

# News

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## **BUREAU OF LABOR STATISTICS INTRODUCES ITS FIRST MEASURES OF MULTIFACTOR PRODUCTIVITY**

Productivity, as measured by output per unit of combined labor and capital inputs--multifactor productivity--rose an average of 1.5 percent per year from 1948 to 1981 in the private business sector, according to a new measure introduced today by the Bureau of Labor Statistics of the U.S. Department of Labor.

This new series shows the changes in the amount of labor and capital used in production (table A). As such it reflects the joint effect of many influences, including changes in technology, the level of output, utilization of capacity, the organization of production, managerial skills, as well as changes in the characteristics and efforts of the workforce.

The traditional productivity series--output per hour of all persons--reflects these influences and also the impact of changes in capital per unit of labor input. The new measure, therefore, supplements the existing measure by providing a basis for measuring that impact.

Over the 1948-81 period, when multifactor productivity increased 1.5 percent per year, the traditional productivity measure of output per hour rose 2.4 percent per year. Therefore, the growth in capital per hour contributed 0.9 percentage point to the growth in output per hour (table B).

The growth in multifactor productivity showed two distinct patterns: 2.0 percent per year from 1948 to 1973, but only 0.1 percent per year from 1973 to 1981. This slowdown reflected a falloff in output growth, coupled with a faster growth of combined inputs of labor and capital. The accelerated increase in inputs of labor and capital after 1973 was due to the faster increase in the hours of all persons since the annual rate of growth of capital was slower after 1973.

Table A. Average annual rates of growth in productivity indexes and related measures by major sector, 1948 to 1981 1/

Measure	Private business <u>2/</u>			Private nonfarm business <u>2/</u>			Manufacturing		
	1948-1981	1948-1973	1973-1981	1948-1981	1948-1973	1973-1981	1948-1981	1948-1973	1973-1981
Productivity indexes:									
Output per hour of all persons,.....	2.4	3.0	0.8	2.0	2.5	0.6	2.6	2.9	1.5
Output per unit of capital services....	-0.1	0.2	-1.0	-0.1	0.2	-1.1	-0.2	0.6	-2.6
Multifactor productivity <u>3/</u> .....	1.5	2.0	0.1	1.3	1.7	0.0	1.8	2.2	0.4
Output.....	3.3	3.7	2.2	3.4	3.9	2.1	3.3	4.0	1.2
Inputs:									
Hours of all persons..	0.9	0.7	1.4	1.4	1.3	1.5	0.7	1.1	-0.2
Capital services.....	3.5	3.6	3.2	3.6	3.6	3.3	3.6	3.5	4.0
Combined labor and capital inputs <u>4/</u> ...	1.8	1.7	2.0	2.1	2.1	2.1	1.6	1.8	0.9

1/ Average annual rates based on compound rate formula.

2/ Excludes government enterprises.

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

4/ Hours of all persons combined with capital service inputs index weighted by labor and capital shares.

Table B. Average 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 1981 1/

Measure	1948- 1981 (1)	1948- 1973 (2)	1973- 1981 (3)	Slow- down (4) (Col.2 -Col.3)
<u>Private business 2/</u>				
Output per hour of all persons	2.4	3.0	0.8	-2.2
Minus: Contribution of capital services per hour <u>3/</u>	0.9	1.0	0.7	-0.3
Equals: Multifactor productivity <u>4/</u>	1.5	2.0	0.1	-1.9
<u>Private nonfarm business 2/</u>				
Output per hour of all persons	2.0	2.5	0.6	-1.9
Minus: Contribution of capital services per hour <u>3/</u>	0.7	0.8	0.6	-0.2
Equals: Multifactor productivity <u>4/</u>	1.3	1.7	0.0	-1.7
<u>Manufacturing</u>				
Output per hour of all persons	2.6	2.9	1.5	-1.4
Minus: Contribution of capital services per hour <u>3/</u>	0.8	0.7	1.1	0.4
Equals: Multifactor productivity <u>4/</u>	1.8	2.2	0.4	-1.8

1/ Average annual rates based on compound rate formula.

2/ Excludes government enterprises.

3/ Change in capital per unit of labor weighted by capital's share of total output.

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

The traditional productivity measure of output per hour slowed--dropping from a growth rate of 3.0 percent during the 1948-73 period to 0.8 percent from 1973 to 1981. Of this 2.2 percentage point falloff, 0.3 percentage point was the result of the slowdown in the growth of capital per unit of labor input. The balance--that of multifactor productivity growth--reflected the remaining influences.

Output per unit of capital services, another productivity measure introduced today, fluctuated between 1948 and 1981 but did not register a significant trend over the period as a whole (chart A).

Private nonfarm business. From 1948 to 1981, multifactor productivity growth in this sector averaged 1.3 percent annually as output rose 3.4 percent per year and combined labor and capital inputs increased 2.1 percent per year (table A).

As was the case for the private business sector as a whole, after 1973 there was a marked change in the trend. Multifactor productivity grew 1.7 percent annually from 1948 to 1973, but did not grow at all after 1973 (table B). Hence, all of the increase in output during the later period came from increased inputs of capital and labor.

The traditional productivity measure for the private nonfarm business sector, output per hour of all persons, rose 2.5 percent per year from 1948 to 1973, compared with 0.6 percent per year between 1973 and 1981. The 1.9 percentage point slowdown in output per hour in this sector partly reflects a 0.2 percentage point decline in the contribution of capital services per unit of labor input. Most of the slowdown, however, was due to the 1.7 percentage point falloff in multifactor productivity growth, which in turn reflected the impact of other influences.

As in private business, output per unit of capital input in the private nonfarm business sector fluctuated from year to year, but there was no evident trend between 1948 and 1981 (chart B).

Manufacturing. From 1948 to 1981, multifactor productivity grew faster in manufacturing than in the more comprehensive business sectors. There was a 1.8 percent annual gain, reflecting a 3.3 percent average rise in output coupled with a 1.6 percent annual increase in combined labor and capital inputs.

The falloff in the multifactor growth rate also occurred in manufacturing after 1973--from a rate of 2.2 percent during the 1948-73 period to 0.4 percent from 1973 to 1981 (table B).

The slowdown in the traditional output per hour indexes for manufacturing after 1973 was 1.4 percentage points, less severe than for the more comprehensive business sectors. Moreover, the growth of capital per hour in manufacturing accelerated after 1973. From 1948 to 1973 the growth in capital services per unit of labor contributed 0.7 percent per year to the growth in output per hour in manufacturing and, after 1973, 1.1 percent per year.

The following note briefly describes the major data sources and the procedures used in deriving the new BLS multifactor productivity indexes. More detailed information on the methods, limitations, and data sources are available on request from the Bureau of Labor Statistics.

Tables 1-6 include all the productivity and related indexes for each year.

#### 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 of 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 of the 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 BLS has done considerable research on the effects on productivity growth of workforce composition (changes in the age, sex, and educational structure of the workforce). This work is not included in the measures published today because more research is required.

The capital services component of the combined input indexes is developed from measures of the stock of physical assets--equipment, structures, land, and inventories--and rental prices for each type of stock. The stock measures, in turn, are derived from data in the national accounts and other sources on investment, service lives, and capital deterioration functions. The rental prices are derived from data on depreciation costs and estimates of rates of return on the capital assets.

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.

Table 1. Private business sector: Productivity and related measures, 1948-81. 1/

Year	Productivity			Output <u>3/</u>	Inputs			Capital per Hour of All Persons
	Output Per Hour of All Persons	Output Per Unit of Capital	Multifactor Productivity <u>2/</u>		Hours of All Persons <u>4/</u>	Capital <u>5/</u>	Combined Units of Labor and Capital Inputs, <u>6/</u>	
Indexes 1977=100								
1948	45.3	99.2	60.1	36.8	81.3	37.1	61.3	45.6
1949	46.0	93.6	59.4	36.1	78.6	38.6	60.8	49.1
1950	49.7	98.7	63.6	39.5	79.5	40.0	62.1	50.4
1951	51.2	100.2	65.1	41.8	81.8	41.8	64.3	51.1
1952	52.9	99.4	66.3	43.2	81.8	43.5	65.2	53.2
1953	54.6	100.7	68.0	45.1	82.6	44.9	66.4	54.3
1954	55.6	96.3	67.8	44.4	79.8	46.1	65.5	57.7
1955	57.8	100.9	70.7	47.9	82.9	47.5	67.8	57.3
1956	58.5	100.0	71.0	49.2	84.2	49.2	69.3	58.5
1957	60.0	97.9	71.6	49.7	82.9	50.7	69.4	61.2
1958	61.8	94.3	72.0	48.9	79.0	51.9	67.8	65.6
1959	63.9	99.3	74.9	52.5	82.1	52.9	70.0	64.4
1960	64.8	98.4	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	82.7	58.2	72.9	70.4
1964	75.4	105.2	84.9	63.3	84.0	60.2	74.6	71.6
1965	78.1	107.8	87.6	67.6	86.7	62.8	77.2	72.4
1966	80.4	108.0	89.3	71.3	88.7	66.1	79.9	74.5
1967	82.3	104.9	89.6	72.9	88.6	69.6	81.4	78.5
1968	85.1	105.5	91.7	76.7	90.1	72.7	83.7	80.7
1969	85.3	103.7	91.3	78.9	92.5	76.1	86.5	82.3
1970	86.1	98.6	90.2	78.3	90.9	79.4	86.8	87.4
1971	89.2	98.1	92.2	80.6	90.4	82.2	87.5	91.0
1972	92.4	101.0	95.2	86.0	93.2	85.2	90.4	91.5
1973	94.7	103.0	97.5	91.8	96.9	89.1	94.1	92.0
1974	92.4	96.5	93.8	89.9	97.2	93.1	95.8	95.8
1975	94.5	91.9	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	100.6	101.8	101.0	105.5	104.9	103.6	104.4	98.8
1979	99.6	100.3	99.9	107.8	108.3	107.5	108.0	99.3
1980	98.8	95.3	97.6	106.2	107.4	111.3	108.8	103.6
1981	100.6	95.0	98.6	108.8	108.2	114.5	110.3	105.8

Average annual percent change 7/

1948-73	3.0	0.2	2.0	3.7	0.7	3.6	1.7	2.8
1973-81	0.8	-1.0	0.1	2.2	1.4	3.2	2.0	1.8
1948-81	2.4	-0.1	1.5	3.3	0.9	3.5	1.8	2.6

See footnotes following table 6.

Table 2. Private nonfarm business sector: Productivity and related measures, 1948-81. 1/

Year	Productivity			Output <u>3/</u>	Inputs			Capital per Hour of All Persons
	Output Per Hour of All Persons	Output Per Unit of Capital	Multifactor Productivity <u>2/</u>		Hours of All Persons <u>4/</u>	Capital <u>5/</u>	Combined Units of Labor and Capital Inputs <u>6/</u>	
Indexes 1977=100								
1948	51.2	98.1	64.6	35.6	69.6	36.3	55.1	52.2
1949	52.3	92.8	64.2	34.9	66.8	37.7	54.4	56.3
1950	55.6	98.4	68.2	38.3	69.0	39.0	56.2	56.5
1951	56.6	100.6	69.5	40.9	72.2	40.6	58.8	56.3
1952	58.0	99.7	70.4	42.2	72.8	42.4	60.0	58.2
1953	59.0	100.9	71.5	44.1	74.7	43.7	61.7	58.5
1954	59.9	96.2	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	61.7
1956	62.5	100.1	74.0	48.2	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	65.1	94.0	74.3	47.8	73.4	50.8	64.3	69.3
1959	67.4	99.5	77.5	51.6	76.6	51.9	66.6	67.7
1960	67.9	98.4	77.6	52.3	77.0	53.2	67.5	69.1
1961	70.0	97.9	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	102.6	83.8	58.9	78.6	57.4	70.3	73.0
1964	77.8	105.5	86.7	62.7	80.5	59.4	72.3	73.8
1965	80.3	108.1	89.2	67.0	83.5	62.0	75.1	74.2
1966	82.2	108.7	90.7	71.0	86.4	65.3	78.3	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	76.5	88.2	72.1	82.3	81.7
1969	86.4	104.1	92.1	78.7	91.1	75.6	85.4	83.0
1970	86.8	98.6	90.7	77.9	89.7	78.9	85.9	88.0
1971	89.7	98.0	92.4	80.1	89.3	81.8	86.7	91.5
1972	93.0	101.1	95.7	85.8	92.2	84.8	89.7	92.0
1973	95.3	103.2	97.9	91.7	96.2	88.8	93.6	92.3
1974	92.9	96.5	94.1	89.7	96.6	93.0	95.4	96.3
1975	94.7	91.7	93.6	87.6	92.5	95.6	93.6	103.3
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	101.1	105.7	105.1	103.7	104.6	98.7
1979	99.3	100.0	99.6	108.0	108.7	107.9	108.4	99.2
1980	98.4	95.1	97.3	106.2	108.0	111.7	109.2	103.4
1981	99.8	94.4	97.9	108.5	108.8	115.0	110.9	105.7
Average annual percent change <u>7/</u>								
1948-73	2.5	0.2	1.7	3.9	1.3	3.6	2.1	2.3
1973-81	0.6	-1.1	0.0	2.1	1.5	3.3	2.1	1.7
1948-81	2.0	-0.1	1.3	3.4	1.4	3.6	2.1	2.2

See footnotes following table 6.

Table 3. Manufacturing sector: Productivity and related measures, 1948-81. 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	45.1	94.4	56.2	35.8	79.4	37.9	63.7	47.8
1949	46.9	86.0	56.0	33.9	72.4	39.5	60.6	54.5
1950	49.4	94.9	59.9	38.6	78.2	40.7	64.5	52.1
1951	51.1	99.6	62.3	43.0	84.2	43.2	69.1	51.3
1952	52.0	95.7	62.2	44.5	85.4	46.4	71.4	54.4
1953	52.9	98.6	63.5	47.5	89.8	48.2	74.8	53.7
1954	53.7	89.2	62.3	44.1	82.1	49.5	70.8	60.2
1955	56.4	95.8	65.9	48.9	86.6	51.0	74.2	58.8
1956	56.0	92.5	64.8	49.2	87.9	53.2	75.9	60.5
1957	57.1	89.6	65.1	49.5	86.5	55.2	76.0	63.8
1958	56.9	80.5	62.8	45.2	79.4	56.2	71.9	70.7
1959	59.6	89.2	67.0	50.5	84.7	56.6	75.4	66.9
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	74.6	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	78.2	70.1
1964	72.3	102.4	79.8	63.9	88.4	62.4	80.0	70.6
1965	74.5	107.3	82.8	69.8	93.6	65.1	84.3	69.5
1966	75.3	108.7	83.7	75.1	99.8	69.2	89.8	69.3
1967	75.3	101.1	81.8	75.0	99.6	74.2	91.7	74.5
1968	78.0	101.1	83.7	79.1	101.4	78.2	94.4	77.1
1969	79.3	100.5	84.6	81.7	103.1	81.3	96.6	78.9
1970	79.1	91.8	82.3	77.0	97.3	83.9	93.6	86.2
1971	83.9	92.4	86.0	78.7	93.7	85.2	91.5	90.9
1972	88.2	99.9	91.1	86.2	97.8	86.4	94.7	88.3
1973	93.0	108.2	96.8	95.9	103.2	88.6	99.1	85.9
1974	90.8	99.6	93.0	91.9	101.2	92.2	98.8	91.1
1975	93.4	89.4	92.2	85.4	91.4	95.5	92.6	104.4
1976	97.5	96.1	97.1	93.6	95.9	97.4	96.4	101.5
1977	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1978	100.9	101.5	101.0	105.3	104.4	103.8	104.2	99.4
1979	101.6	99.5	101.0	108.2	106.5	108.8	107.2	102.1
1980	101.7	90.0	98.6	103.6	101.8	115.1	105.1	113.1
1981	104.5	87.5	99.9	105.9	101.3	121.1	106.0	119.5
Average annual percent change 7/								
1948-73	2.9	0.6	2.2	4.0	1.1	3.5	1.8	2.4
1973-81	1.5	-2.6	0.4	1.2	-0.2	4.0	0.9	4.2
1948-81	2.6	-0.2	1.8	3.3	0.7	3.6	1.6	2.8

See footnotes following table 6.



Table 4. Private business sector: Productivity and related measures, 1948-81. 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	1.6	-5.6	-1.1	-1.9	-3.4	4.0	-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	4.4	3.5	1.4
1952	3.4	-0.8	1.8	3.3	0.0	4.2	1.5	4.2
1953	3.3	1.3	2.6	4.4	1.1	3.1	1.8	2.0
1954	1.7	-4.3	-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	-2.1	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	2.0	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	2.0	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	3.5	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	1.9
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	4.5	1.8	4.2
1975	2.2	-4.7	-0.2	-2.1	-4.2	2.7	-1.8	7.3
1976	3.3	4.5	3.8	6.5	3.0	1.9	2.6	-1.1
1977	2.4	4.0	3.0	6.7	4.2	2.6	3.6	-1.6
1978	0.6	1.8	1.0	5.5	4.9	3.6	4.4	-1.2
1979	-1.0	-1.4	-1.1	2.2	3.2	3.7	3.4	0.5
1980	-0.8	-5.0	-2.2	-1.6	-0.8	3.6	0.7	4.4
1981	1.8	-0.3	1.1	2.5	0.7	2.9	1.5	2.1

See footnotes following table 6.

Table 5. Private nonfarm business sector: Productivity and related measures, 1948-81. <sup>1/</sup>

Year	Productivity			Output <u>3/</u>	Inputs			Capital per Hour of All Persons
	Output Per Hour of All Persons	Output Per Unit of Capital	Multifactor Productivity <u>2/</u>		Hours of All Persons <u>4/</u>	Capital <u>5/</u>	Combined Units of Labor and Capital Inputs <u>6/</u>	
Percent change								
1949	2.2	-5.4	-0.6	-1.9	-4.0	3.7	-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	-0.9	1.2	3.4	0.9	4.3	2.1	3.4
1953	1.7	1.2	1.5	4.4	2.6	3.2	2.8	0.6
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	3.3	3.8	-0.9
1956	0.3	-0.9	-0.1	2.8	2.5	3.7	3.0	1.2
1957	1.8	-2.0	0.4	1.2	-0.6	3.3	0.8	3.9
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	2.6	1.3	2.0
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	3.3	4.9	3.8	6.9	3.5	1.9	2.9	-1.5
1977	2.2	4.0	2.9	6.8	4.5	2.7	3.8	-1.8
1978	0.6	1.9	1.1	5.7	5.1	3.7	4.6	-1.3
1979	-1.3	-1.8	-1.5	2.1	3.5	4.0	3.7	0.5
1980	-0.9	-5.0	-2.3	-1.6	-0.7	3.5	0.7	4.2
1981	1.4	-0.8	0.7	2.2	0.8	3.0	1.5	2.2

See footnotes following table 6.

Table 6. Manufacturing sector: Productivity and related measures, 1948-81. 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	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	3.2	6.3	-4.5
1951	3.4	4.9	3.9	11.4	7.7	6.2	7.2	-1.4
1952	1.8	-3.9	-0.1	3.3	1.4	7.5	3.4	5.9
1953	1.7	3.0	2.1	6.9	5.1	3.7	4.7	-1.3
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	2.8
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	1.7	-5.4	10.9
1959	4.8	10.8	6.6	11.7	6.6	0.8	4.8	-5.4
1960	0.7	-1.3	0.1	0.3	-0.3	1.6	0.3	1.9
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	7.2	2.1	7.5
1968	3.5	0.0	2.4	5.5	1.9	5.4	3.0	3.5
1969	1.7	-0.6	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	4.4	7.4	5.3	9.6	4.9	2.0	4.1	-2.8
1977	2.5	4.1	3.0	6.9	4.2	2.7	3.8	-1.5
1978	0.9	1.5	1.0	5.3	4.4	3.8	4.2	-0.6
1979	0.7	-2.0	-0.1	2.7	2.0	4.8	2.8	2.7
1980	0.2	-9.5	-2.4	-4.3	-4.5	5.8	-1.9	10.7
1981	2.8	-2.8	1.4	2.3	-0.5	5.2	0.9	5.7

See footnotes following table 6.

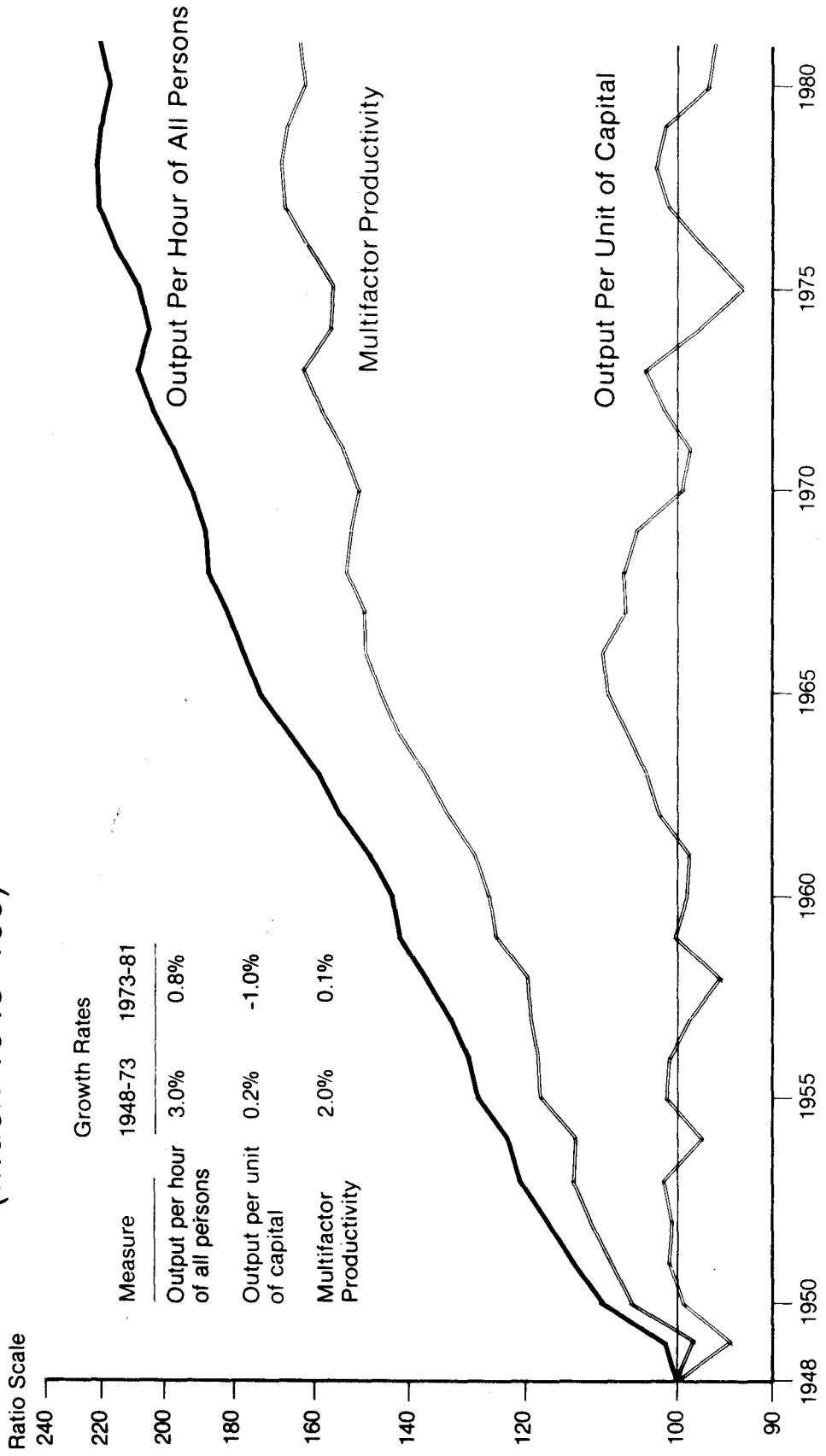
Footnotes, Tables 1-6

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 rental value of real estate occupied by nonprofit organizations, the output of paid employees of private households, 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.
- (7) Average annual percent change based on compound rate formula.

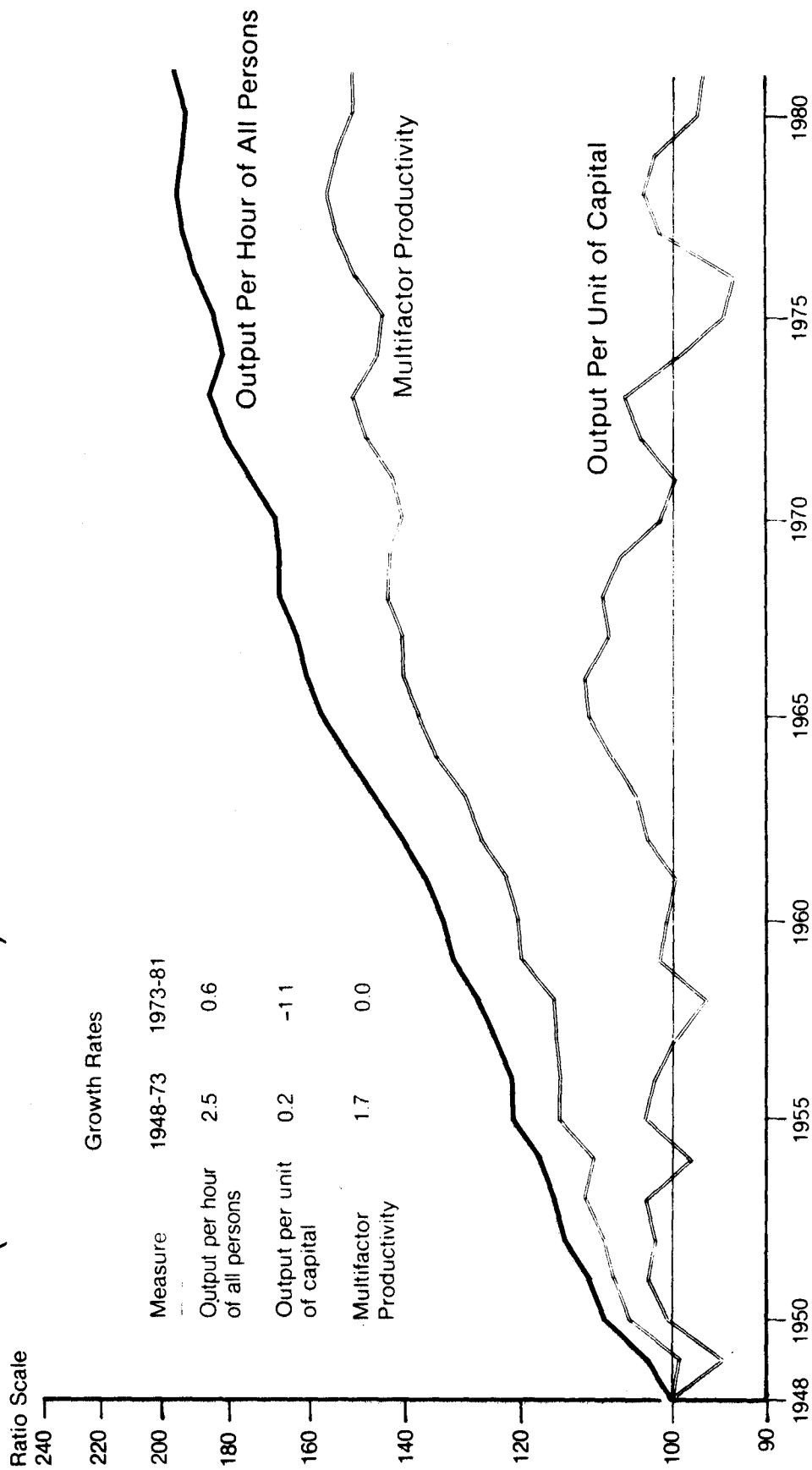
# Chart A. Private Business: Output per Hour of All Persons, Output per Unit of Capital, and Multifactor Productivity

(Index 1948=100)



# Chart B. Private Nonfarm Business: Output per Hour of All Persons, Output per Unit of Capital, and Multifactor Productivity

(Index: 1948=100)



**Chart C. Manufacturing: Output per Hour of All Persons, Output per Unit of Capital, and Multifactor Productivity**  
(Index 1948=100)

