THE PRODUCTIVITY PROBLEM: ALTERNATIVES FOR ACTION

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NOTES

The latest revisions to the National Income and Product Accounts, released by the U.S. Department of Commerce on December 23, 1980, were not available in time to be incorporated into this report.

The bill numbers given in this report are those of bills introduced in the 96th Congress, unless otherwise stated.

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Director

ERRATA SHEET

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Page 57, third sentence of first paragraph should read: "In addition, the distribution of training funds is based on criteria, such as past unemployment rates, that may not conform to the need to retrain workers."

Page 63, eighth line should read: "the funding under the Labor Management Cooperation Act of 1978 (Section 6 of the Comprehensive Employment and Training Act Amendments of 1978), which provides support for"

PREFACE

This study of productivity in the U.S. economy was prepared at the request of the House Budget Committee. It analyzes the reasons for the recent slowing in productivity growth and examines a wide range of policies aimed at reversing the trend. In keeping with the mandate of the Congressional Budget Office (CBO) to provide objective and nonpartisan analysis, the report makes no recommendations.

The report was prepared by members of CBO's Fiscal Analysis Division under the direction of William J. Beeman. George Iden, Marvin Phaup, and Frank Russek were the principal authors. Susan R. Helper, Joseph A. Ritter, John W. Straka, and Robert W. Staiger provided research assistance. Earlier drafts received helpful scrutiny from Alan Blinder of Princeton University, Anthony Yezer of George Washington University, J.R. Norsworthy of the U.S. Department of Labor's Bureau of Labor Statistics, Rolf Piekarz of the National Science Foundation, and Frederick O. Ribe of CBO's Tax Analysis Division. The report was typed by Debra M. Blagburn. Francis S. Pierce and Robert L. Faherty edited the manuscript.

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SUMMARY

Productivity growth, which is the increase in goods and services produced per hour of work, slowed to a crawl in the United States during the 1970s. Continued weak growth in productivity could have profound implications for American society: it could mean greater inflationary pressures as aggregate demand increases faster than the goods and services needed to satisfy it; heightened conflict among social groups struggling for improvements in their living standards; and a diminished capacity to pursue new objectives of importance to the nation and to individuals.

Government policies can affect productivity growth. But it is essential to recognize that the root causes of productivity growth are complex, interdependent, and ramify into almost every economic activity. The decisions of individuals and business enterprises concerning how much to save or invest, and in what form, affect productivity. So do decisions to acquire training or education, to have and rear children, to seek employment, to move from one area to another, to adopt a different production technique, or to use a particular form of transportation. The same holds for national decisions to change defense policies, to raise barriers against foreign goods, or to enforce antipollution standards.

Government cannot and should not attempt to influence all of the private decisions affecting productivity. Nor can it hope to have a single, all-inclusive "productivity policy" that could be applied to all of the channels through which government decisions affect productivity.

Productivity and the Economic Environment

Policies to encourage faster growth in productivity cannot be pursued in isolation from general macroeconomic policies. What happens in the economy as a whole will have an important effect on productivity growth. The major determinants of productivity--the quality of the labor force, the accumulation of capital, and the pace of technological change--are strongly affected by the economic environment. For example, unemployment adversely affects the

acquisition of skills through work experience and training, as well as the mobility of workers. Economic slack also undermines the incentive to invest in new plant and equipment, and to develop and adopt new technology. Inflation may also increase business uncertainty, thus diminishing innovation and investment. Hence, a more stable economic environment would in itself make a major contribution to productivity growth. 1/

Criteria for Choosing Specific Policies

A practical strategy probably requires concentrating efforts on a small number of specific productivity-enhancing policies. In choosing among the many measures that may be advanced to improve productivity, what should be the criteria? A first consideration is the extent to which the federal government can influence the factors governing productivity with some degree of predictability. For example, the real cost of energy over time is probably relatively unresponsive to government economic policy. On the other hand, the composition and perhaps the level of saving and investment--important determinants of productivity--can be influenced by changes in tax law. Less susceptible to control by policy are the size and quality of the work force, and the pace of technological innovation, which are highly important in determining productivity growth.

A second criterion is the degree to which the goal of increasing productivity may conflict with other goals--such as more equal income distribution and a better environment. For example, productivity could be increased by lightening the burden of regulation imposed upon industry; this would free workers and resources for use in production, but it might involve other costs in reduced industrial safety or environmental pollution.

A third criterion is that of political feasibility--whether policies to increase productivity can overcome a political tendency

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1/ The problem of inflation is discussed in several other reports by the Congressional Budget Office: Inflation and Growth: The Economic Policy Dilemma (July 1978); The Fiscal Policy Response to Inflation (January 1979); and a forthcoming report on government policies to reduce inflation.

that works in the opposite direction. For instance, growth in productivity can be influenced by antitrust policies, by policies affecting particular industries, and by the lowering of trade barriers. In the past, however, much legislation in these areas reduced rather than stimulated productivity growth.

A fourth criterion is administrative simplicity. Proposals that would significantly add to the existing complexity of the tax system or that would impose heavy legal and/or administrative burdens are of questionable merit.

Policy Options

Given the above criteria, an agenda for productivity growth legislation might include:

- Modification of the tax laws to encourage saving and investment;
- Redesigning of government regulations to minimize their negative effects on productivity;
- Consideration of new measures to stimulate research and development (R&D), diffusion of modern technology, and improvement of the economic climate for small, high-technology businesses;
- Modification of federal policies to encourage the development of workers' skills and adaptiveness; and
- Examination of policies toward specific industries, focusing on their long-run productivity effects.

Tax Policies to Encourage Capital Formation. The present tax system was not designed for an era of inflation. The interaction of inflation and the tax system has encouraged consumption at the expense of saving and investment. Proposals that seem likely to counteract this include: reducing the marginal tax rate on interest and dividend income; excluding net additions to savings held in financial assets from taxable income until the saver retires; and limiting the deductibility of interest payments by consumers and homeowners. (Economists are uncertain whether such changes will

lead to an increase in total saving, but believe that they can increase the portion of saving that is channeled into business capital formation.) On the investment side, a number of proposals would increase incentives to invest in new plant and equipment, including faster depreciation and tying the amount of depreciation to the rate of inflation.

Government Regulations. The current approach to social regulation frequently emphasizes a single purpose, such as pollution control, without regard to the consequences for productivity. Some argue that a better outcome is possible by tilting more in the direction of economic incentives, and less in the direction of regulation. The incentive approach, such as taxing firms in relation to their pollution, is not without its problems; but it does allow a maximum of flexibility that is important for productivity growth.

Policies to Encourage New Technologies. These policies involve three areas: research and development, the diffusion of new technologies, and the special role of small, high-technology businesses. A general stimulus would be provided by a tax credit for R&D spending, or accelerated depreciation on capital used for R&D. But in some areas, such as basic research or sectors of the economy characterized by small firms, more direct government involvement may be required to achieve a significant expansion of R&D. A higher rate of business investment would help to spur diffusion of new technologies, as would more specialized measures such as liberalizing patent rights for government contractors. Finally, the economic situation of small, high-technology businesses is especially volatile; it could be improved by a variety of tax and credit measures to encourage risk capital and by changes in regulatory measures to reduce financial and administrative burdens.

Improving the Skills and Adaptiveness of Workers. Federal policies do not, as a rule, have a direct impact on this aspect of the labor force, but some have an indirect effect. For example, the structure of the unemployment insurance system might be modified to encourage a more continuous relationship between workers and employers to further skill maintenance and development during cyclical downturns. Also, the Trade Adjustment Assistance program, which seems to emphasize assistance rather than economic adjustment, could be modified to encourage more retraining and increased mobility. In addition, the Comprehensive Employment and Training Act (CETA) programs might be modified to shift their emphasis from public service employment to training.

Industrial Policies. The economic successes enjoyed by some countries that have undertaken to encourage the development of particular industries have stimulated interest in an "industrial policies" approach for the United States. But informed opinion on this is quite divided. For both technical and political reasons, such policies may be difficult to apply in this country. Even so, the United States has many existing policies that bear in different ways upon the industrial structure. These might be reexamined in the light of their long-run implications for productivity growth.

Expected Impact

The above policies would likely boost economic growth significantly, but slowly. No policy or combination of policies can be expected to have a prompt, dramatic effect on productivity growth. Nor would they provide an easy answer to the problem of inflation, particularly the recent very high rates of inflation. Productivity growth, which averaged about 3 percent a year in the postwar period up to the last decade, declined during the 1970s to the point where it has averaged less than 1 percent since 1973. Studies of productivity suggest that federal policies--particularly regulatory and tax policies--do not account for the bulk of the slowdown. Nor is it likely that a change in federal policies alone could restore productivity growth to the postwar trend. Nevertheless, the small gains that might be expected--perhaps 1/2 of 1 percent after several years--are important. Their cumulative impact on living standards over the next decade would be substantial.

The multitude of policy actions taken in the next several Congresses might be modified to make productivity growth a high-priority national goal. Critical areas of concern include: the level and composition of saving and investment; the quality and flexibility of the labor force; the rate of technological advance; the degree and method of industrial regulation; the relative price of energy; and the structure of industry. Most of the policy measures currently under discussion tend to involve increases in investment of one kind or another--such as in plant and equipment, research and development, and training--and adjustments of policies to permit and encourage markets to function more efficiently. Most of the policy options also have their costs, such as the diversion of resources from consumption to investment, or the compromise of other goals such as clean air. While such policies cannot, as a rule, be expected to have large immediate effects, their long-run benefits would be considerable.

CHAPTER I. INTRODUCTION

Growth in output per worker-hour, sometimes called labor productivity, declined dramatically in the United States during the 1970s. After increasing at an average annual rate of more than 3 percent from the end of World War II to 1965, labor productivity growth slowed to 2.2 percent a year in 1965-1973 and to 1.0 percent a year in 1973-1978. Productivity declined in 1979 by almost one percent (see Table 1).

TABLE 1. LABOR PRODUCTIVITY GROWTH RATES IN THE UNITED STATES, BY SECTOR, SELECTED PERIODS, 1947-1979 (Percent changes at annual rates)

Periods	Total Private Business	Farm	Total Nonfarm Business	Manufacturing	Nonfarm Nonmanufacturing
1947-1955	3.5	6.4	2.7	3.6	2.2
1955-1965	3.0	5.1	2.6	2.8	2.4
1965-1973	2.2	5.2	1.9	2.4	1.7
1973-1978	1.0	2.8	0.9	1.5	0.6
1978-1979	-0.8	4.7	-1.0	0.8	-2.0

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics.

This slowdown has retarded improvement in living standards, increased costs of production, and diminished the long-term prospects for the U.S. economy. The gravity of these developments has prompted an urgent search for policy measures to strengthen labor productivity. This report is a part of that search.

DETERMINANTS OF PRODUCTIVITY GROWTH

What are the factors that determine productivity growth in the long run? 1/ One of the most important factors is the amount of physical capital--such as tools, machinery, and other work-facilitating equipment--available for use by each worker, or the capital/labor ratio for short. Higher capital/labor ratios are associated with increased output per hour worked. The amount of capital available depends on the extent of saving and investment in the past, while the number of workers is determined by population size and structure and by the decisions of people to enter the labor force. Also important in determining productivity are the quality and composition of the capital stock--that is, the degree to which the capital stock embodies the best technology and is allocated to its most productive uses.

A second major determinant of labor productivity is the skill level and health (or human capital) of the work force. Better trained, more knowledgeable, healthier workers mean higher productivity. As with capital, the efficient allocation of labor also contributes to higher productivity.

A third factor in the increase of productivity involves innovation, or the development and use of efficient technologies. Investment in research and development contributes to innovation, but it is only one aspect of a much broader process.

A fourth factor adversely affecting productivity in the 1970s was the tenfold rise in international oil prices from $3 a barrel in 1973 to $30 in 1979. This price change reduced labor productivity in several ways, including: (a) rendering a significant amount of the capital stock unprofitable to use, thus reducing the effective capital/labor ratio; (b) inducing firms to use more labor and capital for energy conservation rather than production; and (c) adding to inflation, which among other things induced governments to adopt restrictive policies. This adverse effect on productivity of higher energy prices has been observed in most of the major industrialized market economies of the world (see Table 2).

1/ Short-term cyclical factors can cause sharp variations in productivity, but they are not the concern of this report.

TABLE 2. ANNUAL GROWTH IN GROSS DOMESTIC PRODUCT PER EMPLOYED WORKER IN MAJOR INDUSTRIAL COUNTRIES, 1965-1979 (Percent changes at annual rates)

Country	1965-1973	1973-1979 a/
United States	1.6	0.3
Canada	2.4	0.4
United Kingdom	3.4	1.1
Italy	5.8	1.7
France	4.5	2.9
West Germany	4.3	3.1
Japan	9.1	3.4

SOURCE: U.S. Department of Labor, Bureau of Labor Statistics, unpublished data.

a/ Data for 1979 are preliminary.

Finally, the extent and type of government regulation has an effect on labor productivity--partly because much of the benefit of this regulation is not included in measures of output. 2/

2/ Measurement problems make it especially difficult to assess productivity data. For example, output growth for several significant sectors of the economy--including construction and services--tends to be understated because suitable price indexes are not available. Thus construction is said to have accounted for as much as one-fifth of the slowdown in average productivity growth between the period 1947-1965 and the period 1965-1978, but a considerable part of the decline in construction productivity growth may be apparent rather than real because of measurement difficulties. Another reason that output or gross national product (GNP) may be understated is that some kinds of technological change are not fully reflected in price indexes. Improvements in computers that increase their capacity, and increases in the energy efficiency of