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Military Spending and Economic Stability in BRICS+ and G7 Countries

Araştırma Makalesi /Research Article

Erdem KILIÇ[1]

ABSTRACT: *This paper investigates the economic and geopolitical implications of military spending across two major global blocs: BRICS+ and the G7. While G7 countries exhibit stable, institutionally anchored defense budgets, BRICS+ nations have recently experienced a rapid increase in military expenditures per GDP, driven by economic growth, trade surpluses, and aspirations for greater global influence. Using advanced panel econometric methods, including Two-Stage Least Squares (2SLS), Cross-Sectionally Augmented ARDL (CS-ARDL), and Pooled Mean Group (PMG) estimators, the study analyzes the macroeconomic drivers of military spending, fiscal trade-offs, and strategic consequences in both blocs. Results show that GDP is the dominant and most consistent determinant of defense spending. G7 countries display strong long-run elasticity but low short-run responsiveness, potentially reflecting institutional inertia. In contrast, BRICS+ defense budgets are more responsive to economic and fiscal fluctuations yet show weaker long-run stability. Inflation, fiscal balance, and external accounts exhibit heterogeneous effects. The findings reveal how developmental stages influence the balance between military ambitions and economic priorities.*

Keywords: *G7, BRICS, military spending, panel data*

BRICS+ ve G7 Ülkelerinde Askeri Harcamalar ve Ekonomik İstikrar

ÖZ: *Bu çalışma, BRICS+ ve G7 olmak üzere iki büyük küresel blokta askeri harcamaların ekonomik ve jeopolitik etkilerini incelemektedir. G7 ülkeleri kurumsal olarak yerleşik ve istikrarlı savunma bütçelerine sahipken, BRICS+ ülkeleri son yıllarda ekonomik büyüme, dış ticaret fazlaları ve küresel ölçekte artan nüfuz arayışları doğrultusunda GSYH'ye oranla hızla artan askeri harcamalar sergilemektedir. Çalışma, askeri harcamaların makroekonomik belirleyicilerini ve dinamiklerini ve jeopolitik sonuçlarını gelişmiş ve yükselen ekonomiler bağlamında karşılaştırmalı olarak analiz etmektedir. İleri düzey panel ekonometrik yöntemler (2SLS, CS-ARDL ve PMG tahmincileri) kullanılarak yapılan analizler, GSYH'nin askeri harcamaların en güçlü ve tutarlı belirleyicisi olduğunu göstermektedir. Ampirik sonuçlar değerlendirildiğinde, G7 ülkelerinde uzun dönem esneklik yüksek, kısa dönem tepkisellik ise düşüktür; bu durum kurumsal ataleti yansıtabilmektedir. BRICS+ ülkelerinde ise savunma bütçeleri ekonomik ve mali dalgalanmalara daha duyarlıdır, ancak uzun vadede savunma bütçeleri daha kırılgandır. Enflasyon, bütçe dengesi ve dış denge gibi faktörlerin etkisi bloklar* arasında farklılık göstermektedir. Bulgular, kalkınma aşamalarının savunma-ekonomi dengesine etkisini ortaya koymaktadır.

Anahtar Kelimeler: *G7, BRICS, askeri harcamalar, panel veri*

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[1]Associate Professor, Turkish-German University, Department of Economics, erdem.kilic@tau.edu.tr, https://orcid.org/0000-0003-1917-2227

1. Introduction

Military spending has long been a critical component of national security and geopolitical strategy, but its economic implications remain a subject of deeper debate. In an era of shifting global power dynamics, the allocation of resources toward defense has significant consequences for fiscal stability, economic growth, and development.

This paper examines the trends, drivers, and economic impacts of military spending in two influential economic blocs: the BRICS+ countries (Brazil, Russia, India, China, South Africa, United Arab Emirates, Iran, Egypt, Ethiopia and Saudi Arabia) and the G7 nations (Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States). While the G7 represents advanced economies with historically high but stable defense budgets, the BRICS+ bloc has experienced rapid increases in military expenditures, driven by regional security challenges and aspirations for greater global influence.

Table 1: Country coverage of BRICS+ and G7 blocs

Bloc	**Countries**
G7	Canada, France, Germany, Italy, Japan, United Kingdom, United States
BRICS+	Brazil, Russia, India, China, South Africa, Saudi Arabia, United Arab Emirates, Iran, Egypt, Ethiopia

The relationship between military spending and economic stability is a complicated matter with different outcomes across development stages. On one hand, defense investments can stimulate industrial production, technological innovation, and employment. On the other hand, excessive military expenditures may divert resources from critical sectors such as education, healthcare, and infrastructure, potentially slowing down long-term economic development. This trade-off is particularly more important in emerging economies, where fiscal constraints and developmental needs are more obvious. Defense investments can stimulate industrial production, technological innovation, and employment under Keynesian frameworks (Gold and Adams, 1990; Dunne and Tian, 2015). However, excessive military expenditures may crowd out productive spending in education, healthcare, and infrastructure, potentially slowing long-term economic development (Gupta et al., 2005; Ramey, 2011). This dilemma is particularly acute in emerging economies, where fiscal constraints and developmental needs are more pronounced, and geopolitical implications such as arms races and regional tensions add another dimension to defense spending decisions.

From a political economics perspective, these two blocs exhibit fundamentally different spending patterns. Defense spending in terms of fiscal expenditure in G7 countries is largely determined by institutionalized mechanisms such as NATO commitments, legislative budgeting rules, and long-term procurement contracts (Poterba, 1994; Rogoff, 1990). In contrast, military expenditure in BRICS+ nations

is often more responsive to short-term economic conditions, political cycles, and perceived security threats (Ali, 2007; Bueno de Mesquita et al., 2003). This distinction reflects broader differences in institutional maturity and fiscal flexibility between advanced and emerging economies.

This study adopts a comparative panel approach to analyze military spending behavior across these two blocs, addressing two primary questions: What are the economic drivers of military spending in emerging versus advanced economies? How do fiscal trade-offs and macroeconomic constraints determine defense expenditures across the two groups? Using a macro-panel framework, we estimate the responsiveness of military spending to GDP growth, inflation, fiscal balance, and trade openness.

This allows for a deeper understanding of how fiscal constraints influence defense strategies, particularly in resource-constrained settings (Gupta et al. 2005; Ramey 2011). By contrasting bloc-level dynamics, the study also contributes to debates on how economic development stages and institutional maturity affect security-related fiscal behavior. A dynamic view of military expenditure patterns offers to address an important gap in existing studies that either focus on individual countries or fail to differentiate clearly between advanced and emerging economies (Knight et al., 1996; Smith, 1995; Ali, 2007).

In advanced economies, spending is generally anchored in stable institutional frameworks with legislative oversight and rule-based budgeting, leading to institutionalized inertia in military budgeting. Conversely, BRICS+ countries operate in more volatile fiscal and political environments, where spending fluctuates more readily with economic cycles and strategic ambitions (Ali, 2012). These variables capture the economic limits and fiscal trade-offs that define national defense strategies (Hemming, et al., 2002; Yared, 2019).

While both blocs respond to changing geopolitical pressures, their different institutional arrangements and economic constraints determine how and when they adjust their military posture (Caldara and Iacoviello, 2018), reflecting the evolving structure of global power and military investment (Nordhaus et al., 2012), revealing that BRICS+ countries exhibit greater elasticity with respect to economic variables while G7 military spending remains relatively stable and less sensitive to macroeconomic fluctuations.

For BRICS+ countries, rapid rises in military spending raise concerns about fiscal sustainability and opportunity costs of diverting resources from development priorities. For G7 nations, maintaining high defense budgets subject to fiscal constraints and shifting geopolitical priorities presents distinct challenges. By comparing these two economic blocs, this paper provides detailed analysis of the economic and geopolitical trade-offs associated with military spending.

The remainder of the paper is structured as follows. Section 2 reviews the theoretical and empirical literature on military spending and its economic

implications. Section 3 presents the data sample and methodology. Section 4 examines the empirical model results. Finally, Section 5 concludes with policy recommendations and directions for future research.

2. Literature Review

2.1. The economic and fiscal implications of military spending

Military spending is a widely studied topic, especially its effects on economic growth, government budgets, and development. The debate often centers on the "guns versus butter" dilemma—whether money spent on defense could be better used for social and economic needs (Deger and Smith, 1983). Some researchers argue that military spending boosts the economy by driving innovation and industrial growth (Benoit, 1978). Others, however, believe it takes resources away from more productive investments, especially in poorer countries (Dunne and Uye, 2009).

In emerging economies, military spending is often influenced by security threats and political ambitions. For example, China's rising defense budget is linked to its global influence and disputes in the South China Sea (Cheung, 2011). Similarly, India's military spending reflects its strategic rivalry with Pakistan and China, as well as its desire to modernize its armed forces (Sidhu, 2017). These trends raise questions about the fiscal sustainability of high defense budgets and their impact on long-term economic development.

Recent literature explores the link between military spending, geopolitical risk, economic growth, and global trade dynamics across diverse country groups, including BRICS+ and G7 economies. Economidou et al. (2024) apply a network GVAR model to assess military spending interdependencies among 12 major defense economies. They identify China as the dominant node in the network, with its spending shocks significantly influencing Brazil and the U.S., while Russia's military expenditure is sensitive to shocks originating from Asia and Oceania. NATO dynamics are also impacted by non-NATO actors like Japan, Australia, and India, indicating a diffusion of military influence beyond formal alliances. Khan et al. (2025), using a panel bootstrap Granger causality framework, find a significant causal link from geopolitical risk to defense spending in China, India, and South Africa, whereas in Türkiye and South Korea, causality runs in the reverse direction, potentially due to regional security alliances and defense procurement dependencies. Conversely, no significant causal link is found in Russia and Brazil, with domestic political economy factors—such as the military's role in employment—offered as plausible explanations.

Broader economic impacts of military spending are also addressed. Rahman et al. (2024) document a negative correlation between military spending and FDI inflows in low-income and lower-middle-income countries, leading to lower GDP per capita and diminished well-being outcomes, especially in health infrastructure. This aligns with findings from Chary and Singh (2024), who caution that disentangling

causality in the military-economic nexus is inherently difficult due to the complex geopolitical and ethical environment. From a strategic economic perspective, Cochrane and Zaidan (2024) compare BRICS+ and G7 countries, showing that while the G7 retains technological and military superiority through greater investment, BRICS+ countries leverage demographic and trade growth alongside a larger military workforce. However, Sibte et al. (2025) warn that although military spending may support economic expansion in the short run, it poses significant risks to environmental sustainability by diverting resources away from circular economy initiatives.

The theoretical backdrop to these findings includes classical and modern models of military-economic linkages. For instance, Dunne and Tian (2015) and Cuaresma and Reitschuler (2006) suggest that military expenditure can stimulate economic growth under certain conditions, while Aizenman and Glick (2006) highlight non-linear effects, noting diminishing returns and negative impacts at higher levels of defense spending. More recent work by Sakib and Rahman (2023) emphasizes the heterogeneous responses of countries, reflecting differing security interests and economic capacities.

Thus, recent studies on military spending increasingly emphasizes the complexity and multidimensionality of its drivers, moving beyond traditional macroeconomic variables to incorporate geopolitical risk, institutional structures, and regional dynamics. A 2024 comprehensive meta-analysis of 179 empirical studies (over 20,000 observations) identifies war, prior military expenditure, and perceived external threats as the most consistent predictors of defense budgets, whereas conventional macroeconomic indicators such as GDP, trade openness, and regime type exhibit weaker explanatory power (Bachtiar et al., 2025). These findings challenge earlier frameworks that treat military spending as a primarily economic decision and support the need for models that incorporate dynamic threat perceptions and historical conflict trajectories.

High military spending can strain national budgets, especially in developing countries. When governments spend too much on defense, they may borrow more, leaving less money for education, healthcare, and infrastructure (Gupta et al., 2005). In Africa, for example, excessive military budgets have slowed economic growth and worsened poverty (Collier and Hoeffler, 2007).

Rich countries, like NATO members, face different challenges. They aim to spend at least 2% of GDP on defense (NATO, 2021). While they can afford higher military budgets, rising costs—combined with aging populations and healthcare expenses—can still create financial pressure (Gates, 2010).

Altogether, this literature reveals that military expenditure operates at the intersection of fiscal and strategic policy, economic development, and geopolitical alignment, with country-specific institutional contexts shaping the net effects.

2.2. Geopolitical implications of military spending

Military spending is not just about capital issues—it also affects global security. In tense regions like South Asia and the Middle East, high defense budgets can lead to arms races. For example, India and Pakistan's nuclear rivalry is fueled by mutual distrust (Perkovich, 1999). Similarly, China's military growth has raised fears of an arms race in Asia (Ross, 2009).

Building on this insight, Tutuncu et al. (2024) apply a Panel Fourier Toda–Yamamoto causality framework to examine the directionality between geopolitical risk and military expenditures in selected conflict-prone states. Their results suggest a unidirectional causality from geopolitical risk to defense spending in countries like Colombia, India, Saudi Arabia, and Ukraine, whereas the reverse holds in others—indicating that military expansion may also serve as a tool for geopolitical signaling. These findings are particularly relevant for BRICS+ countries, many of which operate under persistent regional insecurity.

Complementing this view, Tran and Vo (2024) distinguish between local and global geopolitical risk in a panel VAR framework involving 34 countries between 1993 and 2022. They demonstrate that local geopolitical tensions are more consistent predictors of defense spending than global risk indices, often with a temporal lag of up to two years. This temporal sensitivity aligns with the notion that military spending is not only reactive but also anticipatory in the face of localized conflict escalation.

Further theoretical grounding is provided by a recent econometric assessment of the so-called "fear hypothesis" (Walsh et al., 2024), which posits that military budgets are primarily driven by perceived conflict threats rather than economic capacity or political institutions. The study validates this hypothesis using structural break models and finds that conflict anticipation is a stronger determinant of military spending than GDP growth or regime stability.

On the other hand, military spending can prevent conflicts. NATO's defense agreements, for instance, have helped maintain peace in Europe since World War II (Walt, 1998). But military deterrence only works if countries trust each other's military strength and intentions (Jervis, 1978).

2.3. Military spending in BRICS+ and G7 countries

The G7 (wealthy nations) and BRICS+ (emerging economies) experience different spending levels on defense. G7 countries, like the U.S. and Germany, usually keep military budgets stable, following NATO's 2% guideline (NATO, 2021). The U.S., however, spends far more than any other country (SIPRI, 2022). However, there are significant variations within the group, with the United States accounting for the largest share of global military spending (SIPRI, 2022). In contrast, BRICS+ countries have seen rapid increases in defense budgets, driven by regional security concerns and geopolitical ambitions.

China's budget grows alongside its global ambitions and regional disputes (Cheung, 2011). Similarly, Russia's defense expenditures have been driven by its geopolitical ambitions and conflicts in Eastern Europe and the Middle East (SIPRI, 2022). These trends show the differing motivations and economic implications of military spending in advanced and emerging economies.

2.4. Future research path and contributions

Despite extensive research on military spending, several questions remained unanswered. There is limited comparative analysis of military expenditures in advanced and emerging economies, particularly in the context of the BRICS+ and G7 blocs. The applied dynamic modeling of military spending behavior in this study, also reinforce the rationale for examining heterogeneous country responses—especially in emerging economies—using frameworks that can accommodate economic determinants, such as, fiscal and economic trade-offs of high defense budgets.

In particular, this study contributes to this evolving literature by comparing military spending elasticities across G7 and BRICS+ blocs and by incorporating macroeconomic constraints into its empirical design. By analyzing the new trends, drivers, and consequences of defense expenditures in these two blocs, the paper aims to contribute to a deeper understanding of the trade-offs between defense budgets and economic stability.

3. Data and Methodology

3.1. Data sources and scope of data

The primary data sources consist of Stockholm International Peace Research Institute (SIPRI) Military Expenditure Database, for data on military spending (absolute USD denominated values and as a percentage of national GDP). Further, IMF's Fiscal Monitor and World Economic Outlook is used for fiscal data (i.e., government revenue, expenditure, and deficits) and for macroeconomic variables (i.e., GDP growth, Inflation, public debt, trade openness). The data is retrieved for the period 2000–2023 to capture long-term trends and recent developments.

The dependent variable used in this analysis is military spending, measured as absolute military expenditure in USD, while independent variables include economic stability indicators such as GDP growth rate, gross domestic product (in billions PPP), and inflation rate (CPI), alongside economic factors such as trade openness (exports plus imports as a percentage of GDP), current account balance (in billions USD), and fiscal balance (government structural balance as revenue expenditure difference in percentage of GDP). For justification regarding the variable selection compare the introduction part.

3.2. Trends in military spending

For the BRICS+ countries rapid increases in defense budgets, driven by regional security concerns (i.e., India-Pakistan tensions, China's territorial disputes) and

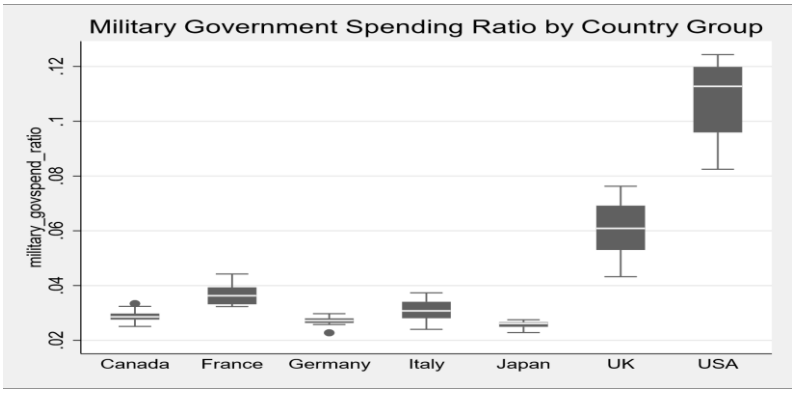
geopolitical ambitions can be conjectured. In the case of G7 countries, stable or declining military budgets, with exceptions (i.e., U.S. spending), often aligned with NATO commitments have been prevailing prior to the second Trump era. Table 2 presents a comparative analysis of military spending as a percentage of GDP between two country groups: the G7 and BRICS+.

Table 2: Comparative analysis of military spending as a percentage of GDP

	Obs	Mean	Std. dev.	Min	Max
G7	175	4.37%	0.0269	2.27%	12.43%
BRICS+	233	10.21%	0.0623	2.65%	36.16%

The mean military spending as a percentage of GDP shows an obvious contrast between these groups, with G7 nations averaging 4.37% while BRICS+ countries allocate a substantially higher 10.21% on average. This indicates that BRICS+ countries spend more than twice as much of their GDP on military expenditures compared to G7 nations. Examining the variability through standard deviation reveals that G7 countries maintain relatively consistent military spending at 0.0269, whereas BRICS+ nations demonstrate considerably higher variation at 0.0623, suggesting greater differences in defense priorities among member states. The range statistics further highlight this disparity, with G7 countries spending between 2.27% and 12.43% of GDP on military, representing a tighter spending range. In contrast, BRICS+ countries show a much wider spread from 2.65% to an exceptional 36.16% of GDP, indicating at least one high-spending country likely influenced by geopolitical tensions or arms races. These differences may be explained by several factors. G7 nations, as developed economies, often benefit from stable alliances like NATO and face fewer direct threats, allowing them to focus on non-military security measures such as cybersecurity and diplomacy.

Figure 1: G7 Boxplot for sample period



Conversely, BRICS+ countries, which are emerging and often geopolitically active states, may face regional conflicts or arms races. Authoritarian regimes within this group might also prioritize military power as a tool of governance. In conclusion, BRICS+ countries allocate a significantly larger share of GDP to military spending than G7 nations, with greater variability, suggesting differing security priorities.

While BRICS+ members may face more immediate threats or pursue militarization as a tool of power projection, the G7 maintains relatively stable and lower defense budgets, possibly due to collective security frameworks and economic constraints. Compare Figure 1 and Figure 2 for specific extent of the country over the sample period.

Figure 2: BRICS+ Boxplot for sample period

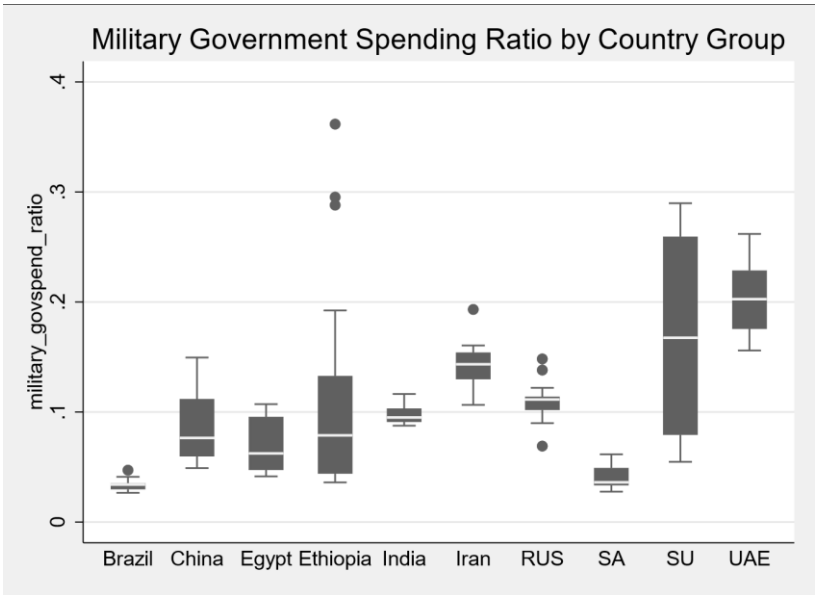


Table 3 presents the descriptive statistics for G7. Military spending and current account balances show the largest disparities, driven by the U.S. GDP (log-transformed) has moderate variation, suggesting proportional differences are stable. Inflation and fiscal balances vary but within expected ranges for advanced economies. Inflation is mostly moderate but has extreme lows (deflation), possibly reflecting different monetary policy periods. High standard deviation reflects varying fiscal policies.

Table 3: Descriptive statistics for G7

Variable	Obs	Mean	Std. dev.	Min	Max
Military spending	175	10.8293%	1.0749	8.9552%	13.5649%
GDP Growth	175	8.0331%	0.7511	6.5812%	9.9776%
Inflation	175	0.3124%	0.8534	-3.2188%	1.4961%
Fiscal Balance	170	-0.8471%	1.2925	-4.4228%	0.4453%
CA Balance	150	3.6563%	1.4858	0.1922%	5.7614%

Note: All variables are expressed in natural logarithms.

In Table 4 the correlation matrix of the relevant sample variables for G7 are presented.

Table 4: Correlation matrix for G7

	Military spending	GDP Growth	Inflation	Fiscal Balance	CA Balance
Military spending	1.0000				
GDP Growth	0.8918	1.0000			
Inflation	0.1154	0.0300	1.0000		
Fiscal Balance	-0.5385	-0.4774	-0.1479	1.0000	
CA Balance	-0.8247	-0.6509	-0.2545	0.5407	1.0000

The highest correlation is given between military spending and GDP, 0.89, followed by the negative correlation between current account and military spending, -0.82. Fiscal balance has a moderate negative correlation with military spending, -0.53.

In Table 5 the descriptive statistics of the relevant sample variables for BRICS+ are presented.

Table 5: Descriptive statistics for BRICS+

Variable	Obs	Mean	Std. dev.	Min	Max
Military spending	233	8.9122%	1.7674	4.2820%	12.4606%
GDP Growth	235	6.7499%	1.7208	1.5845%	10.1482%
Inflation	234	1.9264%	0.9736	-1.0555%	5.8465%
Fiscal Balance	128	0.6263%	1.1970	-2.6172%	2.0493%
CA Balance	121	2.7025%	1.9444	-3.6119%	6.0416%

Note: All variables are expressed in natural logarithms.

The missing observations are mainly due to non-availability of data from the African BRICS countries, namely, South Sudan, Egypt, South Africa. Further, missing data occurs due log transformation of negative values of budget and current account balances in econometric models (see Tables 3-5).

Military spending varies significantly, with China, and potentially Saudi Arabia or Russia, holding dominant positions. Many members allocate very little, resulting in a skewed distribution. A substantial disparity exists between the smallest economies, like Ethiopia, and the largest, such as China. Log transformation provides some normalization, but the standard deviation remains more than double that of the G7, with a log GDP standard deviation of 1.72 compared to the G7's 0.75, explained by China's rise and small economies like Ethiopia. The BRICS+ group has a lower mean, with China rivaling the U.S., and greater inequality exists due to some countries spending very little. Inflation is notably higher and more

volatile, with a mean of 1.92% compared to G7's 0.31.%, skewed by hyperinflation episodes. Considerable country heterogeneity exists, encompassing oil exporters like Russia and Saudi Arabia, manufacturing giants like China. The group exhibits a net surplus in current account balance, primarily due to commodity exporters like Russia and Saudi Arabia, and China's trade dominance. Some countries, including India and Brazil, operate with deficits, but the mean is pulled up by the large surplus countries.

In Table 6 the correlation matrix of the relevant sample variables for BRICS+ are given.

Table 6: Correlation matrix for BRICS+

Variable	Military spending	GDP Growth	Inflation	Fiscal Balance	CA Balance
Military spending	1.0000				
GDP Growth	0.8328	1.0000			
Inflation	-0.2278	-0.2242	1.0000		
Fiscal Balance	0.1250	0.0529	-0.0007	1.0000	
CA Balance	0.6015	0.5099	-0.1203	0.4265	1.0000

Similarly to the G7 countries, in the case of BRICS+, the highest correlation is given between military spending and GDP, 0.83. It is followed by a strong positive correlation between current account and military spending, 0.60, which contradicts the prior results. The correlation between inflation and military spending is relatively low negative correlation, -0.22, this contradicts again in size and sign against the prior case. Fiscal balance has a very low and positive correlation with military spending, 0.12, diverging from the G7 case.

Some economic and fiscal Implications can be driven from the above-described data. For BRICS+ countries high military spending may divert resources from infrastructure, education, and healthcare, potentially hindering long-term economic growth. Due to geopolitical risk potential regional arms races (i.e., Middle East tensions) and shifts in global power dynamics may take place, enhancing the economic effects.

G7 countries may have lower opportunity costs due to higher overall GDP, but rising military budgets may put pressure on fiscal stability in some countries (i.e., US and European debt concerns). Their focus was lying on maintaining strategic alliances, however, countering emerging threats such as Russia-Ukraine conflict China’s rise will build a growing concern.

3.3. Econometric model

3.3.1. Panel data analysis

This study employs a comparative cross-country analysis to examine the trends, drivers, and economic implications of military spending in BRICS+ and G7

countries. The research design combines descriptive statistics, panel data analysis, and case studies to provide a comprehensive understanding of the issue.

The general case to analyze the determinants of military spending is the fixed-effects panel regression model.

$$MilExp_{it} = \alpha + \beta_1 GDP\ Growth_{it} + \beta_2 Inflation_{it} + \beta_3 FiscalBalance_{it} + \beta_4 Trade\ Openness_{it} + \epsilon_{it} \quad (1)$$

where, MilExp_{it}, military spending of country *i* in year *t*, GDPGrowth_{it}, gross domestic product in current USD, Inflation, inflation rate of consumer price index, $\text{FiscalBalance}_{it}$, fiscal budget balance in current, $\text{TradeOpenness}_{it}$, current account balance, ϵ_{it} error term.

3.3.2. Two stage least square estimation

To address potential endogeneity between military expenditure and macroeconomic variables such as GDP and fiscal balance as described in section 3.3.1., the analysis is extended by the Instrumental Variables (IV) approach, specifically Two-Stage Least Squares (2SLS). In particular, endogeneity may arise due to reverse causality (i.e., military spending affecting GDP) or omitted variable bias (i.e., unobserved security threats influencing both defense budgets and fiscal conditions).

The structural equation of interest is:

$$log(MilitaryExp_{it}) = \alpha + \beta_1 log(GDP_{it}) + \beta_2 log(INF_{it}) + \beta_3 log(\text{FisBal}_{it}) + \beta_4 log(BOP_{it}) + \varepsilon it \quad (2)$$

where, log(MilitaryExp), logarithm of military spending, log(GDP), logarithm of GDP (suspected endogenous), log(INF), logarithm of inflation rate, log(FiscalBalance), logarithm of Fiscal Balance, log(BOP), logarithm of balance of payments. The potentially endogenous regressor log(GDP) is instrumented using its own lagged values, under the assumption that past GDP affects current GDP but is uncorrelated with contemporaneous shocks to military expenditure.

The First Stage regression can be in reduced form as

$$lo\ g(GDP_{it}) = \gamma_0 + \gamma_1 lo\ g(GDP_{it-1}) + \gamma_2 Z_{it} + u_{it} \quad (3)$$

where Z_{it} includes other exogenous variables and instruments (e.g., lagged fiscal balance). In the second stage the predicted values of $log(GDP_{it})$ from the first stage are then used in the main regression. To identify valid model specification relevant diagnostic tests are applied. Durbin-Wu-Hausman test confirms endogeneity of GDP and budget deficit, instrument diagnostic test, Shea's Partial test checks for instrument strength.

Although 2SLS does not fully accommodate panel fixed effects in standard IV regression, time-demeaning or using panel-robust standard errors can mitigate bias. Alternatively, panel cointegration methods (e.g., CS-ARDL) are explored as robustness checks, as described in section 3.3.3.

3.3.3. Cross-section augemented autoregessive distibution lag model

The Cross-Section augemented Autoregessive Distibution Lag (CS-ARDL) model was introduced by Chudik et al. (2016) as an extension of the traditional ARDL model to panel data settings that exhibit cross-sectional dependence, which is common in macroeconomic and financial datasets.

The standard form of the CS-ARDL model for unit *i* at time *t* is:

$$y_{it} = \alpha_i + \lambda_i y_{i,t-1} + \beta i' x_{it} + \theta i'' x_{i,t-1} + \gamma i' \hat{z}_{i,t} + \varepsilon_{it} \quad (4)$$

Where, $y_{i,t-1}$, dependent variable, $x_{i,t}$, vector of explanatory variables, $\hat{z}_{i,t}$, cross-sectional averages of the dependent and independent variables, capturing unobserved common factors, α_i, individual-specific fixed effects, $\varepsilon_{i,t}$, error term.

CS-ARDL model exhibits a dynamic structure by incorporating lags of dependent and independent variables and be estimated with heterogeneous slopes or imposed homogeneity (pooled version). CS-ARDL uses ARDL structure to allow both short-run and long-run effects with cross-sectional averages to remove common correlated effects. The mean group estimation estimates are obtained for each unit (each country) and then averaged. The estimation is done using the Dynamic Common Correlated Effects Estimator. Assumptions require a sufficient time dimension (T ≥ 20) for asymptotics. The cross-sectional dependence can be tested by the CD test (See Pesaran (2015)).

3.3.4. Pooled mean group panel cointegration model

To investigate the long-run and short-run determinants of military expenditure across countries, we apply the Pooled Mean Group (PMG) estimator developed by Pesaran et al. (1999). The PMG method is well-suited for dynamic heterogeneous panels where long-run relationships are assumed to be homogeneous, but short-run dynamics and error correction speeds may differ across cross-sectional units (i.e., countries). This approach is particularly appropriate when economic theory supports a common long-run equilibrium, while allowing for heterogeneity in adjustment paths due to institutional, political, or structural differences.

Our model specifications are as follows:

$$\Delta y_{it} = \phi_i\left(y_{i,t-1} - \theta_1 x_{i,t-1}^{(1)} - \theta_2 x_{i,t-1}^{(2)}\right) + \sum_{j=1}^{p-1} \lambda_{ij} \Delta y_{i,t-j} + \sum_{j=0}^{q-1} \gamma_{ij}^{(1)} \Delta x_{i,t-j}^{(1)} + \sum_{j=0}^{q-1} \gamma_{ij}^{(2)} \Delta x_{i,t-j}^{(2)} + \varepsilon_{it} \quad (5)$$

where, Y_{it} is the log of military expenditure (military_exp), $x_{i,t-1}^{(1)}$, $x_{i,t-1}^{(2)}$ are log GDP per capita and consumer price inflation, respectively, θ_i is the error correction speed of adjustment, θ_1, θ_2 are the long-run parameters (assumed identical across countries), $\gamma_{ij}^{(1)}$and λ_{ij} are short-run coefficients (country-specific). The long-run relationship is estimated by pooling across countries, assuming common

coefficients, while short-run coefficients and the error-correction term are allowed to vary.

The use of PMG is justified by heterogeneous short-run dynamics across countries in military expenditure responses, with a theoretically plausible common long-run relationship between military spending, economic output, and inflation. The possibility of non-stationary panel data and cointegration, which PMG handles appropriately. A significant and negative error correction term confirms the presence of a long-run equilibrium, with countries adjusting toward this path over time. Long-run coefficients show the elasticity of military expenditure with respect to GDP per capita and inflation, whereas short-run coefficients capture temporary deviations and adjustment lags.

4. Results

4.1. Two-stage least square models

Due to reverse causality (i.e., military spending affecting GDP) or omitted variable bias, endogeneity may arise. To address potential endogeneity between military expenditure and the remaining variables, we apply Two-Stage Least Square models as described in section 3.3.2. In Table 7 the regression results of the Two-Stage Least Square model for the G7 countries are presented.

Table 7: Two-stage least square regression results for G7

Variable	Coefficient	Std. Err.	Z	P>z
log_gdp	1.5907	0.1092	14.56	0.000
log_bop	-0.2414	0.0384	-6.28	0.000
log_inf	0.1002	0.0465	2.15	0.031
Cons	-1.1931	0.7258	-1.64	0.100
Wald chi2(3)	515.09		R-squared	0.9115
Prob > chi2	0.0000		Root MSE	0.16207
Instruments		*Tests of endogeneity*		
	Shea's Variable partial R-sq.		Test Coefficient	P-value
log_gdp	0.5002	Robust score chi2(2)	2.08667	0.3523
log_bop	0.3901	Robust regression F(2,33)	0.937617	0.4017

Note: All variables are expressed in natural logarithms. Endogenous: log_gdp log_bop, Exogenous: log_inf L1_log_gdp L.log_bop, All variables are expressed in natural logarithms. "L." denotes one-period lags.

The model fit, as indicated by R-squared values, shows strong explanatory power. Overall, the R-squared is 0.9115, reflecting a combined explanatory power of 91.55%. The Wald Chi^2-test for joint significance indicates the regression model is highly significant ($p < 0.01$), meaning the predictors jointly explain military spending effectively.

In terms of coefficient interpretation, the log of GDP (log_gdp) has a coefficient of 1.59 and a p-value of 0.000, making it highly significant. This suggests that a 1% increase in GDP is associated with a 1.59% increase in military spending, holding other factors constant. Economic size, therefore, strongly drives military expenditure in G7 nations. The log of inflation has a coefficient of 0.10 implies a statistically significant link between inflation and military spending in the G7. The log of balance of payments (log_bop) has a coefficient of -0.241 (p-value 0.000), suggesting evidence that trade or imbalances influence military budgets in the G7. Finally, the constant term has a coefficient of -1.193 with a p-value of 0.10, which is significant at a 1% level, indicating fixed baseline effect beyond the predictors.

Alliance commitments, such as NATO membership, have been included into the models but did not improve the models' fit and delivered an insignificant outcome for the coefficient. Additionally, dynamic effects, such as lagged variables are applied in a more dynamic model setting that allow for time and cross-sectional effects. In Table 8 an alternative specification for the regression results of the Two-Stage Least Square model for the G7 countries is presented.

Table 8: Two-stage least square regression results for G7 (alternative specification)

Variable	Coefficient	Std. Err.	Z	P>z
log_gdp	1.7343	0.1923	9.01	0.000
log_fisbal	0.2145	0.0688	3.11	0.002
log_bop	-0.4582	0.1008	-4.54	0.000
log_inf	-0.1125	0.0949	-1.19	0.236
Cons	-1.3313	1.0846	-1.23	0.220
Wald chi2(3)	1041.06		R-squared	0.9887
Prob > chi2	0.0000		Root MSE	0.0725
Instruments		*Tests of endogeneity*		
	Shea's partial R-squared		Test Coefficient	P-value
log_gdp	0.8781	Robust score chi2(2)	4.47058	0.2149
log_fisbal	0.4767	Robust regression F(2,33)	16.6273	0.1779
log_inf	0.4026			

Note: All variables are expressed in logarithmic transformations. Endogenous: log_gdp log_fisbal log_inf, Exogenous: log_bop L1_log_gdp L3.log_fisbal L3.log_inf. "L." denotes one-period lags.

The R-squared is 0.988, indicating that approximately 98.8% of the variation in military expenditure (log_milexp) is explained by the included regressors. This suggests the model is particularly effective in capturing cross-country differences in military spending behavior. The Wald Chi² test for joint significance of the regressors confirms the overall statistical significance of the model at well below

the 1% significance level. Instrumental variable diagnostics support the relevance and strength of the instruments throughout all models in Tables 6 - 9.

The coefficient is 1.734 with a p-value of 0.000, indicating high statistical significance. A 1% increase in GDP leads to a 1.73% increase in military spending, ceteris paribus. This suggests that economic size remains a dominant driver of military budgets in G7 economies. The coefficient for budget deficit is 0.215 (p = 0.002), a 1% increase in the fiscal budget balance is associated with a 0.21% rise in military spending, suggesting fiscal expansion may support defense spending. The inflation coefficient is -0.113, but not statistically significant (p = 0.236). This suggests that inflation does not systematically influence military spending across the countries in this sample. Concerning balance of payments, the coefficient is -0.458, significant at the 1% level (p = 0.000), indicating that improved external balances (i.e., trade surpluses) are associated with reduced military expenditure. The constant term is not statistically significant (p = 0.220), indicating no strong baseline effect beyond the included regressors.

In Table 9 the regression results of the Two-Stage Least Square model for the BRICS+ countries are presented.

Table 9: Two-stage least square regression results for BRICS+

Variable	Coefficient	Std. Err.	Z	P>z
log_gdp	0.5036	0.0464	10.85	0.000
log_bop	0.4319	0.0518	8.33	0.000
log_inf	-0.1214	0.0437	-2.77	0.006
Cons	4.9889	0.2782	17.93	0.000
Wald chi2(3)	1319.16		R-squared	0.9271
Prob > chi2	0.0000		Root MSE	0.4404
Instruments		*Tests of endogeneity*		
	Shea's partial R-squared		Test Coefficient	P-value
log_gdp	0.6770	Robust score chi2(2)	17.3644	(p = 0.0002)
log_bop	0.5237	Robust regression F(2,33)	7.53141	(p = 0.0010)

Note: All variables are expressed in logarithmic transformations. Endogenous: log_gdp log_bop, Exogenous: log_inf L1_log_gdp L.log_bop. "L." denotes one-period lags.

Using a 2SLS specification for BRICS countries, we find that GDP and balance of payments are significant determinants of military expenditures. The elasticity of military spending with respect to GDP is approximately 0.5, while improvements in BOP also positively affect defense budgets. Inflation, in contrast, has a significant negative effect, possibly reflecting tighter fiscal or monetary constraints. Instrumental variable diagnostics support the relevance and strength of the

instruments. The R-squared and Wald-Chi2-test values confirm that the model is highly significant, with predictors jointly explaining military spending.

Compared to the G7, BRICS+ nations exhibit a weaker link between GDP and military spending, with a lower elasticity of 0.50 versus 1.59. Additionally, macroeconomic factors like inflation negatively influence spending in BRICS+ (unlike the G7's positively), and trade surpluses boost it (versus negative impact in G7).

In Table 10 an alternative specification for the regression results of the Two-Stage Least Square model for the BRICS+ countries are presented. This 2SLS specification, applied to BRICS countries, identifies economic size and trade balance as the primary macroeconomic drivers of military spending, with some role for fiscal deficits.

Table 10: Two-stage least square regression results for BRICS+ (alternative specification)

Variable	Coefficient	Std. Err.	Z	P>z
log_gdp	1.5020	0.3498	4.29	0.000
log_fisbal	-0.1202	0.0407	-2.95	0.003
log_bop	0.5449	0.1158	4.70	0.000
log_inf	0.1084	0.1807	0.60	0.548
Cons	-3.8263	2.7275	-1.40	0.161
Wald chi2(4)	1972.75		R-squared	0.9881
Prob > chi2	0.0000		Root MSE	0.0696
Instruments		*Tests of endogeneity*		
	Shea's Variable partial R-sq.		Test Coefficient	P-value
log_gdp	0.3392	Robust score chi2(2)	3.3719	0.3378
log_fisbal	0.2152	Robust regression F(3,2)	5.0707	0.1691
log_inf	0.2464			

Note: All variables are expressed in logarithmic transformations. Endogenous: log_gdp log_fisbal log_inf, Exogenous: log_bop L2.log_gdp L.log_fisbal L2.log_inf. "L." denotes one-period lags.

The model shows a remarkably strong fit, with R-squared of 0.9881, indicating that 98.81% of the variation in military expenditure is explained by the model. The Wald $Chi^2(4) = 1972.75$ ($p < 0.0001$) confirms that the joint set of predictors is highly statistically significant. The coefficient is 1.502, highly significant ($p = 0.000$), suggesting that a 1% increase in GDP is associated with a 1.50% increase in military spending. This confirms a strong elastic response of defense budgets to economic size. The fiscal budget balance coefficient is -0.120, significant at the 1% level ($p = 0.003$). The inflation coefficient is 0.108, but not statistically significant ($p = 0.548$). This indicates no systematic link between inflation and military expenditure

in the BRICS context. The coefficient of balance of payment is 0.545, significantly at 1% (p = 0.000), implying that trade surpluses tend to boost military spending. The constant term is negative (-3.83) but statistically insignificant, suggesting no meaningful baseline effect when all predictors are zero.

The GDP elasticity of 1.50 is very close to the G7 benchmark estimate of 1.59 in previous models — reinforcing that economic capacity is the strongest driver of military expenditure in developed nations. Interestingly, the positive and significant impact of trade balances implies that external economic strength translates into defense investments, aligning with the logic of global projection. The G7 model reveals a highly elastic, GDP-driven military expenditure pattern, sensitive to fiscal and trade balances but largely independent of inflation.

These findings reflect institutional, fiscal, and strategic asymmetries between developed and emerging economies and confirm the reliability of the 2SLS estimation, supported by instrument strength and robust diagnostics.

4.2. Cross sectional-ARDL models

In this section CS-ARDL models are applied to model cross-sectional dependence as described in section 3.3.3., which is common in macroeconomic and financial datasets. The results for the Cross-Sectional ARDL model in case of G7 are given in Table 11.

Table 11: Cross sectional-ARDL model for G7

Variable	Coefficient	Std. Error	Z	P>|z|
L.log_milexp	0.7096	0.1085	6.54	0.000
L.log_gdp	0.3639	0.2096	1.74	0.083
L.log_inf	0.0700	0.0385	1.82	0.069
L.log_bop	-0.0173	0.0496	-0.35	0.727
F-statistic	F(21,14) = 2.28			
Prob > F	Prob > F = 0.06			
R-squared	R-squared: 0.23			
Root MSE	Root MSE: 0.08			
CD Statistic	4.34			
CD p-value	0.0000			

Note: All variables are expressed in natural logarithms. "L." denotes one-period lags. CD refers to Pesaran's cross-sectional dependence test.

Concerning the model diagnostics the following results can be observed. The CD Statistic (Cross-sectional dependence) has a value of 4.34, highly significant p = 0.0000, which indicates a strong cross-sectional dependence. This suggests that using this model specification is appropriate. The R-square 0.23 exhibits moderate explanatory power.

Military spending is strongly persistent, lagged dependent variable is significant and less than 1. Economic growth (GDP) is a key positive driver, supporting the "guns-follow-growth" hypothesis in G7. Inflation has a slight positive effect on

military expenditure. Balance of payments has no significant effect on this short-run dynamic model.

The results for the Cross-sectional ARDL model in the case of BRICS+ are given in Table 12.

Table 12: Cross sectional-ARDL model for BRICS+

Variable	Coefficient	Std. Error	Z	P>|z|
L.log_milexp	0.5785	0.0675	8.57	0.000
L.log_gdp	1.1623	0.4787	2.43	0.015
L.log_inf	–0.0370	0.0150	–2.46	0.014
L.log_bop	–0.0359	0.0565	–0.64	0.526
F-statistic	F(28, 42) = 3.50			
Prob > F	0.00			
R-squared	0.30			
Root MSE	0.20			
CD Statistic	–0.59			
CD p-value	0.552			

Note: All variables are expressed in natural logarithms. "L." denotes one-period lags. CD refers to Pesaran's cross-sectional dependence test.

The model summary is as follows. The cross-sectional dependence test fails to reject independence hypothesis; no remaining residual dependence is observed.

Regarding the model fit $R^2 = 0.30$ the model has moderate explanatory power with overall significant variables. The CS-ARDL model uses lagged values of the variables. The lagged value of military spending is 0.579 (p=0.000) indicating high persistence in military expenditure (path dependence). GDP has a positive long-run relationship, a 1% increase in GDP leads to approximately 1.16% increase in military spending. Inflation has a statistically significant but low negative effect -0.037 (p=0.014). Balance of payments turns out to be insignificant. Again, economic growth (GDP) is a key positive driver, supporting the "guns-follow-growth" hypothesis in BRICS. Inflation suppresses military expenditure. Balance of payments has no significant effect in this short-run dynamic model.

4.3. PMG panel cointegration models

In terms of robust check, we apply PMG Panel Cointegration models, allowing for heterogeneity in adjustment paths due to institutional, political, or structural differences and supporting a common long-run equilibrium dependence as described in section 3.3.4. The results for the PMG Panel Cointegration model in case of G7 are given in Table 13.

The assumptions as given as: homogeneous long-run coefficients across panels, error correction term (EC) for adjustment toward long-run equilibrium, all variables are in log-levels, so the coefficients are expressed as elasticities.

Table 13: Pooled mean group regression for G7 countries

Dependent variable = Δdlog_milexp	Coef.	Std. Err.	z	P>|z|
Long Run				
log_gdp	2.2311	0.9191	2.43	0.015
Error correction	0.0673	0.0113	5.92	0.000
Short Run Δlog_gdp	-0.0216	0.2922	-0.07	0.941
Constant	0.5050	0.0853	5.92	0.000
Log Likelihood	167.1426			

Note: All variables are expressed in logarithmic transformations.

A 1% increase in GDP is associated with a 2.23% increase in military spending in the long run. This is statistically significant (p=0,015) and indicates strong income elasticity. The Error Correction term indicates 6.7% adjustment per year in the short-run. However, the positive sign suggests divergence rather than convergence. No statistically significant short-run impact of GDP growth on military spending. Baseline short-run growth rate in military expenditure 0.505 (p=0.000).

The results for the PMG Panel Cointegration model in case of BRICS+ are given in Table 14.

Table 14: Pooled mean group regression for BRICS+ countries

Dependent variable = Δdlog_milexp	Coef.	Std. Err.	z	P>|z|
Long Run				
log_gdp	1.2962	0.0788	16.45	0.000
Error correction	0.1738	0.0481	3.61	0.000
Short Run Δlog_gdp	1.6040	0.4878	3.29	0.001
Constant	-0.1447	0.1158	-1.25	0.212
Log Likelihood	143.6415			

Note: All variables are expressed in logarithmic transformations.

The 1.296 (p=0.000) value gives a strong, positive, and highly significant long-run elasticity: a 1% increase in GDP is associated with a 1.30% increase in military spending over the long run. This coefficient aligns with the economic theory that higher income leads to increased government capacity and willingness to spend on defense (long run error correction).

The error correction term unexpectedly positive 0.174, and significant (p=0,000). It indicates divergence from long-run equilibrium. The value of Δlog_gdp is 1.60 (p=0.001); a significant short-run elasticity is given: GDP changes lead to an immediate, strong response in military spending. The constant baseline of military spending is not significant.

5. Concluding remarks

This study has examined the macroeconomic determinants of military expenditure through a comparative perspective, focusing on the G7 and BRICS+ blocs. Based on a collection of literature and applying robust empirical techniques, including Two-Stage Least Squares (2SLS), CS-ARDL, and Pooled Mean Group (PMG), estimators detailed insights into how fiscal and economic dynamics determine defense spending across advanced and emerging economies are provided. The results consistently affirm that economic size, proxied by GDP, is the dominant and robust driver of military expenditure across both advanced and emerging economies, with strong and statistically significant elasticities across specifications.

The key findings can be identified as follows. Across all models and country groupings, GDP exhibits strong positive elasticity with military spending, typically exceeding unity. The 2SLS estimates suggest a GDP elasticity of 1.59 for G7 and 0.50 for BRICS+, while PMG results show long-run elasticities of 2.23 (G7) and 1.29 (BRICS+). These findings support the "guns-follow-growth" hypothesis, where rising income levels empower and perhaps politically justify increased military allocations, confirming the importance of economic capacity in enabling defense spending. This aligns with theoretical models suggesting that military expenditure can stimulate economic growth under certain conditions (Dunne and Tian, 2015; Cuaresma and Reitschuler, 2006), while also reflecting the heterogeneous responses of countries based on their differing security interests and economic capacities (Sakib and Rahman, 2023).

Inflation exhibits weak and inconsistent effects, indicating that monetary stability frameworks may dampen its influence on defense budgets, especially in BRICS+ countries. In the G7, inflation appears to have a weak or slightly positive effect on military budgets, while in BRICS+ it is generally statistically insignificant or slightly negative, possibly reflecting inflation-averse fiscal frameworks or crowding-out effects and the prioritization of macroeconomic stability and anti-inflationary policy frameworks.

Fiscal balance shows divergent effects across the economic blocs. G7 budget surplus tends to increase military spending (positive relationship), whereas BRICS+ models show a negative relationship. Most likely, this shows capturing conflicting pressures between expansionary needs, fiscal consolidation policies, and variation in fiscal policy orientation and constraints.

The balance of payments exhibits contrasting influences across groups. In the G7, a negative relationship indicates that trade surpluses may coincide with reductions in military spending, possibly due to spending reallocation or reduced perceived threat. In contrast, BRICS+ shows positive and significant effects, especially in the second 2SLS specification, possibly indicating that external economic strength enables or coincides with strategic military expansion in emerging economies.

These divergences reflect different strategic contexts. BRICS+ countries often face persistent regional insecurity and leverage economic growth to expand military capacity (Tutuncu et al., 2024). Using economic growth can support geopolitical ambitions, as observed in China's rising defense budget linked to its global influence (Cheung, 2011) and India's military spending reflecting strategic rivalries (Sidhu, 2017).

These differences reflect broader institutional asymmetries between the two blocs. G7 military expenditures are embedded in rule-based, institutionalized budgetary frameworks, such as NATO commitments, legislative oversight, and long-term procurement contracts, which reduce responsiveness to short-term macroeconomic fluctuations. G7 countries show higher long-run elasticity of defense spending to GDP but lower short-run responsiveness, suggesting institutional rigidity and budgetary inertia consistent with NATO's defense agreements that have helped maintain stability (Walt, 1998).

Conversely, BRICS+ defense budgets are reacting more readily to economic growth, fiscal cycles, and strategic shocks, but have potentially weaker long-term fiscal discipline, as indicated by mixed effects of deficits and an unstable error correction mechanism. This fiscal volatility has the potential to be symptomatic of broader developmental pressures and evolving geopolitical ambitions consistent with findings that geopolitical risk significantly influences defense spending in countries like China, India, and South Africa (Khan et al., 2025), and that local geopolitical tensions are strong predictors of defense spending with temporal lags (Tran and Vo, 2024). In the PMG cointegration model, the positive and significant error correction term for BRICS+ (respectively higher than for G7) implies divergence from long-run equilibrium, questioning the stability of BRICS+ defense spending trajectories under volatile economic and political conditions.

This study builds on existing literature by explicitly distinguishing between advanced and emerging economies, thereby clarifying how developmental stages and institutional maturity affect the defense-economy nexus. The findings, such as short-run GDP coefficients, support prior concerns (Gupta et al., 2005; Ramey, 2011) that military expenditures in emerging economies may come at the cost of development-oriented investments such as education, healthcare, and infrastructure. Conversely, in advanced economies, institutional stability provides a buffer against short-term political or economic pressures, and further, may also consolidate defense commitments that are incompatible with contemporary geopolitical priorities. This reflects the different strategic contexts, where G7 countries maintain relatively stable defense spending following institutional guidelines like NATO's 2% GDP target (NATO, 2021), while facing challenges from rising costs and competing fiscal demands (Gates, 2010).

From a political economic perspective, the results reflect two distinct paradigms. In the G7, military spending is a function of institutional inertia, alliance obligations, and fiscal rules, leading to relatively stable but rigid budgetary patterns. In BRICS+,

defense spending is determined by growth responsiveness, political cycles, and emerging geopolitical assertiveness, resulting in more variable but strategically adaptive expenditure patterns.

The findings have certain implications for defense policy and fiscal planning. In both advanced and emerging economies, economic growth remains the most consistent enabler of defense budget expansion. However, divergent responses to fiscal and external conditions underscore the importance of institutional context, including alliance commitments, budgetary rules, and regime types (Bachtiar et al., 2025). Therefore, this paper contributes to military expenditure literature in the following way. It provides a comparative macroeconomic assessment across G7 and BRICS+ blocs using consistent advanced panel econometric tools. By the help of quantifying the elasticities of military expenditure to key macroeconomic variables, important contrasts between institutionalized and growth-sensitive budgeting are revealed. Further the study emphasizes the importance of fiscal trade-offs, particularly in emerging economies where military ambitions compete with development ambitions.

Future research should extend the dynamic analysis by incorporating explicit modeling of geopolitical tensions or regional threats. Moreover, more granular case studies could help to validate the bloc-level dynamics observed here and explore the strategic narratives behind observed spending trends. Such extensions will help to clarify the causal channels and conditional dynamics of military spending in an increasingly multipolar and uncertain global order.

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