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Full Length Research Paper

Relationship Between Crime Level, Unemployment, Poverty, Corruption And Inflation In Nigeria (An Empirical Analysis)

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It is an obvious fact that the rate of unemployment, poverty, corruption and inflation in Nigeria is alarming despite government efforts to reduce them. This paper investigates the relationship between crime level, unemployment rate, poverty rate, and corruption level and inflation rate in Nigeria between 1980 and 2009. The properties of time series variables were examined through the application of Augmented Dickey-Fuller technique in testing the unit root property of the series and Granger causality test of causation between the variables. The results of the OLS revealed that unemployment, poverty and corruption impacted negatively on crime level, while inflation rate impacted positively on crime level in the Nigeria. The results of unit root suggest that all the variables in the model are stationary. Inflation is stationary at level but at 10 per cent while crime level, unemployment, poverty, and corruption are stationary at first difference. The results of Causality suggested no causation between unemployment and crime level, one-way causation between poverty and crime level, two-way causation between corruption and crime level, and two-way causation between corruption and inflation, one-way causation also existed between corruption and unemployment. The result further indicates no causation between poverty and unemployment, inflation and unemployment, corruption and poverty, as well as between inflation and poverty. This paper found that, there is a link between crime level, unemployment, poverty, corruption and inflation; but even if people were unemployed, poor and corrupt, criminality may not be that high, but when the cost of living which is determined by inflation is high, crime level become high. Therefore, this paper recommends that concerted effort be made by policy makers to reduce crime level in the country by formulating a robust monetary and fiscal policies aiming at ensuring price stability. Policy makers should also take step to reducing unemployment, poverty, and corruption because they may be inimical to economic growth.

Keywords: Crime, Unemployment, Poverty, Corruption, Inflation and Causality.

INTRODUCTION

The growth of crime level in Nigeria especially in recent times has become one of the major social problems facing the country. The dominance of crime in developing countries increases the volatility of issue, for it pyramids one fear upon others (Ahmed, 2012). Schaefer (1989) defined crime as a violation of criminal law which its formal penalties are applied by some government authority. Crime according to Bazau (1994) is something which offends the morality of society, or that violates the divine law. In Nigeria many adduce the level of crime to the rate of unemployment, poverty, corruption among others. The idea that unemployment, poverty and corruption are related to a whole series of other misfortunes such as illness, despair, and crime is not a new one. The Bible contains many references to poverty, for example. God judged the kings of Israel by their treatment of the poor. Jesus seemed to favor the poor and their company over that of the rich and powerful. The Catholic Church has always held the position that the poor "deserved" alms or charity and did not treat the poor unkindly. The Holy Quran in many chapters held the same position that alms and charity should be given to the poor, orphans and travellers.

The idea that the poor are somehow disreputable can be traced back in European society to the birth of Calvinism and the Protestant work ethic. As pointed out by Max Weber, as Calvin's followers sought a sign from God that they were indeed among God's predestined elite, they hit upon the notion that God's blessing might be demonstrated through success in a worldly calling or profession. Thus, business success was the sign of God's blessing. On the other hand, the poor could certainly not be considered members of the elect. The idea that the poor were lazy and refused to "pick themselves up by their own bootstraps" became predominant over the older perspective that the poor were "closer to God."

The first ever crime to be committed dates back to the first family on earth when Cain murdered his brother Abel, this shows that crime had been existing from time immemorial.

Governments the world over try to curb the crime rate and if possible eradicate crime. Similarly, unemployment, an economic disease is also another problem which governments also try to reduce if not eradicate. It is however interesting to note that where unemployment exists especially at a higher rate there is the tendency for crime rate to also increase because people are easily lured or compelled to criminal tendencies in the face of frustration, poverty and loss of hope in making it.

According to Becker's (1965) economic theory of crime, unemployed people are deprived of legal income resources and thus are more likely to derive some income from illegal activities. Also, many models of crime suggested that unemployment and individuals with low wages face strong incentives to commit crime. Labor

market conditions are believed to have a significant effect on the nation's crime rates. If unemployment rate goes up the legitimate earning opportunities decline and crime tends to increase because the costs of crime goes down for the unemployment workers.

In Nigeria every political aspirant has generation of employment as one of his/her manifesto with various proposals on how this can be achieved although this is yet to be proved after almost fifty years of existence.

Thus this paper apart from establishing the relationship between unemployment, poverty, corruption, inflation and crime also offers solutions to the problem of unemployment and poverty with particular reference to Nigeria. The paper also seeks to answer questions such as: to what extent do unemployment, poverty, corruption and inflation explain or determine crime in Nigeria? Does unemployment, poverty, corruption and inflation causes' crime in Nigeria? How can the menace of unemployment, poverty, corruption, inflation and crime be control to the barest minimal in Nigeria?

Theoretical/Empirical framework

Based on the premise that the poor are lazy and refuse to work hard, it is not too far of a stretch to argue that they will "choose" crime because it is the easy way out. This is similar to the argument frequently made about welfare. Many believe that if offered handouts such as welfare the lower classes will never go to work. Contemporary conservative authors such as George Gilder and Charles Murray advocate the elimination of welfare as an "incentive" for the poor to return to work. Welfare, which has its origins in Elizabethan poor laws [England], was always based on the concept that subsidies to the able-bodied must be kept lower than the lowest paid wage earners, Otherwise, those at the bottom of society would never work since they had no incentive.

Of course, there are a number of other explanations for why poverty and criminal behavior might be related other than those based on the utilitarian rational calculus approach advocated by classical free will theorists. It is possible, for example, that poverty is related to other factors such as resentment, malnutrition, or low intelligence, and that it is these factors which ultimately produce crime. If severe malnutrition (or eating lead-based paint) produces lifelong brain damage, then the long-term effect may be increased rates of crime among these at-risk populations.

However, besides these indirect models, a number of direct correlations between crime and poverty have been expounded upon. For example, if poverty and crime are related, then those societies with higher rates of poverty should have higher crime rates. Similarly, crime should rise during periods of economic depression and decrease whenever economic conditions and opportunities

improve. Crime rates should also be higher in poor communities v. middle- and upper-class neighborhoods. The fundamental question in criminology has been why do people commit crimes?. Many scholars have tried to proffer explanations on why some people conform whereas others deviate (Franca, 2012). Robert Merton in his postulation on the Strain Theory posited that in a class-oriented society, opportunities to get to the top are not equally distributed. Few members of the lower class ever get to the top. His theory emphasized two fundamental elements (i) cultural goals that people believe are worth striving for and (ii) institutionalized means to attain the desired goals. Disparity between goals and means engenders frustration which leads to strain. It is common knowledge that the Nigerian society extols material success but the opportunities to attain success are not available to everyone. Conflicts theories on their part argue that the deficiencies of the capitalist economic system are inherently contradictory and therefore conflict-ridden. That in a capitalist society that the battle line is between the "haves" and the "have nots". The system oppresses and exploits workers and this is tacitly supported by state. Laws are made to protect the rich and the powerful. Based on the preceding argument conflict theories see crime as the inevitable outcome of monopoly capitalism. Such distinctive features of the capitalist system as free enterprise, competition, private acquisition of property and achievement tend to encourage crime as people struggle for economic advantage. Gordon (1973) posits that capitalist societies do not guarantee economic security to majority of their members. Consequently each individual seeks out the best opportunity to fend for himself, sometimes through criminal pursuits. The increase in crime and violent behavior could be attributed to the disillusionment of the "have nots" in the way and manner the state is being governed. Franca (2012) cited example with some state of the north like Borno state where Boko Haram is waging war against the government and police, often demanding for the governors to resign.

Attempts to statistically study these questions can be traced back to early 19th century France and the work of Guerry and Quetelet. Since the time of Guerry and Quetelet many criminologists have studied the relationship between poverty and crime. However, the findings of such studies depend significantly on how the measure of what constitutes poverty is operationalized.

Differences between (1) poverty, (2) social inequality, and (3) relative deprivation have been operationalized

(1) Poverty has often been defined according to an economic standard. A "poverty line" is drawn based upon income considered necessary to meet basic living

standards. While all such standards are arbitrary, the percent of the population living below the poverty line is often used as a measure of social stability.

(2) Social Inequality is a comparison between the material level of those who have the least in society and the material level of other groups. Sociologists, political scientists, and economists often divide the population up into 5ths and compare them on income, wealth, etc. Historical comparisons are also done to determine long-term changes in the percentages of wealth or income each fifth has access to. Overall the long-term trend was an upward one for the bottom fifths through 1980 when the trend reversed itself; some say as a result of the introduction of "trickle-down economics" and the concurrent attack on welfare.

Economic inequality models are also used for cross-cultural comparisons. Nations in which everyone is relatively poor such as many third world countries have little social inequality. Communist or socialist societies attempted to minimize economic inequality but still allowed a rather substantial gap between party leaders and officials [the new class] and the rest of the population.

(3) Relative deprivation has a psychological component to it. It is based on the perception that there is a large distinction between the quality of life available to the poor and the middle classes and the wealthy. Feelings of resentment and injustice must be present for relative deprivation to be a significant factor. This phenomenon is thought to be particularly acute in large cities where the wide gap between the wealthy and the poor is readily apparent everyday. The image is one of poor people looking into the store windows of Bloomingdales or Neiman Marcus and finding them unable to afford to purchase anything.

Are unemployment (and other measures of poverty) and crime statistically linkable? (2) Social inequality and crime? (3) Relative deprivation and crime?

(1) Unemployment has been used as a way to measure the relationship between poverty and crime because unemployment goes up or down with periods of economic depression or prosperity respectively. The study of the relationship between unemployment and crime has produced considerable controversy. What are some of the specific findings of research in this area? Within criminology, the conclusion is that there is either no relationship between unemployment and crime or that the relationship (which correlations show is sometimes positive and sometimes negative) is ultimately insignificant. Other measures of poverty have been employed as well. Many studies of this phenomenon measure poverty by analyzing factors such as the

number of poor people who live in specific neighborhoods or by operationalizing structural poverty [measures of infant mortality, low educational achievement, the number of one-parent families, etc.]

Results of these studies have also proved inconsistent and in some cases contradictory. For example, Cho studied the relationship between the number of people living below the poverty line in major cities and the commission of the FBI's seven index crimes. He found no relationship, meaning that those cities that had a higher percentage of their population living below the poverty line could not be correlated with higher crime rates. On the other hand, Ehrlich found a positive correlation when he used a different method of operationalizing poverty. Ehrlich found that as the percentage of households receiving less than half of the median family income increased or decreased in 1940, 1950, and 1960 the number of property crimes similarly responded. Since these were periods of overall decrease in the percentage of families falling below the 1/2 median income figure he found that property crimes decreased proportionally. Structural poverty and homicide [particularly acquaintance homicides] were found to be correlated by Loftin and Hill, Messner, and Smith and Parker. It appears that in bad economic times acquaintance homicides go up, possibly as a result of being unable to cope with such stressful situations and then lashing out as those closest around them.

2) Social inequality and crime: Cross-cultural studies have similarly found higher homicide rates in nations characterized by a greater degree of economic inequality. However, the correlation did not hold true for property crimes. American studies of economic inequality have found it to be a more significant variable than poverty. These studies often use cities or historical eras for comparison purposes. Cities with higher rates of economic inequality are compared to those with less differentiation. Cities like New York and Los Angeles have much wider gaps between the rich and poor than cities in less prosperous parts of the country like Appalachia or the Deep South (Alabama, Mississippi).

(3) Relative deprivation: It has proved extremely difficult to study the relationship between relative deprivation and crime because the former is so difficult to operationalize. It would require interview-type data collection that is not typically used in this subfield of criminology. Economic studies typically use already existent databases that can be easily manipulated with computer statistical programs such as SPSS. How does one measure feelings that economic inequalities are unjust? While very few Americans are truly wealthy, the overwhelming majority do not feel that the current system is fundamentally unjust if we gage it by programs such as *Lifestyles of the Rich and Famous*. Those at the bottom appear to more frequently complain that American society is racially unjust rather than blame social class differences for their plight.

Why does there appear to be so much confusion within the contemporary study of whether crime and economics are related?

The fact that these studies are based on 2 contradictory theoretical assumptions: (1) the relation between economic conditions and crime is an inverse one (2) the relation between economic conditions and crime is a positive one. As economic conditions improve crime increases because criminality is an extension of normal economic activity. For example, people with more disposable income will be able to spend that money on illegal activities like drugs, gambling, prostitution, etc. As underground organizations emerge to meet these needs they create even more crime (i.e. turf wars among drug dealing organizations). Periods of depression should see a decrease in crime. Plascowe felt he could justify this model as a long-term historical explanation because while the quality of life has risen dramatically for all in western societies, so has the crime rate. Durkheim also supported this view.

Existing literature is varied and inconsistent concerning the relationship between unemployment and crime. While some studies show that there exists a positive relationship between unemployment and crime, some studies revealed that the relationship between unemployment and crime is negative yet some studies revealed that there exists no relationship between unemployment and crime. This is supported by Witte and Witt (2010) who opined that most empirical studies of the unemployment- crime relationships have provided mixed evidence. Also different types of data had been used to ascertain if the type of relationship existing between unemployment and crime. Examples include cross section data, time series data, pane data, aggregate data and regional data.

Studies supporting a positive relationship between unemployment and crime includes the work by Freeman (1990) who discovered that there exists a positive relationship between unemployment and crime. Fougere, et al (2003) using cross section data of France estimates a positive relationship between unemployment and crime.

Chiricos (1987) conducted a survey of the major studies on unemployment and crime and concluded that the relationship between unemployment and crime frequently positive and significant. Using regional data for Spain, Andres (2002) finds statistically evidence of a positive relations between unemployment and crime. Using United States, state level data Rapheal and Winter-Ebmer (2001) report shows that a substantial decline in U.S property crime rates during the 1990s is attributable to the decline in the unemployment rate. Gould, Weinburg and Mustard (2002) using United state's country-level data discovered that the unemployment rate non-college educated men is significantly correlated with property crimes. Studies conducted by Thonberry and Christenson (1984) and Good, Pirog-Good and Sickles

(1986) also found evidence of a relationship between unemployment duration and crime land, Cantor and Russell (1995) found a lagged positive relationship between unemployment and crime in post war United States.

Allen (1996) study revealed that current unemployment has a negative influence on motor vehicle theft applying time series techniques to aggregate data for the United States (1959-1992).

Gottfredson and Hirschi (1990) argued, that the relationship between unemployment and crime is very insignificant. While Pyle and Deadman (1994) seems to think that unemployment may be less important to crime than other indicators of economic activity.

Field (1999) expressed of British crime trends since he found no effect of unemployment on post war British crime trends. Using time series models, Chamlin and Cochran (2000) found no relationship between the conventional BLS measure of unemployment and monthly trends in property crime in the United State between 1982 and 1996. Likewise, Watherburn, Lind and Ku (2001) found no evidence of any relationship between unemployment and crime in a study of the effect of the last Australian recession on break enters and steal and motor vehicle theft.

Adibe (2009) suggested that the common tendency is to blame the pervasive wave of kidnaping outside the Niger Delta exclusively on the unacceptable rate of unemployment in the country, an inefficient and corrupt police force that is ill-equipped to fight crime, and collusion between criminals and politicians. However, he sees these factors to be mere symptoms of a larger malaise, namely that pervasive kidnapping, is one of the major symptoms of both failed and a failing state,

THE MODEL AND DATA

MODEL I

The study first applies OLS regression of the form

$$\begin{aligned}
 & + \quad + \quad + \quad + \quad + \\
 & + \quad + \\
 & \text{CRIMEL} = \beta_0 + \beta_1 \text{UNEMPL} + \beta_2 \text{POVERTY} + \beta_3 \text{CORRUP} + \beta_4 \text{INFL} + \epsilon
 \end{aligned}$$

Where CRIMEL represents the crime level which is obtained by summing the crime committed against assets and property, crime against persons, and crime against lawful and local acts.

UNEMPL denotes unemployment rate

POVERTY denotes poverty rate

CORRUP denotes corruption level

INFL denotes inflation rate

ε is random walk or error term to test the relationship between unemployment, poverty and crime and the strength of their explanatory power. The sign above the

equations indicate apriori expectation of the parameters, therefore, it is expected that β₀, β₁, β₂, β₃, and β₄ > 0.

MODEL II: CAUSALITY MODEL

The model of causality test is thus specified as follows:

$$\begin{aligned}
 \text{CRIMEL}_t &= \sum \phi_i \text{CRIMEL}_{t-1} + \sum \phi_j \text{UNEPL}_{t-1} + \sum \phi_k \text{POVERTY}_{t-1} + \sum \phi_l \text{CORRUP}_{t-1} + \sum \phi_m \text{INFL}_{t-1} + \mu t1 \text{ ---} \\
 & \text{-----} 1 \\
 \text{UNEPL}_t &= \sum \alpha_i \text{CRIMEL}_{t-1} + \sum \alpha_j \text{UNEPL}_{t-1} + \sum \alpha_k \text{POVERTY}_{t-1} + \sum \alpha_l \text{CORRUP}_{t-1} + \sum \alpha_m \text{INFL}_{t-1} + \mu t1 \text{ ---} \\
 & \text{-----} 2 \\
 \text{POVERTY}_t &= \sum \beta_i \text{CRIMEL}_{t-1} + \sum \beta_j \text{UNEPL}_{t-1} + \sum \beta_k \text{POVERTY}_{t-1} + \sum \beta_l \text{CORRUP}_{t-1} + \sum \beta_m \text{INFL}_{t-1} + \mu t1 \text{ ---} \\
 & \text{-----} 3 \\
 \text{CORRUP}_t &= \sum \gamma_i \text{CRIMEL}_{t-1} + \sum \gamma_j \text{UNEPL}_{t-1} + \sum \gamma_k \text{POVERTY}_{t-1} + \sum \gamma_l \text{CORRUP}_{t-1} + \sum \gamma_m \text{INFL}_{t-1} + \mu t1 \text{ ---} \\
 & \text{-----} 4 \\
 \text{INFL}_t &= \sum \pi_i \text{CRIMEL}_{t-1} + \sum \pi_j \text{UNEPL}_{t-1} + \sum \pi_k \text{POVERTY}_{t-1} + \sum \pi_l \text{CORRUP}_{t-1} + \sum \pi_m \text{INFL}_{t-1} + \mu t1 \text{ ---} \\
 & \text{-----} 5
 \end{aligned}$$

Decision rules

The decision rule for equation (1), (2) (3), (4) and (5) under causality models is test of null hypothesis that the estimated coefficients are equal to zero at an appropriate level of significance or using the rule of thumb that if t-statistic is at least 2 the null hypothesis is rejected otherwise accepted. Therefore, Equation(1) UNEMPL, POVERTY, CORRUP or INFL causes CRIMEL if Ho: φ_j, φ_k, φ_l, φ_m, = 0 is rejected. Equation(2) CRIMEL, POVERTY, CORRUP or INFL causes UNEMPL if Ho: α_i, α_k, α_l, α_m, = 0 is rejected. Equation(3) CRIMEL, UNEMPL, CORRUP, INFL or causes POVERTY if Ho: β_i, β_k, β_l, β_m, = 0 is rejected. Equation(4) CRIMEL, UNEMPL, POVERTY or INFL causes CORRUP if Ho: γ_i, γ_j, γ_k, γ_m, = 0 is rejected. Equation(5) CRIMEL, UNEMPL, POVERTY or CORRUP or causes INFL if Ho: π_i, π_j, π_k, π_l, = 0 is rejected.

A cointegration tests was also carried out to detect a long-run relationship between unemployment, poverty and crime. This method is been applied in many areas of applied research in economics but it has not been extensively utilized in the research of the economics of crime. Before the development of this method, many empirical researches utilized the OLS alone but this was found to give spurious results. In addition ADF Technique is adopted to test the unit root property of the time series data used. This method was adopted because most time series data exhibit a random walk and often non stationary. The traditional Granger causality tests will be applied in this study as an alternative way of detecting a causal link between unemployment, poverty and crime.

Table 1: Regression Results

Dependent Variable: CRIMEL
 Method: Least Squares
 Sample: 1980 2009
 Included observations: 30

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	12.45972	0.182640	68.22013	0.0000
UNEMPL	-0.024474	0.009107	-2.687408	0.0126
POVERTY	-0.004965	0.003438	-1.444090	0.1611
CORRUP	-0.018054	0.060952	-0.296195	0.7695
INFL	0.002915	0.001902	1.532872	0.1379
R-squared	0.598898	Mean dependent var	12.05463	
Adjusted R-squared	0.534722	S.D. dependent var	0.260734	
S.E. of regression	0.177850	Akaike info criterion	-0.464740	
Sum squared resid	0.790766	Schwarz criterion	-0.231207	
Log likelihood	11.97110	Hannan-Quinn criter.	-0.390031	
F-statistic	9.332070	Durbin-Watson stat	1.023276	
Prob(F-statistic)	0.000093			

Table 2. Unit Root Test for Crime level(AT FIRST DIFFERENCE)

Null Hypothesis: D(CRIMEL) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.752331	0.0000
Test critical values:		
1% level	-3.689194	
5% level	-2.971853	
10% level	-2.625121	

*MacKinnon (1996) one-sided p-values.

By definition (Granger 1969), an economic series X_1 is said to "Granger cause" Y if changes X_1 precede changes in Y since the future cannot predict the past. Basically, Granger causality measures precedence and information content.

The data on crime used in this study are the total number of offences per 100,000 total population. The data was taken from the annual abstract of statistics a publication of the Federal office of Statistics of Nigeria and statistical bulletin a publication of central bank of Nigeria. The CLEEN Foundation (2009) classified all crimes reported into three; crime against property, crime against persons, and crime against lawful and local acts. Table one shows the descriptive statistics for the crime variable used.

Annual, national level data from period ranging from 1986 -2012 are used in this study. The data on

unemployment rate and poverty rate was also taken from statistical bulletin of the central bank of Nigeria for the same period.

Poor data quality is a problem for crime studies because the records from the police can be expected to understate true criminal activity by a relatively large margin (Nilsson and Agell, (2003).

RESULT AND DISCUSSION

Table 1 contains multiple regression results for crime, unemployment, poverty, corruption and inflation in Nigeria. The results indicate that the coefficient of POVERTY, CORRUP, and INFL are found to be statistically insignificant while the coefficient of UNEMPL and the constant are found to be statistically significant.

Table 3. Unit Root Test for Unemployment (AT FIRST DIFFERENCE)

Null Hypothesis: D(UNEMPL) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.537189	0.0000
Test critical values: 1% level	-3.689194	
5% level	-2.971853	
10% level	-2.625121	

*MacKinnon (1996) one-sided p-values.

Table 4. Unit Root Test for Poverty (AT FIRST DIFFERENCE)

Null Hypothesis: D(POVERTY) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-10.88376	0.0000
Test critical values: 1% level	-3.689194	
5% level	-2.971853	
10% level	-2.625121	

*MacKinnon (1996) one-sided p-values.

Table 5. Unit Root Test for Corruption (AT FIRST DIFFERENCE)

Null Hypothesis: D(CORRUP) has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-9.841226	0.0000
Test critical values: 1% level	-3.689194	
5% level	-2.971853	
10% level	-2.625121	

*MacKinnon (1996) one-sided p-values.

Precisely, the coefficient of POVERTY, CORUUP, and INFL are found to be statistically insignificant at 16.11.percent, 76.95percent, and 13.79percent level respectively as indicated by their probability values of 0.1611, 0.7695, and 0.1379 respectively. The coefficient of UNEMPL and constant are found to be statistically significant at 5 per cent and 1percent level respectively as indicated by their probability values of 0.0126, and 0.0000 respectively. The coefficient of INFL is rightly signed (positive) and consistent with the theory, while the

coefficients of UNEMPL, POVERTY and CORRUP are not rightly signed, hence is not consistence with theoretical expectation. The regression results implies that 1 per cent change in INFL raises CRIMEL by 0.002915 while 1 per cent change in UNEMPL, POVERTY and CORRUP reduces CRIMEL by 0.0245units, 0.005units, and 0.181units respectively. The F-statistics value of 9.3321, which measure the joint effects of the explanatory variables, found to be significant at 1 per cent as indicated by the corresponding

Table 6. Unit Root Test for Inflation (AT level)

Null Hypothesis: INFL has a unit root
 Exogenous: Constant
 Lag Length: 0 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.896696	0.0580
Test critical values:		
1% level	-3.679322	
5% level	-2.967767	
10% level	-2.622989	

*MacKinnon (1996) one-sided p-values.

Table 7. Unit Root Test for Inflation (AT FIRST DIFFERENCE)

Null Hypothesis: D(INFL) has a unit root
 Exogenous: Constant
 Lag Length: 1 (Automatic - based on SIC, maxlag=1)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-5.388721	0.0002
Test critical values:		
1% level	-3.699871	
5% level	-2.976263	
10% level	-2.627420	

*MacKinnon (1996) one-sided p-values.

Table 8. CORRELATION MATRIX

	CRIMEL	UNEMPL	POVERTY	CORRUP	INFL
CRIMEL	1	-0.70443	-0.45543	-0.61497	0.482722
UNEMPL	-0.70443	1	0.310437	0.671491	-0.44455
POVERTY	-0.45543	0.310437	1	0.626752	-0.10838
CORRUP	-0.61497	0.671491	0.626752	1	-0.33032
INFL	0.482722	-0.44455	-0.10838	-0.33032	1

probability value 0.0000093. This implies that the variables of the model are jointly, statistically significant and can significantly jointly affect crime level in Nigeria.

The R^2 value of 0.5989 implies that 59.89 per cent of the total variation in crime level in Nigeria was explained by unemployment, poverty, corruption and inflation. Coincidentally, the goodness of fit of the regression remained high after adjusting for the degree of freedom as indicated by the adjusted R^2 ($R^2 = 0.5347$ or 53.47%). The R-Square suggested that not only the included variables of the model that affect crime in Nigeria, but there are other variables, although their influence is higher than those variables not captured in the model. The Durbin-Watson statistics (1.0233) in table 1 is higher than R^2 (0.5889) indicating that the model is non-spurious. The Durbin-Watson statistics 1.0233 is very low and less than 2 indicating the presence of/or positive

autocorrelation. This provides the bases for conducting unit root test.

The results of unit root test in tables 2, 3, 4, 5, and 6 revealed that INFL is stationary at level (d(0)) and at 10 per cent level. While CRIMEL, UNEMPL, POVERTY, and CORRUP are stationary at first difference (d(1)); precisely at both 1 per cent, 5 per cent and 10 per cent level as indicated in table 2, 3, 4, and 5. INFL is stationary at level and at 10 per cent which is indicated by ADF results in table 6 at 10 per cent less than the critical values in negative direction. The ADF value for INFL is -2.8967 and the critical values are -3.6793, -2.9678 and -2.6230 at 1, 5, and 10 per cent respectively; the probability value also confirmed that INFL is stationary at 10 per cent as indicated by its value of 0.0580. Table 7 shows that INFL is stationary at first difference and at 1 per cent, 5 per cent and 10 per cent level as indicated by

Table 9. DESCRIPTIVE STATISTICS (JARQUE-BERA NORMALITY TEST)

	CRIMEL	UNEMPL	POVERTY	CORRUP	INFL
Mean	12.05463	7.823333	52.89667	0.830667	21.96333
Median	12.08742	6.3	54	0.665	12.8
Maximum	12.44308	19.7	81.2	2.7	72.8
Minimum	11.37243	1.8	32	0	4.7
Std. Dev.	0.260734	5.228416	12.59755	0.912117	19.46919
Skewness	-0.602745	0.75486	0.314751	0.55593	1.223984
Kurtosis	2.903502	2.2805	2.320406	1.909057	3.163076
Jarque-Bera	1.82815	3.496168	1.072653	3.032985	7.523928
Probability	0.400887	0.174107	0.584893	0.21948	0.023238
Sum	361.639	234.7	1586.9	24.92	658.9
Sum Sq. Dev.	1.971484	792.7537	4602.25	24.12679	10992.43
Observations	30	30	30	30	30

Table 10: Pairwise Granger Causality Tests

Date: 07/23/13 Time: 17:35

Sample: 1980 2009

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
UNEMPL does not Granger Cause CRIMEL	28	1.19000	0.3223
CRIMEL does not Granger Cause UNEMPL		1.90790	0.1711
POVERTY does not Granger Cause CRIMEL	28	4.43937	0.0234
CRIMEL does not Granger Cause POVERTY		0.19049	0.8278
CORRUP does not Granger Cause CRIMEL	28	4.89382	0.0170
CRIMEL does not Granger Cause CORRUP		2.14760	0.1396
INFL does not Granger Cause CRIMEL	28	1.18860	0.3227
CRIMEL does not Granger Cause INFL		2.05105	0.1515
POVERTY does not Granger Cause UNEMPL	28	1.52386	0.2391
UNEMPL does not Granger Cause POVERTY		1.81857	0.1848
CORRUP does not Granger Cause UNEMPL	28	5.69061	0.0098
UNEMPL does not Granger Cause CORRUP		1.97329	0.1618
INFL does not Granger Cause UNEMPL	28	1.22879	0.3112
UNEMPL does not Granger Cause INFL		1.39380	0.2683
CORRUP does not Granger Cause POVERTY	28	0.30996	0.7365
POVERTY does not Granger Cause CORRUP		0.37756	0.6897
INFL does not Granger Cause POVERTY	28	1.55922	0.2317
POVERTY does not Granger Cause INFL		0.90059	0.4202
INFL does not Granger Cause CORRUP	28	2.14222	0.1402
CORRUP does not Granger Cause INFL		2.43750	0.1096

their critical values greater than the ADF value in negative direction. This is also confirming by its probability value of 0.0002 in table 7. Table 8 represents the correlation coefficients for the

variables under consideration. The result revealed that crime level in Nigeria was negatively correlated with unemployment, poverty and corruption, and positively correlated with inflation rate. This implies that

Table 11 :STABILITY TEST

Chow Breakpoint Test: 1999
 Null Hypothesis: No breaks at specified breakpoints
 Varying regressors: All equation variables
 Equation Sample: 1980 2009

F-statistic	4.775290	Prob. F(5,20)	0.0049
Log likelihood ratio	23.56936	Prob. Chi-Square(5)	0.0003
Wald Statistic	23.87645	Prob. Chi-Square(5)	0.0002

as unemployment, poverty, and corruption increases crime level decreases and vice-versa, while increase inflation, increase crime level. The result further indicates that crime level and unemployment were 70.44 per cent negatively correlated, crime level and poverty were 45.54 per cent negatively correlated, crime level and corruption were 61.50 per cent negatively correlated, and crime level and inflation were 48.27 per cent positively correlated.

The result of descriptive statistics in table 9 indicated all the variables of the model have residuals normally distributed as indicated by their Jarque- Bera values greater than zero and their probability values very high, implying acceptance of the null hypothesis of normality of the residuals of the variables.

The results of causality are contained in table 10. The results revealed that two-way causation existed between crime level (CRIMEL) and corruption (CORRUP) and also inflation (INFL) and corruption (CORRUP). The result also indicated a one-way causation between crime level (CRIMEL) and inflation (INFL), between corruption (CORRUP) and unemployment (UNEMPL), and between poverty and crime level (CRIMEL). The causation runs from crime level to inflation, from corruption to unemployment and from poverty to crime level respectively. The result further indicates no causation between poverty and unemployment, between crime level and unemployment, between inflation and unemployment, between corruption and poverty, and between inflation and poverty.

The Chow breakpoint test is contained in table 11. 1999 was assumed to be the break period because of its significant in the politics of the country. The null hypothesis of no breakpoints is rejected 5 per cent level as indicated by F-statistics value of 4.7753 and the probability value of 0.005. This implies that crime level in Nigeria is not stable over the years, especially with the advent of democratic dispensation.

Table 1 in appendix represent Chow forecast test. The Chow forecast test shows that the breakpoint may change the parameters of the model and their impact on crime level in the country. The OLS result of the test revealed that poverty and inflation impacted positively on crime level, while unemployment and corruption impacted negatively on crime level in the country.

CONCLUSION AND RECOMMENDATIONS

This paper investigates the relationship between crime level, unemployment rate, poverty rate, corruption level and inflation rate in Nigeria. The properties of time series variables were examined through the application of Augmented Dickey-Fuller technique in testing the unit root property of the series and Granger causality test of causation between the variables. The results of the OLS revealed that unemployment, poverty and corruption impacted negatively on crime level, while inflation rate impacted positively on crime level in the Nigeria. The results of unit root suggest that all the variables in the model are stationary. Inflation is stationary at level but at 10 per cent while crime level, unemployment, poverty, and corruption are stationary at first difference. The results of Causality suggested no causation between unemployment and crime level, one-way causation between poverty and crime level, two-way causation between corruption and crime level, and two-way causation between corruption and inflation, one-way causation also existed between corruption and unemployment. The result further indicates no causation between poverty and unemployment, inflation and unemployment, corruption and poverty, as well as between inflation and poverty. This paper found that, there is a link between crime level, unemployment, poverty, corruption and inflation; but even if people were unemployed, poor and corrupt, criminality may not be that high, but when the cost of living which is determined by inflation is high, crime level become high. Therefore, this paper recommends that concerted effort be made by policy makers to reduce crime level in the country by formulating a robust monetary and fiscal policies aiming at ensuring price stability. Policy makers should also take step to reducing unemployment, poverty, and corruption because they may be inimical to economic growth.

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Appendix**Table 1: Chow Forecast Test**

Specification: CRIMEL C UNEMPL POVERTY CORRUP INFL

Test predictions for observations from 1999 to 2009

	Value	Df	Probability
F-statistic	3.036691	(11, 14)	0.0269
Likelihood ratio	36.58922	11	0.0001

F-test summary:

	Sum of Sq.	Df	Mean Squares
Test SSR	0.557224	11	0.050657
Restricted SSR	0.790766	25	0.031631
Unrestricted SSR	0.233542	14	0.016682
Unrestricted SSR	0.233542	14	0.016682

LR test summary:

	Value	Df
Restricted LogL	11.97110	25
Unrestricted LogL	30.26571	14

Unrestricted log likelihood adjusts test equation results to account for observations in forecast sample

Unrestricted Test Equation:

Dependent Variable: CRIMEL

Method: Least Squares

Date: 07/23/13 Time: 17:55

Sample: 1980 1998

Included observations: 19

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.78069	0.336956	34.96215	0.0000
UNEMPL	-0.006992	0.028029	-0.249466	0.8066
POVERTY	0.010054	0.005474	1.836866	0.0875
CORRUP	-0.325558	0.105002	-3.100483	0.0078
INFL	0.002016	0.001621	1.243690	0.2340

R-squared	0.501809	Mean dependent var	12.19632
Adjusted R-squared	0.359468	S.D. dependent var	0.161379
S.E. of regression	0.129157	Akaike info criterion	-1.034640
Sum squared resid	0.233542	Schwarz criterion	-0.786103
Log likelihood	14.82908	Hannan-Quinn criter.	-0.992578
F-statistic	3.525415	Durbin-Watson stat	1.523357
Prob(F-statistic)	0.034372		