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Countries Military Expenditures: Definitions and Determinants

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ABSTRACT

Since the beginning of civilization, every country has always been interested to know the defence system of the other countries and are making constant efforts to make a well-built and efficient defence system than the other nations. Thus, the size and the pattern of military expenditure of a country does not depend only on its GDP or financial capability; in addition it depends on various other factors. All these factors may be identified as economic, non-economic, internal, external, political, geographical, geopolitics and geostrategic factors among others. All these factors are playing a vital role in determining the size and the composition of the military expenditure of a country. Military Expenditure is the amount of financial resources allocated by a nation to maintain armed forces and other essential services for defence purpose. Military expenditures are one of the most critically observed components of public expenditure. The standard definitions of military expenditure have been proposed by some international organizations and research institutes that are involved in the study of the defence sector. In this issue, one of the vital problems is how to define military expenditure or which public expenditure should be a part of military expenditure, further what are the main determinants of the military expenditure of a country.

Keywords: Military expenditure, military capability, GDP, military expenditure

Military expenditures are one of the most critically observed components of public expenditure. Thus, the study of military expenditure is an important field of economics in general and in defence economics in particular. It may be a study in a different way like relationship between military expenditure and growth, determinants of military expenditure, and pattern of military expenditure etc. It is very difficult to define military expenditure because its composition varies according to the country and organizations. Moreover, governments are basically free to define military expenditure according to their own wish and purpose. In simple words Military Expenditure is the amount of financial resources allocated by a nation to maintain armed forces and other essential services for the defence purpose. The standard definitions of military expenditure have been proposed by some international organizations and research institutes that are involved in study of defence

sector namely North Atlantic Treaty Organization (NATO), International Monetary Fund (IMF), US Arms Control and Disarmament Agency (US ACDA), International Institute for Strategic Studies (IISS) and Stockholm International Peace Research Institute (SIPRI).

The role of defence sector in economic growth (and *vice-versa*) has been a crucial issue for discussion across the world. Further, the relationship between military expenditure and economic growth is a very controversial issue; it varies from country to country and even within a country in different time periods. Thus, in order to study the above mentioned relationship, we required data on both the factors. Economic growth of a country can be measured with the growth rate of Gross Domestic Product (GDP), and the data on GDP is easily available. While data related to the military expenditure of a country is not easily available and besides it is associated with number of problems.

One of the vital problems is how to define military expenditure or which public expenditure should be a part of military expenditure, further what are the main determinants of the military expenditure of a country. After analysis of these two important issues we can perfectly establish the relationship between military expenditure and GDP. Thus, the basic objectives of this paper is to analyse the important issues of military expenditure namely definition of military expenditures, main determinants of military expenditure, military expenditure and military capability and the problems associated to the data of military expenditure.

Review of Literature

Ames and Goff (1975) examined the defence and education expenditures in sixteen South American countries from 1948 to 1968. They found that the political variables were not the major determinants of either education or defence budgets, instead they concluded that changes in the education and defence budget were related to the level of the available resources. Deger and Smith (1983) used the cross-country data of 50 developing countries for the period of 1965-1973 and found that the per capita income, participation in a war during the period and be in an oil producer were positively related to the share of military expenditure in GDP. Treddenick (1985) in his study argued that the recent increase in Canadian defence expenditures have been influenced more by economic issues than by security considerations. For a number of reasons, military expenditures constitute an attractive economic policy instrument. Geoffrey (1986) in his study found that domestic economic forces do exert at least a moderate influence on defence expenditure and the defence expenditure in the current year was positively related to defence expenditure in the previous year, and to the government's budgetary positions in that year. Balance of payment position had a considerable impact on government revenue and thereby on defence expenditure. Harris (1988) found that the presence of, or perceived likelihood of war is the main determinant of the size of military expenditure.

At other times, the size of GNP sets a general limit and domestic economic conditions, especially foreign exchange availability, exert a moderate impact. Robert and Frederiksen (1990) examined

the economic determinants of defence spending in six East Asian countries and found that economic variables and resource availability are probably the main determinants of military expenditure. Further in the study, all the countries increased their defence budget as the expected Gross National Product increased, a significant variation between countries existed to the timing of the increased defence allocations. Qian and Qiao (1999) studied the major determinants of China's military expenditures for the period 1965-1993 and found that China's military expenditures are positively influenced by China's Gross National Product, its rival's military expenditures and it's lagged military expenditures.

In addition, the change in the Chinese leaderships top priority from preparing for war to the economic development after 1979 has a negative impact on China's military expenditures, but the border wars with the Soviet Union and Vietnam do not have a significant impact. Balla (2006) confirms that defence expenditures are determined by a combination of economic, political and military variables. The national income and its growth rate represent important determinations of defence spending. Li Ling (2014) studied the determinants of military expenditure in China for the period of 1994-2008 and found that the main determinants are the demand of arms import, the development of economy and the level of exports of goods and services.

Definition of Military Expenditure

In order to discover the main determinants of military expenditure, first we analyse the various definitions of military expenditures. Standard definitions of military expenditure have been suggested by IMF, UN and NATO. Comparative pictures of all three definitions have been presented in Table 1. It is observed from Table 1 that the NATO definition is a comprehensive measure of financial burden of the operation of armed forces. The IMF definitions provide the bases for various data products published by the World Bank and the IMF thus less specifically oriented towards military consideration than NATO definitions. The UN definition was developed specifically for the purpose of international comparison. It is the most comprehensive definition. The differences between the three standard definitions do not look very

Table 1: Definitions of Military Expenditures^a

Sl. No.	Possible items of Military Expenditure	Items ^b in definitions issued by		
		NATO	IMF	UN
Expenditures for Military forces and their support				
1	Pay to soldiers, officers	X	X	X
2	Salaries to technicians, bureaucrats etc. within armed forces or connected to military organization	X	X	X
3	Medical services, tax benefits, social benefits for the above (including relatives)	X	X	X
4	Pensions	X	—	X
5	Military schools, hospitals etc.	X	X	
6	Current procurement expenditures on weapons (incl. arms imports)	X	X	X
7	Infrastructure construction, housing etc.	X	X	X
8	Operation and maintenance	X	X	X
9	Procurement of other goods	X	X	X
10	Military research and development	X	X	X
Other expenditures with military/defence/strategic purpose				
11	Stockpiling of strategic goods	X ^c	—	—
12	Mothballing of weapons, production lines, etc.	X ^c	X	—
13	Arms production subsidies/conversion subsidies	X	—	—
14	Military aid to other countries	X	X	X
15	Contributions to international organizations (military alliances UN peacekeeping, etc.)	X	X	—
16	Civil defence	—	X	X
Expenditures for post military forces/ action				
17	Veteran benefits, etc.	—	—	—
18	Services of war debts	—	—	
Expenditures on other forces				
19	Paramilitary/Gendarmery	X ^d	X ^d	X ^d
20	Border/ Customs Guards	X ^d	X ^d	X ^d
21	Police	X ^d	—	—
Chargeable to other accounts				
22	Humanitarian/ disaster relief	X	—	—
23	UN Peacekeeping	X	X	—
Incomes from				
24	Military schools, hospitals, companies	Y	Y	Y
25	Civilian use of military infrastructure	Y	Y	Y
26	VIP transport	Y	Y	Y
27	Sale of patents, know-how	Y	Y	Y
28	Repayments of productions subsidies	Y	Y	Y
29	Military aid from other countries	—	—	X ^e
Obligations for future spending				
30	Procurement of credit	X	X	—

Source: Brzoska, Michael, *World Military Expenditures, Handbook for Defence Economics, Volume 1*, edited by K Hartley and T Sandler, Elsevier Science B.V, 1995, pp. 48-49; ^a Ball (1988, pp. 402-404), UN (1977, 1981), NATO DPQ (90) FIN & ECON, part 1(reprinted in *Deutscher Bundestag, Druckasche 11/7373, 28*); ^b symbols: X, should be included in military expenditures; -, should not be included in military expenditures, Y, should be budgeted as income; ^c If managed and financed by defence organization; ^d When judged to be trained, equipped and available for military operations; ^e Double-counting has to be considered before aggregations.

striking but they can lead to very different data results. The SIPRI definition of military expenditure has been presented in Table 2. The SIPRI definition is also most comprehensive and appropriate for analysis and international comparison of military expenditures, while this definition serves as a guideline, in practice it is often difficult to adhere to due to data limitation.

Military Expenditure and Military Capability

Military expenditure is an input measure, which is not directly related to the output of military activities, such as military capability or strength, while there may be other political or economic motivations, the primary reason of the countries carrying out military expenditure is to achieve military capability of one sort or other, as many other factors contribute to build military capability. It should be recognized that military expenditure is a measure of current recourses devoted to renewing, replacing, and expanding military capability. Therefore, it does not measure the net acquired military infrastructure for military capability. Further, the value of military expenditure in creating military capability will vary extremely from country to country. The composition of military expenditure, management, planning and organization of forces, level of corruption, efficiency in use of military

expenditure, country’s technological absorption capability also play a vital role in creating military capability. Further, a country’s geographical location, political situation, industrial strength, direction and composition of foreign trade, potential adversaries and alliances with other countries position within the international community also play a significant role for creating military capability. It does not mean that the country with high military expenditure build more military capability and low military expenditure with less military capability. As there is no other single good indicator available to measure military capability, military expenditure often serves this purpose and researchers are using the same to measure the military capability or strength.

Determinants of Military Expenditure

The crucial issue related to the analysis of military expenditure of a country may be of two types i.e., how much security (internal and external) is required in a country and how much security that country can afford. Thus, these two issues are playing a vital role to find out the size, patterns and factors affecting the military expenditures of a country. As discussed above, military capability does not depend only on military expenditure, correspondingly military expenditure does not depend only on Gross Domestic Product, various

Table 2: SIPRI Definition of Military Expenditures

Sl. No.	Expenditure on the following items included as Military Expenditure
A	Military Expenditure includes current and capital expenditure on:
1	The armed forces, including peacekeeping forces;
2	Defence ministries and other government agencies engaged in defence projects;
3	Paramilitary forces, when judged to be trained and equipped for military operations; and
4	Military space activities.
B	Such expenditures should include:
5	Personnel including: all expenditures on current personnel, both military and civil, Retirement pensions of military personnel; and Social services for personnel and their families;
6	Operations and maintenance;
7	Procurement;
8	Military research and development
9	Military Construction;
10	Military aid (in the military expenditure of the donor country).
C	The following military-related expenditures are excluded:
11	Civil defence; Current expenditure for previous military activities, including veterans’ benefits, demobilization, conversion of arms production facilities and destruction of weapons.

Source: <http://www.sipriyearbook.org>.

Table 3: List of Possible Determinants of Military Expenditure of a Country

Sl. No	Factors	Remarks (if any)
1	Gross Domestic Product	Economic condition of the country/ Financial capability
2	Government General/Civil Budget	Expenditures on the other sector of the economy
3	Bureaucratic procedures in the allocations of military expenditure	
4	Government policy for defence production	Military industrial complex
5	Foreign Trade	Directions and composition
6	Foreign Exchange Reserves	Balance of Payment/ Trade Balance
7	Foreign aid and Foreign debt for military expenditure	Foreign aid from other country of the world for defence sector
8	Economic and other sanction by international intuitions and organizations	
9	Pattern and compositions of Military expenditure	Previously Military expenditures
10	Conditions of existing defence systems	Operating cost/ maintenances/ technology
11	Arms Races and Arms Trade	Militarization of society
12	Military doctrine or preparedness	War experience, procurement policy
13	Enthusiastic to prove dominant in military power	
14	Dimension of international boundary	Circumstances on country boarder
15	Regional and global conflict	
16	Terrorism or need of internal security	
17	Role of military in non-military affairs	Military services required by other sectors of the economy like disaster management
18	Participation of defence sector in business and trade	
19	External threat	Threat perception policy
20	Military expenditure of rival country	
21	Relationship with neighbor and other countries of the world	
22	Membership of international originations, Military alliances and agreements	As Membership of NATO, UN Peacekeeping forces, treaties etc.
23	Policy of Disarmament or Armament	
24	Ideological priorities of government	
25	Geopolitics and Geostrategic	

other factors also influence it. Thus the main determinants of military expenditure are economic, political, geographical and strategic factors among others. It is observed from the literature on military expenditure that all these determinants are not included in all the studies, some studies included only some factors and left the other factors. On the basis of all these issues and the study of different definitions of military expenditure, we prepare a comprehensive list of the main determinants of military expenditure in this paper. All these factors might influence the military expenditure of a country directly or indirectly. To construct this list we attempt to include all the economic and non-economic, internal and external, political and non-

political, geographical, geopolitics and geostrategic factors.

GDP and Military expenditure

Military expenditure as a share of GDP is provided as a vital indicator of the portion of a country's resource used for military activities. It is an indicator of the economic burden of military expenditure. It is often called the "military burden" or "defence burden". It is the most useful measure of international comparison of military expenditure. Military expenditure as a share of GDP may be a good measure of the "military burden" for the economy but not of the priority given to the military sector over the use of the available resources in decision

making. As an alternative, the share of military expenditure in government expenditure is a good indicator of the relative importance of the military sector in a given country. In practice, the value of this indicator is limited by conceptual and data problems for government expenditures. In spite of that researchers use both the ratios of military expenditure to GDP and government expenditure.

Problems with Military Expenditure Data

There are a number of conceptual problems with military expenditure data. In addition, data on military expenditure are of unequal quality and availability. Its size and composition are often treated as state secrets which create more difficulty with the availability of data related to accurate military expenditure.

Further, there are no clear limits to the functions of the military, in the contemporary era each and every sector of the economy required military services directly or indirectly. The main purpose of the data on military expenditure is to provide an easily identifiable measure of the scale of resources absorbed by the military. Long and short term changes in military expenditure may be signs of a change in military output, but interpretations of this type should be made with caution.

As per SIPRI, there are three types of problems associated with the data of military expenditure namely reliability, validity and comparability. The main problems of reliability are due to the less than comprehensive coverage of official military expenditure data, the lack of detailed information on military expenditure and the lack of data on

Table 4: The 15 Countries with the Highest Military Expenditure in 2015

Rank		Country	Military Expenditure 2015(in billion US dollar at Market Exchange Rate	Change in Military expenditure 2006-2015 (%)	Military Expenditure as Share of GDP (%)		World share, 2015(%)
2015	2014				2015	2006	
1	1	USA	596	-3.9	3.3	3.8	36
2	2	China	(215)	132	(1.9)	(2.0)	(13)
3	4	Saudi Arabia	87.2	97	13.7	7.8	5.2
4	3	Russia	66.4	91	(5.4)	(3.5)	(4.0)
5	6	UK	55.5	-7.2	2.0	2.2	3.3
Subtotal top 5 Countries			1020	NA	NA	NA	61.5
6	7	India	51.3	43	2.3	2.5	3.1
7	5	France	50.9	-5.9	2.1	2.3	3.0
8	9	Japan	40.9	-0.5	1.0	1.0	2.4
9	8	Germany	39.4	2.8	1.2	1.3	2.4
10	10	South Korea	36.4	37	2.6	2.5	2.2
Subtotal top 10 Countries			1239	NA	NA	NA	74.6
11	11	Brazil	24.6	38	1.4	1.5	1.5
12	12	Italy	23.8	-30	1.3	1.7	1.4
13	13	Australia	23.6	32	1.9	1.8	1.4
14	14	United Arab Emirates	(22.8)	136	(5.7)	(3.2)	1.4
15	15	Israel	16.1	2.6	5.4	7.5	1.0
Subtotal top 15 Countries			1350	NA	NA	NA	81.3
World			1676	19	2.3	2.3	100

Note: (i) Figure in parentheses is estimated value; (ii) Military Expenditure as Share of GDP is based on estimates of 2015 GDP from the IMF, World Economic Outlook Database, Oct 2015; (iii) NA: Not Available; **Sources:** SIPRI Year Book 2016, Armaments, Disarmament and International Security, Oxford University Press, United Kingdom.

actual rather than budgeted military expenditure. In many countries, the official data covers only a part of the total military expenditure. Important items can be hidden under the non-military budget headings or can even be financed entirely outside the government budget. Many such extra-budgetary and off-budget mechanisms are employed in practice. The validity of expenditure data depends on the purpose for which it is used.

Since, expenditure data is a measure of monetary input, its most valid use is as an indicator of economic resources consumed for military purpose. For the same reason, its utility as an indicator of military strength or capability is limited, while military expenditure does have an impact on military capability, so do many other factors as the balance between personnel and equipment, the technological level of military equipment, and the state of maintenance and repair, as well as the overall security environment in which the armed forces are to be employed. The comparability of the data is limited by two different types of factors i.e., the varying coverage (or definition) of the data and the method of currency conversion. The coverage of official data on military expenditure varies significantly between countries and over time for the same country. For the conversion into a common currency, the choice of exchange rate makes a great difference in cross-country comparisons. This is a general problem in international comparisons of economic data and is not specific to military expenditure. However, since international comparisons of military expenditure is often a sensitive issue, it is important to bear in mind that the interpretation of cross-country comparisons of military expenditure is greatly influenced by the choice of exchange rate.

Present Trends of World's Military Expenditure

Analysis of key determinants of military expenditure and its associated issues are incomplete without discussing the current trend of world's military expenditure. World military expenditure is estimated to be \$ 1676 billion in 2015, an increase of 1.0% in real terms when compared to 2014. This is the first rise in global military expenditure since 2011, although a minor one. Looking at the longer term trend, military spending was 19% higher in real terms in 2015 than in 2006. Rank wise the top

15 countries of highest military spending in 2014 and 2015 have been presented in Table 4. It is clear from the table that there was no change in the list of countries that comprised the top 15 military spenders in 2015 compared with 2014, although there were some change in their ranks. The five biggest military spenders in 2015 were the USA, China, Saudi Arabia, Russia and UK with 36%, 13%, 5.2%, 4.0%, and 3.3% of the world's military expenditure respectively. These five counters contribute 61.5% of the world's military expenditure. Further, according to military expenditure as share of GDP in 2015, it was 13.7% in Saudi Arabia, 5.4% in Russia, 3.3% in USA, 1.9% in China and 2.0% in UK.

The USA with the total military expenditure of \$ 596 billion remains as the world's largest military spenders, it is nearly more than three times of China's military expenditure in 2015, while the change in military expenditure from 2006 to 2015 is -3.9% in USA and 132% in China military expenditure. The USA military expenditure has decreased due to the withdrawal of most of its troops from Afghanistan and Iraq and the impact of the 2011 Budget Control Act. The expansion of China's military ambitions is one of the main reasons for the increase in China's military spending. The rapid growth in Saudi Arabia's military expenditure is reflected in its recent willingness to use military force directly in both Yemen and Syria. The fall in world oil prices led to cuts in military spending in several oil revenue dependent countries that had previously made rapid increases.

In the group of 15 countries, maximum countries increased their military spending from 2006 to 2015. However, the level of growth varied widely from -30% in Italy to 132% in china. The rank of India in top 15 countries is six with military expenditure of \$ 51.3 billion, which is only 3.1% of the world's military expenditure and 2.3% of India's GDP. But in the case of change in military expenditure in 2006-2015 it had increased 43%. It is about one forth of China's military expenditure. Thus, China, UAE, Saudi Arabia and Russia feature in the grouping that has made very large increases in 2006-15. Emerging powers, such as Brazil, India, Australia and South Korea, fall within the grouping that has made more modest increases. Other Western oriented countries are part of the grouping that has remained static or

in which there has been a reduction in spending to varying degrees in 2006-15. These countries include the USA, France, Germany, Israel, Italy, Japan and the UK. All these fifteen countries contribute 81.3% of the world's military expenditure and it is only around 2.3% of the world's GDP.

CONCLUSION

Since the beginning of civilization, every country has always been interested to know the defence system of the other countries and are making constant efforts to make a well-built and efficient defence system than the other nations. Currently the detailed study of defence sector of the other countries is a prerequisite to strengthen our defence system. One key approach to study the defence sector is to study the size and the pattern of military expenditure of a country. Military expenditure is the amount of financial resources allocated by a country for maintaining the armed forces and other essential services for internal and external security. It is evident that military capability of a country does not depend only on its military expenditure, actually military expenditure is a measure of the current resources that are assigned to renewing, replacing and expending the military capability. It is a key factor for determining the military capability among the other factors.

The size and the pattern of military expenditure of a country does not depend only on its GDP or financial capability, in addition it depends on various other factors. All these factors may be identified as economic, non-economic, internal, external, political, geographical, geopolitics and geostrategic factors among others. All these factors are playing a crucial role in determining the size and the composition of the military expenditure. Military expenditure as a share of GDP and as a share of government expenditure is the good measure for military burden and relative importance of the military sector in a country respectively. However, in order to study the military expenditure of country a researcher faces various types of problems. It is very difficult to define the military expenditure. Various organizations and government define it in its own convenient way. Besides, it is suffering with the problems of reliability, validity and comparability.

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