regression Output of $GDP_{t-1}= 1.72+0.565GDP_{t-2}-0.045INFLA_{t-1}+U_t$

Dependent Variable: GDP_{t-1}				
Method: Least Squares				
Date: 04/22/16 Time: 12:26				
Sample: 2001 2014				
Included observations: 14				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP_{t-2}	0.564735	0.164677	3.429354	0.0056
$INFLA_{t-1}$	-0.045246	0.642397	-0.070434	0.9451
C	1.722626	0.523398	3.291233	0.0072
R-squared	0.563301	Mean dependent var		3.545000
Adjusted R-squared	0.483901	S.D. dependent var		1.037480
S.E. of regression	0.745326	Akaike info criterion		2.437420
Sum squared resid	6.110622	Schwarz criterion		2.574361
Log likelihood	-14.06194	F-statistic		7.094483
Durbin-Watson stat	2.585058	Prob(F-statistic)		0.010495

Source: E-Views 7.0

Appendix 8b: Mali's Regression Output of $UNEMPL_{t-1}=0.462+0.499UR_{t-2}-0.002IR+U_t$

Dependent Variable: UR_{t-1}				
Method: Least Squares				
Date: 02/29/16 Time: 14:59				
Sample(adjusted): 2001 2013				
Included observations: 13 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UR_{t-2}	0.499778	0.186261	2.683220	0.0230
IR	-0.002947	0.182367	-0.016157	0.9874
C	0.462110	0.194739	2.372966	0.0391
R-squared	0.460912	Mean dependent var		0.851538
Adjusted R-squared	0.353095	S.D. dependent var		0.256022
S.E. of regression	0.205920	Akaike info criterion		-0.123485
Sum squared resid	0.424030	Schwarz criterion		0.006888
Log likelihood	3.802653	F-statistic		4.274926
Durbin-Watson stat	2.503428	Prob(F-statistic)		0.045530

Source: E-Views 7.0

Appendix 9a: Niger's Regression Output of GDP_{t-1}= 2.59-3.32$INFLA_t$+1.95$INFLA_{t-1}$+U_t

Dependent Variable: GDP_{t-1}				
Method: Least Squares				
Date: 04/22/16 Time: 15:10				
Sample: 2001 2014				
Included observations: 5				
Excluded observations: 9				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
INFLA	-3.323525	2.174941	-1.528099	0.2661
INFLAT	1.948565	1.891950	1.029924	0.4113
C	2.590601	1.248047	2.075723	0.1736
R-squared	0.791705	Mean dependent var		2.800000
Adjusted R-squared	0.583410	S.D. dependent var		1.582688
S.E. of regression	1.021526	Akaike info criterion		3.164182
Sum squared resid	2.087032	Schwarz criterion		2.929845
Log likelihood	-4.910456	F-statistic		3.800884
Durbin-Watson stat	2.418517	Prob(F-statistic)		0.208295

Source: E-Views 7.0

Appendix 9a: Niger's Regression Output of $UNEMPL_{t-1}$=0.360+0.500UR_{t-2}-0.003IR

Dependent Variable: UR_{t-1}				
Method: Least Squares				
Date: 02/29/16 Time: 15:05				
Sample: 2001 2014				
Included observations: 14				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
URT2	0.500295	0.162173	3.084954	0.0104
IR	-0.003159	0.011799	-0.267729	0.7939
C	0.360342	0.112120	3.213889	0.0082
R-squared	0.475570	Mean dependent var		0.656429
Adjusted R-squared	0.380219	S.D. dependent var		0.188990
S.E. of regression	0.148784	Akaike info criterion		-0.785230
Sum squared resid	0.243504	Schwarz criterion		-0.648289
Log likelihood	8.496611	F-statistic		4.987574
Durbin-Watson stat	2.543691	Prob(F-statistic)		0.028726

Source: E-Views 7.0

Appendix 10a: Senegal's Regression Output of GDP_{t-1}= 1.83+.55GDP_{t-2}-0.0087$INFLA_{t-1}$+U_t

Dependent Variable: GDP_{t-1}				
Method: Least Squares				
Date: 04/22/16 Time: 15:32				
Sample: 2001 2014				
Included observations: 13				
Excluded observations: 1				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
GDP_{t-2}	0.551767	0.177280	3.112403	0.0110
$INFLA_{t-2}$	-0.008683	0.946328	-0.009175	0.9929
C	1.833870	0.582432	3.148645	0.0104
R-squared	0.546946	Mean dependent var		3.693846
Adjusted R-squared	0.456336	S.D. dependent var		1.122167
S.E. of regression	0.827414	Akaike info criterion		2.658151
Sum squared resid	6.846141	Schwarz criterion		2.788524
Log likelihood	-14.27798	F-statistic		6.036223
Durbin-Watson stat	2.785870	Prob(F-statistic)		0.019087

Source: E-Views 7.0

Appendix 9a: Niger's Regression Output of UNEMPL=0.974+0.193UR_{t-1}-0.198UR_{t-2}-0.006IR+U_t

Dependent Variable: UR				
Method: Least Squares				
Date: 02/29/16 Time: 15:13				
Sample: 2001 2014				
Included observations: 12				
Excluded observations: 2				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
UR_{t-1}	0.192781	0.056775	3.395542	0.0094
UR_{t-2}	-0.198135	0.042812	-4.628019	0.0017
IR	-0.006430	0.045633	-0.140903	0.8914
C	0.973620	0.045750	21.28131	0.0000
R-squared	0.734335	Mean dependent var		0.962500
Adjusted R-squared	0.634711	S.D. dependent var		0.069167
S.E. of regression	0.041804	Akaike info criterion		-3.250448
Sum squared resid	0.013981	Schwarz criterion		-3.088812
Log likelihood	23.50269	F-statistic		7.371053
Durbin-Watson stat	1.513572	Prob(F-statistic)		0.010874

Source: E-Views 7.0

REFERENCES

[1] Abachi, T. (1998). Inflation - Unemployment Trade-off in Less Developed Countries (LDCs): The case study of Nigeria. *Unpublished M.Sc. Thesis, Economics Department, Ahmadu Bello University (ABU), Zaria*

[2] Adamson, Y. (2000). Structural Disequilibrum and Inflation in Nigeria: A Theoretical and Empirical Analysis. *Centre for Economic Research on Africa, New Jersey 07043: Montclair State University, Upper Montclair* .

[3] Balami, G. (2006). Innovation and Growth in Developing Countries. *Journal of Development Economics, July; Growth in Developing Countries, Journal of Economic Literature, September: Growth in the Global Economy. Cambridge, Mass: MIT Press, 33(3)* .

[4] Buhari, A. (1987). Straight to the point, . *ICAN Economics, Unilorin Press, University of ilorin, Nigeria* .

[5] CBN (2004) Annual Report and Statement of Account. Abuja: Central Bank of Nigeria.

[6] Friedman, M. (1976). Inflation and Unemployment. *Chicago Journals - Journal of Political Economy* , 451 - 472.

[7] Friedman, M. (1968). The Role of Monetary Policy. *American Economic Review58* , 1-17.

[8] Granger, C. (1969). Investigating casual relationships by econometric models and cross spectral methods. *Econometrica* , 17(2): 424-438.

[9] Hamilton, A. (2001). Exploding Inflation. *Zea; Intelligence* .

[10] Kamin, S., & Klau, M. (1998). Some Multi-Country Evidence on the Effects of real Exchange Rates on Output. *International Finance Discussion Papers, Washington,D.C: Federal Reserve Board, 611* .

[11] Jhingan, M.L (2008). Advanced Economics Theories: Vrinda (P) Ltd, New Delhi

[12] Hover. D (2016) New Classical Macroeconomics:*The Concise Encyclopedia of Economics 2nd Edition () from www.econlib.org 23/04/2016*

[13] Rational Expectation in the economy and Unemployment. (access online from www.Study.com) on 23/04/2016

[14] Omoke, P., & Ugwuanyi, C. (2010). Money, Price and Output: A casuality Test for Nigeria. *American Journal of Scientific Research ISSN 1456-223X, Issue 8,* , pp. 78 - 87 Euro Journals Publishin, Inc.

[15] Orji, A., Orji-Anthony, I., & Okafor, J. (2015). Inflation and Unemployment Nexus in Nigeria: Another test of the Phillip's Curve. . *Asian Economic and Financial Review* .

[16] Phillips, W. (1958). The Relationship between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom. *Economica* .

[17] Piana, V. (2001). Inflation Economics. *Web Institute* .

[18] Popovic, G., & Popovic, J. (2009). Inflation and Unemployment in the EU: Comparative Analysis of Phillips Regularity. UDK 336.748.12,331.56. *Dyanamics in Nigeria: Is there Evidence of Jobless Growth? Paper presented at the 53rd Annual Conference of the Nigerian Economic Society (NES) on "Youth Employment and Poverty Reduction in Nigeria" Nicon Luxury Hotel, Abuja* .

[19] Sack, D. (2016). Regional Economic Integration in West Africa. *Center for Research on Political Economy* .

[20] Stock, J., & Watson, M. W. (1999). Forecasting Inflation. *National Bureau of Economic Research (NBER) Working Paper 7023, March* .

[21] WWW.Study.com: Rational Expectation in the economy and Unemployment. (access online from www.Study.com) on 23/04/2016

[22] Umaru, A., & Zubairu, A. (2012). An Empirical Analysis of the Relationship between Unemployment and inflation in Nigeria from 1977-2009. *Economics and Finance Review Vol.1* .

[23] Wallich, H. (1979). Balancing Inflation and Unemployment. Controversies: Limits to Inflation?

[24] Williams, O., & Adedeji. (2004). Inflation Dynamics in the Dominican Republic. *IMF Working Paper, WP/04/29, Western Hemisphere Department: Washinton,D.C* .

[25] World Bank. (1998). World Development Indicators. Washington, D.C. *The World Bank* .