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MULTIFACTOR PRODUCTIVITY TRENDS IN MANUFACTURING, 2006

Multifactor productivity, defined as output per unit of combined inputs, was reported today by the Bureau of Labor Statistics (BLS) of the U.S. Department of Labor for the manufacturing sector and for durable goods, nondurable goods, and three-digit (NAICS) manufacturing industries for the year 2006.

In manufacturing, the annual rates of multifactor productivity change for 2006 were:

- 1.6 percent in the manufacturing sector,
- 3.2 percent in the durable goods manufacturing sector, and
- 0.2 percent in the nondurable goods manufacturing sector.

At 1.6 percent, multifactor productivity growth in the manufacturing sector grew more rapidly than the 0.4 percent increase posted in 2005 (as revised). This occurred as durable goods manufacturing productivity growth accelerated to 3.2 percent from 2.5 percent and nondurable goods manufacturing productivity fell less, dropping 0.2 percent in 2006 after a 1.8 percent decrease in 2005. The 2005-06 annual changes are summarized in table A and further detail and historical measures are shown in tables 1 through 3.

Multifactor productivity is designed to measure the joint influences on economic growth of technological change, efficiency improvements, returns to scale, reallocation of resources, and other factors, allowing for the effects of capital, labor and, in the case of the manufacturing sector, intermediate inputs (energy, materials, purchased business services). 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.

The data sources and methods used in the preparation of the manufacturing series differ from those used in preparing the private business and private nonfarm business multifactor series and therefore the measures are not directly comparable. See BLS News Release, *Multifactor Productivity Trends, 2006*, <http://www.bls.gov/news.release/pdf/prod3.pdf>, for information on multifactor productivity measurement in the private business and private nonfarm business sectors.

Table A. Compound average annual rates of growth for multifactor productivity, output per hour of all persons, output per unit of capital services and related measures in the manufacturing sector for selected periods, 1987 to 2006

	1987-06	1987-90	1990-95	1995-00	2000-06	2005-06
<u>Productivity</u>						
Multifactor productivity ¹	1.4	0.2	1.2	2.0	1.6	1.6
Output per hour of all persons	3.6	1.8	3.4	4.6	3.8	1.2
Output per unit of capital services	0.2	-0.1	0.5	0.3	0.0	1.3
<u>Sectoral Output</u>						
	2.5	2.1	3.3	4.5	0.4	1.8
<u>Inputs</u>						
Hours ²	-1.1	0.4	-0.1	-0.1	-3.3	0.6
Capital services	2.3	2.2	2.8	4.2	0.3	0.5
Energy	-0.7	2.0	1.6	-2.5	-2.4	-5.5
Non-energy materials	2.0	1.6	3.6	4.9	-1.5	-1.0
Purchased business services	2.6	5.5	3.0	2.4	1.1	2.0
Combined inputs ³	1.1	2.0	2.0	2.5	-1.2	0.3

¹Output per unit of combined labor hours, capital, energy, materials, and business services inputs.

²Hours at work of all persons.

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

Changes in 2006

Multifactor productivity in the manufacturing sector rose 1.6 percent in 2006 (see table A). This is the fifth consecutive year that multifactor productivity rose in manufacturing (see table 1). The 2006 multifactor productivity gain reflected a 1.8 percent increase in sectoral output and a 0.3 percent increase in combined inputs. The increase in combined inputs was down from the sharp 3.3 percent increase in 2005. Capital services grew 0.5 percent in 2006, after remaining unchanged in 2005. Hours grew 0.6 percent in 2006, materials declined 1.0 percent and purchased business services rose 2.0 percent.

Within manufacturing, multifactor productivity for durable goods increased in 2006 while it fell for nondurable goods (table 3). The manufacturing industries that showed the largest multifactor productivity growth in 2006 were all durable goods industries; computer and electronic products (7.6 percent), transportation equipment (4.0 percent), and wood products (3.0 percent). One durable goods industry showed the sharpest decline in multifactor productivity, nonmetallic mineral products (-3.1 percent). The other two industries that showed sharp declines were nondurable goods industries; textile mills and textile product mills (-2.6 percent) and plastics and rubber products (-1.9 percent).

Historical trends in manufacturing

Multifactor productivity (output per unit of combined inputs) differs from labor productivity (output per hour worked) in the treatment of both capital and intermediate inputs (energy, materials, and business services). Labor productivity measures do not explicitly account for the effects of capital nor do they account for changes in the effects of intermediate inputs on output growth. As a result, changes in input intensity (the ratio of other inputs to labor hours) can influence labor productivity growth. In contrast, multifactor productivity treats capital and intermediate inputs as explicit factors of production and, therefore, is net of changes in input intensity. Historical trends in labor productivity growth can be disaggregated into the sum of multifactor productivity growth plus the contributions of the intensities of capital and of intermediate inputs.

The relationship between labor productivity growth and these components can be seen in table B and chart 1. Chart 1 shows how the relative contributions of multifactor productivity, capital intensity, and intermediate input intensity shifted in the latter half of the 1990's. These contributions have somewhat slowed during the 2000-2006 period.

The contribution of each input's intensity equals the change in the ratio of that input to hours multiplied by that input's cost share. Historically, the labor share is about a third of total cost, the capital share about a sixth, the materials share about 30 percent of total cost, and the business services share about 20 percent. The energy share is historically only about 3 percent of total cost.

Multifactor productivity in manufacturing grew 1.4 percent annually between 1987 (the starting point of the series) and 2006 (see table A). Sectoral output increased at a 2.5 percent annual rate over the period and combined inputs rose an average of 1.1 percent per year. Of the 3.6 percent growth rate in output per hour (labor productivity), 1.4 percent can be attributed to increases in multifactor productivity, 0.5 percent to the contribution of capital intensity, 0.8 percent to changes in materials intensity, and 0.8 percent to changes in business services intensity (see table B). The remaining input, energy, was a very small share of total inputs; therefore, it made no discernable contribution to output per hour.

From 1995 to 2000, multifactor productivity in manufacturing rose more rapidly than in previous periods, averaging 2.0 percent per year. Sectoral output growth increased to an average of 4.5 percent per year (table A) while combined inputs advanced an average of 2.5 percent per year, slightly faster than in the early 1990s. In the 2000-2006 period, multifactor productivity grew at a slower rate than in the 1995-2000 period, averaging 1.6 percent per year. Labor productivity slowed to a still-robust average annual growth rate of 3.8 percent per year. The contribution of capital intensity was slightly slower in the 2000-2006 period than in the 1995-2000 period, increasing an average of 0.6 percent annually (table B). The contribution of the intensity of information processing equipment grew 0.2 percent while that of other capital services rose 0.4 percent during the 2000-2006 period. The contribution of materials intensity dropped to an average annual increase of 0.5 percent from the 1.4 percent growth shown in the 1995-2000 period while the contribution of business services intensity accelerated to 1.0 percent.

Table B. Compound average annual rates of growth in output per hour of all persons and the contributions of capital intensity, intermediate inputs intensity, and multifactor productivity, manufacturing sector, 1987 to 2006

	1987-06	1987-90	1990-95	1995-00	2000-06	2005-06
<u>Manufacturing</u>						
Output per hour of all persons	3.6	1.8	3.4	4.6	3.8	1.2
Contribution of capital intensity ¹	0.5	0.3	0.4	0.7	0.6	0.0
Contribution of information processing equipment and software ²	0.2	0.2	0.2	0.4	0.2	0.1
Contribution of all other capital services	0.3	0.1	0.2	0.4	0.4	-0.1
Contribution of energy intensity ³	0.0	0.0	0.0	-0.1	0.0	-0.2
Contribution of materials intensity ⁴	0.8	0.3	1.0	1.4	0.5	-0.5
Contribution of purchased business services intensity ⁵	0.8	0.9	0.6	0.5	1.0	0.3
Multifactor productivity ⁶	1.4	0.2	1.2	2.0	1.6	1.6

¹Growth rate in capital services per hour multiplied by capital's share of current dollar costs.

²Growth rate of information processing equipment and software per hour multiplied by its share of total costs.

³Growth rate in energy services per hour multiplied by energy's share of current dollar costs.

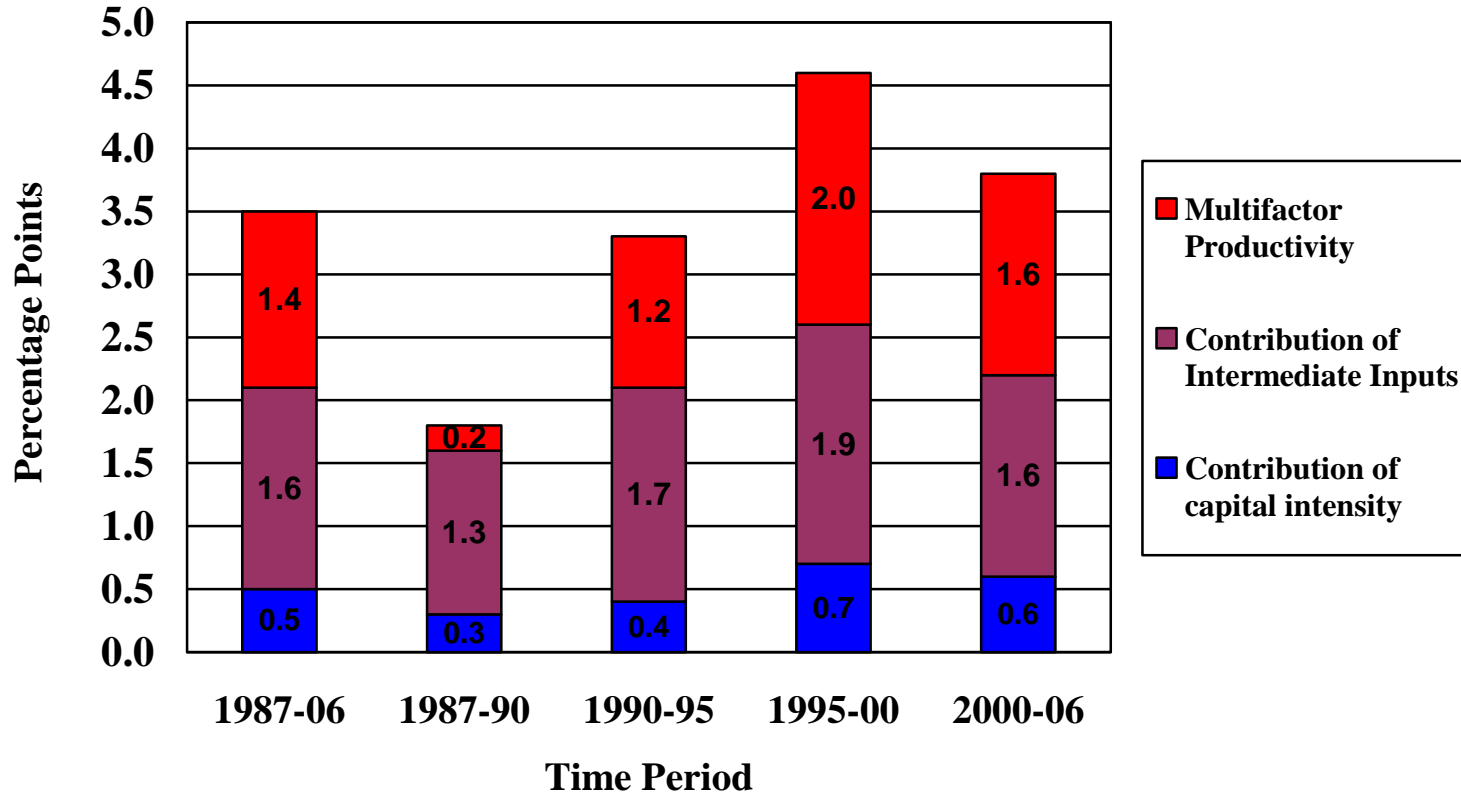
⁴Growth rate in materials services per hour multiplied by materials' share of current dollar costs.

⁵Growth rate in business services per hour multiplied by business services' share of current dollar costs.

⁶Output per unit of combined inputs.

Over the entire 1987-2006 period, multifactor productivity advanced most rapidly in the computer and electronic products industry (see table 3). This industry's 9.6-percent average annual growth rate during this period was 8.0 percentage points higher than the industry with the next highest growth rate, apparel, leather, and allied products. In the 1995-2000 period, multifactor productivity grew very rapidly in the computer and electronic products industry, 15.9 percent per year. In the 2000-2006 period, the growth rate slowed to 6.7 percent. Three industries experienced a decline in multifactor productivity over the 1987-2006 period: food, beverage, and tobacco products (-0.3 percent); chemical products (-0.1 percent); and electrical equipment, appliances, and components (-1.0 percent).

**Chart 1. Contributors to growth in output per hour
in the manufacturing sector 1987-2006**



In Chart 1, the contribution of intermediate inputs includes energy, materials, and purchased business services. Multifactor productivity plus the contribution of intermediate inputs plus the contribution of capital intensity may not sum to output per hour due to independent rounding.

Table C. Previous and revised productivity and related measures for the 2004-2005 and 2003-2004 periods

Sector	Multifactor productivity ¹	Sectoral output	Combined inputs ²	Hours ³	Capital services	Energy	Materials	Purchased business services
Percent change, 2004-2005								
<u>Manufacturing</u>								
Previous	3.4	3.5	0.1	-1.1	-0.3	-3.3	1.0	1.3
Revised	0.4	3.7	3.3	-1.1	0.0	9.1	5.9	7.8
<u>Durable manufacturing</u>								
Previous	3.3	5.0	1.6	-0.1	-0.4	-0.2	3.3	4.0
Revised	2.5	5.2	2.6	-0.1	-0.2	2.8	5.9	4.8
<u>Nondurable manufacturing</u>								
Previous	3.2	1.9	-1.2	-2.7	-0.3	-5.0	-0.3	-1.5
Revised	-1.8	2.0	3.9	-2.8	0.0	12.8	4.9	11.1
Percent change, 2003-2004								
<u>Manufacturing</u>								
Previous	3.8	1.8	-2.0	-0.5	-0.8	-3.9	-2.5	-3.9
Revised	2.6	1.7	-0.9	-0.5	-0.6	-0.5	-0.4	-2.1
<u>Durable manufacturing</u>								
Previous	4.5	2.3	-2.1	0.7	-1.0	-6.6	-2.9	-5.8
Revised	3.4	2.3	-1.0	0.6	-0.7	-2.5	-1.0	-3.8
<u>Nondurable manufacturing</u>								
Previous	2.5	1.2	-1.3	-2.4	-0.7	-2.3	-0.6	-1.8
Revised	1.5	1.2	-0.3	-2.4	-0.5	0.7	0.9	-0.2

¹Sectoral output per unit of combined inputs.

²The growth rate of each input is weighted by its share of nominal costs.

³Hours at work of all persons.

Revised Measures

Previous and revised productivity and related data for 2004 and 2005 for the manufacturing, durable manufacturing, and nondurable manufacturing sectors are displayed in Table C. In 2005, productivity growth was revised downward to 0.4 percent from 3.4 percent in the manufacturing sector, to 2.5 percent from 3.3 percent in the durable manufacturing sector, and to -1.8 percent from 3.2 percent in the nondurable manufacturing sector. Productivity growth was also revised downward for all three major sectors in 2004. This was due to large revisions in energy, materials, and purchased services.

In all three sectors the downward revisions to multifactor productivity mainly reflect revisions to intermediate inputs (energy, materials, purchased services) due to revisions upward in the underlying source data provided by the Bureau of Economic Analysis (BEA), U.S. Dept. of Commerce. This was done to make these measures consistent with the annual revision of its integrated annual industry accounts. The industry accounts revisions include revised and newly-available Census Bureau data on gross output and the results of the 2007 annual revision of the BEA's National Income and Product Accounts (NIPAs). The NIPA estimates include revised (2004) and newly-available (2005) IRS source data (and BEA extrapolations of these data for 2006) for the business income, net interest, and depreciation components of industry-level gross operating surplus.

Summary of methods for the manufacturing sector and manufacturing industries

The manufacturing 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, capital, or any other factor of production. Rather, multifactor productivity is designed to measure the joint influences on economic growth of technological change, efficiency improvements, returns to scale, reallocation of resources due to shifts in factor inputs across industries, and other factors. The multifactor productivity indexes are derived by dividing an output index by an index of the combined input of labor, capital services, energy, non-energy materials, and business service inputs.

The multifactor productivity measures for manufacturing differ in several ways from those for private business and private nonfarm business in their treatment of labor input, output, and classes of factor inputs. First, the manufacturing measure of labor input is a direct aggregate of hours. This is in contrast to the major sector measures for which estimates of the effects of changing labor composition have been developed.

Next, the output concept used for multifactor productivity in manufacturing is "sectoral output." Sectoral output is similar to gross output, but excludes shipments from one establishment to another within the same manufacturing industry or sector. In contrast, the output concept used for private business and nonfarm business is "gross product originating" and is similar to "real value added". Gross product originating in private business equals gross domestic product in the economy less general government, government enterprises, private households (including the rental value of owner-occupied real estate), and non-profit institutions. Gross product originating excludes intermediate transactions between businesses.

The output index for manufacturing is computed using a chained superlative index (Tornqvist) of three-digit NAICS industry outputs. Industry output is measured as sectoral output, the total value of goods and services leaving the industry. Wherever possible, the indexes of industry output are calculated with a Tornqvist formula. This formula aggregates the growth rates of the various industry outputs between two periods, using their relative shares in industry value of production averaged over the two periods as weights. Industry output measures for manufacturing industries are constructed using data from the economic censuses and annual surveys of the Bureau of the Census, U.S. Department of Commerce, together with information on price changes, primarily from BLS.

The resulting manufacturing multifactor productivity measure compares what is produced in the manufacturing sector with the inputs used to produce it. The comparison excludes flows of intermediate inputs between manufacturing establishments from measures of both output and inputs. However, the comparison does include capital service inputs and capital goods produced, even when these goods are produced and consumed in manufacturing.

Multifactor productivity in manufacturing compares "sectoral output" to three classes of inputs: 1) hours at work of labor employed within manufacturing; 2) capital services employed by manufacturing establishments; and 3) purchases of energy, materials, and business services from outside of manufacturing (intermediates).

Hours paid of production workers are obtained from the Current Employment Statistics (CES) survey. The hours of these employees are then converted to an at-work basis by using information from the Employment Cost Index (ECI) of the National Compensation Survey (NCS) and the Hours at Work Survey. Hours at work for nonproduction workers are derived using data from the Current Population Survey (CPS), the CES, and the NCS. The hours at work of proprietors are derived from the CPS. Hours at work data reflect Productivity and Costs data as of the March 5, 2008 news release. Therefore, it reflects the benchmark revisions to the CES survey and other revisions to hours released on February 1, 2008. The construction of hours at work follows the methods used in the private business sector described in USDL 08-0410, *Multifactor Productivity Trends, 2006*, <http://www.bls.gov/news.release/pdf/prod3.pdf>, except that hours in manufacturing are directly aggregated and do not include the effects of changing labor composition.

Capital input measures the services derived from the stock of physical assets and software. The assets included are fixed business equipment, structures, inventories, and land. Among equipment, BLS provides additional detail for 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.

The aggregate capital input measures are obtained by Tornqvist aggregation of the capital stocks for each asset type within each of the eighteen manufacturing 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. Data on investments in physical assets and software are obtained from BEA. Nonfarm industry detail for land is based on IRS book value data. Current-dollar gross product originating (GPO) data, obtained from BEA, are used in estimating capital rental prices.

In manufacturing, intermediates are the largest input in terms of costs. Furthermore, research has shown that substitution among inputs, including intermediates, affects productivity change. Therefore, it is important to include intermediates in productivity measures at the level of manufacturing. In contrast, the more aggregate productivity measures compare "value-added" output with two classes of inputs, capital and labor. Because of these differences in methods, productivity change in manufacturing cannot be directly compared with changes in private business or private nonfarm business.

Intermediate inputs (energy, materials, and purchased business services) are obtained from BEA based on BEA annual input-output tables. Tornqvist indexes of each of these three input classes are derived at the 3-digit NAICS level and then aggregated to total manufacturing. As with the sectoral output measures, materials inputs are adjusted to exclude transactions between establishments within the same sector.

The five input indexes (capital services, hours, energy, materials, and purchased business services) are combined using Tornqvist aggregation, employing weights that represent each component's share of total costs. Total costs are defined as the value of manufacturing sectoral output. The index uses changing weights: The share in each year is averaged with the preceding year's share.

Multifactor productivity data incorporate NAICS input-output tables and revised BEA chain-type price and quantity indexes for intermediate inputs (energy, materials, and business services). See tables at <http://www.bea.gov/Industry/Index.htm> , Gross Domestic Product by Industry.

BLS built multifactor productivity measures from three-digit NAICS detail. Most of the critical data used to calculate these measures were not reported on a NAICS basis for years prior to 1998. Detailed GDP by industry data were available from 1998 forward. But from 1987 to 1997, many of the income components needed to construct capital rental prices were obtained by applying 1997 SIC-to-NAICS conversion factors to SIC data and adjusting to the estimated NAICS totals. A similar procedure was applied to manufacturing inventories, energy, materials, and business services. Land data were only available from 1998 to 2004 on a NAICS basis. As a consequence, land estimates from 1987 to 1997 were calculated using a combination of SIC to NAICS conversion factors and more detailed IRS data. Data for 2005 and 2006 were extrapolated using detailed IRS data for 2004.

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/mprdownload.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*. Methods for measuring manufacturing multifactor productivity are discussed in "Measurement of productivity growth in U.S. manufacturing" in the July 1995 issue of the *Monthly Labor Review*. See <http://www.bls.gov/mfp/mprgul95.pdf>. More detailed data can be obtained from our web site at <http://www.bls.gov/mfp> or by request at 202-691-5606.

Table 1. Manufacturing sector: Productivity and related measures, 1988-2006

Percent change from previous year

Year	Productivity				Hours ²	Inputs				
	Output per hour of all persons	Output per unit of capital	Multifactor Productivity ¹	Sectoral Output		Capital Services	Energy	Materials	Purchased business services	Combined units of all Inputs ³
1988	2.1	3.4	1.7	5.2	3.0	1.7	4.0	1.4	8.9	3.4
1989	1.0	-0.6	-0.5	1.6	0.6	2.2	-0.2	1.9	6.0	2.2
1990	2.2	-3.0	-0.7	-0.3	-2.5	2.8	2.1	1.4	1.8	0.4
1991	2.6	-4.0	-0.3	-1.7	-4.2	2.4	-0.3	-0.6	-0.7	-1.4
1992	3.8	0.8	-0.6	3.3	-0.5	2.4	-0.9	8.6	7.1	3.9
1993	2.5	1.3	2.7	3.9	1.3	2.5	3.2	0.9	0.2	1.2
1994	3.5	3.1	2.7	6.0	2.4	2.8	3.1	3.9	3.7	3.1
1995	4.5	1.5	1.8	5.3	0.7	3.7	3.0	5.3	4.9	3.4
1996	3.6	-0.7	0.5	3.4	-0.2	4.1	-2.9	9.0	-0.4	2.9
1997	5.5	2.6	2.8	7.4	1.7	4.6	-1.9	8.0	4.1	4.4
1998	5.4	0.1	2.3	5.2	-0.2	5.0	-2.6	5.2	3.2	2.9
1999	4.5	-0.3	0.8	3.8	-0.7	4.1	0.1	5.0	5.3	3.0
2000	4.0	-0.4	3.5	2.7	-1.3	3.1	-5.2	-2.6	0.0	-0.7
2001	1.6	-6.5	-1.3	-5.1	-6.5	1.5	-9.4	-6.7	0.7	-3.8
2002	6.9	-1.2	3.7	-0.7	-7.1	0.6	-1.5	-5.3	-2.5	-4.2
2003	6.2	1.0	2.8	1.0	-4.9	0.0	-5.5	-0.8	0.9	-1.8
2004	2.3	2.3	2.6	1.7	-0.5	-0.6	-0.5	-0.4	-2.1	-0.9
2005	4.8	3.7	0.4	3.7	-1.1	0.0	9.1	5.9	7.8	3.3
2006	1.2	1.3	1.6	1.8	0.6	0.5	-5.5	-1.0	2.0	0.3

¹Sectoral output per unit of combined inputs.

²Hours at work of all persons.

³Combined units of capital services, hours, energy, non-energy materials, and purchased business services, superlative chained index.

Source: Output data are from the Bureau of the Census, U.S. Department of Commerce, and modified by the Bureau of Labor Statistics (BLS), U.S. Department of Labor. Compensation and hours data are from BLS. Capital measures are based on data supplied by BEA. See also Summary of Methods in this release.

Table 2. Manufacturing sector: Productivity and related measures, 1987-2006

Indexes (2000=100)

Year	Productivity				Hours ²	Inputs				
	Output per hour of all persons	Output per unit of capital	Multifactor Productivity ¹	Sectoral Output		Capital Services	Energy	Materials	Purchased business services	Combined units of all Inputs ³
1987	64.1	96.4	85.0	64.1	100.0	66.5	99.1	63.2	65.2	75.4
1988	65.4	99.7	86.4	67.4	103.1	67.6	103.1	64.1	71.0	78.0
1989	66.1	99.1	86.0	68.5	103.7	69.2	102.9	65.3	75.2	79.7
1990	67.5	96.1	85.4	68.3	101.1	71.1	105.1	66.2	76.6	80.0
1991	69.3	92.2	85.1	67.1	96.9	72.8	104.7	65.8	76.0	78.9
1992	71.9	93.0	84.6	69.3	96.4	74.5	103.7	71.5	81.5	82.0
1993	73.8	94.3	86.8	72.0	97.7	76.4	107.1	72.1	81.6	83.0
1994	76.4	97.2	89.2	76.3	100.0	78.5	110.4	74.9	84.7	85.6
1995	79.8	98.7	90.8	80.3	100.6	81.4	113.7	78.9	88.8	88.5
1996	82.7	98.0	91.2	83.1	100.4	84.8	110.4	86.0	88.5	91.1
1997	87.3	100.6	93.8	89.2	102.2	88.7	108.2	92.9	92.1	95.1
1998	92.0	100.7	95.9	93.8	101.9	93.2	105.4	97.7	95.0	97.8
1999	96.1	100.4	96.7	97.4	101.3	97.0	105.5	102.6	100.0	100.7
2000	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2001	101.6	93.5	98.7	94.9	93.5	101.5	90.6	93.3	100.7	96.2
2002	108.6	92.3	102.4	94.3	86.8	102.1	89.3	88.4	98.2	92.1
2003	115.3	93.2	105.2	95.2	82.6	102.1	84.4	87.7	99.1	90.5
2004	117.9	95.4	108.0	96.9	82.2	101.6	84.0	87.3	97.0	89.7
2005	123.5	98.9	108.4	100.4	81.3	101.5	91.6	92.4	104.5	92.7
2006	125.0	100.2	110.1	102.3	81.8	102.0	86.6	91.5	106.6	92.9

¹Sectoral output per unit of combined inputs.²Hours at work of all persons.³Combined units of capital services, hours, energy, non-energy materials, and purchased business services, superlative chained index.

Source: Output data are from the Bureau of the Census, U.S. Department of Commerce, and modified by the Bureau of Labor Statistics (BLS), U.S. Department of Labor. Compensation and hours data are from BLS. Capital measures are based on data supplied by BEA. See also Summary of Methods in this release.

Table 3. Compound average annual rates of growth in the multifactor productivity measures for manufacturing industries in selected periods. 1987-2006

Average annual percent

Industry	1987-06	1987-90	1990-95	1995-00	2000-06	2005-06
Manufacturing	1.4	0.2	1.2	2.0	1.6	1.6
<u>Nondurable manufacturing</u>	0.2	-0.6	0.7	-0.3	0.6	-0.2
Food, beverage, and tobacco products	-0.3	-1.7	1.5	-1.9	0.3	-0.5
Textile mills and textile product mills	0.9	1.0	0.7	1.3	0.8	-2.6
Apparel, leather, and allied products	1.6	0.1	2.8	0.6	2.0	2.1
Paper products	0.3	-0.4	-0.1	0.1	1.1	-1.2
Printing and related support activities	0.4	0.6	-0.3	0.3	1.1	0.6
Petroleum and coal products	0.0	-0.1	0.6	0.2	-0.6	0.7
Chemical products	-0.1	-1.0	-0.8	0.0	1.0	0.4
Plastics and rubber products	0.7	0.7	0.6	1.2	0.4	-1.9
<u>Durable manufacturing</u>	2.3	0.9	1.6	3.6	2.4	3.2
Wood products	0.3	1.0	-1.2	0.1	1.2	3.0
Nonmetallic mineral products	0.5	0.3	1.0	0.8	-0.1	-3.1
Primary metals	0.7	1.1	0.1	0.5	1.1	-0.5
Fabricated metal products	0.5	-0.1	1.0	0.1	0.7	1.8
Machinery	0.0	1.0	-1.7	-0.7	1.7	2.0
Computer and electronic products	9.6	5.6	9.6	15.9	6.7	7.6
Electrical equipment, appliances, and components	-1.0	-2.2	-2.0	-1.1	0.7	-0.7
Transportation equipment	0.4	-1.7	-0.3	0.3	2.0	4.0
Furniture and related products	0.3	-0.8	0.7	0.4	0.3	1.1
Miscellaneous manufacturing	1.4	2.4	0.3	1.7	1.6	0.7

Note: Multifactor productivity measures by industry do not sum up to aggregate manufacturing measures because industry measures exclude transactions only within the specific industry while the aggregate manufacturing measures also exclude transactions between all manufacturing industries.