ISSN 2256-0394 (online)
ISSN 2256-0386 (print)
2019, *33*, 170–182
doi: 10.2478/eb-2019-0012
https://content.sciendo.com

INSTITUTIONAL QUALITY, ECONOMIC MISERY AND CRIME RATE IN NIGERIA

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Abstract. This study examines the effect of institutional quality and misery index on crime rate in Nigeria. Data sourced for the period of 1986–2016 from the Nigerian Police Force, National Bureau of Statistics, International Country Risk Guide (ICRG) and World Bank Development Indicators are employed. The study applies the ARDL approach to co-integration in estimating the model built for the study. The results show that there is a long-run relationship among the variables. It further reveals that institutional quality reduces crime rate significantly in the short run while economic misery increases the level of crime in Nigeria. These results imply that gradual improvements in institutional arrangements within democratic administrations would further provide a more effective and efficient peaceful means for settling disputes and re-alignments of socio-economic inequalities, which seem to be the main causes of criminal activities in Nigeria.

Keywords: *Crime Rate, Democracy, Institution, Nigeria*

JEL Codes*:* C13, D63, H80, K42.

INTRODUCTION

This paper examines the effect of institutional quality and misery index on the crime rate in Nigeria. There are many factors attracting the attention of scholars to investigate the possible relationship between economic misery and the crime rate in developing countries. First, the 2008 global financial crisis brought economic hardship to every developing country, which served as one of the motivational factors to individuals who engaged in criminal activities simply to generate income in order to compensate for income deficiency (Bahmani-Oskooee & Oyolola, 2009; Rosenfeld, 2014; Lorde, Jackman & Lowe, 2016; Amin, 2019). Second, Nigeria experienced economic recession in 2015, which continued until the third quarter of 2016; this further brought a lot of hardship to the citizens, including a high rate of unemployment (Adelowokan, Maku, Babasanya & Adesoye, 2019). Hence, crime actually increases in the wake of the recession (Uggen, 2012; Lorde *et al.*, 2016). There are high levels of the crime rate, including armed robbery and kidnapping in the country. The youth has become the militant groups as witnessed in the South-South of the country; some

religious groups have become the Boko-Haram Sect in the society (Fasakin, 2015; Ajide, Bankefa & Ajisafe, 2018; Iyekekpolo, 2018). Finally, and probably most importantly, Nigeria is associated with a high level of inflation and youth unemployment, which have impacted the security level in the country concerning individuals, businesses and quality of institutions. Furthermore, crime appears to be the main weapons for financing terrorist activities. This is because many organizations and individuals have been involved in robberies and kidnapping leading to payment of ransoms, which has been used to commit crimes in the country (Munir, Asghar & Rehman, 2017).

Based on this background, several authors have empirically examined the impact of economic misery index on crime function (Tang & Lean, 2009; Piraee & Barzegar, 2011; Özcan & Açıkalın, 2015). They document that there is positive relationship between crime and economic misery. Contrarily, some authors document a negative relationship between the two variables (Piraee & Barzegar, 2011; Saboor, Sadiq & Khan, 2016). Furthermore, the study of Igbinedion and Ebomoyi (2017) reveals that inflation and unemployment positively impact the crime rate, while Adekoya and Abdul Razak (2018) show a negative relationship between the misery index and property crime. The present study deviates from this group of studies in a number of ways. Thus, the author studies the role of instructional quality in the relationship between economic misery and the crime rate in Nigeria. It is believed that a country with good and effective institutions such as rule of law, good business climate, and more secure property rights is in a better position to reduce criminal activities. Good institutional quality can attract investment for better utility of both physical and human resources more efficiently, resulting in better economic growth performance (Lehne, Mo & Plekhanov, 2014; Wang, Shah, Ali, Abbas & Ullah, 2019). Furthermore, to the author's knowledge, it very hard to identify any study that exclusively focuses on the relationship among institutional quality, economic misery and the crime rate in Nigeria. Similarly, the institutional impact on the crime rate has not been traced yet. For this purpose, the author develops the institutional quality through the principal component analysis (PCA) using data on democratic accountability, bureaucratic quality and governance stability. The earlier studies that examine the effect of institution on the crime rate focus only on one-dimensional aspect of institutional quality, which is either democracy or political risk. Instead of using a single measure of institutional quality, the present study is based on a number of institutional indicators compressed using the PCA. Furthermore, the author formulates Arthur Okun's Misery index that comprises inflation and the unemployment rate as a measure of economic hardship in Nigeria. The author of the present study considers it to be a practical indicator of the economic hardship being faced by an average citizen (Agheli, 2017; Amin, 2019). An increase in the index shows a deteriorating economic well-being of a country. A decrease in the misery index and an increase in institutional quality, such as the rule of law, would position the country to have the crime rate being reduced. Meanwhile, a country with a weak institution could bring a feeling that a perpetrator may get away with criminal activities leading to a loss of confidence and a lack of transparency in the rule of law

and political authorities. The rest of this paper is organized as follows: The next section provides the literature review, Section 2 entails the methodology. Results and discussions are presented in Section 3. Section 4 reports the conclusions.

1. LITERATURE REVIEW

1.1. Institutions and Crime Rate

Eisner (2001) explains theoretically that a good institution is associated with a lower level of crime rate. The reason given is that more social control (imprisonment, fine, sanctions and other higher level of punishment) is imposed where there are effective instructional qualities, especially during the democratic regime. However, some scholars shared a contrary view that non-democratic systems of government are aggressive in the enforcement of sanctions on minor crime (Lin, 2007). In the study of Huntington (1993), crime rates are the highest in a country where political institution such as democracy is still in transition. Lafree and Tseloni (2006) show that during the second half of the twentieth century, the homicide rate gradually increases for full democracies. This evidence buttresses the study of Alexeyeva and Patrignani (1994) and Alvazzi Del Frate *et al*. (1998). Furthermore, Fernandez and Kuenzi (2006) demonstrate that perception of citizens with regard to security during the democratic regime gives support for transition to the democratic system of governance. Lin (2007) predicts that democracy reduces the crime rate after considering several countries. This submission supports the work of Ceobanu, Wood and Ribeiro (2010), who also empirically testify that democracy reduces the crime rate after controlling for several variables in the study. Using dummy variables for democratic regime, Kolstad (2016) documents that democracy reduces corruption, which is a component of crime. Furthermore, Blanco and Ruiz (2013) examine the perceptions about insecurity and crime in democracy using Colombia as a study ground. They show that crime and insecurity have significant implications for democracy. This position supports the work of Blanco (2012) conducted in Mexico.

1.2. Economic Misery and Crime Rate

Studies provide that there are links between crime and misery index. Theoretically, inflation and unemployment can be a motivational factor towards engaging criminal acts, while some provide evidence that it can be an opportunity factor. Becker (1968) reveals that unemployment has a positive effect on the crime rate; this happens when an individual derives more returns to compare legitimate activities (Tang, 2009; Keshavarz & Markazi, 2010; Obamuyi & Olayiwola, 2018). Contrarily, Cantor and Land (1985) show that crime and unemployment are in the negative relationship because when people are unemployed, the expenditure on property and luxury goods is reduced. In addition, most citizens prefer to stay at home and protect their property against criminals. In this respect, Tang and Lin (2007) find a mixed result for different

types of the crime rate. Furthermore, a higher level of the inflation rate can have a positive effect on the crime rate in a country because of its deteriorating effect on purchasing power (Teles, 2004; Tang & Lean, 2007; Tang 2009).

More importantly, scholars take both the unemployment rate and inflation rate to formulate the misery index and examine its effect on the crime rate. Their main augment is that separate two variables may not provide a strong picture of the two variables on the crime model as a result of multi collinearity and misspecification problems leading to a loss of valuable information. Based on this argument, Tang and Lean (2009) use the USA data for the period of 1960–2005. They document that there is a positive relationship between crime and economic misery. This supports the motivational effect hypothesis. Piraee and Barzegar (2011) also examine the relationship using the Iranian data for the period of 1971–2008. Their results confirm motivational and opportunity effects. Özcan and Açıkalın (2015) reveal that citizens react to economic hardship by compensating themselves with returns from lottery games. Similarly, Saboor *et al.* (2016) reveals that the misery index and crime are co-integrated. The empirical study also suggests that citizens are more miserable in the democratic regime than dictatorship in Iran. Lorde, Jackman and Lowe (2016) further examine the impact of misery index on crime using Markov-switching models. Their study supports the motivational effect of economic misery on the crime rate in Barbados. More recently, Munir *et al.* (2017) provide in Pakistan that there is a bidirectional and long-run relationship between crime and misery index. The recent work of Igbinedion and Ebomoyi (2017) reveals that inflation and unemployment positively impact the crime rate, while Adekoya and Abdul Razak (2018) unravel the link between the misery index and property crime, using data for the period of 1970–2013. The results from ARDL reveal that there is a negative relationship between the misery index and property crime.

2. DATA AND METHODOLOGY

The main goal of the paper is to examine the effect of institutional quality and misery index on the crime rate in Nigeria from 1986 to2016.For this purpose, the study embraces the theoretical model of Becker (1968) and Ehrlich (1973), which has been a baseline for most empirical models on crime and factors influencing it (Piraee & Barzegar, 2011; Saboor, *et al.*, 2016; Lorde, *et al.*, 2016). The rational behaviour theory of Becker-Ehrlich suggests positive nexus between unemployment and crime rate. On the contrary, the theoretical model of Cantor and Land (1985) suggests that unemployment can have either positive or negative effect on crime. While this inconsistence persists in empirics, many critics have suggested the use of both inflation and unemployment as a variable in modelling a crime function. This is because unemployment alone cannot capture the effect of financial distress on crime. This leads to the use of misery index as a variable (Di Tella, *et al*., 2001). Hence, unemployment alone may not provide sufficient indication of economic distress (Lorde, *et al.*, 2016).

For the purpose of the present study, the author modifies the empirical model of Tang and Lean (2009), Piraee and Barzegar (2011), Saboor *et al.* (2016) by including institutional quality. The author empirically specifies the empirical model as stated below:

$$CR = f\left(IQ, MI, GDP\right), \tag{1}$$

where *CR* is the crime rate, *IQ* is the institutional quality, *GDP* is the GDP growth rate, *MI* is the misery index.

It is the addition of inflation rate and unemployment rate in Nigeria. To measure the crime rate in Nigeria, the procedures of Saboor *et al.* (2016) are followed. Crime rate is the number of crime offences recorded as a percentage of population per 10 000 (Saboor, *et al.*, 2016). The data for the crime rate is sourced from the Nigerian Police Force and the National Bureau of Statistics. To measure the Institutional Quality (*IQ*), the author of the paper combined and compressed the data on bureaucratic quality, democratic accountability and governance stability sourced from the International Country Risk Guide (ICRG) using the principal component analysis to form the *IQ* used for the study. Data on the unemployment rate and inflation rate were sourced from the World Bank development indicators and used to form the misery index (*MI*). The growth rate of real GDP per capita (*GDP*) is used as a control variable. These data were sourced from the World Bank Development Indicator.

The study utilizes the analytical technique of the Autoregressive Distributed Lag Model (ARDL). The technique does not require previous knowledge of the properties of the variables. This means that irrespective of the integrated order of the variables provided that order is below or equal to one, the technique is still applicable. A detail specification of the ARDL with respect to the study variables is presented by transforming Eq. (1) to (2):

$$\begin{aligned}\Delta CR_t = {} & \beta_0 + \sum_{i=1}^{k} \prod_i \Delta CR_{t-i} + \sum_{i=0}^{k} \gamma_i \Delta IQ_{t-i} + \sum_{i=0}^{k} \theta_i \Delta MI_{t-i} + \sum_{i=0}^{k} \delta_i \Delta GDP_{t-i} + \beta_1 CR_{t-1} \\ & + \beta_2 IQ_{t-1} + \beta_3 MI_{t-1} + \beta_4 GDP_{t-1} + e_t \ ,\end{aligned} \tag{2}$$

where Δ is first-difference operator and *k* is the optimal lag length, the estimation of the above-mentioned equation would reveal the long-run causality test by comparing the results from F-test of the Wald test with the Narayan critical values at 5 % level of significance with unrestricted and no trend series. Furthermore, where there is long-run co-integration, the long-run equation is regressed and the error term included as an explanatory variable, which results in the Error Correction Model (ECM) presented in Eq. (3):

$$\Delta CR_t = \sigma + \sum_{i=1}^{k} \prod_i \Delta CR_{t-i} + \sum_{i=0}^{k} \gamma_i \Delta IQ_{t-i} + \sum_{i=0}^{k} \theta_i \Delta MI_{t-i} + \sum_{i=0}^{k} \delta_i \Delta GDP_{t-i} + \beta_0 ECM_{t-1} \ . \tag{3}$$

The ARDL technique uses *F-statistic* to test for the existence of co-integration, which involves the use of asymptotic critical value bounds; and depends whether the

variables are *I*(0), which is the lower bound, or *I*(1), which is the upper bound, or a mixture of both.

3. RESULTS AND DISCUSSION

The study investigates the unit root properties of the variables through the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) test. The results are presented in Table 1. The results show that all our variables are stationary after first differencing with the exception of GDP growth rate that is stationary at the level.

Table 1. Unit Root Test

Variables	ADF test	PP test	Remarks
CR	−5.534874* (0.0001)	−5.737754* (0.0001)	*I*(1)
IQ	−4.755991* (0.0007)	−4.783216* (0.0006)	*I*(1)
GDP growth	−4.812138* (0.0005)	−4.812138* (0.0005)	*I*(0)
MI	−3.624997* (0.0112)	−4.783216* (0.0009)	*I*(1)

**significance at 1 %; figures in* ( ) *are P-value*

Table 1 shows that only growth rate of GDP is significant at the level, while other variables are significant at first differencing. This means that we have one variable that is integrated of order zero, *I*(0) while others are integrated order one, *I*(1). Hence, we examine the long-run relationship using the ARDL Bound test approach to co-integration as presented in Table 2.

Table 2. Bound Test Approach to Co-integration

F-statistic	K	Equations	Info-criteria	ARDL model selected
5.141492	3	$CR = f\left(IQ, MI, GDP\right)$	AIC	(2, 1, 1, 0)
Critical value				
		10 %	2.72	3.77
		5 %	3.23	4.35
		2.5 %	3.69	4.89
		2.5 %	3.69	4.89

The F-statistics are greater than upper bound at both 10 percent and 5 percent, while the model is allowed to be selected automatically. The results confirm that there is evidence of long-run relationship among the variables.

The estimated results are presented in Table 3 and Table 4 showing ARDL results in short run and long run, respectively. The estimate is appropriate when data displayed a mixture of zero and one integrated order as seen in the case discussed in the paper. It can also be applied when the variables under consideration take a different level of optimal lag length. The ARDL can also be applied even in the presence of endogenous explanatory variables. The estimation technique can be applied when the sample data size is small. The institutional variable is negative and has a significant effect on the crime rate in Nigeria in the short run. The coefficient is significant at 5 percent. This buttresses the view of some scholars who state that strong good institutions provide more effective and peaceful means for settling disputes and easing socio-economic inequalities. They further contend that democracy as an institution promotes nonviolent behaviour and discourages criminal activities (Piccone, 2017).

Table 3. Estimation Method: Short-Run Coefficients of ARDL

Dependent variable: *CR*

Selected model: ARDL (2, 1, 1, 0)				
Variables	**Coefficients**	**Std error**	**T-statistics**	**P-value**
D(*CR*(-1))	0.321069	0.205458	1.562696	0.1331
D(*IQ*)	−3.326856**	1.531348	−2.172501	0.0414
D(*MI*)	0.164315**	0.074374	2.209305	0.0384
D(*GDP*)	0.001721	0.176794	0.009737	0.9923
CointEq(-1)	−0.440884*	0.171783	−2.566514	0.0180

, means significance at 1 %, 5 %,*

This is because an effective system of institutional quality could establish an efficient court system, which is capable of sustaining the rule of law. The results reiterate the submission of Lin (2007) and the theoretical submission of Eisner (2001). They indicate that democratic institution decreases serious crime. Specifically, Lin (2007) states after using international data that a 1- unit increases in crime severity reduce the effect of democracy on crime by 4 percent. The results also show that the coefficient of misery index (MI) is positive and significant at a 5 % level. This implies that inflation and unemployment serve as a motivator for engaging in criminal activities. As economic misery, it encourages youths to be involved in crime related activities in Nigeria. The economic growth variable is insignificant. This result does not support the position of Islam (2014) who confirms the negative effect of growth on the crime rate using 12 000 small-medium sized enterprises in developing countries. The same applies to the findings of Ahmad, Ali and Ahmad (2014). They empirically

revealed that crime had a negative and significant impact on economic growth in the long run.

Misery index is described as a measure of macroeconomic performance and people satisfaction. It is derived by adding the unemployment and inflation rates, also gives equal weight to both rates. Rise in the index indicates poor economic performance and growing misery. Furthermore, it is important to note that inflation as a component of misery index may cause the purchasing power to reduce, thus increasing the living costs. Consequently, the crime rate may increase due to the inability of an individual to maintain his/her living standard as enjoyed before. This confirms the submission of Deadman and MacDonald (2002) who state that a sustained period of higher inflation and unemployment would result in a higher level of the crime rate. This is quite interesting because it confirms the work of Imrohoroglu, Merlo and Rupert (2001) who reveal that most people that engage in criminal activities are unemployed. Long and Witte (1981) emphasize that harsh economic conditions can serve as a factor influencing crime behaviour. Therefore, a higher rate of inflation can increase criminal behaviour among the citizens in a country. There many things that can be factored out from this statement. The general increase in prices of goods and unfavourably adjusted wage without considering the other economic factors causes a situation of unfavourable real income per head, especially low income-skilled labour. Inflation can reward criminals due to the rising demand and subsequent high profits in the illegal activities. Inflation destroys the confidential level attached to the existing institutions' arrangements, which may lead to a loss of social control. It can also reduce the economic ability of individuals in communities to maintain areal level for deterrence (Tang & Lean, 2007).

Table 4. Estimated Method: Long-Run Coefficients of ARDL

Dependent variable: *CR*

Selected Model: ARDL (2, 1, 1, 0)				
Variables	**Coefficients**	**Std Error**	**T-statistics**	**P-value**
IQ	−1.541562	1.949622	−0.790698	0.4380
MI	0.063330	0.187714	0.337372	0.7392
GDP	0.003905	0.401045	0.009736	0.9923
C	15.321558**	7.239336	2.116431	0.0464
R-Square	0.642178	Durbin-Wats	1.921254	
Adj. R-Square	0.522903	Normality	Jarq-Bera 0.842 *P*-Val (0.656)	
F-statistic	5.384046	Heterosk[ARCH]	$\chi^2 = 0.7275$ *P*-Val (0.6950)	
Prob.(F-stat)	0.001210			
Serial Corr [LM] B-G	$\chi^2 = 3.366583$ *P*-Val (0.1858)			

,,*** means significance at 1 %, 5 %,10 %*

Table 4 shows the long-run relationship between the independent variables and crime rate in Nigeria. The coefficients of institutional quality and misery index are not significant. The results also suggest that the model estimated by the author of the paper passes the standard diagnostic test, such as serial correlation, normality, heteroscedasticity, cumulative sum (CUSUM) and cumulative sum of squares (CUSUMQ) stability test as report in Fig. 1.

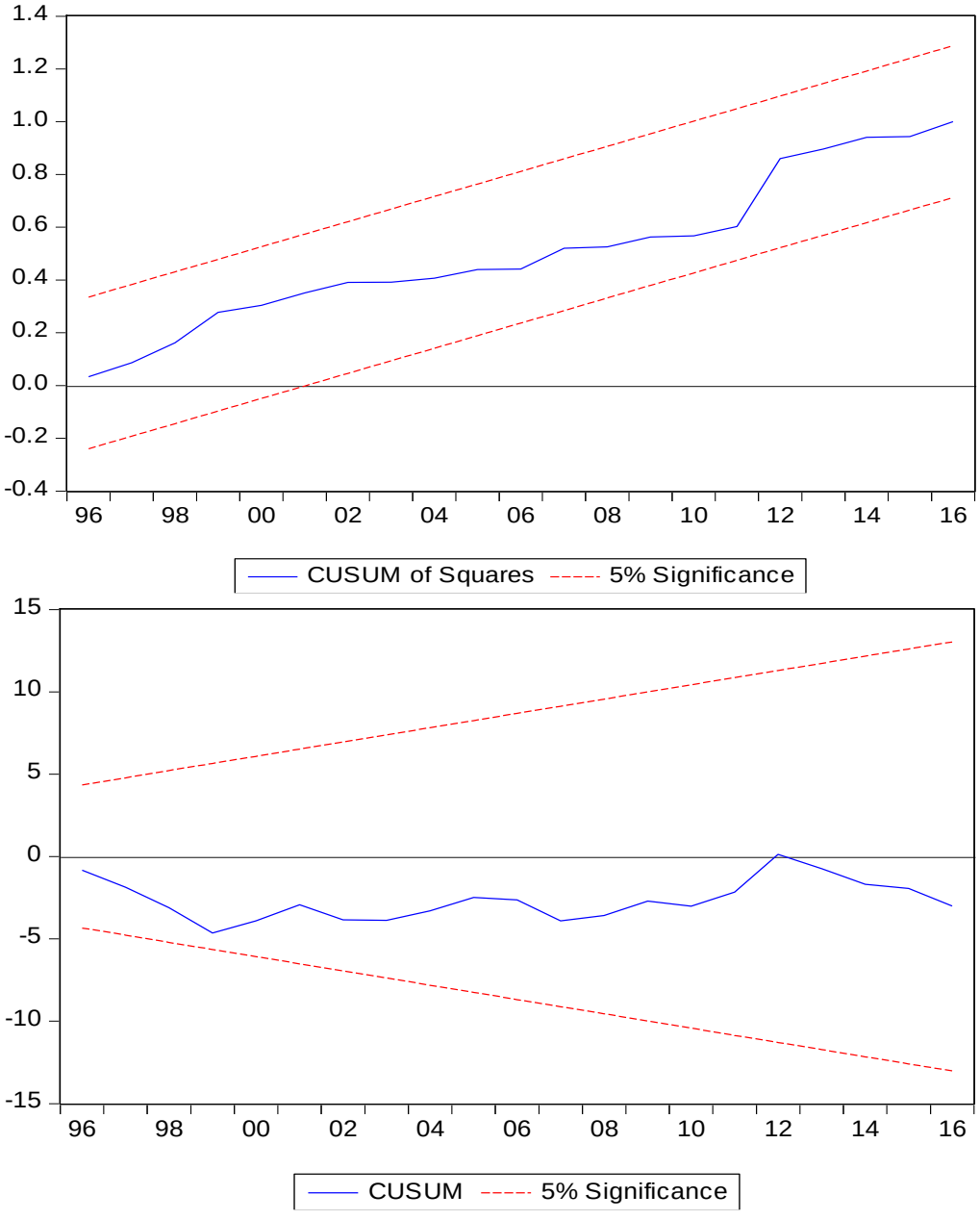

Fig. 1. CUSUM & CUSUM of square.

Studies on determinants of crime have identified different variables that correlate with criminal activities, which include poverty, unemployment among others. However, one of the most neglected variables in the literature is institutional quality. This study investigates the impact of institutional quality and misery index on the crime rate in Nigeria. Our results further confirm the work of Lin (2007) who provides that democratic institution correlates with criminal activities negatively, especially where serious offences are involved. This submission contradicts the documentation of Alexeyeva and Patrignani (1994). They confirm that during the period of democratic transition of 1989 and 1994, crime rates in Moscow, Bulgaria, and Hungary are very high. The results of the present study re-affirm Fernandez and Kuenzi (2006) that a citizen's perception of public safety significantly predicts support for democracy. The study results also find a position in the discourse of corruption and its relation to democratic institutions. Corruption forms part of national crime, which means by definition crime is a complex phenomenon. In this case, the study results support the empirical evidence of Goel and Nelson (2005). They reveal that corruption declines with civil liberties/democracy. Moreover, we also relate our work with the study of Chowdhury (2004) who provides evidence that corruption declines with democracy index, while Treisman (2000) finds that the age of a country's democracy reduces corruption. In this case, the author of the paper argues that institutional quality transforms into less crime because the adoption of a democratic system increases the opportunity costs of engaging in criminal activities (Rock, 2009).

CONCLUSION

The study has examined the effect of institutional quality and economic misery on the crime rate in Nigeria from 1986–2016 using ARDL estimation technique. Results have shown that institutional quality reduces the crime rate, while the misery index increases the crime rate significantly in the short run. However, the study does not confirm any significant effect of the two variables in the long-run. The study concludes that economic hardship and ineffective institutional system contribute to a higher rate of crime in Nigeria. Hence, the government should review its economic policy reforms and improve the institutional quality to mitigate the level of crime rate in the country. Furthermore, gradual improvements in institutional arrangements within democratic administrations would further provide a more effective and efficient peaceful means for settling disputes and re-alignments of socio-economic inequalities in the society. Crimes are controllable under the democratic political system because of effective distribution of resources, eradication of deprivation and discriminations. This becomes possible under democracy because of inclusive nature of politics, wide level of political participations, effective governance and transparent system, as well as independent judicatory systems. Visionary political leaders with coherent economic teams with comprehensive programs in place would be the best option for the Nigerian democratisation to thrive successfully.

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