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Economic Determinants of Military Expenditure in Ethiopia during 2011 – 2019: A Panel Analysis

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Abstract: Issues: Ethiopia's military expenditure is increasing from time to time which detrimentally distracts the actual follow of the economy. The country needs to build a virtuous protection and henceforth, it will do reduction of expenses for growth. Ethiopia is in a prerequisite of to do stability the both. **Methods:** This paper objective to evaluate the economic determinants of military expenditure in Ethiopia during the period 2011 – 2019. Linear Regression analysis has been applied with military expenditure and export, GDP, gross capital formation, urban population and foreign direct investment. **Findings:** Ethiopia's military expenditure has significantly influenced export of Ethiopia which is articulated in the regression analysis and the coefficient is -1.37, R-square is 0.74 and t-statistics is -3.90. GDP increased in the country which is highly significant influence in the increased military expenses and expressed in the regression analysis that coefficient is -5.68, R-square is 0.94 and t-statistics is -11.65. And also, the capital formation of Ethiopia is significantly increased the military expenditure of the country. The urban population of Ethiopia has significantly influenced the military expenses which is clearly elucidated in the

regression analysis where coefficient is -9.89, R-square is 0.94 and t-statistics is -10.92 and military expense is significant influence with the FDI of Ethiopia which is clarified as coefficient is -0.40 and t-statistics is -19.60 and there are meager influences of the military expenses by FDI, so R-square is 0.83. **Conclusions:** Ethiopia's military expenditure has increased significantly from 2011 to 2019. It has significant relationship between export, GDP, gross capital formation, urban population and foreign direct investment, hence, Ethiopia faces internal and external threads, so it is always surging the outlay for military due to purchase new weapons and import arm equipment. Furthermore, the government policy should focus on GDP, capital formation and FDI to development of the country.

Keywords: 1. Military Expenditure 2. Export 3. GDP 4. Gross Capital Formation 5. Urban Population 6. FDI

1. Introduction

Armed spending is a significant question for the global economy. It has impact beyond the possessions it receipts up, especially when it permits struggle. Indeed, nations essentially need some level of security to contract with internal and external pressures, but any reserve practice conveys an opportunity cost in that it averts financial issues somehow and other possessions from being instead working for resolutions that might straight recover the stride of growth of nations. This is predominantly vital for developing countries as in the post-conflicts within and border countries have engaged there, and this is questionable to modification any time shortly. When governments commence military expenditure, they offer wage income and cover other outlays for the military forces and secure arms for the forces. Regrettably, the only reliable data is on military spending as such. (1)

In developing countries, it is possible that the weapons will be imported, mainly advanced defense equipment, and will drain valuable funds of foreign exchange. This recommends that the opportunity cost of military outlay is expected to be higher than the spending itself. The conclusion of the post-conflicts carried substantial drops in armed expenditure, even though not constantly across entirely world's counties. Nonetheless, as expenditure for military to probably surge yield through multiplier effects in the incidence of unproductive collective demand. This way, amplified military expenditure can lead to enlarged capacity utilization, increased incomes, and henceforth, increased investment and growth. (2)

In case of Ethiopia's military expenditure, it's growing from time to time which destructively disturbs the usual follow of the economy. In terms of military spending, Ethiopia is 116th place in the world and Ethiopia's military spending (1.2 %) by is actual low as compared with her neighboring countries including Eritrea (6.3 % and 8th place), Djibouti (3.8 % and 27th place), Egypt (3.4 % and 33th place), Sudan (3.0 % and 41th place) as well as Kenya (2.8 % and 47th place). (3)

Ethiopia is dedicated to engaging entire her resources at the allocation for economic development. On the other hand, the nation had to shape of a well-made defense and hence, it will decrease outlay for growth. Ethiopia is in a requirement of to do balance the both.

Obviously, the encounter in the shape of a well-made defense is that of the readiness of resources. In this case, this study is focusing on what are the determinants of military expenses and how it is influencing the military outlay of the country from 2011 to 2019. (4)

2. Literature Review

This section has reviewed some literatures regarding the determinants of military expenditure in the worldwide countries and also in Ethiopia and how the determinants are influence expenses for military.

In (5), this report has analyzed that an analysis of the causes of military outlay in 125 countries in the time periods of 1972 to 1988. And concluded that military expenses to GDP as depended variable and it was highly significant on the independent variables were economic and monetary variables and political indicators with demographic and physical topographies of countries. The outcomes exceedingly confirm the position of these indicators were explaining that there were cross country variances in the military spending.

In (6), this article expressed what are the determinants of military expenses in the period of 1967 to 1958 in the sample of 13 countries of Sub- Saharan Africa. the results suggested that economic features show significant role in influential military load in the countries as a entire sample. In a time-series study, military expenses have found negative consequence on economic growth for all the countries and the exogenous variables were human reserve accumulation, investment distributions and the balance of payments.

In (7), the author elucidated that the crucial characteristic of a country is that it privileges the control over valid vehemence within its boundaries. Many countries face struggle in sustaining that monopoly and they want military forces and arms to encounter their chief objective is hang around the power. And also, the author notified that 27 major military wars in 1998 and also caused major causalities. Two of the wars were internal such as Pakistan between India and Ethiopia between Eritrea. Once the countries have resolved their internal constancy issues, they twitch to upsetting about their nationals. Many of these battles and resentments comprise very poor nations and there is a usual alarm that the military expenses are captivating funds that could be used for growth.

In (8), this analysis elucidated that high amount of military outlay in any country especially in Africa can't be a legal motive to found a direct fundamental connection between military outlay and battle. Suppose battle is happening, the association between military outlay and battle converts very solid and the country's possessions will be preoccupied to the warfare struggle. Though, preceding to outburst of battle, an increasing military spending or a strangely high amount of military outlay be a cautionary mark that somewhat is steeping then, military spending number is required to explicate the emergent state. Subsequently it is an effort measure, military outlay can't by the situation disturb military ability or

regulate military asset as military asset be contingent not only on the contribution of capitals, nonetheless, also over on costlier.

In (9), the authors used worldwide data for the period of 1960 - 1999 and spending is, to a degree, in a term of provincial community evil and estimated territory military battles. The authors have found that possibly, there is a counterbalancing civic moral consequence suppose the amount of military outlay is powerfully revolts are daunted by military spending and influenced by the outlay of fellow nations. The authors, Yet, analyzing for military spending, the estimation of a military battle multiplier and found that no prevention consequence of military expenditure on exogenic surge in military spending through one of the perils of internal battle. Hence, there looks to be no nation is extra than folded in mutually the initiating regional civic moral consequence counteracting the civic evil nation and its fellow nations and also given an inference is that military stand up from a fellow nations military battle.

In (10), the author explained in his report that armed-related importations have been accountable for the routine of external debt gathered by the country Ethiopia over the years, hostile climatical situations and the Derg regime's unwise land policy also paid pointedly to the unnatural state of the country's assets. Hence, Ethiopia has had to trust on outside sources for funding (military and economic) to encounter some of her growth targets and occasionally her basic needs. These things are influencing the benefactors of help (economic and military) to the state a good deal of influence its way of strategy and public outlay.

In (11), this article explained that there is no all-purpose treaty as clear consequence of democracy on economic progress. And also, analyzed that the outcome of augmented heights of democracy on peace, explains that by way of the mark of democracy surges, the chance of struggle between countries drops. Based on the stroke of explanation, it trails that more-democratic nations assign fewer of his rare possessions for military reasons than less-democratic countries. This article examines that suppose there is a undesirable association between the mark of democracy and military spending. This research article is constructed on figures for 92 nations for the period of 1987 - 97 and have done the analysis of the association between the military spending and democracy via cross section and panel estimate methods and the outcomes from the analysis recommended that advanced mark of democracy is connected with minor points of military spending.

In (12), this study indicated that military expenditure undesirably marks economic development after 1991 which was called post-Cold War period in 70 developing nations. Nevertheless, the consequence is inconsequential in the cross-sectional OLS technique and the some LDCs supportive sample, correspondingly. Furthermore, the outcome of military expenditure on development restricted upon war experience is positive and significant over all conditions, although the result is precise to internal instead of external war.

In (13), this study notified that the fundamental relationship between military spending and economic development in 35 African nations during 1990 to 2015. The results revealed that (i) no fundamental relationship between military spending and development

in seven nations (ii) unidirectional connection from military outlay to development in two countries; and (iii) unidirectional relationship from development to military outlay in fourteen countries. And also implied some findings that 1. 7 African countries are not having causation with the defense policy aims and it was independent with growth policy. 2. 14 African countries growth influences military expenses 3. 2 countries were effectively using military expenses for growth objectives. 4. And remain 12 countries in Africa, growth and defense expense objectives move together.

In (14), this research aimed to review the literature relating with the association between military outlays and external debt. Particularly, currently, among the global financial catastrophe and the international security encounters, considerate the association amid external debt and military spending is projecting in scheming the debt administration procedure in concurrence with military policy. The experiential study has found varied outcomes, which can be credited to alterations in data series or time durations, variable selection, models in econometric employed. Still, maximum of the articles authorizes the occurrence of a long-term association between military outlay and external debt and reflect military expenditure as a important contribute aspect to the stock of external debt.

In (15), this article analyzed about military expenditure suffocates economic growth and using data on non-OECD nations. Unquestionably, harmony and long-term sustainable economic growth are the main outline of all nations. This study objectives to analytically estimate the influence of military expenditure on economic progress for panel of 35 non-OECD nations during the year 1988–2019. The author used a multivariate regression model grounded on the augmented production function to attain the aim of the research. The authors and also used the panel autoregressive distributed lag (ARDL) and pooled mean group (PMG) method, whereas, in calculation, the robust least squares and fixed-effect estimators are executed for the strength of the outcomes. This research concluded a strong undesirable outcome of military expenditure on economic development. The Dumitrescu Hurlin panel causality test outcomes showed that bi-directional causality amid military outlays and economic progress. In general, these estimations deliver sturdy provision that military outlay is not useful rather harmful to economic development. The experiential results of this research suggested that legislators essential to restructure the military budget to inspire economic development and progress of social wellbeing.

In (16), this study examines the association between natural capitals and military outlay in 163 countries in the period of 1996–2017. The study showed that the impact of natural capitals on military outlay was negative. In additional calculation, the consequence is mostly marked in Middle East, North Africa and Sub-Saharan Africa countries. In general, this study implied that resource reliant nations practice income from plentiful properties to calm obstruction collections and hence absolutely positive contributive to political steadiness.

In (17), this article expressed that Military expenditure influences to countries GDP and government budgets in the advanced and developing countries has dropped significantly later the close of Cold War. In this study, the authors employed the date for 138 countries in the period of 1970 to 2019 to study junction in military expenditure and found that there is definitely junction in military expenditure across nations. A country's relationship was

influenced by political solidity and risk of fierceness in the country and the level of its communal outlay and military expenditure by its neighboring countries.

In (18), this article expressed the outlay of military spending across the world and how the military expenses increased and what are causes for the incremental of the expenditure. World military outlay in 2020 is valued as 1981 billion USD, the maximum level subsequently 1988 and the initial year for that SIPRI has a reliable estimation for entire international military outlay. World military outlay in 2020 stood 2.6 % sophisticated in actual terms than in 2019 and 9.3 % advanced than in 2011. The international military load expressed that world military outlay in a share of total gross domestic product (GDP) and it has rose by 0.2 % facts in 2020 and it has increased to 2.4 %. This surge was mostly due to the circumstance that maximum nations in the universal practiced severe monetary recessions in 2020 associated to the Covid-19 epidemic, whereas military outlay continued to increase in general. This Fact Sheet highlighted that the provincial and nationwide military spending data for 2020 and tendencies concluded the period 2011–20.

3. Objective of the study

The objective of this study is to find out the economic determinants of military expenditure in Ethiopia during the period 2011 – 2019.

4. Methods of the Study

As mentioned in the introduction, this paper aims to assess the economic determinants of military expenditure in Ethiopia during the period 2011 – 2019. Linear Regression analysis has been applied with military expenditure and export, GDP, gross capital formation, urban population and foreign direct investment.

5. Data used

The data regarding Ethiopia's military expenditure, export, GDP, gross capital formation, urban population and foreign direct investment have been collected from world bank website for the year 2011 to 2019 to assess the economic determinants of military expenditure of Ethiopia. This data is presented in the table 1. The percentage growth rate of above-mentioned data is presented in the table 2.

6. Data Analysis

Military expenses: The association between military expenses and economic growth indicators is an important theme of analysis and discussion especially for developing country like Ethiopia. Ethiop's military expenditure has increased from 0.332441772 Billion USD in 2011 to 0.54483943 Billion USD in 2019 (Table -1). The percentage growth rate over previous year (2011) is too high in the year of 2014 while it is in 10.26 and 10.77 in 2012 and 2016 whereas it is negative and very low in the years of 2013 (-5.86) and 2017 (1.96). Percentage growth rate of military expenses increased from 2.45 to 6.41 in the years of 2018 and 2019 (Table-2).

Export: Export of Ethiopia has increased from 5.33191067 in 2011 to 7.615437261 in 2019, (Table -1) but it has negative percentage growth rate over the years 2013, 2015 and 2016 which are -0.24, -6.59 and -4.03 respectively and it has reduced 13.10 to 7.93 in the recent years of 2018 and 2019. (Table – 2). Export of Ethiopia has significantly influenced the military expenditure which is expressed by the coefficient -1.37, R-square is 0.74 and t-statistics is -3.90 and it means that export has increased in the country to meet out the increased expenses of military (Table – 3).

GDP: GDP is the vital variable to stimulate the military expenditure of a country because the allocation of military expenditure is highly based on the country's GDP. In Ethiopia, GDP has increased significantly which is 31952763089 Billion USD in 2011 to 95912590628 in 2019 Billion USD. (Table – 1). In the case of percent growth rate over previous year of GDP is not that much meaningful in Ethiopia. It is 35.55 in the year of 2011 but it has significantly reduced in the year of 2019 which is 13.82. Nonetheless, comparison with the previous years in 2015 to 2019, it has significantly increased from 10.06 to 13.82 whereas it is 3.06 in the year 2018. (Table – 2). As per consolidated GDP increased in the country which is highly significant influence in the increased military expenses which is calculated by regression analysis and explained that coefficient is -5.68, R-square is 0.94 and t-statistics is -11.65. (Table – 3).

Capital formation: Capital formation of the country is actually ample significant to rise the military expenditure of the country. Gross capital formation of Ethiopia has increased from 10259286600 USD in 2011 to 33822600538 USD in 2019 (Table – 1). In case of percentage growth rate of gross capital formation is high in the year 2012 which is 56.61. It is also high in the years 2014 and 2015 which are 30.11 and 24.33 percentage growth respectively. And also, it has the negative growth rate in the year of 2018 which is -6.90, but it is increased to 15.57 in the year of 2019 (Table – 2). The capital formation of Ethiopia is significantly increased the military expenditure of the country which is explicated with the regression result thus the coefficient is -4.95, R-square is 0.92 and t-statistics is -9.48 (Table – 3).

Urban population: Certainly, urban population surge, it will influence the variations in the military expenses of the country. Ethiopia's urban population has increased drastically because of increasing population year by year (90139929 in 2011 to 112078730 in 2019 and 114963588 in 2020). It is increased from 15986316 in 2011 to 23788710 in 2019 (Table – 1). As per percentage growth rate over the previous year is gradual increase year by year which is 5.34 in 2012 to 4.90 in 2019 (Table – 2). Military expenses of Ethiopia have significantly influenced by the urban population which is obviously elucidated by the regression analysis where coefficient is -9.89, R-square is 0.94 and t-statistics is -10.92 (Table – 3).

Foreign Direct Investment: military expense is influenced by many variables where one of the variables is foreign direct investment. Foreign direct investment is amplified from 0.628624806 Billion USD in 2011 to 2.51622802 Billion USD in 2019 (Table – 1). Nonetheless, in case of percentage growth rate over previous year has a destructive trend

which is presented in the table – 2. It is negative in the year 2012 which is -55.69 whereas it has a significant increased in the next year 2013 which is 382.43 and it is increasing trend up to 2015 (57.73%). The percentage growth rate over previous year of FDI is negative drift from 2016 (-3.04%) to 2019 (-25.12%). (Table – 2). Military expense is significant influence with the FDI of Ethiopia which is clarified as coefficient is -0.40 and t-statistics is -19.60 and is meager influence with the FDI hence R-square is 0.83 (Table – 3).

Table – 1. Ethiopia's Military Expenses Determinants from 2011 to 2019

Year	Military Expenses (Billions of US \$)	Export (Billions of US \$)	GDP (Current US\$)	Gross Capital Formation (Current US\$)	Urban Population	Foreign Direct Investment (Billions of US \$)
2011	0.332441772	5.33191067	31952763089	10259286600	15986316	0.628624806
2012	0.366539018	5.962716169	43310721414	16067394958	16839218	0.278562822
2013	0.345064166	5.948437727	47648211133	16239043212	17717910	1.343876024
2014	0.414476026	6.474164234	55612228234	21129157230	18635946	1.855052154
2015	0.442532624	6.047701985	64589334979	26269304748	19590313	2.626517918
2016	0.490177249	5.804111647	74296618481	27748875907	20581872	4.142937496
2017	0.499795483	6.238595145	81770791971	31435952119	21609845	4.017159565
2018	0.512029057	7.05559939	84269348327	29265747926	22678295	3.360419369
2019	0.54483943	7.615437261	95912590628	33822600538	23788710	2.51622802

Source: Calculation based on data of World Bank, 2021.

Table-2. Growth rate of Ethiopia's Military Expenses Determinants since 2012 (Percentage Growth Rate over previous year 2011)

Year	Military Expenses	Export	GDP	Gross Capital Formation	Urban Population	Foreign Direct Investment
2012	10.26	11.83	35.55	56.61	5.34	-55.69
2013	-5.86	-0.24	10.01	1.07	5.22	382.43
2014	20.12	8.84	16.71	30.11	5.18	38.04
2015	6.77	-6.59	16.14	24.33	5.12	41.59
2016	10.77	-4.03	15.03	5.63	5.06	57.73
2017	1.96	7.49	10.06	13.29	4.99	-3.04
2018	2.45	13.10	3.06	-6.90	4.94	-16.35
2019	6.41	7.93	13.82	15.57	4.90	-25.12

Source: Calculation based on data of World Bank, 2021.

Table – 3 Regression result

(Regression result of the independent variables Export, GDP, Capital formation, Urban Population and FDI with Military Expenses as a dependent variable)

variables	Coefficients	R Square	t -statistics
Export	-1.37	0.74	-3.90
GDP	-5.68	0.94	-11.65
Gross Capital Formation	-4.95	0.92	-9.48
Urban Population	-9.89	0.94	-10.92
Foreign Direct Investment	-0.40	0.83	-19.60

Source: Calculation based on data of World Bank, 2021.

6. Conclusions

Ethiopia’s military expenditure is increased significantly from 2011 to 2019. The percentage growth rate over previous year (2011) condensed in the above-mentioned period. Ethiopia’s economic growth in 2018 slowed because of high inflation and rate of interest and slight improvement in economic reforms. Military expenditure of Ethiopia has significant relationship between export, GDP, gross capital formation, urban population and foreign direct investment, therefore it is clearly explained that the Ethiopia faces internal and external threads for the survival and she always increases the expenditure for military due to purchase new weapons from other countries and import arm equipment to protect from internal and external threads. Moreover, the government strategy should emphasis on gross domestic product, capital formation and should concentrate on absorb FDI to development of the country.

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