

Chapter 2

Economic Growth

FASTER ECONOMIC GROWTH in the United States requires, above all, an expansion of demand, to take up existing slack and to match future increases in capacity. Unless demand is adequate to buy potential output, accelerating the growth of potential is neither an urgent problem nor a promising possibility. Full utilization will itself contribute to growth of capacity. Saving and investment to increase capacity and improve productivity flourish in prosperity and wane when the economy is slack. Reduction of economic fluctuations lessens the risks associated with innovation and investment and diminishes the resistance to technological change. A full employment economy can achieve more rapid growth than an economy alternating between boom and recession; for that reason, effective stabilization policy is the first step toward a policy for economic growth. But stabilization policy is not enough. A sustained improvement in the growth rate requires also a concerted effort, private and public, to speed the increase of potential output. Chapter 1 has analyzed the current problem of underutilization. In this chapter the emphasis is on the growth of potential output.

The growth of the U.S. economy results primarily from decisions taken by individuals, families, and firms. However, all levels of government—Federal, State and local—have a role in the promotion of economic growth. It is no part of that role to force on unwilling households and business firms any particular rate of growth in their own individual activities. But if, as a Nation, we desire a higher rate of growth, there are two consequences for government policy. First, in those areas of economic activity traditionally allotted to some level of government, public expenditures must provide services which contribute to the growth of potential output and which satisfy the needs that accompany increasing income and wealth. Second, public policy—notably in the fields of taxation, education, training, welfare, and the control of money and credit—inevitably stimulates or retards the growth potential of the private economy, even if no such result is consciously intended. Accelerated economic growth requires coordinated policy at all levels of government to facilitate the increase of productivity and the expansion of capacity. No change is implied in the historic division of responsibility between public bodies and private citizens.

GROWTH: PROBLEM OR OPPORTUNITY

The sources of growth of potential output often present themselves as "problems." A rapidly expanding labor force provides new workers to man factories and perform services, and opens new opportunities for investment to equip them. But it accentuates simultaneously the "problem" of assuring useful jobs at satisfactory wages for an ever-growing number of job seekers. Rapid technological progress increases productivity, releasing labor and other resources for new uses. But it creates simultaneously the "problem" of displaced workers, declining industries, and depressed areas. The problems and the opportunities are opposite sides of the same coin. A commitment to accelerated growth is at the same time a commitment to solve even more such problems. The challenge is to find solutions which do not limit the economy's capacity to grow.

This is what is meant by saying that there are "growing pains" associated with economic progress. They are not new. Nor are they insoluble if the expansion of demand creates new opportunities for labor and capital as old ones disappear. An adequate level of demand, though not itself the solution to structural problems, is a necessary precondition to the solution.

The most pressing of the social problems resulting from rapid industrial progress is the creation of islands of obsolete capacity and unwanted skills. It is inequitable to inflict the costs of progress on an arbitrarily selected few, when the benefits are widely shared. It is more than inequitable—it is self-defeating—to invite resistance to progress, pools of idleness, low productivity, and poverty. The need for specific policies to restore the earning power of displaced workers and the vitality of depressed regions has already been emphasized in connection with the objectives of the Employment Act itself. That need is intensified with the acceptance of accelerated economic growth as a goal of national policy.

Faster economic growth incurs costs and imposes responsibilities. It must—if it is worth undertaking—confer even larger benefits. Potential output has been growing, on the average, at 2.9 percent annually since the turn of the century and at about 4 percent since the end of the second World War, though since 1954 the rate has slowed to 3.5 percent. Yet there are sound reasons for wanting even faster growth in the future—(1) unsatisfied needs at home and (2) threats to freedom abroad.

(1) Per capita disposable personal income, measured in 1961 dollars, has been increasing since 1947 at about 2 percent a year; it surpassed \$2,000 a year in the last quarter of 1961. Nevertheless, about 30 percent of all families and unrelated persons have less than \$1,000 of money income per person, and are now below the level that the average American achieved a quarter-century ago.

A high rate of economic growth today will enable increasing millions to enjoy better lives tomorrow. Only a limited imagination can fail to see opportunities for providing more fully both such basic needs as food,

clothing and shelter and the amenities of civilized life—education, medical care, travel and recreation.

In many, though not all, contexts growth in per capita production will reduce the number of persons with low incomes. Poverty in the United States is disproportionately concentrated among the aged, the nonwhite, the poorly educated, marginal farmers, and families without a male breadwinner. The disadvantaged fare better in a buoyantly growing economy. But for some, the remedy lies in welfare or insurance payments coupled with substantially improved services and retraining to restore them to self-sufficiency. In the longer run, the provision of good education and adequate health services for the children of these families is essential to break the degrading cycle of dependency.

Other unfilled needs lie in the field of public or mixed public and private expenditures. The renewal of cities, the reconstruction of transportation facilities, the improvement of education at all levels, the provision of new facilities for the arts, the expansion of medical care facilities, the conservation and expansion of our national parks and forests, all these things need more resources than we now devote to them. Economic growth will help create those resources.

(2) The leadership of the free world imposes heavy economic burdens on the United States. The primary responsibility for maintaining the military security of the free world falls on us. Although we hope that world tensions will slacken, we must be prepared if they do not. If the threat rises in intensity, we must increase our defense capabilities to meet that threat. The future needs of defense are uncertain but imperative; the larger and more efficient our economy, the more readily will we be able to shoulder larger military burdens, if we must.

Our responsibility is no less in the global battle against poverty, ignorance, and disease. The less developed nations need our capital and technique. They also need a further demonstration of the ability of a free economy to grow, to prosper, and to use its enhanced resources wisely.

The foreign trade policy of the United States should be formulated with regard for the obvious fact that a more satisfactory rate of economic growth can be achieved here and abroad if producers are stimulated to efficiency by active participation in international trade. A liberal trade policy works to this end by providing increased market opportunities abroad for U.S. products while promoting the efficient utilization of resources through the invigorating effects of foreign competition, whether encountered in our home markets or in the markets of other countries.

GOALS FOR THE CURRENT DECADE

Goals, if they are to be useful, should be neither too easy nor too difficult. To set a goal that would have been achieved anyway serves no useful purpose. To set a goal that is obviously impossible of achievement invites a

loss of confidence and perhaps failure to achieve what is possible. A good target is one that can be met, but not without effort.

This general limitation sets only a range of growth targets for the United States in the 1960's. It is no easy matter to say exactly how fast an economy can grow, or to obtain consensus on how fast it should grow. Some of the benefits of growth have already been discussed. The costs of growth are the diversion of resources from the satisfaction of current needs to those uses which will yield increased output in the future, and the strain on our institutions and social fabric which this diversion might entail. Ultimately, a democratic society achieves one rate of growth rather than another through the freely made economic and political decisions of its citizens. The task of economic analysis is to show what the choices are, what alternative choices will cost, and what benefits they may yield.

The basic determinants of a society's productive capacity in any year are as follows:

- (1) The number of people available for employment, the number of hours they wish to work, their incentives and motivations, and their health, general education, occupational desires, and vocational skills;
- (2) The stock of new and old plant and equipment, and its composition by age, type, and location;
- (3) The terms on which the economy has access to natural resources, whether through domestic production or imports;
- (4) The level of technology, covering the range from managerial and organizational competence to scientific, engineering, and mechanical understanding;
- (5) The efficiency with which resources, domestic and foreign, are allocated to different economic ends, and the extent of monopolistic or other barriers to the movement of labor and capital from low-productivity to high-productivity uses.

These basic determinants interact in complex ways. For example, advanced machinery is of little use without skilled labor to operate it; advanced technology often requires capital equipment to embody it.

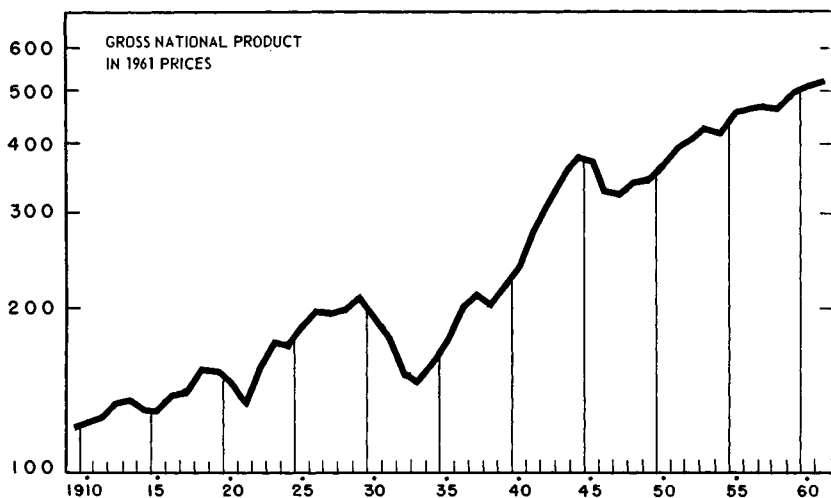
Next year's productive capacity will exceed this year's to the extent that the basic determinants can be expanded and improved. Success in achieving a higher rate of growth in the future depends on our willingness to spend current resources to expand our production potential and by our skill and luck in spending them effectively.

The record of economic growth in the United States does not suggest that the average growth rate realized in the past is an immutable natural constant, leaving no scope for growth-stimulating policies. The rate of growth of output has varied from one span of years to another, depending on specific economic circumstances (Chart 9). There was one prolonged period of stagnation—the decade of the 1930's—when potential output grew at less than the average long-term rate, and realized output grew more slowly still. Again, there have been periods when poten-

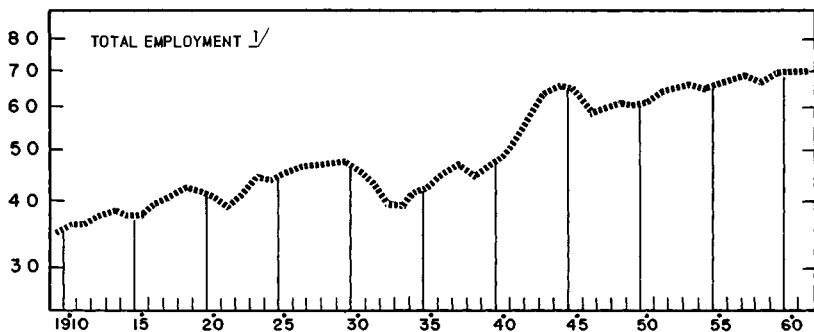
CHART 9

Output, Employment, and Productivity

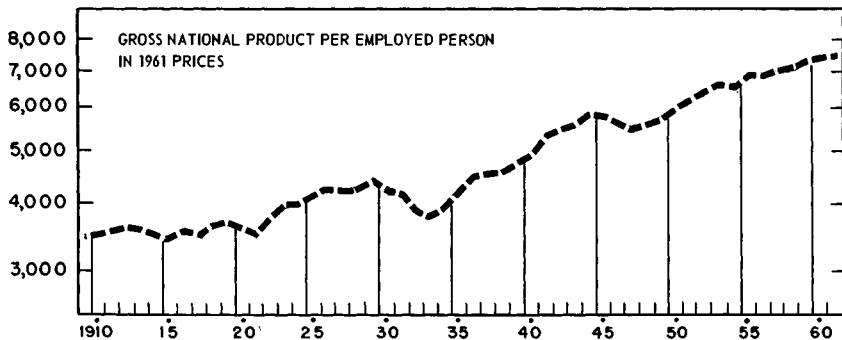
BILLIONS OF DOLLARS (Ratio scale)



MILLIONS OF PERSONS (Ratio scale)



DOLLARS (Ratio scale)



^{1/}CIVILIAN EMPLOYMENT PLUS ARMED FORCES.

SOURCES: DEPARTMENT OF COMMERCE, DEPARTMENT OF LABOR, AND COUNCIL OF ECONOMIC ADVISERS.

tial output expanded more rapidly than the past average. The postwar years have been such a period of accelerated growth. Even including the years since 1954, during which growth was sluggish, real gross national product (GNP) in this postwar period has increased at an average annual rate of 3.5 percent. Had potential output been realized in 1960, as it was in 1947, the realized growth rate would have been 4.0 percent a year.

Table 10 shows, for the 1947-60 period, the increases in realized and potential GNP, population, labor force, employment, man-hours, GNP per person, and productivity. Approximately four-fifths of the annual increase in potential GNP during the period is explained by increases in output per man-hour and one-fifth by increases in total man-hours worked. The increase in output per man-hour is, of course, the resultant of improvements in the quality of the labor force, the quantity and quality of capital, the level of technology, and still other factors.

TABLE 10.—*Output, population, labor input, and productivity, 1947-60*

Item	Unit	1947	1954	1960 ¹	Percentage change per year		
					1947 to 1954	1954 to 1960	1947 to 1960
<i>Output:</i>							
Gross national product.....	Billions of dollars, 1961 prices.....	324.9	422.0	511.1	3.8	3.2	3.5
Potential gross na- tional product ²	do.....	324.9	440.5	541.8	4.4	3.5	4.0
<i>Population</i>	Millions of persons.....	144.1	162.4	180.7	1.7	1.8	1.8
<i>Labor input:</i>							
Labor force ³	Millions of persons.....	61.8	67.8	73.1	1.3	1.3	1.3
Employment ³	do.....	59.4	64.2	69.2	1.1	1.3	1.2
Potential employ- ment ⁴	do.....	59.4	65.1	70.2	1.3	1.3	1.3
Man-hours.....	Billions of man-hours.....	129.6	132.9	139.7	.4	.8	.6
Potential man-hours ⁵	do.....	129.6	135.4	143.1	.6	.9	.8
<i>GNP per capita</i>	Dollars, 1961 prices.....	2,255	2,599	2,828	2.0	1.4	1.8
<i>Productivity:</i>							
GNP per worker.....	Dollars, 1961 prices.....	5,470	6,573	7,386	2.7	2.0	2.3
Potential GNP per worker.....	do.....	5,470	6,768	7,718	3.1	2.2	2.7
GNP per man-hour.....	do.....	2.51	3.18	3.66	3.4	2.4	2.9
Potential GNP per man-hour.....	do.....	2.51	3.25	3.79	3.8	2.6	3.2

¹ Data include Alaska and Hawaii.

² Same as actual in 1947; in 1954 and 1960, calculated from 3.5 percent trend line through mid-1955.

³ Includes armed forces.

⁴ Assumes 4 percent unemployment rate for all periods, with no adjustment for cyclical movement of the labor force.

⁵ Same as actual in 1947; in 1954 and 1960, assumes 4 percent unemployment rate and corrects for decline in hours induced by recession.

Sources: Department of Commerce, Department of Labor, and Council of Economic Advisers.

But consideration of the years 1947-60 as a unit masks significant differences within the period. There was a substantial slowing down in the growth of potential output between the first and the second part of this period. From 1947 to 1954, potential GNP grew at a rate of 4.4 percent a year, and from 1954 to 1960 at a rate of 3.5 percent. Since the labor

force grew at a rate of 1.3 percent a year in both periods and average hours worked fell somewhat more slowly after 1954 than before, the slower rate of growth that has taken place since 1954 is explained by a decline in the rate of increase of productivity. This decline resulted in part from a more slowly rising trend of productivity within nonmanufacturing industry, and in part from a shift—usual in slack periods—from manufacturing to nonmanufacturing in the composition of economic activity.

Further evidence that modern industrial economies are not helpless prisoners of past long-term trends is to be found in Table 11, which shows that the major countries of Western Europe, and Japan as well, have recently exceeded their own long-term performances.

TABLE 11.—*Growth of gross national product per man-year, selected countries, 1913–59*

[Percent per year]

Country	1913–59	1950–59
Japan	2.6	6.1
Italy	1.7	4.7
Germany	1.4	4.5
France	1.5	3.6
Netherlands	1.3	3.4
Norway	1.9	3.1
Sweden	1.7	2.8
United States	1.8	2.2
Canada	1.5	2.0
Denmark	1.2	1.8
United Kingdom8	1.7

NOTE.—Gross national product at constant prices was used wherever available. See *National Institute Economic Review*, No. 16, July 1961, pp. 36 and 46–47, for data and description of sources of materials used.

Source: National Institute of Economic and Social Research.

On June 28, President Kennedy stated that a growth rate of 4.5 percent yearly is “well within our capability.” On November 17, the United States joined with the other 19 member nations of the Organization for Economic Cooperation and Development in setting as a target the attainment of a 50 percent (4.1 percent a year) increase in their combined national product during the decade from 1960 to 1970. The ability of the United States to meet, and even to exceed, this target is the best guarantee of success for the OECD. A high rate of growth of potential output will not be reached immediately. The policies to achieve it, even if adopted now, will not bear fruit at once, and it will not be achieved without effort. But in the second half of the decade, with the help of a rapidly growing labor force, it should be possible to exceed a growth rate of 4.5 percent annually and to achieve an average rate of growth of potential output of 4.3 percent between 1960 and 1970.

If this growth is achieved and if, in addition, 1970 is a year of 4 percent unemployment, actual GNP will grow at an average annual rate of 4.9 percent (Table 12). The difference between this figure and 4.3 percent reflects the current shortfall of actual output from potential output. Such a rate of growth of total GNP would mean an annual increase of GNP per person in the population of 3.2 percent, nearly double the rate achieved during

TABLE 12.—Output, population, labor input, and productivity, 1960 actual and 1970 illustrative

Item	Unit	1960 ¹	1970 illustrative ²	Percent-age change per year 1960-70
<i>Output:</i>				
Gross national product.....	Billions of dollars, 1961 prices.....	511.1	825	4.9
Potential gross national product.....	do.....	541.8	825	4.3
<i>Population</i>	Millions of persons.....	180.7	213.8	1.7
<i>Labor input:</i>				
Labor force ³	do.....	73.1	87.1	1.8
Employment ³	do.....	69.2	83.7	1.9
Potential employment.....	do.....	70.2	83.7	1.8
Man-hours.....	Billions of man-hours.....	139.7	162	1.5
Potential man-hours.....	do.....	143.1	162	1.2
<i>GNP per capita</i>	Dollars, 1961 prices.....	2,828	3,858	3.2
<i>Productivity:</i>				
GNP per worker.....	do.....	7,386	9,868	2.9
Potential GNP per worker.....	do.....	7,718	9,868	2.5
GNP per man-hour.....	do.....	3.66	5.09	3.4
Potential GNP per man-hour.....	do.....	3.79	5.09	3.0

¹ Potential series for 1960 based on the following assumptions: *GNP*, calculated from 3.5 percent trend line through mid-1955; *employment*, 4 percent unemployment rate; *man-hours*, 4 percent unemployment rate and correction for decline in hours induced by recession.

² Illustrative figures for 1970 based on the following assumptions: *Potential GNP growth rate* of 4.3 percent per year from 1960 to 1970, with actual and potential being the same in 1970; *population*, 1955-57 fertility levels continue to 1980; *labor force*, participation rate of 57.8 percent of noninstitutional population 14 years of age and over; *employment*, 4 percent unemployment rate; *man-hours*, continuation of previous trend.

³ Includes armed forces.

NOTE.—Data includes Alaska and Hawaii.

Sources: Department of Commerce, Department of Labor, and Council of Economic Advisers.

the 1947-60 period. It is this figure which most nearly measures the gain to society from accelerated economic growth. If, by 1970, we succeed in achieving an unemployment rate below 4 percent, even further increases in output will become possible. To a first approximation, each 1 point decline in the 1970 unemployment rate would add about \$8 billion to 1970 GNP and about 0.1 to the annual rate of growth.

Table 12 is in no sense a prediction of what will actually occur. It shows what would be required to move up to and beyond a 4.5 percent growth rate, giving us a rate of growth of potential for the full decade averaging 4.3 percent a year. Demographic factors lay the foundation for a significant acceleration of potential output. If labor force projections are realized and if past trends in hours worked per man year continue, available labor input will increase during the 1960's at more than one and one-half times its rate of growth during the 1947-60 period. With this increase in labor input, it is a matter of arithmetic that a 3 percent yearly increase in man-hour productivity would be needed if the annual rate of growth of potential GNP is to average 4.3 percent over the decade.

The required growth of output per man-hour was surpassed in the 1947-54 period, but since 1954 performance has fallen below what is required. The vigorous growth of the early postwar period benefited from the possi-

bility of renewing a capital stock which had aged during the depression and war years of low investment. Making good this backlog of investment demand brought with it the quick realization of latent technological progress. Simple continuation of recent trends will not be sufficient to repeat that performance. The rest of this chapter suggests the kind of effort in education, technological development, capital formation, and other areas that may be required to do so. In particular, unless technical progress brings an unexpected increase in the productivity of capital, a major rise in capital investment will be needed.

The population upsurge which began in the 1940's, together with the expected decline in death rates, will give us a rapid increase in the population of working age. Adult women are expected to enter the labor force in increasing proportions; but because a larger fraction of our youth will remain in school and because the trend toward earlier retirement among male workers is likely to continue, over-all labor force participation rates are expected to remain steady. The resultant of these factors should be a labor force in 1970 of a little more than 87 million, an annual rate of increase of 1.8 percent in this decade, compared with the distinctly lower rate of 1.3 percent from 1947 to 1960. If 4 percent of the labor force is unemployed in 1970, total employment will come to 83.7 million. A reduction in the unemployment rate to 3 percent would add over 800,000 to employment.

The calculations of Table 12 assume that the average number of hours worked a year will continue to decline at the same rate as in the past. This reduction in the intensity of work has been going on for a long time. It will continue, both because our citizens choose to enjoy some part of their increased productivity in the form of longer vacations and perhaps a shorter workweek, and because much of the increase in the labor force will consist of part-time workers by preference, notably young people still in school and women with family responsibilities. Full employment will, however, eliminate one possible cause of a decline in average hours; when unemployment rates are high, as they are at present, pressure builds up for a reduction in the workweek. This pressure, motivated by a desire to share the limited volume of employment, is to be sharply distinguished from the desire for increased leisure reflected in the long-run decline in average annual hours. The second of these is to be honored; the first should be met by expanded employment opportunities. Variations in the number of hours worked, like variations in participation rates, also respond to economic forces in other ways. The lure of job opportunities in a growing and prospering economy may attract even more than the expected number of people into the labor force, and may induce some to abandon part-time for full-time work. On the other hand, it is also possible that full employment at the rising wage and salary levels permitted by rising productivity will lead some secondary wage earners to withdraw from the labor force, and others to retire at an earlier age.

The beneficial effects of labor force growth do not occur automatically. Productivity is preserved and increased primarily through acts of investment: investment in the improvement of human resources, in the creation of new technical and managerial knowledge, in the development of natural resources, and in the formation of physical capital. In the case of investment in human capital and in research and development, the link between expenditure and yield is difficult to measure, but there can be little doubt that the return is substantial. In regard to investment in plant and equipment and the development of natural resources, there is more statistical evidence available. No one of these investments can make its full contribution to the objective of accelerated growth without the others. Each of them is necessary; there is good reason to believe that together they can be sufficient, if vigorously pursued.

INVESTMENT IN HUMAN RESOURCES

Increased production is not an end in itself but only a means of providing increased real income for all to share. As indicated earlier, this is one of the reasons that more rapid growth is a desirable social goal. High levels of education and health, equality of opportunity—these are among the valid measures of a society's performance. They are desirable in their own right. In addition, they have an economic dimension. They are among the foundations of growth as well as among its benefits.

Americans have long spoken of foregoing consumption today in order to invest in their children's education and thus in a better tomorrow. For an economy, just as for an individual, the use of the word *invest* in this connection is clearly justified, since it is precisely the sacrifice of consumption in the present to make possible a more abundant future that constitutes the common characteristic of all forms of investment. That devoting resources to education and health is, in part, an act of investment in human capital explains why programs in the area of education and health are economic growth programs. This kind of investment has a long and remarkable history. Rough estimates, which take into account differences in the length of the school year and in school attendance, suggest that the stock of equivalent school years in the labor force rose more than sixfold between 1900 and 1957. The annual rate of growth of the stock of education was more than 3 percent, or about twice the rate of growth of the labor force itself.

Failure to pursue vigorous educational and health policies and programs leads to smaller increases in output in the long run; it is also associated with higher expenditures in the short run. If we fail to invest sufficiently in medical research, we lose not only what stricken individuals might have produced had they been well, but also the use of the resources and funds currently devoted to their care. Failure to invest sufficiently in education means that we will lose the additional output that would be possible with a better educated labor force; it may also mean the perpetuation of social

problems necessitating public expenditures. Recognition of the costs of inadequate investment in social welfare is one of the reasons for the Administration's concern to strengthen family services in the public welfare field.

It is a waste of resources to restrict health and education to those who can afford them. Moreover, in addition to each person's interest in his own health and education, there is a public interest in everybody's health and education. The well-being of each citizen contributes to the well-being of others. As a result, we have organized programs to help the population to obtain a quality education, to require attendance in schools, to help ourselves and others to obtain needed medical care, to require that certain medical precautions, such as vaccinations, be taken by everyone.

Education

Estimates made by private scholars suggest that about one-half of the growth in output in the United States in the last 50 years has resulted from factors other than increases in physical capital and man-hours worked. Education is one of the "other factors." Even without allowance for the impact of education on invention and innovation, its contribution appears to account for between one-fourth and one-half of that part of the increase of output between 1929 and 1956 not accounted for by the increased inputs of capital and labor. Education is of vital importance in preparing the skilled labor force demanded by new investment and new technology.

Education's contribution to output is reflected by the well-documented fact that income—a measure of each individual's contribution to production—tends to rise with educational attainment. Of course, not all differences in money income are the result of education. Differences in native ability as well as parental economic and social status are also reflected. Nevertheless, a substantial proportion of the increase in income at increasing levels of education may be attributed to that education.

In 1930, \$3.2 billion (3.3 percent of GNP in current prices) was spent for all schools at all levels of education. In 1960, expenditures had risen to about \$24.6 billion (5.0 percent of GNP). In turn, in 1930, 29.0 percent of the population 17 years old graduated from high school. By 1958 this was true for 64.8 percent. Similarly, in higher education the number of earned degrees conferred rose from 140,000 in 1930 to 490,000 in 1960.

Though significant progress has been made, substantial opportunities and needs for investment in education still exist. There is a pressing need to improve curricula and teaching methods, make education more readily available to students of merit by reduction of financial barriers, expand facilities and staff to meet rising enrollments, improve the quality and productivity of our teaching staffs and increase their salaries, and narrow the gap in opportunities available to students in different parts of our country. These problems must be met—and met quickly—at all levels of government and at all levels of education if our standards of education are to keep abreast of our needs.

The program of the Administration includes specific proposals designed to meet urgent needs in the field of education: increased funds for scholarships; assistance to institutions of higher education for the construction of facilities; aid to the States for assistance to public elementary and secondary schools; and a program to improve the quality of elementary and secondary education through curriculum research, demonstration projects, teacher training institutes, and special project grants.

Work of this last kind has been begun, with the support of the National Science Foundation, in supplementary training of teachers of science and mathematics, especially in high schools, and in the development of new courses in physics, mathematics, chemistry, and biology. Similar support has been given by the U.S. Office of Education for improvement in courses in English and modern foreign languages; it should be extended to the other major academic fields.

Student opportunities. Of each 1,000 pupils who entered the fifth grade in 1952, 900 entered high school in 1956, 600 graduated from high school in 1960, and 300 entered college in the fall of 1960. Thus 40 per cent of the original 1,000 students did not graduate from high school and half of those graduating from high school did not enter college. Many of these withdrawals are by children of better than average intelligence. It is generally agreed that improvement of teaching and expansion of guidance and counseling services will help to reduce the drop-out rate. Efforts to eliminate this waste of human resources have already begun, but more are needed.

Financial barriers to secondary education come chiefly from a pressing need for immediate income for the family. At the college level, the financial problem arises both from the direct costs of attending college and the income foregone. The Office of Education estimates that in the 1961-62 school year the average direct costs of attending public colleges are about \$1,700 a year, and of attending private colleges, \$2,300. These costs have risen rapidly in recent years, and they are expected to continue to rise. They are significant obstacles for large parts of our population. The Administration proposal for assistance to higher education would authorize 4-year scholarship aid for 212,500 capable students in need of financial assistance.

Personnel and facilities. Enrollments in elementary and secondary schools rose from 28.2 million pupils in 1950 to 42.5 million in 1960. Enrollment in 1970 is expected to be 53.0 million. In 1950, 2.3 million students were enrolled in institutions of higher education, and by 1960 the figure had risen to 3.6 million. The projected 1970 enrollment is 7.0 million. Rising enrollments have necessitated substantial expansion of personnel and facilities. Further expansion is required if quality is not to deteriorate.

Our educational system thus confronts unprecedented challenges. To accommodate doubled enrollments by 1970, outlays for college facilities must be more than doubled; total expenditures must rise two-to-threefold.

Needs at the below-college level, about the same in dollar terms, must also be met, lest the foundations of the educational system be eroded. The price of failure will be the irrevocable loss of valuable talent.

However urgent the need for additional facilities and for the rehabilitation and replacement of existing facilities, the personnel problem is especially acute, because of the time required to train teachers. Among beginning teachers in public elementary and secondary schools in 1956-57, 27 percent lacked a standard certificate, a bachelor's degree, or both. Demand for new teachers and for replacement of those leaving the profession will be very high. It can be met only by the training of new teachers, accompanied by programs to increase the productivity and quality of experienced teachers. Teachers' salaries at all levels must continue their recent rise if good teachers are to be attracted into and retained in the profession of educating the Nation's youth. Other programs for expansion of the educational system cannot succeed unless the rewards to teaching are increased.

State differences. In a highly mobile and interdependent society, the lack of educational opportunities is not simply a matter of concern to some States; it is of concern to the Nation. The support that the different States (and different areas within States) give to education varies substantially. Such support depends not only on the commitment that the population has to education, but also on the resources of the State and the number of children seeking a public education. As a consequence, some States with low per student expenditures for education have educational budgets that, as a percentage of personal income, are far above the national average. Increased Federal support for education, as outlined in the President's proposals, is essential to eliminate these imbalances as well as provide for programs to meet the national responsibilities that transcend State and local boundaries. Ultimately, the effectiveness of our democracy rests on an educated and informed citizenry.

Health

U.S. economic growth in the twentieth century has been associated with better health of the population as a whole as well as an increase in per capita expenditures on health and medical care. Public and private expenditures on health care increased from \$3.6 billion, or 3.5 percent of GNP, in 1929 to \$26.5 billion, or 5.4 percent of GNP, in 1960. This has been accompanied by a sharp increase in life expectancy and a reduction in death rates from communicable diseases.

At the same time that economic growth has contributed to an improvement in the health of our people, better health has contributed to economic growth. Better health makes possible an increase in the size of the labor force and in the effectiveness of effort on the job.

Further improvements in health would yield significant economic, as well as human, benefits. On an average day in 1960, 1.3 million employed persons—2 percent of civilian employment—were absent from work be-

cause of illness or accident. The days of work lost because of illness far exceeded the days of work lost because of industrial disputes; in fiscal year 1960, "currently employed" persons lost a total of 371 million days from work as a result of illness or injury, while the loss from industrial disputes in 1960 totaled 19 million days.

The costs of ill health have traditionally been calculated as the money spent for the prevention and treatment of accident and disease. The waste of human resources and the consequent loss of production is an important additional cost about which not enough is known. Where facts are available, as in the related area of vocational rehabilitation, the relationship between costs and benefits is impressive. In 1960, at an average cost of \$900 per rehabilitant under Federal-State programs, median wages of rehabilitated persons were raised from \$450 a year at acceptance to \$2,350 at closure, a difference of \$1,900 in the first year after rehabilitation.

Public support for medical research, the most basic of investments in better health, has been growing. In fiscal year 1962, total expenditures will exceed a billion dollars, of which 60 percent is supported by the Federal Government. Further expansion of research activities, where funds can be wisely spent and where qualified research personnel exist, is desirable both for humanitarian and economic reasons. Much of the necessary research is carried on by doctors of medicine. More rapid expansion of the number of physicians is required to insure that patient care needs, teaching needs, and research needs can all be met. This will be true even if needed improvements are made in the organization and financing of medical care.

Increased demands for medical services, stemming in part from new discoveries and in part from growth in population and changes in age and income structure, already mean unfilled internships and residencies in hospitals. The full medical needs of the country are not being met in many fields, including public health and preventive medicine. The Administration has presented a program to authorize Federal grants for the construction of medical, dental, osteopathic, and public health teaching facilities, project grants to plan for new facilities and improved educational programs, and scholarship aid to students. The importance of maintaining and improving the health of the Nation makes the enactment of this program a matter of great urgency.

Eliminating Racial Discrimination

Racial discrimination is a national disgrace. In this respect, above all others, practice in the United States is a standing affront to professions of democratic principle. Discrimination inflicts immeasurable human and social costs on a large number of our citizens. In addition—and this is why it deserves particular mention in this Report—it inflicts an economic loss on the country.

Discriminatory practices in education, training, employment and union membership impede the development and utilization of human resources.

They reduce the efficiency and slow the growth of the economy, at the same time that they alter—and alter inequitably—the distribution of the fruits of economic progress.

Although significant reductions in discriminatory barriers have been accomplished in recent years, important problems remain. Many nonwhite families are trapped in a vicious circle: Job discrimination and lack of education limit their employment opportunities and result in low and unstable incomes; low incomes, combined with direct discriminations, reduce attainable levels of health and skill and thus limit occupational choice and income in the future; limited job opportunities result in limited availability of vocational education and apprenticeship training. Unless action is taken, today's training practices, affecting tomorrow's employment possibilities, will help to perpetuate inequitable employment patterns.

Our economy loses when individuals who are capable of acquiring skills are denied opportunities for training and are forced into the ranks of the unskilled, and when individuals with education, skill, and training face discriminatory hiring practices that result in their employment in low productivity jobs.

Discrimination is reflected in the distribution of income and in disparities in the levels of education attained by white and nonwhite groups. Nonwhite families had a median money income of \$3,233 in 1960. Although this represents a remarkable advance over the figure of \$2,099 for 1947 (in 1960 prices), the magnitude of the problem still remaining is indicated by the fact that in 1960 the median income for white families was \$5,835. In 1960, 11.0 percent of white but 31.7 percent of nonwhite families had money incomes of less than \$2,000, while 36.6 percent of white but only 13.6 percent of nonwhite families had money incomes of \$7,000 and over.

In 1947, 11 percent of the nonwhite population 14 years of age and over was illiterate; by 1959, this percentage had dropped to 7.5, with declines registered in every age group. The figure was, however, considerably higher than the 1.6 percent illiterate in the white population. Equally disturbing is the fact that in the nonwhite population the percentage of illiterates was higher for each age and sex group than the comparable percentage for the white population. While the median school⁶ years completed for the nonwhite population 25 years of age and over had risen from 5.8 in 1940 to 8.1 in 1959, the median for the total population was 11.0 in 1959.

The unemployment rate in December 1961 was 5.2 percent for white males and 4.7 percent for white females, but 12.4 percent for nonwhite males and 10.7 percent for nonwhite females. Nonwhite workers made up less than 12 percent of the labor force, but accounted for 22 percent of the total unemployed and 24 percent of those unemployed 15 weeks or more.

Economic growth will be furthered by the adoption of nondiscriminatory policies and practices to insure that all Americans may develop their abilities to the fullest extent and that these abilities will be used. The Depart-

ment of Justice, the President's Committee on Equal Employment Opportunities, and the U.S. Commission on Civil Rights are already acting vigorously. They should be joined in the campaign by all parts of our population and all units of government, business, and labor.

INVESTMENT IN TECHNOLOGICAL PROGRESS

Technological knowledge sets limits on the productivity of labor and capital. As the frontiers of technology are pushed ahead, industrial practice and productivity follow, sometimes pressing close on the best that is known, sometimes lagging behind, with the gap varying from industry to industry and from firm to firm. A stimulus to economic growth can come either from increasing the rate at which the frontiers are advancing or from bringing the technology actually in use closer to the frontiers.

Research and Development

The advance of technological knowledge depends on the amount and effectiveness of the human and material resources devoted to research and development. The limited data available suggest that within industries and between industries there is a positive correlation between research effort and productivity growth. However, some of the most important developments affecting the productivity of a firm or industry may originate from research done by equipment and material suppliers, or from basic research done by government and the universities. The benefits of research activity are often widely shared.

Expenditures on research and development in 1960 totaled about \$14 billion, as shown in Table 13. In 1961 the total was probably in the neighborhood of \$15 billion, nearly three times the expenditures in 1953, and almost a third as large as business expenditures on fixed capital. After rough allowance for rising costs, the volume of research and development performed has approximately doubled since 1953. Between 1953

TABLE 13.—*Research and development expenditures, 1953 and 1957-60*

[Billions of dollars]

Type of research, financing, and performance	1953	1957	1958	1959	1960
Total expenditures.....	5.15	10.03	11.07	12.62	14.04
By type of research:					
Basic research.....	.43	.83	1.02	1.15	1.30
Applied research and development.....	4.72	9.20	10.05	11.47	12.74
By source of funds: ¹					
Federal Government.....	2.74	6.38	7.17	8.29	9.22
Industry.....	2.24	3.39	3.62	4.03	4.49
Universities and other nonprofit institutions.....	.17	.26	.28	.30	.33
By performer:					
Federal Government.....	.97	1.44	1.73	1.83	2.06
Industry ²	3.63	7.66	8.30	9.55	10.50
Universities and other nonprofit institutions ²55	.93	1.04	1.24	1.48

¹ Based on reports by performers.

² Includes research centers administered by organizations in this sector under contract with Federal agencies.

Source: National Science Foundation.

and 1960, research and development as a percentage of GNP in current prices doubled from 1.4 percent to 2.8 percent.

Research and development cover a wide range of activities aimed at increasing the stock of scientific and technical knowledge. As we move from basic research to applied research and to development, the goals become more closely defined in terms of specific practical objectives, the predictability of the results increases, and the benefits become less diffuse. More than 90 percent of research and development spending is for applied research and development—most of it for development. Slightly less than 10 percent is for basic research.

Approximately three-fourths of the Nation's total research and development effort is performed by industry, and over half of this is financed by the Federal Government. Profit considerations naturally lead private firms to concentrate on developing and improving marketable products. Even here, supplementary government support can pay off handsomely. Estimates suggest that hybrid corn research, of which perhaps one-third was publicly supported, yielded a substantial return to society over and above the returns to farmers and seed producers.

Less than one-third of all basic research is done by industry. Government, the universities, and other nonprofit institutions, although doing only one-fourth of total research, do most of the Nation's basic research. Such research seldom results directly or immediately in new products and processes. But in the long run, basic research is the key to important advances in technology. Fundamental inventions like the transistor—an outgrowth of basic research in solid-state physics—may revolutionize large sectors of industry and have a tremendous ultimate effect on productivity.

Although research and development spending is increasing rapidly in most industries, more than 55 percent of industrial research is performed by two industry groups, the aircraft and parts industry, and the electrical equipment and communications industry, as shown in Table 14. This heavy concentration of industrial research reflects primarily the concentration of defense contracts.

Industrial research is also heavily concentrated in large firms. In 1958, firms employing more than 5,000 persons accounted for 84 percent of total industrial research spending, significantly more than the share of these firms in manufacturing employment.

The Federal Government plays a much larger role in financing than in performing research. It is estimated that in 1961 the Government paid for about two-thirds of the total national research effort including, in addition to work done in government laboratories, almost 60 percent of the research undertaken in industry-run laboratories and over 70 percent of the research done by universities. About 70 percent of government research and development spending is accounted for by the Department of Defense. The Atomic Energy Commission and National Aeronautics and Space Administration together account for nearly 20 percent.

TABLE 14.—Funds for industrial research and development, by source and industry, 1960

Industry	Funds for research and development, 1960						Research and development funds as percent of net sales, 1959 ¹
	Amount (millions of dollars)			Percentage change from 1959			
	Total	Federal Government	Company	Total	Federal Government	Company	
Total	10,497	6,125	4,372	10	9	11	4.2
Food and kindred products.....	106	9	97	19	(²)	15	.3
Paper and allied products.....	66	1	65	12	(²)	12	.8
Chemicals and allied products.....	1,047	303	744	10	7	12	4.3
Petroleum refining and extraction.....	289	25	264	6	4	6	1.0
Rubber products.....	115	35	80	4	-5	8	2.0
Stone, clay, and glass products.....	82	4	78	14	(²)	11	1.4
Primary metals.....	164	18	146	19	20	19	.7
Fabricated metal products.....	126	54	72	2	-7	9	1.7
Machinery.....	993	384	609	5	-5	12	4.2
Electrical equipment and communication.....	2,405	1,634	771	7	4	16	11.3
Motor vehicles and other transportation equipment.....	849	216	633	-2	-13	3	3.4
Aircraft and parts.....	3,482	3,027	455	15	16	9	20.8
Professional and scientific instruments.....	416	211	205	18	21	15	8.3
Other industries.....	358	205	153	18	19	17	(²)

¹ Data apply to all manufacturing industries and to the communication and crude petroleum and extraction nonmanufacturing industries.

² Percent change not computed for an industry where the amount in the base period was less than \$15 million.

³ Not available.

NOTE.—Detail will not necessarily add to totals because of rounding.

Source: National Science Foundation.

In addition to its direct contributions to research and development spending, the Federal Government has stimulated private research and development activity. The science information services of the National Science Foundation, the Atomic Energy Commission, the Office of Technical Services of the Department of Commerce, and other government agencies contribute to the over-all efficiency of national research and development. Federal tax law encourages research and development by making such costs fully deductible in the year they are incurred. The Small Business Act encourages spending on research and development, including cooperative research, by small companies. Moreover, the Federal Government makes an important contribution to the training of future research scientists and engineers through its support of education and basic research in the universities.

Strengthening research and development. During the 1950's, the number of professional scientists and engineers in the United States increased at an annual rate of approximately 6 percent. Total resources allocated to research and development grew at an even faster rate because a rising proportion of all scientists and engineers were engaged in research, and because supporting personnel, equipment, and material per research scientist increased. During the 1960's, these trends will continue, but one limit to growth will be the supply of scientists and engineers in certain fields. Future investment in research will be limited largely by the quantity and quality of earlier investment in education.

Overemphasis on current research and development activity should not be permitted to erode the underlying educational base. Just as research is investment for the economy, education is investment for research. The needs for educational expansion stressed earlier in this chapter include urgent requirements for laboratories, laboratory equipment, and other science teaching facilities.

A greater share of research and development resources and talent should be devoted to basic research and to prototype development and experimentation in fields which promise major advances in civilian technology. Military research helped to create such important discoveries as isotope medicine, the computer, and the jet engine. The important impact on civilian technology of these offspring of military research suggests that high returns might be achieved if sights were set higher in nonmilitary research. Since the risks of basic research and experimental development are very great, and since the rewards for success are not confined to single firms or even industries, there is a case for public support to attract additional resources into this work.

In a number of industries, firms which are highly efficient in production and marketing may be too small to undertake an efficient research and development program. In others, a research tradition is lacking, or research is discouraged because the benefits tend to diffuse beyond the market grasp of individual firms. In agriculture, all these conditions are present, and the high returns to society from government support of research suggest that comparable programs to increase research in certain manufacturing industries might be highly desirable.

An Administration bill to create an Assistant Secretary of Commerce for Science and Technology has passed the Senate and is now pending before the House. Its enactment would be an important step in fulfilling the Government's responsibilities in this area. The competence and experience of the National Bureau of Standards could well be used in support of a program to fill the gaps in the national industrial research effort.

More Effective Use of Existing Technology

(1) In some industries there are legal obstacles to technical change. The housing construction codes of many localities provide a prominent example. In principle, these codes protect the public from shoddy construction; in practice, they often prevent the use of new materials, designs, and techniques which are superior to the old, and a lack of uniformity among codes in different localities discourages mass production of certain prefabricated housing components. With respect to construction codes in particular, the Housing and Home Finance Agency should continue to encourage the adoption of performance standards for codes and should strengthen its programs of testing and evaluation.

(2) American labor has a remarkable record of acceptance of new technology; but understandable resistance to the displacement of labor by new equipment has occasionally developed when opportunities for retraining and re-employment were not clearly visible. The Federal Government can help considerably, first, by pursuing effective policies to maintain full employment, and second, by expanding and improving its programs in job training and retraining.

(3) The process of technological change would be smoother if society knew better how to reap the rewards and reduce the costs. Research in the social, behavioral, and managerial sciences can lead to more efficient use of resources and to quicker grasp of the opportunities afforded by technological progress. Improved understanding may, in time, yield ways to ease the burdens of adjustment. Strengthening of research in these auxiliary fields is needed to gain maximum benefit from research which creates new technology.

(4) Innovation is facilitated by a flow of information about new technical developments. Since many firms, especially small ones, are not in a position to follow new technological developments closely, the Government can play a useful role by providing business with relevant information and analysis. These service functions of the Department of Commerce and the Small Business Administration should be substantially strengthened. The success of the Federal-State Extension Service in speeding the diffusion of agricultural technology serves to illustrate how effective such programs can be.

(5) The Panel on Civilian Technology, composed of a group of distinguished scientists, engineers, businessmen, and economists, has been brought together under the joint auspices of the office of the President's Special Assistant for Science and Technology, the Department of Commerce, and the Council of Economic Advisers. The panel is examining opportunities for stimulating civilian research and development as well as for more effective use of existing technology. It has begun to address itself particularly to those sectors of our economy where major social and economic benefits could be expected to accrue from technological advances.

(6) By eliminating monopolistic and collusive barriers to the entry of new business and by maintaining the spur of competition to innovation and the utilization of technology, antitrust enforcement tends to create conditions which encourage economic growth. (See Chapter 4.)

INVESTMENT IN PLANT AND EQUIPMENT

Between the resourcefulness of the labor force and the ideas of the laboratory on one side and the satisfaction of consumption needs on the other, the indissoluble link is the economy's stock of plant and machinery. Our own history and the experience of other industrial countries alike demonstrate the connection between physical investment and growth

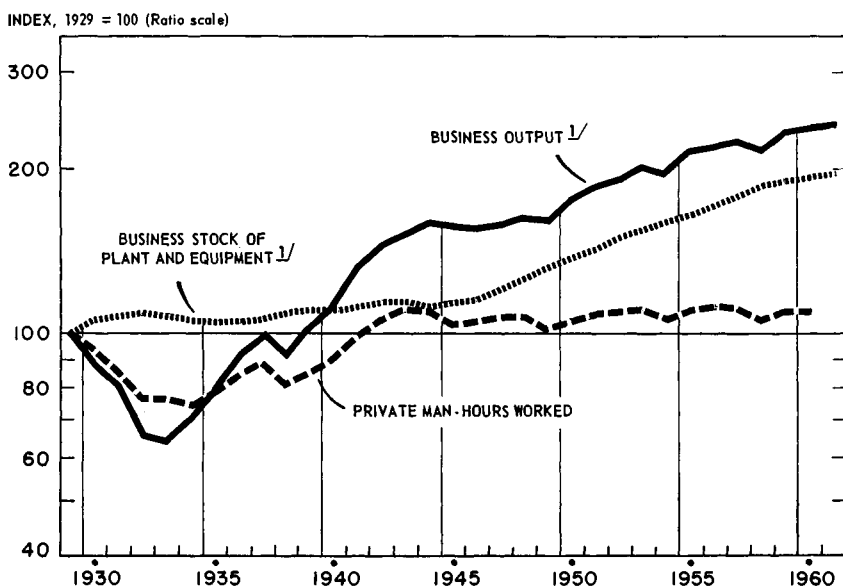
of productive capacity. Without investment in new and renewed plant and equipment, skills and inventions remain preconditions of growth; with it, they become ingredients.

Investment as a Source of Growth

Investment in fixed capital leads to increased capacity both by equipping new members of the labor force with capital up to existing standards and by providing greater amounts for all workers. Since 1929, the stock of privately owned plant and equipment (in constant prices) has grown relative to private man-hours worked by nearly 80 percent (Chart 10) and by nearly 50 percent relative to the private labor force. Nearly all of the latter increase has taken place during the postwar period. Between 1929 and 1947, the rate of investment was sufficient only to provide enough capital—although more modern capital—to keep pace with a growing labor supply. No increase in capital per worker occurred. Since 1947, the rate of growth in the ratio of capital stock to labor supply has been approximately 2.7 percent a year, but there is a perceptible difference between the growth records of the first and second halves of the postwar period. From 1947 to 1954, the amount of capital per worker increased by 3.5 percent a year; in contrast, the annual increase from 1954 to 1960 averaged only 1.9 percent.

CHART 10

Indexes of Business Output, Capital Stock, and Man-Hours



SOURCE: COUNCIL OF ECONOMIC ADVISERS (BASED ON DATA FROM VARIOUS GOVERNMENT AND PRIVATE SOURCES).

The importance of investment in the growth process is suggested by the parallel movement of the growth of potential output per man and the growth of capital per man (Table 15). Both ratios grew more rapidly after 1947 than before, and more rapidly between 1947 and 1954 than subsequently. In general, the experience since 1929 supports the belief that the more rapidly the capital stock grows relative to the labor force, the greater will be the growth in potential output per worker, provided that other necessary conditions are met.

TABLE 15.—*Growth in business potential capital-labor and output-labor ratios, 1929–60*

[Percent per year]

Item	1929 to 1947	1947 to 1960	1947 to 1954	1954 to 1960
Capital stock per worker ¹	0.0	2.7	3.5	1.9
Output per worker ²	1.5	2.8	3.3	2.1

¹ Business capital stock is built up from private purchases of plant and equipment, with allowance for retirements; excludes religious, educational, hospital, other institutional, and farm residential construction.

² Business output is gross national product minus product originating in general government, government enterprises, households and institutions, the rest of the world, and services of existing houses.

NOTE.—Details of series are available upon request.

Source: Council of Economic Advisers.

Though there was no increase in capital per worker between 1929 and 1947, there was a slow increase in productivity which must be attributed to technical progress and to improvement in the quality of both labor and capital. When, as in subsequent years, investment was more rapid, there was an accompanying acceleration of productivity gains. These gains were not simply the result of the separate contributions of the advance of knowledge, the improved skills of the working population, and the rise in capital per worker, but came in large part from the interaction of all three.

Investment in new equipment serves as a vehicle for technological improvements and is perhaps the most important way in which laboratory discoveries become incorporated in the production process. Without their embodiment in new equipment, many new ideas would lie fallow. Conversely, the impact of a dollar's investment on the quality of the capital stock depends on how rapidly increases in knowledge have taken place. This interaction between investment and technological change permits each worker to have not only more tools, but better tools as well.

The slower rate of growth of the capital stock in recent years provides one explanation for the accompanying slower growth of labor productivity and potential output. The proportion of output devoted to investment, and the rate of growth of the capital stock itself, are measures of the diversion of current resources to the creation of future capacity. During the period 1947–54, expenditures on business fixed investment averaged 11.0 percent of GNP and the stock grew at an annual rate of 4.2 percent (valued in 1961 prices). In the period 1955–60, 9.8 percent of GNP was invested and the capital stock grew at an annual rate of 3.2 percent. The ratio

of investment to potential GNP is even more relevant; in this case, the ratios are 10.9 percent and 9.4 percent for the two periods. This difference of 1.5 percent in the fraction of potential GNP invested represents nearly \$45 billion of additional capital.

Policies to Encourage Investment

(1) *Adequate levels of demand.* The single most important stimulant to investment is the maintenance of full utilization of capacity. The historical record shows that when output falls below its potential the rate of growth of the capital stock declines. Expected profit from investment is strongly influenced by the expected demand for the output that the new capital will help produce, even if the investment is meant largely for cost reduction rather than capacity expansion. Estimates of future demand are colored by the experience of the present and the recent past. During periods of economic slack, estimates of future demand are relatively pessimistic, and many projects are foregone which would appear profitable under conditions of high demand.

There is a tendency to think of profitable investment opportunities for the whole economy as exhaustible: the more of them that are used up in any one year, the fewer remain. There may be some validity to this view for a single industry, which can mistakenly expand its capacity beyond the possibilities of future market demand. But for the entire economy, what appears as unavoidable excess capacity is in fact avoidable deficiency of demand. There are, and always will be, unsatisfied wants for a higher standard of living, though the demand for any particular product may perhaps be satiated. The investment boom of 1955-57 did not make inevitable the excess capacity that has ruled since then. Instead, it created an opportunity for higher levels of production in later years, had the demand been forthcoming. The opportunity was lost; even before the cyclical peak in the third quarter of 1957, the growth of demand slowed down and excess capacity began to emerge.

It is true that, with any given level of technology, a higher rate of investment can occur only through the acceptance of investment opportunities of lower profitability. But appropriate tax and monetary measures can make even these investments sufficiently attractive. And technical progress can have the same effect. To equip a more rapidly growing labor force also demands a larger volume of investment relative to potential GNP. Fortunately, if actual output is held close to a rising potential output, faster labor force growth will open opportunities for additions to plant and equipment which would be economically unattractive if the labor supply situation were tighter. Thus a higher ratio of investment to output can be more easily maintained. When excess capacity already exists, however, profitability is low for that reason alone, and the growing labor force appears as a threat, instead of the stimulus to investment it really is.

In addition to serving as an indicator of future profits, the level of aggregate demand, through its impact on current profits, plays an important role in providing finance for investment. The importance of the level of economic activity in determining profits is indicated in Chart 3, which shows that net and gross profits as a percentage of GNP fluctuate very closely with the rate of capacity utilization. A policy that sustains near-capacity operations goes beyond strengthening the profitability of investment; it insures an ample supply of low-cost internal funds, which itself encourages investment.

(2) *Monetary and credit policy.* The open market operations of the Federal Reserve and the debt-management operations of the Treasury exert a powerful influence on supply conditions in credit markets. If economic growth were the only end to be served, the sole object of monetary and credit policy would be to assure an adequate flow of funds to finance the needed capital formation at interest rates appropriate to the basic profitability of investment. This was pointed out by the Chairman of the Board of Governors of the Federal Reserve System in March 1961, in a statement to the Joint Economic Committee: "As I have said many times in the past, before this Committee and others, I am in favor of interest rates being as low as possible without stimulating inflation, because low rates can help to foster capital expenditures that, in turn, promote economic growth."

Use of monetary techniques for growth purposes must, of course, be limited by the demands placed on them by other national objectives. In the present situation, for example, monetary policy has a role to play in the attainment of recovery from recession and in the restoration of balance of payments equilibrium. Policies for growth and recovery are complementary, since any policy that stimulates investment will simultaneously stimulate aggregate demand. This situation, however, will not always prevail. When excessive demand threatens inflation, stability and growth goals will tend to push monetary policy in opposite directions. At such times, the importance of economic growth would suggest the major use of other measures—principally budgetary surpluses—to achieve stability. For when demand is strong enough to generate pressure on existing capacity, and only then, rapid growth requires that enough resources be withheld from other uses to make a sustained high rate of investment possible without inflation. Under these circumstances, a surplus in the Federal budget plays the constructive role of adding to national saving and making resources available for investment. The role of a policy of monetary ease at full employment is then to insure that the resources freed by a tight fiscal policy are indeed used for investment and not wasted in unemployment.

The current balance of payments problem puts additional constraints on the use of monetary policy to promote recovery and growth. The techniques developed by the Federal Reserve to meet the new situation have already been discussed in Chapter 1, Part II.

(3) *Tax policy.* Every tax system is the product of particular needs and economic conditions; no tax system can be neutral in its effects on the ways in which households and business firms earn and spend their incomes. If faster economic growth is desired, revision of the tax structure is called for, to permit a higher rate of investment once full use of resources is achieved.

The Administration's program encompasses two complementary approaches to this objective. The first is an investment tax credit equal to 8 percent of investment in eligible machinery and equipment; the second is revision of the guidelines for the tax lives of properties subject to depreciation.

The investment credit will stimulate investment by reducing the net cost of acquiring depreciable assets, thus increasing expected profitability. The increase will vary inversely with the expected life of the asset. For an asset with a service life of 10 years and an after-tax yield of 10 percent before the credit, the investment credit will increase the expected rate of return by about one-third. The increase in net yield will be greater for less durable equipment and smaller for more durable equipment.

Investment decisions are also influenced by the availability of funds. The investment tax credit will increase by some \$1.5 billion the flow of cash available for investment under conditions anticipated for 1962.

Since the credit applies only to newly acquired assets, the entire incentive effect is concentrated on the profitability of new capital and no revenue is lost in raising the profitability of assets already held by business firms. It is an efficient way of encouraging re-equipment and modernization of productive facilities, as well as the expansion of capacity. The credit will thus help to accelerate economic growth and improve our competitive position. It will also increase the attractiveness of investment at home relative to direct investment abroad. In both ways the credit will help to ease our balance of payments problem.

Revision of tax lives for depreciable property is desirable as a matter of equity to reflect more accurately the influence of obsolescence on economic lives of capital assets. Present guidelines were established 20 years ago on the basis of replacement practices of the depressed prewar years. Depreciation, designed to reflect the loss in value of plant and equipment over time, is a function not alone of "wear and tear," but also of technological progress, changes in the relative costs of economic inputs, competitive conditions, and consumer tastes and demand. Through its favorable effects on cash flows, expected rates of return, and risk, liberalized depreciation will tend to stimulate investment.

The investment tax credit, coupled with liberalized depreciation, will provide a strong and lasting stimulus to the high rate of investment that is a major requirement for accelerated economic growth. Together, they will provide incentives to invest comparable to those available in the rapidly growing industrial nations of the free world.

Attention to Federal income tax adjustments to stimulate investment must not be allowed to obscure the role of State and local tax policies and practices in economic growth. The tax collections of these governments are nearly half as large as Federal collections. In fiscal year 1960, they increased by more than 10 percent, or \$3.7 billion.

The power to tax under this governmental system is shared by thousands of separate jurisdictions. Improved coordination among them will improve economic efficiency. Identical tax sources are frequently utilized by two, three, and even four layers of government without appropriate cooperation. Taxing authorities occasionally use their powers in ways that capriciously affect decisions concerning the location of plants and disrupt normal competition. The result may be a misallocation of resources and economic loss.

The Congress has recognized the need for better intergovernmental coordination. It has provided for the creation of the Advisory Commission on Intergovernmental Relations to foster "the fullest cooperation and coordination of activities between the levels of government." The Advisory Commission, composed of representatives of the executive and legislative branches of all levels of government, has already made important recommendations for the coordination of local taxes by the States and for improved tax coordination and cooperation between Federal and State governments.

INVESTMENT IN NATURAL RESOURCES

Economic growth is not simply a matter of growth in the size and skills of the labor force, in the quantity and quality of capital goods, and in the productivity of the processes by which these inputs are combined. It is equally a matter of turning more and more of the earth's endowment of natural wealth—soil, sunlight, air, water, minerals, plant and animal life—to the purposes of man. America's position has generally been one of natural plenty, but we cannot complacently assume that the abundance of the past will also characterize the future.

But neither is there any reason to suppose that resource limitations will in the foreseeable future place serious limits on the growth of the economy. Technological change, substitution of abundant and cheap raw materials for scarce and expensive ones, investment in improved resource management and conservation, and increased reliance on imports all provide important offsets to the effects of increasing scarcity on the real cost of obtaining resource inputs. Taken together, these factors tend to keep the economy growing along the path of least resistance so far as its resource requirements are concerned. If the various offsets to increasing scarcity are not fully effective, resources can be obtained by digging and drilling deeper, utilizing lower grade deposits, constructing dams and better waste treatment facilities, and other measures involving higher costs. But the necessity

to devote more labor and capital to these tasks would constitute a drag on the economy, tending to cancel some of the efforts we make to stimulate growth. Indeed, taking the economy as a whole, it is equivalent to a decline in productivity.

The Historical Record

A rough judgment as to the probable consequences of continued depletion of resources in the future can be derived by examining the record of the past. The long-term trend of raw materials prices relative to the prices of finished products is a useful, though by no means ideal, indicator of the effectiveness of the offsets to natural scarcity.

TABLE 16.—*Ratios of indexes of raw materials prices to index of finished products prices, 1900–57*
[1920–24=100]

Period	All raw materials ¹ ²	Agri-cultural products	Forest products	Minerals				
				Total ²	Metals ²	Fuels	Con-struction materials	Other non-metallic minerals
Annual average:								
1900-04.....	94	97	70	90	130	78	92	146
1905-09.....	96	103	77	81	139	68	79	127
1910-14.....	103	118	74	77	124	67	73	124
1915-19.....	108	121	74	87	130	76	72	124
1920-24.....	100	100	100	100	100	100	100	100
1925-29.....	112	122	94	94	112	89	103	103
1930-34.....	88	89	93	84	103	78	107	84
1935-39.....	102	104	109	94	131	88	100	77
1940-44.....	111	120	127	88	118	81	91	86
1945-49.....	125	134	158	93	109	92	82	93
1950-54.....	128	128	187	105	133	103	82	105
1955-57.....	118	108	184	111	147	107	85	130
1957.....	116	105	174	111	136	110	84	123

¹ Excludes fishery and wildlife products, for which adequate price data are not available.

² Excludes gold.

NOTE.—Figures for earlier years, especially prior to 1915, are less reliable than those for later years. Annual index for each group has been divided by the over-all finished products index.

Source: Department of Commerce (based on data, including finished products price index, to be published by the Bureau of the Census in the forthcoming report, *Raw Materials in the United States Economy, 1900–57*, Working Paper No. 6).

Table 16 shows the movements of price indexes for all raw materials and for broad subgroups, relative to an index of prices of finished products. From 1900–04 to 1955–57—the last period for which data are available—the over-all index increased by 25½ percent, an average rate of increase just over 0.4 percent per year. The most striking feature of the table, however, is not this slow but visible trend toward increasing costs as our resource endowment has been exploited more intensively but the varying patterns of price movement shown by different commodities and by the same commodity at different times. The outstanding example of a strong upward price trend is forest products. Even in forestry, however, there are prelim-

inary indications that productivity gains are beginning to offset the effects of scarcity on prices. The index for all minerals has risen slightly less than that for all raw materials, and the subgroups of the minerals index show divergent movements. A considerably larger increase in the minerals index would undoubtedly have occurred if the opportunities of international trade had not been available. This is particularly true of the metals subgroup where net imports accounted for 44.8 percent of apparent consumption of metallic ores in 1957.

The index for agricultural products shows the effects of the great depression, the second World War and its aftermath, and the accelerated improvement of agricultural productivity in the 1950's. The last is largely responsible for the decline of the over-all index from its 1950-54 peak. It is reasonable to expect that improvements in agricultural productivity will continue to exert a substantial downward pressure on the over-all index in the future.

Implications for Public Policy

The lessons to be drawn from this review of past trends are these: First, it is likely that increasing resource scarcity has had only a negligible retarding effect on economic growth during the present century. Rising real costs of obtaining some resources have been largely compensated by declining costs of obtaining others. Second, the historical record does not indicate that more rapid economic growth will simply result in our "running out of resources" more quickly. On the contrary, past investments have permitted resources to be extracted more efficiently and used more efficiently.

Public policy has contributed to this success by limitation of economic waste, the development and adoption of improved methods in agriculture, forestry, and other fields, the unified development of river valleys, and a variety of other measures. Finally, the opportunity to obtain raw materials from abroad has been important in the past and will be increasingly important in the future.

Preventing resource scarcity from being a drag on economic growth is by no means the only objective of policy in this field. Particularly for water, forest, and scenic resources, an important objective is the provision of aesthetic and recreational benefits which are not reflected in aggregate measures of economic activity because they do not pass through the market place. The difficulty of determining objective standards by which such benefits can be weighed is obviously not a valid reason for neglecting them.

Water Resources

There is wide agreement that one of the most serious resource problems facing the United States at present and in the immediate future is the development of water resources. The use of water has been increasing rapidly as a result of population growth, higher living standards, increasing urbanization, rapid growth of industries that are heavy users of water,

increases in the amount of land under irrigation, and other factors. In the Eastern United States and the Pacific Northwest, the problem presented by these trends can be met for the next few decades by an adequate and appropriately timed program of investment in (1) multiple purpose water resource development which, in addition to other benefits, permits the collection and storage of water for use as needed and (2) facilities for treatment of industrial and municipal wastes. In some of the dry regions of the West, however, the opportunities for further development of water resources will be exhausted within the next two decades. Barring major scientific breakthroughs, the continued economic development of these regions will soon come to depend upon how effectively an almost fixed supply of water is used to satisfy the most important of the various industrial, agricultural, and municipal needs for water.

It is certain that additional investment to increase the quantity and to improve the quality of the supplies of water will be a major part of any solution to the problem. Pollution control, in particular, will require major investment expenditures in the coming decades. The enactment last year of the Administration's proposal for an expanded program of grants under the Federal Water Pollution Control Act and extension of Federal authority to seek abatement of pollution of navigable waters were important steps forward. But the fact that water resources in some regions of the country will soon be close to fully developed calls attention to a consideration that is relevant to water resources policy for the country as a whole: investment in development of existing water supplies is not a complete solution to the problem of water scarcity, nor is it necessarily the economically desirable solution under every particular set of circumstances. A variety of offsets to increasing scarcity are available and each has a role to play. In particular, additional research and development in methods of conserving and augmenting water supplies, including desalinization, weather modification, reduction of evaporation losses, cheaper and more effective waste treatment and more efficient use of water in industry and agriculture may produce high returns.

Since expensive investments must be undertaken to increase the quantity and quality of water supplies, it is appropriate that the costs be reflected in prices charged industrial and agricultural users. To treat a costly commodity as if it were free only encourages excessive use. There is evidence that significant reductions in water withdrawals could be achieved in many important water using activities and that they can be expected to occur if proper deterrents are provided. The burdens of scarcity on the economy cannot be entirely eliminated by using scarce capital to augment the supply of scarce water. But the burden can be minimized by a proper balance between investments in increased supply on the one hand, and price increases to eliminate inefficient use on the other.

Agricultural Land

The problem of agricultural land stands in sharp contrast to the problem of water resources. Whereas in the latter the problems requiring attention are those posed by increasing scarcity, in the former they are problems of adjusting to abundance.

Agriculture is the major source of downward pressure on the price index for all raw materials, and land is in ample supply. There are approximately 640 million acres of land suitable for cultivation in the United States at present, but only about 450 million are actually used for crops or pasture. Present indications are that only slightly more than 400 million acres of cropland (including cropland pastured and idle) will be in use by 1980 to produce agricultural products.

The major land resource investments required during the next several decades will, therefore, involve the conservation and protection of remaining farmland and the transfer of land to nonagricultural use rather than bringing more land into agricultural production. There are currently close to 70 million acres of land used for cropland which are subject to severe erosion hazard or otherwise not suitable for cultivation over the long run. Much of this land could be transferred to provide products or services, such as forestry and recreation, for which the demand is rising. At the same time, about 17 million of the 240 million acres of good land now in pasture or forest could be converted to cropland.

The Department of Agriculture currently has plans for a long-range land use adjustment program. This program has three major facets: transfer of cropland to grass; transfer of cropland to forest; and greater emphasis on wildlife and recreational development in the small watershed programs. As the program develops, it will be possible for supply management to place less emphasis on temporary diversion of acreage from the production of specific crops.

The present problems of U.S. agriculture, which reflect in part the fact that the pace of technological progress in agriculture exceeds the rate of growth in demand for farm products, should not blind us to the important lessons to be drawn from the record. When strong policy measures are taken well in advance, technological progress affords an escape from increasing scarcity. Indeed, it is technology that largely determines which portions of the environment are regarded as resources and which are not. Research not only makes possible the more effective use of existing resources, as in the case of agriculture, but may create important new ones. The record of agriculture also illustrates, however, the long lag between the decision to act and the appearance of the benefits. Careful and continuing analysis of present and future resource needs, coupled with readiness to act when the indications of potential difficulties become persuasive, is the best hope for success in meeting the resource requirements of rapid economic growth.

INVESTMENT IN PUBLIC SERVICES

Accelerated economic growth will require increased public investment, just as it will require increased private investment. Without additional plant and equipment, governments at all levels will be unable to meet the increased demands for public services that arise both as a consequence of measures taken to stimulate growth and as a consequence of growth itself. If a high and rising educational level of the labor force is sought as a means to speed economic growth, additional investment in school and college buildings, furnishings, and laboratory equipment will be required. Demands for transportation of both people and goods will increase as a result of economic growth; meeting these demands will require additional investment in urban public transportation systems, airports, roads and highways.

Failure to make adequate investments in the physical basis of public services inevitably retards economic growth. In some cases, the connection is fairly easy to trace; inadequate investment in highways will bring an increase in congestion, with consequent declines in the productivity of trucks and truck drivers, and rising transportation costs. In other cases, the process by which a shortage of basic public services tends to retard the growth of output is less obvious, but no less real; education is an important example. As has been noted above, an inadequate effort to solve the water pollution problem will be paid for in higher costs of obtaining water of adequate quality—unless it is paid for by a decline in the health of the population and decreased productivity in water-using industrial processes. Inadequacy of public services also has effects on economic welfare that are not reflected in aggregate economic statistics. Commuters are well aware of the sacrifice of time that results from inadequate urban transportation systems. The sacrifice of recreational opportunities resulting from failure to make sufficient provisions for public parks as cities expand is another example.

The task of meeting the transportation, recreation, education, housing, and other needs of growing metropolitan areas poses a major challenge to our existing forms of political organization at the State and local level. Public facilities serving the needs of individual political jurisdictions within an urban area are often less efficient than they would be if they had been designed for all, or a large part, of the area. For example, lack of effective and well coordinated land use planning and zoning regulation has resulted in locational patterns of residential, commercial, and industrial developments that intensify transportation problems. Improved planning and coordination can increase the efficiency of public services and make cities better places in which to live. Progress can be achieved through continued Federal assistance to States and local bodies for the planning of urban area development, comprehensive urban renewal programs within cities, public improvement programs, and specific public improvements.

Although the Federal Government is making an important contribution to the solution of problems whose significance extends beyond the boundaries of political units at lower levels, it must be remembered that civil government is basically a State and local responsibility. About 80 percent of spending for civil government in 1960—for education, highways, water supply, sanitation, public health, police and fire protection, etc.—actually took place at the State and local level, with only about 15 percent of these local expenditures financed by Federal aid. State and local governments account for more than 70 percent of public civilian employment and for two-thirds of nonmilitary government payrolls. Their activities are a major factor in the economy.

As a Nation, we have surely not erred on the side of excessive public investment in recent years. Major sources of demand for public services have expanded sharply: for example, the number of automobiles and trucks has grown more rapidly than GNP, and the extent of urbanization has increased. Nevertheless, new nondefense public construction as a fraction of GNP was essentially unchanged in the 1950's from its level in the 1920's. It must also be noted that a substantial backlog of unsatisfied needs for schools, highways, and other public facilities was carried over into the decade of the 1950's from the second World War—probably a much greater backlog than was carried into the 1920's from the first.

Although these historical comparisons throw an interesting light on the changing role of the public sector in the U.S. economy, they do not provide firm standards for the future division of responsibility between the public and private sectors. That issue cannot be settled by the invocation of historical ratios any more than it should be settled by abstract argument. If our economy is to use its productive resources in reasonable accordance with a consensus as to national priorities, we must face the question of public versus private expenditures pragmatically, in terms of intrinsic merits and costs, not in terms of fixed preconceptions.

INVESTMENT IN HOUSING

The higher standard of living made possible by economic growth results from increased output of a wide variety of goods and services. Among these is one item which, by virtue of its economic importance, its great influence on the general quality of life, and the unique character of the capital investment required to expand its supply, deserves special attention in a discussion of economic growth. This item is housing.

The value of the current services supplied by the Nation's residential structures—the total of rents paid plus the imputed rental value of owner-occupied dwellings—accounted for 13.1 percent of personal consumption expenditures in 1961, or 8.5 percent of GNP. Another 4.1 percent of GNP was accounted for by residential nonfarm construction—the total expenditures on replacing, improving, and adding to the nonfarm portion of the stock of residential structures. That stock itself represents roughly

one-fourth of our national wealth, about twice the share accounted for by producers' durable equipment.

These figures are, in part, a statistical image of the importance of the basic human need for shelter. To a greater extent, however, they reflect the fact that better housing is among the most important benefits that economic progress can confer. A dwelling that provides adequate protection against the elements may nevertheless be a serious hazard to the mental and physical health of its occupants, if it is overcrowded, lacking in hot and cold running water or plumbing facilities, or structurally unsound. A better home provides a healthier, safer, and more comfortable living environment; it affords greater opportunities for recreation, aesthetic enjoyment, and peace and quiet.

Few, if any, Americans actually lack a roof over their heads. But about one-fifth of the Nation's housing units are classified as "dilapidated" or else lack one or more of the basic plumbing facilities. Like the poverty that it reflects, substandard housing is a burden borne to a disproportionate extent by a few groups in the society; the aged, the nonwhite, the poorly educated, and families without a male breadwinner. The burden is perhaps most regrettable when it renders ineffective the measures society takes to promote equality of opportunity. The child who has no decent place in which to study can hardly take full advantage of the free education that is provided to him.

The elimination of substandard housing and the provision of a decent home in a suitable environment for all American families is an important objective of public policy in the housing field. The public interest has been deemed to extend also to the promotion of home ownership. Through the mortgage insurance and mortgage guaranty operations of the Federal Housing Administration (FHA) and the Veterans Administration (VA) and the secondary market operations of the Federal National Mortgage Association (FNMA), the Government facilitates homebuilding and the flow of private capital into home loans by providing insurance against the risk of default and making mortgage loans a more liquid investment for financial institutions. In addition, FNMA assists in the financing of certain special types of home mortgages, as authorized by the Congress and directed by the President. Public housing amounted to just over 3 percent of all nonfarm housing starts between 1947 and 1960.

These various activities played a major role in the substantial progress toward better housing for the Nation that was made during the 1950's. Whereas in 1950, 55.0 percent of occupied housing units were owner-occupied, 61.9 percent were owner-occupied in 1960. Nonfarm housing starts exceeded the increase in the number of nonfarm households by roughly 25 percent for the decade, providing a margin for replacement of housing units demolished by public and private improvement programs, for improvement of average quality, and to accommodate housing needs arising from migration and mobility of the American people. In recent years, about

30 percent of sales of new nonfarm housing units have been under the FHA or VA programs.

A sharp rise in the rate of household formation will occur in the latter part of this decade, reflecting the high birth rates of the middle and late 1940's. It is all the more important, therefore, that substantial progress in improving the average quality of the Nation's housing be made in the early part of the decade, when the need to increase its quantity will be less urgent. The enactment in the last session of Congress of the Administration-sponsored Housing Act of 1961 was a major step toward meeting the Nation's housing needs. In addition to extending and expanding existing programs for public housing, housing for the elderly, college housing, and farm housing, the Act provides for major new programs of FHA-insured loans to finance construction and rehabilitation of housing for moderate income families, and long-term FHA-insured home repair loans. These new types of loans are eligible for purchase by FNMA. Other important provisions make Federal assistance available to States and localities for various measures in the field of urban affairs, including planning, loans, and demonstration grants for mass transportation projects, and acquisition of land for permanent open-space uses, such as parks. Additional funds were authorized to finance the construction of community facilities. Finally, a series of provisions make additional assistance available for households and businesses displaced by urban renewal programs or other government actions.

Rapid economic growth should bring the national goal of decent housing and a suitable living environment for every American family well within reach during the present decade. Estimates prepared for the Council of Economic Advisers by the Housing and Home Finance Agency indicate that no American households need occupy a dilapidated structure by 1970. This could be achieved with about the present ratio of residential construction expenditures to GNP—provided that GNP itself grows at approximately the rate discussed earlier in this chapter. This estimate includes an allowance for expenditures on additions and alterations based on extrapolation of the 1950–60 trend, but this allowance is probably not adequate to make possible the elimination of housing that is deficient for reasons other than dilapidation. It is clear, however, that the virtually complete elimination of deficient housing is by no means an unrealistic objective in a context of rapid economic growth.

Construction costs have risen more rapidly than broad price indexes in recent years. For example, while the all-inclusive price index for GNP rose by 40 percent between 1947 and 1961, the subindex for nonfarm residential construction rose by 50 percent. If this were to continue, it would mean that the share of current-price GNP devoted to the building of houses must rise if the proportion of real output going into housing investment is not to fall. There is a need to identify artificial barriers to technological progress and to efficient allocation of resources in the construction industry. Their

reduction or removal can make a significant contribution to growth in this important sector of the economy.

CONCLUSION

This Chapter began with the observation that sustained long-run growth of potential supply is both difficult to achieve and pointless of achievement unless the growth of demand keeps pace. Capacity to produce is not an end in itself, but an instrument for the satisfaction of needs and the discharge of responsibilities. The needs will go unfilled and the responsibilities unmet to the extent that growing productive power runs to waste in idle machines and unemployed men.

Here the objectives of stabilization policy and growth policy coalesce. The mandate of the Employment Act renews itself perpetually as maximum levels of production, employment and purchasing power rise through time. The weapons of stabilization policy—the budget, the tax system, control of the supply of money and credit—must be aimed anew, for their target is moving. In particular, as Part II of Chapter 1 explains, with given expenditures and given tax rates, the Federal budget surplus at full employment grows with the economy. If it grows too rapidly, it can become an obstacle to full employment, to healthy economic growth, indeed to its own realization. If it grows too slowly, it can contribute to inflationary pressure.

Some surplus at full employment may be desirable, to help to finance the formation of capital. How large it should be depends on the size of the investment program required by the economy, on the freely made saving decisions of families and business firms, and on the level of government expenditures. It is the function of monetary policy, the tax system, and transfer payments to help to generate demand for the investment needed for economic growth. It is the function of over-all fiscal policy to insure that investment demand is matched, at full employment, by an equivalent volume of private and public saving.

The course of the budget surplus at full employment depends on the growth of the national income, the responsiveness of tax revenues to a rising tax base, and the changing level of Federal outlays. Even if Federal expenditures remain a constant proportion of GNP, as they have in recent years, the surplus at full employment will grow slightly because the progressive character of the tax system causes revenues to rise relative to GNP. If expenditures remain constant, or nearly so, the full employment surplus will grow much more rapidly.

As the economy returns to the full employment track, the full employment surplus will need to be kept from growing indefinitely, and perhaps to be reduced. The choice—or rather the division, for it is unlikely to be an “either-or” matter—is between reductions in tax receipts and increases in government expenditures, whether Federal, State or local. A pragmatic decision will almost certainly involve both. It is unlikely that the most

urgent unmet needs of the population will lie all in the area of private consumption or all in the areas traditionally allotted to public consumption and investment. Undoubtedly much of the reduction in the full employment surplus should be channeled directly to private purchasing power, just as most, by far, of present consumption spending is in private hands. The choice of a balance between public and private expenditures is an important choice for society. It should be made consciously through the normal democratic processes. And it should be made by weighing the urgency of alternative uses of resources, rather than by appeal to simple slogans on one side or the other.

The concern of this chapter has been the source of rising productive potential and the policies that can strengthen them. Granted continued prosperity, we can have slower growth or faster growth. There is substitution between the composition of output in the present and the level of output in the future. Just as a single individual can increase his consumption possibilities in the future by present saving, so can a whole society provide more fully for its future by using present resources for acts of investment in the broadest sense. No absolute reduction in current consumption need occur; it is only necessary that consumption grow less rapidly than total output for a time. Indeed, future levels of consumption will be higher than they could otherwise be—the cost is primarily in postponement. Happily, for an advanced society like ours, much of what is described from this point of view as investment can also be seen as present enjoyment of some of the delights of civilization: widespread education, good health, and the search for knowledge.