

# National Security, Economic Growth and Development: A Quantitative-Empirical Synthesis Perspective

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## Abstract

The article investigated, examined, and analysed the nexus between national security, economic growth, and the processes of development with Ghana's experience spanning 2000 to 2020 as the main thrust of inquiry. The study applied a quantitative approach and/or methodology with a number of statistical techniques and methods as part of its design. These includes multiple regression analysis, Generalized Method of Moments (GMM), Breusch and Pagan test; Wooldridge test for autocorrelation in panel data; Pesaran and Hausman test are applied as part of the research design. The article applied a quantitative approach with Whilst national security presents a negative effect, foreign investment, and trade records a positive impact on the country's processes of economic growth and development. In investigating and examining the core existing question as to the trade-off between national security and development; and/or, is the processes of economic development possible without a corresponding comprehensive national security, among others, the article recommends a balanced growth approach to a comprehensive national security framework and the processes of economic growth and development. National security, economic growth and development are mutually intertwined; security is a pre-condition for ensuring economic growth as much as economic growth and development are the pre-conditions for national security.

**Key Words:** Balanced Growth, Development, Economic Growth, Foreign Direct Investment and Trade, Keynesianism.

## Introduction

The relationship and/or nexus between noted variables within the processes of economic growth and national security is blurred. The relationship has been the subject of inquiry particularly, in the advanced

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industry economies of the western hemisphere and for that matter, countries within the North Atlantic Treaty Organisation (NATO) since the 1960/70s. The crux of this growing relationship between national security policy and an open economy growth trajectory and/or path includes defense plan, foreign trade, and investment. During the Cold War era, containment strategy sought to hold up the former Union of Soviet Socialist Republics (USSR), and the Warsaw pact. Formerly Warsaw Treaty of Friendship, Cooperation, and Mutual Assistance and later the Warsaw Treaty Organisation bloc adopted a strong defense effort to support it. Similarly, and in tandem, the United States of America (USA) policy equally sought sustained economic growth across the entire Western alliance system, both to achieve prosperity and to build strategic strength for containment (Denoon, 2004). The concept of national security could be traced to the 17th century during the thirty-year war in Europe and the English Civil Wars between 1642 and 1651. By 1648, the Peace Treaty of Westphalia established the novel concept of the nation-state which had sovereign monopoly of the use of force; domestic affairs including religion, but more importantly, control over external security (Holmes, 2014).

There is no single definition of national security. However, a well-known definition is the ability of a government to utilize military force to protect its citizens' safety, economic welfare, and social institutions from the threat of attack by foreign or domestic invaders (Longley, 2021). In today's globalized world, certain non-military dimensions of national security include economic security, political security, energy security, homeland security, cybersecurity, human security, and environmental security. In its broad sense, national security as espoused by the United Nations (UN) after the end of the Cold War, encompasses people's safety from hunger, disease, and repression, including harmful disruptions of daily life. The concept has expanded to include economic security, environmental security, political security, and the protection of women and minorities. A major characteristic is to avoid and/or downplay national security as a military problem between nation-states, instead focus on social and economic causes and on assumed international responsibility to protect people from violence (Holmes, 2014).

Research into military expenditure and for that matter, national security results in a mixed and often contradicting outcomes relative to its impact on national economy. Although, not always the case, economic development is in most cases accompanied by a rise in military expenditure (hereafter ME). Data from the World Bank shows that from 1988 to 2012, countries with the highest ME thus, as a proportion of their Gross Domestic Product (GDP), recorded the highest economic development (5.96 per cent in high income non-OECD). On the other hand, countries with lower shares have lower economic development (2.08 percent in middle income countries and 2.05 percent in low-income countries (Yew & Churchill, 2018). There is no clear-cut answer as to the relationship between national security and the processes of economic growth and development; there exists a complex interaction between national security and economic growth and hence, development which is the thrust of this article. Apart from this introductory section, the rest of this article is organized as follows: the second (literature review) part delves into the relationship between Foreign Direct Investment (FDI), national security, economic growth and development; the third part (methodological approach and data requirements) discusses the research methodology, method and data requirements as applied in this article; the fourth part (discussion) brings to the fore the results and analysis of the study; and, the last section (summary) provide the conclusions of the article and recommendations via an enhanced policy formulation and implementation.

## **Literature Review and Theoretical Framework**

According to Yew and Churchill (2018), ME could provide and hence, promote as well as hinder economic growth. Military expenditure as part of the national security architecture, system, policies, and procedures could lead to the development of new technologies that spills over to the private sector. It could create socio-economic structure through spin-off effects, and lead to the provision of public infrastructure and the protection of the economy against both domestic and external threats. In addition, it could lead to an increase in aggregate demand and the employment through the Keynesian multiplier effect. However, an overcommitment to national

security through an increase ME, is adversarial to economic growth and development through its opportunity costs via gun-butter trade off as it could crowd out investment in other productive sectors of the economy and/or activities. Moreover, an increase in ME could lead to increases in overall tax burden and government debt with the potential to reduce the processes of economic growth. An increase in expenditure and its net effect on national security and economic growth thus, depend on the benefits versus the opportunity costs at a particular point in time.

An investigation of whether FDI affects economic growth based on a panel data of 84 countries over the period 1970-1999 involving both single and simultaneous equation model technique showed a significant endogenous relationship between FDI and economy from the mid-1980s onwards (Xiaoying & Xiaming, 2005). The relationship between FDI relative to human capital exerts a strong positive effect on economic growth in the developing world, while that of FDI and technology gap has a significant negative impact. FDI not only introduces new advanced technologies for economic growth, but also its military and intelligence sector thus, national security. National security enables an atmosphere in which the capacity to control domestic and foreign conditions is enhanced; a necessary condition to enjoy one's own self-determination, prosperity, and well-being. It is thus, suggested that security relates to the creation of the presence of peace, safety, happiness, and the protection of human and physical resources; in essence, the absence of crisis, and threats to human existence (Otto & Ukpere, 2012).

The effects of ME on the processes of economic growth and development originate from three channels. These include the supply (opportunity cost of ME such as the crowding-out effect, adverse balance of payment), the demand (increases in aggregate demand, employment, and capital utilization through the Keynesian multiplier effect), and the security (providing security for people and properties from both internal and external threats) channels. Studies show the positive effects of ME on economic growth through human capital accumulation or spin-off technologies; enhancing infrastructure, increasing a Keynesian-type aggregate demand and the promotion of full employment (Kennedy, 1983; Degrasse, 1993; Mueller & Atesoglu, 1993; Yakovlev, 2007).

In Less Developed Countries (LDCs), only a small part of GDP not spent on military and by extension, national security, is allocated to productive activities within an economy. However, spending on military-national security provides an avenue for economic growth by providing for education, medical care, technical training, and public infrastructure including roads, airports and communication networks that equally benefits the private sector. Similarly, military-security nexus establishments engage in scientific, Research and Development (R & D) activities resulting in positive spill-over effects to private production (Benoit, 1973; Benoit, 1978; Nikolaidou, Dunne, & Vougas, 2001; Dunne & Tian, 2013).

By contrast, other studies suggest that there is no significant relationship between ME-security continuum and the processes of economic growth and development (Biswas, 1993; Biswas & Ram, 1986; Derouen, 2000; Derouen, 1994). In an attempt to capture the effect and/or impact of national security relative to the processes of economic growth and development, this article reviews the Solow-Swan, neo-classical and/or exogenous growth model widely applied and used as a theoretical framework for comprehensive understanding of in and/or cross country growth patterns. It is a model of long-run economic growth focusing on capital accumulation, labour or population growth, and increases in productivity essentially, driven by technological progress. Developed independently by Robert Solow<sup>5</sup> and Trevor Swan<sup>6</sup> in 1956, it superseded the Keynesian Harrod<sup>7</sup>-Domar<sup>8</sup> model. At its core is an aggregate production function, often specified to be of Cobb-Douglas type:

$$Y = K^a (AL)^b \dots\dots\dots(1)$$

**Where:**

**Y** = Output

**K** = Capital

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5 Solow, R.W. (1956). A contribution to the theory of economic growth, *Quarterly Journal of Economics*, **70** (1), pp. 65-94.  
 6 Swan, T.W. (1956). Economic growth and capital accumulation. *Economic Record*, **32**(2), pp. 334-361.  
 7 Harrod, R.F. (1939). An essay in dynamic theory. *The Economic Journal*, **49**(193), pp. 14-33.  
 8 Domar, E. (1946). Capital expansion, rate of growth, and employment. *Econometrica*, **14**(2), pp. 137-147.

$L$  = Labour

$A$  = Productivity parameter

$\alpha$  and  $\beta$  = share of capital in total output

It is well noted that an increase in  $A_t$  results in higher output without corresponding increase in input; thus, an increase in  $A_t$  contributes to the rate of increases in the productiveness of other factors, henceforth, also known as Total Factor Productivity (TFP) (Cobb & Douglas, 1928).

To enhance the applicability and a comprehensive understanding of the above model, interactions among noted variables and/or factors such as national security, Foreign Indirect Investment (FDI), globalization index, and environmental policy are included. Henceforth,  $Y_t$  is interpreted as Gross Domestic Product (GDP) per capita,  $L_t$  as the number of workers,  $K_t$  as the aggregate capital stock, and  $A_t$  representing the overall productivity index (Asghari, 2015). Therefore:

$$A_{it} = f(NSI_{it}, KOF_{it} * NSI_{it}, FDI_{it} * NSI_{it}, FDI_{it} * NSI_{it} * ER_{it})$$

$$= (NSI_{it})^g (KOF_{it} * NSI_{it})^d (FDI_{it} * NSI_{it})^q (FDI_{it} * NSI_{it} * ER_{it})^j \dots\dots\dots(2)$$

A combination of equations (1) and (2) respectively results in:

$$Y_{it} = K_{it}^a L_{it}^b (NSI_{it})^g (KOF_{it} * NSI_{it})^d (FDI_{it} * NSI_{it})^q (FDI_{it} * NSI_{it} * ER_{it})^j \dots\dots\dots(3)$$

After taking the natural logs relative to equation (3), an ambiguity and/or explicit function is specified as follows in:

$$Y_{it} = a \ln K_{it} + b \ln L_{it} + g \ln NSI_{it} + d \ln(KOF_{it} * NSI_{it})$$

$$+ q \ln(FDI_{it} * NSI_{it}) + j \ln(FDI_{it} * NSI_{it} * ER_{it}) + m_i + j_i \dots\dots\dots(4)$$

According to Asghari (2015), the National Security Index (NSI) is a summation of five indices including Human Development Index (HDI), Research and Development Index, Gross Domestic Product Performance Index, Defense Expenditure Index as well as the Population Index respectively. Moreover, KOF index represents three aspects of the processes of globalisation. These include economic globalisation (flows of capital, goods and information services) (Wako, 2018); political globalisation

(diffusion of government policies) (Dreher, 2006; (Dreher, Gaston, & Marten, 2010; Milner, 2018); and, social globalisation (exchange of ideas, information and people) (Goulet, Restrepo, & Martin, 2000; Kocourek, Labourtkova, & Bednarova, 2013).

The issue of economic growth and development has become a great concern for many economies especially those in developing economies and in sub-Saharan Africa, during the COVID-19 pandemic. Economic growth could simply be conceptualized as a rise in GDP or GDP per capital. On the other hand, economic development encompasses growth and other developmental dimensions (Todaro & Smith, 2019). The Government of Ghana started deepening its liberal capital account regime in the 1980s under the auspices of the Bretton Woods institutions as part of the processes of economic recovery termed the Structural Adjustment Programme (SAP). As part of the liberalization policies, a free-floating foreign exchange system was adopted as part of the financial sector reforms (Benhin & Barbier, 2001). Ghana, has since been seen as an attractive destination for foreign investment and this relatively long exposure to investment flows thus, make it an ideal laboratory and/or candidate for empirical research on its efficacy in generating economic growth and therefore, enhancing the processes of development relative to its national security arrangement, and policies.

### **Data Requirements, Methodology and Design**

The study applied a quantitative approach and/or methodology with a number of statistical techniques and methods as part of its design. The quantitative approach is conceptualized as the organized inquiry about phenomenon through the collection of numerical data and execution of statistical, mathematical, or computational techniques. The source of quantitative research is positivism paradigm that advocates for approaches embedded in statistical breakdown that involves other strategies like inferential statistics, testing of hypothesis, mathematical exposition, experimental and quasi-experimental design, randomization, blinding, structured protocols, and questionnaires with restricted variety of pre-arranged answers (Slevitch, 2011). These include multiple regression

analysis to predict the values of a dependent variable, Y, given a number of p explanatory variables (X1, X2, ... XP) (Uyanik & Guler, 2013).

The Generalized Method of Moments (GMM), unlike Maximum Likelihood Estimation (MLE), does not require a complete knowledge of the distribution of the underlying data-sets (Hansen, 1982; Hall, 2005). Moreover, Breusch and Pagan test; Wooldridge test for autocorrelation in panel data; Pesaran and Hausman test are applied as part of the research design. For instance, the Hausman (Hausman, 1978) and Durbin (Durbin, 1954) tests are applied to the problem of detecting endogenous regressors (Hausman & Taylor, 1981; Chmelarova, 2007).

This article estimated standard growth equation relative to national security on the basis of pooled cross-sectional country time series data-sets spanning from 2000 to 2020. Noted data involves KOF globalization index from the Swiss Economic Institute; National Security Index (NSI): involving the National Cyber Security Index, Global Cybersecurity Index, ICT Development Index, Networked Readiness Index (The World Bank GovData360; [ncsi.ega.ee/country/gh/](http://ncsi.ega.ee/country/gh/)); Foreign Direct Investment (Kearney Foreign Investment [FDI] Confidence Index, UNCTAD world investment report, OECD FDI regulatory Restrictiveness Index). Environmental Regulation (ER) and/or Environmental Policy Stringency/Performance Index involves the number of environmental agreements ratified, ISO 14001 certifications (OECDiLibrary, [epi.yale.edu/epi-results.2022component/epi](http://epi.yale.edu/epi-results.2022component/epi), Knoema and the World Bank GovData360). The quantitative approach statistical software applied in this article includes the Excel XLSTAT version 22 (Addinsoft, 2022); and, Excel Real Statistics Resource Pack release 8.2.1 (Zaiontz, 2022).

## **Empirical Results and Analysis**

Economists tend to argue in favour of the free flow and movement of capital across national borders as it allows financial capital to seek out the highest rate of return. It is espoused that international capital flows reduce the risk faced by owners of capital by creating an environment that allows them to diversity their lending and investment (Loungani & Razin, 2001). FDI contributes to economic growth and development stimulation of the

host country as more conducive environment is created for investors, local community, and the economy at large.

Similarly, FDI allows economic sectors of the host country to have its presence felt in the international markets to ensure trading on a globalized scale. Again, FDI creates new employment opportunities, increased incomes and thus, boosts the national economy. FDI allows for resource transfer and, the exchange of knowledge technologies, and requisite skills for economic development. Furthermore, FDI contributes to corporate tax revenues in the host country (OECD, 2002; OECD, 2021). There exists a mixed resultant relationship between FDI and national security as compared to other variables and/or sectors of an economy. For example, Russia designated forty-four sectors as “strategic” and are subject to government scrutiny; Indonesia has a policy termed “negative investment list” outlining sectors that are either completely closed or partially closed to foreign investment; the central government of India, periodically releases press updates of their policies restricting FDI on national security grounds; China reviews incoming FDI to determine dimensions/concerns for national security (Janow, 2013).

Results of equation (1) relative to fixed and random effects applicable to the data-sets spanning from 2000 to 2020 panel data are presented in **Table 1** below.

**Table 1: The Determinates of National Security, Economic Growth and Development**

<i>VARIABLES</i>	<i>RANFON EFFECT</i>		<i>FIXED EFFECT</i>	
<i>C</i>	1.75**	(2.35)	2.863*	(10.37)
<i>K<sub>it</sub></i>	3.084364*	(17.18)	1.21351*	(10.03)
<i>L<sub>it</sub></i>	4.1052	(0.36)	1.749*	(2.40)
<i>NSI<sub>it</sub></i>	-6.45***	(-1.72)	-2.32**	(-2.30)
<i>KOF<sub>it</sub>*NSI<sub>it</sub></i>	1.13***	(1.71)	3.21*	(2.46)
<i>FDI<sub>it</sub>*NSI<sub>it</sub></i>	.200056*	(2.12)	2.45*	(2.35)
<i>FDI<sub>it</sub>*NSI<sub>it</sub>*ER<sub>it</sub></i>	.100068	(2.12)	-12.1*	(-0.50)
<i>R<sup>2</sup></i>	0.8152		0.7163	
<i>Observations</i>	180		180	
<i>Time</i>	20		20	
<i>Breusch and Pagan LM test</i>	74.34			
<i>Prob &gt; X<sup>2</sup></i>	0.0000			
<i>Wald test heteroskedasticity</i>			1.0E + 04	
<i>Pesaran test: cross sectional</i>			83.344	
<i>Hausman test</i>			X <sup>2</sup> (2) = 16.36	
<i>Prob &gt; X<sup>2</sup></i>			0.0010	
<i>Wooldridge test: autocorrelation</i>			13.358	

**Note:** *T-test statistics are in parentheses. Confidence Levels: 99%, 95% and, 90% with corresponding alpha/significance levels: \*\* (1%), \*(5%), and \*\*\* (10%) respectively.*

It is well noted that slope heterogeneity estimates at times affected by potential biases, in a small open economy like Ghana. Fixed effects models treat  $\mu t$  and  $\phi i$  as part of the regression parameters. However, random effects model treat them as part of the components of a random disturbance; a Hausman test is applied to test for the inconsistency of the random effects estimates. Henceforth, to correct for heteroscedasticity due to variations in variables, a likelihood-ratio is applied in comparing the feasibility of a General Least Squares Regression (FGLS). Moreover, a Wooldridge test is equally applied relative to the panel data to test for autocorrelation (Benjamin & Jorg, 2010).

A Pesaran  $CD(p)$  test is performed to find out whether the residuals from the fixed random effect estimation due to the regression model are spatially independent of each other. Whilst the  $CD(p)$  test specify that the alternative and/or research hypothesis presumes that there exists a spatial dependence; the null hypothesis presumes otherwise (Pesaran, 2004). Except for interaction between *FDI*, *NSI* and *ER*, all other coefficients of variables are significant \_\_\_ see table 1. As such, *K*, *L*, *KOF\*NSI* and *FDI\*NSI* leads to an increase in the country's GDP. Despite these observations, *NSI* results in a negative effect on GDP. This could be attributed to the relatively less developed state of developing economies (Ghana) and hence, their national security apparatus and/or architecture. Even so, it has recently concluded that military expenditure does not promote economic growth in industrialised countries. Thus, it is increasingly accepted that countries with high rates of economic growth, investment and employment are inversely related to high levels of military expenditure (Rothschild, 1973; Smith, 1977; Desli & Gkoulgkoutsika, 2021). This is evidently manifested by a country such as Japan, with a very low share of its national resources to military expenditure, rather devotes a high subsidy on civilian industry records a high rate of economic growth, investment and less unemployment in comparison to the United States

of America that allocates a much larger share of its resources to military purposes (Ball, 1983; Desli & Gkoulgkoutsika, 2021).

Asghari (2015) suggests that a comprehensive national security arrangement calls for a governance system that facilitates economic growth; this in turn leads to an environment that creates wealth that enables both the public and private sectors respectively to fund security that enhances the well-being of nationals. Unfortunately, most developing nations including Ghana, with a weak developing governance institution, lack the capability to provide an enhanced human security. Whilst national security creates an atmosphere of peace and tranquility, and thus, supported by FDI and free markets, it creates employment opportunities and higher incomes. This leads to increases in the rate of economic growth and development. The combined benefits of FDI could contribute to the modernization of national economy and security, and as such directly promote economic development.

The nexus between FDI, economic growth and development, to a degree, depend on the “*absorptive capacity*” which includes the level of national security, human capital development, type of trade regime and the degree of openness (Boretsky, 1975; Rogers, 2004). An enhanced national security increases the rate of FDI inflows that augment national capital stock and thus, spurs human capital accumulation which in turn speeds up technological advances, growth and development (Melman, 1976; Duncan & Coyne, 2013). An increased regime of FDI contributes to an accumulation of investment capital and the growth of Total Factor Productivity (TFP) of a recipient country (Asghari, 2015) such as Ghana.

## Conclusions and Recommendations

The discussion and analysis with reference to national security and a noted variable such as Foreign Direct Investment relative to the processes of economic growth and development continue to be relevant.. The goal of this article was to empirically investigate the nexus between national security, economic growth, and development with Ghana, as laboratory. The focus of the inquiry was to seek the balance between economic gains

from foreign investment, trade, and national security as a catalyst to economic growth and development. Although national security thus, has negative effect relation with FDI, it exhibited a positive effect on Ghana's rate of economic growth and development. The paper recommends a balanced growth<sup>9</sup> approach to a comprehensive national security framework and, the processes of economic growth and development. National security, economic growth and development are mutually intertwined; security is a pre-condition for ensuring economic growth as much as economic growth and development are the pre-conditions for national security. National security is seen as part of the non-economic framework and the lack of security could lead to a more time-consuming, risky and, thus, very expensive developmental trajectory.

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