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The Effect of Crime on Foreign Investment and Economic Development in Sub-Saharan Africa: A Panel Data Analysis

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Abstract
This study investigates the effect of crime on economic development in 22 sub-Saharan African countries between 2000 and 2020, using data from global sources. The study utilized a panel vector autoregression (VAR) approach to analyze the dynamic correlations between variables. This was achieved through the examination of impulse response functions and error variance decomposition. The study established a definitive cause-and-effect connection between the crime rate and growth indicators. The panel vector autoregression (VAR) technique resolves the issue of endogeneity by permitting endogenous interaction among the variables in the system. The findings indicate that the crime rate has a significant effect on economic growth in sub-Saharan countries, though with very low magnitude. The economic prosperity of most sub-Saharan African countries may be attributed to the abundant availability of natural resources in the region. The causality test findings indicate a diverse causal connection between the crime rate and growth indicators. While there is no direct causal relationship between economic growth and the crime rate, there is a one-way causality between economic growth and foreign investment. This means that economic growth can enhance foreign investment, suggesting that in sub-Saharan countries, economic growth plays a crucial role in improving foreign investment. However, as indicated by the findings, there exists a bidirectional causal relationship between foreign investment and crime rates. In summary, it is clear that the crime rate in sub-Saharan African nations has a significant impact. In the future, countries with higher crime rates are likely to see slow economic growth and less foreign investment.

Keywords: Panel data**.** Panel VAR model, Impulse response, Variance decomposition, Causality test

1.0 Introduction

In the Sub-Saharan Africa region, where there are forty-eight countries over a billion populations are living, the impact of crime rate on government economic growth indicators interaction raises an immense question that needs a detail scientific investigation. Crime is defined as any action that puts a person in danger of being sentenced (Becker, 1968). In other words, the concept refers to a combination of individual behavior that justifies social agents' involvement in illegal activities. However, the societal materialization of insecurity in Africa, as evidenced by border conflicts, civil wars, politico-military crises, terrorism, and so on, poses a significant development challenge. It not only destroys social and human capital but also discourages investment and prevents countries from developing (World Bank, 2006). Kidnapping, insurgency, and militant operations are among the channels. Civil conflict and violence are also the results of ethnic hatred and marginalization. Several incidents have been reported in Mali, Nigeria, the Democratic Republic of the Congo, and South Africa. The cry of marginalization over resources sparked a civil war between South Sudan and Sudan.

Sub-Saharan Africa is a continent that is extraordinarily rich in resources; nonetheless, the resources have been a curse for economic progress in the region. effective economic results in any region of the globe can only be accomplished via effective governance, since significant data has demonstrated that enhancing the quality of government has a positive impact on economic growth and development.

Crime is a serious hindrance to economic growth and development in the majority of sub-Saharan Africa, despite attempts tried to prevent it. There is, however, currently no large application of modern statistical research methods to investigate how crime impacts economic growth in sub-Saharan African countries. This research explores the influence of crime rates on growth and development in sub-Saharan African countries.

The overall scarcity of examination into criminality and societal reactions to crime in Sub-Saharan Africa (SSA) has stressed the significance of a scientific study with the purpose of discovering concerns associated to economic growth within the framework of regional development.

Economic growth is a precondition for the development of any economy (Metu, Kalu, & Ezenekwe, 2013). Economic growth has the tendency to draw investors into an economy, generating job possibilities for the inhabitants. Increased employment enhances productivity, making it a feasible instrument for increased salaries. However, when people do not achieve their fundamental wants in life, they may resort to crime as a survival strategy.

Ahmad, Ali, and Ahmad (2014) believe that crime generates uncertainty in the economy, which impacts productivity and diminishes the real gross domestic product (GDP) (a measure of economic growth). Crime is easily characterized as doing something wrong or connected to immorality. According to Mary and Minko (2016), the breakout of crime in the 21st century south of the Sahara started from poverty, mental craziness, the quest for an easier way of life, acculturation, power hungriness, and globalization. It takes numerous forms. There is a change in behaviors owing to globalization through television and the internet. Crime has grown fluid and varied, involving ritual crimes, assassinations, and murders. Also, this phenomenon is expanding and is refined through underground rebellions, terrorism, urban guerrillas, robberies, abductions, and sexual slavery, thereby becoming a cross-border concern. Many African nations are seeing an upsurge in crime.

In the causation relationship research by Tassew Dufera T. et al. (2020), this study evaluates the causative link between air transport demand and economic development for six sub-Saharan African nations over the period 1981–2018. (2020). Vector error correction and vector autoregression models are applied to discover long- and short-run causalities. The results demonstrate varied, context-specific causal linkages. There are various plausible causes for this variability, including disparities in per capita income, low-cost carriers' proportion of national aviation markets, the existence of significant home-based airlines, and comparative geographical advantage as a natural hub.

The empirical study undertaken by Ayang, Timbi, and Toumpiguim (2021) studied the influence of unemployment on crime in Sub-Saharan Africa. This study's major contribution is to enhance the knowledge on these phenomena, which is ubiquitous throughout the African continent. The research includes 40 sub-Saharan African nations and is based on the two-stage Generalized Method of Moments (GMM). The young unemployment rate is found to have a positive and substantial influence on the rate of homicide in SSA nations. The study undertaken by Pranav Raj and Siva Reddy Kalluru (2023) adopts an autoregressive distributed lag (ARDL) technique to empirically evaluate the extent to which murders effect economic development. The case study was done in India, and longitudinal yearly data from 1990 to 2019 were utilized. The limits cointegration test demonstrates that the crime rate, proxied by the murder rate, together with investment, FDI, exports, and enrollment, cause real per capita GDP in the long term. The murder rate will have a severely negative influence on economic growth in the short run.
Domingo (2023), study the influence of unemployment on crime in Sub-Saharan Africa (SSA). The technique relied on the descriptive analytic approach to describe the consequences of unemployment on the growth of violence and crime in Africa. The data suggest that an increase in unemployment leads to an increase in violent crime. The data reveal that unemployment has a favorable and considerable influence on crime in Sub-Saharan Africa. Other things being equal, this indicates that the greater the unemployment rate in sub-Saharan Africa, the higher the crime rate. The study's novelty arises from the fact that it is one of the few to evaluate the influence of unemployment on crime in the SSA.

This research explores the effect crime has on growth and development in sub-Saharan African countries. Some factors, such as output growth and foreign direct investment, are believed to represent economic and financial flows that assist economies, particularly emerging ones, overcome development obstacles. However, several of these economies may itself have internal issues that might considerably restrict economic development. One such concern is the predominance of criminal behavior. Criminal activities have the ability to increase the cost of doing business and can even lower the demand for goods and services.

2.0 Data and Methodology

The section introduces and briefly explained the data and methodology employed in the study.

2.1 Data and Study Area

A panel data of combination of economic growth variables and crime rate (Proxy by Prison rate) spanning from 2000 to 2020 are used for selected 22 Sub-Saharan African countries. The choice of countries is guided by the availability of reliable data and to fill any gaps in the data, we use linear interpolation. The data were obtained from the following source: www.theglobaleconomy.com online database, World Prison Brief (WPB) online database, and United Nations Office on Drugs and Crime (UNODC).

Table 1: Description of Variables

Variables	Description	Source
$\mathbf{RGDP}_{it}$	The rate of change of real GDP at date t of country i.	theglobaleconomy.com, WPB, UNODC
$\mathbf{FDI}_{it}$	Foreign Direct Investment, percent of GDP at date t of country i.	theglobaleconomy.com, WPB, UNODC
$\mathbf{CRR}_{it}$	Number of prisoners per 100,000 people at date t of country i. (Proxy for crime)	theglobaleconomy.com, WPB, UNODC
$\mathbf{POP}_{it}$	Population size, in millions at date t of country i.	theglobaleconomy.com, WPB, UNODC

2.2 Methodology

This section presents the panel unit tests, panel cointegration tests, and the causality test among the variables for testing the relationship that exist between the variables of interest.

2.3 Panel VAR model Framework

The effect of crime on Foreign Investment and Economic Development in Sub-Saharan Africa are analyzed using a panel VAR (PVAR) technique by estimating the impulse response function and variance error decomposition. The Panel VAR framework accounts for individual country heterogeneity while allowing for dynamic relationships between multiple endogenous variables. In general, VAR models have been found to be an especially useful tool to estimate dynamic interactions between endogenous variables of interest. In our case, the length of the series is not sufficiently long to robustly estimate separate VAR models for each country.

The PVAR approach has several advantages over individual country VAR's. There is gain of degrees of freedom by analyzing a panel of countries and also can better model the spillovers from one country to another, since the panel approach captures country-level heterogeneity.

Given N countries indexed $i = 1, \ldots, N$ and time $t = 1, \ldots, T$ the model is defined following Amat Adarov (2019) as follows:

$$Y_{it} = \mu_i + A(L)Y_{it-1} + \varepsilon_{it} \qquad (1)$$

where the vector

$$Y_{it} = [\mathrm{RGDP}_{it}\ \ \mathrm{FDI}_{it}\ \ \mathrm{CRR}_{it}\ \ \mathrm{POP}_{it}\ ]'$$

RGDP is the rate of change of real GDP, FDI is the Foreign Direct Investment, percent of GDP, CRR is the Number of prisoners per 100,000 people (proxy for Crime rate) and POP is the Population size in millions. $A(L)$ is a matrix polynomial in the lag operator L, μ_i is the vector of time-invariant country effects, ε_{it} is the error term. The specified four-variable setup represents a most parsimonious model allowing for efficient estimation in light of our relatively small number of observations.

2.4 Panel Unit Root Tests

There are various ways in the literature for detecting the existence of unit roots in panel data. We investigated Breitung (2000), Levin, Lin, and Chu (2002) (LLC), Im, Pesaran, and Shin (2003) [W-test (IPS)], the ADF-Fisher Chi-square test (ADF-Fisher), the PP Fisher Chi-Square test (PP-Fisher), Maddala and Wu (1999), and Hadri (2000). In all these examples except Hadri, the null hypothesis is that the variable has a unit root. Panel unit root tests are frequently grouped into first-generation and second-generation tests. First-generation tests, which presume cross-sectional independence, and second-generation tests, which explicitly allow for some type of cross-sectional reliance and try to solve the problem of cross-sectional dependency in the first-generation tests, The second-generation tests are based on the heterogeneity assumption. Accordingly, there is no common autoregressive (AR) structure in the series, and the panels are heterogeneous.

2.5 Panel Causality Test

The panel causality test examines the direction of causality between the variables in a panel context. In Granger causality tests (Granger,1969), variable X is said to be Granger-causal to variable Y if lagged values of X can improve the predict ability of Y. A causal relationship may be unidirectional, bidirectional, or absent. Bidirectional causality exists between Y and X if the coefficients of the lagged Y_t and X_t are statistically different from zero when either of the variables is modeled as the dependent variable and the other as the independent variable (Enders, 2014). Similarly, there is unidirectional causality from X to Y if the coefficients of the lagged X_t are statistically different from zero when Y_t is the dependent variable and not when X_t is the dependent variable. If neither the coefficient of the lagged X_t nor that of the lagged Y_t is statistically different from zero, there is no causal relationship between the variables. Here, to avoid multicollinearity problems, Y_t and X_t are not modeled as dependent and independent variables in the same equation, and the subsequent matrices are arranged accordingly. The following matrix shows the VAR model testing for a Granger causal relationship between Y_t and X_t.

$$\begin{pmatrix} Y_t \\ X_t \end{pmatrix} = \begin{pmatrix} \alpha_1 \\ \alpha_2 \end{pmatrix} + \sum_{j=1}^{n} \begin{pmatrix} \alpha_{11j} & \alpha_{12j} \\ \alpha_{21j} & \alpha_{22j} \end{pmatrix} \begin{pmatrix} Y_{t-j} \\ X_{t-j} \end{pmatrix} + \begin{pmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{pmatrix}$$

where $\alpha's$ are coefficients to be estimated, n is the maximum lag length, and ε_t represents the white noise error term. When the coefficients on the lagged variables are statistically different from zero, there is a causal relationship between the variables.

3.0 Results of Empirical Analysis

In the analysis, the focus on the impulse-response functions (IRFs), which describe the reaction of one variable in the system to the innovations in another variable in the system from the estimated panel VAR model and the variance decomposition expressing the magnitude of the overall effect of a shock, providing the proportion of the movement in one variable explained by the shock to another variable over time. Moreover, presented here is causality test, to test the causal relation among the variables including crime rate.

3.1 Panel Data plot and Descriptive statistics

The plot of the variables is presented in Figure 1, though no significant secular trend is observed, but the movement is slow and random in most of the countries. Table 2 presents the descriptive statistics for all the variables that are employed in the study. These descriptive statistics show that Sub-Saharan Africa is characterized by a high level of crime with mean 137.7696 and a low level of economic development with average of 3.791580.

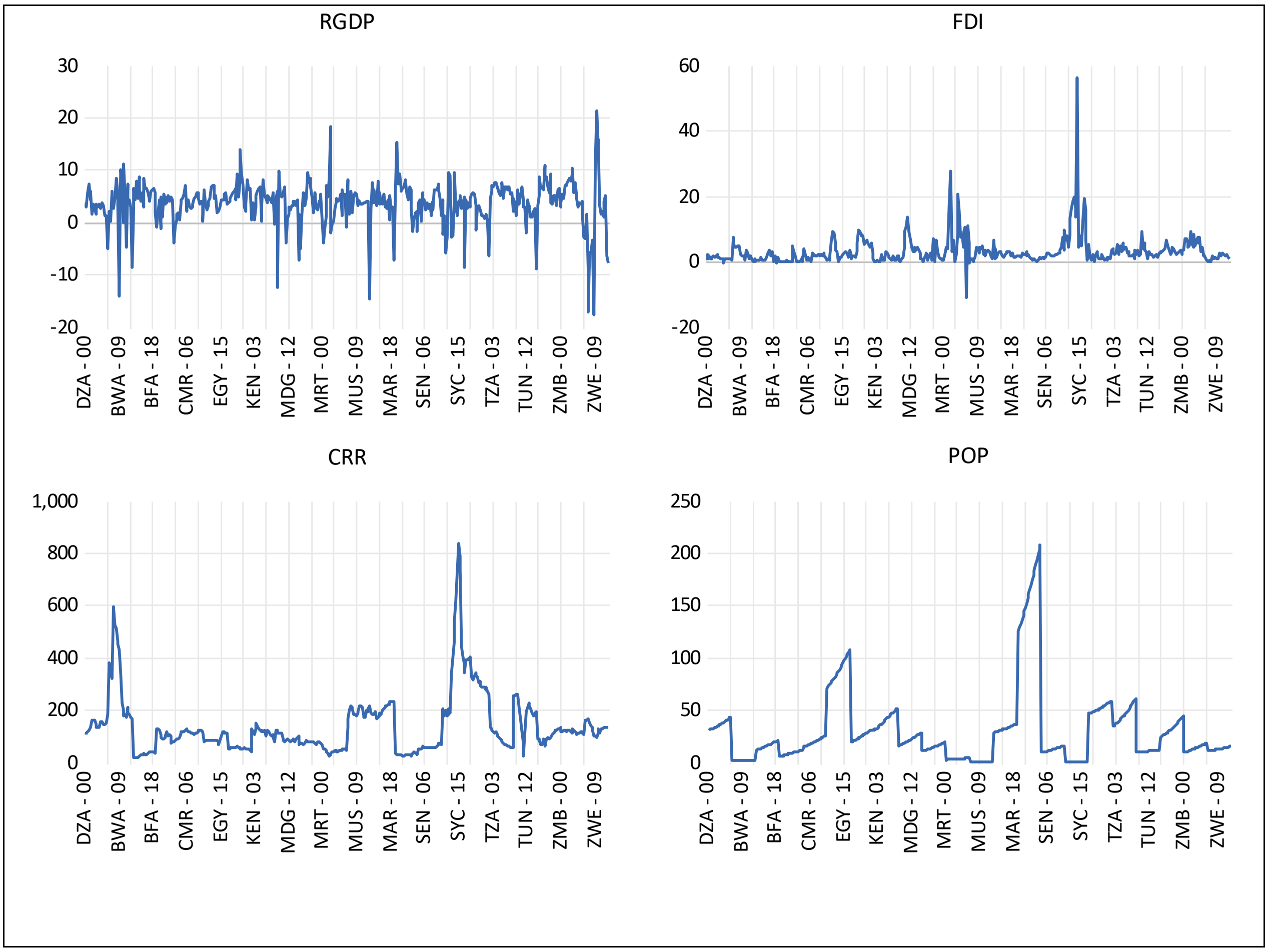

Figure 1: Plot of the variables under study

Table 2: Panel Descriptive statistics

Variables	Mean	Standard Deviation	Minimum	Maximum
RGDP	3.791580	4.070357	-17.67000	21.45000
FDI	3.144610	4.271049	-10.95000	56.26000
PRR	137.7696	113.5115	19.0000	837.000
POP	29.95948	36.00960	0.08000	208.3300

3.2 Panel Unit Root Tests

A summary of variety of panel unit root tests were carried out on the variables to provide the evidence of unit root/stationarity, both which assumes common and individual unit root process

Table 3: Panel Unit root test for real GDP

*

Panel unit root test: Summary
Series: the rate of change of real GDP (RGDP)

Sample: 2000 2020
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-0.10359	0.4587	22	423
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-3.82291	0.0001	22	423
ADF - Fisher Chi-square	106.296	0.0000	22	423
PP - Fisher Chi-square	127.508	0.0000	22	440

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

The Levin, Lin, and Chu test assumes a common unit root process, and the results indicate that RGDP panel data has a common unit root. The Im, Pesaran, and Shin W-Stat, ADF-Fisher Chi-Square, and PP-Fisher Chi-Square tests assume individual unit root processes, and the estimated results revealed evidence of stationarity for individual variables. Hence, there are very clear mixed results for both tests.

Table 4 : Panel Unit root test for FDI

Panel unit root test: Summary
Series: Foreign Direct Investment, percent of GDP (FDI)

Sample: 2000 2020
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-4.93804	0.0000	22	435
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-6.21279	0.0000	22	435
ADF - Fisher Chi-square	136.701	0.0000	22	435
PP - Fisher Chi-square	132.906	0.0000	22	440

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

FDI panel data unit root/stationary tests show strong evidence of stationary for the series. The Levin, Lin, and Chu tests that assume a common unit root process and Im, Pesaran, and Shin W-Stat, ADF-Fisher Chi-Square, and PP-Fisher Chi-Square tests that assume individual unit root processes revealed no unit root process.

Table 5: Panel Unit root test for CRR

Panel unit root test: Summary

Series: Crime Rate (CRR)

Sample: 2000 2020
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 2
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-1.83215	0.0335	22	428
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-0.65939	0.2548	22	428
ADF - Fisher Chi-square	54.8472	0.1266	22	428
PP - Fisher Chi-square	44.9141	0.4334	22	440

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

The Levin, Lin, and Chu test assumes a common unit root process, and the results indicate that there is no common unit root for CRR panel data. The Im, Pesaran, and Shin W-Stat, ADF-Fisher Chi-Square, and PP-Fisher Chi-Square tests assume individual unit root processes, and the estimated results revealed strong evidence of unit root for the individual variables. Hence, there are very clear mixed results for both tests.

Table 6: Panel Unit root test for POP

Panel unit root test: Summary
Series : Population in millions (POP)

Sample: 2000 2020
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 4
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	3.79265	0.9999	22	408
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	11.6311	1.0000	22	408
ADF - Fisher Chi-square	9.43907	1.0000	22	408
PP - Fisher Chi-square	22.2284	0.9975	22	440

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

The POP panel data provide strong evidence of a unit root. Both the Levin, Lin, and Chu tests, which assume a common unit root process, and the Im, Pesaran, and Shin W-Stat, ADF-Fisher Chi-Square, and PP-Fisher Chi-Square tests, which assume individual unit root processes, all show strong evidence of unit root in the panel series.

The Panel VAR model Estimation

The variables enter the model in first differences, which assures their stationarity, and the panel VAR lag order is determined based on the model selection criteria with lag order of 2. Following the estimate of the PVAR model we construct orthogonalized impulse response functions and forecast error variance decomposition to trace the effect of each variable in the system overtime.

3.3 Impulse Response Functions for Panel VAR Model

Impulse Response Functions (IRFs) are one of the important tools of the VAR technique for studying the interaction between the variables in this research. They reflect how individual variables respond to shocks from other variables in the system. When graphically depicted, the IRFs offer a visual picture of the behaviour of variables in response to shocks. The reactions are for a given variable to a one-time shock in each of the variables in the system. Following Yakubu et al. (2013) and Musa & Jibrin (2013), the response projection time is ten years to let us capture both the long term and short-term responses.

Panel Crime rate Shocks

From Figure 2, it can be observed that there is a large response of the crime rate to its own innovations. For example, the figure shows that the crime rate has an immediate positive response to its own shock, with the highest positive effect. The real GDP response to crime rate shock is quite negative at the initial stage but has a positive effect in later periods, though in the long run the effect diminishes to zero.

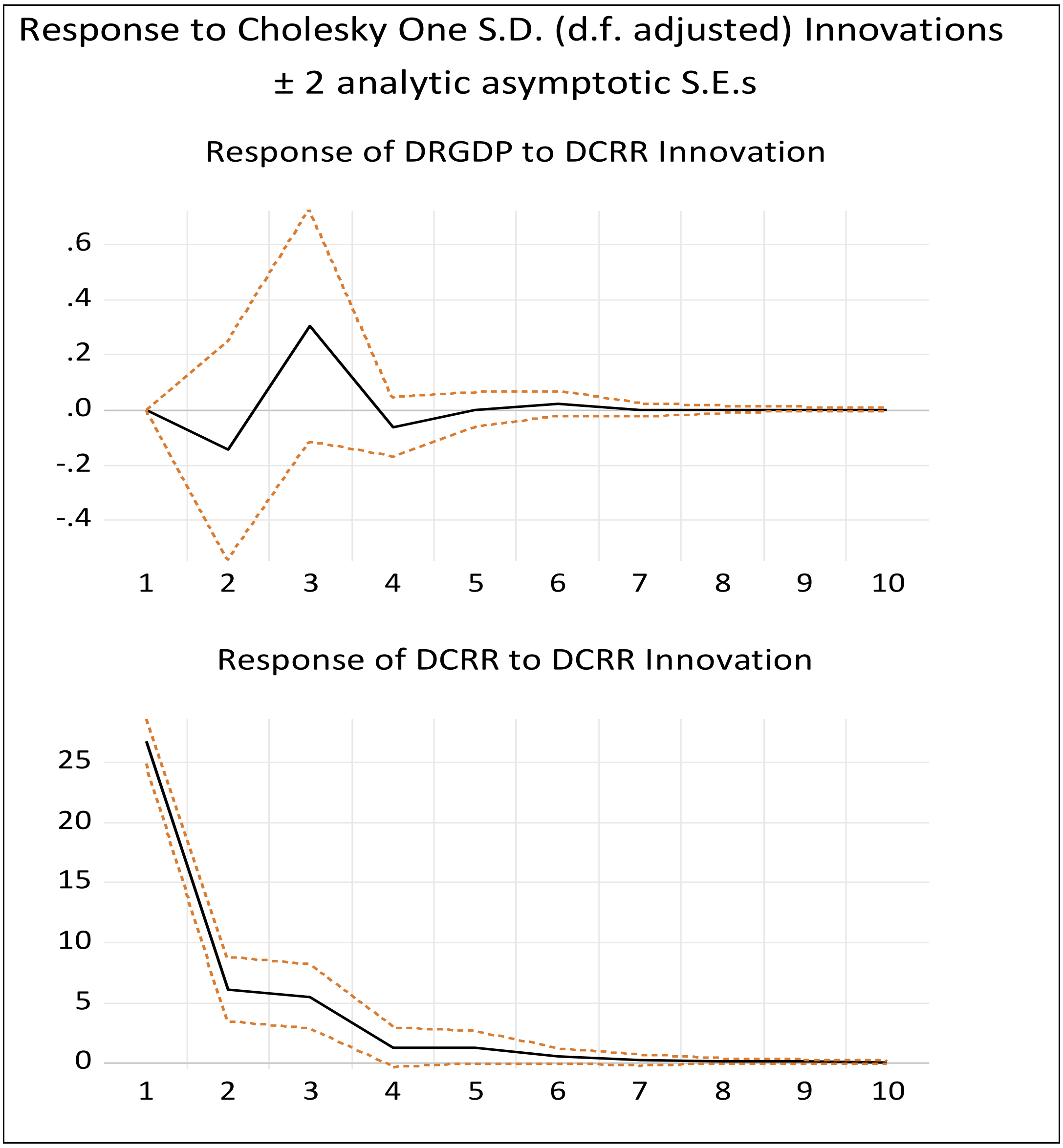

Figure 2: Impulse response of RGDP to Crime shocks

The crime rate shocks exert no significant effect on foreign direct investment, as Figure 3 revealed. The panel crime rate shocks in sub-Saharan African countries had less effect on real GDP and foreign direct investment, and this is true, as history and research related to crime may have suggested that most of the crime was caused by foreign west countries themselves. These included the targeted abundance of natural resources that they were eager to cultivate without giving a dime.

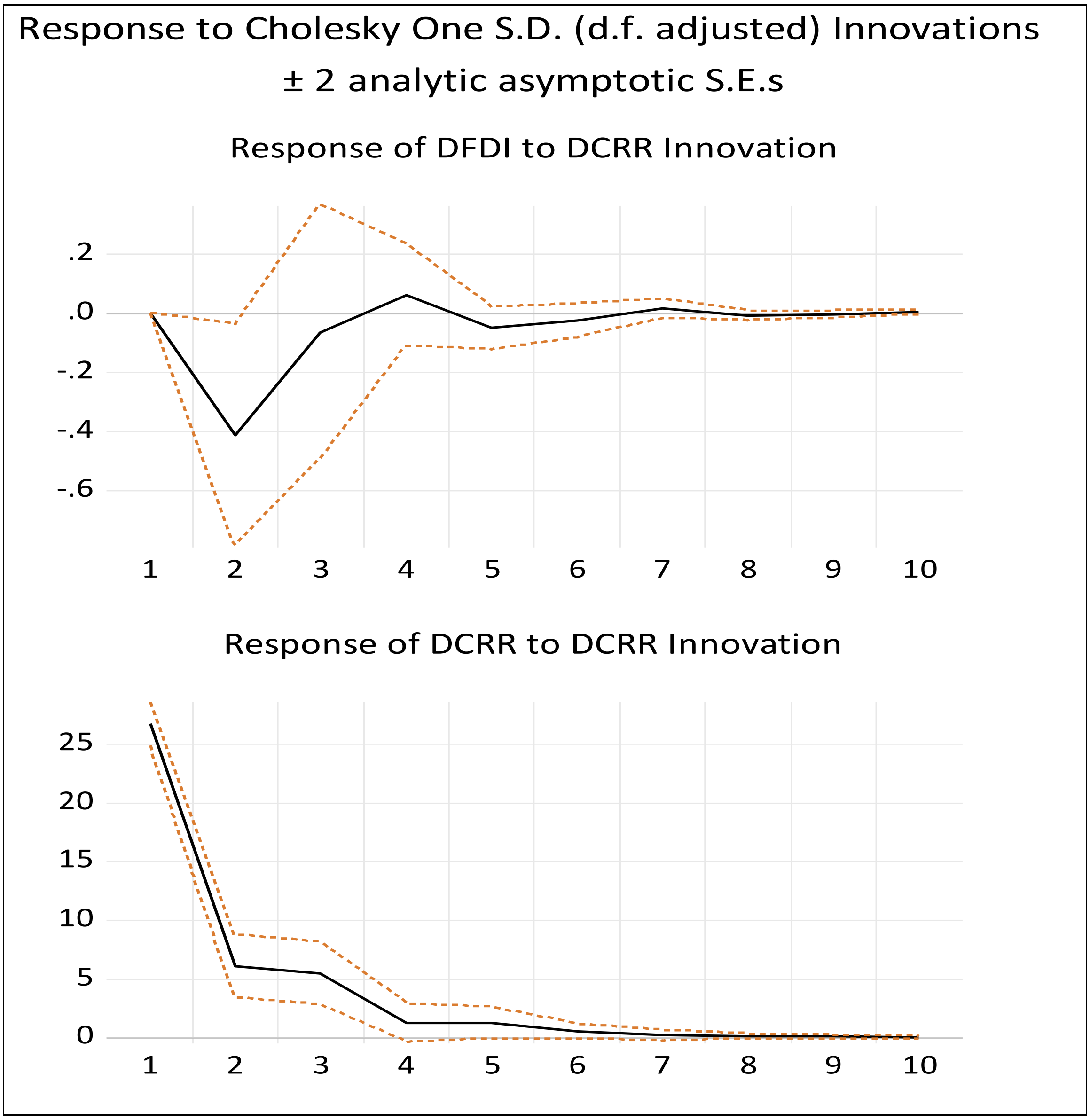

Figure 3: Impulse response of FDI to Crime shocks

3.4 Panel VAR Model Forecast Error Variance Decomposition

The results of variance decomposition at the Panel VAR Model reveal the forecast error in each variable that can be attributed to innovations in other variables over ten-year periods. However, it helps identify the main channels of influence for individual variables. Following Yakubu et al. (2013) and Musa & Jibrin (2013), the number under each variable represents the percentage of variance that was attributable to the dependent variable over a 10-year period.

Panel Variance of real Gross domestic product

According to Table 7, the rate of change of real GDP accounted for its contemporary variance from its own innovations by about 98 percent through the study periods. There was some variation caused by the crime rate. However, as periods increase, the variation caused by the crime rate may increase. Hence, the effect caused by the crime rate on real GDP is greater compared to other variables in the study.

Table 7: Variance error decomposition of RGDP

Period	S.E.	DRGDP	DFDI	DCRR	DPOP
1	4.040386	98.84881	0.333715	0.764536	0.052943
2	4.387959	98.92577	0.369780	0.648253	0.056196
3	4.417928	98.14290	0.569603	1.231258	0.056237
4	4.458152	98.11021	0.560669	1.273681	0.055439
5	4.464126	97.98241	0.690801	1.270771	0.056017
6	4.466351	97.91137	0.757706	1.274718	0.056209
7	4.467091	97.91084	0.758219	1.274644	0.056294
8	4.467338	97.90311	0.765801	1.274508	0.056585
9	4.467428	97.89927	0.769422	1.274509	0.056795
10	4.467445	97.89902	0.769468	1.274508	0.057007

Cholesky One S.D. (d.f. adjusted)
Cholesky ordering: DCRR DPOP DFDI DRGDP

Panel Variance of Foreign direct investment

The panel variance decomposition of foreign direct investment is also given in Table 8. Panel variance of foreign direct investment was caused largely by its own innovations in the initial period, with 98 percent, with some contribution from other variables in the later periods. Though the variation caused by other variables was significantly less, the effect of the crime rate was below 1% throughout the study periods.

Table 8: Variance error decomposition of FDI

Period	S.E.	DRGDP	DFDI	DCRR	DPOP
1	4.040386	0.000000	99.87898	0.094752	0.026265
2	4.387959	1.231349	97.91891	0.825158	0.024580
3	4.417928	1.243118	97.88792	0.844311	0.024655
4	4.458152	1.933814	97.18260	0.857669	0.025920
5	4.464126	2.227227	96.87967	0.867175	0.025930
6	4.466351	2.227268	96.87596	0.870839	0.025933
7	4.467091	2.285949	96.81499	0.872973	0.026089
8	4.467338	2.302238	96.79864	0.873040	0.026078
9	4.467428	2.302213	96.79851	0.873168	0.026107
10	4.467445	2.304749	96.79584	0.873258	0.026156

Cholesky One S.D. (d.f. adjusted)
Cholesky ordering: DCRR DPOP DFDI DRGDP

3.5 Panel Pairwise granger causality test

Table 9: Panel VAR Granger Causality Test

Variable	Causal Relationship	Chi-square	p-value
Panel RGDP	FDI → RGDP	1.344819	0.5105
	CRR → RGDP	2.468274	0.2911
	POP → RGDP	0.488744	0.7832
	All	4.250629	0.6428
Panel FDI	RGDP → FDI	8.481536	0.0144*
	CRR → FDI	7.456548	0.0240*
	POP → FDI	0.038880	0.9807
	All	17.88339	0.0065*
Panel CRR	RGDP → CRR	2.460086	0.2923
	FDI → CRR	28.52644	0.0000*
	POP → CRR	0.051032	0.9748

	All	31.09762	0.0000*
Panel POP	RGDP → POP FDI → POP CRR → POP	0.079110 0.110125 0.065037	0.9612 0.9464 0.9680
	All	0.238819	0.9997

* Significant at 5% level

The variety of the empirical data may suggest that in the causal relationship between crime rate and economic development, the study variables alter the direction of causality. The geo-economic conditions of the sample countries in this study varied, as indicated by the empirical data indicating various causal correlations between the studied variables and crime. From Table 9, though, there is no substantial causal association between economic growth and the crime rate, but there is a unidirectional correlation between economic growth and foreign investment, where development in the economy boosts foreign investment. This suggests that foreign investment is not strong enough to support economic development and potentially implies that in sub-Saharan African countries, economic growth is vital for enhancing foreign investment. However, as demonstrated by the data, there is a clearly a bidirectional causal relationship between foreign investment and crime rates. Sub-Saharan countries with a higher crime rate may continue to face less foreign investment and possibly even economic development.

4.0 Conclusion

The study uses a panel VAR approach to objectively examine the influence of crime on foreign investment and economic development in 22 sub-Saharan African countries. The dynamic correlations of variables have been captured by the studies of impulse response function and error variance decomposition. The causal relationship between crime rate and growth indicators was also explored. The research variables are differences to make the variables stationary, and the variables enter the panel VAR model in first differences, which assures their stationarity. Impulse Response Functions (IRFs) depict how individual variables respond to shocks from other variables in the system, and the results suggest the crime rate has a considerable influence on the economic growth of sub-Saharan African countries, however with relatively low magnitude. The richness of natural resources in most sub-Saharan African countries adds to their economic success. The error variance decomposition for Panel VAR helps identify the primary pathways of effect for individual variables. During the research periods, the rate of change of real GDP accounted for its current variation from its own innovations by around 98 percent. There was some variance due by the crime rate. However, as periods lengthen, the variance produced by the crime rate rises. Hence, the effect induced by the crime rate on real GDP is bigger than other factors in the study.

Similarly, the study suggests a varied causal link between crime rate and growth indicators. Although there is no significant causal relation that exists between economic growth and the crime rate, however, there is a unidirectional causality between economic growth and foreign investment, where growth in the economy enhances foreign investment, which perhaps implies that in sub-Saharan countries, economic growth is important for improving foreign investment. However, as demonstrated by the data, there is a bidirectional causal link between foreign investment and crime rates. Overall, it is obvious that the influence of the crime rate in sub-Saharan African nations cannot be disregarded; the countries with a higher crime rate may continue to suffer sluggish economic growth and extremely low foreign investment in due course.

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