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Technical information: (202) 691-5606• mfpweb@bls.gov • www.bls.gov/mfp
Media contact: (202) 691-5902• PressOffice@bls.gov

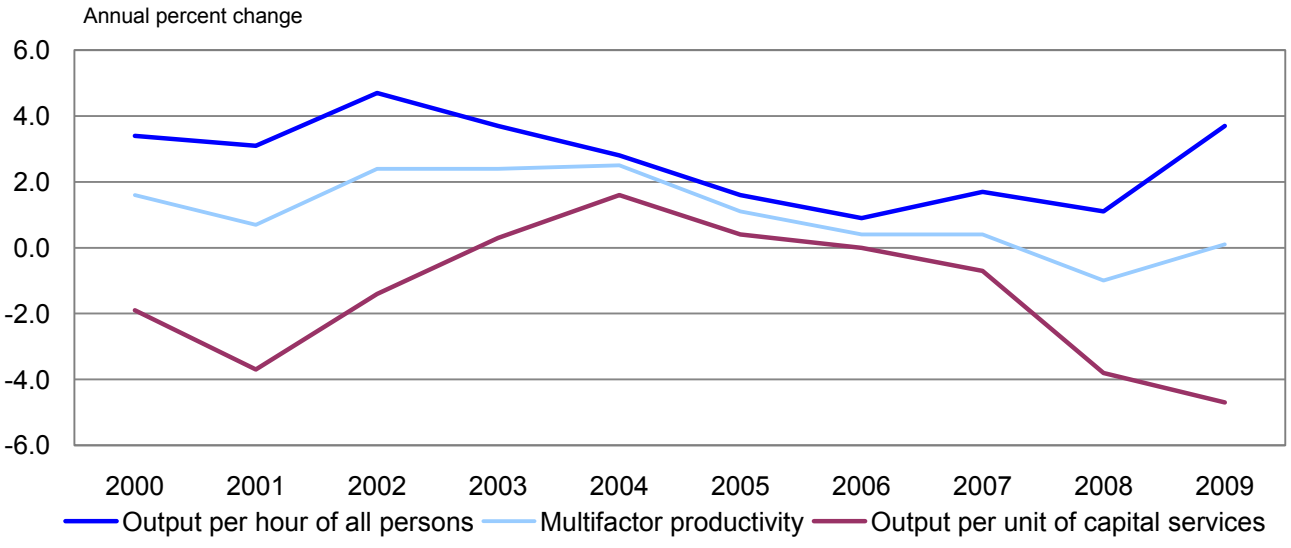
MULTIFACTOR PRODUCTIVITY TRENDS - 2009

Private nonfarm business sector multifactor productivity grew at a modest 0.1 percent annual rate in 2009, the U.S. Bureau of Labor Statistics reported today. (See chart 1, table A.) In 2009, the gain in multifactor productivity reflected decreases of 3.7 percent in output and 3.8 percent in the combined inputs of capital and labor. Capital services grew by 1.1 percent, and labor input – which is the combined effect of hours worked and labor composition – fell 6.3 percent. (See table A, table 1.) For both the private nonfarm business and private business sectors, the declines recorded in output, combined inputs of capital and labor, and labor input were the largest in the series, which began in 1987. Growth in capital services was also the slowest recorded since the series began.

Multifactor productivity measures the change in output per unit of combined capital and labor. Multifactor productivity is designed to measure the joint influences of technological change, efficiency improvements, returns to scale, reallocation of resources, and other factors on economic growth, allowing for the effects of capital and labor. Multifactor productivity, therefore, differs from labor productivity (output per hour worked) measures that are published quarterly by BLS since it includes information on capital services and other data that are not available on a quarterly basis. Additionally, multifactor productivity measures for the private business and private nonfarm business sectors account for shifts in the composition of labor. Estimates of labor composition are not included in the quarterly labor productivity measures.

Private business sector multifactor productivity grew 0.2 percent in 2009, reversing a decline of 0.9 percent in 2008. The multifactor productivity gain in 2009 reflected decreases of 3.6 percent in output and 3.8 percent in the combined inputs of capital and labor. Capital services grew by 1.0 percent, and labor input fell by 6.3 percent. (See table A, table 2.)

Chart 1. Output per hour of all persons, multifactor productivity, and output per unit of capital services in the private nonfarm business sector, 2000-2009



Historical trends in private nonfarm business

Multifactor productivity in private nonfarm business grew 0.9 percent annually between 1987 (the starting year of the series) and 2009. Output increased at a 2.8 percent annual rate over that period and combined inputs of capital and labor rose an average of 1.9 percent per year. Output per hour worked (labor productivity) grew at a 2.2 percent rate. For the 2000-2007 period, multifactor productivity in private nonfarm business rose more rapidly than in previous periods, averaging 1.4 percent per year. Multifactor productivity decreased for the 2007-2009 period, averaging a decline of 0.5 percent per year. Output decreased at a 2.4 percent annual rate over that period and combined inputs of capital and labor fell an average of 1.9 percent per year. (See table A.)

Labor productivity growth, or output per hour, can be viewed as the sum of three components: multifactor productivity growth, the contribution of capital intensity, and the contribution of shifts in labor composition. Multifactor productivity and the contribution of capital intensity contributed more to output per hour during the latter half of the 1990s. (See table B.) The growth rate of these two components continued to be relatively high over the 2000-2007 period. For 2007-2009, the contribution of capital intensity, reflecting the ratio of capital to hours worked, rose sharply compared to previous periods due to a sharp decline in hours worked. Of the 2.4 percent growth rate in private nonfarm business labor productivity for the 2007-2009 period, 2.3 percent can be attributed to the contribution of capital intensity, while the 0.5 percent contribution of labor composition was offset by the 0.5 percent decrease in multifactor productivity.

Capital services grew 3.8 percent for the 1987-2009 period. Within capital services, equipment was the fastest growing component, averaging 5.9 percent. (See table 5.) The increase in equipment was largely due to capital services of information processing equipment and software, averaging 10.8 percent. The fastest growth in equipment was in computers and related equipment, which grew 20.8 percent.

For the 2000-2007 period, within equipment, information processing equipment and software (IPES) grew 8.3 percent annually. For the 2007-2009 period, IPES slowed to 5.6 percent annually. For both periods, the rate of increase in information processing equipment and software was markedly lower than the double-digit increase observed in the 1995-2000 period.

Revised measures

The revised multifactor productivity measure for the most recent year reflects the use of a more rigorous methodology than that used in the preliminary multifactor productivity release published on October 6, 2010 http://www.bls.gov/news.release/archives/prod3_10062010.pdf. Revisions to underlying data affect multifactor productivity growth rates in both 2008 and 2009. (See table C.) For 2008, the 1.0 percent decline in multifactor productivity growth for the private nonfarm business sector was lower than the 0.1 percent increase reported on October 6, 2010. This downward revision in multifactor productivity growth was largely due to output being revised down to a decline of 0.9 percent from a decline of 0.2 percent. For 2009, the 0.1 percent change in multifactor productivity growth for the private nonfarm business sector was also lower than the 0.7 percent change reported on October 6, 2010. The revision in multifactor productivity growth in 2009 was due to a revision in the labor composition estimate to account for more recently published data. The labor composition estimate, used in the labor input measure, was revised up to 0.9 percent from 0.3 percent. The MFP labor composition measure uses 2009 wages from the 2010 March supplement to the Current Population Survey (CPS) to determine weights across groups. In contrast, the preliminary MFP labor composition estimate assumes relative wages across groups remain constant between 2008 and 2009.

Table A. Compound annual growth rates for productivity, output, and inputs in the private nonfarm business and private business sectors for selected periods, 1987-2009

In percent

	1987-2009	1987-1990	1990-1995	1995-2000	2000-2007	2007-2009	2008-2009
Private nonfarm business[1]							
Productivity							
Multifactor Productivity[2]	0.9	0.5	0.5	1.3	1.4	-0.5	0.1
Output per hour of all persons	2.2	1.4	1.6	2.8	2.6	2.4	3.7
Output per unit of capital services	-0.9	-0.4	-0.4	-1.0	-0.5	-4.3	-4.7
Output	2.8	3.2	2.9	5.0	2.7	-2.4	-3.7
Inputs							
Combined inputs[3]	1.9	2.7	2.4	3.6	1.3	-1.9	-3.8
Labor Input[4]	1.1	2.3	2.0	2.5	0.4	-3.9	-6.3
Hours	0.6	1.7	1.3	2.2	0.1	-4.7	-7.1
Labor composition[5]	0.5	0.6	0.7	0.3	0.3	0.8	0.9
Capital services	3.8	3.6	3.3	6.0	3.2	2.0	1.1
Analytic ratio							
Capital services per hour of all persons	3.2	1.9	1.9	3.8	3.2	6.9	8.8
Private business[1]							
Productivity							
Multifactor Productivity[2]	1.0	0.6	0.4	1.5	1.5	-0.4	0.2
Output per hour of all persons	2.3	1.6	1.5	2.9	2.7	2.4	3.7
Output per unit of capital services	-0.8	-0.4	-0.3	-0.7	-0.4	-4.1	-4.5
Output	2.9	3.2	2.8	5.0	2.7	-2.3	-3.6
Inputs							
Combined inputs[3]	1.9	2.6	2.4	3.4	1.2	-1.9	-3.8
Labor Input[4]	1.0	2.1	2.0	2.3	0.3	-3.9	-6.3
Hours	0.5	1.6	1.3	2.0	0.0	-4.6	-7.0
Labor composition[5]	0.5	0.6	0.7	0.3	0.3	0.7	0.8
Capital services	3.7	3.6	3.1	5.8	3.1	1.8	1.0
Analytic ratio							
Capital services per hour of all persons	3.1	2.0	1.8	3.7	3.1	6.7	8.6

1 Excludes government enterprises.

2 Output per unit of combined labor and capital inputs.

3 The growth rate of each input is weighted by its share of current dollar costs.

4 Index of hours at work; hours at work by age, education, and gender group are weighted by each group's share of the total wage bill.

5 Ratio of labor input to hours.

Table B. Compound annual growth rates in output per hour of all persons and the contributions of capital intensity, labor composition, and multifactor productivity in the private nonfarm business and private business sectors for selected periods, 1987-2009

In percent

	1987-2009	1987-1990	1990-1995	1995-2000	2000-2007	2007-2009	2008-2009
Private nonfarm business[1]							
Output per hour of all persons	2.2	1.4	1.6	2.8	2.6	2.4	3.7
Contribution of capital intensity[2]	1.0	0.6	0.6	1.2	1.0	2.3	3.0
Contribution of information processing equipment and software[3]	0.6	0.5	0.5	0.9	0.6	0.8	0.9
Contribution of all other capital services	0.4	0.1	0.2	0.2	0.4	1.5	2.0
Contribution of labor composition[4]	0.3	0.4	0.5	0.2	0.2	0.5	0.6
Multifactor productivity[5]	0.9	0.5	0.5	1.3	1.4	-0.5	0.1
Contribution of R&D to multifactor productivity	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Private business[1]							
Output per hour of all persons	2.3	1.6	1.5	2.9	2.7	2.4	3.7
Contribution of capital intensity[2]	1.0	0.6	0.6	1.2	1.0	2.3	2.9
Contribution of information processing equipment and software[3]	0.6	0.5	0.4	0.9	0.5	0.8	0.9
Contribution of all other capital services	0.4	0.2	0.1	0.3	0.4	1.5	2.0
Contribution of labor composition[4]	0.3	0.4	0.5	0.2	0.2	0.5	0.5
Multifactor productivity[5]	1.0	0.6	0.4	1.5	1.5	-0.4	0.2

1 Excludes government enterprises.

2 Growth rate in capital services per hour multiplied by capital's share of current dollar costs.

3 Growth rate of information processing equipment and software per hour multiplied by its share of current dollar costs.

4 Growth rate of labor composition (the growth rate of labor input less the growth rate of the hours of all persons) multiplied by labor's share of current dollar costs.

5 Output per unit of combined labor and capital inputs.

Multifactor productivity plus contribution of capital intensity and labor composition may not sum to output per hour due to independent rounding. Contribution of information processing equipment and all other capital may not sum to the contribution of capital intensity due to independent rounding.

Table C. Annual growth rates of the preliminary and revised multifactor productivity measures in the private nonfarm business sector for the 1987-2009 period

Percent change from previous year

Year	Multifactor Productivity	
	Preliminary	Revised
1988	1.0	1.0
1989	0.1	0.0
1990	0.4	0.4
1991	-0.9	-1.0
1992	2.3	2.3
1993	0.3	0.3
1994	0.7	0.7
1995	0.0	0.0
1996	1.4	1.4
1997	0.6	0.6
1998	1.5	1.5
1999	1.6	1.7
2000	1.6	1.6
2001	0.7	0.7
2002	2.4	2.4
2003	2.5	2.4
2004	2.6	2.5
2005	1.0	1.1
2006	0.4	0.4
2007	0.5	0.4
2008	0.1	-1.0
2009	0.7	0.1

TECHNICAL NOTES

Capital Services: Capital services are the services derived from the stock of physical assets and software. There are 86 asset types for fixed business equipment and software, structures, inventories, and land. Data on investments in physical assets are obtained from BEA. Data on inventories are estimated using BEA and additional information from IRS Corporation Income Returns. Data for land in the farm sector are obtained from USDA. Nonfarm industry detail for land is based on IRS book value data. Current-dollar value-added data, obtained from BEA, are used in estimating capital rental prices.

Among equipment, BLS provides additional detail in tables 5 and 6 on information processing equipment and software (IPES). IPES is composed of four broad classes of assets: computers and related equipment, software, communications equipment, and other IPES equipment. Computers and related equipment includes mainframe computers, personal computers, printers, terminals, tape drives, storage devices, and integrated systems. Software is comprised of pre-packaged, custom, and own-account software. Communications equipment is not further differentiated. Other IPES includes medical equipment and related instruments, electromedical instruments, nonmedical instruments, photocopying and related equipment, and office and accounting machinery. Structures include nonresidential structures and residential capital that are rented out by profit-making firms or persons.

Financial assets are excluded from capital services measures, as are owner-occupied residential structures. The aggregate capital services measures are obtained by Tornqvist aggregation of the capital stocks for each asset type within each of 60 NAICS industry groupings using estimated rental prices for each asset type. Each rental price reflects the nominal rate of return to all assets within the industry and rates of economic depreciation and revaluation for the specific asset; rental prices are adjusted for the effects of taxes. Current-dollar capital costs can be defined as each asset's rental price multiplied by its constant-dollar stock, adjusting for capital composition effects.

Labor Input: Labor input in private business and private nonfarm business is obtained by chained superlative (Tornqvist) aggregation of the hours at work by all persons, classified by age, education, and gender with weights determined by each group's share of the total wage bill. Hours paid of employees are largely obtained from the Current Employment Statistics program (CES). These hours paid are then converted to an at-work basis by using information from the Employment Cost Index (ECI) of the National Compensation Survey (NCS) benchmarked to the Hours at Work Survey. Hours at work for nonproduction and supervisory workers are derived using data from the Current Population Survey (CPS), the CES, and the NCS. The hours at work of proprietors, unpaid family workers, and farm employees are derived from the Current Population Survey. Hours at work data reflect Productivity and Costs data as of the February 3, 2011 "Productivity and Costs" news release (USDL-11-0128). The growth rate of labor composition is defined as the difference between the growth rate of weighted labor input and the growth rate of the hours of all persons. Additional information concerning data sources and methods of measuring labor composition can be found in Cindy Zoghi, 2007, "Measuring Labor Composition: A Comparison of Alternate Methodologies" http://www.bls.gov/bls/fesacp1121407.pdf.

Combined Inputs: Labor and capital services are combined using Tornqvist aggregation, employing weights that represent each component's share of total costs. The Tornqvist index uses changing weights; the share in each year is averaged with the preceding year's share. Total costs are defined as the value of output less a portion of taxes on production and imports. Most taxes on production and imports, such as excise taxes, are excluded from costs; however, property and motor vehicle taxes remain in total costs.

Capital Intensity: Capital intensity is the ratio of capital to hours worked in the production process. The higher the capital to hours ratio, the more capital intensive the production process is.

In a production process, profit maximizing/cost-minimizing firms adjust the factor proportions of capital and labor if the price of one factor is less than the other factor; there would be a tendency for the firms to substitute the less expensive factor for the more expensive one. In the short run, changes in hours worked are more variable than changes in capital services. Changes in hours worked in business cycles can result in volatility of the capital intensity ratio over short periods of time. In the long run an increase in wages relative to the price of capital will induce the firm to substitute capital for labor, resulting in an increase in capital intensity.

Rising labor costs are, in fact, an incentive for firms to introduce automated production processes. Industry estimates of capital to hours ratios can be obtained at http://www.bls.gov/mfp/mprdload.htm.

Output: Private business sector output is a chain-type, current-weighted index constructed after excluding from gross domestic product (GDP) the following outputs: general government, nonprofit institutions, private households (including owner-occupied housing), and government enterprises. This release presents data for the private business and private nonfarm business sectors. The private business sector, which accounted for approximately 76 percent of gross domestic product in 2005, includes all of gross domestic product except the output of general government, government enterprises, non-profit institutions, the rental value of owner-occupied real estate, and the output of paid employees of private households. Additionally, the private nonfarm business sector excludes farms from the private business sector, but includes agricultural services. Multifactor measures exclude government enterprises, while the BLS quarterly Productivity and Cost series include them. The output measures are based on the revised National Income and Product Accounts (NIPA) data released by BEA on January 28, 2011.

Multifactor Productivity: Multifactor productivity measures describe the relationship between output in real terms and the inputs involved in its production. They do not measure the specific contributions of labor or capital, or any other factor of production. Rather, multifactor productivity is designed to measure the joint influences of technological change, efficiency improvements, returns to scale, reallocation of resources, and other factors on economic growth, allowing for the effects of capital and labor.

The multifactor productivity indexes for private business and private nonfarm business are derived by dividing an output index by an index of capital services and labor input. The output indexes are computed as chained superlative indexes (Fisher Ideal indexes) of components of real output.

Research and development: The stock of research and development in private nonfarm business is derived by cumulating constant dollar measures of research and development expenditures and allowing for depreciation. Current dollar expenditures for privately financed research and development are obtained from annual issues of Research and Development in Industry published by the National Science Foundation. BLS develops price deflators and estimates of the rate of depreciation. Further description of these data and methods can be found in BLS Bulletin 2331 (September 1989), "The Impact of Research and Development on Productivity Growth." BLS measures of year-to-year contributions of research and development to the private nonfarm business sector and measures of the stock of research and development are available at http://www.bls.gov/mfp/rdtable.pdf .

Other information: Comprehensive tables containing additional data beyond the scope of this press release are available upon request at 202-691-5606 or at http://www.bls.gov/mfp/mprdload.htm . More detailed information on methods, limitations, and data sources of capital and labor are provided in BLS Bulletin 2178 (September 1983), "Trends in Multifactor Productivity, 1948-81" and on the BLS Multifactor Productivity website under the title "Technical Information About the BLS Multifactor Productivity Measures" for Major Sectors and 18 NAICS 3-digit Manufacturing Industries at http://www.bls.gov/mfp/mprtech.pdf. General information is available on the BLS Multifactor Productivity website at http://www.bls.gov/mfp/mprover.htm. Additional data not contained in the release can be obtained in print or at http://www.bls.gov/mfp. A number of comprehensive tables set up as zip files can be obtained at http://www.bls.gov/mfp/mprdload.htm. Included in the additional data available in the home page is a zip file containing selected multifactor productivity data that links 1948-87 SIC data to NAICS data from 1987 forward. This file includes data for the private business and private nonfarm business sectors.

Table 1. Private nonfarm business sector: productivity and related measures for the 1987-2009[1] period

Annual percent change from previous year

Year	Productivity			Output[3]	Inputs			Capital services per hour of all persons
	Output per hour of all persons	Output per unit of capital services	Multifactor Productivity[2]		Labor Input[4]	Capital Services[5]	Combined units of labor and capital services[6]	
1988	1.7	0.9	1.0	4.6	3.5	3.6	3.5	0.7
1989	0.8	-0.4	0.0	3.5	3.3	4.0	3.5	1.2
1990	1.9	-1.7	0.4	1.4	0.1	3.2	1.1	3.7
1991	1.7	-3.6	-1.0	-0.9	-1.1	2.9	0.1	5.5
1992	4.0	1.5	2.3	3.8	1.0	2.3	1.4	2.5
1993	0.6	0.3	0.3	3.6	3.3	3.2	3.3	0.3
1994	1.1	1.1	0.7	4.7	4.1	3.6	3.9	0.0
1995	0.5	-1.1	0.0	3.3	2.7	4.4	3.2	1.6
1996	2.6	-0.3	1.4	4.4	2.2	4.8	3.0	2.9
1997	1.5	-0.4	0.6	5.1	4.0	5.5	4.5	1.9
1998	2.9	-1.2	1.5	5.2	2.4	6.4	3.6	4.1
1999	3.3	-1.1	1.7	5.6	2.6	6.8	3.9	4.5
2000	3.4	-1.9	1.6	4.5	1.2	6.5	2.8	5.5
2001	3.1	-3.7	0.7	1.0	-1.6	4.9	0.3	7.1
2002	4.7	-1.4	2.4	1.9	-2.0	3.4	-0.4	6.1
2003	3.7	0.3	2.4	3.1	-0.4	2.8	0.6	3.4
2004	2.8	1.6	2.5	4.2	1.2	2.5	1.6	1.1
2005	1.6	0.4	1.1	3.4	2.0	3.0	2.3	1.2
2006	0.9	0.0	0.4	3.2	2.5	3.2	2.8	1.0
2007	1.7	-0.7	0.4	2.2	1.2	3.0	1.8	2.4
2008	1.1	-3.8	-1.0	-1.1	-1.5	2.8	-0.1	5.1
2009	3.7	-4.7	0.1	-3.7	-6.3	1.1	-3.8	8.8

See footnotes following table 4. Source: Bureau of Labor Statistics

Table 2. Private business sector: productivity and related measures for the 1987-2009[1] period

Annual percent change from previous year

Year	Productivity			Output[3]	Inputs			Capital services per hour of all persons
	Output per hour of all persons	Output per unit of capital services	Multifactor Productivity[2]		Labor Input[4]	Capital Services[5]	Combined units of labor and capital services[6]	
1988	1.5	0.5	0.8	4.3	3.4	3.8	3.5	1.0
1989	1.0	-0.2	0.3	3.7	3.2	3.9	3.5	1.2
1990	2.2	-1.5	0.6	1.5	-0.1	3.0	0.9	3.7
1991	1.6	-3.4	-1.0	-0.8	-1.0	2.7	0.2	5.2
1992	4.2	1.8	2.6	4.0	1.0	2.1	1.4	2.3
1993	0.6	0.2	0.2	3.3	3.1	3.1	3.1	0.4
1994	0.9	1.4	0.7	5.0	4.5	3.5	4.2	-0.4
1995	0.1	-1.2	-0.3	2.9	2.7	4.2	3.2	1.4
1996	2.9	0.0	1.7	4.6	2.0	4.6	2.8	2.9
1997	1.8	-0.1	0.8	5.2	3.9	5.3	4.4	1.8
1998	3.0	-1.1	1.5	5.0	2.3	6.2	3.5	4.1
1999	3.5	-0.9	1.9	5.6	2.4	6.6	3.7	4.5
2000	3.5	-1.7	1.7	4.6	1.2	6.3	2.8	5.3
2001	3.2	-3.6	0.8	0.9	-1.8	4.8	0.2	7.1
2002	4.6	-1.3	2.3	2.0	-1.9	3.3	-0.4	5.9
2003	3.9	0.5	2.6	3.1	-0.4	2.7	0.5	3.4
2004	2.9	1.6	2.6	4.2	1.1	2.5	1.6	1.3
2005	1.6	0.4	1.1	3.4	2.0	3.0	2.3	1.2
2006	1.0	0.2	0.5	3.1	2.4	2.9	2.6	0.8
2007	1.6	-0.8	0.3	2.1	1.2	2.9	1.8	2.4
2008	1.2	-3.6	-0.9	-0.9	-1.5	2.7	0.0	4.9
2009	3.7	-4.5	0.2	-3.6	-6.3	1.0	-3.8	8.6

See footnotes following table 4. Source: Bureau of Labor Statistics

Table 3. Private nonfarm business sector: indexes of productivity and related measures, 1987-2009[1]

Indexes 2005=100

Year	Productivity			Output[3]	Inputs			Capital services per hour of all persons
	Output per hour of all persons	Output per unit of capital services	Multifactor Productivity[2]		Labor Input[4]	Capital Services[5]	Combined units of labor and capital services[6]	
1987	66.2	111.6	82.3	54.2	75.6	48.6	65.9	59.4
1988	67.3	112.6	83.2	56.7	78.2	50.4	68.2	59.8
1989	67.8	112.1	83.2	58.7	80.8	52.4	70.6	60.5
1990	69.1	110.2	83.5	59.6	80.8	54.1	71.4	62.8
1991	70.3	106.2	82.7	59.0	79.9	55.6	71.4	66.2
1992	73.1	107.8	84.6	61.3	80.7	56.9	72.4	67.8
1993	73.6	108.1	84.9	63.5	83.4	58.7	74.8	68.0
1994	74.3	109.3	85.5	66.5	86.9	60.8	77.8	68.0
1995	74.7	108.1	85.5	68.7	89.2	63.5	80.3	69.1
1996	76.6	107.7	86.7	71.7	91.1	66.6	82.7	71.1
1997	77.8	107.3	87.2	75.4	94.8	70.2	86.5	72.5
1998	80.1	106.1	88.5	79.3	97.1	74.7	89.6	75.5
1999	82.7	104.9	89.9	83.7	99.6	79.8	93.1	78.9
2000	85.5	102.9	91.4	87.5	100.8	85.0	95.7	83.2
2001	88.2	99.1	92.0	88.4	99.2	89.2	96.0	89.0
2002	92.3	97.7	94.2	90.1	97.2	92.2	95.6	94.5
2003	95.7	98.0	96.5	92.8	96.9	94.7	96.2	97.7
2004	98.4	99.6	98.9	96.7	98.1	97.1	97.7	98.8
2005	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2006	100.9	100.0	100.4	103.2	102.5	103.2	102.8	101.0
2007	102.6	99.2	100.8	105.5	103.8	106.3	104.6	103.4
2008	103.8	95.4	99.8	104.3	102.2	109.3	104.6	108.7
2009	107.6	90.9	99.9	100.5	95.8	110.5	100.6	118.3

See footnotes following table 4.

Source: Bureau of Labor Statistics

Table 4. Private business sector: indexes of productivity and related measures, 1987-2009[1]

Indexes 2005=100

Year	Productivity			Output[3]	Inputs			Capital services per hour of all persons
	Output per hour of all persons	Output per unit of capital services	Multifactor Productivity[2]		Labor Input[4]	Capital Services[5]	Combined units of labor and capital services[6]	
1987	65.4	109.1	81.3	54.2	76.4	49.6	66.6	59.9
1988	66.4	109.7	82.0	56.5	78.9	51.5	68.9	60.5
1989	67.1	109.5	82.2	58.6	81.5	53.5	71.3	61.3
1990	68.6	107.9	82.7	59.5	81.4	55.2	72.0	63.6
1991	69.7	104.2	81.9	59.0	80.6	56.7	72.1	66.9
1992	72.6	106.1	84.0	61.4	81.4	57.9	73.1	68.4
1993	73.0	106.3	84.1	63.4	83.9	59.7	75.4	68.7
1994	73.7	107.8	84.8	66.6	87.7	61.8	78.5	68.4
1995	73.8	106.4	84.5	68.5	90.0	64.3	81.0	69.3
1996	75.9	106.5	86.0	71.6	91.8	67.3	83.3	71.3
1997	77.3	106.4	86.7	75.3	95.4	70.8	86.9	72.6
1998	79.6	105.2	88.0	79.2	97.6	75.2	90.0	75.6
1999	82.4	104.2	89.6	83.6	99.9	80.2	93.3	79.0
2000	85.3	102.5	91.2	87.4	101.1	85.3	95.9	83.2
2001	88.0	98.8	91.8	88.2	99.3	89.3	96.1	89.1
2002	92.1	97.5	94.0	90.0	97.4	92.2	95.7	94.4
2003	95.6	98.0	96.5	92.8	97.0	94.7	96.2	97.6
2004	98.4	99.6	98.9	96.7	98.1	97.1	97.7	98.8
2005	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2006	101.0	100.2	100.5	103.1	102.4	102.9	102.6	100.8
2007	102.6	99.4	100.9	105.3	103.6	106.0	104.4	103.3
2008	103.8	95.8	99.9	104.3	102.1	108.8	104.4	108.3
2009	107.6	91.5	100.2	100.6	95.6	109.9	100.4	117.6

See footnotes following table 4.

Source: Bureau of Labor Statistics

Footnotes, Tables 1-4

Source: BLS develops productivity measures using output data published by the Bureau of Economic Analysis (BEA), compensation and hours data published by other Bureau of Labor Statistics (BLS) programs, and capital data supplied by BEA and U.S. Department of Agriculture. Also see Technical Notes in this release.

(1) The private business sector includes all of gross domestic product except the output of general government, government enterprises, non-profit institutions, the rental value of owner-occupied real estate, and the output of paid employees of private households. The private nonfarm business sector also excludes farms but includes agricultural services.

(2) Output per unit of combined labor and capital services.

(3) Gross domestic product originating in the sector, chained superlative index.

(4) Index of hours at work of all persons including employees, proprietors, and unpaid family workers, classified by age, education, and gender. This chained superlative index is computed by combining changes in the hours of each age, education, and gender group weighted by each group's share of the total wage bill.

(5) A measure of the flow of capital services used in the sector. Capital services measure the services derived from the stock of physical assets and software. The assets included are fixed business equipment, structures, inventories, and land.

(6) The growth rates of labor input and capital services are combined by weighting with their respective shares of current dollar costs, and aggregating into a chained superlative index.

Table 5. Compound average annual growth rates in real capital services by asset type, private nonfarm business sector, 1987-2009

In percent

	1987-2009	1987-1990	1990-1995	1995-2000	2000-2007	2007-2009	2008-2009
All Assets	3.8	3.6	3.3	6.0	3.2	2.0	1.1
Equipment	5.9	4.9	5.1	10.0	5.1	2.6	1.5
All Information Processing Equipment & Software (IPES)	10.8	11.0	9.6	17.8	8.3	5.6	5.0
Computers & related equipment	20.8	19.2	16.1	40.8	14.4	12.6	10.9
Software	12.2	17.8	13.4	16.8	8.2	4.4	3.9
Communication equipment	6.9	6.0	5.3	10.4	6.4	5.3	4.9
Other IPES	3.7	2.8	4.0	3.7	4.0	3.6	3.2
All other equipment	2.1	2.2	1.9	3.2	1.8	0.9	0.0
Structures	2.0	3.0	2.0	2.2	1.4	1.8	1.6
Residential rental capital	1.3	1.9	1.0	1.6	1.4	0.2	-0.1
Inventories	2.5	3.4	2.2	4.2	2.1	-1.2	-4.4
Land	1.6	1.9	1.3	1.7	1.3	2.3	1.1

Note: For a brief discussion of methods used in preparing these data, see Technical Notes in this release. Source: Bureau of Labor Statistics

Table 6. Compound average annual growth rates in real capital services by asset type, private business sector, 1987-2009

In percent

	1987-2009	1987-1990	1990-1995	1995-2000	2000-2007	2007-2009	2008-2009
All Assets	3.7	3.6	3.1	5.8	3.1	1.8	1.0
Equipment	5.8	4.6	4.9	9.8	5.1	2.6	1.6
All Information Processing Equipment &Software (IPES)	10.8	11.0	9.6	17.8	8.3	5.6	5.0
Computers & related equipment	20.8	19.2	16.1	40.8	14.4	12.6	10.9
Software	12.2	17.8	13.4	16.8	8.2	4.4	3.9
Communication equipment	6.9	6.0	5.3	10.4	6.4	5.3	4.9
Other IPES	3.8	2.9	4.0	3.7	4.0	3.6	3.2
All other equipment	2.0	2.2	1.8	3.0	1.8	0.9	-0.1
Structures	1.9	2.9	1.9	2.2	1.4	1.7	1.6
Residential rental capital	1.3	1.9	1.0	1.6	1.4	0.2	-0.1
Inventories	2.4	2.9	2.2	4.1	2.1	-1.2	-4.1
Land	1.4	3.2	1.1	1.3	1.0	1.4	0.4

Note: For a brief discussion of methods used in preparing these data, see Technical Notes in this release. Source: Bureau of Labor Statistics