News
United States Department of Labor
Bureau of Labor Statistics
Washington, D.C. 20212

Internet: http://www.bls.gov/mfp/home.htm
Technical information: (202) 691-5618
Media contact: (202) 691-5902

USDL 07-1281
For release: 10:00 a.m. EDT
Tuesday, August 21, 2007

MULTIFACTOR PRODUCTIVITY TRENDS FOR DETAILED MANUFACTURING INDUSTRIES, 2005

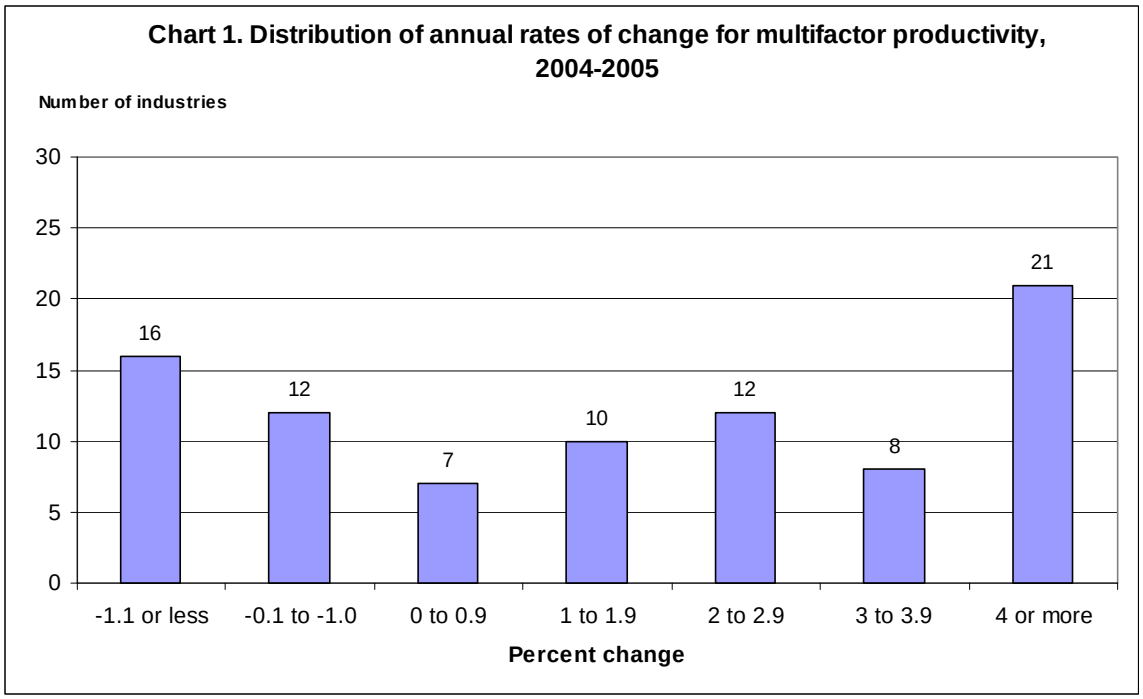
The Bureau of Labor Statistics of the U.S. Department of Labor reported today on multifactor productivity – output per unit of combined inputs – for four-digit NAICS manufacturing industries through the year 2005. Multifactor productivity rose in roughly two-thirds of the 86 detailed manufacturing industries in 2005, slightly fewer than in 2004. More industries experienced an increase in multifactor productivity over a longer period. From 1987 to 2005, multifactor productivity increased in three-quarters of the manufacturing industries.

Multifactor productivity indexes relate the change in output to the change in the combination of labor, capital, and intermediate purchases consumed in producing that output. Because industry multifactor productivity indexes explicitly account for inputs of capital and intermediates as well as labor, they are not influenced by the substitution of capital and intermediate inputs for labor, as are measures of labor productivity. Industry multifactor productivity indexes measure the joint influences on economic growth of a variety of factors, including technological change, returns to scale, enhancements in managerial and staff skills, changes in the organization of production, and other efficiency improvements.

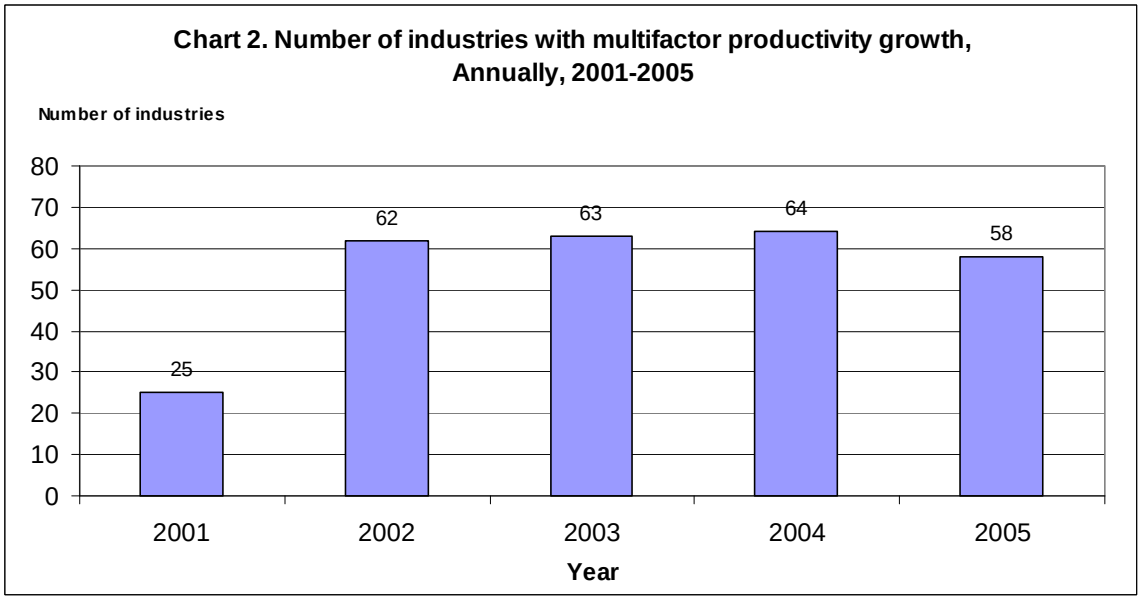
The attached tables present multifactor productivity and related series for all four-digit manufacturing industries that are based, for the first time, on the North American Industry Classification System, or NAICS. Historical data were reconstructed to reflect the switch to NAICS, and therefore these measures are not comparable with the detailed industry measures previously reported on a 1987 Standard Industrial Classification (SIC) basis.

2004-05 change

Multifactor productivity rose in 58 industries in 2005, as output rose in 71 industries and combined inputs rose in 55 industries. Changes in multifactor productivity were broadly distributed and varied greatly across industries, even within 3-digit industry groups. (See Table 1 and Chart 1.) Multifactor productivity rose by 3 percent or more in 29 industries, but declined in 28 industries in 2005.



Five industries registered double-digit growth in multifactor productivity. The largest increase in multifactor productivity, 27.6 percent, occurred in computer and peripheral equipment (NAICS 3341), followed by an increase of 18.9 percent in apparel knitting mills (NAICS 3151). Output rose rapidly in the five industries with the largest productivity increases, while combined inputs declined in all five except computer and peripheral equipment. The largest multifactor productivity decline was 10.9 percent in railroad rolling stock (NAICS 3365), where output increased but combined inputs rose much more rapidly.

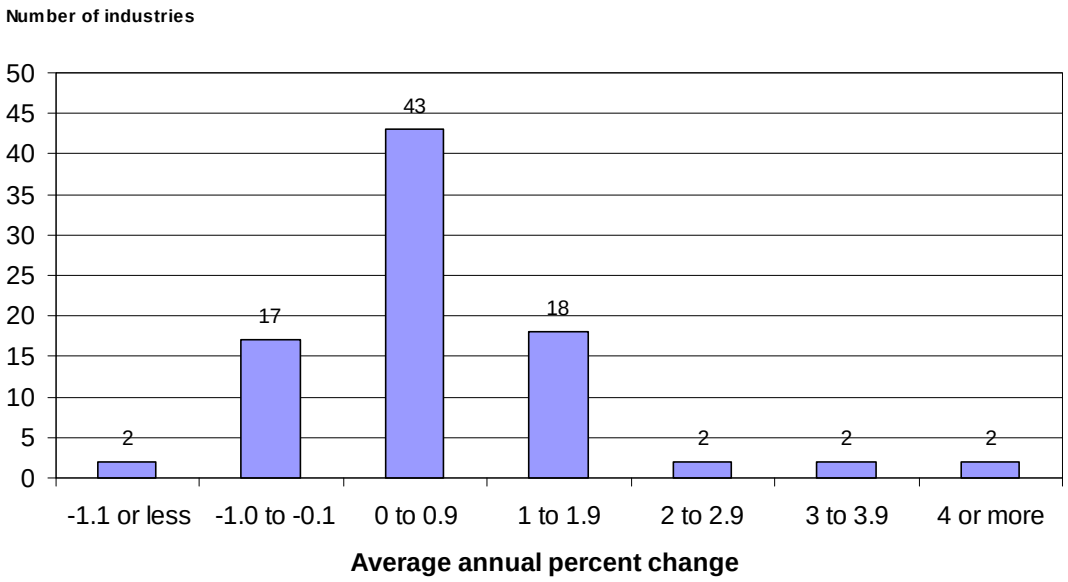


The number of industries with multifactor productivity growth each year increased greatly after 2001. (See Chart 2.) While still high compared to 2001, the 58 industries with multifactor productivity growth in 2005 represent a slight decline from the numbers that recorded growth in 2002, 2003, and 2004. Although output rose in 16 more industries in 2005 than in 2004, combined inputs increased in 19 more industries than in 2004. For most industries, input growth in 2005 was led by increases in intermediate purchases. While capital services increased in 31 industries and labor hours rose in 30 industries, intermediate purchases increased in 60 industries.

Long-term trends

From 1987 to 2005, multifactor productivity rose in 65 industries. (See Table 2.) Output rose in 69 industries while combined inputs rose in 60 industries. Although more industries registered multifactor productivity growth from 1987 to 2005 than did so in 2005, the average annual change in multifactor productivity was more modest for most industries over the long term. Multifactor productivity grew between 0 percent and 3 percent per year, on average, in 63 industries, and exceeded 3 percent per year in only four industries. (See Chart 3.)

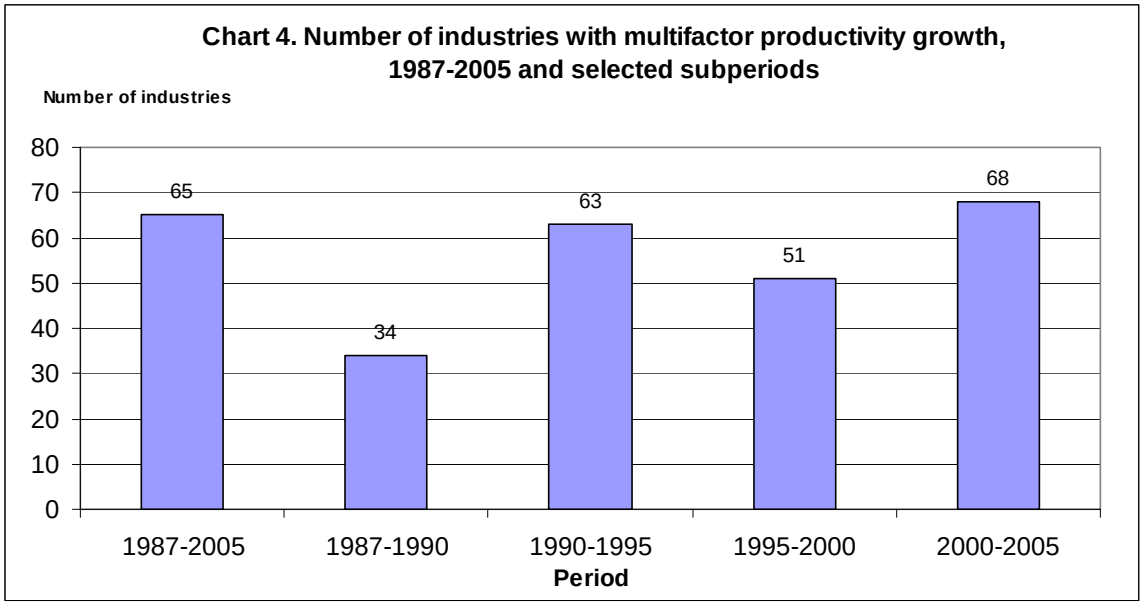
Chart 3. Distribution of annual rates of change for multifactor productivity, 1987-2005



The five manufacturing industries with the fastest growth in multifactor productivity over the period were all in the computer and electronic products subsector (NAICS 334). The multifactor productivity growth of 17.5 percent per year in computer and peripheral equipment (NAICS 3341) and 14.9 percent in semiconductors and electronic components (NAICS 3344) were much faster than for any other manufacturing industry.

Multifactor productivity declined in nineteen industries from 1987 to 2005. However, the average decline over the period was less than 1 percent per year for all but three industries. The largest decline in multifactor productivity was 1.8 percent per year in tobacco and tobacco products (NAICS 3122).

Table 3 shows average annual multifactor productivity growth by industry between 1987 and 2005 and for various subperiods. Multifactor productivity grew in more industries from 2000 to 2005 than in any of the other periods shown. (See Chart 4.) From 2000 to 2005, 68 industries recorded positive multifactor productivity growth, and 12 industries recorded average annual growth in excess of three percent. By comparison, from 1995 to 2000, 51 industries had positive multifactor productivity growth, with six industries growing at an average annual rate greater than three percent. Average annual multifactor productivity growth accelerated in 55 industries in 2000 to 2005 compared to 1995 to 2000.



Technical Note

Output

Industry output is measured as sectoral output, the total value, in real terms, of goods and services produced for sale outside the industry. For most manufacturing industries, real output is measured by deflating nominal value of production, but for a few detailed industries within the petroleum refining, cement, iron and steel, and aluminum industries it is measured by physical quantities of output. Industry value of production is derived by adjusting industry shipments for changes in inventories and subtracting intra-industry transfers and resales. Wherever possible, the indexes of industry output are calculated with a Törnqvist 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 are constructed primarily 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.

Combined Inputs

The index of combined inputs is a Törnqvist index of separate quantity measures of labor, capital, and intermediate purchases inputs. The growth rates of the various inputs are aggregated using their average relative cost shares in industry value of production as weights. The labor weight is based on the total value of labor compensation, including fringe benefits. The intermediate purchases weight is based on the total value of materials (adjusted to remove intra-industry transactions), fuels, electricity, and purchased services. The capital weight is a residual calculated as the value of net production minus the value of labor compensation minus the value of intermediate purchases.

Capital Input

The measure of capital input is based on the flow of services derived from the stock of physical assets. Physical capital is composed of 26 categories of equipment, 2 categories of structures, 3 categories of inventories, and land. Capital services are estimated by calculating capital stocks; changes in the stocks are assumed to be proportional to changes in capital services for each asset.

Capital stocks are calculated using the perpetual inventory method, which takes into account the continual additions to and subtractions from the stock of capital as new investment and retirement of old capital occur. The perpetual inventory method measures stocks at the end of a year equal to a weighted sum of all past investments, where the weights are the asset's efficiency relative to a new asset. A hyperbolic age-efficiency function is assumed to calculate the relative efficiency of an asset at different ages.

Estimates of investment by asset type are derived from annual capital expenditures by industry from the economic censuses and annual surveys of the Bureau of the Census, U.S. Department of Commerce, along with estimates of asset detail by industry from the capital flow tables of the Bureau of Economic Analysis.

Price changes are removed from the annual investment data before calculating stocks. Price deflators for each asset category are constructed by combining detailed price indexes (mostly PPIs) with weights from the BEA capital flow tables that reflect the industry's use of individual asset commodities.

The index of aggregate capital input for each industry is an annually chained Törnqvist quantity index. To construct the index, the growth rates of the stocks of each type of asset are aggregated using weights that are the average of each asset type's cost share in successive years. The asset costs are estimated by multiplying the asset stocks by implicit rental prices.

Labor Input

The industry labor input measures represent the hours of all workers in the industry. The primary source of data on employment and hours is the BLS Current Employment Statistics (CES) survey, which provides monthly data on the number of jobs held by wage and salary workers employed directly in nonfarm establishments. The CES survey also provides data on the average weekly hours of production and nonsupervisory workers in these establishments.

Data from the BLS Current Population Survey (CPS) are used to supplement the CES data. The Division of Industry Productivity Studies (DIPS) estimates the average weekly hours of nonproduction workers for each industry using data from the CPS together with the CES data. The hours of all workers are treated as homogeneous and are directly aggregated.

Intermediate Purchases Input

The measures of intermediate purchases input is constructed as a Törnqvist aggregate of separate quantities of materials, services, fuels, and electricity consumed by each industry. Except for electricity, for which direct quantity data are available, quantities are derived by deflating current-dollar values with appropriate price deflators.

Nominal values of materials, fuels and electricity and quantities of electricity consumed by each industry are obtained from economic censuses and annual surveys of the Bureau of the Census, U.S. Department of Commerce. Purchased business services are estimated using benchmark input-output tables and other annual industry data from the Bureau of Economic Analysis, U.S, Department of Commerce.

To avoid double counting, the materials estimates exclude the value of intra-industry purchases. Estimates of materials purchased from other establishments within the industry are subtracted from the gross measure of materials costs.

Constant-dollar materials consumed are derived by dividing annual current-dollar industry purchases by a weighted price deflator for each industry. Materials deflators are constructed for each industry by combining detailed producer price indexes and import price indexes from BLS using weights based on detailed commodity data from the BEA benchmark input-output tables. Aggregate price indexes to deflate purchased business services are constructed in a similar manner.

Annual total fuels consumed by each industry are also deflated with weighted price deflators. Producer price indexes for individual fuel categories are weighted together with weights reflecting detailed fuels expenditures by industry from the Energy Information Administration, U.S. Department of Energy.

Additional Information

The multifactor productivity measures in this news release include data on industry output, capital expenditures and cost of materials and fuels from the 2005 Annual Survey of Manufactures of the Bureau of the Census, U.S. Department of Commerce, along with data from the 1997 benchmark IO tables and capital flow tables of the Bureau of Economic Analysis, U.S. Department of Commerce. Employment and hours data from the BLS Current Employment Statistics survey reflect the annual benchmark revision published in February 2007. The output and labor input measures included in this release are the same as those used in the labor productivity measures for four-digit manufacturing industries released April 19, 2007.

Tables containing multifactor productivity and related indexes for the manufacturing industries included in this release are accessible on the Multifactor Productivity website at http://www.bls.gov/mfp/home.htm. More detailed data and information is available upon request by sending an email to dipsweb@bls.gov or by calling the Division of Industry Productivity Studies (202-691-5618).

 Information in this report will be made available to sensory-impaired individuals upon request. Voice phone: 202-691-5618; TDD message referral phone number: 1-800-877-8339.

Table 1. Multifactor productivity and related data for 86 industries, percent change, 2004-2005

NAICS code	Industry	2005 Employment (thousands)	Percent change, 2004-2005					
			Multifactor productivity	Output	Combined inputs	Labor	Capital	Intermediate purchases
3111	Animal food	49	6.3	8.8	2.4	-2.0	1.5	3.3
3112	Grain and oilseed milling	61	-1.0	5.9	6.9	0.2	0.0	9.6
3113	Sugar and confectionery products	79	6.4	2.5	-3.7	-7.7	-0.2	-4.2
3114	Fruit and vegetable preserving and specialty	174	-1.3	0.2	1.5	-4.2	0.8	3.1
3115	Dairy products	132	2.0	5.3	3.2	3.2	1.4	3.6
3116	Animal slaughtering and processing	504	2.1	5.2	3.0	-3.3	2.4	4.3
3117	Seafood product preparation and packaging	41	2.1	5.1	2.9	-8.4	-0.1	6.0
3118	Bakeries and tortilla manufacturing	280	-0.1	0.9	1.0	-0.5	0.0	2.0
3119	Other food products	159	-1.4	0.1	1.6	3.5	0.5	1.7
3121	Beverages	167	3.6	5.2	1.5	0.6	0.7	2.1
3122	Tobacco and tobacco products	25	7.0	4.5	-2.3	-7.5	-3.5	-0.6
3131	Fiber, yarn, and thread mills	50	-1.3	-3.4	-2.2	-1.1	-4.4	-2.1
3132	Fabric mills	104	8.2	-3.0	-10.3	-10.7	-4.7	-11.4
3133	Textile and fabric finishing mills	63	8.1	1.9	-5.7	-7.0	-4.5	-5.6
3141	Textile furnishings mills	96	1.1	5.6	4.5	-4.4	-2.1	8.8
3149	Other textile product mills	74	4.8	4.6	-0.2	-1.5	0.3	0.3
3151	Apparel knitting mills	37	18.9	11.0	-6.7	-10.2	-4.2	-6.1
3152	Cut and sew apparel	200	2.5	-6.7	-9.0	-10.5	-3.9	-11.6
3159	Accessories and other apparel	21	2.1	6.5	4.2	-7.5	-4.4	13.8
3161	Leather and hide tanning and finishing	7	-7.5	-0.7	7.4	-10.0	-3.1	14.5
3162	Footwear	18	-1.9	2.2	4.1	-4.4	-3.4	9.6
3169	Other leather products	15	10.8	10.1	-0.6	-3.5	1.2	-0.3
3211	Sawmills and wood preservation	119	2.9	7.7	4.6	-0.5	0.3	6.8
3212	Plywood and engineered wood products	123	1.3	8.1	6.7	0.8	2.7	10.3
3219	Other wood products	317	-0.7	5.4	6.2	0.2	3.0	9.6
3221	Pulp, paper, and paperboard mills	142	2.4	0.0	-2.3	-0.6	-3.6	-2.1
3222	Converted paper products	343	1.7	0.8	-0.8	-1.2	-0.9	-0.7
3231	Printing and related support activities	646	3.8	2.3	-1.4	-2.2	1.1	-2.2
3241	Petroleum and coal products	112	0.7	0.2	-0.5	-0.1	1.6	-1.0
3251	Basic chemicals	150	4.5	-0.7	-5.0	-6.0	-2.5	-5.6
3252	Resin, rubber, and artificial fibers	108	2.1	3.8	1.6	-1.0	-2.6	3.0
3253	Agricultural chemicals	40	13.3	9.6	-3.3	-4.1	-2.0	-4.0
3254	Pharmaceuticals and medicines	288	1.5	0.8	-0.6	-2.7	2.9	-5.6
3255	Paints, coatings, and adhesives	68	4.2	1.3	-2.8	-2.3	-2.4	-3.0
3256	Soaps, cleaning compounds, and toiletries	114	17.7	7.7	-8.5	-4.5	0.5	-17.4
3259	Other chemical products and preparations	104	2.6	-1.2	-3.7	-3.0	-3.1	-4.2
3261	Plastics products	635	-0.4	1.2	1.7	-1.5	0.7	3.2
3262	Rubber products	169	0.5	0.8	0.3	-3.4	-0.3	2.3
3271	Clay products and refractories	62	4.6	2.9	-1.6	-3.5	-1.0	-0.7
3272	Glass and glass products	108	2.3	0.3	-1.9	-6.9	-1.9	1.2
3273	Cement and concrete products	240	0.2	4.8	4.6	2.1	1.6	7.8
3274	Lime and gypsum products	20	5.0	7.4	2.3	-4.2	1.0	5.2
3279	Other nonmetallic mineral products	76	1.9	5.6	3.7	-1.2	0.5	8.7
3311	Iron and steel mills and ferroalloy production	96	-2.9	-1.9	1.0	0.7	-2.4	2.9
3312	Steel products from purchased steel	61	-1.8	4.2	6.1	2.0	-2.2	10.3
3313	Alumina and aluminum production	73	2.1	11.4	9.1	-0.6	-2.4	14.9
3314	Other nonferrous metal production	72	-9.0	1.5	11.5	2.0	-3.2	17.7
3315	Foundries	164	-0.1	1.4	1.5	-1.8	-1.0	4.8

Table 1. Multifactor productivity and related data for 86 industries, percent change, 2004-2005-Continued

NAICS code	Industry	2005 Employment (thousands)	Percent change, 2004-2005					
			Multifactor productivity	Output	Combined inputs	Labor	Capital	Intermediate purchases
3321	Forging and stamping	111	-0.7	4.2	5.0	0.9	0.4	8.8
3322	Cutlery and hand tools	56	3.0	2.7	-0.2	-5.0	-2.5	3.9
3323	Architectural and structural metals	398	-0.1	6.8	6.9	4.2	2.2	10.2
3324	Boilers, tanks, and shipping containers	91	-3.2	-0.4	2.9	-0.9	-0.3	5.0
3325	Hardware	36	1.8	-4.5	-6.3	-9.2	-2.4	-6.7
3326	Spring and wire products	59	3.1	2.7	-0.4	-6.0	-0.7	2.6
3327	Machine shops and threaded products	345	-0.7	5.3	6.0	4.6	1.4	9.6
3328	Coating, engraving, and heat treating metals	145	6.2	9.7	3.3	1.1	-1.4	6.1
3329	Other fabricated metal products	282	0.9	2.1	1.2	0.8	-1.2	2.8
3331	Agriculture, construction, and mining machinery	208	0.9	12.5	11.5	7.8	0.6	15.3
3332	Industrial machinery	124	-5.4	-2.1	3.5	1.6	-1.2	5.8
3333	Commercial and service industry machinery	111	-0.2	0.6	0.8	-5.6	-3.2	4.6
3334	HVAC and commercial refrigeration equipment	153	-1.6	4.5	6.3	0.9	0.8	10.0
3335	Metalworking machinery	202	3.5	7.2	3.6	-0.8	-1.7	8.1
3336	Turbine and power transmission equipment	98	-2.1	9.2	11.5	5.2	-1.5	15.7
3339	Other general purpose machinery	268	1.1	8.8	7.7	0.9	-0.2	13.0
3341	Computer and peripheral equipment	205	27.6	28.0	0.3	-7.5	-6.6	2.0
3342	Communications equipment	147	5.7	-1.7	-7.0	1.0	-15.1	-7.7
3343	Audio and video equipment	32	-0.4	0.4	0.8	0.4	-0.6	1.0
3344	Semiconductors and electronic components	452	8.9	6.6	-2.1	-0.4	-0.5	-4.0
3345	Electronic instruments	436	-1.0	1.2	2.2	5.3	0.1	1.2
3346	Magnetic media manufacturing and reproduction	35	6.5	-3.2	-9.1	-3.9	-4.6	-11.4
3351	Electric lighting equipment	61	4.9	4.2	-0.7	-4.3	-1.4	1.5
3352	Household appliances	85	3.4	-0.4	-3.7	-3.7	-3.1	-3.9
3353	Electrical equipment	152	-1.4	1.5	3.0	-3.6	-2.2	8.2
3359	Other electrical equipment and components	136	1.5	3.7	2.1	-1.5	-3.3	5.9
3361	Motor vehicles	248	1.3	-0.2	-1.6	-3.6	-1.5	-1.4
3362	Motor vehicle bodies and trailers	171	0.4	6.0	5.6	2.8	3.4	6.7
3363	Motor vehicle parts	678	2.8	1.3	-1.5	-3.2	-4.1	-0.6
3364	Aerospace products and parts	455	0.7	16.2	15.4	4.4	1.2	29.0
3365	Railroad rolling stock	27	-10.9	3.2	15.9	12.2	-3.5	19.0
3366	Ship and boat building	153	-3.7	2.5	6.3	6.7	-0.9	8.7
3369	Other transportation equipment	40	3.1	9.9	6.5	1.1	3.1	8.5
3371	Household and institutional furniture	380	1.8	4.2	2.4	-2.4	0.5	5.6
3372	Office furniture and fixtures	133	-0.1	3.6	3.8	-0.7	-1.4	8.6
3379	Other furniture-related products	52	-1.4	2.0	3.4	0.4	-0.2	5.9
3391	Medical equipment and supplies	305	7.1	10.9	3.5	2.9	3.8	3.8
3399	Other miscellaneous manufacturing	348	3.2	4.4	1.2	-3.4	2.4	3.4

Table 2. Multifactor productivity and related data for 86 industries, average annual percent change, 1987-2005

NAICS code	Industry	Average annual percent change, 1987-2005					
		Multifactor productivity	Output	Combined inputs	Labor	Capital	Intermediate purchases
3111	Animal food	1.0	2.5	1.5	-1.3	2.5	1.6
3112	Grain and oilseed milling	-0.2	1.8	2.0	-1.2	1.4	2.4
3113	Sugar and confectionery products	0.5	1.2	0.7	-1.0	1.7	0.8
3114	Fruit and vegetable preserving and specialty	0.1	1.6	1.5	-0.4	1.9	1.8
3115	Dairy products	-0.2	1.0	1.2	-0.5	2.1	1.3
3116	Animal slaughtering and processing	0.9	2.4	1.4	1.3	2.9	1.3
3117	Seafood product preparation and packaging	0.4	1.1	0.7	-1.2	1.3	1.0
3118	Bakeries and tortilla manufacturing	-0.8	0.8	1.7	0.0	2.3	2.3
3119	Other food products	0.4	2.1	1.7	1.2	1.5	2.0
3121	Beverages	0.5	1.8	1.3	-0.6	1.0	1.8
3122	Tobacco and tobacco products	-1.8	-2.0	-0.3	-3.4	-1.7	2.0
3131	Fiber, yarn, and thread mills	0.9	0.1	-0.8	-4.3	-0.3	0.2
3132	Fabric mills	1.1	-1.5	-2.6	-5.8	-0.9	-1.6
3133	Textile and fabric finishing mills	0.8	-1.3	-2.1	-3.6	-0.8	-2.0
3141	Textile furnishings mills	0.4	1.1	0.7	-1.1	0.1	1.4
3149	Other textile product mills	0.4	0.9	0.5	-0.9	2.0	0.8
3151	Apparel knitting mills	0.7	-3.9	-4.6	-6.3	-1.2	-4.9
3152	Cut and sew apparel	-0.5	-5.1	-4.7	-7.6	-1.5	-5.0
3159	Accessories and other apparel	-1.5	-4.2	-2.7	-3.2	-0.6	-3.0
3161	Leather and hide tanning and finishing	-1.0	-3.5	-2.6	-4.2	-1.2	-2.8
3162	Footwear	-0.6	-6.8	-6.2	-8.5	-2.9	-5.6
3169	Other leather products	1.2	-2.4	-3.6	-4.8	-1.5	-3.7
3211	Sawmills and wood preservation	0.5	1.4	0.8	-1.4	0.2	1.5
3212	Plywood and engineered wood products	-0.2	1.6	1.7	1.0	2.1	2.1
3219	Other wood products	-0.2	1.0	1.2	-0.1	1.7	1.7
3221	Pulp, paper, and paperboard mills	0.8	0.3	-0.5	-3.0	0.5	-0.1
3222	Converted paper products	0.1	0.7	0.6	-0.7	1.7	0.7
3231	Printing and related support activities	0.0	0.3	0.3	-0.8	2.6	0.0
3241	Petroleum and coal products	1.1	1.3	0.2	-1.8	1.2	0.2
3251	Basic chemicals	-0.7	0.5	1.2	-2.5	1.1	1.9
3252	Resin, rubber, and artificial fibers	0.5	1.3	0.7	-1.5	1.5	0.9
3253	Agricultural chemicals	1.8	1.5	-0.3	-1.3	-0.9	0.3
3254	Pharmaceuticals and medicines	-0.8	4.0	4.8	2.8	5.9	4.3
3255	Paints, coatings, and adhesives	0.0	0.7	0.6	-1.1	0.9	1.0
3256	Soaps, cleaning compounds, and toiletries	1.1	2.7	1.7	-0.6	2.5	1.4
3259	Other chemical products and preparations	-0.1	0.6	0.7	-2.1	1.1	1.5
3261	Plastics products	0.7	3.2	2.5	0.4	4.0	2.8
3262	Rubber products	1.0	1.4	0.4	-1.2	0.9	1.1
3271	Clay products and refractories	0.9	-0.2	-1.1	-1.8	-0.2	-1.0
3272	Glass and glass products	1.1	0.8	-0.3	-1.4	1.3	-0.5
3273	Cement and concrete products	0.6	2.0	1.3	1.3	1.3	1.3
3274	Lime and gypsum products	0.1	0.7	0.6	-0.9	1.0	0.7
3279	Other nonmetallic mineral products	1.3	1.5	0.2	-0.5	0.4	0.5
3311	Iron and steel mills and ferroalloy production	1.9	1.9	-0.1	-3.1	-1.7	1.8
3312	Steel products from purchased steel	0.2	0.1	-0.1	-0.6	-1.4	0.5
3313	Alumina and aluminum production	0.9	0.7	-0.2	-2.2	0.0	0.4
3314	Other nonferrous metal production	-0.4	-0.8	-0.4	-2.1	-0.5	0.0
3315	Foundries	0.9	1.1	0.2	-1.4	0.2	1.3

Table 2. Multifactor productivity and related data for 86 industries, average annual percent change, 1987-2005-Continued

NAICS code	Industry	Average annual percent change, 1987-2005					
		Multifactor productivity	Output	Combined inputs	Labor	Capital	Intermediate purchases
3321	Forging and stamping	1.0	2.0	1.0	-1.1	1.9	1.8
3322	Cutlery and hand tools	-0.2	-0.1	0.2	-1.7	0.7	1.2
3323	Architectural and structural metals	0.3	1.8	1.6	0.7	1.3	2.0
3324	Boilers, tanks, and shipping containers	0.4	-0.5	-1.0	-1.0	0.0	-1.2
3325	Hardware	0.1	-1.0	-1.2	-3.2	0.2	-0.6
3326	Spring and wire products	1.2	1.6	0.4	-1.6	1.5	1.2
3327	Machine shops and threaded products	1.2	3.3	2.1	1.0	2.9	2.7
3328	Coating, engraving, and heat treating metals	1.7	3.6	1.9	0.3	2.6	2.8
3329	Other fabricated metal products	0.1	0.3	0.2	-0.9	0.8	0.8
3331	Agriculture, construction, and mining machinery	0.7	3.2	2.4	0.0	-0.2	3.8
3332	Industrial machinery	0.4	1.9	1.5	-0.8	2.7	2.4
3333	Commercial and service industry machinery	-0.4	-0.3	0.1	-1.8	0.6	1.0
3334	HVAC and commercial refrigeration equipment	0.9	2.4	1.5	-0.4	1.8	2.1
3335	Metalworking machinery	0.7	0.8	0.1	-1.4	1.3	1.2
3336	Turbine and power transmission equipment	-0.2	2.1	2.2	-0.7	0.9	3.7
3339	Other general purpose machinery	0.5	1.9	1.4	-0.9	0.7	2.7
3341	Computer and peripheral equipment	17.5	19.5	1.6	-4.1	1.4	3.3
3342	Communications equipment	3.6	4.8	1.1	-2.5	2.9	2.3
3343	Audio and video equipment	2.9	4.2	1.3	-3.3	1.2	2.3
3344	Semiconductors and electronic components	14.9	17.2	2.0	-1.5	6.9	1.3
3345	Electronic instruments	1.0	1.4	0.4	-2.4	0.7	2.6
3346	Magnetic media manufacturing and reproduction	3.8	2.8	-1.0	-0.1	2.3	-1.6
3351	Electric lighting equipment	0.6	0.5	-0.1	-1.6	0.7	0.2
3352	Household appliances	2.0	2.0	0.0	-2.5	0.4	0.7
3353	Electrical equipment	0.3	0.0	-0.3	-2.9	-0.4	1.2
3359	Other electrical equipment and components	0.4	0.3	-0.1	-2.1	0.7	0.3
3361	Motor vehicles	0.1	2.5	2.4	-1.2	1.6	3.0
3362	Motor vehicle bodies and trailers	-0.1	3.0	3.0	1.3	2.3	3.6
3363	Motor vehicle parts	1.5	3.8	2.2	0.3	2.0	3.0
3364	Aerospace products and parts	-0.7	-1.2	-0.5	-3.2	-0.1	1.1
3365	Railroad rolling stock	0.6	4.8	4.2	0.3	-0.7	6.0
3366	Ship and boat building	0.3	1.1	0.7	-0.8	-0.2	2.0
3369	Other transportation equipment	1.6	5.5	3.8	0.3	3.1	5.0
3371	Household and institutional furniture	0.7	1.6	0.9	-0.4	1.7	1.5
3372	Office furniture and fixtures	0.5	1.7	1.2	-0.9	2.1	2.1
3379	Other furniture-related products	0.8	2.6	1.8	0.6	0.9	2.5
3391	Medical equipment and supplies	1.8	4.8	3.0	1.0	5.4	2.9
3399	Other miscellaneous manufacturing	0.9	2.0	1.1	-0.7	2.0	1.8

Table 3. Multifactor productivity trends, 1987-2005 and selected subperiods

NAICS code	Industry	Average annual percent change					
		1987-2005	1987-90	1990-95	1995-00	2000-05	2004-05
3111	Animal food	1.0	0.4	0.6	-1.5	4.2	6.3
3112	Grain and oilseed milling	-0.2	0.1	0.6	-1.2	-0.2	-1.0
3113	Sugar and confectionery products	0.5	-0.3	0.6	0.6	0.8	6.4
3114	Fruit and vegetable preserving and specialty	0.1	-2.6	1.3	0.1	0.7	-1.3
3115	Dairy products	-0.2	-0.3	-0.5	-1.0	1.0	2.0
3116	Animal slaughtering and processing	0.9	-1.0	1.3	0.8	1.8	2.1
3117	Seafood product preparation and packaging	0.4	-1.4	0.2	0.1	2.0	2.1
3118	Bakeries and tortilla manufacturing	-0.8	-4.9	0.4	-1.0	0.5	-0.1
3119	Other food products	0.4	0.0	0.7	-0.8	1.5	-1.4
3121	Beverages	0.5	0.4	1.0	-2.2	2.9	3.6
3122	Tobacco and tobacco products	-1.8	-1.8	0.9	-2.9	-3.3	7.0
3131	Fiber, yarn, and thread mills	0.9	0.0	0.5	-0.1	2.8	-1.3
3132	Fabric mills	1.1	-0.1	1.4	0.3	2.4	8.2
3133	Textile and fabric finishing mills	0.8	-0.1	0.0	1.2	1.9	8.1
3141	Textile furnishings mills	0.4	-0.7	1.2	-0.9	1.4	1.1
3149	Other textile product mills	0.4	-1.0	-0.4	0.4	2.1	4.8
3151	Apparel knitting mills	0.7	0.9	2.0	-2.4	2.6	18.9
3152	Cut and sew apparel	-0.5	-1.2	0.5	-0.7	-0.9	2.5
3159	Accessories and other apparel	-1.5	1.0	0.4	-3.8	-2.6	2.1
3161	Leather and hide tanning and finishing	-1.0	-3.6	-0.5	4.3	-5.0	-7.5
3162	Footwear	-0.6	-1.8	0.3	-0.7	-0.8	-1.9
3169	Other leather products	1.2	0.2	-3.2	3.1	4.4	10.8
3211	Sawmills and wood preservation	0.5	2.4	0.4	-0.8	0.9	2.9
3212	Plywood and engineered wood products	-0.2	-0.6	-0.1	-0.3	0.2	1.3
3219	Other wood products	-0.2	-0.8	-1.0	-0.1	1.0	-0.7
3221	Pulp, paper, and paperboard mills	0.8	-1.6	-0.2	1.3	2.6	2.4
3222	Converted paper products	0.1	-0.6	-0.2	0.0	1.0	1.7
3231	Printing and related support activities	0.0	-0.2	-0.4	-0.4	0.9	3.8
3241	Petroleum and coal products	1.1	-1.8	1.8	2.2	1.1	0.7
3251	Basic chemicals	-0.7	-0.7	-3.2	-1.6	2.8	4.5
3252	Resin, rubber, and artificial fibers	0.5	-0.7	1.4	-0.1	1.1	2.1
3253	Agricultural chemicals	1.8	2.2	1.2	-1.5	5.7	13.3
3254	Pharmaceuticals and medicines	-0.8	-1.7	-2.4	-1.0	1.7	1.5
3255	Paints, coatings, and adhesives	0.0	-1.9	-0.7	-0.7	2.7	4.2
3256	Soaps, cleaning compounds, and toiletries	1.1	-1.4	0.3	-1.2	5.7	17.7
3259	Other chemical products and preparations	-0.1	-1.6	0.2	0.8	-0.3	2.6
3261	Plastics products	0.7	-0.8	1.1	1.1	0.8	-0.4
3262	Rubber products	1.0	1.4	1.3	1.2	0.2	0.5
3271	Clay products and refractories	0.9	0.7	1.6	0.6	0.7	4.6
3272	Glass and glass products	1.1	-0.2	1.7	2.2	0.1	2.3
3273	Cement and concrete products	0.6	0.5	0.4	0.9	0.6	0.2
3274	Lime and gypsum products	0.1	-1.4	-2.4	0.7	2.8	5.0
3279	Other nonmetallic mineral products	1.3	-1.3	2.0	0.3	3.2	1.9
3311	Iron and steel mills and ferroalloy production	1.9	1.4	2.0	2.7	1.4	-2.9
3312	Steel products from purchased steel	0.2	1.1	2.4	0.8	-3.1	-1.8
3313	Alumina and aluminum production	0.9	-0.2	-0.6	0.6	3.2	2.1
3314	Other nonferrous metal production	-0.4	-1.6	1.6	0.9	-2.8	-9.0
3315	Foundries	0.9	0.2	1.5	1.3	0.5	-0.1

Table 3. Multifactor productivity trends, 1987-2005 and selected subperiods -Continued

NAICS code	Industry	Average annual percent change					
		1987-2005	1987-90	1990-95	1995-00	2000-05	2004-05
3321	Forging and stamping	1.0	-0.5	1.1	1.7	1.0	-0.7
3322	Cutlery and hand tools	-0.2	-1.4	1.0	-0.1	-0.9	3.0
3323	Architectural and structural metals	0.3	-0.9	0.9	0.7	-0.1	-0.1
3324	Boilers, tanks, and shipping containers	0.4	0.9	1.5	0.3	-0.8	-3.2
3325	Hardware	0.1	-2.2	0.7	0.5	0.5	1.8
3326	Spring and wire products	1.2	0.0	1.4	0.6	2.2	3.1
3327	Machine shops and threaded products	1.2	1.0	3.0	0.7	0.2	-0.7
3328	Coating, engraving, and heat treating metals	1.7	0.9	2.1	-0.1	3.5	6.2
3329	Other fabricated metal products	0.1	-1.7	0.3	-0.7	1.7	0.9
3331	Agriculture, construction, and mining machinery	0.7	2.4	-0.1	-1.1	2.4	0.9
3332	Industrial machinery	0.4	0.2	1.6	1.2	-1.3	-5.4
3333	Commercial and service industry machinery	-0.4	0.9	-0.5	-0.6	-1.1	-0.2
3334	HVAC and commercial refrigeration equipment	0.9	-0.2	0.7	0.8	1.8	-1.6
3335	Metalworking machinery	0.7	0.1	1.3	-0.6	1.7	3.5
3336	Turbine and power transmission equipment	-0.2	-0.6	0.0	1.5	-1.6	-2.1
3339	Other general purpose machinery	0.5	0.4	0.0	0.5	0.9	1.1
3341	Computer and peripheral equipment	17.5	5.7	13.6	27.3	19.6	27.6
3342	Communications equipment	3.6	3.8	4.4	6.5	0.0	5.7
3343	Audio and video equipment	2.9	3.8	2.3	2.2	3.8	-0.4
3344	Semiconductors and electronic components	14.9	7.2	18.2	23.6	8.3	8.9
3345	Electronic instruments	1.0	1.6	0.3	-0.3	2.7	-1.0
3346	Magnetic media manufacturing and reproduction	3.8	1.3	6.0	-0.8	8.0	6.5
3351	Electric lighting equipment	0.6	-1.7	0.2	0.7	2.4	4.9
3352	Household appliances	2.0	-0.4	2.5	1.0	4.0	3.4
3353	Electrical equipment	0.3	0.5	1.9	-1.8	0.7	-1.4
3359	Other electrical equipment and components	0.4	-1.7	1.2	1.9	-0.4	1.5
3361	Motor vehicles	0.1	0.2	-1.3	0.0	1.6	1.3
3362	Motor vehicle bodies and trailers	-0.1	-2.9	2.2	-1.2	0.4	0.4
3363	Motor vehicle parts	1.5	-0.8	2.3	1.1	2.5	2.8
3364	Aerospace products and parts	-0.7	-2.7	-1.5	0.1	0.6	0.7
3365	Railroad rolling stock	0.6	2.2	-1.2	5.1	-3.0	-10.9
3366	Ship and boat building	0.3	0.0	-2.0	2.3	0.8	-3.7
3369	Other transportation equipment	1.6	-1.6	4.3	0.8	1.7	3.1
3371	Household and institutional furniture	0.7	-0.4	0.8	0.2	1.8	1.8
3372	Office furniture and fixtures	0.5	-2.6	0.3	1.8	1.4	-0.1
3379	Other furniture-related products	0.8	0.1	0.7	0.3	1.9	-1.4
3391	Medical equipment and supplies	1.8	2.3	0.3	2.5	2.3	7.1
3399	Other miscellaneous manufacturing	0.9	1.2	0.6	0.7	1.2	3.2