

World Military Expenditures and Arms Transfers, 2019 edition

Introduction

This edition of World Military Expenditures and Arms Transfers (WMEAT), *WMEAT 2019*, published in December 2019, covers the eleven-year period from 2007 through 2017. WMEAT responds to a statutory requirement, codified at [22 USC 2593b](#), that the U.S. Department of State annually publish detailed, comprehensive and statistical information and in-depth analyses regarding military expenditures, arms transfers, armed forces, and related economic data for each country of the world. Comments, including suggestions for improvement of WMEAT and identifications of apparent errors, may be addressed to WMEATeditor@state.gov.

This edition of WMEAT is published electronically, on the website of the U.S. Department of State, in the form of four distinct downloadable documents:

- this "Introduction and Overview" section, in a PDF document;
- Table I, the military expenditures and armed forces personnel table, in an Excel spreadsheet workbook containing eight "world pages" (pages of global scope) and 170 country pages;
- Tables II - IV, the arms transfer deliveries tables, in an Excel spreadsheet workbook containing thirteen "world pages" (no country pages); and
- a "Sources, Data, and Methods" section, in a PDF document.

The Tables make up the body of this report. They offer much information not described in the "Overview." The "Sources, Data, and Methods" section details the methodological basis for data in the tables, especially with respect to substantial and pervasive uncertainties and sources of error.

Table I presents annual and eleven-year-mean information about number of armed forces personnel, population, labor force, military expenditures, gross domestic product (GDP), and ratios of these parameters, for individual countries, for geographic, economic and political groups of countries, and for the world. It also presents annual and eleven-year-mean Freedom House "political rights" scores and World Bank Institute "voice and accountability in governance" scores for individual countries.

Table II presents annual and eleven-year-mean information about the value of exports and imports both of arms and of all goods and services, and ratios of these parameters, for individual countries, for geographic, economic and political groups of countries, and for the world.

Table III presents a matrix of world arms transfer values by major supplier and country of destination for the three-year period from 2015 through 2017.

Table IV presents annual and eleven-year-mean information about the value of arms exports of major suppliers to individual countries; to geographic, economic, and political groups of countries; and to the world.

The "Group rankings and trends" and "Country rankings and trends" pages of both the military expenditures workbook and the arms transfers tables workbook offer rankings of both of countries and of economic (GDP-per-capita) and political (degree-of-democracy) groupings of countries, by every demographic, economic, and political parameter used in preparing this report, and also by a measure of average annual change for military parameters.

New features in this edition of WMEAT are described at the start of the "Sources, Data, and Methods" section. *WMEAT 2019* contains no changes in format or method.

Military expenditure and GDP values and ratios involving them may vary greatly depending on currency conversion method used, and no single currency conversion method seems best for all analytic purposes. The "Overview" page of Table I indicates the range of variation across conversion methods of military spending both in absolute terms and relative to GDP, for all countries and groups of countries, for both the latest year covered and for the eleven-year period average. The conversion methods used, and the advantages and disadvantages of each, are described in the "Sources, Data, and Methods" section.

Overview

WMEAT figures, especially for armed forces personnel, military expenditures, and arms transfers, are neither so accurate nor so reliable as uniform presentation in statistical tables might seem to imply, due to incompleteness, ambiguity, or total absence of data for some countries either in those parameters or in parameters, such as GDP price deflators or exchange rates, used in Table I to convert local-currency-denominated values for military spending and GDP to U.S. dollars. In Table I, apparent sources of error and extent of imprecision vary across countries, years, and parameters, and are indicated by color-coding on the pages for specific countries. In Tables II, III, and IV, the quality of source data for arms transfer values is not readily assessable. In no table does either rounding or limitation on significant digits adequately reflect potential inaccuracy.

Military expenditures

From 2007 through 2017, in constant 2017 U.S. dollar terms, the annual value of world military expenditures appears to have risen about 11% - 33%, from about \$1.51 - 2.15 trillion in 2007 to about \$1.77 - 2.88 trillion in 2017, and to have averaged between \$1.72 and \$2.61 trillion for the 11-year period. The range of values results from WMEAT's use of five different methods to convert non-U.S. military expenditures to U.S. dollars. Using a real market exchange rate (MER) with a base year of 2017 for each country yields the lowest period-average value for annual global military expenditures; using the purchasing power parity rate for each foreign country's whole economy (PPP-for-GDP) yields the highest such value.

Military burden (ratio of military expenditures to GDP)

During the eleven-year period, for the world, the share of GDP to which military expenditure was equivalent – an indicator sometimes called "the military burden" – appears to have averaged between 1.9% and 2.5%, peaking at between 2.2% and 2.8% in 2009 and trending downward thereafter to between 1.7% and 2.2% in 2017. Converting non-U.S. military expenditures and GDPs to U.S. dollars using a real MER yields the greatest period-average military burden; converting non-U.S. GDPs at PPP-for-GDP while converting non-U.S. military expenditures at a notionally estimated defense-sector-specific PPP rate yields the lowest period-average military burden.

Throughout the period, military spending accounted for a far lower share of measured global economic output than in 1989, at the end of the Cold War, when it appears to have been about 4.7% at a real MER.

Armed forces

The number of people serving in the world's armed forces appears to have fallen about 3% in absolute terms, from about 21.0 million in 2007 to about 20.4 million in 2017, peaking at about 21.3 million in 2008. From 2007 to 2017, the world total of armed forces personnel appears to have fallen about 13% in per capita terms, from about 0.32% to about 0.28% of total population. It appears to have fallen by about 13% as a proportion of the labor force, from about 0.69% to about 0.60%. Armed forces personnel as a share of the labor force appears to have trended downward over the period in every region except East Africa, for every quintile of world population ranked by GDP per capita, and for every quintile of world population ranked by NGO-assessed degree of democracy.

From 2007 through 2017, world military expenditures per armed forces member – an indicator of the capital-intensivity of the military – appear to have risen by 15-38% despite rising more slowly after 2009; results vary depending on which method of converting non-U.S. military expenditures to U.S. dollars is used. Military spending per armed forces member appears to have risen for every economic and political group of countries and in all regions except North America and East Africa.

The world ratio of military spending per armed forces member to GDP per labor force member – an indicator of the capital-intensivity of the military relative to that of the economy as a whole – appears to have trended upward for the eleven-year period despite declining during 2009 through 2013.

Arms transfers

From 2007 to 2017, the global annual value of international arms transfer deliveries appears to have averaged about \$181 billion in constant 2017 U.S. dollar terms, and to have risen by about 65%, from about \$119 billion to about \$195 billion, despite declining after 2012 from a peak of \$206 billion in that year. The arms trade's share of world trade in goods and services appears to have ranged from about 0.6% to about 0.9%, averaging about 0.8% and trending upward until 2009 but thereafter declining, recovering and staying at its 2009 level of about 0.9%.

During the eleven-year period, about 79% of the world arms trade, by value, appears to have been supplied by the United States, about 10% by the European Union, about 5% by Russia, and less than 2% by China. There was no clear trend in either the U.S., the Russian, or the Chinese market share during the period.

Countries in the richest quintile of world population appear to have accounted for more than 97% of world arms exports and more than 63% of world arms imports, regardless of whether quintiles are based on national GDP per capita at a real MER or at PPP. By either standard, the richest quintile was the only GDP-per-capita quintile with a positive arms trade balance.

Countries in the most democratic quintile of world population appear to have accounted for about 92% of world arms exports and 50% of world arms imports. The most democratic quintile was the only degree-of-democracy quintile with a positive arms trade balance.

In constant 2017 U.S. dollar terms, U.S. arms exports appear to have averaged about \$143 billion a year, while U.S. arms imports – of arms merchandise only, inasmuch as no data on U.S. armed services imports are readily available – appear to have averaged about \$5 billion a year. Over the period, the arms trade surplus of the United States may have offset as much as 24% of its total trade deficit.

About 67% of U.S. arms exports appear to have been delivered to countries in the richest quintile of world population, which appear to have sourced 84% of their arms imports from the United States. About 54% of U.S. arms exports appear to have been delivered to countries in the most democratic quintile of world population, which appear to have sourced about 85% of their arms imports from the United States. Of U.S. arms exports, a growing proportion, averaging about 20% for the period in constant-dollar terms, appears to have gone to multinational entities or entities not specified by the governmental exporting or export licensing authority.

Both the growth in the world arms trade and the high proportion of world arms imports supplied by the U.S. appear to have been due largely to reliance on the United States as a source of arms by other rich, democratically-governed countries.

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