The Recent Militarisation Trends in Sub-Saharan Africa

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Résumé: *Après la deuxième guerre mondiale, les dépenses militaires ont en général augmenté. Plusieurs études faites sur le rôle et les tendances de ces dépenses ont montré clairement que les pays en développement ont également à divers degrés connu une hausse importante des dépenses militaires au cours des trois dernières décennies. Même si les tendances sont presque les mêmes dans tous ces pays, l'auteur estime qu'il faut éviter de trop généraliser car ces généralisations ne tiennent pas souvent compte des conséquences économiques et politiques sur ces pays pris individuellement.*

Introduction

Total world military expenditure (ME) increased enormously after World War II both in real terms and in terms of the ratio of military expenditure to total output (military burden). It jumped from US$287 billion in 1959 to US$663 billion in 1985, at constant 1980 prices [see Table 1]. The superpowers' arms race, the wars in Vietnam and Korea, and the continuous intensive conflict between Third World countries, were the main reasons behind this escalation. In the late 1970s, military expenditure accounted for about 6% of total world GNP, with the burden even higher among the Less Developed Countries (LDCs) (Mohammed 1992). In the period between 1988 and 1991, however, total world military expenditure declined as a result of reductions in US and Soviet military spending which accounted for around 60% of the world total.

From 1965 to 1985 Third World military expenditure constituted about 15% of the world total but its burden was over 4% of GDP and more than 15% of total governments expenditure. Moreover, although the bulk of the military spending was by the developed countries, the fastest growth was among the poorer countries. In the same period Third World military expenditure increased faster than that of developed countries. Then the trend declined in the late 1980s but was again reversed in 1990 (Deger 1991:115-135).

This tendency gave rise to a large number of empirical studies focusing on the trends and the role of military expenditure in developing countries. These studies pinpoint the escalation in LDCs military expenditures in the post-war period. For example Deger (1982) described the rate of growth of LDCs military spending up to the mid-1970s as 'exponential', while

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Table 1: Total World and African ME (1959-1985)

Year	World 1980 US$ mn	ME Annual growth rate	African ME exc. Egypt 1980 US$ mn	Total 1980 US$ mn	African Annual growth rate	ME % Share in total world ME
1959	287815	---	614	903	---	0.32
1960	297744	3.45	737	1048	16.06	0.35
1961	325917	9.46	1087	1430	36.45	0.44
1962	358503	10.00	1616	2003	40.21	0.56
1963	374190	4.38	1828	2263	12.87	0.66
1964	374107	-0.02	2198	2743	21.21	0.73
1965	375174	0.29	2529	3120	13.74	0.83
1966	412893	10.05	2640	3248	4.10	0.79
1967	456510	10.56	3275	4121	26.88	0.90
1968	483839	6.00	3803	4676	13.47	0.97
1969	490999	1.48	4578	5563	18.97	1.13
1970	483853	-1.46	4852	6340	13.97	1.31
1971	482014	-0.38	5373	7082	11.70	1.47
1972	490444	1.75	5662	7335	3.57	1.50
1973	493048	0.53	6354	9096	24.01	1.84
1974	501022	1.62	8938	11666	28.25	2.33
1975	507480	1.29	11634	15901	36.30	3.13
1976	514030	1.29	12979	16690	4.96	3.25
1977	523400	1.82	13391	17273	3.49	3.30
1978	537730	2.74	13930	16109	-6.74	3.00
1979	560330	4.20	14799	16867	4.71	3.01
1980	567050	1.20	14758	16222	-3.79	2.86
1981	579560	2.21	13850	15338	-5.45	2.65
1982	615050	6.12	13931	15610	1.77	2.54
1983	631590	2.69	14222	16105	3.17	2.55
1984	642580	1.74	12869	14113	-8.02	2.31
1985	663129	3.20	12699	13879	-6.31	2.09

Source: Based on data from SIPRI *World Armament and Disarmament Yearbook* (various issues)

McKinlay (1989) showed that it was following a 'compound interest' rate of increase. Moreover, in a recent influential paper, Porter (1989) analysed the recent trends of military expenditure in LDCs. He argued that the data used in his analyses permit him to discern four trends sufficiently clearly to be able to call them 'stylised facts' of the contemporary development process: they are, first, that LDCs' military expenditures have been rising as a fraction of GDP; second, that the capital cost component of this spending appears to have been rising relative to the operating cost component; third, that the portion of LDCs' population serving in the armed forces has been increasing; and fourth, that LDCs military wages appear to have been rising relative to civilian wages.[1]

These studies clearly show that military expenditure increased rapidly in the last three decades, and particularly in the 1970s and the early 1980s. However, this does not mean that different LDCs regions shared the same experience. This study claims that the experience of the African continent with respect to the trends of military expenditure was different. Indeed, this is even obvious from Porter's analysis as the African countries (which constituted 35% of the number of countries included in his sample) show a decline in the growth rates of both the military burden and military wage.

Variations between groups of LDCs point to the need for a classification scheme, by which Third World countries can be divided into groups according to their socioeconomic, political, geographical and strategic backgrounds. This would then allow the examination of the trends in each of the relatively homogeneous groups separately. This study is undertaken in this spirit. It is concerned with the analysis of the determinants and economic effects of military expenditure in Sub-Saharan Africa. The next section looks at the trends in military spending in Africa. Then it focuses on a sample of thirteen Sub-Sahara African countries. The rest of the paper deals with the delineation of the recent militarisation trends of the sample.

The Trends of Military Expenditure in Sub-Saharan Africa

African military spending constitutes a very small portion of the total world's military expenditure. It was only 0.32% of total world military spending in 1959, and it reached 2.09% in 1985. In the period between 1959 and 1977 the annual rate of growth of African military expenditure was very high, and exceeded the growth rate of total world military spending throughout the period. By 1978 however, total African military expenditure and the ratio of African military expenditure to total world military expenditure

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1 There are some problems with Porter's analysis; the sample used is very small (48 countries only); and within his sample there are considerable variations between LDCs regions.

flattened out [see Table 1]. Nevertheless, military expenditure in absolute terms is still high and its burden on individual countries is also high, but, as Figure 1 shows, reductions in African military spending started before other LDCs regions (Luckham 1985:295; Batchelor and Mohammed 1992).

Africa contains more than fifty countries which differ considerably in their structures, military capabilities and socioeconomic development. Thus, to overcome the problems of dealing with such a wide variety of countries, the study chooses a sample of thirteen Sub-Sahara African countries: Benin, Central African Republic, Ethiopia, Kenya, Mali, Niger, Rwanda, Somalia, Sudan, Tanzania, Togo, Uganda, and Zaire. The choice of the sample is motivated by the following considerations: First, following the World Bank regional classification, the selected group belongs to the Sub-Sahara African region, with some common geographical, ethnic, cultural and social characteristics. Some of the social indicators are listed in Table 2. Second, the selected group falls under the 'low income oil-importing' (LYC/M) category in the World Bank income and relative resource endowment classification.[2] Third, the military involvement in the economic and political affairs of these countries is very high, to the extent that a military government is the rule rather than the exception. This is accompanied by intense civil wars and political instability. Fourth, none of these countries has a domestic armament industry. Fifth, these countries are characterised by low per capita income and sluggish economic growth. Agriculture dominates economic activity both in its contribution to the GDP (ranging between 27% in Zaire and 61% in Tanzania, in 1987) and its absorption of the economically active population (ranging from 66% in Benin and 90% in Tanzania in 1987). The industrial sector is very small and is concentrated on agricultural food processing and import substitution. Finally, data considerations preclude the inclusion of some Sub-Sahara African countries to the sample.

As militarisation refers to the process of expansion of the military establishment within a certain society, it can be quantified by a set of economic, political and strategic indicators. These include the level of military expenditure and its shares in government expenditure and total GDP, as well as arms imports, size of the armed forces, and military intervention in the political scene. The following sections illustrate the trends of these indicators over time for individual countries as well as over a cross-section of the thirteen countries.

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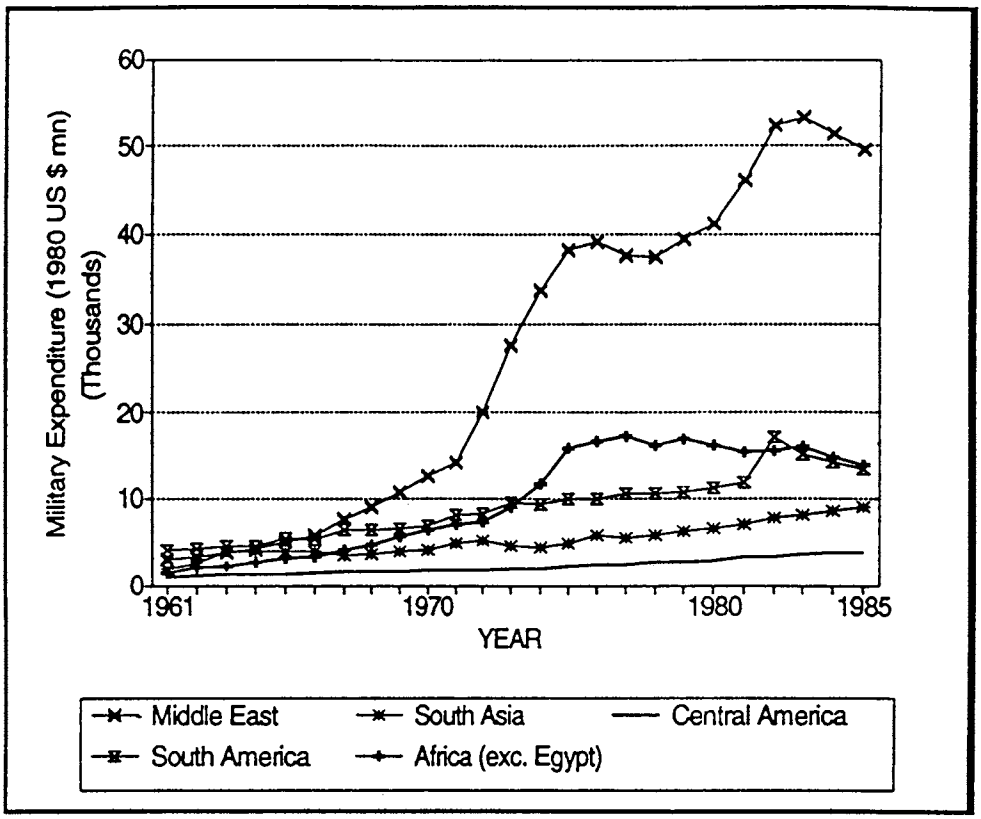
2 Notice that the sample total area is 4,564,009 square miles, which is about 40% of the total African area.

Figure (1): Third World Military Expenditure, by Regions.



SOURCE: SIPRI "*World Armament and Disarmament Yearbook*" (various issues).

Table 2: Sub-Saharan African Sample and Background Information

	(1)	(2)	(3)	(4)	(5)	(6)
Country	Date of independence	Area (square miles)	GNP per capita (US$) 1987	Life expectancy at birth, 1987	Primary school enrolment ratio 1986	Infant mortality rate 1986
Benin	1960	43484	310	50	48.1	108.9
C.A.R.	1960	240535	330	50	46.7	114.7
Ethiopia	1941	483123	130	47	36.0 #	129.2
Kenya	1963	219745	330	58	94.0 #	83.0
Mali	1960	478767	210	47	24.0	132.7
Niger	1960	489191	260	45	29.0	137.0
Rwanda	1962	10169	300	49	64.0 #	116.4
Somalia	1960	246201	318	47	25.0 ~	126.2
Sudan	1956	967500	330	50	49.0 *	112.0
Tanzania	1961	364900	180	53	72.0 #	97.9
Togo	1960	21925	290	53	95.0 #	95.9
Uganda	1962	93104	260	48	58.0 ^	115.4
Zaire	1960	905365	150	52	98.0 *	98.4

Sources:

(1) SIPRI Yearbook 1985, pp. 325-8.
(2) Regional Surveys of the World: *Africa South of the Sahara 1991.*
(3&4) *Africa Economic and Financial Data (1989).*
(5) *The African Review (1990).*
(6&7) The World Bank, *World Tables 1988/89.*
#:1985, *:1984, ~:1983, and ^:1982.

The Military Burden

While the level of military expenditure might be considered the obvious indicator of militarisation, it is seldom used in empirical analyses because of problems of making comparisons over time and across countries. The absence of a suitable deflator for military expenditure to account for price changes make comparisons over time difficult, while for international comparisons figures need to be converted into a single currency using official exchange rates or purchasing power parities. These comparisons can lead to considerable distortions as is documented in the Literature, particularly for the LDCs (Summers and Heston 1988). Even if these problems could be properly handled, it is still better to use expenditure relative to some broad economic aggregate. To surmount these obstacles, military spending as a proportion of GDP is widely used as a measure of the military burden.

In our sample the military burden ranges from 0.02% in Uganda in 1963 to 12.63% in Ethiopia in 1987, with a sample mean value of 2.51 % for the 1963-1986 period, which is slightly lower than the mean value for a typical LDC.[3] In the same period the mean value of the military burden for individual countries varied considerably. To examine the trend more precisely we regress the military burden on time for each country separately. However, in the search for the best functional form, different forms were used to fit the data: linear, quadratic and cubic functions as shown below:

$$X_t = \alpha_o + \alpha_1 t \quad .. \qquad (1)$$

$$X_t = \alpha_o + \alpha_1 t + \alpha_2 t^2 \qquad (2)$$

$$X_t = \alpha_o + \alpha_1 t + \alpha_2 t^2 + \alpha_3 t^3 \qquad (3)$$

where X, is the military burden (%) at period t, and as coefficients. The best functional form is chosen for each country by the well-known characteristics of the best fit. The equations are estimated by OLS, and when the OLS results reveal the presence of serial correlation, the Cochrane-Orcutt iterative procedure with first order autoregressive scheme AR(1) was used;[4] the results are shown in Table 3.

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3 Porter (1989:1574) estimated the mean value of the military burden for the Third World to be 3% for the 1950-1980 period, while McKinlay (1989:4) provided higher estimates.

4 See Gujarati (1988), pp.375-84. The regressions are also tested for functional form and Heteroscedasticity by the F and x2 tests versions.

Table 3: Trends of the Military Burden

Country	α_o	α_1	α_2	α_3	R^2	F ( )	Period
Benin	2.1477 (10.63)	-0.1917 (-2.91)	0.0159 (2.73)	-0.0033 (-2.22)	0.61	11.13	1963-87
C.A.R.*	-1.3559 (-1.10)	0.7831 (2.75)	-0.0493 (-2.50)	0.0009 (2.23)	0.74	15.18	1961-87
Ethiopia*	-6.887 (-0.70)	0.6688 (1.92)	-----	-----	0.94	209.50	1960-87
Kenya*	1.4416 (1.47)	-0.4221 (-1.59)	0.0494 (2.51)	-0.0012 (-2.73)	0.95	75.86	1960-87
Mali	0.9499 (0.77)	1.0363 (2.42)	-0.0942 (-2.25)	0.0022 (1.91)	0.53	6.10	1967-87
Niger	1.5144 (8.00)	-0.2326 (-3.76)	0.0164 (3.01)	-0.0003 (-2.42)	0.51	7.38	1963-87
Rwanda	2.7446 (12.19)	-0.0479 (-3.16)	-----	-----	0.30	9.99	1963-87
Somalia	3.7138 (4.92)	0.3056 (-1.34)	0.0377 (2.0)	-0.0011 (-2.45)	0.36	4.29	1961-87
Sudan	-3.2857 (-1.77)	1.5111 (3.83)	-0.0966 (-3.81)	0.0018 (3.61)	0.82	24.31	1960-87
Tanzania*	2.1135 (2.14)	0.1069 (1.91)	-----	-----	0.53	12.33	1962-87
Togo*	0.6712 (2.70)	0.0735 (5.17)	-----	-----	0.87	79.92	1961-87
Uganda	-0.7437 (-1.43)	0.8626 (5.09)	-0.0632 (4.22)	0.0014 (3.56)	0.65	12.90	1963-87
Zaire	3.0525 (8.80)	-0.0892 (-3.82)	-----	-----	0.39	14.59	1963-87
Total Sample	-0.1809 (-2.48)	0.0166 (2-95)	-----	-----	0.04		1967-87

Source:

The dependent variable for the total sample is the relative deviation from over all own-country means. The estimation method is pooled cross-section time-series estimation; cross-sectionally Hetoskedastic and time-wise Autoregressive model.

* Refers to Cochrane-Orcutt autoregressive estimation procedure with first order autoregression scheme AR(1).

( ) Figures between brackets are t-ratios.

(-----) Omitted if not significant at 95% when included.

From the regression results and the estimated mean values of the military burden [Tables 3 and 8], one can infer the following findings about the behaviour of the military burden in the sample: Firstly, although all these countries face similar conditions, the magnitude of the military burden differs significantly among them. For example, countries such as Ethiopia, Mali, Somalia, Sudan and Tanzania devoted higher portions of their output to military spending than the rest of the sample, while on the other hand, in the same period Niger devoted consistently lower resources for military purposes. Secondly, the trend of military burden in the 1963-1987 period differed also among individual countries. However, four groups of countries followed similar trends. The first group includes Rwanda and Zaire where the military burden exhibited a decreasing linear trend. The second group comprises Ethiopia, Tanzania and Togo where the military burden followed an increasing linear trend. The third group contains Benin, Kenya, Mali, Niger and Somalia where the military burden decreased after few years from independence and escalated in the 1970s but decreased remarkably in the 1980s. The last group includes Central African Republic, Sudan and Uganda. In this group military burden increased enormously after independence until it peaked in mid-1970s, then it decreased in the late 1970s and the early 1980s but it again escalated in the late 1980s.

Nevertheless, although there is considerable variation in the pattern of military burden across countries, there are also some similarities. The results suggest that the era of declining military spending started earlier in the Sub-Sahara African region than in other regions of the world. This contradicts the 'compound interest' explanation of the growth of Third World's military spending suggested by McKinlay (1989). It is also obvious that it does not accord with Porter's (1989) 'stylised facts' discussed earlier. Indeed, the decline in the military burden noticed in the majority of the sample countries, particularly in the 1980s is obvious from the fitted trends and the calculated growth rates. However, in a few countries (Ethiopia, Togo and Tanzania) the burden did not show a sign of decline in the period analysed. This increasing trend is also noticed for the whole sample when we followed Porter's (1989) estimation procedure with the dependent variable being the relative deviation from overall own-country means, to allow for country specific factors. Then we pooled the cross-sectional time series observations for the entire sample. The result might reflect the influence of the three countries mentioned above.

Military expenditure as a ratio of central government expenditure (CGE) is used as another measure of the military burden, though it is not a good indicator as the ratio of military expenditure to total output because the ratio of CGE to GDP varies considerably among countries. For our sample the mean value of ME/CGE for the period between 1967 and 1987 was estimated to be about 13%. Again Ethiopia, Rwanda, Somalia, Sudan and

Uganda allocated higher percentages of their CGE to the military than the rest of the countries in the sample. Moreover, the ranking of the countries according to the levels of the military burden measures is highly consistent with the trends of military expenditure as is obvious from Table 8.

Military Personnel

Another important indicator of the degree of militarisation in a country is the proportion of the total population, or the economically active population, that are military personnel. Definitional and measurement problems require us to use the size of the armed forces as a proxy for military personnel, though this does cause problems in making cross country comparisons. The armed forces in these countries reflect different institutions, functions and levels of conscription. Indeed, there is no general agreement on what constitute the armed forces themselves, and different countries adopt different definitions. Dunne (1986) points to the interactions in the roles of the army, paramilitary and police forces in different countries. In this study we will rely on the US Arms Control and Disarmament Agency (USACDA) armed forces definition and figures, because they include paramilitary forces, which constitute a significant proportion of these countries military personnel [more than 40% of the total armed forces in 1988].[5]

In our sample the percentage of population serving in the armed forces ranged from 0.03% in Rwanda in 1963 to 1.22% in Somalia in 1977. For the entire sample the mean value is 0.22% for the period 1964-1985.[6] In our sample, however, only three countries had ratios higher than the mean value of the total sample: Ethiopia (0.34%), Somalia (0.75%), and Sudan (0.26%). Table 4 gives the results of regressing the percentage of the population in the armed forces on time. The growth rates in 1979 and 1985 are computed and are shown in Table 7. These results show that the percentage of the population serving in the army in our sample is small compared with other Third World countries, and that the trend was not similar across countries.

While in Benin, Central African Republic, Togo and Tanzania the percentage of population serving in the armed forces was increasing consistently and rapidly, it was decreasing steadily in Mali throughout the period. In Ethiopia, Kenya, Somalia, Sudan and the whole sample the increases of the 1960s and the early 1970s flattened out by the late 1970s and the ratio fell in the 1980s. However, in Niger, Rwanda, Uganda and Zaire the ratio increased in the 1960s and peaked in 1970 then it decreased

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5 · Mohammed 1992, The lack of the economically active population time series precludes the option of judging the armed forces against the total labour force.

6 For a typical LDC the ratio was about 0.40 %, for the 1950-1980 period [see Porter (1989: 1577)].

Table 4: Trends of Military Personnel 1963-1985

Country	α_0	α_1	α_2	α_3	R^2	F ( )
Benin	0.099 (8.24)	-0.003 (-1.29)	0.0003 (2.92)	0.71	25.00	
C.A.R.	0.0971 (5.85)	0.0049 (4.07)	-----	-----	0.44	16.59
Ethiopia*	0.849 (1.99)	-0.2313 (-2.10)	0.0215 (2.48)	-0.0005 (-2.50)	0.85	23.21
Kenya	0.2777 (11.03)	-0.0469 (-5.77)	0.0032 (4.37)	-0.0001 (-3.40)	~ 0.81	24.97
Mali	0.1585 (19.25)	-0.0024 (-3.98)	-----	-----	0.43	15.84
Niger	0.0321 (2.76)	0.0169 (4.12)	-0.0015 (-3.70)	0.00003 (3.32)	0.50	6.28
Rwanda	0.0199 (2.36)	0.0228 (7.64)	-0.0019 (-6.53)	0.00004 (5.63)	0.79	24.53
Somalia	0.5261 (4 74)	-0.0894 (-2.28)	0.0152 (4.06)	-0.0005 (-4.58)	0.87	43.18
Sudan	0.1895 (5.45)	-0.0285 (-2.33)	0.0046 (3.90)	-0.0001 (-4.16)	0.89	52.22
Tanzania	0.0845 (1.68)	0.0069 (2.05)	-----	-----	0.67	19.32
Togo*	0.0916 (4.97)	-0.0027 (-0.77)	0.0004 (2.99)	-----	0.81	43.94
Uganda*	4.4039 (-2.35)	1.2544 (3.10)	-0.692 (-2.67)	0.0012 (2.37)	0.78	19.44
Zaire	-0.1191 (-0.81)	0.0879 (2.25)	-0.007 (-2.25)	0.0002 (2.15)	0.60	6.27
Total Sample	0.2395 (6.05)	0.0415 (-3.25)	0.0049	-0.0001 (-4.31)	0.86	36.84

Source:

The dependent variable is the percentage of population serving in the armed forces, 1963-1987.

* Refers to Cochrane-Orcutt autoregressive estimation procedure with first order autoregression scheme, AR(1).

( ) Figures between brackets are t-ratios.

(----) Omitted if not significant at 95% when included.

in the 1970s and increased again in the 1980s. By 1985, however, nine countries in the sample and the average for the whole sample show a growth rate lower than in 1979. Moreover, for seven countries and for the total sample, the growth rate was negative in 1985 [see Table 7, and Figure 2].

Capital Cost Component of Military Expenditure

The composition of military spending can vary from country to country and hence may affect their economies differently. For example, the payment of salaries might increase demand for locally produced goods while military-related investment might occur at the expense of investing in more productive civil sectors. Disaggregated military spending can also reflect different perceptions and uses of the military. However, the disaggregation of military expenditure into current, capital, and research and development (R & D) components, although of vital importance to our study, is not feasible for our sample. The major sources of data on military expenditure provide only annual aggregates and the first serious attempt to breakdown military expenditure from national budgetary documents was made by Ball (1984). While there are problems with the data,[7] she was able to conclude that operating costs, particularly the personnel-related outlays, form a large proportion of most developing countries security expenditure.

With regard to our sample, Ball presents a breakdown of military spending figures for only six countries, and for different periods. From her figures, the percentages of capital costs to total security expenditures are calculated and the figures are shown in Table 5. They suggest that the percentage of capital costs in relation to total security expenditure is very small, and there is no evidence to suggest that capital costs have been rising relative to operating costs components. Indeed. the ratio was high immediately after the countries' independence because they were faced with the responsibility of establishing their national armed forces, but the ratio declined few years later. Furthermore, Ball shows that none of these countries has research and development expenditure.

Arms Imports

The countries included in our sample do not produce arms.[8] Therefore, arms imports remain the sole source for their military equipment. The situation in

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7 The breakdown is not entirely accurate because it was not possible to distinguish between capital and current expenditures in some cases, and there are, of course, the well known difficulties surrounding the accuracy of military spending data. For more discussion on this issue, see Ball (1984), and Mohammed (1993).

8 With the exception of Sudan and Ethiopia, where very recently we find an evidence for small arms munitions for system [see USACDA (1987:15) and ammunition [see Brzoslca and Ohlson (1986:57)].

Figure (2): The Sample Arms Imports and Size of the Armed Forces.

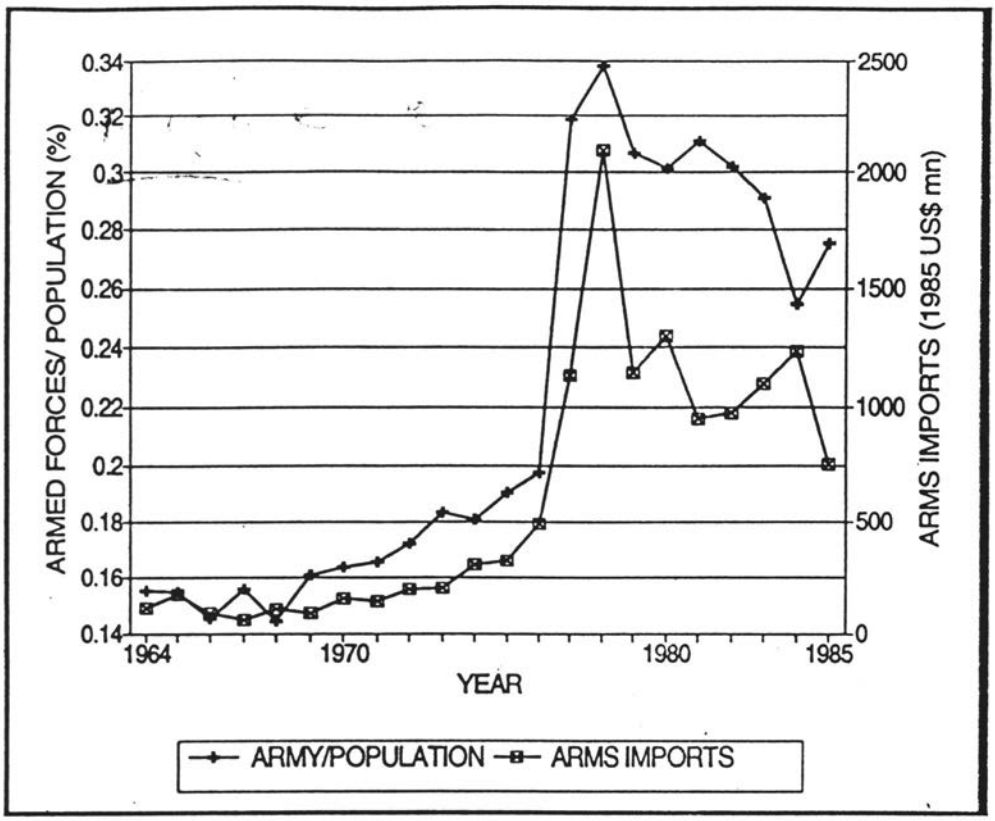

Table 5: % Of Capital Cost to Total Security Expenditure

Year	Benin	C.A.R	Mali	Sudan	Tanzania	Uganda
1959	—	—	—	11.45	—	—
1960	0.00	—	0.00	9.02	—	—
1961	0.86	666	0.63	11.63	—	—
1962	3.19	9.16	0.37	10.52	—	—
1963	1.68	5.51	0.09	11.58	—	—
1964	1.72	4.80	0.09	13.58	—	—
1965	0.00	3.50	0.05	7.97	15.07	—
1966	1.75	0.38	0.92	10.86	11.01	—
1967	1.19	0.00	—	8.43	8.94	—
1968	0.80	0.00	—	10.39	4.86	—
1969	0.00	0.00	—	13.20	3.27	—
1970	0.94	0.00	—	7.06	3.40	23.86
1971	1.68	0.00	—	—	3.02	3.84
1972	2.03	0.00	—	—	1.67	18.56
1973	3.31	0.00	—	—	0.87	2.04
1974	—	—	—	—	0.74	1.65
1975	—	—	—	—	0.36	—
1976	—	—	—	—	0.10	15.60
1977	—	—	—	—	0.17	27.96
1978	—	—	—	—	2.53	—
1979	—	—	—	—	2.62	—

Source: Ball (1984), pp. 70-170. (—): Not Available.

Africa with intensive civil wars, internal and external conflicts, meant that arms imports rose faster in Africa than any other region in the world up to 1980 [Luckham (1986)]. In fact, in our sample, arms imports rose even faster in the 1960s and the early 1970s than for Africa as a whole. But since 1978 arms imports have shown a remarkable decline.

For the period 1963-1987, the mean value of arms imports in our sample was US$44.3 million in constant 1985 prices; with an Ethiopian mean eight-fold the total sample mean. In addition Somalia, Sudan and Tanzania also imported arms more than the rest of the sample countries. We regressed arms imports on time for each country separately and for the total sample and the results shown in Table 6. They show that compared with other Third World regions (e.g., the Middle East) arms transfers appear to be relatively insignificant. Second, the trends of arms imports were similar among two groups of countries. It was linear and increasing in Mali, Niger, Tanzania and Uganda. However, for the rest of the countries and for the total sample it increased rapidly during the 1960s and 1970s but it decreased enormously by the late 1980s. Moreover, in all individual countries and for the total sample the 1979 arms imports growth rates were higher than the 1987 rates of growth. Moreover, in eight countries and the total sample, the 1987 growth rate was negative [see Figure 2].

Another way of examining the various militarisation trends is to calculate the growth rates implied by the regressions. Table 7 gives the trends growth rates in 1979 and 1987 to compare the rising trends of most countries in the 1970s with the reductions witnessed in the 1980s. For both the military burden and ratio of the population serving in the armed forces the 1979 growth rates were higher than those of 1987 (and 1985) for nine countries and for the entire sample. Moreover, in 1987 five countries had a negative military burden growth rate and in 1985 five countries and the entire sample had a negative growth rate for the ratio of the population in the armed forces. Furthermore, in all countries and the entire sample the 1987 arms imports growth rates were lower than those of 1979. Indeed in 1987 eight countries and the total sample ratio witnessed a negative arms imports growth rate.

The previous analysis of the magnitudes of the various indicators allows us to rank the countries according to their militarisation levels. Table 8 shows the consistency between the levels of military burden, army size, and arms imports within these countries. The ranking also shows that Ethiopia, Somalia, Sudan, Tanzania and Uganda are highly militarised countries compared with the sample averages. On the other hand, countries as Benin, Niger and Togo had low militarisation levels. Moreover, the trends of the examined indicators are also consistent for the sample countries because for each country two or more of the fitted trends have the same functional form. For example, military burden, ratio of population in the armed forces and arms imports trends have the same functional form in Kenya, Somalia and Tanzania.

Table 6: The Trends of Arms Imports 1963-87

Country	α_o	α_1	α_2	α_3	R^2	F( )
Benin	17.4615 (1.45)	-9.347 (-2.37)	1.1395 (3.27)	-0.0321 (-3.64)	0.55	8.48
Ethiopia	-160.453 (-1.5)	35.6893 (4.84)	----	----	0.50	23.40
Kenya	40.73 (1.58)	-18.706 (-2.22)	2.238 (3.00)	-0.0631 (-3.30)	0.48	6.35
Mali	-3.9665 (-0.65)	1.2725 (3.08)	----	----	0.29	9.49
Niger	(0.6615 (-0.36)	0.2893 (2.31)	----	----	0.19	5.35
Rwanda	4.0935 (1.00)	-1.8537 (-1.39)	0.2149 (1.83)	-0.0006 (-2.02)	0.23	2.05
Somalia	56.0317 (1.26)	-26.7048 (-1.84)	3.844 (2.99)	-0.1169 (-3.59)	0.59	10.15
Sudan	30.9322 (1.04)	-15.473 (-1.55)	2.3842 (2.78)	-0.0712 (-3.28)	0.64	12.43
Tanzania	1.3743 (0.06)	3.3043 (2.13)	----	----	0.16	4.54
Togo	4.3032 (0.64)	-2.4092 (-1.10)	0.3393 (1.74)	-0.0102 (-2.08)	0.32	3.28
Uganda	2.9999 (0.40)	0.9562 (1.90)	----	----	0.14	3.59
Zaire	-18.7991 (-1.03)	10.4923 (3.24)	-0.3806 (-3.15)	----	0.32	5.25
Total Sample	417.9738 (1.38)	-211.194 (-2.14)	27.6998 (3.17)	-0.7612 (-3.44)	0.69	15.86

Source:

* The dependent variable is the arms imports in constant 1985 US$. Note that, there is no separate equation for C.A.R. because it imported arms only very recently, for few years in the 1970s, which are added to the total sample.

( ) Figures between brackets are t-ratios.

(----) Omitted if not significant at 95% when included.

Table 7: The Growth Rates of the Trends Examined

Country	Military Burden 1979 1987	Army Size 1979 1985	Arms Imports 1979 1987
Benin	20.0	13.0	4.9	5.8	59.0	-176.0*
C.A.R	-6.1	5.7	2.7	2.2	----	----
Ethiopia	10.3	5.7	8.2	-13.8	8.0	4.9
Kenya	4.5	-14.7	158.0	-11.9	5.0	-230.8*
Mali	-9.8	-0.6	-2.0	-2.3	7.0	4.5
Niger	7.9	-0.5	-2.0	7.8	7.0	4.4
Rwanda	3.8	2.9	-0.4	7.4	4.1	-88.1#
Somalia	18.1	-40.9	1.8	-43.0	2.0	-333.9*
Sudan	-6.2	11.8	3.0	-9.3	3.6	-136.5
Tanzania	2.6	2.2	3.4	2.8	6.0	3.9
Togo	3.8	2.9	7.0	6.6	3.0	-409.9*
Uganda	-2.9	10.2	22.8	15.3	5.0	3.5
Zaire	-5.8	-10.8	-6.0	13.2	-5.0	-151.5
Total Sample	1.6	1.4	8.4	-22.8	6.5	-45.5

Source:

* 1986 growth rate

1985 growth rate. The growth rates are calculated for these years because the fitted trends imply negative arms imports figures after these dates.

Table 8: Militarisation Indicators in Sub-Saharan Africa

Country	Mean of M.B.(%)I 963-1987	R	Mean of Army/Pop. (%), 1963-1985	R	Mean of Arms Imports 1963-87	R	Mean of ME/CGE 1967-1987	R
Benin	1.7842	11	0.1144	10	12.25	9	10.70	9
C.A.R.	2.0241	9	0.1562	6	0.67	13	9.78	10
Ethiopia	5.4343	1	0.3450	2	303.51	1	23.38	1
Kenya	2.2256	7	0.0938	11	25.32	6	9.27	11
Mali*	3.3708	4	0.1298	8	12.58	8	12.88	6
Niger	0.7105	13	0.0802	13	3.10	11	4.87	13
Rwanda	2.1224	8	0.0888	12	2.01	12	15.84	4
Somalia	3.3966	3	0.7549	1	64.45	2	20.33	2
Sudan	3.1411	5	0.2645	3	55.85	3	14.48	5
Tanzania	3.6951	2	0.1687	5	44.33	4	10.95	8
Togo	1.7667	12	0.1391	7	4.72	10	8.00	12
Uganda	2.3428	6	0.1225	9	15.43	7	17.25	3
Zaire	1.8933	10	0.1721	4	33.49	5	11.32	7
Sample	2.5100		0.2213		44.30		13.00	

Source:

* 1967-1987.

R: Rank

Summary and Conclusion

The relation between military expenditure and economic development has been the focus of research and debate in the last three decades. The interest has mainly resulted from the growth in both the level of military spending and the military burden. However, the centre of attention has shifted towards the Third World countries because of their alarming trends of military expenditure in the post-war period. Most of these studies consider the Third World as a homogeneous group, and hence generalise their findings from limited LDCs samples to all other individual countries. This study emphasises that these generalisations have adverse effects on the proper understanding of the trends, determinants and the economic impact of military expenditure as well as other policy implications. Breaking down the Third World into smaller groups, with similar security webs, and economic and political conditions, facilitates closer and more accurate investigation of the economic issues related to military spending.

A sample of thirteen Sub-Sahara African countries was chosen for analysis in this study, and the changes over time of the military burden, military personnel, capital costs, and arms imports were investigated. The findings of our analysis suggest that the magnitudes and trends of militarisation indicators in the sample are different from other LDCs. The levels of the military burden, armed forces size and arms imports were lower in these countries than other Third World regions and they all started to decline in the 1980s in most of Sub-Sahara African countries. Nevertheless, there are considerable variations between these countries regarding their militarisation levels and trends. A few countries committed themselves to high and increasing levels of military expenditure, army size and arms imports. There are, however, some similarities between the majority of the countries in the sample in many regards. First, the capital cost component of military expenditure in the region is negligible and shows no sign of becoming more significant. Second, in most countries, and for the totals of the entire sample, the military burden, the percentage of population serving in the armed forces and arms imports increased rapidly in the 1960s and the early 1970s, but by the late 1970s and the early 1980s they all declined, although at different rates.

This experience of Sub-Sahara African countries, thus, contradicts the general escalation in LDCs' militarisation levels, because most of the militarisation indicators decreased during the 1980s. These findings implicitly point to some plausible determinants of military spending in the region, but a detailed separate study of the determinants will be of vital importance to the understanding of the impact of military expenditure in the region.

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