

News

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MULTIFACTOR PRODUCTIVITY MEASURES

Private Business, Private Nonfarm Business, and Manufacturing Sectors
Annual Measures for 1983

Multifactor productivity, which measures output per unit of combined labor and capital inputs, increased 2.9 percent in the private business sector in 1983, according to the latest measures announced today by the Bureau of Labor Statistics of the U.S. Department of Labor (table A). This increase, the largest since 1977, was slightly more than the 2.8 percent rise in the output per hour measure of productivity. The small difference is attributable to a decline in the amount of capital services per hour of all persons (the capital-labor ratio).

The following tabulation shows the annual rate of change of multifactor productivity from 1982 to 1983 for the 3 sectors covered by the BLS measures:

2.9 percent for private business,
3.6 percent for private nonfarm business, and
4.6 percent for manufacturing.

Details are given in tables 1-6.

Private business sector

Multifactor productivity, which also can be defined as the change in output not attributable to changes in capital services and worker hours, increased 2.9 percent in private business in 1983 (table 4), compared with a decrease of 1.5 percent in 1982. This rise, the largest since 1977, reflected a growth in output of 4.5 percent and an increase in combined labor and capital inputs of 1.5 percent. The increase in combined inputs resulted from rises in both hours of all persons (1.6 percent) and capital services (1.4 percent). The increase in capital services was the smallest since 1948, the initial year of the series.

Output per hour of all persons increased 2.8 percent from 1982 to 1983. The difference between the changes in the output per hour and multifactor productivity reflects a 0.1 percent decline in the contribution of capital services per hour to output per hour (table A).

Output per unit of capital services (capital productivity) increased 3.1 percent for 1983. This was the first rise since 1978.



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Private nonfarm business

Multifactor productivity rose 3.6 percent in the private nonfarm business sector in 1983 (table 5). Output increased 5.1 percent and combined inputs increased 1.5 percent. The rise in combined inputs was a result of increases in hours and capital services of 1.5 percent, each. This was the smallest growth in capital services in the postwar period in private nonfarm business.

Output per hour of all persons increased 3.6 percent in private nonfarm business in 1983. Capital services per hour did not change in 1983, and therefore did not contribute to the change in output per hour.

Output per unit of capital services (capital productivity) also rose 3.6 percent in 1983.

Manufacturing

In manufacturing, multifactor productivity increased 4.6 percent from 1982 to 1983, the largest rise since 1976 when it increased 5.3 percent (table 6). The rise in multifactor productivity reflected an increase of 5.2 percent in output and an increase in combined inputs of 0.5 percent. The rise in combined inputs resulted from an increase in hours of all persons of 0.9 percent and a decrease in capital services of 0.5 percent. This is the first decrease in capital services in manufacturing since 1948.

Output per hour grew 4.3 percent in manufacturing. The difference between multifactor productivity and output per hour reflects the decrease of 0.3 percent in the contribution of capital services per hour to output per hour (table A).

Output per unit of capital services (capital productivity) increased 5.7 percent in manufacturing in 1983. This was the largest increase since 1976 (when it was 7.4 percent).

Long-term trends

Productivity measures vary from year to year in part because of changes in the economy related to the business cycle. In order to get an approximate measure of secular trends, long-term measures are calculated. Previously, BLS published measures for the 1948-73 period and for 1973-81. In this release the second period has been extended to include 1983. The average measures from 1973-83 are virtually the same as from 1973-81.

Growth in output per hour and multifactor productivity showed two distinct patterns between 1948-73 and 1973-83 (table B). Output per hour in private business grew at an average rate of 3.0 percent per year in the earlier period. This was the result of a 2.0 percent annual growth of multifactor productivity and a 1.0 percent annual

Table A. Productivity indexes and related measures
Percent change from 1982 to 1983

Item	Private business <u>1/</u>	Private nonfarm business <u>1/</u>	Manu- facturing
Productivity:			
Output per hour of all persons.....	2.8	3.6	4.3
Output per unit of capital services..	3.1	3.6	5.7
Multifactor productivity <u>2/</u>	2.9	3.6	4.6
Output.....	4.5	5.1	5.2
Inputs:			
Hours of all persons.....	1.6	1.5	0.9
Capital services.....	1.4	1.5	-0.5
Combined units of labor and capital input <u>3/</u>	1.5	1.5	0.5
Capital services per hour of all persons (capital-labor ratio)....	-0.3	0.0	-1.3
Contribution of capital services per hour to output per hour <u>4/</u>	-0.1	0.0	-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.

4/ Percent change in capital services per hour weighted by capital's share of current dollar output.

Table B. Compound annual rates of growth in output per hour of all persons, the contribution of capital services per hour, and multifactor productivity, by major sector, 1948 to 1983

Measure	1948- 1983 (1)	1948- 1973 (2)	1973- 1983 (3)	Slowdown (2) - (3)
<u>Private business</u> 1/				
Output per hour of all persons	2.4	3.0	0.9	-2.1
Minus: Contribution of capital services per hour to output per hour 2/	0.9	1.0	0.7	-0.3
Equals: Multifactor productivity 3/	1.5	2.0	0.2	-1.8
<u>Private nonfarm business</u> 1/				
Output per hour of all persons	2.0	2.5	0.8	-1.7
Minus: Contribution of capital services per hour to output per hour 2/	0.8	0.8	0.7	-0.1
Equals: Multifactor productivity 3/	1.2	1.7	0.1	-1.6
<u>Manufacturing</u>				
Output per hour of all persons	2.6	2.9	1.8	-1.1
Minus: Contribution of capital services per hour to output per hour 2/	0.8	0.7	1.0	0.3
Equals: Multifactor productivity 3/	1.8	2.2	0.8	-1.4

1/ Excludes government enterprises.

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

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

Source: Tables 1-3.

growth rate in the contribution of capital services per hour to output per hour. During the following period, 1973-83, output per hour grew at a yearly rate of only 0.9 percent: 0.2 percentage points reflected multifactor productivity growth and 0.7 percentage points came from increased contribution of capital services per hour.

In private nonfarm business, the growth rate of output per hour decreased from 2.5 percent in the 1948-73 period to 0.8 percent in the 1973-83 period. This reflected a decline in multifactor productivity growth from 1.7 percent to 0.1 percent, and a decline in the annual growth of the contribution of capital services per hour from 0.8 percent to 0.7 percent.

The manufacturing output per hour growth rate decreased from 2.9 percent to 1.8 percent annually between the two periods, while multifactor productivity growth declined from 2.2 percent to 0.8 percent. The annual growth rate of the contribution of capital services per hour increased from 0.7 percent in the first period to 1.0 percent in the 1973-83 period. Thus, the decline in multifactor productivity was moderated by the increase in the growth of the contribution of capital services per hour to output per hour.

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

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

Summary of Methods

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 labor component (the hours of all persons) of input indexes is developed from measures of employment and average hours, drawn mainly from the BLS Current Employment Statistics program (the "establishment" survey) and the Current Population Survey (the "household" survey). The establishment survey provides information about employees on nonagricultural payrolls; the household survey about the self-employed, unpaid family workers, and those engaged in agriculture.

The capital input series measures the services derived from the stock of physical assets. The assets comprise fixed business equipment, structures, inventories, and land. Structures include nonresidential structures and residential capital which is rented out by profitmaking 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 value.

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-world" sector, owner-occupied housing, nonprofit institutions, and private household employees. The private nonfarm business sector also excludes agriculture but includes agricultural services.

These multifactor productivity measures describe the relationship between output in real terms and the paid 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 changes in technology; level of output; utilization of capacity, energy, and materials; the organization of production; managerial skill; and the characteristics and effort of the work force.

Table 1. Private business sector: productivity and related measures, 1948-83 1/

Year	Productivity			Output 3/	Inputs			Capital services per hour
	Output per hour of all persons	Output per unit of capital	Multifactor productivity 2/		Hours of all persons 4/	Capital services 5/	Combined units of labor and capital inputs 6/	
Indexes 1977=100								
1948	45.3	99.0	60.0	36.8	81.3	37.2	61.3	45.7
1949	46.0	93.5	59.3	36.1	78.5	38.6	60.8	49.2
1950	49.7	98.6	63.6	39.5	79.4	40.1	62.1	50.4
1951	51.2	100.1	65.1	41.8	81.8	41.8	64.3	51.1
1952	52.9	99.3	66.3	43.2	81.7	43.5	65.2	53.3
1953	54.7	100.6	68.0	45.1	82.6	44.9	66.4	54.3
1954	55.6	96.2	67.8	44.3	79.8	46.1	65.5	57.8
1955	57.9	100.9	70.7	47.9	82.8	47.5	67.8	57.4
1956	58.5	100.0	71.0	49.2	84.1	49.2	69.3	58.5
1957	60.0	97.9	71.6	49.7	82.8	50.7	69.4	61.3
1958	61.9	94.3	72.1	48.9	79.0	51.9	67.8	65.6
1959	63.9	99.3	75.0	52.5	82.1	52.9	70.0	64.4
1960	64.8	98.5	75.4	53.3	82.2	54.1	70.7	65.8
1961	67.0	98.0	76.9	54.2	80.9	55.3	70.5	68.4
1962	69.6	101.2	79.7	57.2	82.2	56.6	71.8	68.8
1963	72.3	102.6	82.0	59.7	82.6	58.2	72.8	70.4
1964	75.4	105.2	85.0	63.3	84.0	60.2	74.5	71.6
1965	78.1	107.8	87.6	67.6	86.6	62.7	77.2	72.4
1966	80.5	108.0	89.3	71.3	88.7	66.0	79.9	74.5
1967	82.3	104.9	89.6	72.9	88.6	69.5	81.4	78.5
1968	85.1	105.5	91.7	76.7	90.1	72.7	83.6	80.7
1969	85.3	103.7	91.3	78.9	92.5	76.1	86.5	82.3
1970	86.1	98.5	90.2	78.3	90.8	79.4	86.7	87.4
1971	89.3	98.1	92.2	80.6	90.3	82.2	87.5	91.0
1972	92.4	101.0	95.2	86.0	93.1	85.2	90.3	91.5
1973	94.8	103.0	97.5	91.8	96.8	89.1	94.1	92.0
1974	92.5	96.5	93.8	89.9	97.2	93.1	95.8	95.9
1975	94.5	92.0	93.6	88.0	93.1	95.7	94.0	102.8
1976	97.6	96.1	97.1	93.7	95.9	97.5	96.5	101.6
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	100.5	101.8	101.0	105.5	105.0	103.6	104.5	98.7
1979	99.3	100.3	99.7	107.9	108.6	107.5	108.2	98.9
1980	98.7	95.6	97.6	106.4	107.8	111.4	109.0	103.3
1981	100.6	94.1	98.3	109.2	108.5	116.0	111.0	106.9
1982	100.8	89.6	96.8	106.3	105.4	118.7	109.8	112.6
1983	103.7	92.3	99.6	111.1	107.2	120.3	111.5	112.3

See footnotes following table 6.

Table 2. Private nonfarm business sector: productivity and related measures, 1948-83 ^{1/}

Year	Productivity			Output 3/	Inputs			Capital services per hour
	Output per hour of all persons	Output per unit of capital	Multifactor productivity 2/		Hours of all persons 4/	Capital services 5/	Combined units of labor and capital inputs 6/	
Indexes 1977=100								
1948	51.2	97.9	64.6	35.6	69.6	36.4	55.2	52.3
1949	52.3	92.7	64.2	34.9	66.8	37.7	54.4	56.4
1950	55.6	98.2	68.1	38.3	69.0	39.0	56.2	56.6
1951	56.6	100.4	69.5	40.8	72.1	40.7	58.8	56.4
1952	58.0	99.6	70.4	42.2	72.8	42.4	60.0	58.2
1953	59.0	100.8	71.5	44.1	74.7	43.7	61.7	58.5
1954	59.9	96.1	71.0	43.2	72.1	44.9	60.8	62.3
1955	62.3	100.9	74.1	46.8	75.1	46.4	63.2	61.8
1956	62.5	100.0	74.0	48.1	77.0	48.1	65.1	62.5
1957	63.6	98.0	74.3	48.7	76.6	49.7	65.6	64.9
1958	65.2	94.0	74.3	47.8	73.3	50.8	64.3	69.3
1959	67.4	99.5	77.5	51.6	76.6	51.9	66.6	67.8
1960	68.0	98.4	77.6	52.3	77.0	53.2	67.4	69.1
1961	70.0	98.0	78.9	53.3	76.1	54.4	67.5	71.5
1962	72.5	101.3	81.7	56.4	77.8	55.7	69.0	71.6
1963	74.9	102.7	83.8	58.9	78.6	57.4	70.3	73.0
1964	77.9	105.6	86.7	62.7	80.5	59.4	72.2	73.8
1965	80.3	108.2	89.2	67.0	83.5	62.0	75.1	74.2
1966	82.2	108.7	90.7	71.0	86.3	65.3	78.2	75.7
1967	83.8	105.3	90.7	72.5	86.5	68.9	79.9	79.6
1968	86.7	106.0	92.9	76.4	88.2	72.1	82.3	81.8
1969	86.4	104.1	92.1	78.7	91.0	75.6	85.4	83.0
1970	86.8	98.6	90.7	77.8	89.7	78.9	85.9	88.0
1971	89.7	98.0	92.4	80.1	89.3	81.8	86.7	91.6
1972	93.0	101.1	95.7	85.8	92.2	84.8	89.6	92.0
1973	95.3	103.2	97.9	91.7	96.2	88.8	93.6	92.4
1974	92.9	96.5	94.1	89.7	96.5	93.0	95.3	96.3
1975	94.8	91.7	93.6	87.6	92.4	95.6	93.5	103.4
1976	97.8	96.1	97.2	93.6	95.7	97.4	96.3	101.8
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	100.6	101.9	101.0	105.7	105.1	103.7	104.6	98.7
1979	99.0	100.1	99.4	108.0	109.1	107.9	108.7	98.9
1980	98.2	95.2	97.2	106.4	108.4	111.7	109.5	103.1
1981	99.6	93.2	97.4	108.7	109.1	116.6	111.6	106.8
1982	99.9	88.7	95.9	105.9	106.0	119.4	110.4	112.6
1983	103.5	91.9	99.3	111.3	107.6	121.2	112.0	112.6

See footnotes following table 6.

Table 3. Manufacturing sector: productivity and related measures, 1948-83 1/

Year	Productivity			Output 3/	Inputs			Capital services per hour
	Output per hour of all persons	Output per unit of capital	Multifactor productivity 2/		Hours of all persons 4/	Capital services 5/	Combined units of labor and capital inputs 6/	
Indexes 1977=100								
1948	45.1	93.9	56.1	35.8	79.4	38.1	63.8	48.0
1949	46.9	85.6	55.9	33.9	72.4	39.6	60.7	54.8
1950	49.4	94.5	59.9	38.6	78.2	40.9	64.5	52.3
1951	51.1	99.2	62.2	43.0	84.2	43.4	69.2	51.6
1952	52.1	95.5	62.2	44.5	85.4	46.6	71.5	54.5
1953	52.9	98.4	63.5	47.5	89.8	48.3	74.8	53.8
1954	53.8	89.0	62.3	44.1	82.1	49.6	70.8	60.4
1955	56.4	95.6	65.8	48.9	86.6	51.1	74.2	59.0
1956	56.0	92.4	64.8	49.2	87.9	53.3	76.0	60.6
1957	57.2	89.5	65.1	49.5	86.5	55.3	76.0	63.9
1958	56.9	80.4	62.8	45.2	79.4	56.2	71.9	70.8
1959	59.6	89.1	67.0	50.5	84.6	56.7	75.4	67.0
1960	60.0	88.0	67.0	50.7	84.4	57.5	75.6	68.2
1961	61.6	86.9	68.0	50.7	82.3	58.3	74.5	70.9
1962	64.3	92.9	71.5	55.1	85.6	59.2	77.0	69.2
1963	68.9	98.3	76.3	59.6	86.5	60.7	78.1	70.2
1964	72.3	102.3	79.8	63.9	88.4	62.4	80.0	70.6
1965	74.6	107.3	82.8	69.8	93.6	65.1	84.3	69.5
1966	75.4	108.6	83.7	75.1	99.7	69.2	89.7	69.4
1967	75.3	101.1	81.8	75.0	99.5	74.2	91.7	74.5
1968	78.0	101.1	83.8	79.1	101.4	78.2	94.4	77.1
1969	79.3	100.5	84.6	81.7	103.0	81.3	96.6	78.9
1970	79.2	91.8	82.3	77.0	97.3	83.9	93.5	86.2
1971	84.0	92.3	86.0	78.7	93.7	85.2	91.5	90.9
1972	88.2	99.8	91.1	86.2	97.8	86.4	94.6	88.4
1973	93.0	108.2	96.8	95.9	103.1	88.6	99.0	85.9
1974	90.8	99.6	93.1	91.9	101.2	92.2	98.7	91.1
1975	93.4	89.4	92.2	85.4	91.4	95.5	92.6	104.5
1976	97.6	96.1	97.1	93.6	95.9	97.4	96.3	101.6
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	100.9	101.5	101.1	105.3	104.4	103.8	104.2	99.4
1979	101.6	99.5	101.0	108.2	106.5	108.8	107.1	102.1
1980	101.7	90.7	98.8	103.5	101.7	114.1	104.8	112.2
1981	104.9	89.9	100.8	106.1	101.1	118.0	105.2	116.7
1982	107.1	82.9	100.3	99.3	92.7	119.8	99.0	129.2
1983	111.6	87.6	104.9	104.4	93.5	119.2	99.5	127.5

See footnotes following table 6.

Table 4. Private business sector: productivity and related measures, 1948-83 ^{1/}

Year	Productivity			Output 3/	Inputs			Capital services per hour
	Output per hour of all persons	Output per unit of capital	Multifactor productivity 2/		Hours of all persons 4/	Capital services 5/	Combined units of labor and capital inputs 6/	
Percent change								
1949	1.6	-5.6	-1.1	-1.9	-3.4	3.9	-0.8	7.6
1950	8.2	5.5	7.2	9.4	1.2	3.7	2.1	2.5
1951	2.9	1.5	2.4	5.9	2.9	4.3	3.5	1.4
1952	3.4	-0.8	1.8	3.3	0.0	4.1	1.5	4.2
1953	3.3	1.3	2.6	4.4	1.1	3.1	1.8	2.0
1954	1.7	-4.4	-0.4	-1.8	-3.4	2.7	-1.4	6.3
1955	4.1	4.8	4.4	8.1	3.8	3.1	3.6	-0.7
1956	1.1	-0.9	0.3	2.6	1.5	3.6	2.3	2.0
1957	2.6	-2.0	0.9	1.0	-1.5	3.1	0.1	4.7
1958	3.1	-3.7	0.7	-1.6	-4.6	2.2	-2.3	7.1
1959	3.3	5.3	4.0	7.3	3.9	1.9	3.2	-1.9
1960	1.5	-0.8	0.6	1.6	0.1	2.4	0.9	2.3
1961	3.4	-0.5	1.9	1.7	-1.6	2.2	-0.3	3.8
1962	3.9	3.2	3.6	5.6	1.6	2.3	1.9	0.6
1963	3.8	1.4	2.9	4.4	0.6	2.9	1.4	2.4
1964	4.3	2.5	3.6	6.0	1.6	3.4	2.3	1.7
1965	3.6	2.4	3.1	6.8	3.1	4.3	3.6	1.1
1966	3.1	0.2	1.9	5.5	2.4	5.3	3.5	2.8
1967	2.3	-2.9	0.3	2.2	-0.1	5.3	1.9	5.4
1968	3.4	0.6	2.4	5.2	1.7	4.6	2.7	2.9
1969	0.2	-1.7	-0.5	2.9	2.7	4.7	3.4	2.0
1970	0.9	-5.0	-1.2	-0.8	-1.7	4.3	0.3	6.2
1971	3.6	-0.5	2.2	3.0	-0.6	3.5	0.8	4.1
1972	3.5	3.0	3.3	6.7	3.1	3.6	3.3	0.5
1973	2.6	2.0	2.4	6.6	4.0	4.6	4.2	0.6
1974	-2.4	-6.3	-3.8	-2.1	0.4	4.6	1.8	4.2
1975	2.2	-4.7	-0.2	-2.1	-4.2	2.7	-1.9	7.3
1976	3.3	4.5	3.7	6.5	3.1	1.9	2.6	-1.2
1977	2.4	4.0	3.0	6.7	4.2	2.6	3.6	-1.6
1978	0.5	1.8	1.0	5.5	5.0	3.6	4.5	-1.3
1979	-1.2	-1.4	-1.3	2.2	3.5	3.7	3.6	0.2
1980	-0.6	-4.8	-2.0	-1.3	-0.8	3.6	0.7	4.4
1981	1.9	-1.5	0.7	2.6	0.7	4.2	1.9	3.5
1982	0.3	-4.8	-1.5	-2.6	-2.9	2.3	-1.1	5.3
1983	2.8	3.1	2.9	4.5	1.6	1.4	1.5	-0.3

See footnotes following table 6.

Table 5. Private nonfarm business sector: productivity and related measures, 1948-83 ^{1/}

Year	Productivity			Output 3/	Inputs			Capital services per hour
	Output per hour of all persons	Output per unit of capital	Multifactor productivity 2/		Hours of all persons 4/	Capital services 5/	Combined units of labor and capital inputs 6/	
	Percent change							
1949	2.2	-5.4	-0.6	-1.9	-4.0	3.6	-1.3	8.0
1950	6.3	6.0	6.2	9.7	3.2	3.5	3.3	0.3
1951	1.9	2.2	2.0	6.6	4.6	4.2	4.5	-0.4
1952	2.5	-0.8	1.3	3.4	0.9	4.2	2.1	3.3
1953	1.7	1.2	1.5	4.4	2.6	3.2	2.8	0.5
1954	1.5	-4.7	-0.6	-2.0	-3.5	2.8	-1.4	6.5
1955	4.0	5.0	4.4	8.4	4.2	3.2	3.8	-0.9
1956	0.3	-0.8	-0.1	2.8	2.5	3.7	3.0	1.1
1957	1.8	-2.0	0.4	1.2	-0.6	3.3	0.8	3.8
1958	2.4	-4.1	0.0	-1.9	-4.3	2.3	-2.0	6.8
1959	3.5	5.9	4.3	8.0	4.4	2.0	3.5	-2.3
1960	0.8	-1.1	0.1	1.4	0.6	2.5	1.3	1.9
1961	3.0	-0.5	1.7	1.8	-1.2	2.3	0.1	3.5
1962	3.6	3.4	3.5	5.9	2.2	2.4	2.3	0.2
1963	3.3	1.4	2.5	4.4	1.1	3.0	1.8	1.9
1964	3.9	2.8	3.5	6.4	2.4	3.5	2.8	1.1
1965	3.1	2.5	2.9	7.0	3.7	4.4	4.0	0.7
1966	2.4	0.5	1.7	5.9	3.4	5.4	4.2	1.9
1967	1.9	-3.1	0.0	2.1	0.2	5.4	2.1	5.2
1968	3.4	0.7	2.4	5.4	2.0	4.7	3.0	2.7
1969	-0.3	-1.8	-0.8	2.9	3.2	4.8	3.8	1.5
1970	0.4	-5.3	-1.6	-1.1	-1.5	4.5	0.5	6.0
1971	3.4	-0.6	2.0	2.9	-0.4	3.6	0.9	4.0
1972	3.7	3.2	3.5	7.0	3.2	3.7	3.4	0.5
1973	2.5	2.1	2.3	6.9	4.3	4.7	4.5	0.4
1974	-2.5	-6.5	-3.9	-2.2	0.4	4.7	1.8	4.3
1975	2.0	-5.0	-0.5	-2.4	-4.3	2.8	-1.9	7.4
1976	3.2	4.9	3.8	6.9	3.5	1.9	3.0	-1.6
1977	2.2	4.0	2.9	6.8	4.5	2.7	3.8	-1.8
1978	0.6	1.9	1.0	5.7	5.1	3.7	4.6	-1.3
1979	-1.6	-1.8	-1.7	2.2	3.8	4.0	3.9	0.2
1980	-0.8	-4.8	-2.2	-1.5	-0.7	3.5	0.7	4.2
1981	1.5	-2.1	0.2	2.2	0.7	4.3	1.9	3.6
1982	0.3	-4.9	-1.5	-2.6	-2.9	2.4	-1.1	5.4
1983	3.6	3.6	3.6	5.1	1.5	1.5	1.5	0.0

See footnotes following table 6.

Table 6. Manufacturing sector: productivity and related measures, 1948-83 1/

Year	Productivity			Output 3/	Inputs			Capital services per hour
	Output per hour of all persons	Output per unit of capital	Multifactor productivity 2/		Hours of all persons 4/	Capital services 5/	Combined units of labor and capital inputs 6/	
	Percent change							
1949	4.0	-8.9	-0.4	-5.2	-8.9	4.0	-4.9	14.1
1950	5.4	10.4	7.1	13.9	8.0	3.1	6.3	-4.5
1951	3.4	4.9	3.9	11.4	7.7	6.1	7.2	-1.4
1952	1.8	-3.7	0.0	3.3	1.4	7.3	3.3	5.8
1953	1.7	3.1	2.1	6.9	5.1	3.7	4.7	-1.4
1954	1.6	-9.6	-2.0	-7.2	-8.6	2.7	-5.3	12.3
1955	5.0	7.5	5.8	10.8	5.5	3.1	4.7	-2.3
1956	-0.7	-3.4	-1.6	0.7	1.5	4.3	2.4	2.7
1957	2.1	-3.2	0.4	0.5	-1.5	3.8	0.1	5.4
1958	-0.4	-10.2	-3.4	-8.6	-8.2	1.8	-5.3	10.9
1959	4.8	10.8	6.6	11.7	6.6	0.8	4.8	-5.5
1960	0.7	-1.2	0.1	0.3	-0.3	1.5	0.3	1.8
1961	2.7	-1.2	1.5	0.1	-2.5	1.4	-1.4	4.0
1962	4.3	6.9	5.1	8.6	4.1	1.6	3.3	-2.4
1963	7.2	5.7	6.7	8.3	1.0	2.4	1.5	1.4
1964	4.8	4.2	4.6	7.1	2.2	2.9	2.4	0.6
1965	3.1	4.8	3.7	9.2	5.9	4.2	5.3	-1.6
1966	1.1	1.3	1.2	7.7	6.5	6.3	6.5	-0.2
1967	0.0	-7.0	-2.3	-0.2	-0.2	7.3	2.1	7.5
1968	3.5	0.0	2.4	5.5	1.9	5.4	3.0	3.5
1969	1.7	-0.5	1.0	3.4	1.6	3.9	2.3	2.3
1970	-0.2	-8.7	-2.7	-5.8	-5.6	3.2	-3.2	9.3
1971	6.1	0.6	4.5	2.2	-3.7	1.6	-2.2	5.5
1972	5.0	8.1	6.0	9.6	4.3	1.4	3.4	-2.8
1973	5.4	8.4	6.3	11.2	5.5	2.6	4.6	-2.8
1974	-2.4	-7.9	-3.9	-4.2	-1.9	4.1	-0.3	6.1
1975	2.9	-10.3	-0.9	-7.1	-9.7	3.5	-6.2	14.6
1976	4.5	7.4	5.3	9.6	4.9	2.0	4.1	-2.8
1977	2.5	4.1	2.9	6.9	4.3	2.7	3.8	-1.6
1978	0.9	1.5	1.1	5.3	4.4	3.8	4.2	-0.6
1979	0.7	-2.0	-0.1	2.7	2.1	4.8	2.8	2.7
1980	0.2	-8.8	-2.2	-4.4	-4.5	4.9	-2.2	9.9
1981	3.1	-0.9	2.1	2.5	-0.6	3.4	0.4	4.1
1982	2.1	-7.8	-0.5	-6.4	-8.3	1.5	-5.9	10.7
1983	4.3	5.7	4.6	5.2	0.9	-0.5	0.5	-1.3

See footnotes following table 6.

Footnotes, Tables 1-6

SOURCE: Output data from Bureau of Economic Analysis (BEA), U.S. Department of Commerce, and the Federal Reserve Board. Compensation and hours data 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 household, government, 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.