THE RELATIONSHIP BETWEEN ECONOMIC GROWTH AND CRIME RATES IN NAMIBIA

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ABSTRACT

The study examined the relationship between economic growth and crime rate in Namibia, using the time series quarterly data over the period 2000Q1 to 2015Q4. The variables used included gross domestic product at current price and crime rate. The study employed time series techniques such as the unit root, cointegration, Granger-causality within the vector autoregression framework. The Johansen cointegration test revealed that there was no cointegration among the variables. The Granger causality showed bidirectional causality running from crime rate to economic growth. The results showed that an increase in crime rate does indeed result in a decline in economic growth.

Keywords: Granger-causality, crime rate, economic growth, Namibia.

INTRODUCTION

There appear to be a close relationship between economic growth and crime rates. This is due to the fact both variables are viewed through the same lens and in the same breath. Martin and Storey (2010) defines crime as a conduct forbidden by the state and to which a penalty is attached because the conduct is regarded by the state as criminal. Similarly, Du Plessis & Du Plessis (1995) define crime as an unlawful act which violates the interests and safety of the community or body politic. On the other hand economic growth can be defined as an increase in the capacity of the economy to produce goods and services, compared from one period to another over a period of time.

Previous research on the causes of crime has received massive attention from sociologists and criminologists but minimal research has been done by economists. According to Tibbetts and Hemmens (2010), the Classical school argues that individuals have free will and choose to commit crime based on reason and pleasure-seeking decisions. They weigh out the potential cost and benefits of offending and they will maximise their pleasure and minimise their pain. The Positive School, on the other hand, perceives that people do not freely choose their behaviour but, their behaviour is determined by factors outside their free will such as genetics, employment, parenting, economic and social.

From an economic point of view, Becker (1968) suggests that an individual’s decision to participate in crime could be analysed through the utility theory. The basic hypothesis of this theory is that an individual is a rational utility who decides whether or not to engage in criminal activity by weighing the pros and cons of crime.

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This study posits that the damage caused by crime affects the individual, communities and society welfare negatively, which can hinder the creation and maintenance of a developed and well-functioning country economy. It imposes large costs to private and public sectors which have a negative impact on personal well-being of an individual, as well as on the welfare of the society as a whole. The impact of crime on the economy is extensive because it generates great costs for the society at different levels, from individual to the national level. The research conducted in the United States, in 2007 indicates that, there have been more than 23 million crimes committed in the country which resulted in economic losses of nearly 15 billion US dollars paid to the victims and 179 billion US dollars in government expenditures on legal and judicial activities, police investigation, protection and corrections (McCollister, French and Fang, 2010). These economic losses present an opportunity cost, because the money spent could yield tangible and intangible returns if invested with care. As such, it seems reasonable to believe that crime has a negative impact on the economic growth of a country (Gaibulloev & Sandler, 2008).

According to Roman (2010), criminologists tend to say that tough economic times drives more people to commit crime. Bad economies at times lead to more property crimes and robberies as criminals steal popular items that they cannot afford. The study also posits that bad economic times result in more domestic violence and greater consumption of mind-altering substances such as drugs and alcohol, leading to more violence in general and in return more crime.

Conversely, the economists argue that better economic times increase crime. The economists argue that the more people are out and about flashing their shiny new smart phones, and tablets, the - more big-screen TVs in homes to steal. That is people who cannot afford these luxuries are tempted to commit crime such as property crime and corruption to fill the economic gap. Therefore, the objective of this study is to examine the relationship between the crime rate and economic growth in Namibia. The paper is organized as follows: the next section presents a literature review. Section 3 discusses the methodology. The empirical analysis and results are presented in section 4. Section 5 concludes the study.

LITERATURE REVIEW

The relationship between economic growth and crime has gained importance in the academic arena with some scholars trying to assess the direct and indirect costs of crime on the society (McCollister et al., 2010). The number of studies which have tested this relationship in order to assess the impact of crime on economic progress has grown. Despite these studies, the obvious conclusion on the association between economic growth and crime rate has not been defined. Many studies report that crime has a negative significant effect on economic growth (Cárdenas, 2007; Peri, 2004; Gaibulloev & Sandler, 2008), whereas other conclude that the effect is not clear (Goulas & Zervoyianni, 2012; Burnham, Feinberg and Husted 2004) or even absent (Carmeci & Mauro, 2007).

Crime has enormous negative implications for society. It does not only affect society in terms of spent money in order to investigate, arrest and punish criminals or to help repair damage resulting from criminal activities, but also in terms of personal safety, integrity and happiness. Crime induces trauma; it leaves the victim with permanent scars: physical, emotional, and economical and psychologically.
Governments have the responsibility to protect its citizens by crafting efficient social policies aimed at reducing the effects of crime on the society. This has become a common objective of the governing bodies. The identification of the determinants of crime is an important step toward achieving economic growth. Although some perceive the criminal intent as largely a personal problem brought up by a low self-esteem or insanity-latest theories have shifted focus on ecological causes. These theories suggest that people are prone to crime through environmental temptation rather than internal drives, and therefore, by controlling these outside influences, crime can be reduced. There are three most prominent ecological theories which are strain theory, social disorganisation theory, and the economic theory of crime. The above mentioned theories use both economic and social variables, such as economic growth, income inequality, urbanisation and education among others.

Some scholars argue that the rate at which the economy grows is also important since it determines the creation of opportunities. They also posit that significant non-linear effects may be present, more important than growth (or growth rate). However, what is most important is the quality of growth. This is viewed through poverty levels, urbanisation and the level of education.

In general there are few empirical studies that have looked at the relationship between crime rates and economic growth. Francis & Pattern (2003) conducted a survey on Firm Victimization in Jamaica; the study revealed that crime affects business operations in ways that are likely to affect output in the long run. The study interviews manager in different business operation and their response were as follows, 39 percent responded that they were unlikely to develop their business because of crime, and 37 percent reported that crime discourages investments that would improve output. The survey found that the total costs of crime in Jamaica during 2001 came to J$12.4 billion, which was equivalent to 3.7 percent of GDP.

Among these studies is Peri (2004) who conducted an empirical investigation that tested the effects of socio-cultural variables, such as civic involvement of its citizens and the presence of organised crime as revealed by murder rates, on the economic success of Italian provinces using data from 95 provinces over the period from 1951 to 1991. The author concludes that civic involvement does not have a clear impact on economic progress, but crime does have a significant effect on reducing per capita income and employment growth.

Tang (2009) investigated the association among crime rate, inflation and unemployment in Malaysian economy for the period of 1970 to 2006. The study used Bartlett trace test of Johansen (2002) to analyse the data. The study revealed the long run association between inflation, unemployment and crime.

Detotto and Otranto (2010) conducted an analysis of the macroeconomic consequences on criminal activity. The study revealed that criminal activities discourage domestic and foreign direct investments, reduces firm competitiveness, and relocates resources, hence creating uncertainty and inefficiency. Although the impact of economic variables has been widely investigated; there is not much concern about crime affecting the overall economic performance.

Dritsakis and Gkanas (2010) examined the effect of socio-economic determinants on crime rates in Greece. The study covered the period between of 1971 and 2006. The estimated cointegrating residual was used as an error correction term in the VECM, where the short-run
dynamics appeared through the statistical significance of all the regressors. The study revealed that unemployment and real compensation have an effect to crime rate through different direction.

Gouls and Zervoyianni (2012) conducted a study exploring how crime – uncertainty interaction affects economic growth. The study covered 25 countries over the period of 1991 to 2007 and found that an increase in crime has a symmetric effect on economic growth. The results show that higher-than average macroeconomic uncertainty enhances the adverse impact of crime on growth, implying that a 10% increase in the crime rate can reduce annual per capita GDP-growth by between 0.49 and 0.62 percent.

Kumar (2013) investigated the relationship between crime and economic growth in India. The study utilised state level data from the period 1991 to 2011. A reduced form equation has been estimated using instrumental variable approach to correct for joint endogenously between crime and economic growth. The study suggested that higher crime rate may reduce the level of per capital income and its growth rate. The study further reveal that controlling intentional crime rate, such as those of homicide and robbery in states can increase annual growth per capita income by 1.57 and 1.2 percentages point respectively.

Detotto and Pulina (2013) investigated whether more crime means fewer jobs and less economic growth in Italy from the period of 1970 to 2004. The study used an Autoregressive Distribution Lags (ADL) approach to investigate how a set of economic variables and a deterrence variable affect criminal activity. The Granger causality test was implemented to establish temporary interrelationships. The study revealed that the lack of deterrence positively affects each type of crime, especially theft. All crime typologies have a negative effect on economic activity, thereby, reducing the employment rate. The study highlighted that homicides, robbery, extortion and kidnapping have a strong effect on economic growth.

Islam and Asif (2014) examined the relationship between economic growth and crime against small and medium sized enterprises in developing countries. Their study used the ordinary least square, using the data for about 12,000 firms in 27 developing countries. They found that economic growth is negatively associated with crime. The relationship is stronger in small and medium firms than in larger firms.

Naddeo (2014) conducted an empirical analysis of the impact of crime on economic performance. The study used a panel of data of 19 Italian regions. The study employed the Two Stage Least Square method, and revealed that if homicide rates increase by 1%, the GDP will be lower than 0.32%. The System GMM estimator was used to capture the effect of crime on economic growth. The result showed that the growth rate would be reduced by 0.13% if the homicide rates increase by 1%. They also revealed that crime substantially affects the level of GDP per capita and economic growth, across Italian regions, especially in Southern Italy, Mezzogiorno to be specific.

Ahmad, Ali and Ahmad (2014) conducted an empirical investigation on the impact of crime and economic growth in Pakistan using time series data for the period 1980 to 2011. The Augmented Dickey Fuller (ADF) test was used to check the stationary of variables. The Autoregressive Distributive Lag (ARDL) to co-integration was used to find short and long run relationships between crime and economic growth. The results revealed that crime has a negative and significant impact on economic growth in the long run, whereas the short run effect of crime on economic growth is negative but insignificant.
Based on the literature, several authors have indicated that there is a long run relationship between the crime rate and economic growth. However, these studies were mostly conducted in the developed countries and no literature was found about Namibia. Some authors indicated that higher crime rates discourage domestic and foreign direct investments, reduces firm competitiveness, relocates resources; and create uncertainty and inefficiency. Other studies have indicated that increase in the crime rate reduces per capita GDP growth.

**METHODOLOGY**

Based on empirical literature, this study tested for causality within the vector autoregression framework. Therefore, the first step entails the analysis of the order of integration of the variables by examining whether the variables are stationary; does not contain unit root. When data contains a unit root it means any result derived from such data will be spurious or nonsensical. Spurious regression implies that the relationship between variables may appear statistically significant, though no meaningful relationship among the variables exists. Furthermore, being non-stationary implies that the mean, variance and covariance are not constant over time. There are various methods for testing for unit roots but the Augmented-Dickey test (ADF) and Phillips Peron (PP) tests were used.

The next step was to establish if cointegration exists among the variables of interest. Cointegration is generally defined as a concept which mimics the existence of the long run equilibrium relationship among variables. It gives an indication of convergence to some sort of equilibrium in the long run. This study employs the Johansen cointegration test for this purpose. Since this will be done in the vector autoregressive (VAR) framework, the first step uses first difference as shown below:

\[
Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + \ldots + A_n Y_{t-n} + \varepsilon_t
\]

whereas \( Y_t \) is lag length \( n \) \((p \times 1)\) vector endogenous variable, then first difference changes below:

\[
\Delta Y_t = \sum_{j=1}^{n} \pi_j \Delta Y_{t-j} + \pi Y_{t-n} + \varepsilon_t
\]

whereas \( \pi_j \) is a short term adjusting coefficient to explain short-term relationship, \( \pi \) is long term shock vector that includes long term information that tips off on the existence long term equilibrium relationship. Moreover rank of \( \pi \) decides the number of cointegrated vector. \( \pi \) has three hybrids:

(a) \( \text{rank}(\pi) = n \), then \( \pi \) is full rank, meaning all the variables are stationary series in the regression \((Y_t)\)

(b) \( \text{rank}(\pi) = 0 \), then \( \pi \) is null rank, meaning variables do not exhibit cointegrated relationship.

(c) \( 0 < \text{rank}(\pi) = r < n \), then some of variables exist \( r \) cointegrated vector.

The Johansen cointegration approach uses the rank of \( \pi \) to distinguish the number of cointegrated vector and examine rank of vector in testing how many of non-zero of characteristic roots exist in the vector. There are two statistic processes for cointegration.

\[
H_0: \text{rank}(\pi) \leq r \text{(at most } r \text{ integrated vector)}
\]

(i) Trace test:

\[
H_1: \text{rank}(\pi) > r \text{(at least } r+1 \text{ integrated vector)}
\]
\[ \lambda_{\text{trace}}(r) = -T \sum_{i=r+1}^{n} \ln(1 - \hat{\lambda}_i) \]

\( T \) is sample size, \( \hat{\lambda}_i \) is estimated of characteristic root. If test statistic rejects \( H_0 \) that means variables exist at least \( r+1 \) long term cointegrated relationship.

(ii) Maximum eigenvalue test:
\( H_0 : \text{rank}(\pi) \leq r \) (at most \( r \) integrated vector)
\( H_1 : \text{rank}(\pi) > r \) (at least \( r+1 \) integrated vector)
\[ \lambda_{\max}(r, r+1) = -T \ln(1 - \hat{\lambda}_{r+1}) \]

If test statistics accepts \( H_0 \) that means variables have \( r \) cointegrated vector. This method starts testing from variables that do not have any cointegrative relationship which is \( r=0 \). Then the test has added the number of cointegrative item to a point of no rejecting \( H_0 \) that means variables have \( r \) cointegrated vector.

The final step in this study is to test for causal relationship between the variables of interests by means of Granger causality test. To cater for this, Granger (1969) developed a model based on lead and lag relations in forecasting. That is determining whether one time series is good for forecasting the other. There are different situations under which Granger causality test can be applied. However, in this study, Granger causality will be tested in a Vector Autoregressive (VAR) framework where a multivariate model is extended to test for simultaneity of all included variables. Granger used twin factors of VAR to find variables’ causal relationship. The VAR can be considered as a means of conducting causality tests, or more specifically Granger causality tests. It assumes two series \( X_t \) and \( Y_t \) that define those messages set.

\[ X_t = \alpha_0 + \sum_{i=1}^{k} \alpha_i X_{t-i} + \sum_{i=1}^{k} \alpha_2 Y_{t-i} + \varepsilon_{1t} \quad (3) \]
\[ Y_t = \beta_0 + \sum_{i=1}^{k} \beta_i X_{t-i} + \sum_{i=1}^{k} \beta_2 Y_{t-i} + \varepsilon_{2t} \quad (4) \]

To determine the variables’ relationship the following test are conducted on the coefficients.
(i) \( \alpha_{2i} \neq 0 \) and \( \alpha_{ii} = 0 \): meaning \( Y \) lead \( X \) or \( X \) lag \( Y \).
(ii) \( \beta_{ii} \neq 0 \) and \( \beta_{2i} = 0 \): meaning \( X \) lead \( Y \) or \( Y \) lag \( X \).
(iii) \( \alpha_{2i} = 0 \) and \( \beta_{ii} = 0 \): meaning both variables are independent.
(iv) \( \alpha_{2i} \neq 0 \) and \( \beta_{ii} \neq 0 \): meaning both variables are interactive each other and have feedback relationship.

The relevance of this test is to validate and confirm whether indeed there is no predictability among the variables.

**Impulse Response Functions**

The impulse response function traces effects of shocks on the endogenous variables in dynamic marginal effects of their current and future values. The study will make use of the generalised impulse response function (GIRF) because it is not sensitive to the ordering of variables and can be used in both linear and nonlinear multivariate models. According to,
GIRF is unique for it has historical patterns of correlation between shocks Pesaran and Shin (1998).

**Forecast Error Variance Decomposition**

According to Enders (2004), variance decomposition examines the importance of each individual shock over all other variables.

**Data and Data Source**

The study uses quarterly data, from 2000: Q1 to 2015: Q4. The two variables captured are Nominal Gross Domestic Product (GDP) and Crime Rate (CR). The data for GDP were obtained from the Annual Report of Bank of Namibia, while the data for Crime Rate (CR) were retrieved from the Namibia Police Force, Criminal Investigation Directorate, Crime Statistic Sub-Division archive. The GDP is treated a dependent variable, while CR is an independent variable.

**RESULTS**

Table 1: Unit Root in Levels and First Difference

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model Specification</th>
<th>ADF Test Levels</th>
<th>ADF Test First Difference</th>
<th>PP Test Levels</th>
<th>PP Test First Difference</th>
<th>Order of integration</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNGDP</td>
<td>Intercept and trend</td>
<td>-0.279</td>
<td>-12.853**</td>
<td>-0.121</td>
<td>-29.209**</td>
<td>I(1)</td>
</tr>
<tr>
<td></td>
<td>Intercept</td>
<td>-7.987**</td>
<td>-12.776**</td>
<td>-7.986**</td>
<td>-29.067**</td>
<td>I(0)</td>
</tr>
<tr>
<td>LNCRIME</td>
<td>Intercept and trend</td>
<td>-2.301</td>
<td>-3.713**</td>
<td>-4.379**</td>
<td>-12.765 **</td>
<td>I(1)</td>
</tr>
<tr>
<td></td>
<td>Intercept</td>
<td>-2.453</td>
<td>-3.713**</td>
<td>-4.999**</td>
<td>-13.511**</td>
<td>I(1)</td>
</tr>
</tbody>
</table>

Source: Author’s compilation  
Note: ***, ** and * indicate significance at 1, 5 and 10%, respectively.

Table 1 shows the results of the ADF and PP tests show that the economic growth became stationary after differencing once when considering intercept and trend, while stationary in levels when considering intercept. Furthermore, the results revealed that crime was stationary in first difference.

**Selection of the Lag length**

It is important to find the maximum lag on the VAR stability that is based on the roots of the characteristic of Polynomial as the results appear in table 2. The optimal lag length of 5 was chosen based on the availability of criteria information. Moreover, the VAR satisfies the stability condition as the value of its AR roots is less than one and there is no root that lies outside the unit circle as shown in table 3.
Table 2: Selection of the lag length

<table>
<thead>
<tr>
<th>Lag</th>
<th>LogL</th>
<th>LR</th>
<th>FPE</th>
<th>AIC</th>
<th>SC</th>
<th>HQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>-491.557</td>
<td>NA</td>
<td>84413.43</td>
<td>17.0192</td>
<td>17.090</td>
<td>17.047</td>
</tr>
</tbody>
</table>

Source: Author’s compilation

Table 3: Characteristics of Polynomial Stability condition of the Generic Model

<table>
<thead>
<tr>
<th>Root</th>
<th>Modulus</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.995115</td>
<td>0.995115</td>
</tr>
<tr>
<td>-0.360152</td>
<td>0.360152</td>
</tr>
<tr>
<td>0.224944 - 0.122085i</td>
<td>0.255938</td>
</tr>
<tr>
<td>0.224944 + 0.122085i</td>
<td>0.255938</td>
</tr>
</tbody>
</table>

Source: Author’s compilation

Cointegration Test

The Johansen cointegration test was used to test the possible existence of any long run relationship. This relationship is possible even if individually they contain unit root, as overtime they are assumed to move together and be stable and stationary. Table 4 shows the Johansen cointegration test based on the Trace and Maximum Eigen values of the stochastic matrix. The result shows an absence of cointegration in all cases as reflected by both tests statistics.

Table 4: Johansen cointegration test based on Trace and Maximum Eigen value test

<table>
<thead>
<tr>
<th>Maximum Eigen Test</th>
<th>Trace Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H_0$: rank = r</td>
<td>$H_0$: rank = r</td>
</tr>
<tr>
<td>$H_a$: rank = r</td>
<td>$H_a$: rank = r</td>
</tr>
<tr>
<td>Statistic</td>
<td>Statistic</td>
</tr>
<tr>
<td>0.05% Critical value</td>
<td>0.05% Critical value</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>r=0</th>
<th>r=1</th>
<th>r=0</th>
<th>r=1</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.665</td>
<td>14.264</td>
<td>7.698</td>
<td>15.494</td>
</tr>
<tr>
<td>0.032</td>
<td>3.841</td>
<td>0.032</td>
<td>3.841</td>
</tr>
</tbody>
</table>

Source: Author’s compilation

The null hypothesis of no cointegration could not be rejected, due to the fact that the calculated values of the test statistics are greater than the critical values. Thus, depict that there is no long run relationship between the two variables.

VAR Granger Causality Test

Granger causality was conducted to test whether the variables under study predict one another. Conclusions were drawn through the comparison of p (probability values) and the $\alpha$ (level of significance). In this regard, when the p-value is smaller than the level of significance suggest that the variable is able to predict the other. In other words, the null hypothesis of no Granger-causality is rejected.
Table 0: Granger causality test for LNGDP and LNCRIME

<table>
<thead>
<tr>
<th>Regressor</th>
<th>LNGDP</th>
<th>LNCRIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>LNGDP</td>
<td>0.000</td>
<td>0.0902</td>
</tr>
<tr>
<td>LNCRIME</td>
<td>0.0108</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

*Source: Author’s compilation*

Table 5 above summarises the result of the two variables under study. The results show that LNGDP does Granger-cause LNCRIME at 10% level of significance. Similarly LNCRIME also does Granger-causes LNGDP at 5% level of significance. Thus, there is a bidirectional causality running from LNGDP to LNCRIME as well as from LNCRIME to LNGDP.

**Impulse response function**

The results of the impulse response functions are presented in figure 1 below. The figure shows how one variable responds to one standard deviation shocks of another variable.

**Figure 1: Impulse Response Functions: LNGDP and LNCRIME**

Response to Generalized One S.D. Innovations ± 2 S.E.

A shock to LNCRIME leads to a small increase in LNGDP, and then it gradually decreases at the second quarter until it reaches the steady state equilibrium in the third quarter. The variable maintains equilibrium until the tenth quarter. The fact that the new equilibrium is above the steady state implies that the effects of the shocks is permanent. Moreover, a shock in LNGDP leads to an immediate and sharp decline in LNCRIME, and then it gradually increase at the second quarter until it reaches the steady state equilibrium in the third quarter. The effect of the shocks also appears to be permanent as the new equilibrium is found.
Variance Decomposition

The Forecast Error Variance Decomposition (FEVD) is used to achieve the forecast ability and show how each variable is important in random innovation using the VAR model. The FEVD results are illustrated in Table 6 and 7 respectively.

Table 6: Variance Decomposition LNGDP

<table>
<thead>
<tr>
<th>Quarter</th>
<th>LNGDP</th>
<th>LNCRIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>97.17041</td>
<td>2.829593</td>
</tr>
<tr>
<td>8</td>
<td>98.37709</td>
<td>1.622914</td>
</tr>
<tr>
<td>12</td>
<td>98.84436</td>
<td>1.155643</td>
</tr>
<tr>
<td>16</td>
<td>99.09275</td>
<td>0.907255</td>
</tr>
<tr>
<td>20</td>
<td>99.24678</td>
<td>0.753221</td>
</tr>
</tbody>
</table>

Source: Author’s compilation

Table 7: Variance Decomposition of LNCRIME

<table>
<thead>
<tr>
<th>Quarter</th>
<th>LNGDP</th>
<th>LNCRIME</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>6.937925</td>
<td>93.06207</td>
</tr>
<tr>
<td>8</td>
<td>9.495978</td>
<td>90.50402</td>
</tr>
<tr>
<td>12</td>
<td>11.81346</td>
<td>88.18654</td>
</tr>
<tr>
<td>16</td>
<td>13.93203</td>
<td>86.06797</td>
</tr>
<tr>
<td>20</td>
<td>15.87534</td>
<td>84.12466</td>
</tr>
</tbody>
</table>

Source: Author’s compilation

The forecasting errors for LGDP and LNCRIME are by large attributed to their own innovations. Notably, the fluctuations in LNGDP resulting from LNCRIME are very minimal and almost accounting to zero. On the contrary, the fluctuations in LNCRIME resulting from LNGDP are relatively moderate and gradually increase as the horizon extends.

CONCLUSIONS

The study examined the relationship between the crime rate and economic growth in Namibia using quarterly data for a period 2000Q1 to 2015Q4. There is limited literature on the relationship between the crime rate and economic growth, and it is still imprecise to conclude that the crime rate has a negative effect on the economic growth. Based on the stationarity test, using the Augmented Dickey-Fuller and Phillips Perron tests, the results showed that the variables were stationary in first difference. The cointegration test estimates show that there was no long-run relationship among the variables. Furthermore, the Granger causality results showed a bidirectional causality running from economic growth to crime rate and vice versa. That is, the variables can help predicting one another. The results of the generalised impulse response functions showed that an increase in crime rate does indeed result in a decline in economic growth. The forecast error variance decomposition analysis showed that the fluctuations are largely attributed to their own innovations. The study also stimulates debate and improvements in the evidence. The following are the recommendations. Since, crime rate leads to a decline in economic activities, the Criminal Justice System Forum should craft a policy aimed at reducing crime and the fear of crime and their social and economic costs.

The study only considered two variables to narrow down the scope. This limitation leads to the results presented above. If the study had considered more variables, it would have arrived
at different results. Future researches are encouraged to consider more variables and/or the use of different econometric approaches to test if similar results will be attained. Further, research may need to explore further by using the indicators of unemployment and allocated budget to the Criminal Justice System and examines whether such indicators performs better in predicting economic growth.

REFERENCES


