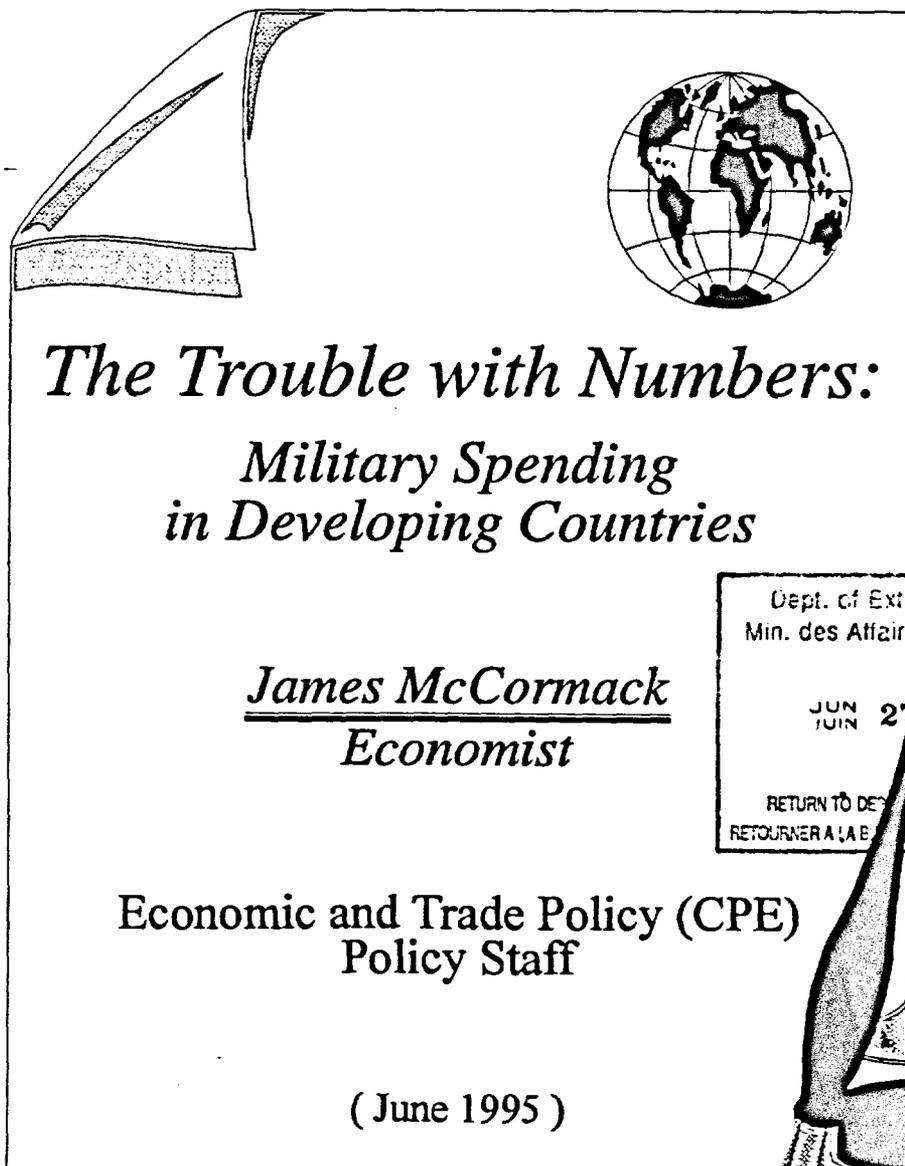


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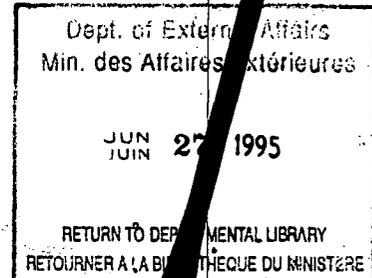
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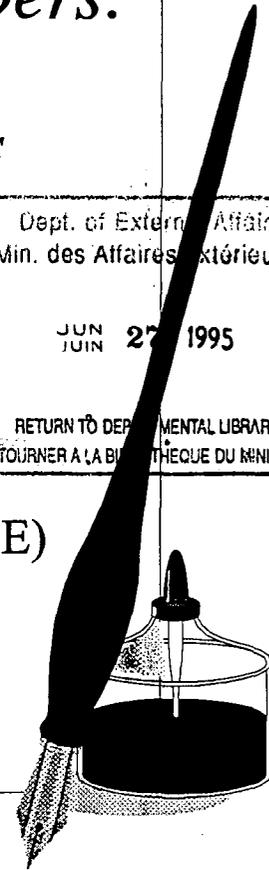
## *The Trouble with Numbers: Military Spending in Developing Countries*

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## **The Trouble With Numbers: Military Spending in Developing Countries**

In the development process, public sector resources are generally scarce. Their allocation is one of the key factors that determine the pace and distribution of economic progress, and whether that progress can be maintained in the long term. As such, there is normally a trade-off in terms of the impact on economic development between public sector resources that are devoted to military and/or security purposes and those that are devoted to the efficient provision of other necessary social services.

The trade-off between military and other social services spending, however, is not linear. Putting aside all other social factors and considering only the economic implications, there is a certain minimum level of national security that is essential for conducting business, just as there is a need for a legal system that is capable of at least enforcing commercial contracts. Once that minimum level of national security is in place, the potential trade-off between military spending and economic advancement begins. The identification of an "acceptable" level of military spending (something above the minimum level) beyond which further spending is judged "excessive" (and leads to a reduction in economic development prospects), has become an issue of debate within the development community.

In order to address the issue, this Commentary points out weaknesses and gaps in the currently available data on military spending, and identifies which indicators might be useful for international analyses and comparisons. The Commentary concludes that, without exception, any proclamation that a particular country is spending excessively on its military, and is consequently jeopardizing its economic development, should be based on the available data as well as an extensive subjective, non-numeric evaluation. Even if comparable cross-country data were available, there would be no objective numeric criteria that could be applied across all countries to determine acceptable levels of military spending. Consequently, a country-specific analysis is required in order to provide a context within which the military operates and interacts with other institutions both domestically and internationally.

### **The Data**

There is no single measure of military spending, or ratio of military spending in relation to another statistic, that provides both an accurate description of the military's influence in an economy and a means for international comparison. There

are problems with the accuracy of numbers, their timeliness, their completeness, their honesty, differing definitions and their comparability intertemporally and internationally, particularly for developing countries.

In terms of the available data on military expenditures, there are a number of difficulties that make their interpretations and international comparisons tenuous.

- National security interests and the sensitivity of military information often lead countries to release no accurate military budget or expenditure data.
- Many countries release only aggregate figures for military budgets or expenditures. This leads to uncertainty with respect to what types of activities are included in the spending reports.
- Different national definitions of military spending also lead to uncertainties concerning what types of activities are included in spending estimates. Outside of NATO countries, paramilitary forces and civil defence spending, for example, may or may not be included in official military budgets.

Despite their shortcomings, several measures are collected and used regularly by international institutions to monitor and compare military spending across countries. For the data that are collected, there are often problems of consistency between different sources. It is not uncommon, for example, for military expenditure estimates generated by the International Institute for Strategic Studies (IISS) and the U.S. Arms Control and Disarmament Agency for a specific country in a specific year to differ significantly. There is no *a priori* reason in terms of accuracy to favour the estimates of either source.

### **Military Spending As a Share of Gross Domestic Product**

In terms of economic activity as measured by Gross Domestic Product (GDP), the informal sector, which can be quite large in the least developed countries, is usually either not included or is roughly estimated. When this is the case, GDP estimates are not very accurate. In addition, since official exchange rates might not reflect purchasing power parities, estimates of GDP can be misleading. An overvalued (undervalued) exchange rate would lead to an overestimation (underestimation) of the relative size of an economy when expressed in a foreign currency such as U.S. dollars. To compensate for misaligned exchange rates, purchasing power estimates of exchange rates can be used, but they are subject to wide margins of error.

Military spending as a share of GDP is one of the most common and easily understood measures of the relative size of the military in a country. Since GDP is defined similarly across all countries (keeping in mind the above caveats), this ratio would appear to be appropriate for international comparisons. The appeal of this approach is its simplicity in terms of calculation and the intuitive understanding of the resulting ratio. If, for example, military spending represented 5 per cent of GDP in one country and 10 per cent in another, we would feel comfortable concluding that the military was significantly larger (perhaps even twice as large in relative terms) in the country with the 10 per cent ratio.

Military spending as a share of GDP is available for most countries from the International Institute for Strategic Studies. The IISS provides both the annual defence budget estimates and actual annual defence expenditure estimates, although for many countries the budget estimates are more timely. In order to provide the most up-to-date data, the tables in this Commentary use defence budget estimates.

### **Military Spending as a Share of Health and Education Spending**

In trying to determine a country's relative commitment to maintaining the social infrastructure necessary for economic development, military spending is compared often to government spending on health and education. A low ratio of military spending to health and education spending is taken to imply that a country has institutionalized the priority it attaches to development through spending commitments.

One of the practical drawbacks of using this ratio is the lack of data. For many developing countries, there are no recent data on health and education expenditures. Of the 150 developing countries considered in the tables of this Commentary, there were no data available for 78 countries in the primary source (UNICEF, *State of the World's Children*). For 31 of these latter countries, data were drawn from the UNDP *Human Development Report* of 1994. Although using two sources results in a more complete data set, the years covered were different, making it difficult to compare internationally.

### **Armed Forces Per 1,000 People**

Another easily understood and widely used measure of the relative size and importance of the military is the number of armed forces personnel per 1,000 people. For the purposes of this Commentary, the armed forces include only "active" personnel. Reserves are not included unless they have been mobilized. The IISS has

up-to-date data for most countries, and the ratios of armed forces per 1,000 people are roughly in line with other sources.

Once again, despite the intuitive appeal of this measure, it is subject to some uncertainty and interpretation. Assuming the size of the military (in persons) was determined accurately, the fiscal burden would still be uncertain since the per member cost of maintaining an armed force varies from country to country. Further, there are several countries that maintain paramilitary forces of sufficient means to support or replace regular military forces. Generally, paramilitary forces are not included in armed forces data. As an example of the potential magnitude of paramilitary forces, the IISS estimates that the Popular Mobilization Army of Iran has had as many as one million volunteers during periods of offensive operations.

Another potential problem with comparing armed forces' strengths internationally lies in determining their respective roles and influences in different countries. While a relatively large armed force could imply a lack of commitment to economic development (all other things held constant), it is possible that the military could also contribute to a country's rudimentary infrastructure or pass on basic skills to its otherwise unskilled members.<sup>1</sup>

### **Total Deaths Due to Conflict**

In determining whether a country's military expenditures are excessive, it is necessary to establish a context within which its military operates. In 1993, there were 27 developing countries that recorded civilian and/or military deaths due to major armed conflicts, according to the Stockholm International Peace Research Institute (SIPRI). The activities of police/paramilitary "death squads" are not necessarily captured by the SIPRI data.

Of the 11 developing countries whose military spending represented the highest shares of GDP in 1993, five were engaged in major armed conflicts that resulted in deaths. Of the ten developing countries with the highest ratio of armed forces personnel per 1,000 people in 1993, three were involved in similar conflicts.

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<sup>1</sup> Although most of the literature claims that military spending reduces economic development, some analysts point to the possibility of positive spillovers. For example, see R. Picciotto, "Comment on 'The Post-Cold-War World: Implications for Military Expenditures in Developing Countries', by R.S. McNamara", in *Proceedings of the World Bank Annual Conference on Development Economics 1991*, World Bank, Washington DC, March 1992, p. 133.

It should be emphasized that simply providing a national context in which the military operates, i.e., signalling whether the country is engaged in an armed conflict, does not address directly the question of whether military spending is excessive. A country can spend a large sum on its military without being engaged in armed conflict, and still not be spending excessively as long as there is a legitimate threat to national security. At the same time, it is feasible for a country to be engaged in an armed conflict, but judged to be spending excessively on its military if it is determined that a reduction in oppressive government military actions would reduce internal (and/or external) tensions, conflict and deaths.

### **Arms Imports as a Share of Total Imports**

Arms imports as a share of total imports is used as another gauge of a country's relative commitment to military spending and economic development. Imports are an essential element in the development process. To the extent that a country's limited trading resources are devoted to importing arms, and they are diverted from more productive uses, development is slowed.

Arms imports data are used also to compensate for reporting problems with some countries' military expenditures data. According to the U.S. Arms Control and Disarmament Agency, there are a number of countries that include only operating expenses in their reported military expenditures.<sup>2</sup> A better estimate of total military spending for those countries is obtained by adding the value of arms imports to available expenditure estimates.

The accuracy of arms imports data is not considered particularly good. Arms imports are defined usually as arms deliveries, not arms payments. Thus, since arms can be paid for in different years than they are delivered, the data can give a false impression of the economic burden imposed by international arms purchases in any given year. In addition, weapons prices often do not reflect production costs, and trade is facilitated frequently by barter or other offsetting arrangements. As a result, one must be careful when comparing the arms imports of individual countries over time, and comparing the arms imports of different countries in any given year.

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<sup>2</sup> The Agency cites Algeria, Chile, Cuba, Ecuador, Egypt, Honduras, Iraq, Iran, Libya and Syria in this regard. See U.S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers, 1993-94*, Washington DC, February 1995, p. 166.

### So, What is Excessive?

It would be convenient if there were an easily identified limit beyond which military spending in developing countries was accepted as excessive and a hinderance to economic development. Of course, such a limit could not be expressed in absolute terms -- it would need to be relative to the size of countries' economies. When applying the concept of an acceptable limit to military spending in the real world, it also needs to be relative to the military activities of neighbouring countries, and relative to individual countries' legitimate internal conflict management requirements. It quickly becomes impossible to find a universally applicable point estimate of a limit to military spending.

That said, the relationship between military spending and economic development is still one that warrants attention. In 1992, OECD countries collectively disbursed about \$US60 billion of Official Development Assistance.<sup>3</sup> In the same year, military spending in developing countries was about \$US125 billion.<sup>4</sup> In some developing countries, military spending and ODA inflows represent similar shares of national income. Although more aid per capita has flowed historically to developing countries that spend more on the military, donor countries are considering now whether a reversed linkage would be more appropriate, particularly from a development perspective.<sup>5</sup>

The best advice to those analyzing military spending in developing countries, and especially to those engaged in international comparisons, is to keep the analysis simple and rely mostly on aggregated data. It must be recognized that there is no way to compensate for data inaccuracies, and the available data provide only the roughest guide. Since it is difficult enough to collect even the most basic statistics such as GDP, anything more specific, such as the shares of public expenditures devoted to education and health, is apt to be riddled with errors and omissions.

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<sup>3</sup> See UNDP, *Human Development Report 1994*, Oxford University Press, Oxford, U.K., 1994, p. 197.

<sup>4</sup> See UNDP, *op. cit.*, p. 48.

<sup>5</sup> A key part of the debate on military spending and development centres on the relationship between aid and military spending. Some commentators have suggested restricting aid disbursements to those countries that fail to reduce military spending to a specified level such as 2% of GDP. See R.S. McNamara, "The Post-Cold War World: Implications for Military Expenditure in Developing Countries", in *Proceedings of the World Bank Annual Conference on Development Economics 1991*, World Bank, Washington DC, March 1992, p. 107.

In the end, a country-specific, non-numeric evaluation of military expenditures is also necessary. To focus solely on numeric measures of military spending without taking account of the national and international social and security contexts risks reaching erroneous conclusions. Too many important factors related to both the role of the military and the development process are not captured by the data, and would not be captured by the data even if they were available.

## MILITARY SPENDING IN DEVELOPING COUNTRIES

Country	Military Budget	Military Spending As % of Health & Education Spending	Armed Forces Per 1,000 People	Total Deaths Due To Conflict	Arms Imports as % of Total Imports	ODA Inflow as % of GNP
	(1993)	(1986-92)	(1993)	(1993)	(1993)	(1992)
	(1)	(2)	(3)	(4)	(5)	(6)
1 Afghanistan	14.5	N/A	N/A	2,000-3,000	0.0	N/A
2 Albania	3.5	N/A	21.4	0	0.0	N/A
3 Algeria (f)	2.7	11	4.3	1,100-2,400	0.1	1
4 Angola (a) (i)	30.9	162	7.3	20,000	N/A	N/A
5 Argentina	1.6	76	2.1	0	0.1	0
6 Armenia	3.6	N/A	9.6	0	0.0	N/A
7 Azerbaijan	2.9	N/A	7.5	>2,000	2.0	N/A
8 Bahamas	0.5	N/A	9.3	0	N/A	N/A
9 Bahrain (f)	5.4	41	14.5	0	1.1	N/A
10 Bangladesh	1.5	63	0.9	<25	0.3	7
11 Barbados (b) (f)	0.5	5	1.6	0	0.0	N/A
12 Belarus	3.3	N/A	8.8	0	0.0	N/A
13 Belize	2.0	N/A	4.5	0	0.0	N/A
14 Benin	1.5	45	0.9	0	0.0	13
15 Bhutan (b)	0.5	N/A	2.9	0	0.0	24
16 Bolivia	1.9	59	4.2	0	0.4	13
17 Bosnia (a)	47.2	N/A	25.6	10-30,000	0.0	N/A
18 Botswana	3.8	52	5.4	0	0.6	3
19 Brazil	1.0	40	2.1	0	0.2	0
20 Brunei Darussalam (f)	31.8	125	15.3	0	0.0	N/A
21 Bulgaria	3.0	54	12.1	0	0.0	N/A
22 Burkina-Faso	3.3	95	1.0	0	N/A	15
23 Burundi (b)	2.1	80	1.2	0	0.0	26
24 Cambodia	2.2	N/A	8.6	(g)	N/A	N/A
25 Cameroon	0.7	47	1.8	0	0.0	7
26 Cape Verde	0.8	N/A	2.6	0	0.0	N/A
27 Central African Rep. (f)	2.4	33	1.5	0	0.0	14
28 Chad (f)	5.2	74	4.8	0	N/A	20
29 Chile	2.2	50	6.7	0	0.4	0
30 China (f)	1.4	114	2.4	0	0.4	1
31 Colombia (f)	2.0	57	4.2	1,500	N/A	1
32 Comoros	N/A	N/A	N/A	0	N/A	N/A
33 Congo (f)	3.8	37	3.9	0	0.0	5
34 Costa Rica	1.4	3	0.0	0	0.0	2
35 Cote d'Ivoire (f)	1.4	14	1.0	0	0.0	9
36 Croatia	9.1	N/A	22.1	100-500	0.4	N/A
37 Cuba (f)	3.7	125	9.6	0	5.9	N/A
38 Cyprus (f)	7.5	17	13.8	0	0.4	N/A
39 Czech Republic	2.9	N/A	9.0	0	0.0	N/A
40 Djibouti	6.0	N/A	19.8	0	0.0	N/A
41 Dominica	N/A	N/A	N/A	0	N/A	N/A
42 Dominican Republic	1.3	21	3.2	0	0.0	1
43 Ecuador	3.4	45	5.1	0	0.8	2
44 Egypt	3.7	81	7.2	0	13.4	10
45 El Salvador	1.6	95	5.5	0	1.6	6

## MILITARY SPENDING IN DEVELOPING COUNTRIES

Country	Military Budget	Military Spending	Armed Forces	Total Deaths	Arms Imports	ODA Inflow
	As % of GDP	As % of Health & Education Spending	Per 1,000 People	Due To Conflict	as % of Total Imports	as % of GNP
	(1993)	(1986-92)	(1993)	(1993)	(1993)	(1992)
	(1)	(2)	(3)	(4)	(5)	(6)
46 Equatorial Guinea	1.5	N/A	3.5	0	0.0	N/A
47 Estonia	0.6	N/A	1.5	0	8.1	N/A
48 Ethiopia (e)	7.4	78	2.4	0	0.0	21
49 Fiji (f)	1.6	37	5.0	0	0.0	N/A
50 Gabon (f)	2.4	51	3.7	0	0.0	1
51 Gambia (f)	3.4	11	0.8	0	0.0	N/A
52 Georgia	3.8	N/A	N/A	2,000	0.0	N/A
53 Ghana	1.4	8	0.4	0	0.0	9
54 Grenada	N/A	N/A	N/A	0	N/A	N/A
55 Guatemala	1.0	43	4.3	<200	0.2	2
56 Guinea (a) (c)	1.3	264	1.3	0	0.0	15
57 Guinea-Bissau	3.7	100	8.7	0	0.0	49
58 Guyana (f)	1.4	21	2.1	0	0.0	N/A
59 Haiti (f)	2.3	30	1.0	0	0.0	4
60 Honduras (f)	1.5	92	2.9	0	0.9	11
61 Hong Kong (f)	N/A	10	N/A	0	N/A	0
62 Hungary	1.7	37	7.1	0	7.0	N/A
63 India	2.2	425	1.4	>3,000	0.0	1
64 Indonesia	1.5	72	1.4	<50	0.6	2
65 Iran	0.5	34	7.8	50-200	6.2	0
66 Iraq (a) (f)	15.3	271	19.2	(g)	0.0	N/A
67 Israel	9.1	157	36.8	(g)	3.8	3
68 Jamaica	0.9	44	1.3	0	0.0	4
69 Jordan	8.3	105	24.9	0	0.6	9
70 Kazakhstan	3.9	N/A	2.3	0	0.0	N/A
71 Kenya	2.2	40	0.9	0	0.3	9
72 Korea, Dem. Rep. of	10.6	N/A	48.8	0	0.0	N/A
73 Korea, Rep. of	4.0	129	14.1	0	1.0	0
74 Kuwait	7.3	95	10.1	0	9.9	N/A
75 Kyrgyzstan	1.7	N/A	2.6	0	0.0	N/A
76 Laos	8.2	N/A	7.8	0	N/A	16
77 Latvia	3.0	N/A	26.1	0	0.0	N/A
78 Lebanon (a)	4.4	N/A	12.3	0	0.2	N/A
79 Lesotho	5.0	18	1.0	0	0.0	13
80 Liberia	3.0	56	6.9	<2,000	0.0	N/A
81 Libya (f)	5.0	71	1.4	0	0.0	N/A
82 Lithuania	3.0	N/A	2.3	0	1.7	N/A
83 Macedonia	1.6	N/A	4.7	0	0.0	N/A
84 Madagascar	1.2	33	1.6	0	0.0	13
85 Malawi	1.0	31	1.1	0	3.7	27
86 Malaysia	4.0	50	5.8	0	0.2	0
87 Mali	1.9	72	0.8	0	0.0	16
88 Mauritania (f)	2.8	40	7.1	0	0.0	19
89 Mauritius (a)	0.4	8	1.2	0	0.3	2
90 Mexico	0.5	13	1.9	0	0.0	0

## MILITARY SPENDING IN DEVELOPING COUNTRIES

Country	Military Budget As % of GDP	Military Spending As % of Health & Education Spending	Armed Forces Per 1,000 People	Total Deaths Due To Conflict	Arms Imports as % of Total Imports	ODA Inflow as % of GNP
	(1993)	(1986-92)	(1993)	(1993)	(1993)	(1992)
	(1)	(2)	(3)	(4)	(5)	(6)
91 Moldova	1.2	N/A	2.5	0	0.0	N/A
92 Mongolia	6.9	N/A	9.6	0	0.0	N/A
93 Morocco	3.6	75	7.0	0	0.3	4
94 Mozambique	11.3	233	2.0	0	0.0	135
95 Myanmar	10.6	96	6.3	(g)	14.7	N/A
96 Namibia	2.2	22	4.0	0	0.0	6
97 Nepal	1.3	38	1.7	0	0.0	14
98 Nicaragua (a)	13.1	250	3.5	0	N/A	50
99 Niger (f)	1.3	11	0.6	0	0.0	15
100 Nigeria	0.6	75	0.6	0	0.7	1
101 Oman	13.7	218	21.3	0	3.8	1
102 Pakistan	6.9	933	4.7	0	4.5	2
103 Panama	1.2	13	4.5	0	0.0	3
104 Papua New Guinea	1.1	21	0.9	0	0.0	13
105 Paraguay	1.6	76	3.4	0	0.4	2
106 Peru	1.4	66	4.9	<1,700	0.2	2
107 Philippines (h)	2.3	55	1.6	523	0.2	4
108 Poland	2.5	N/A	7.3	0	0.0	N/A
109 Qatar (f)	4.3	192	17.1	0	0.0	N/A
110 Romania	2.5	52	9.9	0	0.0	N/A
111 Russia	6.6	N/A	11.5	0	0.0	N/A
112 Rwanda (e)	7.3	77	0.6	>1,000	1.5	19
113 Sao Tome & Principe (b)	N/A	N/A	7.5	0	0.0	N/A
114 Saudi Arabia (f)	13.1	151	5.7	0	13.4	0
115 Senegal (f)	2.1	33	1.6	0	0.0	11
116 Serbia/Montenegro	10.6	N/A	12.0	0	0.0	N/A
117 Seychelles	3.5	N/A	11.4	0	N/A	N/A
118 Sierra Leone	2.5	43	1.4	0	0.0	18
119 Singapore	5.1	96	18.9	0	0.1	N/A
120 Slovak Republic	2.3	N/A	8.5	0	2.5	N/A
121 Slovenia	1.5	N/A	4.1	0	0.0	N/A
122 Somalia	N/A	1266	N/A	(g)	0.0	N/A
123 South Africa (f)	3.5	41	1.9	4,400	0.0	N/A
124 Sri Lanka	4.7	69	7.1	>2,000	0.5	7
125 Sudan (f)	0.1	44	4.2	(g)	0.4	N/A
126 Surinam (f)	3.3	27	3.7	0	0.0	N/A
127 Swaziland (b) (f)	2.4	11	3.3	0	0.0	N/A
128 Syria	2.2	355	28.4	0	2.9	1
129 Tajikistan	4.4	N/A	0.5	16-20,000	0.0	N/A
130 Tanzania	3.2	114	1.8	0	0.0	52
131 Thailand	2.7	63	4.3	0	0.2	1
132 Togo	2.8	44	1.7	0	0.0	14
133 Tonga	N/A	N/A	N/A	0	N/A	N/A
134 Trinidad & Tobago (f)	1.8	9	2.0	0	0.0	0
135 Tunisia	3.8	26	4.1	0	0.2	3

## MILITARY SPENDING IN DEVELOPING COUNTRIES

Country	Military Budget As % of GDP (1993) (1)	Military Spending As % of Health & Education Spending (1986-92) (2)	Armed Forces Per 1,000 People (1993) (3)	Total Deaths Due To Conflict (1993) (4)	Arms Imports as % of Total Imports (1993) (5)	ODA Inflow as % of GNP (1992) (6)
136 Turkey	2.6	47	8.3	3,000	3.3	0
137 Turkmenistan	3.8	N/A	7.0	0	0.0	N/A
138 Uganda	2.7	153	2.7	0	0.0	24
139 Ukraine	7.2	N/A	10.0	0	0.0	N/A
140 United Arab Emirates	5.2	200	25.5	0	2.0	N/A
141 Uruguay	1.9	82	8.1	0	0.0	1
142 Uzbekistan	2.8	N/A	2.0	0	0.0	N/A
143 Vanuatu	N/A	N/A	N/A	0	N/A	N/A
144 Venezuela	1.7	20	3.7	0	0.5	0
145 Viet Nam	1.7	N/A	7.9	0	0.3	N/A
146 Western Samoa	N/A	N/A	N/A	0	N/A	N/A
147 Yemen	4.9	81	6.0	0	1.3	4
148 Zaire	3.0	140	1.2	0	N/A	N/A
149 Zambia (a) (f)	1.5	63	2.6	0	0.0	39
150 Zimbabwe (d)	3.8	210	4.3	0	N/A	12

Sources (except as noted):

(1)(3) The International Institute for Strategic Studies, "The Military Balance, 1994-95", Brassey's (U.K.) Limited, London, October 1994

(2)(6) UNICEF, "The State of the World's Children, 1995", Oxford University Press, Oxford, U.K., 1995

(4) Stockholm International Peace Research Institute "Yearbook", Stockholm, 1994

(5) U.S. Arms Control & Disarmament Agency, "World Military Expenditures & Arms Transfers 1993-94", Washington DC, February 1995

Notes:

(a) The military budget was not available, so actual or estimated expenditures for 1993 were used.

(b) Data for spending as a share of GDP and armed forces per 1,000 persons are from U.S. Arms Control & Disarmament Agency.

(c) Health spending estimates are not available, so military spending is shown as a % of education spending only.

(d) Education spending estimates are not available, so military spending is shown as a % of health spending only.

(e) CPE estimates of military spending as a percentage of health and education are based on UNICEF data for health and education and U.S. Arms Control and Disarmament Agency data for military spending.

(f) Data on military spending as a % of health and education spending are from UNDP "Human Development Report 1994" and are for 1990-91.

(g) Although the country was engaged in a major armed conflict in 1993, there is no reliable death count.

(h) Conflict deaths are for the first six months of 1993.

(i) For most of 1993, the UN estimates 1,000 war-related deaths per day including victims of war-induced starvation or disease.

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