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USDL 06-1201  
FOR RELEASE: 10:00 a.m. EDT  
WEDNESDAY, JULY 12, 2006

## PRODUCTIVITY AND COSTS BY INDUSTRY SELECTED SERVICE-PROVIDING AND MINING INDUSTRIES, 2004

The Bureau of Labor Statistics of the U.S. Department of Labor reported today on productivity and costs for selected service-providing and mining industries. Labor productivity – defined as output per hour – rose in 2004 in 26 of the 39 industries studied here. Output increased in 31 industries and hours declined in 18 industries. Unit labor costs declined in 13 of the 39 industries measured. Of these, 12 were industries that recorded productivity gains.

From 1987 to 2004, labor productivity increased in 34 of the 39 industries. Output rose in 34 industries, while hours decreased in 15 industries. Unit labor costs fell in nine of the industries measured.

### **2003-2004 change**

Labor productivity rose in 2004 in two-thirds of the 39 detailed service-providing and mining industries studied. (See table 1.) Seven industries recorded productivity growth in excess of 10 percent. In 2004, many of the service-providing and mining industries studied increased output, employment, and labor hours. While a larger share of industries than in the previous year recorded output increases in 2004, the share of industries with increases in labor hours also rose, resulting in a drop from the previous year in the share of industries with productivity gains. At the same time, labor compensation increased more rapidly than output in many industries, which contributed to a rising share of industries with increases in unit labor costs. (See table 2.)

Of the four largest industries studied, those with employment of over a million persons, three had productivity increases in 2004. Productivity rose 7.8 percent in automotive repair (NAICS 8111), 5.3 percent in commercial banking (NAICS 52211), and 5.7 percent in travel accommodations (NAICS 7211), while productivity in janitorial services (NAICS 56172) fell 1.4 percent. The three industries with productivity gains had essentially flat or declining unit labor costs during the year, while unit labor costs in the janitorial services industry increased 3.2 percent.

Output per hour in the mining sector fell 7.7 percent, and only one of four detailed mining industries registered productivity growth. Productivity rose 4.1 percent in nonmetallic mineral mining and quarrying (NAICS 2123), but fell 13.7 percent in the oil and gas extraction industry (NAICS 211). Unit labor costs, which reflect the total labor costs required to produce a unit of output, increased 12.4 percent in the mining sector as a whole. Growth in unit labor costs was especially strong in the oil and gas extraction industry, rising 16.4 percent.

Productivity increased in 2004 in both of the detailed utilities industries covered. Output per hour grew 2.2 percent in power generation and supply (NAICS 2211) and 3.9 percent in natural gas distribution (NAICS 2212). Output was little changed in either industry over the year, but labor hours fell 2.7 percent in power generation and supply and 3.6 percent in natural gas distribution. Unit labor costs increased 4.6 percent in the power generation and supply industry and 6.9 percent in the natural gas distribution industry.

Four of the six transportation and warehousing industries covered increased output per hour in 2004. The strongest growth occurred in air transportation (NAICS 481). Labor productivity increased 11.4 percent in this industry, as output increased and hours remained flat. A productivity decline of 5.7 percent in the couriers and messengers industry (NAICS 492) was the only substantial drop in productivity in the sector. Unit labor costs declined in two of the six transportation industries. Air transportation (NAICS 481) was the only industry in the group to have a considerable decline in unit labor costs, 10.7 percent.

Productivity increased in 2004 in six of the eight information industries covered. Double-digit productivity growth occurred in software publishers (NAICS 5112), at 17.0 percent, wireless telecommunications carriers (NAICS 5172), at 19.1 percent, and cable and other program distribution (NAICS 5175), at 12.4 percent. Unit labor costs declined in three information industries, with the largest drop, 15.5 percent, occurring in the software publishers industry.

Labor productivity rose in 2004 in 13 of the 19 other service-providing industries for which BLS maintains measures. Of these industries, the truck, utility trailer, and RV rental and leasing industry (NAICS 53212) recorded the largest productivity increase, 18.3 percent. Advertising agencies (NAICS 54181) and travel agencies (NAICS 56151) also had productivity gains exceeding 10 percent. Productivity fell 11.6 percent in the portrait photography studios industry (NAICS 541921). In 2004, unit labor costs declined in eight of the 19 measured industries in this group.

### **Long-term trends**

Between 1987 and 2004, productivity increased in 34 of the 39 detailed industries studied. (See table 1). Output increased in all but five industries over the period, and labor hours declined in 15 industries. Unit labor costs declined in nine industries, all of which registered productivity increases. (See table 2.)

Productivity in the mining sector grew 1.3 percent per year from 1987 to 2004. All four detailed mining industries recorded productivity gains. While output trends varied by industry, employment and labor hours fell for the sector as a whole and for all four individual mining industries. Unit labor costs in the sector increased at an average rate of 3.2 percent per year.

Output per hour increased between 1987 and 2004 in the two utilities industries covered by the BLS measures. Productivity growth in power generation and supply (NAICS 2211) and natural gas distribution (NAICS 2212) averaged 2.9 percent per year and 3.3 percent per year, respectively. In both utilities industries, output increased and employment and labor hours fell over the period. Unit labor costs increased at an average rate of about 2 percent per year in both industries.

Between 1987 and 2004, productivity increased in four of the six transportation and warehousing industries for which BLS maintains measures. Line-haul railroads (NAICS 482111), the only measured industry in this sector where hours declined over the period, led productivity growth with an average increase of 5.5 percent per year. Unit labor costs increased in most of the transportation and warehousing industries over the period, but declined in line-haul railroads.

Productivity rose between 1987 and 2004 in seven of the eight information industries presented here. Output per hour expanded rapidly in the software publishing industry (NAICS 5112), averaging 17.7 percent per year. Both wired and wireless telecommunications carriers (NAICS 5171 and 5172) registered average annual productivity growth of 5.0 percent per year or more. Output growth of over 20 percent per year in software publishing and wireless telecommunications carriers contributed to the strong productivity growth in those industries. On the other hand, productivity growth was essentially flat in the newspaper, periodical, book, and directory publishers industry (NAICS 5111), and productivity edged down over the period in the radio and television broadcasting industry (NAICS 5151). Unit labor costs declined between 1987 and 2004 only in the information industries with strong productivity growth – software publishers (NAICS 5112) and wired and wireless telecommunications carriers (NAICS 5171 and 5172).

Output per hour grew over the long term in 17 of the 19 other service-providing industries covered, including medical laboratories (NAICS 621511) and diagnostic imaging centers (NAICS 621512) for which data begin in 1994 (1994-2004 average annual percent changes represent the long-term growth rates for these industries). In this group of industries, productivity growth was modest, with only seven industries recording average productivity increases of 2.5 percent per year or more. Productivity gains for many of the industries in this group resulted from output growth in excess of labor hours growth. In contrast, the small productivity gain in the photofinishing industry (NAICS 81292) resulted from a 4.0 percent per year decline in labor hours that exceeded a 3.6 percent per year decline in output. Unit labor costs increased between 1987 and 2004 in all but four of the industries in this group.

## **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. 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 service-providing and mining industries 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. Other data sources include the United States Geological Survey of the U.S. Department of the Interior, the U.S. Department of Energy, the U.S. Department of Transportation, the U.S. Postal Service, and the Postal Rate Commission.

### **Labor Hours**

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 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 Current Population Survey (CPS) are used to supplement the CES data. The Office of Productivity and Technology (OPT) estimates the average weekly hours of supervisory and nonproduction workers by industry using data from the CPS together with the CES data. CPS data are also used to estimate the employment and hours of self-employed and unpaid family workers in most of the service-providing industries. The hours of nonsupervisory workers, supervisory workers, and self-employed and unpaid family workers are treated as homogeneous and are directly aggregated.

Other sources of employment and hours data for service industries include the American Association of Railroads, the U.S. Department of Transportation, and the U.S. Postal Service.

### **Unit Labor Costs**

The unit labor cost series represents the cost of labor input required to produce one unit of output. The indexes of unit labor costs for each industry are computed by dividing an index of industry labor compensation by an index of industry output. Compensation, defined as payroll plus supplemental payments, is a measure of the cost to

the employer of securing the services of labor. Payroll includes salaries, wages, commissions, dismissal pay, bonuses, vacation and sick leave pay, and compensation in kind. Supplemental payments include legally required expenditures and payments for voluntary programs. The legally required portion consists primarily of Federal old age and survivors' insurance, unemployment compensation, and workers' compensation. Payments for voluntary programs include all programs not specifically required by legislation, such as the employer portion of private health insurance and pension plans.

### **Labor Productivity**

The industry labor productivity measures describe the relationship between output and the labor time involved in its production. They show the changes from period to period in the amount of goods and services produced per hour. Industry output per hour indexes are prepared from data published by various public and private agencies, using the greatest level of industry detail available.

Although the labor productivity measures relate output to hours of employees or all persons engaged in an industry, they do not measure the specific contribution of labor, capital, or any other factor of production. Rather, they reflect the joint effects of many influences, including changes in technology; capital investment; level of output; utilization of capacity, energy, and materials; the organization of production; managerial skill; and the characteristics and effort of the workforce.

Year-to-year movements in productivity measures for some industries might be erratic, particularly in the smaller industries. The annual changes in an industry's output and use of labor may reflect cyclical changes in the economy rather than long-term trends. Also, annual productivity indexes are based on sample data, which are likely to differ from data generated by a census of establishments in the industry. As a result, long-term trends tend to be more reliable indicators of the performance of an industry than are the year-to-year changes.

### **Notes**

The measures in this news release replace the mining, utilities, and service industry series published in table 51 of the Monthly Labor Review and in the news release Productivity and Costs by Industry, 2003 (released August 26, 2005), and may reflect revisions to those series. Output measures for the U.S. Postal Service (NAICS 491) reflect changes to the weights used to aggregate products and services. All of the measures for 2004 in this release are preliminary and subject to revision.

Estimates of employment and hours of self-employed and unpaid family workers for all years have been revised to more accurately account for employment and hours of proprietors in secondary jobs. Previously, a proprietor's hours worked at secondary jobs were attributed to the industry of the proprietor's primary job. Hours worked at secondary jobs are now included in a proprietor's hours only if the person is a proprietor in the secondary job, and these hours are classified in the industry of the secondary job.

Published productivity and unit labor cost indexes for selected NAICS industries, including the industries covered in this report, can be accessed electronically by visiting the Labor Productivity and Costs Web site: <http://www.bls.gov/lpc/home.htm>. While the index numbers and rates of change reported by BLS in this news release are rounded to one decimal place, all percent changes in this release and on the BLS web site are calculated using index numbers to three decimal places.

Measures for additional detailed service-providing industries are available upon request by calling the Division of Industry Productivity Studies (202-691-5618) or by sending a request by e-mail: [dipsweb@bls.gov](mailto:dipsweb@bls.gov). Data on industry employment, annual hours, the net value of production, and the implicit price deflator for output also are available upon request.

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**Table 1. Annual percent change in output per hour and related series, 1987-2004 and 2003-2004**

NAICS code	Industry	2004 Employment (thousands)	Annual percent change, 1987-2004 <sup>1/</sup>			Annual percent change, 2003-2004		
			Output per hour	Output	Hours	Output per hour	Output	Hours
<b>Mining</b>								
21	Mining	523	1.3	-0.2	-1.5	-7.7	-1.2	7.1
211	Oil and gas extraction	123	2.0	-0.9	-2.9	-13.7	-2.6	12.9
212	Mining, except oil and gas	205	3.0	1.0	-2.0	1.2	3.4	2.2
2121	Coal mining	71	3.9	0.0	-3.7	-0.3	3.8	4.1
2122	Metal ore mining	28	4.0	2.2	-1.7	-4.7	0.9	5.9
2123	Nonmetallic mineral mining and quarrying	107	1.4	1.1	-0.3	4.1	4.1	-0.1
<b>Utilities</b>								
2211	Power generation and supply	409	2.9	1.1	-1.8	2.2	-0.5	-2.7
2212	Natural gas distribution	109	3.3	1.5	-1.8	3.9	0.2	-3.6
<b>Transportation and Warehousing</b>								
481	Air transportation	483	2.6	3.4	0.8	11.4	11.5	0.0
482111	Line-haul railroads	178	5.5	2.6	-2.7	3.1	5.6	2.5
48412	General freight trucking, long-distance	864	1.5	3.2	1.7	-0.8	6.1	6.9
48421	Used household and office goods moving	104	-1.1	0.3	1.4	2.9	5.7	2.7
491	Postal service	782	1.1	1.2	0.1	2.1	0.1	-1.9
492	Couriers and messengers	598	-0.9	2.6	3.5	-5.7	-2.3	3.6
<b>Information</b>								
511	Publishing	953	4.3	5.1	0.8	3.9	4.3	0.4
5111	Newspaper, book, and directory publishers	718	0.1	-0.4	-0.4	-2.4	0.6	3.0
5112	Software publishers	236	17.7	26.4	7.4	17.0	9.5	-6.5
51213	Motion picture and video exhibition	140	0.8	2.5	1.7	3.3	-3.1	-6.2
515	Broadcasting, except internet	338	0.5	2.0	1.5	1.5	2.0	0.5
5151	Radio and television broadcasting	249	-0.4	-0.1	0.3	-3.1	-0.8	2.4
5152	Cable and other subscription programming	88	2.4	8.2	5.6	8.5	6.9	-1.5
5171	Wired telecommunications carriers	558	5.0	3.8	-1.2	0.8	-4.5	-5.3
5172	Wireless telecommunications carriers	195	8.2	24.0	14.6	19.1	16.5	-2.2
5175	Cable and other program distribution	132	0.5	5.8	5.3	12.4	8.7	-3.3
<b>Finance and Insurance</b>								
52211	Commercial banking	1281	2.4	2.0	-0.4	5.3	4.8	-0.5
<b>Real Estate and Rental and Leasing</b>								
532111	Passenger car rental	125	1.6	3.8	2.1	-1.8	9.3	11.3
53212	Truck, trailer and RV rental and leasing	62	4.8	4.6	-0.2	18.3	13.0	-4.5
53223	Video tape and disc rental	158	4.2	7.4	3.1	4.2	6.6	2.3
<b>Professional and Technical Services</b>								
541213	Tax preparation services	131	1.2	4.3	3.1	-7.9	6.4	15.4
54131	Architectural services	207	1.6	3.7	2.1	5.2	5.3	0.1
54133	Engineering services	831	1.1	3.0	1.9	7.4	10.5	2.9
54181	Advertising agencies	180	1.9	1.8	-0.2	10.3	9.4	-0.8
541921	Photography studios, portrait	78	-0.4	2.5	2.9	-11.6	2.6	16.1
<b>Administrative and Support Services</b>								
56151	Travel agencies	128	3.8	2.9	-0.8	13.9	7.7	-5.4
56172	Janitorial services	1129	3.1	4.6	1.4	-1.4	3.0	4.5

**Table 1. Annual percent change in output per hour and related series, 1987-2004 and 2003-2004--Continued**

NAICS code	Industry	2004 Employment (thousands)	Annual percent change, 1987-2004 <sup>1/</sup>			Annual percent change, 2003-2004		
			Output per hour	Output	Hours	Output per hour	Output	Hours
<b>Health Care and Social Assistance</b>								
6215	Medical and diagnostic laboratories	198	4.5	7.5	2.9	0.1	4.7	4.6
621511	Medical laboratories	136	3.6	6.2	2.5	1.6	4.4	2.7
621512	Diagnostic imaging centers	62	5.6	9.8	4.0	-3.7	5.3	9.4
<b>Accommodation and Food Services</b>								
7211	Traveler accommodations	1750	2.3	3.1	0.8	5.7	6.0	0.4
<b>Other Services</b>								
8111	Automotive repair and maintenance	1155	1.6	2.6	1.0	7.8	1.2	-6.1
81211	Hair, nail and skin care services	899	2.5	3.5	1.0	5.7	8.9	3.0
81221	Funeral homes and funeral services	111	-0.6	0.3	1.0	-2.4	-5.9	-3.5
8123	Drycleaning and laundry services	382	0.8	0.5	-0.3	7.4	0.6	-6.3
81292	Photofinishing	43	0.4	-3.6	-4.0	2.5	-11.8	-13.9

<sup>1/</sup> For NAICS industries 6215, 621511, and 62512, annual percent changes are for 1994-04.

**Table 2. Annual percent change in total compensation, output, and unit labor costs, 1987-2004 and 2003-2004**

NAICS code	Industry	2004 Employment (thousands)	Annual percent change, 1987-2004 <sup>1/</sup>			Annual percent change 2003-2004		
			Total compensation	Output	Unit labor costs	Total compensation	Output	Unit labor costs
<b>Mining</b>								
21	Mining	523	2.9	-0.2	3.2	11.1	-1.2	12.4
211	Oil and gas extraction	123	3.5	-0.9	4.4	13.4	-2.6	16.4
212	Mining, except oil and gas	205	0.8	1.0	-0.2	6.2	3.4	2.7
2121	Coal mining	71	-1.4	0.0	-1.5	6.6	3.8	2.7
2122	Metal ore mining	28	2.3	2.2	0.1	8.0	0.9	6.9
2123	Nonmetallic mineral mining and quarrying	107	3.2	1.1	2.1	5.2	4.1	1.1
<b>Utilities</b>								
2211	Power generation and supply	409	3.0	1.1	1.9	4.1	-0.5	4.6
2212	Natural gas distribution	109	3.4	1.5	1.9	7.1	0.2	6.9
<b>Transportation and Warehousing</b>								
481	Air transportation	483	4.0	3.4	0.5	-0.5	11.5	-10.7
482111	Line-haul railroads	178	0.8	2.6	-1.8	5.6	5.6	0.0
48412	General freight trucking, long-distance	864	3.5	3.2	0.2	8.9	6.1	2.7
48421	Used household and office goods moving	104	4.4	0.3	4.1	5.7	5.7	-0.1
491	Postal service	782	4.1	1.2	2.8	3.4	0.1	3.2
492	Couriers and messengers	598	7.3	2.6	4.6	6.8	-2.3	9.3
<b>Information</b>								
511	Publishing	953	5.9	5.1	0.8	-2.4	4.3	-6.5
5111	Newspaper, book, and directory publishers	718	3.6	-0.4	4.0	1.2	0.6	0.6
5112	Software publishers	236	13.1	26.4	-10.5	-7.4	9.5	-15.5
51213	Motion picture and video exhibition	140	4.3	2.5	1.7	4.5	-3.1	7.8
515	Broadcasting, except internet	338	5.5	2.0	3.5	6.3	2.0	4.2
5151	Radio and television broadcasting	249	4.6	-0.1	4.7	5.4	-0.8	6.2
5152	Cable and other subscription programming	88	11.0	8.2	2.6	13.7	6.9	6.4
5171	Wired telecommunications carriers	558	2.0	3.8	-1.7	-6.4	-4.5	-1.9
5172	Wireless telecommunications carriers	195	17.1	24.0	-5.6	16.5	16.5	0.0
5175	Cable and other program distribution	132	10.2	5.8	4.1	7.1	8.7	-1.5
<b>Finance and Insurance</b>								
52211	Commercial banking	1281	5.4	2.0	3.4	2.9	4.8	-1.8
<b>Real Estate and Rental and Leasing</b>								
532111	Passenger car rental	125	6.7	3.8	2.9	6.4	9.3	-2.7
53212	Truck, trailer and RV rental and leasing	62	3.8	4.6	-0.8	5.1	13.0	-7.0
53223	Video tape and disc rental	158	5.7	7.4	-1.6	4.8	6.6	-1.7
<b>Professional and Technical Services</b>								
541213	Tax preparation services	131	4.4	4.3	0.1	12.7	6.4	5.9
54131	Architectural services	207	5.6	3.7	1.8	6.7	5.3	1.4
54133	Engineering services	831	6.3	3.0	3.3	7.8	10.5	-2.5
54181	Advertising agencies	180	4.8	1.8	3.0	4.1	9.4	-4.9
541921	Photography studios, portrait	78	5.2	2.5	2.5	3.7	2.6	1.1
<b>Administrative and Support Services</b>								
56151	Travel agencies	128	5.1	2.9	2.2	0.1	7.7	-7.0
56172	Janitorial services	1129	5.6	4.6	1.0	6.3	3.0	3.2

**Table 2. Annual percent change in total compensation, output, and unit labor costs, 1987-2004 and 2003-2004--Continued**

NAICS code	Industry	2004 Employment (thousands)	Annual percent change, 1987-2004 <sup>1/</sup>			Annual percent change 2003-2004		
			Total compensation	Output	Unit labor costs	Total compensation	Output	Unit labor costs
<b>Health Care and Social Assistance</b>								
6215	Medical and diagnostic laboratories	198	6.2	7.5	-1.2	11.5	4.7	6.5
621511	Medical laboratories	136	5.4	6.2	-0.7	10.6	4.4	6.0
621512	Diagnostic imaging centers	62	8.1	9.8	-1.6	13.6	5.3	7.9
<b>Accommodation and Food Services</b>								
7211	Traveler accommodations	1750	5.5	3.1	2.4	6.1	6.0	0.1
<b>Other Services</b>								
8111	Automotive repair and maintenance	1155	4.5	2.6	1.8	-2.4	1.2	-3.6
81211	Hair, nail and skin care services	899	5.6	3.5	2.0	9.4	8.9	0.4
81221	Funeral homes and funeral services	111	5.1	0.3	4.7	8.8	-5.9	15.6
8123	Drycleaning and laundry services	382	3.4	0.5	2.9	1.0	0.6	0.4
81292	Photofinishing	43	-0.1	-3.6	3.6	-10.1	-11.8	1.8

<sup>1/</sup> For NAICS industries 6215, 621511, and 62512, annual percent changes are for 1994-04.