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How Much Research for a Dollar?

That a dollar will not buy as much now as it would in 1950 is clear to every purchaser who can remember 1950 prices. That the $13 billion the nation will spend on research and development this year will not buy as much equipment or the services of as many scientists and engineers as would the same amount in 1950 is also true, but not so immediately obvious; the figure is so large, the cost elements so varied, and the experience of scientists with figures of this magnitude so meager that one may have to think about the matter to realize that increasing the research and development budget from a little under $3 billion in 1950 to about $13 billion in 1960 does not buy a comparable increase in research and development effort.

Ellis A. Johnson and Helen S. Milton of the Johns Hopkins University Operations Research Office have sought to develop a cost-of-research index that will be useful in analyzing research and development trends. They start with the concept of the cost per year of a technical man; "the 'technical man' is the professional scientist or engineer, together with his supporting technical, administrative, and housekeeping staffs, and his machines and equipment, i.e., the man plus the overhead costs."

Johnson and Milton secured cost records from 17 laboratories, varying greatly in size and roughly equally divided among industry, government, university, and private nonprofit institutions. There was variation in the experience of these laboratories, but there was also a quite useful degree of consistency among their records, sufficient to justify the conclusion that when the costs per technical man were applied to the national research and development totals for the past decade, the result demonstrated that for 4½ times as much money as was spent in 1950 we are getting slightly more than twice as much research and development activity.

Using 1950 as a base year in which the cost-of-research index was 100, the authors report that from 1920 to 1940 the index varied only a few points above or below 50. Between 1940 and 1950 it doubled. Since 1950 the increase has averaged 7 percent a year to bring the index to 191 in 1960. The major elements in the increase have been higher salaries and overhead costs. Professional salaries are going up at about 7 percent a year, overhead costs a little more rapidly, and equipment and material costs not quite so rapidly.

It is always proper to ask whether or not research and development budgets are appropriate to the national needs. Are they increasing too slowly, too rapidly, or at about the right rate? In an ultimate sense this question can be answered only in terms of national needs and the valuation placed upon the work accomplished. Decision on these matters must be in terms of judgment, but a generally accepted cost-of-research index should assist us to reach better informed judgments. For example, Johnson and Milton write, "In military technology . . . there are some critical areas in which the absolute dollar support has increased but in which less actual technical effort is being expended than in 1950." Is this what we want? Surely there are times when a decrease in effort is justified, just as there are times when an increase is mandatory, but we should know what we are doing, and not be fooled by the fact that we are spending more dollars to buy less research. When we are spending $13 billion a year and the amount increases year after year, we need a cost-of-research index just as, for other purposes, we need a cost-of-living index.—D.W.