CUBAN MILITARY EXPENDITURES: CONCEPTS, DATA AND BURDEN MEASURES

Jorge F. Pérez-López

The last two decades have seen the emergence of a rich literature on the military in socialist Cuba. The interest in studying the island's military institutions and functions was piqued in the 1970s by the overseas involvement of the Cuban military: overt intervention of Cuban forces in African wars; veiled involvement in Middle Eastern and Asian military campaigns; and threats of involvement in military conflicts in the Americas. Relatively well treated in the literature are Cuban military institutions (del Aguila 1989; Fernández 1989; Walker 1989 and 1995b), military mission and strategy (Buchanan 1995b; Goure 1989a; Walker 1995a, Zubatkin 1995), military relations with civil society (Buchanan 1995a; Domínguez 1974 and 1976; Suárez 1989), military relations with the Soviet Union (Goure 1989b; Goethals 1995), and military elites (Fermoselle 1987a and 1987b). Recent works have examined the adaptation of the military to the economic stringencies brought about by the economic crisis of the 1990s (e.g., Alonso 1995; Millett 1993; León 1995; Walker 1996). Less well studied are the implications of the Cuban military establishment and its activities for the civilian economy.[1]

What are the economic consequences—positive and negative—of various military activities? What are the trade-offs between military expenditures and other forms of public spending, such as nutrition, health, education, infrastructure, housing? Where is Cuba situated relative to this guns-versus-butter controversy?

To a large extent, the lack of attention to the economic implications of the Cuban military comes about because of the lack of adequate information. Reliable time series data on the structure and performance of the Cuban economy are difficult to come by and fraught with methodological questions.[2] Even scarcer are statistics on Cuban military expenditures, size of the armed forces, arms imports, and military foreign aid received or granted. Moreover, little is known about the precise definition of military expenditures used in Cuban statistics and how certain activities are treated.

This paper is a first attempt at examining the implications for the Cuban economy of the military, focusing on military expenditures. The first part of the paper looks at conceptual issues related to the definition of military expenditures. The second part reviews sources of military expenditures estimates. The third part focuses on official data and estimates of Cuban military expenditures, identifying some deficiencies in the data. The last part presents several measures of the military burden on the Cuban economy and compares them with similar measures for

1. Exceptions are Alonso (1995) and Roca (1980).

2. The classic evaluations of Cuban economic statistics are by Mesa-Lago (1969a and 1969b). See also Mesa-Lago and Pérez-López (1985).

other nations. The paper closes by raising some issues for further research.

THE CONCEPT OF MILITARY EXPENDITURES

The questions of how much of its resources a country devotes to military-related (or security-related) activities, and how the given country compares with others in this same regard, often do not result in unequivocal answers. There are several reasons for this. First, there are differences across countries—and even across organizations specializing on international security matters—with regard to the precise definition of military expenditures. Second, there is a tendency on the part of governments to restrict the amount of information they make public regarding military expenditures, arguing that potential enemies might profit from disclosure of sensitive information. And third, there are serious methodological problems in comparing military expenditures within the same country over time or across countries.

Definition of Military Expenditures

Conceptually, military expenditures (ME) can be broadly defined as all the material and human resources devoted by a state to its defense, and intended to: 1) guarantee its national independence, the integrity of its territory and, where appropriate, the respect of the international treaties binding the country to foreign states; and 2) maintain internal security and public order (Herrera 1994, p. 13). The first part of the definition concentrates on the defense of national territory and the ability to meet external challenges, while the second focuses on the maintenance of internal order. These motivations are virtually inseparable and their objective is the same: to ensure the proper functioning of a nation's society and economy, and basically to guarantee its survival, power and identity (Herrera 1994, p.13).

Military expenditures allow a state to purchase[3] a set of inputs from within the domestic economy and from foreign countries in order to produce an output called national defense. The most readily available data on ME for most countries is the budget of the Ministry of Defense or its equivalent within each country. While the Ministry of Defense budget may generally be a proxy for ME, there are practical problems in equating these two concepts. Some of the problems arise from differences across countries in accounting techniques and in the degree of state intervention in the economy. For example (Herrera 1994, p. 14):

- In some countries, the Ministry of Defense carries out functions related to infrastructure that are performed in others by the civilian sector. Examples are construction and maintenance of ports and airports, dredging of shipping channels, installation of telecommunications networks, land clearance, and surveillance of civilian productive equipment or lines of communication. Ministries of Defense in some nations can also be involved in providing certain services that are considered to be within the civilian sphere in others, e.g., air traffic control, customs services, meteorological information.

- On the other side of the ledger, some expenditures from the budgets of civilian ministries may be primarily for military purposes and therefore augment the budget of Ministries of Defense. Examples include research and development closely associated with weapons, construction of public infrastructures (roads and bridges to and from military bases, housing facilities for members of the military), research in areas such as nuclear power and airspace with military applications.

In part to address these national differences, the North Atlantic Treaty Organization (NATO), the International Monetary Fund (IMF), and the United Nations (UN) have developed standardized defini-

3. It is common for developing countries to receive foreign aid that allows them to augment their military expenditures beyond levels sustainable from domestic resources. In some instances, the military aid takes the form of loans or grants that allow the recipient country to increase their purchase of weapons systems and other inputs for the military. In others, it takes the form of the outright transfer or "gift" of military hardware, which therefore does not have to be purchased as such.

Definitions of Military Expenditures

North Atlantic Treaty Organization (NATO)

All current and capital expenditures on the armed forces, in the running of defense departments and other government agencies engaged in defense projects as well as space projects; the cost of paramilitary forces and police when judged to be trained and equipped for military operations; military R&D, tests and evaluation costs; and costs of retirement pensions of service personnel including pensions of civilian employees. Military aid is included in the expenditure of the donor countries. Excluded are items of civil defense, interest on war debts and veterans' payments.

International Monetary Fund (IMF)

All expenditure, whether by defense or other departments, for the maintenance of military forces, including the purchase of military supplies and equipment (including the stockpiling of finished items but not the industrial raw materials required for their production), military construction, recruiting, training, equipping, moving, feeding, clothing and housing members of the armed forces, and providing remuneration, medical care, and other services for them. Also included are capital expenditures for the provision of quarters to families of military personnel, outlays on military schools, and research and development serving clearly and foremost the purposes of defense. Military forces also include paramilitary organizations such as gendarmerie, constabulary, security forces, border and customs guards, and other trained, equipped and available for use as military personnel. Also falling under this category are expenditures for purposes of strengthening the public services to meet wartime emergencies, training civil defense personnel, and acquiring materials and equipment for these purposes. Included also are expenditures for foreign military aid and contributions to foreign to international military organizations and alliances. This category excludes expenditures for non-military purposes, though incurred by a ministry or department of defense, and any payments or services provided to war veterans and retired army personnel.

United Nations (UN)

The United Nations has drawn up an extremely precise and detailed accounting matrix with three categories of military expenditures: (A) operating costs; (B) procurement and construction; and (C) research and development.

A. Operating costs

(1) Personnel: a) conscripts; b) other military; c) civilian

(2) Operations and maintenance: a) current-use material; b) maintenance and repairs; c) purchased services; d) rent.

B. Procurement and construction

(1) Procurement: a) aircraft and engines; b) missiles, including conventional warheads; c) nuclear warheads and bombs; d) ships and boats; e) armored vehicles; f) artillery; g) other ordnance and ground force arms; h) ammunition; i) electronics and communications; j) non-armored vehicles.

(2) Construction: a) airbases; b) missile sites; c) naval bases; d) electronics and communications; e) personnel; f) medical; g) training; h) warehouses and depots; i) command, administration; j) fortifications; k) shelters.

C. Research and development

(1) Basic and applied

(2) Development, testing and evaluation.

tions of ME (see box). These definitions are used by the organizations to compile ME statistics that are widely used. There are several differences among the three definitions, among them with regard to: 1) the treatment of military aid; 2) financing of military pensions; 3) treatment of security forces not perma-

nently engaged in national defense; and 4) research and development activities.

Secrecy of Military Expenditures

Perhaps a more significant problem than differences in the definition of ME is that "in the great majority of countries, if not all of them, information concerning questions of national defense are surrounded by an opaqueness symptomatic of the eminently political nature of this subject" (Herrera 1994, p. 23). The secrecy concerning statistical data on military expenditures is justified on the grounds that it reduces information available to other countries, who may be either potential or actual opponents. Another reason for the secrecy is, almost certainly, preventing the general public from knowing too much about their own military expenditures and potentially challenging the level of such expenditures through the political process (Ball 1988, p. 85).

The former Soviet Union and its military allies followed a pattern of dissemination of statistical data that has been described as "the fewer data published, the better" (Ball 1988, p. 84). Many developing countries have adopted this same approach. Even governments who make available substantial statistical information on ME are widely believed to understate their ME levels, although it is not possible to determine which countries understate their security expenditures, during which periods, and to what degree. Among the most frequently mentioned mechanisms used to obscure military expenditures are: double bookkeeping, the use of off-budget financing, highly aggregated budget categories, foreign assistance, and manipulation of foreign exchange and trade statistics. For example (Ball 1988, pp. 111-122; IISS 1994-95, pp. 279-281):

- It has been alleged that some countries keep two sets of ME accounts: one made public through the national budget and a second—more accurate—used only for internal government consumption. The degree of understatement of ME in the published accounts is not known with precision, but estimates range from 10 percent to "several times" the published figures.
- The essence of this mechanism is the creation within a country of funding sources independent of the national budget. A well-documented example is Indonesia, where off-budget military expenditures are financed by a special military fund fed by the earnings of Indonesia's many military-linked enterprises, engaged in mining (including oil production), plantations, banking, and trade; it has been estimated that in the 1970s, military enterprises generated 30-60 percent of the total ME of the country.
- Some countries publish only a single figure for their ME in their national budgets; this makes it relatively easy to manipulate the statistics to understate the level of resources devoted to the military. In some instances, the lack of detail about military expenditures is a function of the inability of the data collection systems to provide the necessary data. In others, however, it is a deliberate effort to obscure the true extent of ME. Examples of the latter cited in the literature include Saudi Arabia and Nigeria.
- Strictly speaking, military aid (whether grants or loans) given by a country to another should appear in the budget of the donor country as an expenditure; repayments of military loans should also appear as an expenditure in the budget of the recipient country as such transactions occur. There is ample evidence that many countries do not adhere to these rules.
- A portion of the foreign exchange earned by some countries through exports is often not entered into the national accounts and is instead set aside for special purposes, including the purchase of weapons. Some countries are also known to manipulate foreign trade accounts to disguise purchases of weapons, identifying them as purchases of "capital goods" for the civilian sector.

Comparability Problems

There are at least two critical methodological problems associated with the development of ME statistics that permit meaningful comparisons over time and across countries: 1) estimating military expenditures in real terms; and 2) converting measures of real

expenditures in domestic currencies to a common currency base.

Deflation: In order to compare real ME over time, it is necessary to deflate current-value statistics to account for changes in prices, i.e., inflation. Ideally, different deflators would be used to adjust components of ME: personnel costs, construction, capital goods, imports of weapons systems, etc.

In practice, it is difficult to obtain even a single reliable measure of inflation for most economies, let alone the possibility of a family of deflators for different components of military expenditures. Thus, intertemporal comparisons of resources devoted to ME tend to be affected by the difficulties in properly adjusting for inflation.

Conversion factors: The military budget for each country is drawn up in that country's local currency. To make international comparisons of ME, it is essential to convert the expenditure streams expressed in national currency to a common currency or base monetary unit, usually the U.S. dollar. The choice of the appropriate exchange rate to convert each national currency to U.S. dollars is a methodological problem of considerable proportion.

One of the alternatives available is to effect the conversion from domestic currency to U.S. dollars using the official exchange rate between the national currency and the U.S. dollar. However, because official exchange rates tend not to correspond to the ratio between the average price levels of the two countries being compared, this method does not produce meaningful comparisons. Methodologically superior is the use of purchasing power parity (PPP) exchange rates to convert to a common basis. However, PPP exchange rates tend to available only for a limited set of countries and are often not up to date. As a result, analysts of ME generally have to rely on a combination of official and PPP exchange rates.

ESTIMATES OF MILITARY EXPENDITURES

The primary source of information on military expenditures is the national budget of each nation. Several national and international organizations compile and adjust central government expenditure (CGE) data to produce series that are comparable within countries over time and also across countries. The best known of these specialized organizations are: 1) the U.S. Arms Control and Disarmament Agency; 2) the Stockholm International Peace Research Institute; and 3) the International Institute for Strategic Studies.

U.S. Arms Control and Disarmament Agency

Since the mid-1960s, the U.S. Arms Control and Disarmament Agency (USACDA) has been producing an annual compilation of data on military expenditures and arms transfers for a wide range of countries. The most recent issue, *World Military Expenditures and Arms Transfers 1993-1994* (USACDA 1995), contains ME, arms transfers, armed forces, and macroeconomic data for 166 countries over the 1983-93 decade.

- **ME** data in the USACDA publications for the members of the North Atlantic Treaty Organization (NATO) follow the NATO definition and therefore exclude expenditures on internal security. For other countries (except socialist countries), the data generally refer to expenditures of the Ministry of Defense; where the former data are known to include internal security expenditures, an adjustment has been made to exclude them. For socialist countries—notorious for the paucity of published data and the ambiguity of released information—the USACDA reports ME estimates by the Central Intelligence Agency and other sources.
- **Arms transfers** (arms exports and imports) statistics refer to the international transfer (under terms of grants, credits, barter, or cash) of military equipment, usually referred to as "conventional," including weapons of war, parts thereof, ammunition, support equipment, and other commodities designated for military use. Dual use equipment, which can have application in both military and civilian sectors, is included when its primary mission is identified as military. Statistics reflect the value of goods actually delivered during the reference year, in contrast both to payments and to the value of programs, agreements, contracts, or orders concluded during the period, which are expected to result in

future deliveries. For the United States, arms transfers data originate from official statistics, while for other countries they are estimates by U.S. Government sources based on fragmentary information.

- **Armed forces** estimates refer to active-duty military personnel, including paramilitary forces if those forces resemble regular units in their organization, equipment, training, or mission; reserve forces are not generally included. Figures for the United States and other NATO countries originate from NATO sources, while all others are estimates by the U.S. Government.

- **Macroeconomic statistics** reported by the USACDA are the gross national product (GNP), CGE, and value of exports and imports. Where available, the statistics originate from national statistical sources; in other instances, they are estimates made by the U.S. Government and other sources. All value data in the report are expressed in U.S. dollars. Conversion of value data from domestic currencies to U.S. dollars is effected using market exchange rates of the most recent year for which data are available and adjusted for inflation using each country's implicit deflator.

Stockholm International Peace Research Institute

Beginning in 1968 and through 1992,[4] the Stockholm International Peace Research Institute (SIPRI) published estimates of ME and arms trade for a large number of countries in its annual yearbook, *World Armaments and Disarmament*. The SIPRI yearbooks included annual estimates of the value of ME in domestic currency at current prices and in U.S. dollars at constant prices; the conversion to U.S. dollars was effected using official exchange rates, with the consumer price index as deflator. The most recent SIPRI yearbook containing ME estimates—the yearbook for 1992—contained statistics on 128 countries, of which 96 were developing countries.

SIPRI relied on NATO's definition of ME; SIPRI analysts adjusted national budget statistics to meet the NATO definition. Basically, the adjustments required taking into account the payment of pensions to retired members of the armed forces and the costs of maintaining paramilitary units and of military aid given to friendly foreign countries. The SIPRI yearbooks also contained data on the value of arms transfers; these data were reported in terms of constant dollars for each year.

International Institute for Strategic Studies

The London-based International Institute for Strategic Studies (IISS) is an independent research center concentrating on problems of security, armed conflict, and arms control throughout the world. The IISS publishes an annual report titled *The Military Balance* that contains information on the armed forces or arms stocks held by specific countries or regions, arms transfers, military assistance, and the official defense budget. The most recent issue of the report, *The Military Balance 1995-1996* (IISS 1995-96), included data on 160 countries.

The official defense budget for each country—the proxy for ME used by the IISS—is reported in the yearbooks at constant prices of a recent year in U.S. dollars; the conversion from national currencies to U.S. dollars is generally effected using the official exchange rate. A summary table consolidates data for individual countries on ME, per capita ME, the military burden (defense expenditures as a percentage of gross national product), and the size of the armed forces.

It should be noted that unlike the publications of the USACDA and SIPRI, which use the NATO definition of ME, IISS relies on the defense budget of each country and therefore the data reported lack compa-

4. Herrera (1994, p. 34) claims that SIPRI's decision not to publish military expenditures estimates in its 1993 yearbook resulted from the departure from that organization of key researchers who used to make these estimates and the lack of resources within SIPRI to continue to carry out this activity. SIPRI did not resume publication of the military expenditures data in the most recent issue of the yearbook—for 1994 (SIPRI 1994)—raising the possibility that the decision to discontinue publication of the military expenditures data in 1993 may be a permanent one.

rability within the same country over time (because of changes in budgeting systems) or across countries. Moreover, the IISS publications generally include ME estimates only for the two most recent years and a reference year in the recent past, all reported in U.S. dollars at constant prices; because the base year for developing the constant-price estimates varies from one issue of the IISS publication to another, it is not possible to put together time series on ME for any country or region from the IISS data.

CUBAN MILITARY EXPENDITURES

There are two sources of information on Cuban ME: 1) official statistics released by the Cuban government in the context of its annual central government budget exercise; and 2) estimates made by external organizations. This section of the paper describes these official data or estimates and raises some methodological questions and problems pertaining to them.

Official ME Data

Official information on ME in socialist Cuba is very sparse. For over a decade—from the mid-1960s to the late 1970s—there was a complete blackout on CGE statistics, including ME. Government expenditures data published since the late 1970s is highly aggregated. Moreover, little is known with respect to the definition of ME that is used by the Cuban government in its budget exercises and how certain components (e.g., arms purchases and military aid) are treated. All available official statistics on the Cuban budget are reported in pesos; presumably they are reported in current prices, although this is not explicitly stated.

Definition: Cuban budget statistics break down CGE into 8 large categories. One of those categories is "defense and internal order" (defensa y orden interior). The practice of reporting ME at highly aggregated levels—often a single budget line—was common for the Soviet Union and the socialist countries of Eastern Europe (Hutchings 1983; Crane 1987).

There is virtually no information on what is meant by "defense and internal order" in Cuban budget statistics. For example, Law No. 29, the budget law passed in 1980, does not throw any light on the components of this budget category ("Ley No. 29" 1980). The same is true for Resolution 156/181 of the State Committee on Finance (Comité Estatal de Finanzas), issued in October 1981, which set forth the system of expenditures in the central budget ("Resolución" 1981). The title of the category suggests that it includes expenditures on activities related to national defense, such as the uniformed services, as well as expenditures related to maintaining domestic order, such as activities of the national police and the Ministry of the Interior. Fidel Castro (1978, p. 3) has confirmed that "defense and internal order" includes all of the defense activities carried out by the Ministry of the Revolutionary Armed Forces and the Ministry of the Interior. It appears, then, that the definition of ME in Cuban budget statistics approximates the IMF definition, as both include expenditures related to maintaining internal order.[5]

ME data: In December 1977, Cuba's National Assembly of People's Power (Asamblea Nacional del Poder Popular, ANPP) approved a state budget for 1978.[6] This marked the first national budget approved by Cuban government since 1966. In that year, in the throes of an internal ideological debate over the socialist economic model that the country should pursue, the Cuban government abolished the Ministry of Finance (Ministerio de Hacienda)—the institution that traditionally prepared the nation's budget—and distributed its functions among other agencies. Responsibility for the preparation and implementation of the national budget was handed over to the Central Planning Board (Junta Central de Planificación, JUCEPLAN), but there is no evidence that a national budget was approved for subsequent years. It appears that the nation operated without a budget from 1966 through the late 1970s.

5. Recent ME expenditures data in a Cuban National Bank publication (BNC 1995) refer to expenditures for "defense and public order." It is not possible to ascertain whether this is the same category used in earlier periods titled "defense and internal order."

6. This section of the paper is based on Pérez-López (1992, pp. 5-13).

Table 1. Approved State Budgets, 1962-66 (in million pesos)

	1962		1963		1964		1965		1966	
	Value	%	Value	%	Value	%	Value	%	Value	%
Revenue	1854	100.0	2093	100.0	2399	100.0	2356	100.0	2745	100.0
Expenditures	1854	100.0	2093	100.0	2399	100.0	2356	100.0	2745	100.0
Financing of national economy	703	37.9	847	40.5	945	39.4	878	34.6	992	36.2
Housing and community services	NA	NA	114	5.4	130	5.4	136	5.4	133	4.8
Culture and social services	569	30.7	605	28.9	681	28.4	696	27.4	821	29.9
Central administration	195	10.5	150	7.2	155	6.5	137	5.4	136	5.0
Defense and internal order	247	13.3	214	10.2	221	9.2	213	8.4	213	7.8
Payment of public debt	116	6.3	134	6.4	157	6.5	163	6.4	174	6.3
Reserve	23	1.2	30	1.4	109	4.5	314	12.4	277	10.1

Source: Budget laws for each year from *Gaceta Oficial.*

With the adoption in the mid-1970s of the Economic Management and Planning System (Sistema de Dirección y Planificación de la Economía, SDPE), Cuba began to reintroduce economic controls, including national and local budgets. As noted above, the first budget approved by the ANPP was for 1978; the ANPP carried out this function regularly through 1990, when the economic crisis precipitated by the dissolution of the socialist community and the breakdown of economic relations with those countries brought about an austerity program known as the "special period in peacetime" (período especial en tiempo de paz).

For 1959, the first year of Cuba's revolutionary government, the national budget devoted 19.1 million pesos, or 14.5 percent of total CGE, to the Ministry of Defense ("Decreto" 1959). For 1960 and 1961, it appears that the Cuban government rolled over the 1959 budget, and a new set of budget priorities was not developed. For 1962, however, with the economy decidedly under governmental control and central planning already being introduced, the Council of Ministers began to issue annual laws proclaiming a national budget. The expenditures side of these annual budgets—for the years 1962-66—are reported in Table 1; among the allocations identified in the budget documents is "defense and internal order."

In 1962, budgeted Cuban CGEs were 1854 million pesos, 14 times the 132 million pesos budgeted for 1959; budgeted ME ("defense and internal order" expenditures) in 1962 amounted to 247 million pesos, a 13-fold increase from 1959, or 13.3 percent of CGE. ME declined in absolute terms and as a share of CGE in subsequent years, reaching a level of 213 million pesos and 7.8 percent of CGE in 1966.

As discussed above, after 1966 there was a hiatus of approximately a decade regarding a national budget. For the period 1978-90, ex ante budget expenditures, as approved by the ANPP, have been made public in official Cuban publications and are reproduced in Table 2. According to these data, ME were 784 million pesos (8.6 percent of CGE) in 1978; they peaked at 1471 million pesos (13.0 percent of CGE) in 1985, and reached 1380 million pesos (9.6 percent of CGE) in 1990. Ex ante budget expenditures for 1995 (not included in Table 2), have also been reported in an official Cuban publication (BNC 1995); according to this source, CGEs in that year were projected at 12683 million pesos, with 727 million pesos (5.7 percent of CGE) allocated to expenditures related to "defense and public order."

Prior to the publication of a report by the Cuban National Bank (Banco Nacional de Cuba, BNC) in 1995 (BNC 1995), the Cuban government had not published statistics on ex post, or realized, national budgets.[7] The mentioned BNC report contains statistics on the executed national budget for 1989-94, including for the category "defense and public order"; these data are reproduced in Table 3. While in earlier official publications, the ME category is referred to as "defense and internal order," the BNC

7. The exception was 1983. In 1984, the ANPP was presented a document with the realized budget for 1983 (ANPP n.d.).

Table 2. Approved State Budgets, 1978-90 (in million dollars, at current prices)

	1978		1979		1980		1981		1982		1983		1984	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Revenues	9169	100.0	9413	100.0	9534	100.0	11201	100.0	9413	100.0	10496	100.0	11471	100.0
State sector	NA	NA	NA	NA	9417	98.8	11082	98.9	9290	98.7	10324	98.4	11275	98.3
Non-state sector	NA	NA	NA	NA	17	0.2	20	0.2	14	0.1	16	0.1	24	0.2
Population	NA	NA	NA	NA	100	1.0	99	0.9	109	1.2	156	1.5	172	1.5
Expenditures	9160	100.0	9409	100.0	9531	100.0	11197	100.0	9834	100.0	10300	100.0	11250	100.0
Productive sphere	4027	44.0	3883	41.3	3978	41.7	4672	41.7	3180	32.0	3558	34.5	3535	31.4
Housing and community services	327	3.6	398	4.2	364	3.8	412	3.7	483	4.9	508	4.9	731	6.5
Education and public health	1533	16.7	1684	17.9	1800	18.9	1848	16.5	2040	20.5	2158	21.0	2405	21.4
Culture and science	1150	12.6	1242	13.2	1315	13.8	1436	12.8	1546	15.6	1524	14.8	1767	15.7
Administration[a]	540	5.9	517	5.5	484	5.1	675	6.0	620	6.3	635	6.2	659	5.9
Defense and internal order	784	8.6	841	8.9	811	8.5	842	7.5	924	9.3	1116	10.8	1169	10.4
Other activities	399	4.4	451	4.8	443	4.7	767	6.9	544	5.5	450	4.4	527	4.7
Reserve	400	4.4	391	4.2	356	3.5	544	4.9	496	5.0	350	3.4	457	4.1
Surplus (Deficit)	9	—	5	—	4	—	4	—	(421)	—	197	—	222	—

	1985		1986		1987		1988		1989		1990	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Revenues	11311	100.0	12018	100.0	11575	100.0	11721	100.0	11904	100.0	12463	100.0
State sector	11108	98.2	11761	97.9	11350	98.0	11506	98.1	11692	98.2	12188	97.8
Non-state sector	24	0.2	27	0.2	42	0.4	30	0.3	41	0.4	73	0.6
Population	179	1.6	230	1.9	183	1.6	185	1.6	170	1.4	203	1.6
Expenditures	11295	100.0	11997	100.0	11690	100.0	12312	100.0	13528	100.0	14484	100.0
Productive sphere	3329	29.5	3958	33.0	3740	32.0	4110	33.4	4975	36.8	5443	37.7
Housing and community services	724	6.4	788	6.6	879	7.5	913	7.4	860	6.3	870	6.0
Education and public health	2557	22.6	2626	21.9	2763	23.6	2940	23.9	2906	21.5	2953	20.4
Culture and science	1886	16.7	1965	16.4	1834	15.7	1947	15.8	2301	17.0	2506	17.3
Administration[a]	648	5.7	651	5.4	578	4.9	530	4.3	525	3.9	503	3.5
Defense and internal order	1471	13.0	1307	10.9	1303	11.1	1326	10.8	1377	10.2	1380	9.6
Other activities	446	4.0	310	2.6	166	1.4	182	1.5	305	2.2	245	1.7
Reserve	235	2.1	393	3.3	428	3.7	364	3.0	279[b]	2.1[b]	549	3.8
Surplus (Deficit)	16	—	21		(115)	—	(591)	—	(1624)	—	(1985)	—

Sources: Budget laws for each fiscal year, as published in *Gaceta Oficial* or *Granma* from Pérez-López (1992).

a. Financing of operations of National Organs of People's Power, central state administration, courts, and prosecutorial system.

b. Undistributed amount.

publication uses the title "defense and public order." It is not clear whether the different titles are the result of translation differences or substantive differences in definition.

Comparison of the ex ante and ex post ME figures for 1989 and 1990, the two years for which there is an overlap in data, raises a number of questions. In both instances, ex post or realized ME are significantly lower than the budgeted amounts; for 1989, the difference is about 9 percent (1377 million pesos v. 1259 million pesos), but for 1990 it is a whopping 38 percent (1380 million pesos v. 1002 million pesos). In contrast, realized CGEs in 1989 and 1990 were higher than budgeted CGEs, by 3 percent and 7 percent, respectively. The differences in ME in the two years suggest that they may in fact arise from different definitions of military expenditure.

According to the data in Table 3, realized ME ("defense and public order expenditures") declined steadily during the period 1989-94 both in absolute

Table 3. Realized State Budgets, 1989-94 (in million dollars, at current prices)

	1989		1990		1991		1992		1993		1994	
	Value	%	Value	%	Value	%	Value	%	Value	%	Value	%
Revenues	12501	100.0	13524	100.0	10949	100.0	10179	100.0	9520	100.0	12757	100.0
Expenditures	13904	100.0	15482	100.0	14714	100.0	15048	100.0	14567	100.0	14178	100.0
Education	1651	11.9	1616	10.4	1504	10.2	1489	9.9	1385	9.5	1334	9.4
Public health	905	6.5	925	6.0	925	6.3	977	6.5	1077	7.4	1061	7.5
Defense and public order	1259	9.1	1002	6.5	882	6.0	842	5.6	713	4.9	651	4.6
Social security	1094	7.9	1164	7.5	1226	8.3	1348	9.0	1452	10.0	1532	9.5
Administration	490	3.5	453	2.9	400	2.7	373	2.5	413	2.8	354	2.5
Housing and community services	40 6	2.9	353	2.3	281	1.9	322	2.2	260	1.8	316	2.2
Productive sphere	388	2.8	284	1.8	209	1.4	209	1.4	166	1.1	188	1.3
Other activities	1141	8.2	1198	7.7	996	6.8	993	6.6	968	6.6	1832	12.9
Variation in inventories	47	0.3	108	0.7	-55	—	-41	—	-73	—	4	—
Business activity	3465	24.9	3981	25.7	4722	32.1	5300	35.2	6168	42.3	4154	29.3
Investments	3060	22.0	4398	28.4	3625	24.6	3239	21.5	2038	14.0	2683	18.9
UBPC[a] aid	—	—	—	—	—	—	—	—	—	—	68	0.5
Reserve	—	—	—	—	—	—	—	—	—	—	—	—
Surplus (deficit)	(1403)	—	(1958)	—	(3765)	—	(4869)	—	(5050)	—	(1421)	—

Source: BNC (1995).

a. Basic Units of Cooperative Production (Unidades Básicas de Producción Cooperativa).

terms and as a share of CGEs. ME fell by about one-half, from 1259 million pesos in 1989 (9.1 percent of CGE) to 651 million pesos (4.6 percent of CGE) in 1994.

Evaluation of official ME statistics: Numerous questions arise about official Cuban ME statistics. Some of the key questions refer to the coverage of the statistics, in particular whether ME statistics include costs such as: 1) training, procurement, and mobilization of reservists; 2) social security payments to former members of the defense establishment; and 3) imports of weapons and military equipment. More broadly, it is unclear how Cuban ME statistics treat dual purpose equipment and capital investments that serve military as well as civilian uses.

Commenting on the national budget for 1978, Fidel Castro (1978, p. 3) defended the accuracy of the statistics presented and raised the issue of the undervaluation of certain defense activities. He stated:

> ... something that aroused interest internationally was our expenses for defense and public order: 784 million pesos. ... [T]his is very interesting and attracted attention because our country has had to make such efforts and go through so much sacrifice in order to defend itself that many were taken by surprise. And if is estimated that we have a formidable defense apparatus—which we must necessarily have!—this is a good standard to measure the kind of effort our country has made in regard to education and public health. These figures are exact; not a single cent has been changed. Everything is there: what corresponds to such and such sphere, to education, to public health, to defense, to public order. It's all there for everybody to see. Yes, almost eight percent is devoted to defense and public order, but we are not afraid to say it. The imperialists have forced us to develop powerful forces.
>
> Needless to say, our efforts in defense are not measured in terms of pesos, in hundreds of millions. They are of a different nature that is very difficult to gauge, that is incommensurable, that is, the human effort! The tens of thousands of young people who devote part of their lives to military service; the tens of thousands of committed officers dedicated to the intense effort of the service; the noncommissioned specialists of our Armed Forces; our reservists; the hours, the time devoted to combat training. That's worth more than all those millions put together. And we do it with pleasure, because the imperialists forced all of us to become soldiers! ...
>
> We don't have doubts of any kind. If for our homeland and our Revolution to survive it had been neces-

> sary to spend twice as much on defense as on other things, we would have spent twice as much on the defense of our country! We have no doubt about any of these matters.

Law No. 24 of 1979 is the main law regarding social security in Cuba, but it is not the only one. Personnel of the Ministry of the Revolutionary Armed Forces and of the Ministry of the Interior are covered by Laws No. 101 and 102. The terms and benefits received by eligible personnel pursuant to the latter laws exceed those available to the general population under Law No. 24 (Donate-Armada 1995). It is not clear whether benefits payed pursuant to Laws No. 101 and 102 are considered as ME or instead are considered in CGE statistics under social security expenditures.

The treatment in Cuban CGE statistics of military aid and arms imports is unknown; this is potentially a very important matter, as fragmentary information suggests that the flows into Cuba of foreign military aid and weapons were very significant. Mesa-Lago (1993, p. 149) cites a reference attributed to Minister of the Revolutionary Armed Forces Raúl Castro to the effect that Cuba received 10 billion rubles ($13.4 billion) in free military aid from the Soviet Union over the period 1960-86. Mesa-Lago (1993, p. 149) goes on to cite two Soviet sources, one who suggests that military aid was higher then the 10 billion rubles estimated by Raúl Castro and another who questioned whether all military shipments had been free, implying that some of the weapons shipments might have been financed by loans.

Former Soviet Ambassador and Foreign Ministry Official Yuri Pavlov (1994, p. 251), commenting on an article in the Soviet newspaper *Granma* on Cuban-Soviet relations, has said the following regarding Soviet weapons shipments to Cuba:

> *Pravda*'s columnist omitted mentioning who was responsible for oversaturating Cuba with modern weapons. Soviet military representatives in Havana were doubtful at times of the wisdom of complying with all Cuban requests for more and more weapons. At one point, after the Cubans requested that more Soviet tanks be transported to Cuba to allow for the formation of additional armored battalions, a Soviet adviser told the Minister of the Revolutionary Armed Forces, "Raúl, you shouldn't ask for that much! The island won't keep afloat—it will sink into the sea under the load!" That does not exonerate, of course, Soviet leaders and military strategists of their responsibility for stimulating Castro's appetite for arms for offering them gratuitously, thus making it possible for the regime to build up a large, sophisticated military machine, whose continued maintenance was bound to constitute, particularly in the absence of free military supplies, an unbearable burden for Cuba.

Finally, there is no information on how Cuban CGE statistics treat dual purpose equipment and capital investments, such as trucks, ambulances, and road equipment that could be used for civilian or military purposes, and roads, bridges, airports or other forms of infrastructure that could serve both civilian needs and defense purposes. Similarly, there is no information on the valuation methods used for military construction and depreciation rates that used for military equipment and capital investments.

ME Estimates

Estimates of Cuban ME are available from three external organizations: 1) USACDA; 2) SIPRI; and 3) IISS. Because of the way the estimates are compiled and presented, it is not possible to develop continuous time series from the IISS estimates. The most recent ME estimates from all three sources are described below.

USACDA: The latest issue of the USACDA yearbook (USACDA 1995) contains estimates of Cuban ME made by that organization for the time period 1983-93. Two time series are presented (see Table 4): 1) annual estimates of Cuban ME in U.S. dollars at current prices; and (2) corresponding annual estimates of Cuban ME in U.S. dollars at constant prices of 1993. The cited USACDA publication is silent on the source of the basic Cuban ME information presented, the exchange rate that was used to make the conversion to U.S. dollars, or the deflator applied. Presumably, the estimates in the USACDA publication use the NATO definition of ME and therefore exclude expenditures related to maintenance of internal order.

Table 4. USACDA Estimates of Cuban ME and Military Burden (In million U.S. dollars, unless otherwise noted)

	ME		Armed Forces	GNP		Population	ME/GNP	ME/capita (U.S.	Armed Forces/
	Current	Constant	(000s)	Current	Constant	(million)	(%)	Dollars)	000 pop.
1993	426	426	175	21460	21460	11.0	2.0	39	16.0
1992	500	511	175	23850	24370	10.8	2.1	47	16.1
1991	1126	1218	297	26950	28300	10.7	4.3	113	27.6
1990	1400	1527	297	33690	36740	10.6	4.2	144	27.9
1989	1377	1567	297	35460	40350	10.5	3.9	149	28.3
1988	1350	1605	297	34720	41290	10.4	3.9	154	28.6
1987	1306	1613	297	33700	41620	10.3	3.9	157	28.9
1986	1307	1665	297	31420	40030	10.2	4.2	163	29.2
1985	1335	1747	297	29520	38630	10.1	4.5	173	29.4
1984	1386	1880	297	26990	36600	10.0	5.1	188	29.8
1983	1470	2082	250	25230	35740	9.9	5.8	211	25.3

Source: USACDA (1995, p. 60).

Table 5. USACDA Estimates of Cuban Arms Exports and Imports, 1983-1993 (In million U.S. dollars at current prices and at constant prices of 1993)

	Arms Imports (AM)		Arms Exports (AX)		Total Imports (M)		Total Exports (X)			
	Current Prices	Constant Prices	Current Prices	Constant Prices	Current Prices	Constant Prices	Current Prices	Constant Prices	AM/M (%)	AX/X (%)
1993	100	100	0	0	1700	1700	1500	1500	5.9	0
1992	100	103	0	0	2185	2240	2050	2102	4.6	0
1991	252	554	0	0	3690	3891	3585	3781	14.2	0
1990	1400	1534	0	0	6745	7393	4910	5381	20.8	0
1989	1200	1372	5	6	8124	9291	5392	6166	14.8	0.1
1988	1700	2032	230	275	7580	9060	5519	6596	22.4	4.2
1987	1800	2234	0	0	7584	9414	5401	6704	23.7	0
1986	1600	2049	0	0	9158	11730	6444	8252	17.5	0
1985	2400	3156	5	7	8677	11410	6503	8552	27.7	0.1
1984	1400	1908	20	27	8213	11190	6174	8415	17.0	0.3
1983	1300	1851	40	57	7235	10300	6416	9135	18.0	0.6

Source: USACDA (1995, p. 108).

The USACDA estimates suggest that Cuban ME at current dollars peaked at $1470 million in 1983, fell steadily through the second half of the 1980s, increased again at the end of the 1980s, and plummeted in the early 1990s; ME fell from $1400 million in 1990 to $426 million in 1993, or by nearly 70 percent. The latter decline is even sharper (72 percent) based on estimates in U.S. dollars at constant prices of 1993.

The mentioned USACDA publication points out that its ME estimates for Cuba omit expenditures for arms procurement. As a result, the USACDA probably significantly underestimates actual Cuban ME. Table 5 presents USACDA estimates of Cuban arms imports and exports during the period 1983-93, both in current U.S. dollars and in U.S. dollars at constant prices of 1993. It is clear from these estimates that arms imports were very significant for Cuba during this period. During the second half of the 1980s, the value of arms imports was roughly one-fifth of the value of overall imports and in 1985 they were the equivalent of 28 percent. For each year in the second half of the 1980s and into the 1990s, USCDA estimates of the value of Cuban arms imports exceeded the level of overall ME estimated by that same organization!

SIPRI: Estimates of Cuban ME in domestic currency and in U.S. dollars at constant prices of 1988 made by SIPRI analysts are reproduced in Table 6. The time series refer to the period 1979-91; as indicated in the text, SIPRI ceased to publish estimates of ME for individual countries after 1991. As the US-

ACDA, SIPRI also used the NATO definition of ME, meaning that they did not cover expenditures related to the maintenance of internal order.

Table 6. SIPRI Estimates of Cuban ME and Military Burden

	ME (million pesos)	ME (million U.S. dollars; constant 1988 prices)	ME/NMP (%)
1991	1750	2255	NA
1990	1400	1804	NA
1989	1377	1775	10.0
1988	1350	1740	11.3
1987	1300	1676	10.7
1986	1307	1685	10.2
1985	1335	1721	9.6
1984	1386	1786	10.1
1983	1133	1460	8.8
1982	1109	1429	9.1
1981	1011	1303	8.8
1980	973	1254	9.9
1979	1009	NA	10.5

Source: SIPRI (1992, 1990).

Trends in SIPRI estimates of Cuban ME in Table 6 differ significantly from those obtained from official ME data or USACDA estimates. Thus, according to the SIPRI estimates, Cuban ME (in pesos or in U.S. dollars at constant prices of 1988) rose steadily throughout the 1980s and into the 1990s; the SIPRI estimates do not show the decline in ME in 1990 and 1991 that is observed from the official budget data or the USACDA estimates.

IISS: As mentioned above, the emphasis on the publications of the IISS is on the military balance for the most recent biennium. All ME estimates published by the IISS are reported in terms of U.S. dollars at constant prices of some reference year. Because the price basis for the estimates changes frequently, it is not possible to develop time series of any reasonable length.

Table 7 contains time series data—with some discontinuities—on estimates of Cuban ME (in U.S. dollars, at constant prices of 1985) for the period 1985-92. For the period under observation, ME peaked in 1988 and declined steadily thereafter. Over the four-year period 1988-92, ME fell by 24 percent.

Table 7. IISS Estimates of Cuban ME, Armed Forces, and Military Burden

	ME (million U.S. dollars at 1985 prices)	Armed Forces (000s)	ME/GDP (%)	ME/capita (U.S. dollars)
1992	1272	175	5.0	117
1991	1491	175	5.0	140
1989	1535	181[a]	5.1	146
1988	1677	180	NA	162
1987	1344	NA	NA	131
1985	1597	162	9.6	158

Source: IISS (1994-95) and earlier issues.

a. 1990

THE MILITARY BURDEN ON THE CUBAN ECONOMY

ME statistics measure military effort by a country in absolute terms. In some instances, it is useful to examine relative indicators of military effort in order to examine military spending in the context of the overall resources of a nation or its public spending priorities and make comparisons with other countries. Several relative indicators of military effort—or military burden ratios—are commonly used by analysts:

- **Military expenditures to gross national product ratio (ME/GNP):** Perhaps the most widely used military burden measure, the ME/GNP ratio relates military spending to the size of the national economy. It scales the value of ME in a given year to the total value of goods and services produced by the economy over that same interval.
- **Military expenditures to central government expenditures ratio (ME/CGE):** The share of CGE devoted to ME is an indicator of the relative importance of the military within the spending priorities of the nation.
- **Military expenditures to population (ME per capita):** The ME per capita ratio relates the level of military expenditures to the size of the nation in terms of population. It complements the ME/

GNP ratio, providing information on the relationship between ME and the size of the nation in terms of population rather than wealth.

- **Armed forces to population (armed forces/pop):** This ratio is an indicator of the degree of militarization of the population.

It should be noted that the calculation of military burden statistics—which typically compare ME or a related measure of military effort to other variables—introduces additional measurement problems. Typically, there are data availability and methodological problems associated with each of the non-military variables that are used to make the comparisons. This is particularly relevant for the ME/GNP ratio, as the measurement of the value of goods and services produced by an economy is problematic for many developing countries and for centrally planned economies.

Military Burden Ratios for Cuba

Tables 8 and 9 present several measures of the Cuban military burden based on official statistics. Table 8 uses ME statistics drawn from the ex ante official budgets for the period 1978-90 and the net material product (NMP)[8] as an indicator of the size of the national economy. Meanwhile, Table 9 relies on statistics drawn from the ex post official budgets for the period 1989-94 and the gross domestic product (GDP) as the measure for the size of the economy. Strictly speaking, the two military burden time series (for 1978-90 and 1989-94) are not comparable. Nevertheless, some general observations may be drawn from the individual and combined series.

The strongest, and most obvious, finding that flows from the data in Tables 8 and 9 is that socialist Cuba has devoted a substantial share of its national resources to the military:

- The ME/NMP ratio rose from around 8 percent in the late 1970s to double-digit shares by the end of the 1980s, peaking at 10.3 percent in 1985. The ME/GNP ratio shows a modest decline (about 1 percentage point) during the economic crisis of the 1990s.
- The ME/CGE ratios behave in a similar fashion to the ME/NMP or ME/GDP ratios: steady increase during the late 1970s and early 1980s, a peak in 1985—when 13 percent of CGEs were devoted to the military—and a decline in the 1990s. The steeper decline of the ME/CGE ratio compared to ME/GDP ratio during the 1990s is a function of the differences in the behavior of GDP and CGE during this period: while GDP shrunk by 32 percent between 1990 and 1994, budget expenditures remained at fairly high levels because of the need to provide subsidies to enterprises, payments to idled workers, etc., and only began to be controlled in 1993-94. Over the period 1990-94, CGEs fell only by about 8 percent.
- The ME/capita series also suggests that there was an increase in military effort through the 1970s and early 1980s; ME/capita peaked in 1985, remained at high levels in the second half of the 1980s, and fell significantly during the first half of the 1990s.

Selected military burden ratios for Cuba estimated by the USACDA, SIPRI and the IISS are reported in Tables 4, 6 and 7, respectively.

- Trends in ME/GNP and ME/capita ratios developed by the USACDA (Table 4) track closely those of official data (Tables 7 and 8). One significant difference, however, is that the ratios estimated by USACDA suggest that the peak in-

8. Following other socialist economies, Cuba used a methodology for its national economic accounts called the Material Product System (MPS). This system differs significantly from the System of National Accounts (SNA), the methodology used by most market economies. The main macroeconomic indicators under the MPS are the global social product (GSP) and the net material product (NMP); the corresponding indicators under the SNA are the gross national product (GNP) and the domestic product (GDP). One of the main differences between the two methods of national accounts is the treatment of "non material services" such as education, housing, public administration, public health, etc.; they are excluded from GSP and NMP but included in GNP and GDP. For further elaboration on the two accounting systems and their differences see Mesa-Lago and Pérez-López (1985). In the early 1990s, Cuba shifted away from the MPS and began to produce macroeconomic statistics based on the SNA.

Table 8. Cuban Military Burden Measures, 1978-90, Based on Official Statistics (In million pesos)

	NMP	CGE	Population (million)	ME	ME/NMP (%)	ME/CGE (%)	ME/capita (pesos)
1990	13592[a]	14484	10.603	1380	10.2	9.6	130
1989	13496	13528	10.577	1377	10.2	10.2	130
1988	13565	12312	10.468	1326	9.8	10.8	127
1987	13273	11690	10.356	1303	9.8	11.1	126
1986	13944	11997	10.246	1307	9.4	10.9	128
1985	14261	11295	10.152	1471	10.3	13.0	145
1984	13696	11250	10.043	1169	8.5	10.4	116
1983	12745	10300	9.946	1116	8.8	10.8	112
1982	12087	9384	9.848	924	7.6	9.3	94
1981	11504	11197	9.753	842	7.3	7.5	86
1980	9523	9531	9.694	811	8.5	8.5	84
1979	10051	9409	9.754	841	8.4	8.9	86
1978	9987	9160	9.686	784	7.9	8.6	81

NMP: Net material product (ingreso nacional creado), at constant prices of 1981.

CGE: Central government expenditures—ex ante budget expenditures from Table 2.

ME: Military expenditures—ex ante budget expenditures for defense and internal order from Table 2.

Source: AEC (1989) and Table 2.

a. Estimated on the basis of the growth rate of GDP at constant prices for 1994.

Table 9. Cuban Military Burden Measures, 1989-94, Based on Official Statistics (In million pesos)

	GDP	CGE	Population (million)	ME	ME/GDP (%)	ME/CGE (%)	ME/capita (pesos)
1994	12868	14178	11.0	651	5.1	4.6	59
1993	12777	14567	10.9	713	5.6	4.9	65
1992	15010	15048	10.8	842	5.6	5.6	78
1991	16976	14714	10.7	882	5.2	6.0	82
1990	19008	15482	10.6	1002	5.3	6.5	95
1989	19586	13904	10.5	1259	6.4	9.1	120

GDP: Gross domestic product, at constant prices of 1981.

CGE: Central government expenditures—realized budget expenditures from Table 3.

Population: Estimated.

ME: Military expenditures—realized budget expenditures for defense and public order from Table 3.

Source: BNC (1995).

tensity in Cuban military effort occurred in 1983 rather than in 1985, as suggested by the official data. The armed forces/population ratio developed by USACDA follows the trend in other burden measures but suggests that this ratio peaked in 1984-86.

- SIPRI estimates of the ME/NMP ratio suggest substantial year-to-year fluctuations in military effort, with a clear trend line difficult to discern. As the series ends with 1989, it does not throw any light on the decline in military effort in the 1990s that is evident from other indicators.
- IISS estimates of ME/GDP ratios are very sparse, but nevertheless they suggest that the level of military effort declined from the mid-1980s to the early 1990s. Trends in the IISS ME/GDP ratios are similar to those of other military burden ratios.

Comparison with Military Burden Ratios for Other Countries

International comparisons of military burden require conversion of national military effort and macroeconomic statistics to common definitions and to a common currency. The painstaking work that is re-

quired to carry out such comparisons has been carried out by a number of organizations, such as the USACDA, SIPRI, and IISS.

For the very reasons that have been spelled out in the first two parts of this paper, there are significant differences in military burden ratios based on official statistics and on estimates made by external organizations. Moreover, there is no basis for singling out which of the measures are the most reliable. For 1989, for example, ME/GNP ratios range from 3.9 percent to 10.2 percent:

Official Cuban data: ME/NMP	10.2 percent
Official Cuban data: ME/GDP	6.4 percent
USACDA	3.9 percent
SIPRI	10.0 percent
IISS	5.9 percent

It stands to reason that extreme caution should be used in using any of the military burden ratios for serious policy analysis.

The most up-to-date and comprehensive set of military burden measures for Cuba is the one that has been developed by the USACDA. Thus, the comparison of Cuban military burden estimates with those of other countries in this section relies on the USACDA estimates.

Table 10 reproduces USACDA estimates of four military burden ratios for 1983, 1985, 1990, and 1993 for Cuba and several groups of countries: 1) the world; 2) the developing countries;[9] 3) Latin American countries; and 4) Central America and Caribbean countries. The last three groupings have been selected to compare patterns of Cuban military burden with those of like countries in terms of level of development, size, and geographic location.

It is evident from the data in Table 10 that military burden ratios of all countries declined substantially during the 1983-93 decade. Military spending began to decline in the mid-1980s and continued to do so through 1995. The decline, which extended to all geographic regions of the world and to developed and developing countries alike, was in sharp contrast to the previous 25 years, when military expenditures rose substantially. The decline in military spending has been attributed to a combination of factors, including a slowdown in world economic activity, increased democratization, improvements in world security, and a fall in military aid ("Drop" 1996, p. 181). Several studies (e.g., Hewitt 1991a, 1991b, 1993) have documented the fall in military spending and offered reasons underlying this trend.

Table 10. Comparison of Measures of Military Burden

	1983	1985	1990	1993
ME/GNP				
World	5.7	5.4	4.4	3.3
Developing countries	6.1	5.4	4.4	3.1
Latin America	2.0	1.8	1.6	1.2
Central America and Caribbean	3.9	3.5	2.7	1.3
Cuba	5.8	4.5	4.2	2.0
ME/CGE				
World	19.0	18.6	16.6	11.5
Developing countries	20.1	18.2	18.2	12.6
Latin America	6.8	5.7	6.9	6.2
Central America and Caribbean	10.4	10.7	9.0	5.3
Cuba[a]	10.8	13.0	9.6/6.5	4.6
ME per capita				
World	255	255	222	157
Developing countries	70	66	60	49
Latin America	60	55	48	38
Central America and Caribbean	65	59	41	17
Cuba	211	173	144	39
Armed forces/000 population				
World	5.8	5.8	5.3	4.4
Developing countries	4.7	4.8	4.5	3.9
Latin America	4.6	4.6	3.6	3.1
Central America and Caribbean	8.9	10.5	8.7	5.9
Cuba	25.3	29.4	27.9	16.0

Source: USACDA (1995).

a. Based on Cuban statistics from Tables 7 and 8.

ME/GNP: According to estimates by the USACDA in Table 10, on average all countries of the world de-

9. The USACDA defines as *developed* countries all NATO members except Greece, Spain and Turkey; all former members of the Warsaw Pact except Bulgaria and the successor states of the Soviet Union (other than Russia); and Australia, Austria, Czechoslovakia, Finland, Ireland, Japan, New Zealand, South Africa, Sweden, and Switzerland. All other countries are considered as *developing* countries.

voted 5.7 percent of their GNP to military spending in 1983. Over the next decade, this share fell by over two full percentage points or by over 40 percent. Military spending by developing countries accounted for 6.1 percent of GNP in 1983—higher than the world average. The ME/GNP share for developing countries fell by three percentage points, or by 49 percent over the next decade, a sharper fall than for the world as a whole.

The ME/GNP ratios for countries of Latin America and Central America and the Caribbean were substantially lower than the corresponding rates for the world and for the developing countries. This reflects the much heavier intensity of military expenditures in developing countries and in Middle Eastern countries. Starting from lower levels, ME/GNP ratios for Latin America and for Central America and the Caribbean also dropped significantly over the period 1983-83, reflecting the overall reduction in military spending.

Cuba's ME/GNP ratio in 1983 was in line with the corresponding ratios for the world and for developing countries (which were influenced by military spending by NATO and the Warsaw Pact and by Middle Eastern countries). However, Cuba's ME/GNP ratio in 1983 was twice the corresponding level for Central America and the Caribbean (which itself is heavily influenced by Cuba's performance) and nearly three times that for Latin America. Cuba's ME/GNP ratio declined sharply over the period 1983-93; in 1993, this ratio was significantly lower than for the world and for the developing countries, but still nearly twice as high as the corresponding ratio for Latin America and for Central America and the Caribbean.

ME/CGE: In 1983, all countries of the world and the developing countries devoted about one-fifth of their public spending to the military. By comparison, the ME/CGE ratios for Latin America and Central America and the Caribbean were about one-third and one-half, respectively, of those for all countries and for developing countries. The USACDA does not produce estimates of the ME/CGE ratio for Cuba, but based on official data in Tables 8 and 9 it can be estimated that the island's ratio was higher—but not significantly so—than for other Western Hemisphere countries. Over the 1983-93 decade, the ME/CGE ratio for all groupings reported in Table 10, as well as for Cuba, fell by about one half.

International comparisons of ME/CGE ratios are sensitive to the form of economic organization and the importance of the national budget as an allocator of resources within each economy . For all countries covered in the most recent USACDA yearbook, the ratio of CGE to GNP was around 30 percent (USACDA 1995, p. 27); this same average relationship for all countries of the world is mentioned in a study of public expenditures conducted by experts from the International Monetary Fund (Chu 1995, p. 8). The CGE/GNP ratio ranged from a low of 17 percent for East Asian countries—where the role of the public sector in the economy is quite limited—to 43 percent for Western European and 52 percent for Eastern European countries (USACDA 1995, p. 27). The larger the magnitude of CGE relative to GNP, the lower the ME/CGE ratio. The USACDA does not report CGE/GNP ratios for Cuba; based on the official data in Table 9, it can be estimated that the CGE/GDP ratio for Cuba in 1993 was 114 percent. Thus, it stands to reason that ME/CGE ratios for Cuba will be lower than for other countries where the role of the public in the economy is more limited.

ME/capita: As a consequence of the overall decline in military spending, ME/capita declined over the period 1983-93 for all country groupings in Table 10 as well as for Cuba. The drop for Cuba was particularly sharp: a five-fold decline from $211 in 1983 to $39 in 1993. For Latin America and Central America and the Caribbean, ME/capita fell less precipitously: to about one-half for Latin America as a whole and one quarter for Central America and the Caribbean. Despite the sharp decline, ME/capita in Cuba in 1993 was still substantially higher than in Latin America as a whole and twice as high as the corresponding level for Central America and the Caribbean.

Armed forces/000 population: The armed forces/population ratios fell during the 1983-93 period for all countries considered in Table 9, albeit at a more moderate pace than other military burden measures.

For the world as a whole, the reduction was about 25 percent, while it was 20 percent for developing countries, and about 33 percent for Latin American and Central America and Caribbean countries. For Cuba, it fell by about 37 percent. Nevertheless, in 1993, the index of armed forces per 1000 population in Cuba was 16.0, over 4 times higher than the index for the developing countries (3.9) and over 5 times higher than the corresponding index for Latin American countries.

CONCLUDING OBSERVATIONS

The examination of patterns of Cuban ME are hampered by the lack of adequate data. Official ME are scarce and those that are available are subject to numerous questions and uncertainties. The same is the case for estimates of ME made by external organizations.

The military burden measures presented in the paper—albeit very crude—suggest that revolutionary Cuba had a high degree of militarization and devoted a considerable share of its national resources to support its military establishment and activities. In the mid-1980s, Cuba devoted around 8 percent of its national income to ME; reductions in ME during the 1990s brought this share down significantly, but nevertheless Cuba devoted more than 5 percent of its national product to ME during the 1990s.

The preliminary analysis of Cuban ME carried out in this paper has raised numerous questions that deserve further attention and research. Hopefully, researchers will pursue some of these avenues, thereby increasing our common knowledge and understanding of Cuban ME and their economic implications. For example:

- What is the precise definition of military expenditures used in Cuban budget data? How are expenses on military pensions and costs associated with reservists handled?
- How are procurements of military equipment and capital construction valued and depreciated in budget statistics?
- How did Cuban international trade statistics treat imports and exports of arms and military equipment? Did Cuba follow the pattern of Eastern European nations of recording military equipment in machinery trade and of the Soviets of treating them in an unspecified commodity residual category (Crane 1987, p. 21).
- To what extent was foreign military assistance—mainly from the Soviet Union—already included in official data on ME, or did foreign assistance augment resources devoted to the military? Does it matter for these purposes whether the assistance took the form of grants (gifts) or loans?

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