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R&D expenditure growth slowing further in 1988

When the totals are all in, national R&D expenditures of \$132 billion are expected for 1988. This represents a 7 percent increase from that of 1987, or 3 percent growth after adjusting for expected inflation. Although real R&D expenditures have increased annually for more than a decade, the 1988 estimate means that for the fourth consecutive year, the rate of R&D growth will have slowed and that the rate of increase will be the lowest since 1977.

Between 1977 and 1982, real R&D expenditures grew at a steady 4.5 percent average annual rate. Between 1982 and 1985, this growth rate accelerated to 6.8 percent annually before dropping to 4 percent in both 1986 and 1987. From 1977 to 1988, real R&D expenditures are estimated to be up by almost 70 percent.

The 1988 ratio of R&D expenditures to GNP is expected to be 2.7 percent, the same as in 1987. By comparison, the ratio of R&D expenditures to GNP was 2.5 percent in 1982 and 2.1 percent in 1977.

The federal government is expected to be the provider of \$65 billion, or 49 percent, of total R&D funds spent by the nation in 1988. This represents a 7 percent increase in federal R&D support for the year, or 3 percent in real terms. Between 1977 and 1982, real federal R&D funding grew at a 2.6-percent average annual rate.

Between 1982 and 1987, this federal R&D support increased to 7 percent annually in real terms. During this latter period, most of the gain in federal R&D expenditures went to related programs.

Nonfederal support, estimated at \$67 billion in 1988, is 7 percent more than in 1987, or a 3 percent increase in real terms. The 1988 estimate reflects a small pickup in the rate of increase in nonfederal real R&D support, which had slowed in each of the previous three years. Real nonfederal support averaged 6.4 percent annual growth between 1977 and 1984 and is expected to average 3 percent growth for the 1985-88 period.

Most nonfederal R&D support comes from industry (93 percent). Industry support is estimated at \$63 billion in 1988 (a 7 percent increase from 1987, or 3 percent in real terms) and should equal 48 percent of total 1988 national R&D expenditures. As recently as 1986, industry support for R&D was greater than federal government support. Major increases in defense-related R&D during the 1980s contributed the most to the displacement of industry by the federal government as the nation's largest provider of R&D funds. Fully 90 percent of the growth in federal R&D support between 1980 and 1988 represents increases for defense-related activities.

Of the \$132 billion 1988 national expenditures total, it is expected that \$15 billion will be spent for basic research, \$27 billion for applied research, and \$89 billion for development. These expenditures represent increases from 1987 levels of 4 percent, 5 percent, and 8 percent, respectively. After adjusting for expected inflation, basic research spending is down slightly in 1988, applied research spending is level, and development spending is up by a total of 4 percent.

The 1988 estimates by type of R&D work represent a continuation in recent national funding patterns. For the past several years, real-term spending growth for research has been slower than for development. Between 1982 and 1988, basic research funding is estimated to increase at an inflation-adjusted 4 percent average annual rate; applied research funding, at 3 percent annually; and funds devoted to development, at 6 percent annually. Differences in these relative rates of growth have increased development's share of total R&D expenditures from 64 percent in 1982 to an expected 68 percent in 1988. This shift toward development is primarily a result of the increases in federal spending on defense R&D, which is about 90 percent development and only some 10 percent research.

National R&D Expenditures

