

# News

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Washington, D.C. 20212

Historical, technical  
information: (202) 523-9261  
Media contact: (202) 523-1913

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## MULTIFACTOR PRODUCTIVITY MEASURES, 1987

Private Business, Private Nonfarm Business, and Manufacturing

The Bureau of Labor Statistics of the U.S. Department of Labor today reported multifactor productivity measures--output per unit of combined labor and capital--for 1987. Multifactor productivity increased from 1986 to 1987 at the following rates:

0.8 percent in private business,  
0.8 percent in private nonfarm business, and  
3.4 percent in manufacturing.

The increase in multifactor productivity in the private business sector was the fifth consecutive increase, but the smallest since 1982. The rise in private nonfarm business productivity also was the fifth consecutive increase, but was smaller than the 1986 increase. The growth in manufacturing multifactor productivity was larger than the growth in 1986 and also the fifth consecutive increase. The 1987 annual changes are summarized in table A; further detail and historical measures are shown in tables 1 through 6.

The change in multifactor productivity reflects the difference between the change in output (production of goods and services) and the change in labor and capital services engaged in the production of the output. Multifactor productivity change does not measure the specific contributions of labor, capital, or any other factor of production. Instead, it reflects the joint effects of many factors, including new technology, economies of scale, change in the composition of labor input (as measured by education and experience), and change in the organization of production.

Table A. Productivity indexes and related measures  
Percent change from 1986 to 1987

Item	Private business <u>1/</u>	Private nonfarm business <u>1/</u>	Manu- facturing
Productivity:			
Output per hour of all persons.....	0.8	0.7	3.4
Output per unit of capital services..	0.8	0.8	3.7
Multifactor productivity <u>2/</u> .....	0.8	0.8	3.4
Output.....	3.7	3.8	4.3
Inputs:			
Hours of all persons.....	2.8	3.0	0.9
Capital services.....	2.8	3.0	0.6
Combined units of labor and capital input <u>3/</u> .....	2.8	3.0	0.9
Capital services per hour of all persons (capital-labor ratio)....	0.0	-0.1	-0.3

1/ Excludes government enterprises.

2/ Output per unit of combined labor and capital input.

3/ Hours of all persons combined with capital service input index, weighted by labor and capital shares.

The Bureau of Labor Statistics also publishes quarterly and annual measures of labor productivity, or output per unit of labor input, eight times a year. The percent change in labor productivity indicates the portion of the change in output that cannot be accounted for by the change in labor inputs. By contrast, the percent change in multifactor productivity indicates the portion of the change in output that cannot be accounted for by the change in combined inputs of labor and capital.

#### Private business sector

Multifactor productivity increased 0.8 percent in 1987 in private business, marking the fifth consecutive annual increase since 1982 (table 1). The 1987 increase resulted from a 3.7 percent increase in output and a 2.8 percent increase in combined labor and capital inputs. Separately, both hours (labor input) and capital services grew 2.8 percent from 1986 to 1987. Hence, the ratio of capital services to hours (capital-labor ratio) showed no change in 1987. In most years, capital services have increased more rapidly than hours.

Output increased more rapidly than hours in 1987, resulting in an increase in labor productivity (output per hour of all persons) of 0.8 percent from 1986 to 1987. Capital productivity (the ratio of output to capital services) also increased 0.8 percent in 1987.

### Private nonfarm business

Multifactor productivity increased 0.8 percent in 1987 in private nonfarm business. This was the fifth consecutive annual increase, but it was less than the 1986 increase of 1.2 percent (table 2). Output increased 3.8 percent last year in the nonfarm business sector while combined inputs of capital and labor increased 3.0 percent. Separately, hours of all persons and capital services both increased 3.0 percent in 1987, and the capital-labor ratio fell 0.1 percent in private nonfarm business. The increase in hours was the largest since 1984, while the increase in capital services was the smallest since 1983.

Labor productivity increased 0.7 percent in 1987, and capital productivity increased 0.8 percent. The rise in labor productivity was smaller than in 1986, while the increase in capital productivity was larger.

### Manufacturing

In manufacturing, multifactor productivity increased 3.4 percent in 1987. In recent years, manufacturing has consistently recorded stronger multifactor productivity gains than the two larger sectors of which it is a component. Since 1982, increases in multifactor productivity in manufacturing have been 3 percent or larger in most years (table 3), while, in private business and private nonfarm business, annual gains have generally been lower than this figure.

In 1987, manufacturing output increased 4.3 percent, and combined inputs increased 0.9 percent. Hours of all persons rose 0.9 percent in 1987, the first increase since 1984, and capital services rose 0.6 percent, the smallest increase since 1983. The capital-labor ratio fell 0.3 percent in 1987, the first decrease since 1984.

In 1987, labor productivity rose 3.4 percent in manufacturing, the fifth consecutive year of gains of 3 percent or more. Capital productivity increased 3.7 percent in 1987, an improvement over the 1986 increase of about 1 percent. In manufacturing, gains in both labor productivity and capital productivity have been stronger in recent years than in the other two major sectors.

### Long-term trends

From 1948 to 1987, multifactor productivity grew at an average annual rate of 1.4 percent in private business; 1.1 percent in private nonfarm business; and 1.9 percent in manufacturing (table B). These long-term rates reflect the difference between the average annual rate of change in labor

Table B. Compound annual rates of growth in output per hour of all persons, the contribution of capital intensity, and multifactor productivity, by major sector, 1948 to 1987

Measure	1948-1987	1948-1973	1973-1979	1979-1987
<u>Private business 1/</u>				
Output per hour of all persons	2.3	2.9	0.6	1.4
Contribution of capital intensity <u>2/</u>	0.9	0.9	0.5	0.8
Multifactor productivity <u>3/</u>	1.4	2.0	0.1	0.6
<u>Private nonfarm business 1/</u>				
Output per hour of all persons	1.9	2.5	0.5	1.2
Contribution of capital intensity <u>2/</u>	0.8	0.8	0.6	0.7
Multifactor productivity <u>3/</u>	1.1	1.7	-0.1	0.5
<u>Manufacturing</u>				
Output per hour of all persons	2.7	2.8	1.4	3.3
Contribution of capital intensity <u>2/</u>	0.8	0.8	0.9	0.7
Multifactor productivity <u>3/</u>	1.9	2.0	0.5	2.6

1/ Excludes government enterprises.

2/ Change in capital services per hour times capital's share of current dollar output.

3/ Output per unit of combined labor and capital input.

Source: Tables 4-6.

productivity (output per hour) and the average annual contribution of capital intensity. Hence, the 1.4 percent rate of growth between 1948 and 1987 in private business equals the 2.3 percent growth in labor productivity minus the 0.9 percent growth in the contribution of capital intensity. The latter equals the change in the capital-labor ratio multiplied by capital's share of total output; historically, capital's share has been approximately one-third of total output.

The widely discussed post-1973 productivity slowdown is obvious from the data in table B. From 1948 to 1973, multifactor productivity grew at an annual rate of 2.0 percent in private business and 1.7 percent in private nonfarm business. These rates, combined with the annual growth of the contribution of capital intensity of 0.9 percent in private business and 0.8 percent in private nonfarm business, resulted in labor productivity growth rates of 2.9 percent and 2.5 percent, respectively, in these two sectors.

During the period 1973 to 1979, gains in multifactor productivity slowed to only 0.1 percent per year in private business. At the same time, the average annual contribution of capital intensity decreased to 0.5 percent. Labor productivity, therefore, increased only 0.6 percent per year from 1973 to 1979. A similar slowdown occurred in private nonfarm business during the 1973-79 period.

Multifactor productivity in manufacturing grew at an annual rate of 2.0 percent from 1948 to 1973. This growth rate fell to 0.5 percent during the years 1973 to 1979. However, the contribution of capital intensity did not fall as it had in the overall business sectors, but remained about constant at 0.9 percent per year. This steady contribution of capital intensity helped prevent labor productivity growth in manufacturing from decreasing as much as in the two larger sectors.

In the latest period, 1979 to 1987, multifactor productivity in manufacturing increased 2.6 percent per year, and labor productivity rose 3.3 percent per year. These results represented a return to pre-1973 growth rates. On the other hand, multifactor productivity grew only 0.6 percent per year in private business and 0.5 percent in private nonfarm business during this period. These growth rates represented an increase from the 1973-79 rates but were still well below the pre-1973 rates.

#### Summary of Methods

The following note describes the major data sources and the procedures used in deriving BLS multifactor productivity indexes. More detailed information on the methods, limitations, and data sources is provided in BLS Bulletin 2178, "Trends in Multifactor Productivity, 1948-81."

The multifactor productivity indexes are derived by dividing an output index by an input index which is a weighted average of the hours of all persons and capital services. The output indexes are computed from measures of constant dollar gross domestic product, derived from the national income and product accounts developed by the Bureau of Economic Analysis of the U.S. Department of Commerce.

The capital input series measures the services derived from the stock of physical assets. The assets included are fixed business equipment, structures, inventories, and land. Structures include nonresidential structures and residential capital which is rented out by profit-making firms or persons. Financial assets are excluded as are owner-occupied residential structures. The aggregate capital measures are obtained by weighting each asset type by its respective rental price.

The labor and capital components of the input indexes are combined with weights which represent each component's share of total output. The index uses changing weights where the share in each year is averaged with the preceding year's share.

Data are presented for the private business, private nonfarm business, and manufacturing sectors. The private business sector, which accounts for about 80 percent of the gross national product, includes all activities in the economy with the exception of general government, government enterprises, the rest-of-the-world sector, owner-occupied housing, nonprofit institutions, private household employees, and the statistical discrepancy. The private nonfarm business sector also excludes farms but includes agricultural services.

These multifactor productivity measures describe the relationship between output in real terms and the labor time and capital services involved in its production. They do not measure the specific contributions of labor, capital, or any other factor of production. Rather, they reflect the joint effects of many influences, including change in technology; level of output; the organization of production; managerial skill; and the characteristics and effort of the work force.

Table 1. Private Business Sector: Productivity and Related Measures, 1949-87 (1)

Year	Productivity			Output (3)	Inputs			Capital per hour of all persons
	Output per hour of all persons	Output per unit of capital	Multifactor productivity (2)		Hours of all persons (4)	Capital (5)	Combined units of labor and capital inputs(6)	
Percent Change								
1949	1.1	-4.1	-0.8	-2.4	-3.5	1.8	-1.6	5.4
1950	8.6	6.2	7.7	9.8	1.1	3.4	1.9	2.3
1951	4.1	2.2	3.4	7.1	2.9	4.8	3.6	1.9
1952	3.2	0.3	2.2	3.2	0.0	2.9	1.0	2.9
1953	3.7	2.1	3.1	4.7	1.0	2.6	1.5	1.6
1954	1.7	-3.4	-0.1	-1.8	-3.4	1.7	-1.7	5.3
1955	3.1	3.5	3.2	7.0	3.8	3.3	3.6	-0.4
1956	1.4	-0.8	0.6	2.9	1.5	3.8	2.3	2.2
1957	2.7	-1.6	1.2	1.1	-1.6	2.8	-0.1	4.4
1958	3.0	-3.4	0.8	-1.9	-4.8	1.6	-2.6	6.7
1959	3.4	5.2	4.0	7.3	3.9	2.1	3.2	-1.7
1960	1.7	-0.8	0.8	1.7	0.1	2.5	0.9	2.5
1961	3.6	-0.1	2.3	1.9	-1.7	2.0	-0.4	3.7
1962	3.6	2.5	3.2	5.3	1.6	2.7	2.0	1.1
1963	4.0	1.6	3.2	4.6	0.5	2.9	1.4	2.4
1964	4.3	2.6	3.7	6.0	1.6	3.3	2.2	1.7
1965	3.0	1.8	2.6	6.3	3.2	4.4	3.6	1.1
1966	2.7	-0.1	1.6	5.2	2.4	5.3	3.5	2.8
1967	2.7	-2.4	0.8	2.7	-0.1	5.2	1.8	5.3
1968	2.8	0.0	1.8	4.5	1.6	4.4	2.6	2.8
1969	0.1	-1.8	-0.6	2.7	2.6	4.6	3.3	1.9
1970	0.8	-4.9	-1.2	-0.9	-1.7	4.2	0.3	6.1
1971	3.3	-0.9	1.8	2.7	-0.5	3.7	0.9	4.2
1972	3.0	2.5	2.8	6.4	3.3	3.8	3.4	0.5
1973	2.0	1.3	1.7	6.0	4.0	4.7	4.2	0.7
1974	-2.1	-6.3	-3.6	-1.9	0.3	4.8	1.8	4.5
1975	2.0	-5.0	-0.5	-2.2	-4.1	3.0	-1.6	7.4
1976	2.8	3.6	3.0	5.9	3.0	2.2	2.7	-0.8
1977	1.6	2.8	2.1	5.8	4.1	2.9	3.7	-1.1
1978	0.8	1.9	1.2	5.8	5.0	3.8	4.6	-1.1
1979	-1.2	-2.1	-1.6	2.0	3.2	4.2	3.6	0.9
1980	-0.4	-5.7	-2.2	-1.2	-0.8	4.7	1.1	5.6
1981	1.4	-1.8	0.3	2.2	0.7	4.1	1.9	3.3
1982	-0.3	-6.2	-2.5	-3.1	-2.8	3.3	-0.7	6.3
1983	2.8	2.0	2.5	4.2	1.5	2.2	1.7	0.7
1984	2.5	5.0	3.4	8.5	5.8	3.3	4.9	-2.4
1985	2.1	0.2	1.4	4.2	2.1	4.1	2.8	2.0
1986	2.2	0.1	1.5	3.6	1.3	3.5	2.1	2.2
1987	0.8	0.8	0.8	3.7	2.8	2.8	2.8	0.0

See footnotes following table 6.

Sept. 30, 1988  
Source: Bureau of Labor Statistics

Table 2. Private Nonfarm Business Sector: Productivity and Related Measures, 1949-87 (1)

Year	Productivity			Output (3)	Inputs			Capital per hour of all persons
	Output per hour of all persons	Output per unit of capital	Multifactor productivity (2)		Hours of all persons (4)	Capital (5)	Combined units of labor and capital inputs(6)	
Percent Change								
1949	1.8	-4.0	-0.3	-2.3	-4.1	1.8	-2.0	6.1
1950	6.6	6.1	6.4	9.9	3.1	3.6	3.3	0.5
1951	3.1	2.5	2.8	7.8	4.6	5.2	4.8	0.6
1952	2.3	0.2	1.6	3.2	0.9	3.0	1.6	2.1
1953	2.2	2.0	2.1	4.7	2.5	2.7	2.6	0.2
1954	1.6	-3.7	-0.3	-2.0	-3.5	1.7	-1.7	5.4
1955	3.0	3.6	3.2	7.2	4.1	3.6	3.9	-0.5
1956	0.6	-0.8	0.1	3.1	2.5	4.0	3.0	1.5
1957	1.9	-1.5	0.7	1.3	-0.6	2.9	0.6	3.5
1958	2.5	-3.7	0.3	-2.1	-4.5	1.6	-2.4	6.4
1959	3.3	5.5	4.0	7.8	4.4	2.2	3.6	-2.1
1960	1.1	-1.1	0.3	1.6	0.5	2.8	1.3	2.2
1961	3.2	-0.1	2.1	2.0	-1.2	2.1	-0.1	3.4
1962	3.3	2.5	3.0	5.5	2.1	2.9	2.4	0.7
1963	3.7	1.6	2.9	4.7	1.1	3.1	1.8	2.0
1964	3.9	2.8	3.5	6.3	2.3	3.5	2.7	1.1
1965	2.5	1.8	2.2	6.4	3.7	4.5	4.0	0.8
1966	2.0	0.1	1.3	5.6	3.5	5.5	4.2	1.9
1967	2.3	-2.7	0.5	2.5	0.2	5.3	2.0	5.1
1968	2.7	0.1	1.8	4.7	1.9	4.6	2.9	2.6
1969	-0.5	-2.0	-1.0	2.7	3.2	4.8	3.8	1.6
1970	0.4	-5.2	-1.6	-1.1	-1.5	4.3	0.5	5.9
1971	3.0	-1.0	1.6	2.7	-0.3	3.8	1.1	4.1
1972	3.0	2.5	2.8	6.5	3.4	3.9	3.6	0.5
1973	1.8	1.2	1.6	6.2	4.3	4.9	4.5	0.6
1974	-2.2	-6.6	-3.7	-1.9	0.3	5.0	1.9	4.7
1975	1.8	-5.4	-0.7	-2.4	-4.1	3.2	-1.7	7.6
1976	2.6	3.6	2.9	6.1	3.5	2.4	3.1	-1.0
1977	1.5	2.7	1.9	5.9	4.4	3.2	3.9	-1.2
1978	0.8	1.9	1.2	6.0	5.1	4.0	4.7	-1.0
1979	-1.6	-2.9	-2.0	1.8	3.5	4.8	4.0	1.3
1980	-0.5	-5.7	-2.3	-1.2	-0.8	4.7	1.0	5.5
1981	1.0	-2.5	-0.2	1.7	0.8	4.3	2.0	3.5
1982	-0.5	-6.6	-2.6	-3.3	-2.8	3.5	-0.7	6.5
1983	3.4	2.6	3.1	5.0	1.6	2.3	1.9	0.7
1984	2.1	4.6	3.0	8.4	6.1	3.6	5.2	-2.4
1985	1.4	-0.4	0.8	3.9	2.4	4.3	3.1	1.9
1986	2.0	-0.2	1.2	3.5	1.4	3.7	2.2	2.2
1987	0.7	0.8	0.8	3.8	3.0	3.0	3.0	-0.1

See footnotes following table 6.

Sept. 30, 1988  
Source: Bureau of Labor Statistics



Table 3. Manufacturing Sector: Productivity and Related Measures, 1949-87

Year	Productivity			Output (3)	Inputs			Capital per hour of all persons
	Output per hour of all persons	Output per unit of capital	Multifactor productivity (2)		Hours of all persons (4)	Capital (5)	Combined units of labor and capital inputs(6)	
Percent Change								
1949	4.1	-5.9	0.7	-5.1	-8.9	0.8	-5.8	10.6
1950	5.4	10.4	7.1	13.9	8.0	3.2	6.3	-4.4
1951	3.9	2.1	3.3	11.9	7.7	9.6	8.3	1.8
1952	1.9	-1.1	0.9	3.4	1.4	4.6	2.5	3.1
1953	2.1	3.5	2.5	7.3	5.1	3.7	4.7	-1.4
1954	1.4	-7.4	-1.4	-7.3	-8.6	0.1	-6.0	9.5
1955	4.7	6.4	5.2	10.5	5.5	3.8	5.0	-1.6
1956	-0.6	-4.3	-1.8	0.9	1.5	5.5	2.7	3.9
1957	2.1	-2.6	0.7	0.6	-1.5	3.2	-0.1	4.8
1958	-0.6	-9.4	-3.3	-8.7	-8.2	0.7	-5.6	9.7
1959	4.5	9.8	6.1	11.4	6.6	1.5	5.0	-4.8
1960	0.5	-2.1	-0.3	0.2	-0.3	2.4	0.5	2.7
1961	2.8	-1.2	1.6	0.2	-2.5	1.4	-1.3	4.1
1962	4.2	5.2	4.5	8.5	4.1	3.1	3.8	-0.9
1963	6.8	4.9	6.2	7.9	1.0	2.9	1.6	1.8
1964	4.8	3.7	4.4	7.1	2.2	3.2	2.5	1.0
1965	2.7	3.3	2.9	8.7	5.9	5.3	5.7	-0.6
1966	1.1	0.0	0.7	7.7	6.5	7.7	6.9	1.1
1967	-0.1	-7.7	-2.6	-0.3	-0.2	8.1	2.4	8.3
1968	3.2	-0.2	2.1	5.1	1.9	5.3	2.9	3.4
1969	1.2	-1.8	0.3	2.8	1.6	4.7	2.5	3.0
1970	0.0	-8.9	-2.6	-5.6	-5.6	3.7	-3.0	9.8
1971	5.6	-0.6	3.8	1.7	-3.7	2.3	-2.0	6.2
1972	4.4	6.4	5.0	8.9	4.3	2.3	3.7	-1.9
1973	4.9	6.8	5.5	10.7	5.5	3.6	5.0	-1.8
1974	-3.0	-9.3	-4.7	-4.8	-1.9	5.0	-0.1	7.0
1975	2.5	-11.1	-1.4	-7.5	-9.7	4.1	-6.2	15.3
1976	4.6	6.7	5.2	9.7	4.9	2.8	4.3	-2.1
1977	3.0	3.7	3.2	7.4	4.3	3.5	4.1	-0.7
1978	1.5	2.0	1.6	6.0	4.4	3.9	4.2	-0.5
1979	-0.1	-2.4	-0.7	2.0	2.1	4.6	2.7	2.4
1980	0.0	-8.6	-2.3	-4.5	-4.5	4.4	-2.3	9.4
1981	2.2	-2.2	1.1	1.6	-0.6	3.9	0.5	4.5
1982	2.2	-8.2	-0.5	-6.1	-8.1	2.3	-5.6	11.4
1983	5.8	6.2	5.9	6.4	0.6	0.2	0.5	-0.4
1984	5.5	10.2	6.8	12.2	6.4	1.8	5.1	-4.3
1985	4.6	1.8	3.8	3.8	-0.8	1.9	0.0	2.8
1986	3.3	1.1	2.7	2.3	-1.0	1.1	-0.4	2.1
1987	3.4	3.7	3.4	4.3	0.9	0.6	0.9	-0.3

See footnotes following table 6.

Sept. 30, 1988  
Source: Bureau of Labor Statistics

Table 4. Private Business Sector: Productivity and Related Measures, 1948-87 (1)

Year	Productivity			Output (3)	Inputs			Capital per hour of all persons
	Output per hour of all persons	Output per unit of capital	Multifactor productivity (2)		Hours of all persons (4)	Capital (5)	Combined units of labor and capital inputs(6)	
Indexes 1977=100								
1948	46.5	99.0	60.8	38.1	81.8	38.5	62.6	47.0
1949	47.1	95.0	60.3	37.2	79.0	39.1	61.6	49.6
1950	51.1	100.8	64.9	40.8	79.9	40.5	62.8	50.7
1951	53.2	103.0	67.2	43.7	82.2	42.4	65.1	51.6
1952	54.9	103.4	68.6	45.1	82.1	43.6	65.7	53.1
1953	56.9	105.5	70.8	47.2	82.9	44.8	66.7	54.0
1954	57.9	101.9	70.7	46.4	80.1	45.5	65.6	56.8
1955	59.7	105.5	73.0	49.6	83.1	47.0	68.0	56.6
1956	60.5	104.6	73.4	51.1	84.4	48.8	69.5	57.8
1957	62.1	102.9	74.3	51.6	83.1	50.1	69.5	60.4
1958	64.0	99.4	74.8	50.6	79.1	50.9	67.6	64.4
1959	66.2	104.5	77.8	54.3	82.1	52.0	69.8	63.3
1960	67.3	103.7	78.5	55.3	82.2	53.3	70.5	64.9
1961	69.7	103.7	80.3	56.3	80.8	54.4	70.2	67.3
1962	72.3	106.2	82.9	59.3	82.1	55.8	71.6	68.0
1963	75.2	108.0	85.5	62.0	82.5	57.5	72.6	69.6
1964	78.4	110.8	88.7	65.8	83.8	59.4	74.2	70.8
1965	80.8	112.8	90.9	69.9	86.5	62.0	76.9	71.6
1966	82.9	112.7	92.4	73.5	88.6	65.2	79.5	73.6
1967	85.2	110.0	93.2	75.4	88.5	68.6	81.0	77.5
1968	87.6	110.0	94.8	78.8	90.0	71.7	83.1	79.6
1969	87.7	108.0	94.3	81.0	92.4	75.0	85.9	81.2
1970	88.4	102.7	93.1	80.2	90.8	78.1	86.1	86.1
1971	91.3	101.8	94.8	82.4	90.3	81.0	86.9	89.7
1972	94.0	104.3	97.5	87.7	93.2	84.0	89.9	90.1
1973	95.9	105.6	99.2	93.0	96.9	88.0	93.7	90.8
1974	93.8	98.9	95.6	91.2	97.2	92.2	95.4	94.9
1975	95.7	94.0	95.1	89.3	93.2	95.0	93.9	101.9
1976	98.4	97.3	98.0	94.5	96.1	97.1	96.4	101.1
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	100.8	101.9	101.2	105.8	105.0	103.8	104.6	98.9
1979	99.5	99.7	99.6	107.9	108.4	108.2	108.3	99.8
1980	99.2	94.1	97.4	106.6	107.5	113.3	109.4	105.4
1981	100.6	92.3	97.6	108.9	108.2	117.9	111.5	108.9
1982	100.3	86.6	95.2	105.4	105.2	121.8	110.7	115.8
1983	103.0	88.3	97.6	109.9	106.7	124.4	112.6	116.6
1984	105.6	92.7	100.9	119.2	112.9	128.6	118.1	113.9
1985	107.9	92.9	102.4	124.3	115.2	133.8	121.4	116.1
1986	110.3	93.0	103.9	128.7	116.7	138.5	123.9	118.7
1987	111.2	93.7	104.7	133.4	120.0	142.4	127.4	118.6

See footnotes following table 6.

Sept. 30, 1988  
Source: Bureau of Labor Statistics

Table 5. Private nonfarm business sector: Productivity and Related Measures, 1948-87 (1)

Year	Productivity			Output (3)	Inputs			Capital per hour of all persons
	Output per hour of all persons	Output per unit of capital	Multifactor productivity (2)		Hours of all persons (4)	Capital (5)	Combined units of labor and capital inputs(6)	
Indexes 1977=100								
1948	52.6	100.6	66.0	36.9	70.2	36.7	55.9	52.3
1949	53.6	96.5	65.8	36.1	67.3	37.4	54.8	55.5
1950	57.1	102.4	70.1	39.7	69.4	38.7	56.6	55.8
1951	58.9	104.9	72.1	42.8	72.6	40.8	59.3	56.1
1952	60.3	105.1	73.2	44.1	73.2	42.0	60.3	57.3
1953	61.6	107.2	74.7	46.2	75.1	43.1	61.8	57.4
1954	62.5	103.3	74.5	45.3	72.4	43.9	60.8	60.6
1955	64.4	106.9	76.9	48.6	75.4	45.4	63.1	60.2
1956	64.8	106.1	77.0	50.1	77.3	47.2	65.1	61.1
1957	66.1	104.4	77.6	50.8	76.8	48.6	65.5	63.3
1958	67.7	100.6	77.8	49.7	73.4	49.4	63.9	67.3
1959	69.9	106.1	80.9	53.6	76.6	50.5	66.2	65.9
1960	70.7	104.9	81.2	54.4	77.0	51.9	67.1	67.4
1961	73.0	104.7	82.8	55.5	76.1	53.0	67.0	69.7
1962	75.4	107.4	85.3	58.6	77.7	54.5	68.6	70.2
1963	78.1	109.2	87.8	61.3	78.5	56.2	69.8	71.6
1964	81.2	112.2	90.9	65.2	80.3	58.1	71.8	72.4
1965	83.3	114.2	93.0	69.4	83.3	60.8	74.6	72.9
1966	85.0	114.3	94.2	73.3	86.3	64.1	77.8	74.3
1967	86.9	111.3	94.6	75.1	86.4	67.5	79.4	78.1
1968	89.3	111.4	96.3	78.7	88.1	70.6	81.7	80.1
1969	88.9	109.2	95.3	80.8	90.9	74.0	84.7	81.4
1970	89.2	103.5	93.8	79.9	89.6	77.2	85.2	86.2
1971	91.9	102.5	95.4	82.1	89.3	80.1	86.1	89.7
1972	94.7	105.0	98.1	87.4	92.3	83.2	89.1	90.2
1973	96.4	106.3	99.7	92.9	96.3	87.3	93.2	90.7
1974	94.3	99.4	96.0	91.1	96.6	91.7	94.9	94.9
1975	96.0	94.0	95.3	88.9	92.6	94.6	93.3	102.2
1976	98.5	97.4	98.1	94.4	95.8	96.9	96.2	101.2
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	100.8	101.9	101.2	106.0	105.1	104.0	104.7	99.0
1979	99.2	98.9	99.1	107.9	108.8	109.1	108.9	100.3
1980	98.7	93.3	96.9	106.6	108.0	114.2	110.0	105.7
1981	99.6	91.0	96.7	108.4	108.8	119.1	112.2	109.4
1982	99.1	85.1	94.1	104.8	105.7	123.3	111.4	116.6
1983	102.5	87.3	97.0	110.1	107.4	126.1	113.5	117.4
1984	104.7	91.3	99.9	119.3	114.0	130.6	119.4	114.6
1985	106.2	91.0	100.7	124.0	116.8	136.3	123.1	116.7
1986	108.3	90.8	102.0	128.3	118.5	141.3	125.8	119.3
1987	109.1	91.5	102.7	133.2	122.0	145.5	129.6	119.2

See footnotes following table 6.

Sept. 30, 1988  
Source: Bureau of Labor Statistics

Table 6. Manufacturing Sector: Productivity and Related Measures, 1948-87

Year	Productivity			Output (3)	Inputs			Capital per hour of all persons
	Output per hour of all persons	Output per unit of capital	Multifactor productivity (2)		Hours of all persons (4)	Capital (5)	Combined units of labor and capital inputs(6)	
Indexes 1977=100								
1948	46.6	106.1	59.5	37.0	79.4	34.8	62.1	43.9
1949	48.5	99.9	60.0	35.1	72.4	35.1	58.5	48.5
1950	51.1	110.2	64.2	40.0	78.2	36.3	62.2	46.4
1951	53.1	112.5	66.3	44.7	84.2	39.7	67.4	47.2
1952	54.1	111.2	66.9	46.2	85.4	41.6	69.1	48.7
1953	55.3	115.1	68.6	49.6	89.8	43.1	72.3	48.0
1954	56.0	106.6	67.7	46.0	82.1	43.1	68.0	52.5
1955	58.7	113.5	71.2	50.8	86.6	44.8	71.3	51.7
1956	58.3	108.6	69.9	51.3	87.9	47.2	73.3	53.7
1957	59.6	105.8	70.4	51.5	86.5	48.7	73.2	56.3
1958	59.3	95.9	68.1	47.0	79.4	49.1	69.1	61.8
1959	61.9	105.2	72.2	52.4	84.6	49.8	72.5	58.8
1960	62.2	103.0	72.0	52.5	84.4	51.0	72.9	60.4
1961	64.0	101.8	73.1	52.6	82.3	51.7	71.9	62.9
1962	66.7	107.1	76.5	57.1	85.6	53.3	74.7	62.3
1963	71.2	112.3	81.2	61.6	86.5	54.9	75.9	63.4
1964	74.6	116.5	84.8	66.0	88.4	56.6	77.8	64.0
1965	76.6	120.3	87.2	71.7	93.6	59.6	82.2	63.7
1966	77.4	120.3	87.8	77.2	99.7	64.2	87.9	64.4
1967	77.4	111.0	85.6	77.0	99.5	69.3	90.0	69.7
1968	79.8	110.8	87.4	80.9	101.4	73.0	92.6	72.0
1969	80.8	108.8	87.6	83.2	103.0	76.5	95.0	74.2
1970	80.8	99.1	85.3	78.6	97.3	79.3	92.1	81.5
1971	85.3	98.5	88.5	79.9	93.7	81.1	90.3	86.6
1972	89.0	104.8	92.9	87.0	97.8	83.0	93.6	84.9
1973	93.4	112.0	98.0	96.3	103.1	86.0	98.3	83.4
1974	90.6	101.6	93.4	91.7	101.2	90.3	98.2	89.2
1975	92.9	90.3	92.1	84.9	91.4	94.0	92.1	102.8
1976	97.1	96.4	96.9	93.1	95.9	96.6	96.1	100.7
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	101.5	102.0	101.6	106.0	104.4	103.9	104.2	99.5
1979	101.4	99.5	100.9	108.1	106.5	108.6	107.1	101.9
1980	101.4	91.0	98.6	103.2	101.7	113.4	104.6	111.5
1981	103.6	89.0	99.7	104.8	101.1	117.8	105.1	116.5
1982	105.9	81.6	99.2	98.4	92.9	120.5	99.2	129.8
1983	112.0	86.7	105.0	104.7	93.5	120.8	99.7	129.3
1984	118.1	95.5	112.1	117.5	99.5	123.0	104.8	123.7
1985	123.6	97.3	116.4	122.0	98.7	125.4	104.8	127.1
1986	127.7	98.4	119.5	124.7	97.7	126.8	104.4	129.8
1987	131.9	102.0	123.6	130.1	98.6	127.6	105.3	129.4

See footnotes following table 6.

Sept. 30, 1988  
Source: Bureau of Labor Statistics

**Footnotes, Tables 1-6**

**SOURCES:** Output data are from Bureau of Economic Analysis (BEA), U.S. Department of Commerce, and the Federal Reserve Board. Compensation and hours data are from the Bureau of Labor Statistics, U.S. Department of Labor, and BEA. Capital measures are based on data supplied by BEA and U.S. Department of Agriculture.

- (1) The private business sector includes all of Gross National Product except the rest-of-world sector, the rental value of owner-occupied real estate, the output arising in nonprofit organizations, the output of paid employees of private households, general government, government enterprises, and the statistical discrepancy in preparing the national income accounts. The private nonfarm business sector also excludes farms, but includes agricultural services.
- (2) Output per unit of combined labor and capital inputs.
- (3) Gross Domestic Product originating in the sector, in constant dollars.
- (4) Paid hours of all employees, plus the hours of proprietors and unpaid family workers engaged in the sector.
- (5) A measure of the flow of capital services used in the sector.
- (6) Hours of all persons combined with capital input, using labor and capital shares of output as weights.

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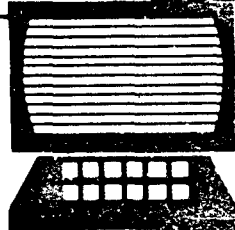


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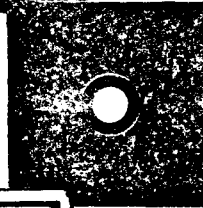
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