European Journal of Government and Economics

ISSN: 2254-7088

Effect of military spending on private investment in Nigeria: does a crowding-out effect exist?

Isiaka Akande Raifu [a] *

[a] Department of Economics, Faculty of Economics and Management Sciences, University of Ibadan, Ibadan, Oyo State, Nigeria

*** Corresponding author at:** heritagetiamiyu@gmail.com

Abstract. This study adopts ARDL and VAR estimation methods to examine whether military spending crowd-out or crowd-in private investment in Nigeria. We use the data that covers the period from 1970 to 2019. Our results, based on the ARDL method, show that military spending only crowds-out private investment in the short run. In the long run, military spending crowds in private investment. The results are robust to the use of alternative estimation methods. Specifically, IRF results show that military spending has a contemporaneous negative effect on private investment. However, the negative effect turns positive after the third period. Also, FEVD results show that most of the variation in private investment is explained by its shock and few by military spending. Our findings have policy implications. While it is advisable to spend more on the military to curtail the activities of insurgents, bandits and kidnappers and to restore confidence in investors, it is important also to take cognisance of the fact that military spending can crowd out private investment.

Keywords. military spending, private investment, crowding-out effect.
JEL Codes. H56; C23
DOI. https://doi.org/10.17979/ejge.2022.11.2.8758

1. Introduction

The role of government spending in engendering economic growth has received both commendation and condemnation in the economic literature. From a commendation perspective, it is believed that government provides some vital services that aid and sustain the economy. Such services include the provision of public goods such as national defense, the rule of law and law enforcement, among others. These goods are not provided by individual citizens or private organisations in most countries because there are no incentives to produce such goods (Wagner, 2007). Thus, the duty of the government is to ensure that the lives and properties of its citizens and foreigners living within its territory are protected against internal and external invaders. Apart from this, when the economy is in crisis, especially during an economic recession, the government is usually called upon to spend more to bail the economy out of recession. Government spending during this period, as argued, would raise effective demand, boost production and investment and

spur economic growth through the multiplier effect (Keynes, 2018). From a condemnation perspective, however, it is believed that government spending, in most cases, is financed by taxes paid by individual citizens or private organisations. Such tax-financing government expenditure increases the tax burden on citizens and private organisations and thereby leads to a reduction in citizens' spending or private organisations' spending and investment, which would eventually lead to the "crowding-out" of private investment (Stratmann and Okolski, 2010).

Apart from health and education, the government also spends on the military for the procurement of arms and ammunition to provide security against external aggressions. Besides the procurement of military arsenals, the government also spends on the military to take care of military personnel welfare, which includes the regular payment of salary and other benefits. While some defense economists believe that military spending can be beneficial to investment, economic growth and employment, others submit that such an increase in military spending has opportunity costs. Those who are against the increase in military spending argue that, in the presence of scarce resources, the allocation of more funds to the military implies depriving other areas of the economy. Smith (1980) submits that increase in military spending affects the public components of consumer consumption expenditure which is maintained through political pressure. Besides, he further argues that military gadgets are produced by highly capitalised industries and thus, an increase in military spending has a direct effect on private investment with an inelastic capacity. Hence, military spending and private investment usually compete for a fixed proportion of public resources. In this case, military spending does crowd-out private investment in the long run (Scott, 2001; Hou and Chen, 2014). Apart from the arguments for and against a perpetual increase in military spending, there is growing concern among citizens across the world, especially in advanced countries, about the perpetual increase in military spending (Sajid, 2021). Many of the citizens are openly expressing their dissatisfaction through different media, such as protests, jingles and other means. In the United States, for instance, Sajid (2021) noted that a great proportion of the budget is devoted to military spending on an annual basis. In 2020, out of a total of $4.7 trillion budget, about $0.73 trillion went to defense spending, suggesting that other areas of the economy, such as education and health, are likely to be affected. The ultimate consequence of the growing military spending in the country is mounting public debt and budget deficit on an annual basis, which in turn, could have a detrimental effect on the overall economy (Caruso and Di, Domizio, 2017; Sajid, 2021).

Figure 1 shows the evolution of military spending from 1970 to 2019 in Nigeria. It is evident from the Figure that there was a significant rise in military spending after the Civil War of 1967-1970. The increase in military spending then was to fortify the military, train the newly recruited military officers, build military barracks and training institutions, procure more ammunition and take care of the general welfare of the military officers. Thereafter, military spending declined considerably, even during periods of military regimes. However, in recent times, there has been an upsurge in military spending aimed at procuring arms and ammunition to fight against insecurity, emanating majorly from the terrorism activities of Boko Haram and the Islamic State of

West African Province (ISWAP).1 The terrorist activities of Boko Haram and ISWAP have not only led to the loss of lives, loss of properties and displacement of people but also the loss of investment, especially in the Northern region. According to the Global Conflict Tracker (2021), more than 350,000 people have lost their lives, more than 3 million people have been displaced from their permanent habitations, and nearly 310,000 people have become refugees.2 Besides, farming in the North, especially in the northeast, has been adversely affected, resulting in low agricultural productivity (Adelaja and George, 2019). Moreover, cross-border trading or business has been drastically reduced between the north and its neighbouring countries such as Niger (Kimenyi, et al. 2014). In fact, Okereocha (2012) submits that the country has lost about N1.33 trillion in Foreign Direct Investment.

In light of this, the primary objective of this study is to examine whether or not an increase in military spending crowds out private investment in Nigeria. Researchers have been keenly interested in studying the relationship between military spending and private investment to detect a crowding-out effect. The empirical findings are diverse depending on a group of countries or a country studied, the models adopted, the estimation techniques used and the measures of military spending used. Besides, most of the extant studies focused on developed economies such as OECD member countries and others (Smith, 1980-OECD; Smith and Dunne, 2001; Hou and Chen, 2014; Dunne and Smith, 2020; OECD; Gold, 1997; Atesoglu, 2004; Perioni, 2009-USA; Scott, 2001-UK, Smith and Dunne, 2001; Malizard, 2015-France; Üçler, 2016-Turkey; Kennedy, 2021-Indonesia). Studies that examine how military spending affects investment in Nigeria are relatively scarce. However, there are a couple of studies that examined the effect of military spending on foreign direct investment but not on domestic private investment (Adediran et al., 2018; Edith et al., 2019). It is, however, known that foreign investors, in most cases, bring their capital to invest in many developing countries like Nigeria. Most of them hardly depend on the domestic capital market to finance their investments. Hence, the issue of the government competing with them for funds in the financial market does not arise. Thus, it cannot be said that military spending crowds out foreign direct investment. The same cannot be said of domestic private investors who, in most cases, seek funds in the domestic financial market.

To explore the impact of military spending on private investment, we set out to achieve two objectives. The first objective is to examine whether the crowding out of military spending occurs in the short run or the long run. This is important for policy decision-making. Assuming that the crowding-out effect occurs in the short run, it would inform the government that its spending, including military spending, does not have a permanent effect on private investors. However, if it occurs in the long run, this may call for drastic reforms in the way the government gets involved in the financial market. To achieve this objective, we employ a novel Autoregressive Distributed Lag (ARDL) estimation method developed by Pesaran et al. (2001). The method can be used to distinguish the effect of military spending on private investment in the short run from the long run.

[1] The issue of insecurity has become complicated as there are currently rises in the activities of bandits, kidnappers, herders-farmers conflicts and the host of others. It is also observed that military spending is subject occasional fluctuations due to the instability of crude oil prices (Raifu and Raheem, 2018; Aminu and Raifu, 2019, Raifu and Aminu, 2020, Raifu, Aminu and Folawewo, 2020; Raifu, 2021)

[2] https://www.cfr.org/global-conflict-tracker/conflict/boko-haram-nigeria

Although Error Correction Model (ECM) can also be used to achieve the same objective, however, the method has some limitations. One of the limitations of using ECM estimation is that they are only applicable when the variables are integrated of order 1, a condition that may not be met in practice. In practice, some variables could be integrated of order 0 or order 1 or a mixture of both. ARDL estimation method becomes useful when the variables display these characteristics. It must, however, be stated that ARDL can be rendered unusable if any of the variables are integrated of higher order, especially the integrated order of 2. The second objective is to examine the dynamic effect of military spending on private investment over time. In this case, we employ Sims (1980)'s Vector Autoregressive method and compute the necessary Impulse Response Function (IRF) as well as Forecast Error Variance Decomposition (FEVD). With this approach, it is possible to trace the dynamic effect of military spending on private investment over time.

The rest of the study is structured as follows. Section 2 reviews the existing studies. Section 3 presents the theoretical framework, estimation model as well data sources. The results are presented in section 4. Section 5 concludes with policy implications.

2. Literature review

Most of the studies on the effect of military spending on the economy are concentrated on how military spending affects economic growth. Beginning with Benoit (1978), who concluded that military spending is positively correlated with economic growth in developing countries, a huge number of studies had been conducted in different countries and groups of countries to thoroughly examine the effect of military spending on economic growth. However, a concrete consensus as regards the real effect of military spending on economic growth has not been reached. Dunne and Smith (2013) summarised the rationales for this development as follows: different theoretical considerations and methodological approaches, different countries considered, different data and periods employed (see also Alptekin and Levine, 2012). Consequently, some studies documented the positive effect of military spending on economic growth (Saba and Ngepah, 2019), while others established a negative effect of military spending on economic growth (Shahbaz, Afza and Shabbir, 2013). There are some strands of studies that did not establish any cogent nexus between military spending and economic growth. (Minzt and Huang, 1990).

As regards the effect of military spending on investment, Table 1 summarises the empirical findings from the existing studies. Like the studies on the nexus between military spending and economic growth, the relationship between military spending and investment remains inconclusive. From the table, three empirical findings could be deduced irrespective of different estimation techniques deployed, country or countries studied as well as periods considered. The crowding-out effect of private investment by military spending, however, dominates the literature (Smith, 1980; Dreger, 1986; Knight, et al., 1996; Scott, 2001; Pieroni 2009; Hou and Chen, 2014; Malizard, 2015; Lorusso and Pieroni, 2017; Kennedy, 2021). This notwithstanding, a handful of studies concluded that military spending crowded-in investment (Üçler, 2016; Kollias and

Paleologou, 2019). The third strand of studies did not find any evidence of a relationship between military spending and investment (Smith and Dunne, 2001; Morales-Ramos, 2020; Atesoglu, 2004; Dunne and Smith, 2020).

The relationship between military spending and investment could still be complementary. This is established by Malizard (2015) who investigated whether military spending crowded-out investment in France using disaggregated data. The evidence of complementarity comes from the relationship between public investment and private investment. According to him, the reason for this phenomenon could be adduced to the fact that the military equipment sector in France is highly capitalistic and, as such, defense in R & D may contribute to the private sector productivity. The way military spending affects private investment could depend on the level of economic development of a country. Kollias and Paleologou (2019), who investigated the effect of military spending on economic growth and investment, concluded that military spending has a positive and significant effect on investment in high-income countries whereas its effect on low-income and middle-income countries is negative. This outcome for the low-income and middle-income countries is rationalised by the fact that most of the countries belonging to these groups could be facing the challenges of resource constraints. Hence, devoting more resources to the military at the expense of other productive projects appears to be disastrous to private investment.

The studies reviewed above are done for other countries. Most of the studies on military spending in Nigeria focused on the effect of military spending on the economy captured by GDP (Apanisile and Okunola, 2014; Ajefu, 2015; Temiyope and Ajala, 2021; Oji and Afolabi, 2022). However, a couple of studies have examined the effect of military spending on foreign direct investment in Nigeria (Aderemi, et al. 2018; Edith et al., 2010). Some studies also examined the effect of the general government on private investment in Nigeria without a specific reference to the influence of military spending on private investment (Akinlo and Oyeleke, 2018; Olaifa and Benjamin, 2020). Given the paucity of studies on the nexus between military spending and private investment in Nigeria, this study is conducted to fill this gap.

Table 1. Literature review: summary table.

Author	Topic	Sample/Date/Method	Findings
Smith (1980)	Military Expenditure and Investment in OECD Countries, 1954-1973	14 OECD 1953–1974 OLS	Negative effect (crowd-out)
Dreger (1986)	Military Expenditure in the Third World Countries: The Economic Effect	50 LDCs, 1965–1973	Negative effect (crowd-out)
Knight, Loayza and Villanueva (1996)	The peace dividend: military spending cuts and economic growth	79 countries, 1971–1985 Fixed Effect	Negative effect (crowd-out)
Gold 1997	Evaluating the trade-off between military spending and investment in the United States	USA 1949-1988 ECM	Short-run negative effect (crowd-out) Long-run (No crowd-out)
Smith and Dunne (2001)	Military Expenditure Growth and Investment	28 OECD countries 1960-1997 OLS, Fixed Effects, Random Coefficient Model and VAR	Neither crowd-out not crowd-in
Scott (2001)	Does UK defence spending crowd-out UK private sector investment?	UK 1974-96 OLS	Negative effect (crowd-out)
Atesoglu, (2004)	Defense spending and investment in the United States	USA 1947Q1–2001Q3 Johansen cointegration	No crowd-out
Pieroni (2009)	Does defence expenditure affect private consumption? Evidence from the United States	USA 1957-2005 VECM	Negative effect (crowd-out)
Hou and Chen (2014)	Military Expenditure and Investment in OECD Countries: Revisited	13 OECD countries 1971–2012 OLS, Pooled LS, two-way fixed effects and random effect	Negative effect (crowd-out). However, it fizzles out over time, especially after the cold war
Malizard (2015)	Does military expenditure crowd out private investment? A disaggregated perspective for the case of France	France 1980-2010 DOLS, FMOLS and CCR	Military equipment and private investment are complementary
Üçler (2016)	Testing the relationship between military spending and private investments: Evidence from Turkey	Turkey 1975-2014 *Maki's cointegration, DOLS and Hatemi-J causality test*	Positive effect (crowd-in)
Lorusso and Pieroni (2017)	The effects of military and non-military government expenditures on private consumption	USA 1960–2013 SVAR and DSGE	Civilian spending-positive effect (crowd-in) Military spending–negative effect (crowd-out)
Kollias and Paleologou (2019)	Military spending, economic growth and investment: a disaggregated analysis by income group.	65 countries 1971–2014 PVAR	high-income group-positive effect (crowd-in) low-income and middle-income countries-negative (crowd-out)
Dunne and Smith (2020)	Military expenditure, investment and growth	17 OECD countries POLS, Fixed Effect, Pooled Mean Group	Neither crowd-out nor crowd-in
Morales-Ramos (2002)	Defence R&D expenditure: The crowding-out hypothesis	The UK- 1966–1996. OLS, 2SLS. France, Germany, UK, USA and Japan, for the period from 1971-1996	No crowding-out-UK No crowding out for others. However, the indirect crowding-out effect occurs through saving,
Kennedy (2021)	The Effect of Defense Spending on Private Investment in Indonesia Based on Historical Data for the Period 1981-2010	Pakistan 1981-2010 OLS	Negative effect (crowd-out)

3. Theoretical consideration, model specification and data sources

3.1 Theoretical consideration and model specification

There are three theoretical models (supply model, demand model and supply-demand model) used to explore the crowd-out effect of military spending (see Morales-Ramos, 2002). In this study, we adopt a demand model. We chose the demand model because we can easily get data for its estimation. The demand model rests on the Keynesian Theory, which considers military spending as part of aggregate demand. Following Hou and Chen (2014), the demand model begins with the national accounting identity specified as follows:

$$Y = Q - W = C + I + M + B\,, \qquad [1]$$

where Y denotes actual production in the economy, Q is the potential output, W refers to the gap between actual output and potential output. C, I, M and B are aggregate consumption, investment (could be private or public investment), military spending and balance of trade, respectively. Equation 1 can be re-specified if we express it as a share of potential output. Thus, equation 1 becomes

$$i = 1 - w - c - m - b \qquad [2]$$

According to Smith (1980), the share of consumption is

$$c = \alpha_o - \alpha_1 u - \alpha_2 g \qquad [3]$$

Here u is the unemployment rate, g is the actual output growth rate. It is believed that when the shares of unemployment and actual output in potential output increase, the share of consumption in it should decline. When this happens, equations 2 and 3 become:

$$i = (1 - \alpha_0) + \alpha_1 u + \alpha_2 g - m - (w + b) \qquad [4]$$

Assume that $(w + b)$ is related unemployment rate as follows: $(w + b) = \beta u$. Then equation 4 can be rearranged as:

$$i = (1 - \alpha_0) - (\beta - \alpha_1) u + \alpha_2 g - m \qquad [5]$$

In many empirical studies that employ the demand model to investigate the crowding-out effect of military spending on investment, equation 5 is often adopted. Equation 5 can be formalised as an econometric model as follows:

$$i_t = \alpha_0 + \alpha_1 u_t + \alpha_2 g_t + \alpha_3 m + \varepsilon_t \quad [6]$$

On a priori ground, if the coefficient of military spending is negative, that is, α_3 is negative, it means that military spending crowds out private investment.

Following Raifu and Afolabi (2022) and Raifu, Obijole and Nnadozie (2022), equation 6 is formalised into the ARDL framework as follows:

$$\Delta i_t = \alpha_0 + \alpha_1 i_{t-1} + \alpha_2 u_{t-1} + \alpha_3 g_{t-1} + \alpha_4 m_{t-1} + \sum_{i=1}^{l} \phi_1 \Delta i_{t-1} + \sum_{i=0}^{p1} \phi_2 \Delta u_{t-1} + \sum_{i=0}^{p2} \phi_3 \Delta g_{t-1} + \sum_{i=0}^{p3} \phi_4 \Delta m_{t-1} + \varepsilon_t \quad [7]$$

In equation 7, Δ is the first difference operator, α_0 is a constant and drift component of the model, α_1 to α_4 are the long-run coefficient parameters which show the effects of lags of investment, unemployment, actual output growth rate and military spending investment. φ_1 to φ_4 are the short-run coefficient parameters showing the effects of the aforementioned independent variables on investment. We test the null hypothesis of the long run, which states that there is no long-run relationship among the variables $(H_0 : \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0)$, against the alternative hypothesis, which stipulates that there is a long-run relationship among them $(H_0 : \alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq 0)$. The error correction model, which shows the speed of adjustment from the short-run disequilibrium towards the long-run equilibrium, is specified as follows.

$$\Delta i_t = \alpha_0 + \sum_{i=1}^{l} \phi_1 \Delta i_{t-1} + \sum_{i=0}^{p1} \phi_2 \Delta u_{t-1} + \sum_{i=0}^{p2} \phi_3 \Delta g_{t-1} + \sum_{i=0}^{p3} \phi_4 \Delta m_{t-1} + \lambda ect_{t-1} + \varepsilon_t , \quad [8]$$

where ect is the error correction term, it is expected that λ the coefficient of error term must be negative, less than 1 and statistically significant to claim that there is an adjustment from the short-run disequilibrium towards the long-run equilibrium.

For the second objective, we use Vector Autoregressive (VAR) method. The basic principle of VAR is that all variables are treated endogenously and expressed as the lags of one another, that is, the lag of dependent variables and independent variables for each variable. Our VAR model consists of four variables which include military spending, private investment, real GDP and unemployment. The general VAR framework is specified as follows:

$$X_t = \beta_0 + \sum_{t=1}^{k} \beta_I X_{t-1} + \varepsilon_t , \quad [9]$$

where X_t = (private investment, military spending, real GDP, unemployment), ε_t is the error term, β_0 denotes the identity matrix and $\beta_1 - \beta_k$ are four by four matrices of the coefficients. We compute impulse response which shows the response of private investment to innovative shocks to military spending as well as other variables included in the model. The orthogonalised IRS is computed using a Cholesky decomposition of the variance-covariance matrix of residuals following Shan (2002). Thereafter, the FEVD, which depicts the proportion of private investment that can be explained by its shock and shock to military spending is also estimated.

3.2 Data sources and preliminary findings

The data used for analysis are sourced from different databases. Military spending, either in dollar value or as a percentage of GDP, is obtained from the Stockholm International Peace Research Institute. Private investment is gathered from the International Monetary Fund. Real GDP is extracted from the World Development Indicators and the unemployment rate is sourced from the National Bureau of Statistics. The data covers the period from 1970 to 2019. Figures 1 to 4 show the trend of these variables over the period under consideration. Specifically, Figure 1 shows the evolution of military spending over the period. It is observed that Nigeria spent more on the military around the 1970s as the period saw military spending rose significantly. This could be attributed to the rebuilding of the military in terms of training of newly recruited soldiers, building of military barracks and training schools and procurement of arms and ammunition after the civil wars. However, spending on the military declined throughout the 1980s and 1990s. In recent times, due to internal crises such as the rising rate of insecurity engineered by insurgent activities such as Boko Haram, ISWAP, Bandits, Kidnappers and gunmen, the government has increased military spending. Figure 2 depicts the trend of private investment. As shown in the Figure, private investment soared around the 1970s to the early 80s. This could be attributed to the indigenisation policy of the government around the period. However, from the middle of the 1980s, private investment declined throughout the 1990s until 2001, when it rose again. This could be attributed to the return of the country to a democratic system of government which restores confidence in investors due to some economic reforms embarked upon by the new civilian government. Figures 3 and 4 are the trend of real GDP and unemployment rate, respectively.

Table 2 presents the results of descriptive statistics. The mean value of private investment stood at $42.83 million. The average military spending in dollar value stood at $1.962 billion. This represents 1.77% of gross domestic product. The mean value of unemployment stood at 11.35% while GDP's mean value stood at ₦32, 553.93 billion. In Table 3, the results of correlation analysis among the variables are presented. It is obvious from the Table that military spending in dollar value is positively and significantly correlated with private investment. However, military sending as a percentage of GDP is negatively correlated with private investment. The negative correlation is insignificant. Real GDP and unemployment are positively and significantly correlated with private investment.

We also conduct a unit root test to determine the stationary properties of our variables of interest. Conducting a unit root test is necessary to avoid running spurious regression. We use Augmented Dickey-Fuller (ADF), Phillips-Perron (PP) and (KPSS) unit root test methods. While ADF and PP assume that variables contain a unit root, KPSS assumes that variables are stationary. The results are presented in Table 4. Evidence from the Table shows that all the variables are integrated of order 1, that is, they contain unit root and they become stationary after the first difference.

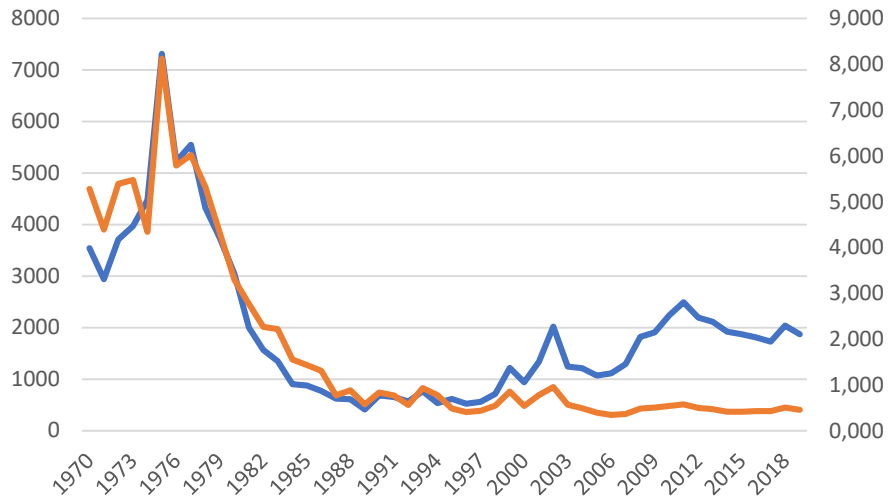


Figure 1. Military spending in million USD (blue line, left axis) and as a percentage of GDP (orange line, right axis).

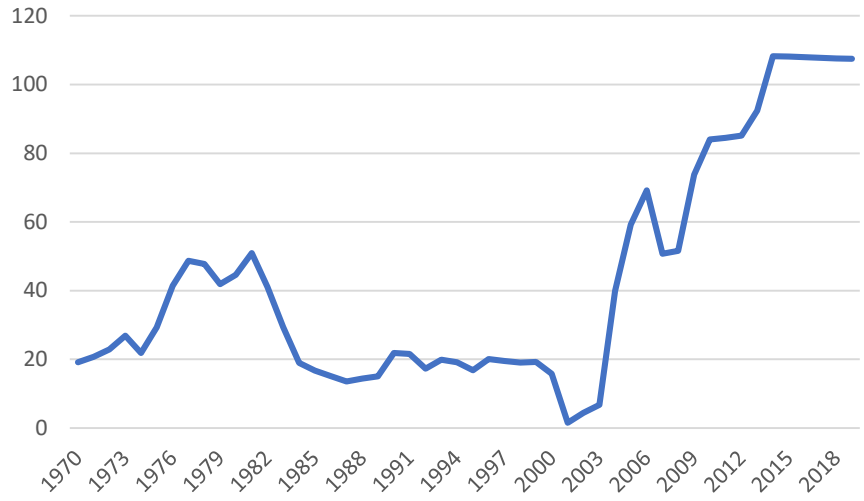


Figure 2. Private investment (B'USD).

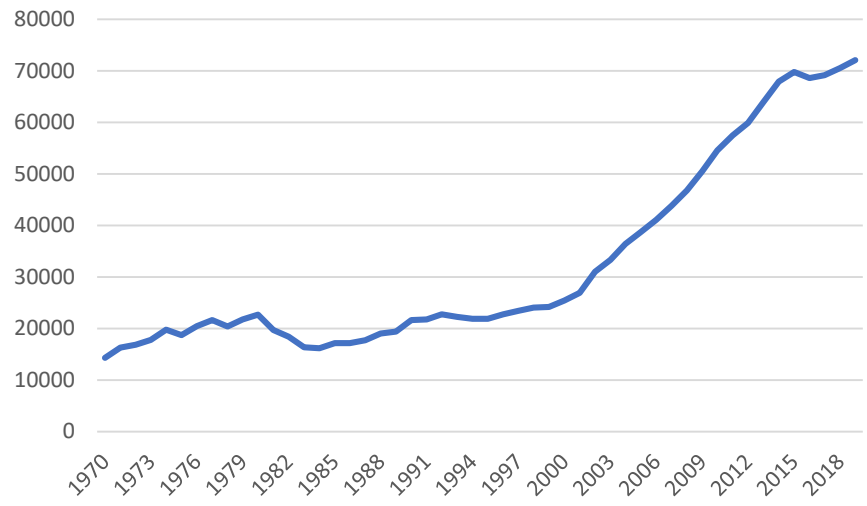


Figure 3. Real GDP.

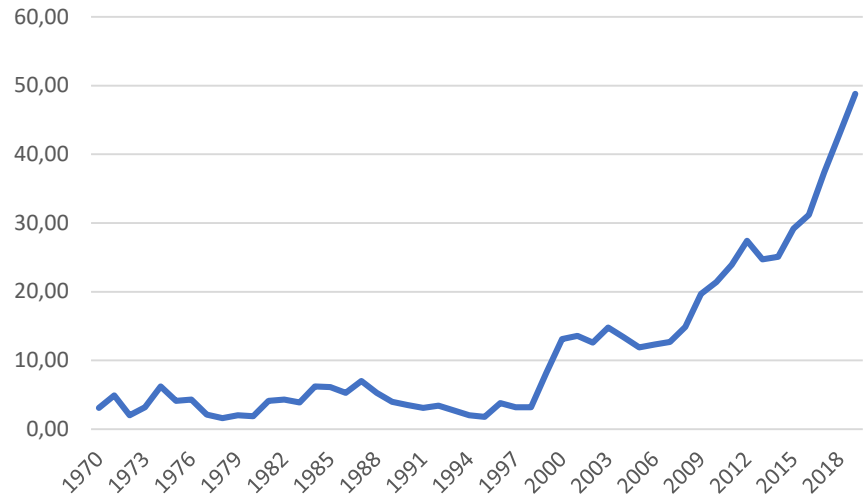


Figure 4. Unemployment rate.

Table 2. Descriptive statistics.

Variables	Obs	Mean	s.d.	Min	Max	p1	p99	Skew.	Kurt.
PI	50	42.829	32.861	1.557	108.273	1.557	108.273	0.901	2.479
MIL	50	1962.5	1504.737	415.000	7314	415.000	7314.000	1.513	5.139
MIL_GDP	50	1.768	2.013	0.348	8.124	0.348	8.124	1.475	3.947
Real GDP	50	32553.93	18606.42	14306.1	72094.1	14306.1	72094.1	1.054	2.574
UNEMP	50	11.354	11.562	1.600	48.820	1.600	48.820	1.524	4.654

Note. PI, MIL, MIL_GDP, Real GDP and UNEMP are private investment, military spending in dollar value, military spending as a percentage of GDP, real gross domestic product and unemployment rate respectively.

Table 3. Pairwise correlations.

Variables	PI	MIL	MIL_GDP	RGDP	UNEMP
PI	1				
MIL	0.357*	1			
MIL_GDP	-0.156	0.656*	1		
RGDP	0.646*	0.104	-0.660*	1	
UNEMP	0.433*	0.064	-0.612*	0.871*	1

* shows significance at the 0.05 level

Note. PI, MIL, MIL_GDP, Real GDP and UNEMP are private investment, military spending in dollar value, military spending as a percentage of GDP, real gross domestic product and unemployment rate respectively

Table 4. Unit Root Test result.

	Level			First Difference			Decision
	WC	**WC&T**	**WDC&T**	**WC**	**WC&T**	**WDC&T**	
Augmented Dickey-Fuller Unit Root Test							
PI	-1.720	-2.032	0.079	-6.610***	-6.563***	-6.649***	I(1)
MIL	-1.470	-1.207	-0.508	-7.436***	-7.511***	-7.505***	I(1)
MIL_GDP	-1.506	-1.750	-1.577	-8.636***	-8.658***	-8.377***	I(1)
RGDP	0.653	-1.368	2.428	-2.266	-2.472	-2.654***	I(1)
UNEMP	-0.566	-2.298	0.785	-3.200**	-3.294*	3.038***	I(1)
Phillips-Perron Unit Root Test							
PI	-1.768	-2.085	0.381	-6.952***	-7.220***	-6.875***	I(1)
MIL	-1.605	-1.344	-0.481	-7.475***	-7.522***	-7.533***	I(1)
MIL_GDP	-1.478	-1.663	-1.563	-8.566***	-8.676***	-8.265***	I(1)
RGDP	0.222	-1.214	2.930	-5.387***	-5.511***	-4.610***	I(1)
UNEMP	-0.484	-2.345	1.009	-7.466***	-7.580***	-7.377***	I(1)
KPSS Unit Root Test							
PI	0.324	0.174**	-	0.137	0.109	-	I(1)
MIL	0.245	0.202**	-	0.210	0.084	-	I(1)
MIL_GDP	0.785***	0.201**	-	0.159	0.058	-	I(1)
RGDP	0.831***	0.211**	-	0.189	0.092	-	I(1)
UNEMP	0.768***	0.162**	-	0.129	0.041	-	I(1)

Note. PI, MIL, MIL_GDP, Real GDP and UNEMP are private investment, military spending in dollar value, military spending as a percentage of GDP, real gross domestic product and unemployment rate respectively

WC, WC&T and WDC&T denote unit root test with constant, with constant and trend and without constant and trend respectively. *, ** and *** denote 10%, 5% and 1% level of significance respectively.

4. Empirical results

4.1 ARDL results

Table 6 reports the results of the ARDL estimation method, which shows the effect of military spending and other control variables on private investment in the short run and the long run. However, before presenting the main results, which would show whether military spending crowds out or crowds in private investment, it is important to present the results of the ARDL bounds testing to discover whether there is cointegration among the variables in the models (military

spending, investment, economic growth and unemployment). The results of the ARDL bounds testing are reported in Table 5. The upper part is the result of bounds testing for model 1 – baseline model (model of military spending as a percentage of GDP (military burden) and private investment including control variables (GDP and unemployment)). The lower part is the result of bounds testing for model 2 - robustness model (military spending (dollar value) and private investment including control variables). To determine the existence of cointegration, Pesaran, et al (2001) provided lower and upper criteria based on F-statistic. If the computed F-statistic value falls below the lower bound F-statistic criteria, there is no cointegration among the variables. On the other hand, if the computed value of the F-statistic falls above the upper bound F-statistic criteria, there is cointegration. However, no decision would be made if the computed value of the F-statistic falls between the lower and upper bounds F-stat criteria. Our results, as shown in the Table, reveal that the computed values of F-statistic from the two models we estimated fall above the upper bounds of F-statistic criteria, signifying the existence of cointegration among our variables of interest. This implies that there is a long-run relationship among the variables. In the same, the results of the Error Correction Model reported in Table 6 show how fast the economy returns to equilibrium when it is temporarily destabilised by either internal or exogenous shocks. To determine whether there would be adjustment in the long run, the coefficient of error correction term must be negatively signed, less than one and statistically significant. Our results in the two models (model 1 and model 2) follow a priori expectations in the sense that they are negatively signed, less than one and statistically significant. Precisely, the coefficients of ECM in model 1 and model 2 are -0.530 and -0.567, respectively. This implies that there is an adjustment towards the long-run equilibrium from the short-run disequilibrium. Thus, we can conclude that about 50% of errors that occurred in the previous year can be corrected in the current year.

As regards the crowding-out of military spending, our results show that in the short run, military spending as a percentage of GDP has a negative effect on private investment (model 1). However, the negative effect is statistically significant and occurs with lags, specifically when military spending is lagged for two periods. Thus, when military spending as a ratio of GDP increases by 1%, private investment would decline by 0.566% in the short run. This suggests that military spending crowds out private investment in Nigeria. This short-run result is similar to most empirical findings in Table 1. For instance, Smith (1980) submitted that an increase in military spending by 1% would crowd out private investment in OECD countries with a degree of crowding-out very close to 1%. In many other countries, similar findings have also been documented (see Dreger, 1986 for LDCs, Knight et al., 1996 for 79 countries, Scott, 2001 for the UK, Pedroni 2009 and Lorusso and Pedroni, 2019 for the US and Kennedy, 2021 for Pakistan). However, most of these studies did not distinguish whether the crowding-out effect takes place in the short run or the long run. However, Hou and Chen (2014) stated that the negative effect of military spending fizzles out over time. After the cold war, they observed that military spending did not have a negative effect on private investment in OECD countries. Gold (1997) had previously concluded that the negative effect of military spending on private investment is a short-run phenomenon as the trade-off between the two variables fizzles out over time. These findings

are consistent with our long-run results. In the long run, we discover that military spending (% of GDP) has a positive and significant effect on private investment. Specifically, an increase in military spending leads to an increase in private investment by 0.548%. This means that military spending crowds-in private investment in the long run. Some studies, especially in advanced countries, that documented a positive effect of military spending on private investment explained their findings based on the positive externality effect of the defense industry. Specifically, it is argued that the defense industry can develop a new technology from their research and development activities which can quickly diffuse and affect other industries. This may not be a generalised explanation for all countries, especially for developing countries like Nigeria, which imports military hardware from developed countries. Thus, the crowding-in effect of military spending can be explained from another perspective. For instance, most countries bedevilled with insecurity problems, such as MENA countries and Nigeria, invested in arms and ammunition to wage war against insurgents to create a conducive environment for investment to thrive. The restoration of a secure environment brings about by the increase in military spending would restore confidence in investors, which in turn could boost investment in the long run.

We conduct a series of robustness tests to check the reliability of our results. In Table 6 model 2, we use military spending in dollar value to examine the effect of military spending on private investment. We find that our result remains unchanged as it is consistent with the result of model 1 both in the short-run and the long run.

Apart from this, we examine whether the crowding-in effect of military spending on private investment in the long run, would remain ditto if we apply other long-run estimation methods. Consequently, we use other estimation methods, such as Dynamic Ordinary Least Squares (DOLS), Fully Modified Ordinary Least Squares (FMOLS) and Canonical Cointegration Regression (CCR). The results of this exercise are reported in Table 7. It is evident from the Table that military spending crowds-in private investment in the long run irrespective of estimation methods.

For other control variables, we find that economic growth has a positive significant effect on private investment. This finding is inconsonant with economic rationality that the period of economic growth leads to a boom in private investment. However, unemployment has a negative insignificant effect on private investment, especially in the long run. Similar findings were documented for France by Malizard (2015), who found the accelerator effect of economic growth on private investment and the inverse or adverse effect of unemployment on private investment.

Post-estimation diagnostic test results are also presented in Table 6. The diagnostic tests, which show the reliability of the ARDL estimation technique adopted in this study include the Jarque-Bera normality test, Breusch-Godfrey serial correlation LM test, LM heteroscedasticity test, Ramsey Reset test and CUSUM and CUSUM Square tests. Most of the statistical tests must not be statistically significant to confirm that the ARDL estimation method and the results generated are reliable. Apart from the Jarque-Bera normality test, other tests such as Breusch-Godfrey serial correlation LM test, LM heteroscedasticity test and Ramsey Reset test show the ARDL results are reliable.

Table 5: Bounds Testing results.

Model 1				
F-Bounds Test	Null Hypothesis: No levels relationship			
	Value	**Significant Level**	**I(0)**	**I(1)**
	Asymptotic: n=1000			
F-statistic	5.708	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66
Model 2				
F-Bounds Test	Null Hypothesis: No levels relationship			
	Value	**Significant Level**	**I(0)**	**I(1)**
	Asymptotic: n=1000			
F-statistic	5.866	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Note. 1(0) is the lower bounds while I(1) is the upper bounds. F-statistic (at least at 5%) below lower bounds implies no cointegration, above upper bounds means cointegration and in-between the two bounds means indecision.

Table 6. ARDL results: effect of military spending on private investment.

Variable	**Model 1**	**Model 2**
	ARDL(3, 3, 0, 0)	**ARDL(3, 3, 0, 0)**
	SHORT-RUN	
CONSTANT	-76.661***	-57.833***
D(PI(-1))	0.180	0.178
D(PI(-2))	0.226*	0.255*
D(MIL_GDP)	-0.098	
D(MIL_GDP(-1))	-0.150	
D(MIL_GDP(-2))	-0.566**	
D(MIL)		-0.186
D(MIL(-1))		-0.168
D(MIL(-2))		-0.621**
ECT(-1)	-0.530***	-0.567***
	LONG-RUN	
MIL_GDP	0.548***	
MIL		0.465**
RDGP	2.605***	1.892***
UNEMP	-0.375	-0.395
R-squared	0.8396	0.8394
Adjusted R-squared	0.8006	0.8004
F-stat	21.517	21.490
	(0.0000)	(0.0000)
Durbin-Watson stat	1.990	1.9435
	DIAGNOSTIC TEST	
Jaque-Bera Test	656.869	640.650
	(0.000)	(0.0000)
B-G Serial Corr. LM Test	1.374	0.981
	(0.2662)	(0.3850)
ARCH LM HET Test	0.0684	0.067
	(0.7948)	(0.7964)
Ramsey Reset Test	2.278	2.685
	(0.1174)	(0.0620)
CUSUM Test	Stable	Stable
CUSUM of Squares Test	Unstable	Unstable

Note. PI, MIL, MIL_GDP, Real GDP and UNEMP are private investment, military spending in dollar value, military spending as a percentage of GDP, real gross domestic product and unemployment rate respectively

*, ** and *** denote 10%, 5% and 1% level of significance respectively

Table 7. Robustness: long-run effect of military spending on private investment from the DOLS, FMOLS and CCR estimation methods.

	(DOLS)	(FMOLS)	(CCR)		(DOLS)	(FMOLS)	(CCR)
MIL_GDP	0.387*	0.442**	0.431***	MIL	0.371*	0.405**	0.420***
	(0.216)	(0.172)	(0.155)		(0.215)	(0.172)	(0.155)
Real GDP	2.357***	2.774***	2.510***	Real GDP	1.803**	2.149***	1.909***
	(0.841)	(0.531)	(0.483)		(0.803)	(0.499)	(0.450)
UNEMP	-0.294	-0.472*	-0.288	UNEMP	-0.289	-0.487*	-0.315
	(0.453)	(0.263)	(0.244)		(0.463)	(0.256)	(0.236)
CON.	-68.781***	-81.313***	-73.454***	CON.	-54.296**	-64.903***	-57.842***
	(25.352)	(16.040)	(14.601)		(24.006)	(14.899)	(13.460)
Obs.	47	49	49	OBS	47	49	49
R-sq	0.713	0.620	0.577	R-sq	0.710	0.606	0.568

Standard errors are in parenthesis. *, ** and *** denote 10%, 5% and 1% level of significance respectively

Note. PI, MIL, MIL_GDP, Real GDP and UNEMP are private investment, military spending in dollar value, military spending as a percentage of GDP, real gross domestic product and unemployment rate respectively

4.2 VAR estimation results

Our second objective is to examine the dynamic effect of military spending on private investment. The optimal lag length selected is 4 using the Akaike information criterion. We do not report the result of the VAR estimation. We only report the results of impulse response function (IRF) and forecast error variance decomposition (FEVD). The results of the impulse response function are reported in Figures 5 and 6 for models 1 and 2. The IRF results show that one standard deviation shock to military spending has a contemporaneous negative effect on private investment. This implies that military spending crowds out private investment when there is a sudden shock to military spending. However, we observe that the negative effect of military spending on private investment turns positive after three periods, that is, after three years. This suggests that military spending crowds-in private investment in the long run. As previously mentioned, the increase in military spending in recent times in Nigeria is to tackle insecurity and thereby provide enabling environment for investment to thrive in the country. Thus, the need for security is a possible explanation for the positive shock of military spending to investment in Nigeria (Kollias and Paleologou 2019). This is contrary to the explanation given by Kollias and Paleologou (2019) for the high-income or industrialised countries that have military hardware manufacturing companies. The explanation of the persistent positive association between military spending and investment in high-income countries, according to Kollias and Paleologou (2019) is premised on the supply-side effects which are engineered by technological spillovers from the defense industry to the other sectors of the economy

The results of FEVD, which shows the proportion of variation in private investment explained by military spending shock, are reported in Table 8 for models 1 and 2 (The graphs of FEVD are put in the appendix). The results show that most of the variability in private investment is due to its shock. In specific terms, especially from the baseline model (model 1), 100% of the variation in private investment is due to its shock in period 1. However, it can be observed that the variation in private investment to its shock declines over time. In period 10, only about 36.55% variation in private investment is due to its shock. Military spending account for a 0% variation in private

investment in period 1. However, as the period increases, the variation in private investment caused by the military spending shock increases. In period 10, military spending shock explains about a 14.06% variation in private investment, signifying that military spending has a positive effect on private investment over time.

Figure 5: Response of Private Investment to Military Spending (% of GDP) and Other Variables

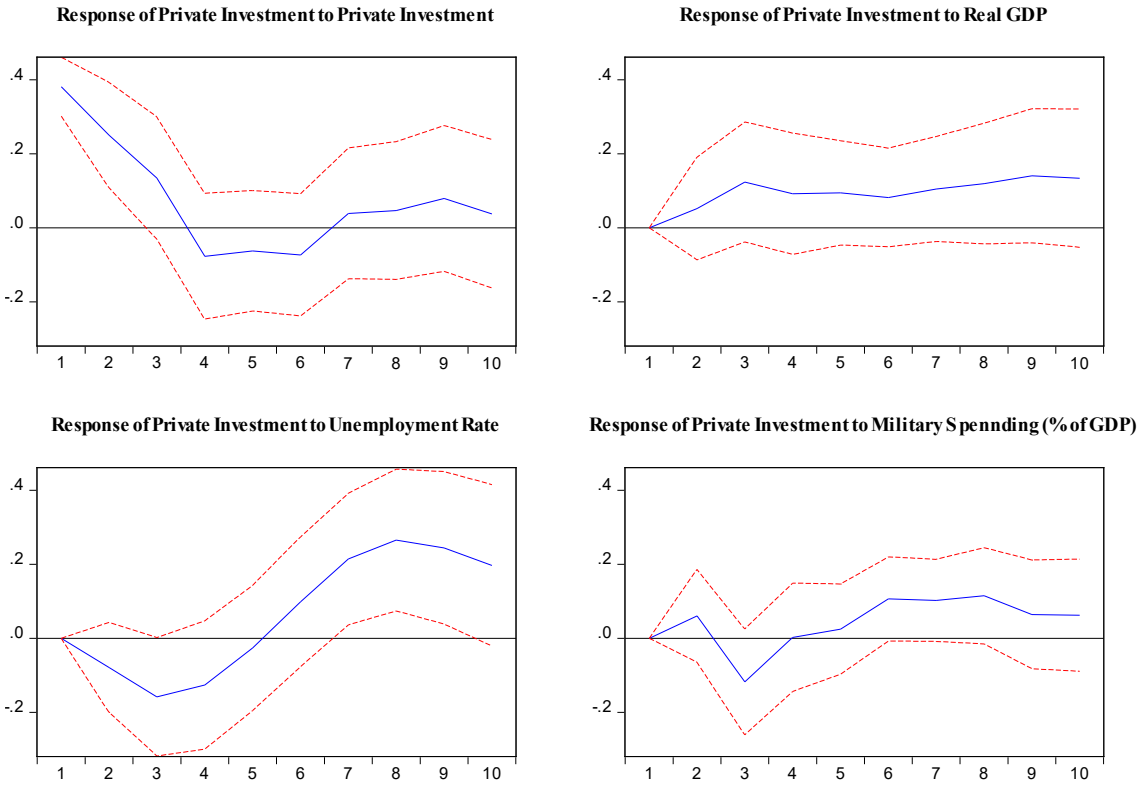


Figure 6: Response of Private Investment to Military Spending and Other Variables

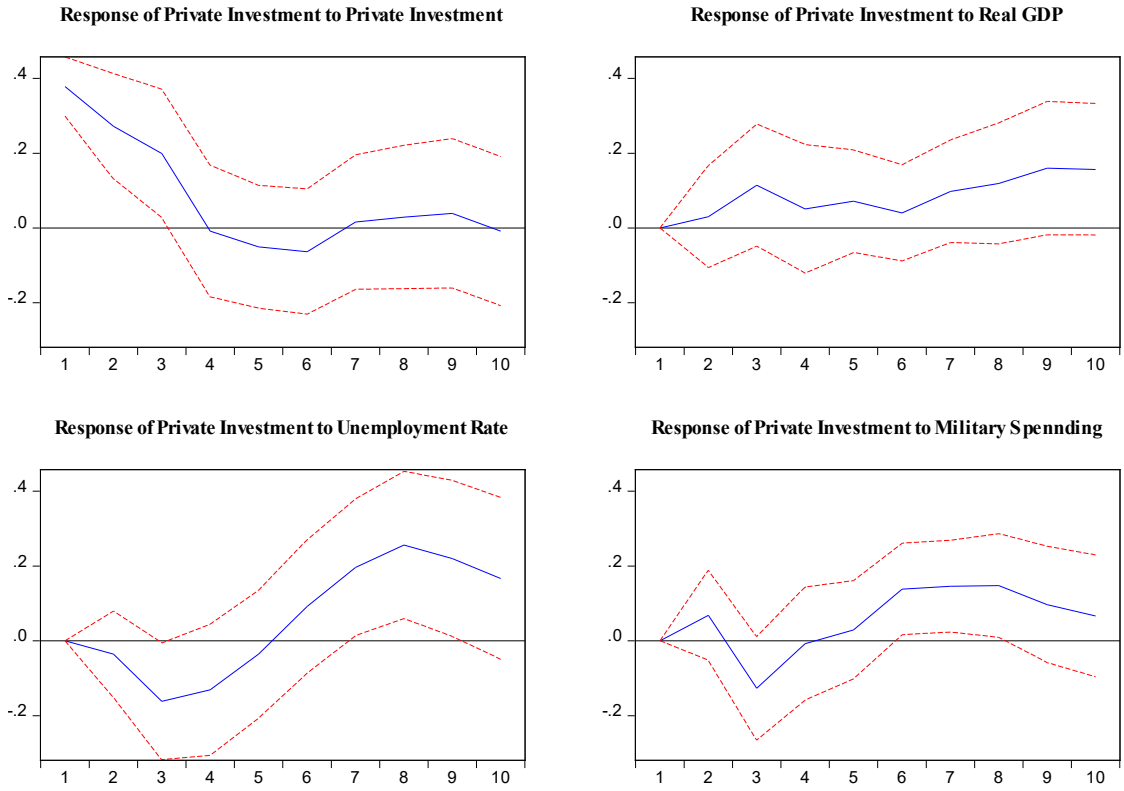


Table 8. Forecast error variance decomposition.

Period	Standard Error	Private Investment	Real GDP	Unemployment Rate	Military Spending (% of GDP)
1	0.380776	100.0000	0.000000	0.000000	0.000000
2	0.469305	94.29579	1.219679	2.810787	1.673740
3	0.540770	77.19032	6.142631	10.66391	6.003140
4	0.568091	71.77813	8.175018	14.60530	5.441544
5	0.580322	69.93948	10.46599	14.20152	5.393001
6	0.608103	65.14490	11.32612	15.56029	7.968686
7	0.662306	55.26383	12.03657	23.59458	9.105021
8	0.733770	45.42605	12.44033	32.27131	9.862312
9	0.792531	39.93432	13.81394	37.13882	9.112920
10	0.830723	36.55274	15.16569	39.42891	8.852654

Cholesky ordering: Private Investment, Real GDP, Unemployment Rate, Military Spending (% of GDP)

Period	Standard Error	Private Investment	Real GDP	Unemployment Rate	Military Spending
1	0.378043	100.0000	0.000000	0.000000	0.000000
2	0.473183	96.95168	0.407319	0.564018	2.076981
3	0.564764	80.50399	4.396137	8.592811	6.507063
4	0.582110	75.79883	4.903520	13.15615	6.141505
5	0.590456	74.40356	6.228081	13.15127	6.217088
6	0.617982	68.97490	6.104384	14.21623	10.70448
7	0.672146	58.36043	7.284997	20.57896	13.77561
8	0.744521	47.71792	8.502604	28.60753	15.17195
9	0.799590	41.61173	11.38372	32.38208	14.62247
10	0.834403	38.22281	13.97637	33.73727	14.06355

Cholesky Ordering: Private Investment, Real GDP, Unemployment Rate and Military Spending

4.3 Discussion

The controversies surrounding the crowding-out effect of military spending depend on many factors such as whether a country is an exporter or importer of military hardware, the stage of development of the country (developed countries or developing countries), how the government raises funds to finance the military spending and allocation of available resources between the military spending and other government spending such as health, education and infrastructure (Morales-Ramos, 2002; Malizard, 2015; Atanassovy and Nanda 2018). With regard to military hardware exporting countries such as the United States, Malizard (2015) argued that an increase in military spending can have a spillover effect on the private sector (investment) through technological progress, which can stimulate growth and investment. However, the same cannot be said about the military hardware importing countries, mainly developing countries. The necessity for ensuring the security of the environment, as submitted by Kollias and Paleologou (2019), could engineer or justify the increase in military spending in developing countries, especially country like Nigeria, which is currently facing severe insecurity that is threatening the foundation of its existence and the economy. The increase in military spending can then be used to procure more arms and ammunition to secure society and provide the enabling environment conducive enough for private investment and economic growth.

In light of this, we investigate the crowing-out effect of military spending in Nigeria with two objectives in mind. First, we examine whether or not the crowding-out effect of military spending is a short-run or long-run phenomenon or both. The first objective is achieved by using a novel ARDL estimation method. Second, we examine the response of private investment to an increase in military spending via the Impulse Response Function (IPF) and Forecast Error Variance Decomposition (FEVD) methods. Our findings based on the first objective reveal that the crowding-out effect of military spending is a short-run phenomenon. In the long-run, military spending does crowd-in private investment in Nigeria. Apart from the fact that our finding is in tandem with submission from existing studies such as Gold (1997) and Hou and Chen (2014), who argued that the negative effect of military spending could fizzle out in the long run, it also justifies the increase in military expenditure in recent time by the government of Nigeria. As previously stated, the country is currently facing security challenges which appear to be threatening the foundation of its existence and future economic prosperity. To combat the insecurity coming from not only the terrorists (Boko Haram and ISWAP) but also bandits, kidnappers, robbers, hoodlums and many others who have become dangerous species to the lives and properties of law-abiding citizens, the increase in military spending becomes inevitable. Many studies have documented the negative effect of insecurity and both private and foreign investment in Nigeria (Olubunmi, 2018; Jelilov, Ozden and Briggs, 2018; Oji and Afolabi, 2022; Yusuf and Mohd, 2022). Yusuf and Mohd (2022) specifically stated that domestic gross capital formation (domestic investment), unemployment rate, foreign direct investment and government spending on education are negatively affected by the growing insecurity. This happens because insecurity drives away investors, who are always afraid to make investments in an unsecured

country. The resultant effect of heightened insecurity is a drastic decline in investment activity. Such a decline in investment activity is detrimental to the economy. Thus, the increase in military spending in Nigeria is not a waste in the long run because it signals to the investors that government is serious about providing adequate security. This would, in turn, restore the confidence of the investors and enable them to further make more investments in the country. Our findings based on the second objective corroborate the results based on the first objective. Based on the IPF results, we discovered that shock to military spending only causes a temporary decline in private investment. The decline effect, as discovered, fizzle out over time, leading to the crowd-in effect of military spending in the long run. However, from FEVD, most deviations in private investment are explained by the shock to private investment and such deviations decline over time. Only about 14.06% of the deviation in private investment can be explained by the shock to military spending. This discovery solidifies the short-run effect of military spending on private investment in Nigeria.

While our study has shown the benefit of an increase in military spending on private investment, particularly in the long run, it, however, has its limitation because it does not cover the whole aspect of investment in the country, especially public investment (government investment. In the literature on military spending, it has been argued that an increase in military spending also crowd-out public investment because such an increase in military spending, in the face of resource or budget constraints, implies that other expenditures such as education, health and infrastructure have to decline or remain unchanged. Hence, in the case of Nigeria, future studies need to investigate the relationship between military spending and public investment.

5. Conclusions and policy implications

In this study, we investigated the possibility of a crowding-out effect of an increase in military spending on private investment in Nigeria using the data that spans from 1970 to 2019. Two main objectives were set, and they were achieved through the use of the ARDL and VAR estimation methods. For the first objective, the ARDL estimation method enables us to know whether the crowding-out effect of military spending occurs in the short run or the long run. In the case of the second objective, the VAR estimation method, through IRF and FEVD, helps to trace the response of private investment to military spending shock and the proportion of variation in private investment explained by military spending shock. We also performed some preliminary analyses, which included correlation analysis and unit root tests.

Our findings are summarised as follows. ARDL results show that military spending crowds out private investment in the short run, whereas it crowds in private investment in the long run. This is supported by the results obtained from IRF, which show that shock on military spending has an instantaneous negative effect on private investment. However, the effect of military spending on private investment turns positive after three periods. The FEVD results reveal that most variation in private investment is explained by its shock, while military spending explains little variation in

private investment.

Given our results, we conclude that while it is important for the government to spend more on the military for the procurement of arms and ammunition to stem the tide of insecurity bedevilling the country from the activities of insurgents, bandits and kidnappers and to restore confidence in investors who are sceptical of investing in the country, it must, however, take cognisance of the fact that military spending can crowd-out private investment.

References

Aderemi, T. A., Olayemi, H. O., Ebere, C. E., & Adeniran, A. A. (2018). Security Spending and Foreign Direct Investment Inflows: Evidence from the Nigerian Economy. IOSR Journal of Humanities and Social Sciences (IOSR-JHSS), 23(11), 29-35.

Ajefu, J. (2015) Impact of defence spending on economic growth in Africa: The Nigerian case. Journal of Developing Areas, 49(4), 227-244. https://doi.org/10.1353/jda.2015.0146

Akinlo, T., & Oyeleke, O. J. (2018). Effects of government expenditure on private investment in Nigerian Economy (1980-2016). Emerging Economy Studies, 4(2), 147-156. https://doi.org/10.1177/2394901518795067

Alptekin, A., & Levine, P. (2012). Military expenditure and economic growth: A meta- analysis. European Journal of Political Economy 28(4), 636-650. https://doi.org/10.1016/j.ejpoleco.2012.07.002

Aminu, A., & Raifu, I. A. (2019). Dynamic nexus between oil revenues and economic growth in Nigeria. Econ Bull, 39(2), 1556-1570.

Apanisile, O. T., & Okunlola, O. C. (2014). An empirical analysis of effects of military spending on economic growth in Nigeria: A bounds testing approach to co-integration 1989-2013. Journal of Public Administration, Finance and Law, 6(6), 117-130.

Atanassovy, J., & Nanda, V. (2018). Crowding-out Innovation. In Proceedings. Annual Conference on Taxation and Minutes of the Annual Meeting of the National Tax Association (Vol. 111, pp. 1-64). National Tax Association.

Atesoglu, H. S. (2004). Defense spending and investment in the United States. Journal of Post Keynesian Economics, 27(1), 163-170.

Ayange, A., Samuel, U. E., Prince, A. I., & Ndubuaku, V. (2020). Security expenditure on economic growth in Nigeria. Humanities and Social Sciences Review, 8(3), 553-561. https://doi.org/10.18510/hssr.2020.8360

Caruso, R., & Di Domizio, M. (2017). Military spending and budget deficits: the impact of US military spending on public debt in Europe (1988-2013). Defence and Peace Economics, 28(5), 534-549. https://doi.org/10.1080/10242694.2016.1228259

Deger, S., (1986), Military Expenditure in the Third World Countries: The Economic Effect, Routledge and Kegan Paul, London.

Dunne, J. P., & Smith, R. P. (2020). Military expenditure, investment and growth. Defence and Peace Economics, 31(6), 601-614. https://doi.org/10.1080/10242694.2019.1636182

Edith, E. C., Abolore, Y. F., OA, A. O., & Moses, S. G. (2019). Security Spending and Foreign Direct Investment Inflows in Nigeria: An Autoregressive Distributed Lag Model Approach.

Gold, D. (1997). Evaluating the trade-off between military spending and investment in the United States. Defence and Peace Economics, 8(3), 251-266. https://doi.org/10.1080/10430719708404880

Hou, N., & Chen, B. (2014). Military expenditure and investment in OECD countries: Revisited. Peace Economics, Peace Science and Public Policy, 20(4), 621-630. https://doi.org/10.1515/peps-2014-0031

Jelilov, G., Ozden, K., & Briggs, S. O. (2018). Impact of insecurity on investment in Nigeria. Journal of Management, Economics, and Industrial Organization, 2(3), 41-61. https://doi.org/10.31039/jomeino.2018.2.3.3

Kennedy, P. S. J. (2021). The Effect of Defense Spending on Private Investment in Indonesia Based on Historical Data for the Period 1981-2010. Palarch's Journal of Archaeology of Egypt/Egyptology, 18(4), 7094-7102.

Keynes, J. M. (2018). The general theory of employment, interest, and money. Springer (Original work published 1936). https://doi.org/10.1007/978-3-319-70344-2

Kimenyi, M., Adibe, J., Djiré, M., Jirgi, A. J., Kergna, A., Deressa, T. T., & Westbury, A. (2014). The impact of conflict and political instability on agricultural investments in Mali and Nigeria. Africa Growth Initiative (Vol. 17). Working Paper.

Knight, M., Loayza, N., & Villanueva, D. (1996). The peace dividend: military spending cuts and economic growth. Staff papers, 43(1), 1-37. https://doi.org/10.2307/3867351

Kollias, C., & Paleologou, S. M. (2019). Military spending, economic growth and investment: a disaggregated analysis by income group. Empirical Economics, 56(3), 935-958. https://doi.org/10.1007/s00181-017-1379-2

Loayza, N., Knight, M., & Villanueva, D. (1999). The peace dividend: military spending cuts and economic growth. The World Bank. https://doi.org/10.1596/1813-9450-1577

Lorusso, M., & Pieroni, L. (2017). The effects of military and non-military government expenditures on private consumption. Journal of Peace Research, 54(3), 442-456. https://doi.org/10.1177/0022343316687017

Malizard, J. (2015). Does military expenditure crowd out private investment? A disaggregated perspective for the case of France. Economic Modelling, 46, 44-52. https://doi.org/10.1016/j.econmod.2014.10.049

Mintz, A., & Huang, C. (1990). Defense expenditures, economic growth, and the "peace dividend". American Political Science Review, 84(4), 1283-1293. https://doi.org/10.2307/1963264

Morales-Ramos, E. (2002). Defence R&D expenditure: The crowding-out hypothesis. Defence and Peace Economics, 13(5), 365-383. https://doi.org/10.1080/10242690213507

Oji, C. E., & Afolabi, J.A. (2022). Economic and Peace Effects of Terrorism in the 21st Century. International Journal of Public Law and Policy, 8(2): 144-157. https://doi.org/10.1504/IJPLAP.2022.122127

Okereocha, C. (2012), "Heartache for the Economy", TELL, May 14, Pp. 46 - 47.

Olaifa, F. G., & Benjamin, O. O. (2020). Government Capital Expenditure and Private Sector Investment in Nigeria: Co-integration Regression and Toda-Yamamoto Causality Analysis. Advanced Journal of Social Science, 6(1), 71-82. https://doi.org/10.21467/ajss.6.1.71-82

Olubunmi, A. A. (2018). Insecurity and Major Determinants of Foreign Direct Investment in Nigeria. International Journal of Humanities and Social Science Research, 4, 54-63. https://doi.org/10.6000/2371-1655.2018.04.06

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. Journal of applied econometrics, 16(3), 289-326. https://doi.org/10.1002/jae.616

Pieroni, L. (2009). Does defence expenditure affect private consumption? Evidence from the United States. Economic Modelling, 26(6), 1300-1309. https://doi.org/10.1016/j.econmod.2009.06.004

Raifu I. A., & Afolabi, J. A. (2022). Military Expenditure and Unemployment in South Africa: Evidence from Linear and Nonlinear ARDL with and without Structural Break. Economic Alternative

Raifu I. A., Obijole, E. O. & Nnadozie, O. O. (2022). The Role of Institutional Quality in Military Spending and Unemployment Nexus in Nigeria. Peace Economics, Peace Science and Public Policy, Vol. 28 Issue 2, pp. 155-194. https://doi.org/10.1515/peps-2022-0006

Raifu, I. A. (2021). The institutional role in oil revenue-economic growth nexus in Nigeria. OPEC Energy Review, 45(1), 52-84. https://doi.org/10.1111/opec.12197

Raifu, I. A., & Aminu, A. (2020). A reconsideration of Wagner's hypothesis for Nigeria using linear and nonlinear ARDL methods. International Journal of Sustainable Economy, 12(4), 321-343. https://doi.org/10.1504/IJSE.2020.112308

Raifu, I. A., & Raheem, A. N. (2018). Do Government Revenues Matter for Economic Growth? Evidence from Nigeria. European Journal of Government and Economics, 7(1), 60-84. https://doi.org/10.17979/ejge.2018.7.1.4333

Raifu, I. A., Aminu, A., & Folawewo, A. O. (2020). Investigating the relationship between changes in oil prices and unemployment rate in Nigeria: linear and nonlinear autoregressive distributed lag approaches. Future Business Journal, 6(1), 1-18. https://doi.org/10.1186/s43093-020-00033-w

Saba, S. C., & Ngepah, N. (2019). Military expenditure and economic growth: evidence from a heterogeneous panel of African countries. Economic research-Ekonomska istraživanja, 32(1), 3586-3606. https://doi.org/10.1080/1331677X.2019.1674179

Sajid, M. J. (2021). Continued increases in military and police spending can lead to economic collapse. In E3S Web of Conferences (Vol. 253, p. 03036). EDP Sciences. https://doi.org/10.1051/e3sconf/202125303036

Scott, J. P. (2001). Does UK defence spending crowd-out UK private sector investment? Defence and Peace Economics, 12(4), 325-336. https://doi.org/10.1080/10430710108404991

Shahbaz, M., Afza, T., & Shabbir, M. S. (2013). Does defence spending impede economic growth? Cointegration and causality analysis for Pakistan. Defence and Peace Economics,

24(2), 105-120. https://doi.org/10.1080/10242694.2012.723159

Shan, J. (2002). A VAR approach to the economics of FDI in China. Applied Economics, 34(7), 885-893. https://doi.org/10.1080/00036840110058941

Sims, C. A. (1980). Macroeconomics and reality. Econometrica: Journal of the Econometric Society, 1-48. https://doi.org/10.2307/1912017

Smith, R. P. (1980). Military expenditure and investment in OECD countries, 1954- 1973. Journal of comparative economics, 4(1), 19-32. https://doi.org/10.1016/0147-5967(80)90050-5

Smith, R., & Dunne, P. (2001). Military expenditure growth and investment. Birbeck College and Middlesex University Business School, Abril.

Stratmann, T. & Okolski, G.L. (2010). Does government spending affect economic growth? Monetary Policy Mercatus on Policy Series June 10, Mercatus Center, George Mason University.

Temitope, L., & Ajala, O. (2021) Military expenditure and economic growth: Evidence from Nigeria. American Journal of Economics, 11, 10-18.

Thia, J. P. (2020). Deficits and crowding out through private loan spreads. The Quarterly Review of Economics and Finance, 77, 98-107. https://doi.org/10.1016/j.qref.2020.01.009

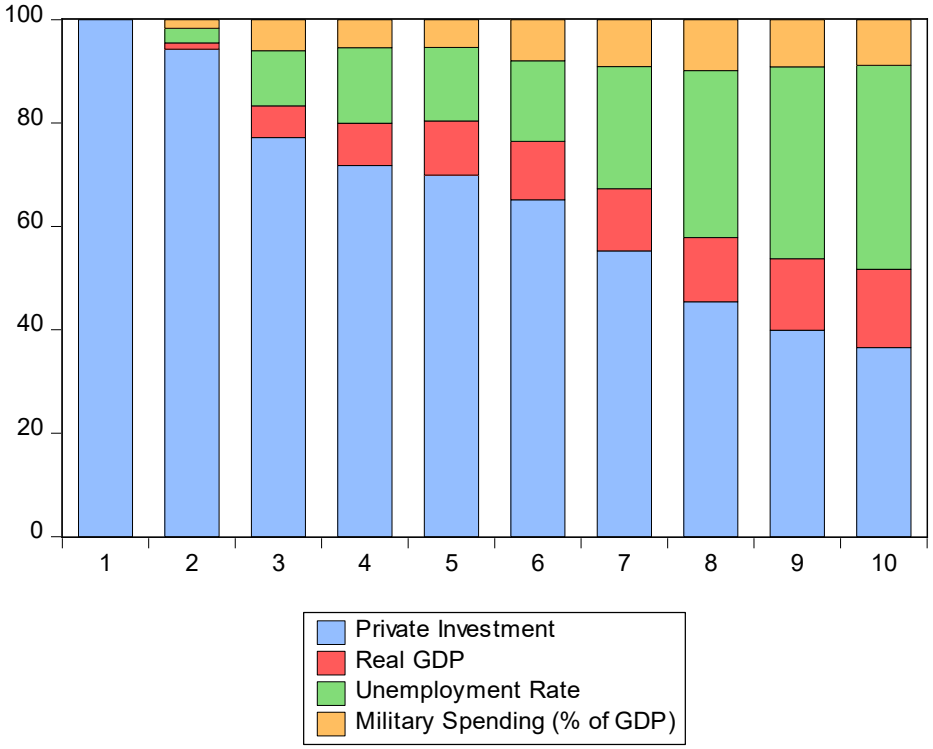
Üçler, G. (2016). Testing the relationship between military spending and private investments: Evidence from Turkey. Theoretical & Applied Economics, 23(3).

Wagner, R. E. (2007). Fiscal sociology and the theory of public finance: An exploratory essay. Edward Elgar Publishing. https://doi.org/10.4337/9781781951354

Yusuf, A., & Mohd, S. (2022). Growth and Fiscal Effects of Insecurity on the Nigerian Economy. The European Journal of Development Research, 1-27. https://doi.org/10.1057/s41287-022-00531-3

Appendix 1.

Variance Decomposition of Private Investment (Military Spending % of GDP) using Cholesky (d.f. adjusted) Factors



Variance Decomposition of Private Investment (Military Spending) using Cholesky (d.f. adjusted) Factors