Research and development (R&D) plays a central role in advanced economies in areas such as economic growth and job creation, industrial competitiveness, national security, energy, agriculture, transportation, public health and well-being, environmental protection, and expanding the frontiers of human knowledge understanding. Accordingly, companies, governments, universities, nonprofit organizations, and others around the world have made substantial investments in R&D. Since 2000, total global R&D expenditures have nearly tripled in current dollars, from $676 billion to $2.0 trillion.

The United States emerged as a global leader in science and technology in the second half of the 20th century. During this period, U.S. public and private investments in R&D grew rapidly and helped to propel the United States to a position of global economic leadership. By 1960, the United States accounted for approximately 69% of the world’s R&D funding. By 2017, however, the U.S. share of global R&D expenditures had fallen to about 28%. (See Figure 1.) The U.S. decline in share of global R&D is not the result of a reduction in U.S. R&D investments—in fact, U.S. public and private R&D grew robustly during this period—but rather is the result of even greater increases in the investments of the governments and industries of other countries, which have recognized the importance of R&D to their industrial innovation and competitiveness.

Figure 1. U.S. Share of Global R&D


Notes: Rest of the World includes the members of the OECD (less the United States), Argentina, China, Romania, Russia, Singapore, South Africa, and Taiwan. R&D expenditures by others countries are not included but are likely to be small in relative terms. In estimating total global R&D, CRS used the most recent year’s reported R&D expenditures for two countries (Singapore and South Africa) that had not reported data for 2017.
In 2017 (the most recent year for which comprehensive data are available), global R&D expenditures were $1.961 trillion. The United States continued to fund more R&D than any other country. China, ranked second in 2017, funded more R&D than the next four highest countries—Japan, Germany, South Korea, and France—combined. The 10 largest R&D-funding countries of 2017 accounted for $1.662 trillion in R&D expenditures, about 84.7% of the global total. (See Table 1.)

### Table 1. Countries with the Highest Expenditure on R&D, 2017

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Amount</th>
<th>Rank</th>
<th>Country</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>United States</td>
<td>$543.2</td>
<td>6</td>
<td>France</td>
<td>$64.7</td>
</tr>
<tr>
<td>2</td>
<td>China</td>
<td>496.0</td>
<td>7</td>
<td>United Kingdom</td>
<td>49.3</td>
</tr>
<tr>
<td>3</td>
<td>Japan</td>
<td>170.9</td>
<td>8</td>
<td>Russia</td>
<td>41.9</td>
</tr>
<tr>
<td>4</td>
<td>Germany</td>
<td>132.0</td>
<td>9</td>
<td>Taiwan</td>
<td>39.3</td>
</tr>
<tr>
<td>5</td>
<td>South Korea</td>
<td>91.0</td>
<td>10</td>
<td>Italy</td>
<td>33.5</td>
</tr>
</tbody>
</table>


**Notes:** PPP = Purchasing Power Parity. PPP is used to determine the relative value of different currencies and to adjust data from different countries to a common currency allowing direct comparisons among them.

Figure 2 illustrates R&D expenditures between 2000 and 2017 for the 10 countries with the highest R&D expenditures.

### Figure 2. R&D Expenditures of Selected Countries, 2000-2017

![Graph showing R&D expenditures of selected countries from 2000 to 2017](image)


**Notes:** PPP = Purchasing Power Parity. PPP is used to determine the relative value of different currencies and to adjust data from different countries to a common currency allowing direct comparisons among them.

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4 Includes OECD members, plus Argentina, China, Romania, Russia, Singapore, South Africa, and Taiwan. (Organisation for Economic Cooperation and Development, OECD.Stat database)
Trends in global R&D share between 2000 and 2017 for the 10 countries with the highest 2017 R&D expenditures are illustrated in Figure 3. Among them, six saw declines in share of global R&D—the United States, Japan, Germany, France, the United Kingdom, and Italy—while four saw their shares grow—China, South Korea, Russia, and Taiwan.

In 2000, China accounted for nearly 5% of global R&D, joining the United States, Japan, South Korea, and the countries of Western Europe as the largest funders of R&D. In 2009, China surpassed Japan to become the second largest funder of R&D. From 2000 to 2017, while China’s share of global R&D rose from 4.9% to 25.3%, the U.S. share fell from 39.9% to 27.7% and Japan’s share fell from 14.6% to 8.7%.

**Figure 3. Share of Global R&D of Selected Countries, 2000-2017**


**Notes:** Global R&D includes the expenditures of the OECD countries, Argentina, China, Romania, Russia, Singapore, South Africa, and Taiwan. Share computed in PPP terms. PPP = Purchasing Power Parity. PPP is used to determine the relative value of different currencies and to adjust data from different countries to a common currency allowing direct comparisons among them.
Figure 4 illustrates the growth of R&D expenditures for each of the 10 countries with the highest 2017 R&D expenditures for 2000 to 2017 as a percentage of its 2000 R&D expenditures.

**Figure 4. Growth in R&D Expenditures Since 2000 for Selected Countries, 2000-2017**

![Figure 4](image)


Author Information

John F. Sargent Jr.
Specialist in Science and Technology Policy

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