CBO TESTIMONY

Statement of
Frederick C. Ribe
Assistant Director
Fiscal Analysis Division
Congressional Budget Office

before the
Task Force on Community Development and Natural Resources
Committee on the Budget
U. S. House of Representatives

September 26, 1991

NOTICE

This statement is not available for public release until it is delivered at 1:00 p.m. (EDT), Thursday, September 26, 1991.

CONGRESSIONAL BUDGET OFFICE
SECOND AND D STREETS, S.W.
WASHINGTON, D.C. 20515

Mr. Chairman and Members of the Task Force, I appreciate the opportunity to appear before the Committee to discuss the findings of CBO's recent report, *How Federal Spending for Infrastructure and Other Public Investments Affects the Economy*. That report examined the economic and other effects of three broad classes of federal investments--expenditures that can be expected to yield benefits to the American people over several years. The report concentrated on spending in three areas: physical infrastructure, including programs for transportation and environmental facilities; human capital, including programs that increase the skills and productive knowledge that people bring to their jobs; and intangible capital, such as research and development.

My testimony today will focus on four themes of that study:

- Carefully chosen public investments can contribute to economic growth. CBO's study identified spending for highway maintenance, expansion of airports and airways, job training programs, and basic and academic research in science and technology as areas in which public investments seem most likely to be productive.

- Most federal spending in the areas considered in the study is undertaken to achieve social objectives as well as economic goals. As a result, some of the programs that CBO reviewed do not show a purely economic rate of return high enough to qualify as candidates to increase economic growth. However, such programs may still prove worthwhile if they are effective in achieving their social goals. The CBO report did not attempt to evaluate the effectiveness of these programs in achieving social goals.

- Improving pricing policies for the use of existing infrastructure will also lead to economic growth by increasing economic efficiency. Charging the right prices for the use of highways, airports, and waterways can relieve congestion, and in doing so allow new public investment spending to be even more focused on high-return projects.

- Public investment is not the only way in which federal policies can increase economic growth. Reducing the deficit or sharpening incentives for productive activity can also be effective in promoting growth across the economy.

SOME BACKGROUND: ANALYZING FEDERAL INVESTMENT

A great deal of attention has focused recently on the federal government's ability to expand the productive capacity of the economy through increased public investment. Much as private investments in new factories or techniques do, public investment can produce assets that contribute to the future productivity of workers in both the public and private sectors. The economic value of a number of public investments is reflected in the relatively high rates of return that have been estimated for them.

Economists cannot say exactly how much of an increase in federal investment would be appropriate in order to increase GNP by a given amount. Still, research in the area does show policymakers how to use information on rates of return in deciding how much to spend, and what program areas are

likely to offer high rates of return. My statement today is primarily devoted to exploring these two subjects.

Expanding federal spending for investment is only one way in which budgetary decisions can contribute to future economic growth. Other approaches are to reduce the federal deficit to allow more of the economy's scarce savings to go into investments in the private sector, or to sharpen incentives for private investment or other productive activities.

Some economists have correctly stressed that the choice between expanding federal investment and reducing the federal deficit as measures to strengthen the economy is to some extent a false choice. In fact, because both of these measures would contribute to the future strength of the economy in much the same way, some analysts propose that federal investment be excluded altogether from the federal deficit. The economic argument for reducing the deficit is that it would channel more private savings into productive private investment, instead of into the financing of federal programs. Federal investment does much the same, channeling resources into productive capital, even though much is publicly owned, and encouraging development of the economy in much the same way that expanded private investment does. For this reason, federal investment does not detract from national saving in the same way as other components of the deficit.

The possibility of excluding public investment from the deficit raises analytic and procedural complications, however. As an analytic matter, treating public investment as part of national saving makes it important that public investment have a rate of return that is at least as high as that of private investment, and therefore places special importance on careful evaluation of projects in ways that I will discuss in the balance of my statement. As a procedural matter, excluding public investment from the budget deficit raises a number of accounting issues and other problems that CBO has discussed at some length in other contexts.[1]

Most federal investment programs have been designed not only to foster economic growth, but also to advance various social goals. In some instances, social goals have been the primary purposes of federal programs. Many human resource programs, for example, have been intended primarily to improve the health, income, education, or other opportunities of relatively disadvantaged people. In other cases, federal programs have been designed to standardize the level of some good or service throughout the country and for all segments of society. Federal highway outlays have been justified in part by the belief that all regions of the country should have equal mobility; similar arguments help explain federal support for water quality projects. Finally, federal support for research and development has often been designed

1. For additional discussion, see Congressional Budget Office, *The Federal Deficit: Does It Measure the Government's Effect on National Saving?* (March 1990), pp. 21-22.

to provide some public good, such as defense or space exploration, rather than promote economic growth.

Decisions about how much to spend in pursuit of these social goals necessarily involve political as well as economic judgments. The economic component of such decisions involves assessing whether a program being considered is the most cost-effective method of achieving a particular goal or goals. Such analysis, however, was beyond the scope of our report.

It is important to distinguish the impact of federal investment on increasing the long-term productive capacity of the economy from another, superficially similar one: bringing about short-term increases in GNP during periods of recession by putting idle resources back to work. Keynesian economic analysis holds that expanded federal spending of any kind can increase GNP during recessions, not because it necessarily results in productive investments, but because it stimulates aggregate demand and puts unemployed workers back to work. This analysis has become controversial in recent years, both among theoretical economists and practical analysts of government spending. In any case, it is not the subject of CBO's report and today's testimony.

Over the last decade, federal investments in infrastructure have trended slightly downward. In 1990 federal infrastructure investments totaled $26.2 billion. Nearly $14 billion was spent on highways; the remaining investments were divided among programs for water resources, mass transit, aviation, municipal wastewater treatment facilities, and rail transportation.

The economic effects of these outlays have been the subject of much recent debate. A few studies have argued that additional investment in public infrastructure would make large and immediate contributions to private economic output. Indeed, these studies have suggested that private output could be increased far more through added spending for public infrastructure than by an equal amount invested in private business plants and equipment. But these studies have been the exception. Their conclusions were based on statistical methods that describe the aggregate economic relationship between infrastructure investment and private economic output. Most analysts, however, have found the statistical approach to be unreliable in this context, because the results that it yields vary widely with small changes in the data or statistical techniques used.

Traditional cost-benefit analysis, which estimates the benefits and costs of individual projects or classes of projects, is usually a more reliable guide to the economic effects of public investment than statistical analyses. But like statistical studies, cost-benefit analyses have certain technical limitations. Moreover, they can be expensive and time-consuming. Done carefully, however, cost-benefit studies offer the best information about the economic effects of infrastructure investment. The most careful empirical research has been done for investments in aviation and highways. Those studies indicate that returns are highest for maintaining existing assets and expanding capacity at certain congested facilities. They also indicate that substantial economic benefits could be achieved through the more efficient use of existing infrastructure assets, particularly highway and aviation facilities.

Cost-benefit studies indicate that increased outlays for airport capacity could yield substantial economic returns. The recent rise in air travel has caused increasing delays at airports and in airways. Adding airport capacity by expanding such facilities as runways, taxiways, landing aids, and terminals could reduce congestion and yield sizable economic benefits. One recent study estimated that building additional runway capacity at a cost of $1.5 billion a year would yield annual benefits of $11 billion for several years--clearly a high rate of return. Nearly all of the benefits would take the form

of reduced waiting time for passengers ($7.9 billion) and lower operating costs for carriers ($2.8 billion).

Cost-benefit analysis also indicates that certain increases in federal spending for highways yield substantial returns. In general, rates of return would be far higher on spending to maintain existing highways than on projects to enhance capacity. Data from 1985 indicate that increasing highway spending enough to maintain current road conditions, for example, would yield a rate of return in the range of 30 percent to 40 percent. By contrast, projects to add new capacity in congested urban areas could generate returns between 10 percent and 20 percent. Further increases in highway spending, however, would yield far lower rates of return. Bringing all road sections up to minimum standards of service or safety, for example, would generate a rate of return between 3 percent and 7 percent. And fixing all those highway deficiencies above minimum service and safety standards would lose money rather than make it.

Using Infrastructure More Efficiently

A significant fraction of the benefits from added investment in infrastructure could be achieved simply by using existing capital stock more efficiently. Better pricing is one of many efficiency-enhancing options that have been

considered. Airlines, for example, might be charged landing fees that encourage the use of aircraft that carry the greatest number of people per plane and therefore would reduce congestion. Landing fees also could provide incentives to shift some flights from highly congested peak periods to off-peak hours. One study has estimated that efficient airport pricing would provide net benefits of $3.8 billion annually.

Substantial economic benefits would also follow more efficient roadway pricing. Although damage to pavement results principally from vehicle weight per axle, current highway taxes provide no incentive to minimize it. Studies estimate that replacing current highway taxes with fees that reward the use of trucks that reduce damage to roads could yield annual net benefits of more than $5.4 billion.

FEDERAL INVESTMENTS IN HUMAN CAPITAL

Economic growth also depends on the skills and productive capacity that people bring to their jobs. Federal outlays contribute to this human capital through programs that offer education, job training, the informal acquisition of skills through work experience, or improved physical and mental health. It is difficult to quantify the effect of particular federal programs on workers'

subsequent productivity. The notion of human capital spending therefore remains elastic, and the exact definition somewhat arbitrary. Under a rather narrow definition that includes only education and training programs, federal outlays totaled $26.4 billion in 1990. A broader definition that also includes outlays for most social services and certain food and nutrition assistance programs-such as the Special Supplemental Food Program for Women, Infants, and Children (WIC) and the National School Lunch Program-would raise total federal outlays for human capital in 1990 to $42.2 billion.

The economic effects of some federal human resource programs, particularly job training programs, generally have been measured in terms of their impact on participants' earnings. Overall, training programs appear to have led to modest gains in the average earnings of program participants. Most human resource programs were designed principally to further noneconomic goals, however, and these programs generally have not been assessed for their economic returns. For example, the WIC program is intended to reduce health problems associated with inadequate diets by providing food assistance and nutrition education. The program appears to have achieved some of its objectives, raising the average birthweight of infants born to participating mothers and reducing the incidence of preterm births. Whether achieving the program's objectives will ultimately increase gross

national product is not known, nor is it the central issue in deciding how much to spend for the program.

FEDERAL INVESTMENTS IN RESEARCH AND DEVELOPMENT

The federal government also promotes economic growth through investments in research and development (R&D). These investments may add to a store of knowledge that can be used to develop new products or production processes. In 1990, federal spending for R&D totaled $67 billion, about 45 percent of all R&D performed in the U.S. economy.

About two-thirds of total federal R&D outlays support development work, which involves finding practical applications for new knowledge (the bulk of federally funded R&D is devoted to new weapons). The remaining federal outlays are split equally between applied research, which seeks to advance knowledge needed to develop new products and processes, and basic research, which seeks to advance knowledge without regard to specific applications.

Limited evidence suggests that federal funding of certain types of research and in certain areas offers significant economic benefits. Economic measures suggest generally high rates of return for academic research in

science and engineering, which accounts for about 25 percent of all federal funded R&D. Research in health and agriculture also appears to yield significant economic benefits. Privately funded R&D appears to be more effective at expanding productivity than most other federally funded R&D.

These results should be expected, perhaps, because most federally funded R&D is designed not to promote economic growth, but to further the goals of various federal agencies, such as defense or space exploration. In many cases, these goals cannot be measured in economic terms. As a result, the spending for such R&D may be best evaluated on the basis of how cost-effective is its contribution to the goals of the funding agency, rather than on claims of ancillary economic benefits.

CONCLUSION

Most broadly, spending in each of these areas may yield returns greater than the average rate of return to private investment. Such high returns, however, can be expected only from carefully selected spending projects. And in many cases, substantial economic benefits also could be achieved through more efficiently structured programs, which would not add to federal expenditures.