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Military Expenditure and Arms Trade: Alternative Data Sources

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Abstract

Analysis of the economic impact of military expenditures and arms trade is frequently hampered by the limited amount of transparent, comprehensive data. Country-specific information can be supplemented, however, by data from multicountry statistical sources. This paper describes seven publications which provide multicountry statistics on military expenditure and trade--the information each source conveys, as well as the differences in coverage and definition--to assist the analyst in understanding how to use this data. Comparisons of the data reported by the various sources reveal numerous, significant differences, particularly in data on military expenditures.

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Summary

The limited amount of transparent, comprehensive data from individual country sources frequently hampers the analysis of the economic impact of military expenditures and arms trade. Country-specific information can be supplemented, however, by data from multicountry statistical publications. This paper describes the major publicly available, multicountry statistical sources on military expenditures and arms transfers. Appendices describe each source in more detail and show data reported for recent years.

A great deal of data on military expenditure and arms trade is available in these multicountry sources. For expenditure data, most countries are covered by more than one source, and the data are usually available for a number of years. As a result, the available data provide, both globally and for many individual countries and groups of countries, a basis for analyzing trends and levels in military expenditure. For trade data, however, some sources cover only a limited number of countries and report trade data for many countries only for cumulative time periods.

In some cases, the data are reported directly by governments, but often the data are built up from a number of primary sources. The accuracy and comprehensiveness of the primary data can vary considerably, both by source and by country. Data sources have different purposes, and the data reported, the method of reporting, and the definitions used by a source reflect the purpose. In addition, significant differences can result from the timing of transactions, from differences on valuation technique, and from differences in exchange rates used to convert local currency expenditures into reported dollar expenditures. Unfortunately, the reported data--particularly expenditure data--generally lack sufficient detail to allow the user to discern whether a given difference is due to definition, exchange rate, timing, valuation, or information.

Comparing the published military expenditure data reveals that the sources frequently show significantly different levels and trends in global, regional, and national military expenditures from 1988 through 1991, both in individual years and for the entire period. Cross-source differences were also found in military expenditure as a percentage of GDP, whether evaluated globally, nationally, or by economic grouping. Only limited comparisons can be made of trade data, but generally the differences between sources are in the direction that would be expected from their differences in coverage.

Several things could be done to improve the usefulness of available data. First, governments are in the best position to improve the coverage and accuracy of their own published data. Second, greater detail in the multicountry sources would enable the user to understand better how the data are estimated, and how definitional and other differences affect cross-source discrepancies. Finally, improvements in the timeliness of some of the data would be helpful.

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Military Expenditure and Arms Trade: Alternative Data Sources

I. Introduction

With the end of the Cold War, considerable international attention has been focussed on the scope for reductions in military expenditures and the trade in arms. At the same time, there are new concerns about arm suppliers aggressively seeking new markets. However, analysis of military expenditures and arms trade is hampered by the limited amount of transparent, comprehensive data. While some countries ^{1/} make information publicly available, in many instances information on military expenditures is viewed as confidential. As a result, for many countries it is difficult to accurately assess the levels or trends of military expenditures and arms trade.

The aura of secrecy surrounding military expenditures is, however, changing. Both public opinion and the donor community are calling for open discussions of military expenditures, and greater attention has been focussed on the functional breakdown of government budgets in the context of evaluating the efficiency of government expenditures. The amount and quality of government-provided information on military expenditures is improving, albeit slowly.

Even where information is available directly from governments, gathering data on a variety of countries can be a time consuming process. Moreover, the reported data may be based on definitions tailored to national standards and may not be amenable to direct international comparison. In order to improve the availability of information on military spending and arms trade, several organizations regularly publish data on these activities. Some rely solely on data reported by individual governments, while others supplement this with information from classified materials, industry publications, and/or their own estimates. This paper describes the major publicly available, multicountry statistical sources on military expenditures and arms transfers, concentrating primarily on those that present data useful for economic analysis. ^{2/}

The paper describes the types of information each source conveys and the differences in coverage and definitions among sources. The purpose is to assist the analyst in understanding how to use the data. The paper also presents comparisons of the data reported by the various sources. Although a considerable amount of information is available, including country-specific data, there are frequently large differences in the comparable numbers reported by different sources. In some cases, it is possible to identify the reasons for the differences from a knowledge of the definitions

^{1/} As used in this report, the term "country" does not in all cases refer to a territorial entity that is a state as understood by international law and practice. As used here, the term also covers some territorial entities that are not states but for which statistical data are maintained on a separate and independent basis.

^{2/} This paper does not consider information available from industry publications.

and coverage of each of the data sources; in other cases, the reasons are unclear. Finally, the paper suggests efforts that might lead to improvements in our knowledge of military expenditures and arms transfers.

The paper is organized as follows. Section II summarizes definitional and other differences among the data sources. Sections III and IV compare the data reported by these sources for recent years, and Section V presents conclusions. Expenditure and trade data for recent years, as reported by the various sources, are presented in Appendix I, and the country groupings used are shown in Appendix II. A more detailed description of each data source can be found in Appendix III, including the definition of military expenditure and/or arms transfers, the ultimate sources of the data, and an assessment of its strengths and weaknesses.

II. Alternative Data Sources

Six publicly available multicountry sources of data on military expenditures and on arms trade are reviewed in this paper. Two of these sources contain data on both defense spending and trade in arms (the Stockholm International Peace Research Institute (SIPRI) and the U.S. Arms Control and Disarmament Agency (ACDA)), two cover only defense spending (the International Monetary Fund's Government Finance Statistics Yearbook (GFSY) and the International Institute of Strategic Studies (IISS)), and two cover only trade in arms (Congressional Research Service (CRS)) and the United Nations (UN) Register of Arms Transfer). Another UN publication on military expenditure, "Reduction of Military Budgets: Military Expenditure in Standardized Form Reported by States," is not included in the following analysis (although it is described in Appendix III), as its coverage is limited; the most recent report, published in 1993, has data on military expenditure for only 32 countries. ^{1/}

Most of the six publications use one or more of the other publications as a source of some of their information. As a result, they cannot be considered entirely independent. Similarities in data reported by two or more sources could reflect independent confirmation of reported data, or could merely be a result of one or more sources relying heavily on the others.

Despite this cross-referential nature of the data reported by the alternative sources, there are also significant differences in the procedures for gathering and estimating military expenditures and arms transfers. The two international organizations (IMF and UN) rely exclusively on voluntary reporting by member governments. Of the two independent non-governmental organizations (SIPRI and IISS), SIPRI, as a

^{1/} The General Assembly has requested the Secretary-General to seek ways to broaden participation in the UN system of standardized reports on military expenditures.

matter of policy, relies entirely on publicly available information, while IISS also uses some confidential government information. The two governmental agencies (ACDA and CRS) use a combination of published information plus access to confidential government records. The comprehensiveness and accuracy of the data are likely to be affected by the information sources used.

In addition, there are significant differences in definitions of military expenditure and of government. The following sections describe some of the important differences and similarities.

1. Military expenditures

There are four sources that report military expenditure data--ACDA, GFSY, IISS, and SIPRI. These sources use different definitions of "military" or "defense" expenditure, with the differences frequently reflecting different purposes for which the statistics are collected or different primary data sources. The most commonly used definitions of defense expenditure are the GFSY definition, based on the UN's Classification of the Functions of Government (COFOG), and the NATO definition. GFSY relies on COFOG; SIPRI uses the NATO definition as a guideline ^{1/}; ACDA and IISS use the NATO definition for NATO countries but for non-NATO countries they generally use data from each country's defense budget, which may be based on yet a different set of definitions. ^{2/} The more important specific differences between the GFSY and NATO definitions are as follows:

- The cost of pensions for military personnel is included in government expenditure on "social security and welfare" in GFSY, but in NATO it is included in defense expenditure.
- Operations within the government sector--for example social security contributions paid by one part of the Government to another--are excluded through consolidation in GFSY, but are included in NATO.
- GFSY includes reserves and auxiliary forces, but puts police, border and coast guards in a separate category, as expenditure on "public order and safety". NATO includes police and paramilitary forces in defense expenditures if they are trained and equipped for military operations.
- Civil defense is included in defense spending in GFSY, although it is separately identified in the detailed breakdown of defense into

^{1/} A major purpose of the SIPRI data is to provide input for SIPRI's research agenda. The emphasis is on a uniform definition over time for each country to show a correct time trend, rather than on adjusting figures to have common cross-country definitions within a single year.

^{2/} See Appendix III for a description of the definition of military used by each source.

"military defense affairs" and "civil defense affairs". Civil defense spending is not included in the NATO definition.

- Military grants-in-kind are included in the defense expenditures of the donor country, but not the recipient country, in both definitions. However, the treatment of cash grants is not the same under the two definitions: GFSY includes military expenditures financed by cash grants in the expenditures of the recipient country, while the NATO definition does not.

The coverage of government also varies, both between sources and across countries within a particular source. Reported military expenditures may include only the budgetary expenditures of the central government, or they may include off-budget expenditures or expenditures of provincial or other governmental levels. Reported "budgetary" defense expenditures may also exclude some budget expenditures due to under-reporting or misreporting. ACDA notes, for example, that "there are indications or reasons to believe that the military expenditures reported by some countries consist mainly of recurring or operating expenditures, and omit all or most capital purchases" (p. 150).

Defense expenditure in some countries may include dual use equipment or infrastructure (e.g., roads, hospitals), dual purpose forces (e.g., military police), and dual purpose industries (e.g., cross-subsidization of military production by civilian output in the same plant). This is particularly the case in some developing countries where the military plays a major role in the economy, and where it is difficult to identify what truly are defense-related expenditures.

Finally, it should be noted that interest on military debt is excluded from defense expenditures under both the GFSY and NATO definitions.

2. Arms transfers

A major problem in identifying trade in military equipment is that the trade classifications used by most countries--the Standard International Trade Classification (SITC) or the Harmonized System (HS)--do not clearly identify military-related trade. For example, no distinction is made between military and civilian imports or exports in the case of dual use equipment such as aircraft. More importantly, for many countries a substantial amount of military trade is not reported by type of product but is lumped together under SITC group 931 "special transactions and commodities not classified according to kind", and thus cannot be separately identified. In addition, some military trade may be hidden in other SITC groups, as the result of importers submitting false documents. It is also likely that some military trade does not go through customs at all. As a result, for most countries, customs data in their present form cannot be used as a source for information on military trade. Publishers of data on arms trade instead rely primarily on sources such as data compiled by defense ministries or specialized government agencies, confidential government information on third country trade, and trade publications.

The four statistical sources that report arms transfer data (ACDA, CRS, SIPRI and the UN) generally include arms transfers regardless of how financed. Arms transfers data may be more inclusive than the expenditures data because the transfer data includes receipts of grants-in-kind. At the same time, the arms transfers data do not include the military's total use of imported goods, as they do not include foodstuffs, medical equipment, petroleum products, and other general supplies.

Each of the four statistical sources report on transfers of conventional arms, but the extent of the coverage of merchandise trade varies, and some sources include some services as well. The CRS data have the most inclusive product coverage, covering all categories of both large and small weapons, ammunition, military equipment and other ordnance, construction and other military related services, and military assistance and training programs. The coverage of ACDA is similar, except that ACDA has less extensive coverage of services. The SIPRI arms trade data cover only five categories of major weapons or systems, as "Publicly available information is inadequate to track [smaller] items satisfactorily." (SIPRI, p. 352). The UN Register covers only major weapons.

ACDA, CRS, and SIPRI to varying degrees report data both in terms of arms transfers agreements (orders) and arms deliveries. Given the long lead time necessary for delivery of the larger, more sophisticated weapons, there can be substantial differences in the two sets of data, with the agreements data more closely reflecting current political developments and the deliveries data corresponding to actual trade flows. The agreements data give an indication of the likely future level of arms transfers on the assumption that most of the agreements are implemented. On the other hand, deliveries are more observable than agreements, particularly when there is an effort to hide the transfer. There can also be systematic differences between countries in the relationship between the agreements and deliveries data. For example, there seems to be a lower utilization rate of agreements for the United States than for other exporting countries, particularly in comparison with estimates for formerly centrally planned countries, where the agreements data tend to be based on delivery estimates. For CRS, the information on transfer agreements is a major focus of the analysis and is presented in the same detail as the data on arms deliveries. In the ACDA reports, the agreements data do not include as much country detail as the deliveries data. In the SIPRI report, the focus is also on deliveries data, with limited information on transfer agreements included in the section on the quantity of arms transfers. The UN reports deliveries data only.

The aim of the CRS report is to provide input to U.S. policy discussions, and the focus is therefore on timely information on trends in arms transfers to the "Third World", broadly defined. As a result, the CRS data do not cover global arms trade, as they do not include imports by industrial countries, eastern Europe, and the former Soviet Union. CRS also provides only limited data on individual countries. Most CRS data is presented in regional subtotals or for cumulative time periods. ACDA reports information on global arms transfers, and also has the most country detail and the most annual data. As a result, it is the most useful source

on trade data for someone undertaking most country-specific analysis. SIPRI and the UN Register fall somewhere between ACDA and CRS in terms of both timeliness and country coverage.

Some of the most politically sensitive arms transfers data are those showing the source of arms for individual importing countries. One of the advantages of the UN Register is that it includes the trading partner for each reported transaction, allowing the data to be cross-checked. ACDA, CRS, and SIPRI each provide some bilateral data on arms transfers, but only for cumulative periods of four or five years.

Statistics on arms transfers have some of the same definitional problems as do military expenditures, including, for example, how to classify dual use equipment which has application in both military and civilian activities, and the distinction between government and non-government buyers. In general, dual use equipment is included in military when its primary mission is identified as military, but this distinction can be difficult to make. In the SIPRI data the criterion is the identity of the buyer, which must be either armed forces, paramilitary forces, intelligence agencies or police force of another country. SIPRI notes that arms supplied to guerrilla forces can pose a definitional problem, and in the SIPRI data these are included in the importing country's total but with the local recipient noted. In the ACDA data, arms transfers to subnational groups are not included. In the CRS data for United States exports, decisions about dual use exports do not arise because the export data are based strictly on the U.S. Foreign Military Sales (FMS) Program, and do not include data on U.S. commercial military sales, as it is felt that there are no commercial agreements data comparable to the agreements data available for the FMS program. Annual totals for U.S. commercial arms deliveries, based on shippers' export documents and export licenses, are listed separately in the CRS report but without a country of destination breakdown. The ACDA data include commercial deliveries of items on the U.S. Munitions Control List, a small amount of which may be intended for civilian rather than military use.

For sources that report data in value terms, the approach to valuation can vary. CRS data are based on the estimated purchase price or delivery value of the items, except for data on the U.S. where actual prices are used. ACDA also uses actual or estimated purchase price, as available. The SIPRI values, in contrast, are based on the average production costs of the weapons; in cases where production costs are not available, estimates are made based on technical comparables. SIPRI stresses that its valuation system is not comparable to official economic statistics such as public expenditure and exports and imports. Rather, its arms transfers data were designed "as a trend-measuring device" for the total flow of major weapons and its geographic pattern (SIPRI, p. 354). Because of the valuation issue, and because "much of the international arms trade involves offset or barter arrangements, multiyear loans, discounted prices, third-party payments, and partial debt forgiveness" (ACDA, p. 154), ACDA warns that close comparisons of data on arms trade with other economic variables are not warranted.

The trade data do not present explicit conversion problems (from national currency to a common currency like U.S. dollars) because they are generally reported in U.S. dollars. However, particularly for trade among former Warsaw Pact countries, there are likely to be underlying valuation difficulties that were encountered by the compiler of the data. ACDA notes, for example, that its data on Soviet arms transfers are taken from sources that present the data directly in U.S. dollars and therefore particular caution should be used in comparing this data with other Soviet data.

Differences between sources can also reflect timing differences. Because of the lumpiness of military equipment sales, a difference in the time period covered (notably calendar year versus fiscal year) can result in significant differences in the data reported for the period. In most cases, data are reported by calendar year, the exception being ACDA's coverage of the arms exports of the United States which are based on fiscal year data. Even when the time period is the same, a difference in the timing of recording of large year-end sales can result in significant differences in data for particular years and complicate the interpretation of trends, particularly for individual countries.

Timing can also be a factor because of differences in reporting lags or the lags between revisions. For example, ACDA (p. 154) notes that the arms transfers estimates for the most recent year, and to a lesser extent for several preceding years, tend to be understated, and can be expected to be revised upward somewhat in succeeding issues. There were in fact substantial upward revisions between the 1990 and the 1991-92 ACDA publications.

III. Comparison of Military Expenditure Data

1. Difficulties in making comparisons

Annual military expenditure, as reported in each of the four sources, is shown in Appendix I, Table 1 for covered countries from 1988 through 1991. In addition to the definitional differences mentioned above, there are two other problems with comparing data across sources.

First, an obvious problem in comparing aggregates across sources is that the set of countries covered in each source is not the same. ^{1/} Largely due to the differences in country coverage, comparisons of global levels of military expenditure across sources is uninformative. For example, total global military expenditure for 1988 varies by over 100 percent across the four sources, with data for countries reporting to GFSY totalling less than half the global figures reported by ACDA. If such

^{1/} In addition, GFSY data and some IISS and ACDA data refer to fiscal year, rather than calendar year, military expenditures. This will have an impact on comparisons below.

global comparisons were attempted using only countries for which all four sources had data, the resulting comparisons would exclude so many countries as to no longer be "global" in any meaningful sense.

In addition to problems stemming from country coverage, comparison of data across sources is sometimes hampered by the form in which the data is presented. Military expenditure data is sometimes converted to U.S. dollars for publication. Local currency data can be converted to current or constant U.S. dollars in one of three ways--using current exchange rates, using historic exchange rates, or using purchasing power parity (PPP) exchange rates. SIPRI and GFSY data are presented in local currency in current prices. For the purposes of the comparisons below, these have been converted to U.S. dollars at the prevailing period average exchange rate, as reported in the IMF's International Financial Statistics (IFS). IISS also uses IFS exchange rates for most conversions but uses PPP exchange rates where they feel official exchange rates are unrealistic. 1/ However, IISS also publishes local currency figures, allowing the user to determine the conversion rates used and to apply different conversion rates if so desired. Thus, for these three sources, direct comparisons are possible.

ACDA, however, uses a rather unique methodology--based on "base year" exchange rates--for converting local currency expenditures to the current and constant dollar expenditures: "current-price national currency data for an entire series of years is converted to current U.S. dollars through the use of a single (base year) exchange rate and two price indexes, one national and one U.S." (ACDA, p. 154). 2/ This methodology, which is carefully explained in ACDA's statistical notes, presents two problems to a researcher wishing to compare data sources, or to use ACDA data in combination with other data.

First, ACDA does not present either the conversion rates it uses or the local currency figures. Thus, in comparisons of ACDA with other data sources, differences in reported military expenditure data will reflect not only differences in underlying military expenditures, but also differences in exchange rates. Without knowing which conversion rates ACDA used for each country for each year, it is impossible to isolate the two sources of difference. Only ACDA's base year data--1991 in the most recent publication--are directly comparable to data from other sources. 3/

1/ In certain instances, PPP rates may offer greater realism than official exchange rates--in comparisons of expenditures converted to U.S. dollars. The difficulties in using such rates are that there is no consensus on PPP rates for all countries and years, and that one should ideally use different PPP rates for converting GDP and military expenditures.

2/ ACDA's methodology is comparable to a PPP calculation. However, ACDA makes no claim that its base year exchange rate is an equilibrium rate, or even that the base year rate is preferable, in any sense, to other rates.

3/ As a result, readers must view with caution the comparisons of ACDA data and data presented in other sources for years other than 1991.

Second, each new ACDA publication uses a different updated base year exchange rate, with the result that ACDA's historic data on current dollar military expenditures can change significantly across editions. For example, ACDA's 1989 edition reported Argentina's current dollar military expenditures in 1988 at US\$1.9 billion, while ACDA's latest edition reports Argentine current dollar military expenditure in 1988 at US\$3.9 billion. Other examples of shifts in data for 1988 due to different conversion rates between the two recent ACDA editions include Egypt (US\$5.6 billion to US\$2.1 billion), France (US\$33.4 billion to US\$37.0 billion), and Sweden (US\$4.9 billion to US\$5.7 billion). These large swings make it difficult to interpret ACDA's data, and they also make any comparisons with ACDA highly sensitive to the edition of ACDA which is used in the comparisons.

2. Global and regional trends in military expenditure

Against this background, we undertook comparisons of percentage changes in data reported by the various sources. Appendix I, Table 2 shows the year-to-year percentage changes in reported military expenditure based on global and regional aggregates. Aggregation involved summing the current dollar expenditures of the relevant countries shown in Appendix I, Table 1. Because of the problems of missing observations for individual countries, all discussions of year-to-year changes in military expenditure focus on countries for which data are available from a source in both years--e.g., SIPRI's estimate of a 0.9 percent increase in military expenditures in 1989 refers to those countries for which SIPRI has military expenditure estimates for both 1988 and 1989. There continues to be differences in the list of countries included in the calculations for each source. Where these differences have a large effect on the comparisons, the differences in coverage are noted below.

The four sources present significantly different pictures of movements in global military expenditure from 1988 through 1991, both for individual years and for the entire period. The widest discrepancy--IISS's very large global increase in 1989--is primarily (almost 90 percent of the total reported increase) accounted for by a one time adjustment in IISS's reported level of Soviet Union military expenditure. Omitting this source of difference, the percentage change in 1989 is broadly similar across all sources. The same cannot be said for 1990 or 1991, however, and for the period as a whole estimates range from virtually no change (ACDA) to a 4.2 percent average annual increase (GFSY).

Regional subtotals ^{1/} also show significant differences in trends in military expenditures as reported by the various sources in almost every year, as well as for the period as a whole. In most cases, such differences are largely accounted for by differences--either in coverage or reported military expenditures--of one or two countries.

^{1/} The list of countries in each region is shown in Appendix II.

With regard to Africa, the majority of the differences between SIPRI and ACDA reflect differences in estimates for South Africa in 1989 and Ethiopia in 1990. 1/ For Asia, differences are largely due to IISS estimates for China, SIPRI estimates for Japan, and SIPRI's lack of data for China and Taiwan, which heavily influence the trend in the other sources. For the Middle East and North Africa, all sources generally report large increases for the period as a whole, although the rate and trend of such increases differs significantly across the sources. 2/ The differences are primarily due to inconsistencies across sources in reported military expenditures of Iran, Iraq, Kuwait, and Saudi Arabia. For the Western Hemisphere, the data are reasonably consistent in 1989 and 1990, but vary significantly in 1991 due to different estimates of United States military expenditure in 1991.

The explanation of differences is not quite as simple for western Europe and eastern Europe and the former Soviet Union. For eastern Europe and the former Soviet Union, there is a high level of uncertainty regarding military expenditures during this period (reflected in very different reported levels and changes). In addition, all sources have data for only a few countries in this region, so slight differences in coverage can make large differences in reported numbers. For western Europe, there are large differences across sources in the level and change in military expenditures for a number of countries--some of the largest are for Belgium, France, Italy, Spain, United Kingdom, and West Germany.

3. Trends in countries classified by level of economic development

In the above analysis, based on expenditures aggregated across countries, countries with the largest military expenditures tend to dominate the outcome and one or two countries can dominate the trend for a region. This section attempts to address that problem by analyzing movements in military expenditure relative to GDP 3/ 4/ for various economic groupings of countries. By using unweighted averages of ratios, each country is given equal weight. The comparisons in this section thus focus on the average of ratios of military expenditures to GDP. As with the previous section, the results reveal important similarities as well as differences across sources.

Military expenditures as a percentage of GDP are shown in Appendix I, Table 3 by country and data source. For some countries or years, the lack

1/ GFSY and IISS have military expenditure data for too few African countries to make comparative analysis meaningful.

2/ GFSY 1991 data is based on too few observations to be used in the comparisons.

3/ Validity of such standard comparisons depends on a presumption of similarity in price structures across countries. Technically, PPP-adjusted ratios would be more appropriate.

4/ For ACDA, their reported expenditure relative to GNP was used. GDP figures from the International Financial Statistics were used when the source did not directly report military expenditures as a percentage of GDP.

of a reported ratio is due to lack of GDP data rather than of military expenditure data. The same data, organized by economic groupings of countries, are shown in Appendix I, Table 4. Looking first at global data, ACDA shows a significant rise over the period in military expenditures relative to GDP, IISS shows a smaller increase, GFSY shows little change, and SIPRI shows some decline. By 1991, estimates of military expenditure as a percent of GDP range from just over three percent (GFSY) to just under 6 percent (ACDA).

Comparing country groupings, ACDA, GFSY and IISS all report lower military expenditures relative to GDP for industrial countries than for developing or east European countries; SIPRI reports east European countries as having the lowest military expenditure/GDP ratios. All sources report little change in industrial country military expenditure/GDP ratios throughout the period. Reflecting the limited availability of information on the level of east European military expenditure, there are wide differences in the reported ratios of this expenditure to GDP.

There is also a great deal of variation in reported movements in military expenditures relative to GDP for developing countries as a group, ranging from significant increases reported by ACDA and, to a lesser extent, IISS, to modest declines reported by GFSY and SIPRI. Within the developing country grouping, all sources agree that the Middle East developing countries have the highest military expenditure relative to GDP, while the Western Hemisphere developing countries have the lowest military expenditure relative to GDP.

Regarding changes, all sources show significant increases over the period in military expenditures relative to GDP for Middle East developing countries and small to moderate increases for developing countries in Asia. In contrast, all sources show northern Africa and Western Hemisphere developing countries decreasing military expenditures relative to GDP. The sources show different pictures regarding movements in sub-Saharan African developing countries' military expenditures relative to GDP.

4. Differences for individual countries

Similarities across sources in reported global or regional totals or trends may be evidence of an underlying consistency in the data sources, or they may be the result of offsetting differences in the figures reported for individual countries. A comparison of reported expenditures by country shows that, at least for changes in military expenditure and as a percentage of GDP spent on military, similarities at the regional or global level are largely the result of offsetting differences at the country level.

Comparisons of reported military expenditures by country were done in three ways. First, we examined differences in the reported numbers, comparing the highest and lowest level of military expenditure for each country in each year in the four sources. For over 58 percent of the countries examined, the highest and lowest estimate of military expenditures varied by more than 30 percent in at least one year. For over 40 percent of

the countries, the maximum difference in reported military expenditures was at least 50 percent. And for almost 23 percent of the countries, the highest estimated military expenditure was at least double the lowest estimated military expenditure in at least one year.

Nevertheless, it is possible that a single source is frequently responsible for the divergence. Therefore, for each country we eliminated the source with the most divergent estimate of military expenditures, and compared the three remaining sources. For 65 percent of the countries, the difference across the remaining sources was less than 20 percent in all years. There was no discernible pattern as to which source was eliminated.

Differences in levels could be due to definitional differences, and would perhaps not be too significant if the sources showed similar growth rates of military expenditure. However, a comparison of percentage changes in reported military expenditures shows even larger discrepancies. For 72 percent of the countries, the highest reported percentage change in military expenditures exceeded the lowest by at least 10 percentage points (e.g., 10 percent growth versus 0 percent growth) in at least one year. For over 57 percent of the countries, the maximum difference was over 20 percentage points, and for 29 percent of the countries the maximum difference was over 50 percentage points (e.g., 50 percent growth versus no change).

At the extreme, for 11 countries--Algeria, Argentina, Botswana, Burma, Colombia, Ethiopia, Hungary, Papua New Guinea, Rwanda, Soviet Union and Venezuela--the maximum difference exceeded 100 percentage points (e.g., 100 percent growth versus no change, or 50 percent growth versus 50 percent reduction) in at least one year. In seven of the eleven cases, it appears the large discrepancy may be the result of a one time jump in the data reported by a source, to a level more consistent with the other sources. In other words, it may reflect more complete information, and not an actual estimated increase. However users of the data have no way of confirming this. In the four remaining cases, analysis of the time trend of the data shows no obvious explanation for the huge discrepancy.

Our third method of comparing reported military expenditures by country was to compute annual pairwise correlation coefficients for the numbers reported for each country by two sources. Correlation coefficients of reported levels of military expenditure were generally quite high--.91 or greater in all but one of the 24 pairwise comparisons. This is not surprising; all sources recognize, for example, that the United States has far higher military expenditures than the United Kingdom, which has far higher military expenditures than Uganda, etc.

Correlation coefficients for reported military expenditure as a percentage of GDP--in the range of .65 to .89 in about half the cases, and .90 to .96 in the other half--are generally lower than the correlation coefficients for levels of military expenditure, but still high enough that the sources are conveying a broadly consistent story. Unfortunately, that is not true of correlation coefficients for percentage change in military

expenditures. Of the 18 annual pairwise correlations coefficients of the reported percentage change in military expenditures, ten are below 0.5, with three negative correlations and two more approximately zero. Only five of the 18 are above 0.8, and only three are above 0.9.

For researchers whose primary concern is order-of-magnitude cross-country comparisons of the levels of military expenditures, all four data sources reviewed here will tell a broadly consistent story. This is certainly true for dollar values of military expenditures, and to a lesser extent for military expenditures as a percent of GDP. Also, for researchers concerned about one or more individual countries, for many countries in many years the sources provide similar information. For a number of countries, however, this is not true. Further, if the reason for looking at alternative data sources on military expenditures is, at least in part, to assess trends in military expenditures, the conclusions one comes to will depend greatly on which source is used.

IV. Comparison of Arms Transfer Data

The extent of the differences in coverage between the four sources of data on arms transfers does not allow a great deal of cross-source comparison, although in certain cases comparisons are possible following adjustments to the reported data. The closest comparisons can be made for the aggregate export data as reported by ACDA and CRS, as both sources cover both large and small arms trade, provide both current and constant price statistics, use a similar approach to valuation, and provide supplementary information that allows the reader to make adjustments to the coverage of the statistics. These two sources also use largely the same background sources. The scope for comparing SIPRI with the other sources is more limited, and comparison with the UN reported data is difficult because of the reporting of physical quantities only.

Appendix I, Table 5 shows arms exports as reported by CRS, ACDA, and SIPRI. In the upper part of the table, data reported in current prices by CRS and ACDA are adjusted to make them as nearly comparable in coverage as possible. Thus, in line A1, CRS exports are adjusted to include U.S. commercial military sales, since these are included in the ACDA data. In line B1, the ACDA data are adjusted to the same "Third World" country coverage as CRS and also to include U.S. transfers of construction and other services. In the adjusted data series covering exports to developing countries, the aggregate ACDA and CRS export numbers are very similar. The small remaining differences could be the result of ACDA's use of fiscal year data for the U.S. while CRS uses calendar year data. For the whole five-year period, the difference in aggregate exports for the two sources is only 0.5 percent.

The lower part of Appendix I, Table 5 compares exports reported by SIPRI, which are available only in constant 1990 prices, with exports reported by ACDA and CRS converted to 1990 prices using deflators provided

in their respective publications. Because of SIPRI's limited reporting of country detail, it is not possible to adjust the SIPRI data in a manner comparable to the above adjustments for ACDA and CRS. However, it is clear that total arms exports reported by SIPRI are significantly lower than those reported by ACDA. This could be expected to be partly due to the fact that SIPRI does not cover small arms trade or military services. The SIPRI and CRS aggregate export data are closer in value, but this reflects the offsetting differences in coverage described earlier.

A comparison of data trends is also relevant, especially in view of SIPRI's statement that its data should be used primarily as a trend measuring device. All three sources show a sharp downward trend in arms exports between 1987 and 1991. The decline is relatively smaller, in both absolute and percentage terms, for SIPRI than for ACDA and CRS, although a large part of the divergence occurs in 1991 for which data will be subject to the usual revisions and for which SIPRI noted that there were major data problems related to the Persian Gulf War and the political changes in Eastern and Central Europe.

There is only limited scope in the data for comparisons of arms transfers on a country-by-country basis. Appendix I, Table 6 provides annual arms export data in constant prices for seven major suppliers, as reported by SIPRI, ACDA, and CRS, for the period 1987-92. As with the unadjusted aggregate export data, the SIPRI and ACDA data represent total exports for each country, while CRS covers each country's exports to the third world only. For the Soviet Union, the United Kingdom, and for the United States in 1987-89, ACDA's estimates are generally significantly higher than those presented by SIPRI, consistent with ACDA's more comprehensive product coverage. For reasons which are not clear, SIPRI shows higher U.S. exports than ACDA for 1990-91. For the other countries there is no particular pattern. As would be expected, CRS exports by major supplier are generally less than those reported by ACDA, and in some cases also lower than those reported by SIPRI. But a notable exception is China which exports almost entirely to what CRS calls the "Third World", with the result that CRS and ACDA data are very similar.

Appendix I, Tables 7, 8 and 9 provide arms import data for individual countries as reported by ACDA, CRS, and SIPRI, respectively. All the data are shown as reported, i.e., ACDA and CRS data are in current prices and SIPRI data are in 1990 prices, which tends to somewhat overstate the SIPRI data for 1987-89 and understate it for 1991. While the overlap in annual, country-specific data is limited, the same general point as noted with exports stands out. When cumulative imports over 1987-91 are compared, SIPRI generally shows lower arms imports than ACDA, at least in part reflecting SIPRI's less comprehensive product coverage. However, for 35 countries, SIPRI reports higher cumulative imports than ACDA; to some extent this reflects SIPRI's use of constant 1990 prices, but for many of the countries the difference is too large to be due to this factor alone. CRS reports only very limited country-specific import data, most of which is for cumulative time periods which do not coincide with the periods used by ACDA

or SIPRI. In cases where comparisons can be made of individual countries for 1991, CRS data are very similar to those reported by ACDA.

All of the sources report some quantity data on arms transfers. Quantity data are reported to the UN on an annual basis, with data available at present only for 1992. The ACDA, CRS, and SIPRI reports also include some information on the number of major weapons delivered, but with less complete coverage than in their main data. ACDA and CRS report physical quantity data only for cumulative amounts over selected time periods (the most recent CRS publication reported cumulative data for 1985-1988 and for 1989-1992 while ACDA reported cumulative data for 1987-91). Most of the SIPRI data is for cumulative time periods which vary according to individual arms contract. Given the varying time periods covered, it is not possible to do a consistency check of the quantity data across any of the four sources.

V. Conclusion

A great deal of data exists in multicountry sources on military expenditures and arms trade. For most countries, more than one published source of information exists, and the data are available for a number of years. As a result, both globally and for most individual countries and groups of countries, the available data provides some basis for analyzing both trends and levels in military expenditure. For a number of countries, however, up-to-date trade data may be available only for cumulative time periods.

In some cases the data are reported directly by governments, but in many cases the data are built up from a number of primary sources. The accuracy and comprehensiveness of the primary data can vary considerably--both by source and by country. However, in all cases, the user of the data is not in a position to verify the quality of the data. In addition, the data may be weakest for exactly those countries where there is the greatest concern about the level and trend of expenditure.

Data sources have different purposes, and the data reported, the method of reporting, and the definitions used by a source reflect this purpose. This is most obviously true with regard to CRS. In addition, given the lumpiness of military equipment sales, significant differences can result from the timing of transactions, and differences can also be due to valuation technique. Finally, there may be significant differences in exchange rates used to convert local currency expenditures into reported dollar expenditures. Users need to be aware of these differences. Even if all sources had access to identical data, they could report different numbers. For some countries, the differences between sources will not be large because the variables that are treated differently are not significant. For other countries the differences can be substantial. Unfortunately, the data--particularly expenditure data--are generally not reported in sufficient detail to allow the user to discern whether a given

difference is due to definitional, exchange rate, or informational differences.

Our comparative analysis of published military expenditure data revealed both similarities and differences. All sources convey roughly the same picture with regard to the order of magnitude of the level of military expenditure by country and, to a lesser degree, with regard to military expenditures as a percentage of GDP. However, for individual countries, large differences often exist between sources with regard to the reported level of military expenditure.

More serious are the differences in reported trends in military expenditure. Our analysis of global data revealed significant differences in reported percentage changes in military expenditure over the period 1988 to 1991. Similarly, our regional comparisons revealed large differences between the sources, while our national comparisons revealed highly inconsistent data on percentage change in military expenditure.

With regard to arms transfer data, the extent of the differences between sources limit the amount of meaningful cross-source comparison that can be made. However, the ACDA and CRS reports provide sufficient background detail to permit adjustment of their data for their major differences in coverage and definitions for the period 1987-89. After adjustment, the remaining differences in their aggregate export levels are small.

Several things could be done to improve the usefulness of available data. First and most important, governments should strive to improve the coverage and accuracy of their own published data on military spending and arms trade. No source can provide more comprehensive or accurate information on a country's military transactions than the country itself. Improved country reporting to the United Nations' "Military Expenditures in Standardized Form Reported by States"--a source excluded from our above analysis due to the limited number of countries reporting--offers a good opportunity for making this information available internationally.

Users of the data would also be greatly benefitted if the alternative sources included more detail on their methodology--particularly with regard to how military expenditures are estimated and converted to U.S. dollars. Reporting of all military expenditure data in current prices in local currency would remove one factor-causing differences across sources. In addition, given that different sources use different definitions of "military" and "government", it would be helpful if additional detail were provided on certain components of military spending and trade that are treated differently under different definitions. This would help users to eliminate cross-source discrepancies due to these definitional differences.

Another obvious area for improvement would be to make some of the data available on a more timely basis. This is not simple, however, given the time required for gathering and cross-checking data. In addition, there are trade-offs between reducing the time it takes to produce a report and the

extent of coverage of individual countries. Given the security and sensitivity of this type of data, it may also be possible for some sources to publish with a lag more detailed data than could be published on a more current basis. Nevertheless, some progress on the timeliness issue should be possible.

Table 1. Military Expenditure Data 1/

(In millions of U.S. dollars)

	U.S. ACDA Data				SIPRI Data				IISS Data				GFSY Data			
	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991
Afghanistan	...	...	433	...	...	...	...	...	...	...	...	...	...	...	...	...
Albania	157	157	...	...	...	...	...	...	...	167	160	103	...	...	...	...
Algeria	1,145	1,133	812	730	...	...	...	...	...	854	1,910	660	...	...	...	...
Angola	...	...	...	...	...	...	...	...	...	2,690	...	...	...	...	...	...
Argentina	3,940	3,822	2,979	2,449	3,100	2,000	2,600	...	1,240	791	771	2,720	1,178	718	...	...
Australia	5,640	5,824	6,434	7,400	5,909	6,403	6,732	6,865	5,030	6,170	7,010	7,060	5,662	5,746	6,158	6,808
Austria	1,511	1,482	1,636	1,667	1,344	1,349	1,542	1,551	1,480	1,410	1,540	1,680	1,334	1,357	1,554	1,546
Bahrain	187	196	216	278	187	188	204	196	165	185	202	221	187	196	216	237
Bangladesh	296	302	326	312	313	347	330	301	...	289	327	303	...	...	...	...
Barbados	11	10	...	...	...	...	...	...	...	...	...	...	9	11	...	...
Belgium	4,292	4,350	4,486	4,625	4,097	3,881	4,644	4,772	3,650	2,580	2,890	3,000	3,615	...	...	...
Belize	...	...	...	...	...	...	...	...	9	10	10	...	4	4	5	5
Benin	38	35	35	...	38	33	37	...	38	...	...	20	...	...	...	...
Bhutan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bolivia	166	151	158	117	170	181	180	192	164	179	...	123	76	83	112	118
Botswana	113	110	128	159	50	46	58	58	27	110	131	...	100	107	170	178
Brazil	5,079	5,839	6,617	5,295	4,493	6,665	7,964	...	1,410	1,180	1,040	2,300	4,492	6,679	5,726	3,028
Bulgaria	5,868	5,885	3,887	1,464	...	...	...	...	2,465	2,465	2,010	1,790	...	...	...	...
Burkina Faso	55	...	74	100	54	50	59	...	...	...	76	108	...	...	...	...
Burma	568	788	949	1,280	337	354	379	796	286	334	1,060	398	276	646	858	969
Burundi	28	25	26	28	23	28	27	28	32	...	...	...	...	...	...	...
Cambodia	...	...	...	...	...	...	...	...	...	...	...	43	...	...	...	...
Cameroon	155	162	178	168	262	157	210	202	160	143	191	...	193	148	...	...

Table 1 (continued). Military Expenditure Data 1/

(In millions of U.S. dollars)

	U.S. ACDA Data				SIPRI Data				IISS Data				GFSY Data			
	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991
Canada	10,560	10,960	11,610	11,510	9,897	10,747	11,414	12,104	7,960	9,480	10,194	11,520	8,464	9,337	...	...
Cape Verde	...	...	...	...	...	...	...	...	...	...	...	4	...	...	...	...
Cayman Islands	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
C.A.R.	...	20	21	...	18	17	22	...	22	...	...	...	...	...	...	...
Chad	38	53	59	67	67	49	63	67	78	58	...	...	...	...	...	...
Chile	838	819	938	1,010	1,572	1,672	1,403	1,445	...	646	927	1,000	555	624	665	728
China-																
Mainland	43,870	45,240	50,310	51,040	...	...	...	...	5,860	6,670	11,300	18,790	...	...	...	...
Taiwan	6,712	8,224	9,063	9,748	...	...	...	...	5,910	8,180	8,550	9,290	...	...	...	...
Colombia	558	694	867	1,037	887	1,041	1,129	...	241	374	904	1,180	...	...	...	...
Comoros	...	...	85	...	...	...	...	...	...	...	...	...	...	...	...	...
Congo	...	...	...	...	69	74	92	...	...	...	...	...	...	...	...	...
Costa Rica	21	21	20	20	21	20	22	20	...	63	57	55	22	23	...	...
Cuba	1,350	1,377	1,400	...	...	...	...	...	2,240	1,830	1,690	1,160	...	...	...	...
Cyprus	128	168	209	415	44	54	66	72	125	155	304	285	44	41	53	57
Czechoslovakia	9,131	8,361	4,432	4,610	1,976	1,875	1,398	723	5,360	4,600	1,654	946	...	2,292	1,799	946
Denmark	2,359	2,416	2,535	2,672	2,320	2,184	2,650	2,615	1,970	1,922	2,600	2,610	2,308	2,137	2,600	...
Djibouti	...	...	...	...	...	...	...	...	36	26	31	39	...	...	...	...
Dom. Republic	62	58	70	53	49	55	57	...	...	61	50	35	40	45	40	...
Ecuador	219	168	204	232	174	159	164	170	...	232	251	261	203	194	203	...
Egypt	2,129	1,335	1,083	1,022	4,089	3,105	1,820	1,163	5,730	4,270	1,570	2,230	4,583	2,752	...	...
El Salvador	188	200	179	171	200	224	149	...	...	139	144	142	155	185	121	125
Eq. Guinea	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ethiopia	...	198	1,384	...	680	815	897	...	472	536	1,310	...	735	899	...	...
Fiji	25	30	31	32	24	29	30	34	...	25	26	32	25	29	31	32
Finland	1,776	1,887	1,986	2,454	2,013	2,150	2,530	2,566	1,470	1,570	1,880	2,200	1,618	1,554	1,968	1,942

Table 1 (continued). Military Expenditure Data 1/

(In millions of U.S. dollars)

	U.S. ACDA Data				SIPRI Data				IISS Data				GFSY Data			
	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991
France	36,970	39,060	40,820	42,430	36,105	35,264	42,675	42,391	31,880	28,580	34,790	34,480	27,447	25,799	32,579	...
Gabon	180	146	148	...	134	128	147	...	154	146	...	...	...	...	...	...
Gambia, The	...	1	...	...	...	...	...	...	3	...	...	...	...	...	...	...
Germany, East	12,110	12,770	13,970	...	...	...	...	...	12,330	11,860	...	...	...	...	...	...
Germany, West	36,230	37,820	41,280	39,520	35,097	33,605	42,312	39,881	30,310	27,460	35,610	32,300	30,264	28,973	...	...
Ghana	22	31	35	37	23	30	35	37	...	41	45	...	23	...	...	...
Greece	3,616	3,560	3,832	3,807	3,326	3,097	3,863	3,902	2,630	3,170	3,920	3,980	...	...	...	...
Guatemala	123	126	105	89	122	121	92	104	...	...	72	...	129	131	...	...
Guinea	26	...	33	37	...	...	...	...	...	27	...	...	...	...	...	...
Guinea-Bissau	...	...	...	...	...	...	...	...	...	4	...	...	...	...	...	...
Guyana	10	5	3	3	12	6	5	3	14	...	...	...	...	...	...	...
Haiti	37	48	53	52	30	33	33	...	...	...	17	29	...	...	...	...
Honduras	62	77	55	47	250	412	413	...	138	124	46	...	...	...	...	...
Hungary	4,396	4,064	1,277	1,261	976	809	703	742	975	1,810	1,450	1,240	754	596	622	...
Iceland	0	0	0	0	...	...	...	...	...	...	...	...	...	...	...	...
India	6,944	6,742	7,487	7,189	9,332	8,751	8,819	7,262	9,590	8,940	10,100	8,070	9,514	8,813	8,752	7,150
Indonesia	1,403	1,507	1,609	1,732	1,877	1,908	1,739	1,852	1,320	1,593	1,610	1,550	1,148	1,207	1,413	1,447
Iran	5,854	4,890	5,213	5,647	7,353	6,707	7,049	9,540	8,960	9,900	3,180	5,790	7,848	8,999	10,999	...
Iraq	13,470	11,070	11,890	9,459	12,868	12,868	13,350	12,868	12,870	...	8,610	...	...	...	...	...
Ireland	442	454	564	511	456	430	556	588	458	376	508	513	458	438	599	...
Israel	6,110	6,245	6,940	4,992	3,811	3,847	4,258	4,519	5,710	6,020	6,160	5,790	5,836	5,728	6,742	4,992
Italy	22,240	23,440	23,290	24,340	19,621	19,927	23,376	23,591	13,850	16,690	19,580	19,720	14,148	...	...	...
Ivory Coast	171	129	138	131	122	117	136	...	...	185	...	...	...	...	...	...
Jamaica	29	31	33	25	28	30	31	27	25	28	33	25	...	...	...	...
Japan	25,680	27,910	30,250	32,560	28,521	28,015	28,310	32,136	28,406	28,406	28,122	32,680	...	...	...	...
Jordan	580	501	484	426	689	442	422	427	763	441	571	578	565	368	309	415

Table 1 (continued). Military Expenditure Data 1/

(In millions of U.S. dollars)

	U.S. ACDA Data				SIPRI Data				IISS Data				GFSY Data			
	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991
Kenya	212	180	211	218	222	210	208	191	275	294	...	223	275	195	235	215
Korea, North	5,840	6,000	5,940	4,660	...	...	...	...	4,625	4,154	5,230	5,450	...	...	...	...
Korea, South	8,177	9,423	10,800	10,580	7,865	9,272	9,684	9,821	...	9,886	10,891	10,770	7,202	8,818	9,417	10,762
Kuwait	1,316	2,030	13,820	16,740	1,463	1,491	...	...	1,470	1,540	13,100	16,760	1,341	1,965	...	...
Laos	...	...	...	...	...	...	...	...	...	19	...	...	...	...	...	...
Lebanon	...	...	139	168	26	...	141	108	...	...	140	151	...	...	...	...
Lesotho	...	36	56	...	...	...	...	...	...	32	...	...	17	25	24	23
Liberia	46	...	...	...	27	28	30	36	28	38	...	...	27	...	...	...
Libya	...	3,382	...	2,670	2,040	1,794	1,945	1,770	1,390	1,510	1,820	...	...	...	...	...
Luxembourg	92	86	94	108	86	76	97	106	74	76	100	106	97	53	92	92
Madagascar	33	32	32	30	28	25	27	...	...	...	35	32	...	32	36	67
Malawi	26	28	24	24	24	26	27	...	21	22	...	...	21	...	...	...
Malaysia	803	1,006	1,066	1,651	1,433	1,479	1,540	1,382	...	1,560	1,700	1,720	856	1,019	1,125	1,572
Maldives	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mali	45	44	...	...	60	63	73	...	64	...	...	...	47	...	...	...
Malta	21	23	13	22	...	...	...	...	22	22	21	22	21	20	20	20
Mauritania	...	43	...	...	...	...	...	...	...	...	40	40	...	...	...	...
Mauritius	4	5	8	10	5	5	5	5	...	...	...	...	4	5	8	10
Mexico	1,190	1,029	1,087	1,185	647	680	720	663	...	641	678	...	914	1,073	1,001	...
Mongolia	281	259	146	113	...	...	...	...	268	...	...	...	...	...	...	...
Morocco	1,122	1,237	1,296	1,147	929	987	1,118	1,164	1,136	1,207	1,350	983	783	847	955	...
Mozambique	83	98	93	144	85	95	100	..	...	116	113	114	...	...	...	...
Namibia	...	...	...	...	...	...	...	...	...	84	47	...	...	...	44	66
Nepal	24	27	31	30	56	58	51	43	37	39	38	33	33	33	37	30

Table 1 (continued). Military Expenditure Data 1/

(In millions of U.S. dollars)

	U.S. ACDA Data				SIPRI Data				IISS Data				GFSY Data			
	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991
Netherlands	6,705	7,064	7,135	7,246	6,729	6,399	7,421	7,243	7,310	6,688	7,820	7,550	6,415	6,055	7,430	7,258
Neth. Antilles	...	...	...	...	...	...	...	...	...	...	...	...	0	0	0	0
New Zealand	792	790	796	559	879	827	818	762	807	818	826	786	905	...	...	750
Nicaragua	...	...	...	70	177	...	...	...	142	...	318	225	...	...	...	...
Niger	19	26	...	30	18	17	20	...	18	21	...	22	...	...	...	...
Nigeria	180	118	193	244	280	229	262	235	276	253	284	244	...	...	...	...
Norway	2,895	3,069	3,210	3,288	2,895	2,933	3,395	3,491	3,070	2,970	3,500	3,460	2,942	3,112	3,812	...
Oman	1,350	1,552	1,707	1,450	1,350	1,326	1,352	1,404	1,385	1,360	1,930	1,490	1,350	1,347	1,707	1,450
Pakistan	2,185	2,387	2,829	2,672	2,699	2,652	2,835	2,845	2,380	2,580	2,910	3,230	...	...	...	...
Panama	98	100	73	0	113	124	125	...	...	...	...	75	103	102	73	79
Papau New Guinea	42	44	51	97	...	...	...	...	38	46	50	...	46	53	69	53
Paraguay	70	76	76	107	59	55	49	...	84	61	...	107	...	54	65	...
Peru	...	...	795	506	806	845	768	...	...	707	642	701	...	...	...	...
Philippines	774	912	951	947	520	757	727	679	858	1,280	928	987	796	947	959	947
Poland	15,350	15,480	8,752	7,362	2,063	1,497	1,541	2,201	1,219	3,230	2,540	2,610	...	...	...	...
Portugal	1,648	1,823	2,020	2,115	1,348	1,457	1,875	2,004	1,270	1,250	1,540	1,430	1,019	1,072	1,319	...
Qatar	...	...	...	...	...	...	...	...	...	...	...	934	...	...	...	...
Romania	7,004	6,916	3,869	3,747	809	788	525	157	809	1,980	1,330	1,010	1,929	1,966	1,329	1,053
Rwanda	24	26	27	117	37	38	36	25	37	37	...	117	...	...	...	...
St. Kitts and Nevis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
St. Lucia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
St. Vincent and the Grenadines	...	...	...	...	...	...	...	...	...	...	...	...	3	3	3	...

Table 1 (continued). Military Expenditure Data 1/

(In millions of U.S. dollars)

	U.S. ACDA Data				SIPRI Data				IISS Data				GFSY Data			
	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991
Sao Tome & Principe	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Saudi Arabia	13,600	14,690	23,160	35,510	14,887	14,686	15,244	28,244	13,570	14,690	23,160	35,510	...	...	...	...
Senegal	94	97	106	108	99	89	110	106	100	97	112	110	...	...	...	...
Seychelles	...	...	...	...	...	...	...	...	...	13	...	16	...	...	...	...
Sierra Leone	5	...	5	12	4	4	3	...	...	5	...	...	...	...	5	...
Singapore	1,492	1,612	1,627	2,107	1,321	1,459	1,677	2,107	1,130	1,490	1,700	2,130	1,238	1,455	1,881	2,039
Solomon Islands	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Somalia	...	...	...	...	21	14	0	...	46	18	...	...	...	...	...	...
South Africa	3,878	4,262	4,411	3,839	4,028	4,149	4,361	3,822	3,290	3,600	4,320	3,850	...	...	...	...
Soviet Union	319,000	303,000	292,000	260,000	...	...	...	...	32,790	119,440	128,790	133,700	...	...	...	...
Spain	8,705	9,397	9,126	9,115	7,171	7,775	9,053	9,035	6,660	6,910	8,540	8,260	6,297	6,887	7,344	...
Sri Lanka	322	323	398	432	297	234	382	419	321	351	439	450	149	127	168	249
Sudan	1,157	1,385	1,059	2,157	215	407	667	829	478	460	320	...	...	...	...	...
Suriname	53	48	77	75	...	...	...	...	...	39	91	75	...	...	...	...
Swaziland	8	9	15	12	10	9	10	9	...	...	...	...	9	8	...	...
Sweden	5,666	5,656	6,062	6,432	4,442	4,560	5,468	5,542	4,430	4,460	5,512	6,460	4,975	4,872	5,954	6,432
Switzerland	4,088	4,486	4,826	4,528	3,047	2,860	3,704	3,651	3,430	3,190	4,100	3,800	...	...	...	...
Syria	1,939	2,769	3,479	4,526	1,482	2,306	3,228	4,519	1,600	1,510	1,480	2,730	1,302	1,484	1,642	...
Tanzania	86	101	124	...	164	150	113	...	...	110	...	...	...	...	...	...
Thailand	1,810	1,937	2,130	2,438	2,161	2,225	2,539	2,932	1,740	1,801	2,040	2,400	1,739	1,843	2,082	2,438
Togo	...	48	48	47	44	41	48	...	...	...	50	47	...	...	...	...
Tonga	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Trinidad & Tobago	...	67	...	29	...	...	...	...	...	59	...	...	...	...	...	...
Tunisia	253	291	389	433	536	485	398	433	545	482	405	436	233	234	248	242

Table 1 (concluded). Military Expenditure Data 1/

(In millions of U.S. dollars)

	U.S. ACDA Data				SIPRI Data				IISS Data				GFSY Data			
	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991
Turkey	3,174	3,803	4,985	5,671	2,664	3,374	5,315	5,007	1,700	2,100	2,980	3,590	1,572	2,125	3,054	3,304
Uganda	31	40	56	78	80	36	25	22	142	84	74	73	...	...	...	...
U.A.E.	1,587	1,587	2,590	4,900	1,580	1,464	1,586	1,634	1,590	1,470	2,590	4,900	1,587	1,587	...	...
U.K.	36,450	38,480	40,660	48,200	34,629	34,020	38,642	42,358	30,960	31,270	38,910	40,430	35,206	34,370	40,887	44,644
U.S.	293,100	304,100	303,200	280,300	295,841	304,607	306,026	304,558	289,000	294,900	289,760	287,450	278,440	293,540	294,990	308,860
Uruguay	167	196	211	198	167	179	199	...	...	...	180	241	161	188	199	180
Vanuatu	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Venezuela	887	899	927	1,900	1,213	934	968	...	...	407	574	1,890	...	...	...	...
Vietnam	...	...	723	720	...	...	...	...	2,540	2,320	...	1,870	...	...	...	...
Yemen	823	957	1,010	1,061	588	700	617	...	786	...	1,000	1,060	...	...	...	...
Yugoslavia	3,797	2,972	4,210	...	2,080	2,125	3,518	3,137	2,080	2,130	3,520	3,480	2,254	2,126	...	...
Zaire	229	...	...	...	68	116	39	2	67	...	...	...	...	...	...	...
Zambia	82	94	80	...	87	69	74	...	...	119	95	...	...	...	...	...
Zimbabwe	290	316	285	316	400	380	327	292	400	387	361	334	386	387	...	...
Above total	1,047,142	1,062,100	1,080,708	1,031,661	620,333	628,189	669,052	671,805	642,523	744,628	789,249	825,727	496,698	496,887	472,507	423,556
Reported																
total 2/	1,058,400	1,069,600	1,086,100	1,038,100												

Sources: ACDA, World Military Expenditures and Arms Transfers, 1990; SIPRI, Yearbook, 1992; IISS, The Military Balance, 1993-94, 1992-93, 1990-91, 1988-89; and GFS, Yearbook, 1993.

1/ Where necessary, figures were converted from local currency to current U.S. dollars using period average exchange rates from IMF, International Financial Statistics Yearbook, 1993. IISS reports either defense expenditure or defense budget data.

2/ Includes rough approximations of military expenditures for countries for which precise estimates were not available.

Table 2. Trends in Military Spending By Region
 (Percentage changes in current dollar expenditures)

	1989	1990	1991
World Total			
ACDA	1.3	1.8	-2.6
GFS	3.4	5.6	3.5
IISS	15.5	8.4	4.7
SIPRI	0.9	7.1	2.3
Africa <u>1/</u>			
ACDA	5.6	23.8	-4.2
GFS	4.7	26.5	3.4
IISS	4.3	27.2	-9.4
SIPRI	-2.7	5.7	12.7
Asia			
ACDA	6.6	9.7	3.4
GFS	5.9	8.1	5.4
IISS	3.6	12.1	12.0
SIPRI	2.1	3.3	6.5
Western Europe			
ACDA	5.2	5.6	4.1
GFS	-2.6	21.3	3.7
IISS	-2.4	22.8	-0.7
SIPRI	-1.2	20.2	0.7
Eastern Europe and FSU <u>2/</u>			
ACDA	-4.6	-7.5	-11.4
GFS	-5.0	-22.8	-36.1
IISS	154.2	4.2	2.5
SIPRI	-10.3	-8.3	-9.4
Middle East and North Africa			
ACDA	4.9	60.1	33.0
GFS	0.0	19.3	-5.5
IISS	4.9	33.1	38.2
SIPRI	-3.7	7.3	13.2

Table 2 (concluded). Trends in Military Spending By Region

(Percentage changes in current dollar expenditures)

	1989	1990	1991
Western Hemisphere			
ACDA	3.8	0.0	-7.2
GFS	6.1	0.1	3.7
IISS	4.3	-1.2	1.1
SIPRI	3.4	1.1	-0.0

Source: Data derived from Table 1.

1/ GFS and IISS include military expenditure data for very few African countries. This limits the direct comparability between these and other sources.

2/ The estimates for Eastern Europe and the former Soviet Union are based on military expenditure data for as little as two, and no more than eight, countries, and thus need to be interpreted with caution.

Table 3. Military Expenditure as Percent of GDP

	U.S. ACDA Data				SIPRI Data				Military Balance Data				GFSY Data			
	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991
Afghanistan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Albania	5.1	4.1	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Algeria	3.2	2.9	2.0	1.8	...	...	...	...	...	...	...	...	...	...	...	...
Angola	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Argentina	3.5	3.5	2.6	1.9	2.46	2.61	1.84	...	0.98	1.03	0.55	1.43	0.93	0.94	...	...
Australia	2.3	2.2	2.3	2.6	2.36	2.26	2.28	2.45	1.24	1.37	1.45	1.44	2.26	2.03	2.09	2.29
Austria	1.2	1.1	1.1	1.0	1.14	1.00	0.98	0.95	1.25	1.04	0.97	1.02	1.13	1.00	0.98	0.94
Bahrain	6.4	5.9	6.1	7.7	5.22	4.81	5.23	...	4.60	4.73	5.17	...	5.22	5.02	5.53	...
Bangladesh	1.7	1.6	1.5	1.4	1.58	1.60	1.45	1.26	...	1.33	1.44	1.28	...	...	...	...
Barbados	0.7	0.6	...	...	...	...	...	...	...	...	...	...	0.60	0.62	...	...
Belgium	2.7	2.5	2.4	2.4	2.70	2.53	2.42	2.42	2.41	1.68	1.50	1.52	2.39	...	...	...
Belize	...	...	...	...	...	...	...	...	2.87	2.77	2.55	...	1.28	1.11	1.27	1.19
Benin	2.4	2.2	2.0	...	1.22	1.69	2.17	...	1.22	...	...	0.8	...	...	...	...
Bhutan	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Bolivia	4.3	3.6	3.5	2.4	3.25	3.31	3.26	3.17	3.13	3.27	...	2.03	1.46	1.52	2.03	1.95
Botswana	5.6	4.5	4.5	4.9	1.94	1.60	1.63	1.68	1.07	3.82	3.71	...	3.92	3.72	4.81	5.16
Brazil	1.4	1.5	1.7	1.3	4.54	1.57	1.65	...	0.44	0.26	0.22	0.57	1.39	1.49	1.19	0.75
Bulgaria	12.2	11.9	8.6	4.0	...	...	...	...	...	...	...	...	...	...	...	...
Burkina Faso	2.5	...	3.0	3.6	...	...	...	...	...	...	...	...	...	...	...	...
Burma	2.9	3.6	3.9	5.8	2.90	2.11	1.67	...	2.46	1.99	4.68	...	2.37	3.85	3.78	...
Burundi	3.1	2.6	2.5	2.4	2.09	2.46	2.91	3.01	2.94	...	...	...	...	...	...	...
Cambodia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cameroon	1.4	1.5	1.6	1.6	2.17	1.46	1.75	1.79	1.33	1.33	1.59	...	1.60	1.38	...	...

Table 3 (continued). Military Expenditure as Percent of GDP

	U.S. ACDA Data				SIPRI Data				Military Balance Data				GFSY Data			
	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991
Canada	2.1	2.1	2.1	2.0	2.01	1.96	1.98	2.05	1.62	1.72	1.77	1.95	1.72	1.70	...	...
Cape Verde	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cayman Islands	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
C.A.R.	...	1.7	1.7	...	1.68	1.61	1.70	...	2.00	...	...	...	...	...	...	...
Chad	3.8	4.9	5.2	5.2	6.43	4.77	5.14	5.16	7.46	5.69	...	...	...	...	...	...
Chile	4.0	3.4	3.6	3.4	6.51	5.96	4.65	4.25	...	2.30	3.07	2.94	2.30	2.22	2.20	2.14
China-Mainland	3.9	3.6	3.7	3.3	...	...	...	...	1.56	1.58	3.06	5.06	...	...	...	...
Taiwan	4.9	5.4	5.4	5.2	...	...	...	...	...	...	...	...	...	...	...	...
Colombia	1.7	2.0	2.3	2.6	2.26	2.63	2.80	...	0.61	0.95	2.24	2.05	...	...	...	...
Comoros	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Congo	...	...	...	...	3.10	3.09	3.23	...	...	...	...	...	...	...	...	...
Costa Rica	1.9	1.6	1.5	1.4	0.45	0.39	0.39	0.35	...	1.21	1.00	0.98	0.47	0.44	...	...
Cuba	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Cyprus	2.9	3.4	3.8	7.1	1.02	1.19	1.18	1.24	2.92	3.39	5.46	4.92	1.02	0.89	0.95	0.99
Czechoslovakia	7.8	6.8	3.6	2.6	3.83	3.72	3.09	2.18	10.40	9.12	3.66	2.85	...	4.55	3.98	2.85
Denmark	2.2	2.2	2.1	2.1	0.03	2.08	2.04	2.01	0.03	1.83	2.00	2.00	0.03	2.04	2.00	...
Djibouti	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Dominican Rep.	1.0	0.9	1.0	0.8	1.05	0.82	0.80	...	...	0.91	0.70	0.48	0.85	0.67	0.56	...
Ecuador	2.5	1.8	2.1	2.1	1.74	1.62	1.53	1.46	...	2.36	2.35	2.24	2.03	1.97	1.90	...
Egypt	8.6	4.9	3.8	3.4	4.14	3.95	3.51	3.09	5.80	5.43	3.03	5.93	4.64	3.50	...	...
El Salvador	4.0	4.0	3.3	2.9	3.66	3.47	2.92	...	...	2.16	2.82	2.40	2.84	2.87	2.37	2.11
Equat. Guinea	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ethiopia	...	12.9	21.9	...	11.59	13.71	14.24	...	8.04	9.03	20.80	...	12.53	15.13	...	...
Fiji	2.3	2.4	2.2	2.2	2.20	2.31	2.48	...	...	2.00	2.09	...	2.22	2.32	2.49	...
Finland	1.6	1.6	1.6	2.0	1.94	1.89	1.88	2.12	1.42	1.38	1.40	1.82	1.56	1.37	1.46	1.60
France	3.8	3.7	3.6	3.6	3.75	3.66	3.57	3.54	3.31	2.97	2.91	2.88	2.85	2.68	2.73	...

Table 3 (continued). Military Expenditure as Percent of GDP

	U.S. ACDA Data				SIPRI Data				Military Balance Data				GFSY Data			
	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991
Gabon	5.2	3.9	3.6	...	4.14	3.21	2.91	...	4.74	3.66	...	...	...	...	...	...
Gambia, The		0.5	...	...	...	...	...	...	1.13	...	...	...	...	...	...	...
Germany, East	8.7	8.4	8.8	...	...	...	...	...	...	...	...	...	...	...	...	...
Germany, West	2.9	2.8	2.8	2.5	2.94	2.84	2.83	2.53	2.54	2.32	2.38	2.05	2.54	2.45	...	...
Ghana	0.4	0.6	0.6	0.6	0.44	0.58	0.57	0.53	...	0.81	0.74	...	0.44	...	...	...
Greece	6.2	5.7	5.8	5.5	6.28	5.76	5.83	5.58	4.96	5.90	5.72	5.69	...	...	...	...
Guatemala	1.7	1.6	1.2	1.0	1.55	1.44	1.20	1.12	...	...	0.94	...	1.64	1.55	...	...
Guinea	1.2	...	1.3	1.3	...	...	...	...	...	...	...	...	...	...	...	...
Guinea-Bissau	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Guyana	4.3	1.9	1.3	1.0	2.80	1.67	1.25	0.91	3.48	...	...	...	...	...	...	...
Haiti	1.6	1.9	2.1	2.0	1.49	1.49	1.31	...	...	...	0.67	...	...	...	...	...
Honduras	2.7	3.1	2.1	1.7	7.83	11.40	9.46	...	4.32	3.44	1.05	...	...	...	...	...
Hungary	6.9	6.3	2.0	2.1	3.49	2.76	2.14	...	3.49	6.18	4.41	...	2.70	2.03	1.89	...
Iceland	0.0	0.0	0.0	0.0	...	...	...	...	...	...	...	...	...	...	...	...
India	3.4	3.0	3.0	2.7	3.41	3.23	3.02	2.83	3.51	3.30	3.46	3.15	3.48	3.25	2.99	2.79
Indonesia	1.8	1.7	1.6	1.6	2.23	2.02	1.64	1.60	1.57	1.69	1.52	1.34	1.36	1.28	1.33	1.25
Iran	8.3	6.4	5.9	5.7	2.26	1.74	1.31	1.34	2.83	2.70	0.63	0.84	2.48	2.45	2.18	...
Iraq	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Ireland	1.6	1.5	1.6	1.3	1.33	1.21	1.25	1.31	1.34	1.06	1.14	1.14	1.34	1.24	1.35	...
Israel	13.0	12.6	12.6	8.1	8.67	8.61	8.16	7.59	13.00	13.47	11.80	9.73	13.28	12.82	12.92	8.39
Italy	2.4	2.3	2.2	2.1	2.34	2.29	2.13	2.05	1.65	1.92	1.79	1.71	1.69	...	...	...
Ivory Coast	2.1	1.6	1.6	1.5	...	...	...	...	...	...	...	...	...	...	...	...
Jamaica	1.1	1.0	1.0	0.7	0.80	0.74	1.18	1.09	0.71	0.68	1.24	1.00	...	...	...	...
Japan	1.0	1.0	1.0	1.0	0.98	0.98	0.97	0.96	0.88	0.99	0.96	0.98	...	...	...	...
Jordan	15.1	13.6	13.5	11.2	11.45	10.49	10.69	10.37	12.68	10.47	14.48	14.02	9.39	8.74	7.83	10.06
Kenya	3.4	2.6	2.8	2.8	2.61	2.52	2.44	2.38	3.23	3.52	...	2.78	3.23	2.34	2.75	2.68
Korea, North	20.0	20.0	20.0	20.0	...	...	...	...	...	...	...	...	...	...	...	...

Table 3 (continued). Military Expenditure as Percent of GDP

	U.S. ACDA Data				SIPRI Data				Military Balance Data				GFSY Data			
	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991
Korea, South	4.2	4.3	4.3	3.8	4.50	4.35	3.97	3.46	...	4.64	4.46	3.79	4.12	4.14	3.86	3.79
Kuwait	4.9	6.2	53.1	102.2	7.15	6.14	...	...	7.19	6.35	...	...	6.56	8.09	...	...
Laos	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Lebanon	...	...	4.2	3.5	...	...	...	...	...	...	...	...	...	...	...	...
Lesotho	...	3.8	5.4	...	...	...	...	...	...	6.37	...	...	4.03	5.07	4.22	3.90
Liberia	4.4	...	...	...	2.79	2.86	...	...	2.86	3.82	...	...	2.70	...	...	...
Libya	...	14.3	...	8.7	...	...	...	...	...	...	...	...	...	...	...	...
Luxembourg	0.9	0.8	0.8	0.8	1.26	1.06	1.08	1.13	1.09	1.06	1.12	1.13	1.43	0.73	1.03	0.99
Madagascar	1.5	1.4	1.2	1.2	1.14	1.00	0.87	...	...	...	1.14	1.20	...	1.28	1.16	2.50
Malawi	1.6	1.6	1.3	1.1	1.80	1.63	1.48	...	1.55	1.38	...	...	1.55	...	...	...
Malaysia	2.7	2.9	2.7	3.7	4.13	3.91	3.60	2.93	...	4.12	3.98	3.65	2.47	2.69	2.63	3.34
Maldives	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Mali	2.3	2.0	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Malta	1.1	1.1	0.8	0.8	...	...	...	...	1.22	1.12	0.91	...	1.12	1.02	0.84	...
Mauritania	...	4.3	...	...	...	...	...	...	...	...	3.83	3.48	...	...	...	...
Mauritius	0.2	0.2	0.3	0.4	0.23	0.25	0.21	0.19	...	...	...	...	0.19	0.23	0.31	0.36
Mexico	0.6	0.4	0.4	0.4	0.38	0.33	0.29	0.23	...	0.31	0.28	...	0.53	0.52	0.41	...
Mongolia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Morocco	5.4	5.5	5.3	4.3	4.20	4.32	4.31	4.21	5.14	5.28	5.20	3.55	3.54	3.71	3.68	...
Mozambique	8.9	9.9	9.2	13.0	7.65	8.28	7.56	...	...	10.12	8.58	10.79	...	...	...	...
Namibia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Nepal	1.1	1.1	1.2	1.1	1.78	1.85	1.54	1.41	1.18	1.26	1.14	1.07	1.05	1.07	1.10	0.97
Netherlands	2.9	2.8	2.6	2.5	2.91	2.80	2.62	2.49	3.16	2.93	2.63	2.60	2.77	2.65	2.62	2.50
Neth. Antilles	...	...	...	...	...	...	...	...	...	...	...	...	0	0	0	0
New Zealand	2.2	2.1	2.0	1.4	2.05	1.97	1.88	1.80	1.88	1.95	1.90	1.85	2.11	...	...	1.77

Table 3 (continued). Military Expenditure as Percent of GDP

	U.S. ACDA Data				SIPRI Data				Military Balance Data				GFSY Data			
	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991
Nicaragua	...	...	...	4.0	15.35	...	...	...	12.32	...	19.26	14.50	...	...	...	...
Niger	1.0	1.3	...	1.3	0.79	0.79	0.81	...	0.77	0.97	...	...	...	...	...	...
Nigeria	0.8	0.5	0.7	0.8	0.87	0.75	0.81	0.81	0.86	0.83	0.88	0.84	...	...	...	...
Norway	3.3	3.4	3.3	3.2	3.23	3.26	3.22	3.30	3.43	3.30	3.32	3.27	3.29	3.46	3.61	...
Oman	20.6	21.1	18.1	15.8	17.74	15.79	12.84	13.78	18.20	16.19	18.32	14.62	17.74	16.03	16.20	14.23
Pakistan	6.5	6.5	7.1	6.1	1.33	7.54	7.54	7.18	1.17	7.33	7.74	8.16	...	...	...	...
Panama	2.5	2.5	1.6	0.0	2.45	2.67	2.50	...	...	...	...	0.14	2.23	2.20	1.46	0.14
Papua New Guinea	1.4	1.4	1.6	3.0	...	...	...	...	1.04	1.29	1.55	...	1.27	1.50	2.13	1.39
Paraguay	1.4	1.4	1.3	1.7	0.98	1.26	0.89	...	1.40	1.39	...	1.88	...	1.24	1.18	...
Peru	...	...	1.8	1.1	2.41	2.04	2.21	...	...	1.71	1.85	1.56	...	...	...	...
Philippines	2.1	2.3	2.2	2.1	1.37	2.35	1.65	1.50	2.26	3.98	2.11	2.18	2.10	2.94	2.18	2.09
Poland	9.0	8.9	5.4	4.6	3.00	1.82	2.47	3.64	1.77	3.93	4.08	4.31	...	...	...	...
Portugal	3.3	3.3	3.3	3.3	3.23	3.22	3.14	2.92	3.05	2.76	2.58	2.08	2.44	2.37	2.21	...
Qatar	...	...	...	...	...	...	...	...	...	...	...	14.00	...	...	...	...
Romania	6.2	6.1	3.7	4.0	1.35	1.47	1.37	0.55	1.35	3.69	3.48	3.51	3.21	3.67	3.47	3.66
Rwanda	1.6	1.7	1.7	7.5	1.52	1.55	1.55	1.48	1.52	1.53	...	6.88	...	...	...	...
St. Kitts and Nevis	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
St. Lucia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
St. Vincent & Grenadines	...	...	...	...	...	...	...	...	...	...	...	...	1.87	1.77	1.66	...
Sao Tome & Principe	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Saudi Arabia	15.8	15.8	21.2	30.1	19.55	17.70	14.56	24.49	17.82	17.70	22.13	30.79	...	...	...	...
Senegal	2.1	2.0	2.0	1.9	2.00	1.93	...	...	2.00	2.09	...	...	...	...	...	...

Table 3 (continued). Military Expenditure as Percent of GDP

	U.S. ACDA Data				SIPRI Data				Military Balance Data				GFSY Data			
	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991
Seychelles	...	...	...	...	...	...	...	...	...	4.12	...	4.25	...	...	...	...
Sierra Leone	0.7	...	1.0	2.3	0.51	0.68	0.78	...	...	0.84	...	...	...	...	1.26	...
Singapore	5.3	5.0	4.5	5.2	5.32	5.00	4.79	5.24	4.55	5.11	4.86	5.30	4.98	4.99	5.37	5.07
Solomon Islands	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Somalia	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
South Africa	4.3	4.4	4.4	3.7	4.60	4.65	4.27	3.54	3.76	4.04	4.23	3.56	...	...	...	...
Soviet Union	12.7	11.5	11.0	10.3	...	...	...	...	...	...	...	...	...	...	...	...
Spain	2.1	2.1	1.9	1.7	2.08	2.05	1.84	1.71	1.93	1.82	1.74	1.57	1.83	1.81	1.49	...
Sri Lanka	4.6	4.3	4.8	4.8	4.25	3.35	4.76	4.65	4.60	5.02	5.47	5.00	2.13	1.82	2.09	2.77
Sudan	5.2	5.5	4.0	7.7	1.16	1.42	3.11	2.46	2.58	1.60	1.49	...	...	...	...	...
Suriname	3.1	2.6	4.0	3.8	...	...	...	...	...	2.57	5.30	...	...	...	...	...
Swaziland	1.2	1.4	1.9	1.4	1.55	1.41	1.24	...	...	...	...	...	1.41	...	...	...
Sweden	2.8	2.6	2.7	2.8	2.44	2.39	2.38	2.33	2.44	2.33	2.40	2.72	2.73	2.55	2.59	2.70
Switzerland	2.0	2.0	2.1	1.9	1.66	1.61	1.64	1.58	1.87	1.80	1.81	1.65	...	...	...	...
Syria	10.1	14.8	15.4	17.9	8.94	12.39	13.50	16.60	9.65	8.11	6.19	10.03	7.85	7.97	6.87	...
Tanzania	4.2	4.5	5.3	...	4.91	5.31	4.44	...	...	3.89	...	...	...	...	...	...
Thailand	3.0	2.7	2.6	2.7	3.63	3.22	3.20	...	2.92	2.61	2.57	...	2.92	2.67	2.62	...
Togo	...	3.3	3.1	3.0	...	...	...	...	...	...	...	...	...	...	...	...
Tonga	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Trinidad & Tobago	...	1.5	...	0.6	...	...	...	...	...	1.36	...	...	...	...	...	...
Tunisia	2.7	2.8	3.3	3.4	5.30	4.76	3.18	3.62	5.39	4.74	3.24	3.65	2.30	2.30	1.98	2.03
Turkey	3.9	4.4	5.0	5.4	3.76	4.20	4.83	...	2.40	2.61	2.71	...	2.22	2.65	2.77	...
Uganda	1.4	1.6	2.0	2.6	1.43	0.72	0.73	0.81	2.53	1.69	2.17	2.67	...	...	...	...
U.A.E.	6.5	5.7	8.1	15.6	7.17	5.32	4.65	4.76	7.21	5.34	7.59	14.28	7.20	5.77	...	...
U.K.	4.1	4.1	4.1	4.3	4.12	4.03	3.93	4.17	3.69	3.70	3.96	3.98	4.19	4.07	4.16	4.40

Table 3 (concluded). Military Expenditure as Percent of GDP

	U.S. ACDA Data				SIPRI Data				Military Balance Data				GFSY Data			
	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991	1988	1989	1990	1991
United States	6.0	5.8	5.5	4.9	6.04	5.80	5.54	5.36	5.90	5.62	5.25	5.06	5.68	5.59	5.34	5.44
Uruguay	2.2	2.5	2.5	2.1	2.20	2.24	2.38	...	...	...	2.15	2.46	2.13	2.36	2.38	1.83
Vanuatu	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...
Venezuela	2.1	2.3	2.0	3.6	2.01	2.18	1.99	...	...	0.95	1.18	3.54	...	...	...	...
Vietnam	...	...	5.2	4.8	...	...	...	...	...	...	...	...	...	...	...	...
Yemen	8.3	9.9	13.8	14.4	...	...	...	...	...	...	...	...	...	...	...	...
Yugoslavia	3.8	2.8	4.0	...	3.41	2.17	...	...	3.41	2.17	...	...	3.69	2.17	...	...
Zaire	2.8	...	...	...	0.77	1.29	0.45	0.02	0.75	...	...	...	...	...	...	...
Zambia	2.7	2.8	2.4	...	2.39	1.49	1.90	...	...	2.56	2.43	...	...	...	...	...
Zimbabwe	6.3	6.3	5.4	5.5	...	...	...	...	...	...	...	...	...	...	...	...

Source: ACDA, World Military Expenditures and Arms Transfers, 1990; SIPRI, Yearbook, 1992; IISS, The Military Balance, 1993-1994, 1992-1993, 1991-1992, 1990-1991, 1988-1989; and GFS, Yearbook, 1993. Where available, defense expenditure, rather than defense budget, is used. Where GDP data were not provided in the source, GDP was taken from IFS, Yearbook, 1993. ACDA data is military expenditure as percent of GNP, rather than GDP.

Table 4. Military Spending Relative to GDP by Level of Development

(Military Expenditure/GDP Ratios)

	1988	1989	1990	1991
World Total				
ACDA	4.08	4.15	4.46	4.92
GFS	3.16	3.18	2.99	3.11
IISS	3.71	3.51	3.89	4.05
SIPRI	3.82	3.28	3.13	3.31
Industrial Countries				
ACDA	2.85	2.75	2.70	2.67
GFS	2.47	2.51	2.60	2.88
IISS	2.45	2.36	2.45	2.44
SIPRI	2.73	2.71	2.65	2.65
Eastern Europe				
ACDA	8.41	7.84	5.89	4.60
GFS	3.20	3.10	3.12	3.26
IISS	4.08	5.02	3.91	3.56
SIPRI	3.02	2.39	2.27	1.59
Developing Countries				
ACDA	3.98	4.17	4.81	5.60
GFS	3.45	3.45	3.14	3.19
IISS	4.22	3.77	4.46	4.84
SIPRI	4.21	3.53	3.34	3.82
Asian Developing				
ACDA	3.31	3.32	3.38	3.42
GFS	2.46	2.56	2.55	2.48
IISS	2.45	3.09	3.43	3.78
SIPRI	2.90	3.23	3.17	3.17
Middle East Developing				
ACDA	9.65	9.98	13.91	18.82
GFS	7.30	7.04	6.91	8.42
IISS	8.95	8.28	9.27	12.40
SIPRI	8.45	8.03	7.69	10.02

Table 4 (concluded). Military Spending Relative to GDP
by Level of Development

(Military Expenditure/GDP Ratios)

	1988	1989	1990	1991
North Africa Developing				
ACDA	4.98	6.08	3.60	4.32
GFS	3.49	3.17	2.83	2.03
IISS	5.44	5.15	3.82	4.38
SIPRI	4.54	4.34	3.67	3.64
Sub-Saharan Africa Developing				
ACDA	2.87	3.23	3.46	3.30
GFS	3.06	3.63	2.06	2.67
IISS	2.70	3.21	4.30	3.73
SIPRI	2.60	2.60	2.55	1.83
Western Hemisphere Developing				
ACDA	2.34	2.12	1.95	1.76
GFS	1.45	1.43	1.43	1.28
IISS	3.18	1.60	2.58	2.51
SIPRI	3.15	2.42	2.23	1.57

Source: Data derived from Tables 1 and 2.

Table 5. Arms Exports
(In millions of U.S. dollars)

	1987	1988	1989	1990	1991
I. <u>In current prices</u>					
A. CRS reported exports	<u>42,156</u>	<u>40,358</u>	<u>33,274</u>	<u>29,827</u>	<u>19,833</u>
Plus U.S. commercial exports <u>1/</u>	2,402	3,373	2,538	1,555	1,346
A1. CRS adjusted exports	<u>44,558</u>	<u>43,731</u>	<u>35,812</u>	<u>31,382</u>	<u>21,179</u>
B. ACDA reported exports	<u>58,360</u>	<u>54,610</u>	<u>50,060</u>	<u>38,250</u>	<u>25,530</u>
Less ACDA imports by:	<u>15,255</u>	<u>15,165</u>	<u>16,245</u>	<u>10,015</u>	<u>7,255</u>
Industrial countries <u>2/</u>	10,050	11,175	12,975	8,390	7,035
Eastern Europe and FSU <u>3/</u>	5,205	3,990	3,270	1,625	220
ACDA adjusted to CRS country coverage	43,105	39,445	33,815	28,235	18,275
plus U.S. construction and other services <u>4/</u>	2,990	2,870	2,560	2,920	3,380
B1. ACDA adjusted exports	<u>46,095</u>	<u>42,315</u>	<u>36,375</u>	<u>31,155</u>	<u>21,655</u>
II. <u>In constant 1990 prices</u>					
C. SIPRI reported exports	45,870	39,317	38,228	29,004	22,114
D. ACDA exports <u>5/</u>	66,065	59,546	52,229	38,250	24,547
E. CRS exports <u>5/</u>	46,798	43,391	34,346	29,827	18,792

Source: CRS, Conventional Arms Transfers to the Third World, 1993; ACDA, World Military Expenditures and Arms Transfers, 1991-92; SIPRI Yearbook, 1992.

1/ U.S. fiscal year basis, as reported by CRS.

2/ Western Europe, United States, Canada, Australia, New Zealand, Japan.

3/ Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Romania, and Yugoslavia, Soviet Union/Russia.

4/ U.S. Foreign Military Sales deliveries of military construction and other services; fiscal year data as reported by ACDA.

5/ Converted to constant 1990 prices using deflators provided in the respective publication.

Table 6. Arms Exports of Major Suppliers

(In millions of U.S. dollars; constant 1990 prices) 1/

	1987	1988	1989	1990	1991	1992
<u>SIPRI</u>						
United States	13,691	11,867	11,969	11,234	11,195	...
USSR/Russia	17,745	15,115	14,887	9,663	3,930	...
France	3,232	2,374	2,861	1,950	804	...
United Kingdom	2,171	1,690	2,661	1,575	999	...
China	2,917	1,930	929	954	1,127	...
Germany, FR	784	1,309	780	1,226	2,015	...
Italy	599	732	225	149	172	...
<u>ACDA</u>						
United States	16,076	12,429	14,083	9,900	9,231	...
USSR/Russia	24,793	23,659	20,655	14,200	6,346	...
France	3,170	1,853	1,982	3,800	1,058	...
United Kingdom	5,434	5,124	4,903	4,300	3,558	...
China	2,377	3,162	2,399	1,400	889	...
Germany, FR	1,698	1,309	1,252	1,000	1,250	...
Italy	651	458	146	100	96	...
<u>CRS 2/</u>						
United States	7,611	4,900	3,689	5,227	5,432	7,074
USSR/Russia	21,426	21,503	17,960	12,800	5,874	2,135
France	2,442	1,075	1,238	3,800	1,137	371
United Kingdom	3,996	3,871	4,129	3,700	3,127	464
China	2,331	3,118	2,271	1,400	1,042	557
Germany	666	645	413	300	853	93
Italy	444	322	206	100	95	0

Sources: SIPRI, Yearbook, 1992; ACDA, World Military Expenditures and Arms Transfers, 1991-92; and CRS, Conventional Arms Transfers to the Third World, 1993.

1/ The ACDA and CRS data are converted to constant 1990 prices using deflators provided in the respective publications.

2/ Exports to "Third World" only.

Table 7. Arms Imports: U.S. Arms Control
and Disarmament Agency

(In millions of current U.S. dollars)

	1987	1988	1989	1990	1991	<u>Total</u> 1987-91
Afghanistan	1,400	2,600	3,800	3,500	1,900	13,200
Albania	--	--	--	--	--	--
Algeria	700	825	600	290	100	2,515
Angola	1,700	1,600	750	490	30	4,570
Argentina	140	290	50	90	10	580
Australia	725	1,100	775	310	210	3,120
Austria	20	80	110	10	10	230
Bahrain	370	30	60	270	50	780
Bangladesh	50	50	110	30	40	280
Barbados	20	--	--	--	--	20
Belgium	160	290	230	220	210	1,110
Benin	--	10	--	5	--	15
Bolivia	--	10	10	--	10	30
Botswana	--	20	20	0	5	45
Brazil	160	340	170	70	20	760
Bulgaria	700	400	290	575	--	1,965
Burkina Faso	--	10	10	10	--	30
Burma	20	20	20	110	370	540
Burundi	20	10	10	5	5	50
Cambodia	460	240	490	230	40	1,460
Cameroon	10	5	5	--	--	20
Canada	170	160	200	120	200	850
Cape Verde	5	5	5	5	--	20
C.A.R.	--	--	--	--	--	--
Chad	100	50	30	40	10	230
Chile	120	90	120	210	70	610
China-Mainland	625	300	250	180	240	1,595
Taiwan	1,300	1,100	525	575	450	3,950
Colombia	10	70	240	80	60	460
Congo	10	20	--	--	--	30
Costa Rica	--	--	--	--	--	--
Cuba	1,800	1,700	1,200	1,400	525	6,625
Cyprus	90	10	40	--	--	140
Czechoslovakia	925	210	460	280	50	1,925
Denmark	110	180	120	40	50	500
Dominican Republic	5	5	10	5	0	25
Ecuador	90	40	30	10	10	180
Egypt	1,700	750	700	550	525	4,225
El Salvador	50	60	70	60	50	290
Equatorial Guinea	--	--	10	--	--	10

Table 7 (continued). Arms Imports: U.S. Arms Control
and Disarmament Agency

(In millions of current U.S. dollars)

	1987	1988	1989	1990	1991	<u>Total</u> 1987-91
Ethiopia	1,000	700	975	320	80	3,075
Fiji	--	--	--	--	--	--
Finland	200	80	20	10	5	315
France	290	190	230	150	130	990
Gabon	--	20	20	--	--	40
Gambia, The	10	10	--	--	--	20
Germany, East <u>1/</u>	310	1,000	825	80	...	2,215
Germany, West <u>1/</u>	725	950	1,200	600	440	3,915
Ghana	20	20	30	--	--	70
Greece	310	470	2,000	120	130	3,030
Guatemala	5	10	10	10	--	35
Guinea	70	20	10	20	5	125
Guinea-Bissau	20	30	10	5	5	70
Guyana	--	--	20	--	--	20
Haiti	5	--	--	--	--	5
Honduras	60	40	30	20	20	170
Hungary	400	120	30	--	--	550
Iceland	--	--	--	--	--	--
India	3,000	3,700	3,900	1,700	800	13,100
Indonesia	250	260	150	210	70	940
Iran	2,000	2,500	1,300	1,400	1,600	8,800
Iraq	5,900	5,400	2,300	2,800	--	16,400
Ireland	20	20	5	5	--	50
Israel	1,800	1,200	1,100	460	460	5,020
Italy	200	310	390	180	180	1,260
Ivory Coast	5	--	--	--	--	5
Jamaica	5	--	5	--	5	15
Japan	1,000	825	1,700	1,000	775	5,300
Jordan	330	440	200	80	60	1,110
Kenya	10	160	10	10	10	200
Korea, North	420	1,000	600	200	90	2,310
Korea, South	625	625	525	550	775	3,100
Kuwait	160	200	490	280	50	1,180
Laos	140	150	100	40	10	440
Lebanon	10	10	10	0	5	35
Lesotho	--	--	--	--	--	--
Liberia	10	10	--	--	--	20
Libya	625	675	975	360	370	3,005
Luxembourg	10	5	20	10	20	65

Table 7 (continued). Arms Imports: U.S. Arms Control
and Disarmament Agency

(In millions of current U.S. dollars)

	1987	1988	1989	1990	1991	<u>Total</u> 1987-91
Madagascar	30	10	30	10	0	80
Malawi	--	5	5	--	--	10
Malaysia	70	30	70	30	30	230
Mali	40	70	10	10	--	130
Malta	5	--	--	--	--	5
Mauritania	--	10	20	--	--	30
Mauritius	--	--	5	--	--	5
Mexico	240	60	80	100	40	520
Mongolia	--	--	--	--	--	--
Morocco	410	130	60	160	30	790
Mozambique	120	160	120	130	10	540
Nepal	--	20	--	10	--	30
Netherlands	600	370	525	450	360	2,305
New Zealand	40	70	60	20	40	230
Nicaragua	500	550	430	60	--	1,540
Niger	5	5	5	--	--	15
Nigeria	170	30	5	10	5	220
Norway	390	390	310	320	200	1,610
Oman	110	30	60	10	40	250
Pakistan	330	360	500	600	120	1,910
Panama	20	10	10	5	5	50
Papua New Guinea	10	30	50	10	--	100
Paraguay	--	30	--	5	--	35
Peru	440	30	140	70	10	690
Philippines	50	60	70	70	80	330
Poland	825	1,000	625	150	--	2,600
Portugal	30	50	70	330	550	1,030
Qatar	--	30	--	5	20	55
Romania	120	20	20	430	170	760
Rwanda	--	--	20	--	--	20
Sao Tome & Principe	5	--	5	5	--	15
Saudi Arabia	6,700	5,100	5,200	5,900	6,900	29,800
Senegal	30	10	5	--	--	45
Sierra Leone	10	--	--	--	--	10
Singapore	260	360	150	130	120	1,020
Somalia	20	30	30	5	0	85
South Africa	40	10	100	--	90	240
Soviet Union	1,300	1,200	900	100	--	3,500
Spain	1,000	975	775	400	150	3,300

Table 7 (concluded). Arms Imports: U.S. Arms Control and Disarmament Agency

(In millions of current U.S. dollars)

	1987	1988	1989	1990	1991	Total 1987-91
Sri Lanka	50	20	10	10	50	140
Sudan	80	80	130	90	90	470
Suriname	--	--	--	5	--	5
Sweden	90	140	240	70	40	580
Switzerland	260	310	420	575	110	1,675
Syria	2,000	1,300	1,000	975	650	5,925
Tanzania	90	70	40	30	10	240
Thailand	390	525	230	190	430	1,765
Togo	--	--	5	--	--	5
Trinidad	--	--	--	--	--	--
Tunisia	50	20	20	20	20	130
Turkey	950	950	1,200	900	800	4,800
Uganda	60	90	20	10	10	190
United Arab Emirates	250	90	850	850	150	2,190
United Kingdom	550	460	775	850	525	3,160
United States	2,200	2,800	1,600	1,700	1,900	10,200
Uruguay	--	5	20	20	5	50
Venezuela	110	120	170	200	140	740
Vietnam	1,900	1,500	1,300	1,100	200	6,000
Yemen, P.D.R. 2/	300	380	230	500	--	1,410
Yemen, Republic of 2/	400	430	420	650	200	2,100
Yugoslavia	625	40	120	10	--	795
Zaire	50	40	--	20	--	110
Zambia	5	--	60	--	10	75
Zimbabwe	80	--	10	--	5	95
Total 3/	58,360	54,610	50,060	38,250	25,530	227,260

Source: U.S. Arms Control and Disarmament Agency, World Military Expenditures and Arms Transfers, 1991-92.

1/ Unified Germany as of 1991 is shown under West Germany; data for East Germany end in 1990.

2/ The Yemens became unified on May 22, 1990. Arms purchases made by Unified Yemen following this date are shown under Republic of Yemen (Sanaa).

3/ To avoid the appearance of excessive accuracy, arms transfer data by country are rounded, with greater severity for larger amounts. All country group totals for arms exports and arms imports shown here are the sums of rounded country data, except for world totals, which are the rounded sums of unrounded country data. This exception is made to preserve the equality of world arms exports and world arms imports; the rounded country data produce unequal world summations.

Table 8. Arms Imports: SIPRI
(In millions of constant 1990 U.S. dollars)

	1987	1988	1989	1990	1991	Total 1987-1991
Afghanistan	901	1,275	2,615	2,419	1,220	8,430
Algeria	...	...	...	...	...	1,099
Angola	1,599	1,171	88	748	--	3,606
Argentina	...	...	...	...	...	685
Australia	565	690	832	427	442	2,955
Austria	...	...	...	...	...	218
Bahrain	...	...	...	...	...	912
Bangladesh	...	...	...	...	...	552
Belgium	...	...	...	...	...	885
Belize	...	...	...	...	...	2
Benin	...	...	...	...	...	5
Bolivia	...	...	...	...	...	116
Botswana	...	...	...	...	...	91
Brazil	...	...	...	...	...	1,248
Brunei	...	...	...	...	...	34
Bulgaria	697	227	53	512	347	1,835
Burma	...	...	...	...	...	268
Cambodia	...	...	...	...	...	318
Cameroon	...	...	...	...	...	20
Canada	846	501	330	329	258	2,263
C.A.R.	...	...	...	...	...	6
Chad	...	...	...	...	...	68
Chile	...	...	...	...	...	1,059
China-Mainland	...	...	...	...	...	797
Taiwan	536	370	368	510	390	2,174
Colombia	...	...	...	...	...	401
Congo	...	...	...	...	...	2
Cuba	...	...	...	...	...	510
Cyprus	...	...	...	...	...	571
Czechoslovakia	1,167	1,197	1,557	716	47	4,684
Denmark	...	...	...	...	...	649
Djibouti	...	...	...	...	...	3
Dominica	...	...	...	...	...	6
Dominican Republic	...	...	...	...	...	8
Ecuador	...	...	...	...	...	390
Egypt	2,850	493	248	1,203	667	5,461
El Salvador	...	...	...	...	...	5
Ethiopia	...	...	...	...	...	603

Table 8 (continued). Arms Imports: SIPRI
(In millions of constant 1990 U.S. dollars)

	1987	1988	1989	1990	1991	<u>Total</u> 1987-1991
Fiji	...	...	...	...	...	6
Finland	...	...	...	...	...	597
France	91	121	232	66	1,191	1,700
Gabon	...	...	...	...	...	166
Germany, East	440	611	610	585	--	2,247
Germany, West	351	514	1,174	1,333	136	3,509
Ghana	...	...	...	...	...	53
Greece	92	819	1,471	929	1,081	4,393
Guatemala	...	...	...	...	...	43
Guinea	...	...	...	...	...	23
Honduras	...	...	...	...	...	73
Hungary	...	...	...	...	...	548
India	5,475	4,009	4,461	1,607	2,009	17,561
Indonesia	...	...	...	...	...	1,429
Iran	823	648	371	832	187	2,862
Iraq	5,438	2,759	1,526	596	--	10,319
Ireland	...	...	...	...	...	63
Israel	1,940	604	120	228	1,676	4,567
Italy	...	...	...	...	...	800
Ivory Coast	...	...	...	...	...	61
Japan	1,644	2,177	2,795	2,094	1,040	9,750
Jordan	...	...	...	...	...	616
Kenya	...	...	...	...	...	216
Korea, North	751	1,734	1,518	612	15	4,631
Korea, South	720	1,184	1,101	370	177	3,551
Kuwait	...	...	...	...	...	1,114
Laos	...	...	...	...	...	133
Lebanon	...	...	...	...	...	84
Lesotho	...	...	...	...	...	6
Liberia	...	...	...	...	...	9
Libya	...	...	...	...	...	1,101
Malawi	...	...	...	...	...	9
Malaysia	...	...	...	...	...	105
Mali	...	...	...	...	...	31
Malta	...	...	...	...	...	8
Mauritius	...	...	...	...	...	28
Mexico	...	...	...	...	...	337
Morocco	...	...	...	...	...	551

Table 8 (continued). Arms Imports: SIPRI
(In millions of constant 1990 U.S. dollars)

	1987	1988	1989	1990	1991	<u>Total</u> 1987-1991
Mozambique	...	...	...	...	...	20
Nepal	...	...	...	...	...	11
Netherlands	420	258	787	282	233	1,980
New Zealand	...	...	...	...	...	106
Nicaragua	...	...	...	...	...	444
Nigeria	...	...	...	...	...	373
Norway	428	293	347	313	235	1,616
Oman	...	...	...	...	...	602
Pakistan	428	331	796	380	364	2,300
Panama	...	...	...	...	...	29
Papua New Guinea	...	...	...	...	...	27
Paraguay	...	...	...	...	...	33
Peru	...	...	...	...	...	939
Philippines	...	...	...	...	...	144
Poland	1,012	1,247	1,225	334	137	3,954
Portugal	...	...	...	...	...	1,025
Qatar	...	...	...	...	...	371
Romania	...	...	...	...	...	1,385
Rwanda	...	...	...	...	...	7
Samoa	...	...	...	...	...	1
Saudi Arabia	2,617	2,441	1,914	2,487	1,138	10,597
Senegal	...	...	...	...	...	32
Seychelles	...	...	...	...	...	1
Sierra Leone	...	...	...	...	...	10
Singapore	...	...	...	...	...	1,276
Solomon Islands	...	...	...	...	...	1
Somalia	...	...	...	...	...	13
South Africa	...	...	...	...	...	64
Soviet Union	835	818	656	656	46	3,013
Spain	1,457	1,681	912	674	231	4,955
Sri Lanka	...	...	...	...	...	274
Sudan	...	...	...	...	...	228
Sweden	...	...	...	...	...	315
Switzerland	...	...	...	...	...	1,141
Syria	1,392	1,393	395	--	267	3,447
Thailand	757	529	530	439	1,115	3,370
Togo	...	...	...	...	...	24
Tonga	...	...	...	...	...	3
Tunisia	...	...	...	...	...	65
Turkey	1,203	1,419	1,138	1,067	1,559	6,384

Table 8 (concluded). Arms Imports: SIPRI
(In millions of constant 1990 U.S. dollars)

	1987	1988	1989	1990	1991	<u>Total</u> 1987-1991
Uganda	...	...	...	...	...	42
U.A.E.	69	68	772	740	141	1,790
United Kingdom	...	...	...	...	...	1,597
United States	...	...	...	...	...	1,399
Uruguay	...	...	...	...	...	109
Vanuatu	...	...	...	...	...	1
Venezuela	...	...	...	...	...	534
Vietnam	...	...	...	...	...	6
Yemen	...	...	...	...	...	367
Yugoslavia	...	...	...	...	...	1,552
Zaire	...	...	...	...	...	27
Zimbabwe	...	...	...	...	...	291
Other	<u>8,328</u>	<u>7,735</u>	<u>7,285</u>	<u>5,515</u>	<u>5,766</u>	--
Total <u>1/</u>	45,870	39,317	38,228	29,004	22,114	174,532

Source: SIPRI, Yearbook, 1992.

1/ Figures may not add up to totals due to rounding.

Table 9. Arms Imports by the "Third World":
U.S. Congressional Research Service

(In millions of current U.S. dollars)

	1991	1992	<u>Total</u> 1989-1992
Afghanistan	1,900	...	...
Algeria	...	...	900
Angola	...	...	...
Bahrain	...	...	600
Burma	300	...	...
People's Republic of China	...	1,100	...
Taiwan	500	700	...
Cuba	500	...	3,100
Egypt	700	1,100	3,100
India	800	500	6,800
Iran	1,500	300	4,500
Iraq	...	...	5,000
Israel	...	800	1,400
Jordan	...	...	200
Kuwait	...	300	1,300
Libya	...	300	2,000
Morocco	...	...	400
Oman	...	...	200
Saudi Arabia	7,100	4,500	25,500
Syria	600	500	3,200
United Arab Emirates	...	400	2,400
Vietnam	...	...	2,500
Yemen	...	...	1,400
Other	<u>5,933</u>	<u>2,220</u>	<u>31,154</u>
Total	19,833	12,720	95,654

Source: U.S. Congressional Research Service, Conventional Arms Transfers to the Third World, 1985-1992.

Table 1. Composition of Regional Country Groups

Africa	Asia	W. Europe	E. Europe and FSU	Middle East and N. Africa	Western Hemisphere
Angola	Australia	Austria	Albania	Afghanistan	Argentina
Benin	Bangladesh	Belgium	Bulgaria	Algeria	Barbados
Botswana	Bhutan	Cyprus	Czechoslovakia	Bahrain	Belize
Burkina Faso	Burma	Denmark	Germany, D.R.	Djibouti	Bolivia
Burundi	Cambodia	Finland	Hungary	Egypt	Brazil
Cameroon	China	France	Poland	Iran	Canada
Cape Verde	Fiji	Germany, F.R.	Romania	Iraq	Cayman Islands
C.A.R.	India	Greece	Soviet Union	Jordan	Chile
Chad	Indonesia	Iceland	Yugoslavia	Kuwait	Colombia
Comoros	Japan	Ireland		Lebanon	Costa Rica
Congo	North Korea	Israel		Libya	Cuba
Eq. Guinea	Rep. of Korea	Italy		Morocco	Dom. Republic
Ethiopia	Lao, P.D.R.	Luxembourg		Oman	Ecuador
Gabon	Malaysia	Malta		Pakistan	El Salvador
The Gambia	Maldives	Netherlands		Qatar	Guatemala
Ghana	Mongolia	Norway		Saudi Arabia	Guyana
Guinea	Nepal	Portugal		Somalia	Haiti
Guinea-Bissau	New Zealand	Spain		Sudan	Honduras
Ivory Coast	Papau New Guinea	Sweden		Syrian Arab Republic	Jamaica
Kenya	Philippines	Switzerland		Tunisia	Mexico
Lesotho	Singapore	Turkey		United Arab Emirates	Nicaragua
Liberia	Solomon Islands	United Kingdom		Yemen, Republic of	Panama
Madagascar	Sri Lanka				Paraguay
Malawi	Taiwan				Peru
Mali	Thailand				St. Kitts & Nevis
Mauritania	Tonga				St. Lucia
Mauritius	Vanuatu				St. Vincent
Mozambique	Viet Nam				Suriname
Namibia	Western Samoa				Trin. & Tobago
Niger					United States
Nigeria					Uruguay
Rwanda					Venezuela
Sao Tome Principe					
Senegal					
Seychelles					
Sierra Leone					
South Africa					
Swaziland					
Tanzania					
Togo					
Uganda					
Zaire					
Zambia					
Zimbabwe					

Table 2. Composition of Country Groups by Level of Development

Industrial Countries	E. Europe	Asian Developing	Middle East Developing	N. Africa Developing	Sub-Saharan Developing	Western Hemisphere Developing
Australia	Albania	Bangladesh	Bahrain	Algeria	Angola	Argentina
Austria	Bulgaria	China-Mainland	Cyprus	Egypt	Benin	Bolivia
Belgium	Czechoslovakia	Taiwan	Iran	Libya	Botswana	Brazil
Canada	East Germany	Fiji	Iraq	Morocco	Burkina Faso	Chile
Denmark	Hungary	India	Israel	Tunisia	Burundi	Colombia
Finland	Poland	Indonesia	Jordan		Cameroon	Costa Rica
France	Romania	North Korea	Kuwait		C.A.R.	Cuba
Germany, F.R.	Soviet Union	South Korea	Lebanon		Chad	Dominican Rep.
Greece	Yugoslavia	Malaysia	Oman		Congo	Ecuador
Ireland		Burma	Saudi Arabia		Ivory Coast	El Salvador
Italy		Nepal	Syria		Ethiopia	Guatemala
Japan		Pakistan	Turkey		Gabon	Guyana
Luxembourg		Papau New Guinea	United Arab Emirates		Ghana	Haiti
Malta		Singapore	Yemen		Guinea-Bissau	Honduras
Netherlands		Sri Lanka			Kenya	Jamaica
Norway		Thailand			Liberia	Mexico
Portugal					Madagascar	Nicaragua
Singapore					Malawi	Panama
Spain					Mali	Paraguay
Sweden					Mauritania	Peru
Switzerland					Mauritius	Trin. & Tobago
United Kingdom					Mozambique	Uruguay
United States					Niger	Venezuela
					Nigeria	
					Rwanda	
					Senegal	
					Sierra Leone	
					Somalia	
					South Africa	
					Sudan	
					Swaziland	
					Tanzania	
					Togo	
					Uganda	
					Zaire	
					Zambia	
					Zimbabwe	

Description of Alternative Data Sources

I. International Monetary Fund: Government Finance Statistics Yearbook

1. Data available

Expenditure on defense in national currency at current prices reported by countries as part of a functional breakdown of government expenditures. The most recent issue, published in March 1994, contains data on defense expenditures for over 90 countries for at least one year, with the currentness of the data varying by country. Individual country pages show the most recent 10 years of reported data. For a few countries, data are reported through 1993, but for most countries the most recent data is for 1991 or earlier. Also includes summary tables showing expenditure on defense as a percentage of total expenditure for each reporting country for 1986-1993, as available, and expenditure on defense as a percentage of GDP by country for 1982-1993, as available. Defense expenditure figures are based on data for fiscal years, which vary by country.

2. Definitions used

Defense expenditures are based on the Classification of the Functions of Government (COFOG) published by the United Nations Statistical Office. Defense expenditures are defined to include administration, supervision, and operation of military defense affairs and forces: land, sea and air, and space defense forces, engineering, transport, communications, intelligence, material, personnel and other non-combat forces and commands, and reserve and auxiliary forces of the defense establishment. They also include civil defense expenditures, the provision of foreign aid either through loans or grants (with grants including both cash and in-kind grants), and defense-related research. However, receipts of military grants-in-kind are not included. Although military and civil defense affairs are put in different subcategories within the definition, expenditure data are reported only for the category as a whole.

In order to have consistency within the functional classification, the definition of military expenditures excludes military pensions (as these are classified under "social security and welfare"), and police, border and coast guards (as these are classified under "public order and safety"). Because total reported government expenditures are consolidated, the definition also excludes operations within the government, such as social security contributions paid for military personnel by one part of the government to another.

3. Ultimate source of data

Defense expenditure reported by individual governments, as part of general reporting on government finance statistics.

4. Strengths and weaknesses of data

Based on a well-defined methodology applied across all countries and set in the context of a comprehensive set of government accounts. The data reflect government reported military expenditure and thus bear a direct relationship to official government statistics. The data are based on a consistent definition of military expenditures, and are presented in conjunction with comparably defined estimates of other elements of government expenditure.

Reported expenditures generally include off-budget items. In instances where it is known that only budget data are reported, this is noted by "budgetary central government" in the table header.

The data is checked for broad consistency with other fiscal and economic data presented to the Fund, although it is difficult to verify the accuracy and completeness of the data.

For some countries, the data are reported to GFSY with a long lag. This factor, in combination with the time required for checking the data and the built-in lag because GFSY is only published annually, results in long lags in the reporting for many countries.

II. International Institute of Strategic Studies: The Military Balance

1. Data available

Defense expenditures in constant U.S. dollars, per capita and as a percent of GDP or GNP, numbers in armed forces, reserves and paramilitary. Detailed breakdown by country of size of various armed forces, number of bases, equipment and weapons. Where the figures include internal or border security expenditures, separate budgets are noted if available. The most recent publication was issued in October 1993, and contains the latest defense expenditure or budget data available as of June 1, 1993. Generally this includes 1991 or 1992 defense expenditure, and 1992 or 1993 defense budget. Some data, particularly for earlier years, is on a fiscal year, rather than a calendar year, basis. Foreign military assistance--in cash, credits or military training--is indicated where it exceeds US\$1 million.

2. Definitions used

For NATO countries both the NATO calculated defense expenditure and the nationally calculated defense expenditure are included. In addition, both defense expenditure (actual or estimated) and defense budgets (expenditure approved in government budgets) are listed where available.

3. Ultimate source of data

Governments, unclassified and published information, and staff estimates. Estimated numbers are clearly marked.

4. Strengths and weaknesses of data

More detailed data on many elements of military than can be found in other sources. Coverage of over 160 countries, deliberately excluding some of the smaller countries.

The only secondary source for global current year (and in some cases, coming year) defense budgets.

Provides defense expenditures in both local currency and U.S. dollars, with the latter based on PPP exchange rates, where official exchange rates are judged to be unrealistic.

It is difficult or impossible to discern the source(s) used for any particular number, or to independently verify the accuracy of the ultimate source.

III. UN: Reduction of Military Budgets--Military Expenditures in
Standardized Form Reported by States

1. Data available

Reports from a few countries (the 1993 report covers 32 countries) on defense expenditure for a recent year, provided voluntarily to the UN. The report covering 1992 was published in August 1993.

2. Definitions used

Countries are requested to provide a detailed breakdown of military expenditures, divided into operating costs, procurement and construction, and research and development, cross classified according to various components of the armed forces, administration support and command, paramilitary, military assistance, and civil defense.

3. Ultimate source of data

Reports by the governments.

4. Strengths and weaknesses of data

Available with a short time lag.

Provides an uniform reporting format with considerable detail.

Few countries report, and there is no independent verification of data accuracy.

IV. UN Register of Arms Transfers

1. Data available

Data, by reporting country, on quantities of international transfers of major conventional weapons for seven major categories. The first issue of the Register was published in October 1993 and covered arms transfers in 1992 as reported by 80 countries, with three additional countries reporting subsequently. U.N members were also invited to provide background information related to their military holdings, procurement through national production, and policies and regulations related to arms transfers; 33 countries submitted at least some of this information. This background information is described in an index circulated with the Register.

2. Definitions used

Arms transfers cover seven categories of major weapons: battle tanks, armored combat vehicles, combat attack aircraft, large calibre artillery systems, attack helicopters, warships, missiles and missile launchers. Reporting was limited to physical quantities in order to have a reasonably straight forward reporting framework and avoid difficulties related to valuation. Reports are to cover both exports and imports.

3. Ultimate source of data

Reports by the governments.

4. Strengths and weaknesses of data

The first report covers all major and medium-sized arms producers except North Korea, and most major arms buyers.

Reports identify the country trading partner involved in each transaction, allowing cross checking of the data. The data are reasonably timely.

The reporting is done only in physical units, making valuation and aggregation difficult.

There is no independent verification of data accuracy. Each reporting nation makes the decision as to whether a particular exported or imported item falls into one of the seven reportable categories.

V. Stockholm International Peace Research Institute (SIPRI):
Yearbook World Armaments and Disarmament

1. Data available

a. Defense expenditure

Ten year series on defense expenditure, by country, for approximately 130 countries. Data are provided in current and constant prices. Calendar year figures are calculated from fiscal year data where necessary, on the assumption that expenditure takes place evenly throughout the year. The most recent publication was issued in late 1992, and covers data through 1991.

b. Arms transfers

Annual data on exports and imports of arms for five years. Data are provided by source (fifteen major exporters and all others) and by recipient (annual data for 15 major importers among developing countries and fifteen major importers among industrialized countries; total imports for five years for all identified country recipients of arms). Cumulative data are also available for approximately 130 countries for the period 1987-1991. Data are based on physical arms transfers and given in constant prices only. Also includes a limited amount of data on physical quantities of arms transfers.

2. Definitions used

The definition of defense expenditure is based on the NATO definition. However, the emphasis is on a uniform definition over time for each country to show a correct time trend, rather than adjusting figures to have common cross-country definitions within a single year. SIPRI states that where possible, the following items are included: all current and capital expenditure on the armed forces used in the running of the defence departments and other government agencies engaged in defence 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.

Arms trade data cover five categories of major weapons or systems: aircraft, armor and artillery, guidance and radar systems, missiles, and warships. The data do not include trade in small arms, artillery under 100-mm calibre, ammunition, support items, services and components or component technology, except for specific items, as SIPRI believes that publicly available information is inadequate to track these items satisfactorily.

3. Ultimate source of data

National sources, including military budgets, white papers and statistical documents published by the government or the central bank, documents issued by international and intergovernmental organizations, journals, and newspapers. As a matter of policy, SIPRI uses only publicly available information, or on occasion, information received directly from a government with the understanding that the information can be made publicly available.

4. Strengths and weaknesses of data

Covers approximately 130 countries.

Data are available with about a one year lag.

It is difficult or impossible to discern the source(s) used for any particular number, or to independently verify the accuracy of the ultimate source.

For 60 larger nations, SIPRI makes an effort to independently confirm reported expenditure data. For the approximately 70 smaller nations, SIPRI in some cases uses data reported in other sources, or projections based on past trends. In some cases, the SIPRI numbers include adjustments to data reported elsewhere, but the size and reasons for the adjustments are not reported on a country-by-country basis.

Data on arms transfers are based on physical volumes, converted to dollar terms at actual or estimated 1990 production costs, and therefore are not comparable to other economic statistics such as GDP.

Small scale purchases are not included.

VI. U.S. Arms Control and Disarmament Agency (ACDA): World Military Expenditure and Arms Transfer (WMEAT)

1. Data available

a. Defense expenditure

Annual estimates for 144 countries of defense expenditures in current and constant prices over 11 years, plus data on the number of military personnel. Defense expenditures are also given as a percent of GNP, as a percent of central government expenditures (CGE) and per capita. Countries are ranked in terms of these indicators. The most recent publication, issued in March 1994, covers data through 1991.

Most data are for calendar years. For some countries, however, expenditure data is available only for fiscal years, which differ from calendar years.

b. Arms transfers

Annual data on arms exports and imports in current and constant dollars, for 144 countries, as well as for supplier and recipient region. For each of these countries, ACDA also provides cumulative imports for 1987-91 by major supplying country or regions. Also includes annual data showing bilateral arms transfer agreements between 12 countries or regional groups of suppliers and regional groups of recipients. In addition, includes a limited amount of data on the physical quantities of arms transfers.

2. Definitions used

For NATO countries, defense expenditure is based on the NATO definition. For other "non-communist" countries, data are generally the expenditures of the ministry of defense. When these are known to include the costs of internal security, an attempt is made to remove these expenditures.

Arms transfers include transfers of weapons of war (both large and small), parts thereof, ammunition, support equipment, and other commodities designed for military use. They also include the building of defense production facilities, and licensing fees paid as royalties for the production of military equipment are included when they are contained in military transfer agreements. Military services such as construction, training, and technical assistance are not included for the United States, although data on U.S. deliveries of military services are provided separately in the report. Data on the military services provided by other countries are included when available. The data include commercial deliveries of items on the U.S. Munitions Control List, a small amount of which may be intended for civilian rather than military use.

3. Ultimate source of data

Published information and confidential U.S. government information.

4. Strengths and weaknesses of data

This is the only source that covers both expenditure and arms transfers in current and constant prices. The arms transfer data include more country detail and more annual data than any other source.

Extensive coverage of merchandise and service transfers.

The publication presents a candid discussion of any problems with the data, improving the user's ability to interpret the data.

Access to unpublished information. There is no opportunity for independent verification of source material.

ACDA's method of converting expenditure data to current dollars limits the comparability of its data with other economic data, except for the "base year" in each ACDA publication.

VII. U.S. Congressional Research Service (CRS): Conventional Arms Transfers to the Third World

1. Data available

Data on arms transfer agreements and arms deliveries to the "Third World" in current and constant dollars. The "Third World" is defined as all countries excluding the United States, Russia, the former Soviet Union, Europe (both east and west), Canada, Japan, Australia, and New Zealand. Information is given for seven major suppliers to these countries (eleven major suppliers for some tables), all other west European suppliers, and all other suppliers, for ten major importers and for world regions (Asia, Near East, Europe, sub-Saharan Africa, and Latin America). Also includes limited data on the number of weapons delivered to Third World regions by major supplier for four-year cumulative time periods. The most recent publication was issued in July 1993 and covers data through 1992.

2. Definitions used

Includes both large and small weapons, all related equipment and ordnance, plus construction and other military related services, and military assistance and training programs.

3. Ultimate source of data

Published information and confidential U.S. Government information.

4. Strengths and weaknesses of data

Access to unpublished information. There is no opportunity for independent verification of source material.

Extensive coverage of merchandise and service transfers.

Available with a short time lag.

Provides data on regional imports broken down by major supplier, but does not cover global arms transfers, as a result of its focus on developing country military imports. The limited amount of country-specific information means this data will be of limited use for analyzing individual countries, except for the largest importers or exporters of arms, or, on occasion, reports on the countries in a particular region, such as the Near East.

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