

Effects of Military Spending on Inclusive Growth in Central African Countries

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Abstract:- This study aims to examine the effects of military spending on inclusive growth in central african countries. The paper uses a sample of 6 CEMAC countries from different sources (WDI and WGI databases) for the period 1990-2022 to carry out the analysis. Using the instrumental variables (IV) method, we establish the causal link between military spending and inclusive growth, demonstrating that the latter exerts a negative and significant effect on inclusive growth in the CEMAC region. To consolidate these findings, we subjected our results to a robustness test using the GMM estimation method, thus confirming the negative effect of military spending on inclusive growth in the CEMAC zone. In view of these findings, Central African countries need to improve the quality of their institutions. Based on these findings, a few non-exhaustive policy suggestions can be made to promote inclusive growth in Africa.

Keywords:- Military Spending, Inclusive Growth, CEMAC, IV, GMM.

I. INTRODUCTION

In 2021, global military spending will exceed US\$2 trillion, reaching a total of US\$2,113 trillion. From the advent of terrorism and the various security crises, global military spending has continued to rise since 2015. In 2021, as the global economy recovered, military spending as a share of GDP increased to 2.2%, up from 2.3% in 2020. However, the share of public expenditure devoted to military spending remains stable at 5.9%. A similar trend can be observed in Africa. According to the Stockholm International Peace Research Institute (SIPRI), cumulative military spending in African countries will decline by 5.3% to US\$39.4 billion in 2022.

This increase has been caused by several crises, including the COVID-19 crisis, armed conflict and terrorism. In recent years, several countries have experienced armed conflicts, notably the Anglophone crisis in Cameroon, the Boko Haram terrorist sect in Nigeria, and coups d'état in Mali, Burkina Faso and Guinea, to name but a few. All these crises require substantial financial resources. However, with the price of raw materials having fallen drastically, these countries are resorting to debt, leading to a more than proportional increase in public spending and, consequently, budget deficits. Under these conditions, most governments are forced to contract

multilateral or bilateral debts, as taxes and other national revenues are not sufficient.

According to the latest economic update, growth in sub-Saharan Africa is set to rise to 3.8% in 2024, from 2.5% in 2023 and 3.6% in 2022. Rising conflict and violence are having a dampening effect on economic activity, and climate shocks are set to exacerbate this fragility. Some 462 million people will still be living in extreme poverty in 2023. Climate change, the COVID-19 pandemic, and increasing conflicts have worsened the debt crisis in the region. Many countries, specifically 21, are at high risk of external debt distress. While East Africa is projected to grow by 5.1% in 2024, West Africa is expected to grow more slowly at 3.7%. Overall, the economic performance of sub-Saharan Africa is hindered by the underperformance of its largest economies.

The facts stylized above call attention to the need to answer the question of whether increased military spending benefits inclusive growth in Africa. The contributions of this study are as follows: First, in the literature, very few studies have looked at the effect of military spending on inclusive growth. It could be interesting to examine the effect of military spending on inclusive growth in a region of the world that is facing a more than proportional increase in military spending and in parallel with several crises, taking into account the quality of institutions. Secondly, this study could inform governments on the evolution of military spending so as not to compromise inclusive growth.

Following this introduction, the second section presents a summary review of the literature. The third briefly outlines the various stages of the methodology adopted. The fourth discusses the results. A conclusion suggests policy recommendations.

II. SUMMARY REVIEW OF THE LITERATURE

The economics of defence as a field of study is the work of Benoit (1973), who introduced statistical and econometric modelling into studies analysing the economic effects of military spending. The empirical work of Benoit (1973; 1978) has the merit of being the first attempt at an economic and analytical application of the economic effects of military spending, highlighting positive effects that could improve growth. This first conclusion on the impact of military spending on growth paved the way for a controversial debate in both the theoretical and empirical

literature on the impact of military spending on economic growth.

There are three opposing trends in the literature on this issue. On the one hand, Keynesians argue that military spending has a positive effect on growth. On the other hand, the classicists and neo-classicists argue that military spending has a negative effect on growth. Finally, for Marxists, the relationship between military spending and growth is highly ambiguous.

The Keynesian approach argues that military spending has a positive effect on economic growth (Atesoglu and Mueller 1990; Benoit 1978; Atesoglu 2004). The use of public spending by the state as an instrument of fiscal policy is well known and established in economics (Faini, Annez and Taylor 1984; Stewart 1991). This approach considers a proactive state that uses military spending as one aspect of public spending. Government investment spending is also intended to increase output through multiplier effects in the presence of inefficient aggregate demand. In this way, increased military spending can lead to higher utilisation of productive capacity, higher profits and thus higher investment and growth.

The classical and neo-classical approach argues that military spending has a negative effect on economic growth (Deger and Smith 1983; Lim 1983; Guarner et al. 2003). This approach sees the state as a rational actor that balances the opportunity costs and security benefits of military spending in order to maximise a well-defined national interest reflected in a social welfare function. Military spending can be seen as a pure public good, and the economic effects of defence spending are determined by the opportunity costs and trade-offs between military and other expenditures. The most influential neoclassical model is that of (Biswas and Ram 1986), developed from Feder (1983). There have been some developments in this approach, with the new classics using military spending as an important shock to the economic system that can have real, dynamic effects on the bottom line.

The Marxist current sees the role of military spending in capitalist development as important but contradictory. The different approaches differ in their treatment of the crisis. The extent to which military spending is seen as necessary for development. One approach has produced the only theory in which military expenditure is both important in itself and an integral part of the theoretical analysis. Developed by Baran and Sweezy (1966), it sees military spending as important for overcoming crises of realisation, for absorbing surpluses without raising wages, and thus for maintaining profits. What these different economic trends have in common, however, is that excessive military spending is bad for the economy, regardless of the level of development of the country in question. In particular, excessive military spending has been shown to jeopardise the future of developing countries, as it tends to crowd out social and economic spending that is more likely to help

these countries emerge from their state of underdevelopment (Berthelemy, Herrera and Sen 1995).

In the empirical literature, different papers support effects that are at the same time positive, negative or even ambiguous. For example, Apanisile and Okunlola (2014) examine the relationship between military spending and growth in Nigeria in both the short and long run. In addition, their analysis seeks to test whether military spending is economically unrelated to growth. Using an ARDL model, they show that military spending has a negative and significant effect on output in the short run, but a positive and significant effect in the long run. Similarly, Topcu and Aras (2017) show that there is no long-run relationship between military spending and growth. Instead, the direction of causality in the short run is from economic growth to military spending.

Also, Taspinara and Sadeghieh (2015) apply the Johansen cointegration model and Granger causality tests to examine the long-run equilibrium relationship and causality between military spending and growth in Turkey. Annual data covering the period 1988-2013 are used to conduct empirical estimations. The results of the study indicate that there is a positive long-run relationship between military spending and economic growth. In the short run, however, the analysis shows a unidirectional relationship between economic growth and military spending. Similarly, Apanisile and Okunlola (2014) examine the same relationship for Nigeria in both the short and long run. Using an ARDL model, they show that military spending has a negative and significant effect on output in the short run, but a positive and significant effect in the long run.

Several studies have explored the relationship between military spending and economic growth. Kollias et al. (2004 and 2007) examined this link in the EU, finding a positive impact of military spending on short-term growth and a positive feedback loop between military spending and long-term growth.

Dunne and Nikolaidou (2005) analyzed peripheral European economies and found inconclusive results due to the heterogeneity of the countries. Chang et al. (2011) studied a broader range of countries and concluded that military spending negatively impacts economic growth in low-income countries, particularly in Europe and the Middle East. Topcu and Aras (2017) focused on new EU member states and found no long-term relationship between military spending and growth, but a short-term causal link from economic growth to military spending.

Given the inconsistent findings, a linear approach may not fully capture the complex relationship between military spending and economic growth. Dynamic models offer a more suitable framework to account for potential non-linear effects, especially in crisis contexts.

III. STUDY METHODOLOGY

In this section, we will highlight the econometric model for estimating the contribution of military spending to the inclusive growth process over the period from 1990 to 2022. Following the empirical work of Topcu and Aras (2017), the equation of the model to be estimated can be specified as follows:

$$\begin{aligned}
 Y_{i,t} = & \beta_0 + \beta_1 MEXP_{it} + \beta_2 INFL_{it} + \beta_3 GEXP_{it} + \beta_4 FDI_{it} \\
 & + \beta_5 TRADE_{it} + \beta_6 SAVING_{it} \\
 & + \beta_7 GOVEFF_{IT} + \beta_8 MOBCELL_{it} \\
 & + \mu_{it} \dots \dots \dots (1)
 \end{aligned}$$

Where

The dependent variable is the inclusive growth index for country i in period t. For inclusive growth, we choose to construct an index. We used a number of variables, including access to electricity, GDP per capita, life

expectancy at birth, mobile phone subscriptions per 100 people, and primary, secondary and tertiary enrolment rates. To construct this index, we took the difference between the maximum and minimum of each variable and divided it by the minimum and maximum. Finally, we took the average to obtain the average inclusive growth index. The independent variable is military expenditure. Thus, Topcu and Aras (2017) show that there is no long-run relationship between growth and military spending.

The control variables are inflation, government spending, foreign direct investment, trade openness, savings, governance, and information and communication technology.

A. Data and Sources

The data collected for this study come exclusively from the World Bank's World Development Indicators (WDI) and World Government Indicators (WGI) databases, covering the period from 1990 to 2022.

Table 1: Definition of Variables and Expected Signs

Variables	Description	Source	Expected Sign
<i>MEXP</i>	Military expenditures, includes all current and capital expenditures on the armed forces, including peacekeeping forces; defense ministries and other government agencies engaged in defense projects; paramilitary forces, if these are judged to be trained and equipped for military operations; and military space activities.	WDI	+
<i>INFL</i>	Inflation as measured by the annual growth rate of the GDP implicit deflator shows the rate of price change in the economy as a whole. The GDP implicit deflator is the ratio of GDP in current local currency to GDP in constant local currency.	WDI	-
<i>GEXP</i>	General government expenditure on education (current, capital, and transfers) is expressed as a percentage of GDP. It includes expenditure funded by transfers from international sources to government. General government usually refers to local, regional and central governments.	WDI	+
<i>SAVING</i>	Gross savings are calculated as gross national income less total consumption, plus net transfers.	WDI	-
<i>FDI</i>	Foreign direct investment are the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments.	WDI	+
<i>GOVEFF</i>	Perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.	WGI	+/-
<i>MOBCELL</i>	Mobile cellular telephone subscriptions are subscriptions to a public mobile telephone service that provide access to the PSTN using cellular technology. The indicator includes (and is split into) the number of postpaid subscriptions, and the number of active prepaid accounts (i.e. that have been used during the last three months).	WDI	+
<i>TRADE</i>	Trade is the sum of exports and imports of goods and services measured as a share of gross domestic product (%gdp).		-
<i>GEXP</i>	General government expenditure on education (current, capital, and transfers) is expressed as a percentage of GDP. It includes expenditure funded by transfers from international sources to government. General government usually refers to local, regional and central governments.		+

Source: Authors construction

B. Descriptive Statistics

The results of the following descriptive statistics suggest strong disparities between these countries in terms of growth, investment, inflation and development.

Inclusive growth appears moderate, with a positive mean but a rather large standard deviation, indicating heterogeneity in growth rates. Military expenditure (MILEXP) is variable, with a non-zero mean and a high standard deviation, suggesting large differences between countries. Foreign direct investment (FDI) is highly variable, with negative minimum values (possibly disinvestment) and a very high maximum. Differences in FDI may reflect differences in the business climate.

Government efficiency (GOVEFF) appears to be relatively low on average, with low dispersion. Low scores could be related to problems of corruption or inefficient

administrations. Inflation (INFL) is highly variable, with very high extreme values indicating episodes of hyperinflation in some countries. These high levels could be associated with political or economic instability. Trade (TRADE) is high on average but very heterogeneous. Saving (SAVINGS) is also highly variable, with negative values possible (debt). Government expenditure (GEXP) is moderate on average, but with a wide dispersion. Mobile phone penetration (MOBCELL) is high on average, but with a high variability, suggesting very different levels of digital development.

This table of descriptive statistics provides a first overview of the data. For a more detailed and nuanced analysis, it is necessary to deepen the study using more advanced statistical tools and taking into account the specific context.

Table 2: Results of Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
INCLGROWTH	198	.094	.387	-1.077	.994
MILEXP	198	1.802	1.806	-1.656	15.009
FDI	198	5.64	15.656	-5.007	161.824
GOVEFF	144	-1.224	.378	-1.879	-.199
INFL	156	1.929	1.935	-3.567	10.195
TRADE	194	68.838	27.788	25.042	144.668
SAVINGS	196	23.477	37.841	-97.91	162.123
PUBEXP	188	7.573	9.713	-5.568	44.633
MOBCELL	165	33.167	37.905	.001	149.108

Source: Authors

IV. RESULTS AND DISCUSSION

A. Effect of Military Spending on Inclusive Growth

The table below reports the results of an econometric regression using the instrumental variable (IV) method. This method is particularly useful when we suspect a correlation between an explanatory variable and the error term, which would bias the estimates obtained by ordinary least squares (OLS). The coefficients associated with each variable indicate the marginal effect of one unit of variation in that variable on the endogenous variable, taking the instrument into account.

The results show that military spending has a negative and significant impact on inclusive growth. The negative

and significant coefficient at the 5% threshold for *MILEXP* in model (1) suggests that an increase in military spending is associated with a fall in growth in a context of poor institutional quality, all other things being equal. This result is similar to those obtained by Chang et al. (2011) and Apanisile and Okunlola (2014), who concluded that military spending has a negative effect on economic growth. This result could be explained by several reasons: firstly, military spending helps to reallocate public resources away from essential social sectors (health, education and infrastructure). Secondly, it can lead to an increase in public spending which can limit the government's ability to invest in sectors essential for inclusive growth. Finally, military spending very often leads to higher inflation, which can reduce the purchasing power of households and businesses.

Table 3: Effect of Military Spending on Inclusive Growth

	(1)	(2)
	INCLGROWTH	INCLGROWTH
MILEXP	-.032** (.015)	-.039*** (.015)
FDI	.004** (.002)	.002 (.002)
INFL	-.0001 (.00011)	.000012 (.0001052)
TRADE	-.002* (.001)	-.002* (.001)
SAVINGS	-.005***	-.005***

	(.001)	(.001)
PUBEXP	.004	.003
	(.003)	(.003)
MOBCELL	.003***	.002***
	(.001)	(.001)
GOVEFF		-.027
		(.089)
_cons	.31***	.352**
	(.083)	(.141)
Observations	161	139
R-squared	.299	.331
Source: Authors		
<i>Standard errors are in parentheses</i>		
*** $p < .01$, ** $p < .05$, * $p < .1$		

In model (2) we included the governance variable to see what role it might play. The results show that military expenditure has a significant negative impact at the 1% level. This shows that institutional quality plays a very important role in the relationship studied. As far as the institutional quality variable is concerned, our study shows that this variable has a negative but insignificant impact on inclusive growth. This result confirms that of (Alice, 2016) for countries in the CFA franc zone in Africa.

Regarding the control variables, we find that inflation, trade openness and savings have a negative and significant impact. While FDI and ICT have a positive and significant impact.

B. Robustness Checks

In both models (1) and (2), the coefficient associated with MILEXP is negative but insignificant in (1) and significant in (2) at a confidence level of 1%. It should be noted that in model (2) we take institutional quality as the instrument, and the effect becomes significant. This suggests that institutional quality is an essential element in the relationship between military spending and inclusive growth. Indeed, this result corroborates our expectations and

is in line with the work of North (1990); Acemoglu and Robinson (2012) and World bank (2019). For these authors, the quality of institutions is a key factor in ensuring that military spending contributes to inclusive and sustainable growth, as strong and effective institutions can optimize resource allocation, promote political and economic stability and effectively regulate markets. In contrast, poor-quality institutions can lead to corruption, inefficiency, political instability and inequality, compromising inclusive growth. However, the results achieved suggest that institutions in the CEMAC zone are not yet effective in promoting inclusive growth.

For control variables, inflation, trade openness and savings have a negative and significant influence. While foreign direct investment and ICT have a positive and significant influence.

In conclusion, the results of this analysis establish a clear causal link between military spending and inclusive growth. Nevertheless, further research is needed to investigate this issue further and better understand the underlying mechanisms.

Table 4: Robustness Test (GMM)

	(1)	(2)
	INCLGROWTH	INCLGROWTH
MILEXP	-.014	-.034***
	(.011)	(.012)
FDI	.002	.001
	(.001)	(.004)
INFL	0	0
	(0)	(0)
TRADE	.001	.001
	(.002)	(.002)
SAVINGS	-.002*	-.002**
	(.001)	(.001)
PUBEXP	0	.001
	(.003)	(.003)
MOBCELL	.003***	.002**
	(.001)	(.001)
_cons	.034	.065

	(.12)	(.129)
Observations	161	161
<i>Source: Authors</i>		
<i>Standard errors are in parentheses</i>		
*** $p < .01$, ** $p < .05$, * $p < .1$		

V. CONCLUSION

This research aims to understand how military spending impacts inclusive economic growth in Central African Economic and Monetary Community (CEMAC) countries. We've noticed a persistent issue: poverty in Africa, coupled with a significant rise in military spending.

To delve deeper, we employed various econometric models and analyzed data from six Central African countries between 1990 and 2022. Our findings suggest a negative correlation between military spending and inclusive growth.

The quality of institutions plays a crucial role in this relationship. Effective governance and policy implementation are essential for boosting inclusive growth. Additionally, increased mobile phone penetration can positively influence economic inclusion. Conversely, a higher trade-to-GDP ratio may hinder inclusive growth.

For promoting inclusive growth Firstly, African states must reduce military spending to direct resources towards key sectors such as education, health, infrastructure and research, in order to boost inclusive growth. Secondly, eliminate superfluous expenditure, such as obsolete weapons programs or non-essential military operations. And finally, to invest in defense technologies that can also have civilian applications, such as information and communication technologies.

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