

New Service Industry Productivity Measures



U.S. Department of Labor
Bureau of Labor Statistics
September 2004

Report 979

The Bureau of Labor Statistics (BLS) has developed labor productivity measures and related series for three service industries—video tape and disc rental (NAICS 53223), travel agencies (NAICS 56151), and janitorial services (56172). The introduction of these measures reflects the ongoing BLS effort to expand productivity measurement in the service-producing sector. This report discusses developments in the new measures over the period 1987 through 2002.

Labor productivity, output, and hours increased in all three industries between 1987 and 2002. (See table 1.) Among the three industries, productivity growth was most rapid in the video tape and disc rental industry, where output per hour grew by 4.0 percent per year, on average. Productivity grew the slowest in travel agencies, at an average annual rate of 1.6 percent per year. For all three industries, productivity and output increased in both of the subperiods (1990-95 and 1995-2000) shown in table 1. In travel agencies and especially in the janitorial services industry, output and output per hour growth accelerated in the later period. In the video tape and disc rental industry, however, productivity and output growth slowed slightly.

Unit labor costs grew inversely to labor productivity for all three industries. Unit labor costs declined at an average annual rate of -1.9 percent over the 1987-2002 period in the video tape and disc rental industry, where productivity growth was the strongest. Unit labor costs increased most rapidly in travel agencies, rising 3.8 percent per year on average between 1987 and 2002, and increased at a slower rate of 0.5 percent per year over the period in the janitorial services industry.

Industry developments

The video tape and disc rental industry recorded an average gain of 4.0 percent per year in labor productivity (output per hour) over the 1987-2002 period. This increase reflected a rapid growth in output of 7.2 percent per year on average, and a more moderate increase of 3.1 percent per year in hours. After posting productivity increases averaging 4.4 percent per year from 1990 to 1995, output per hour in the video tape and disc rental industry grew at a slightly lower rate of 4.1 percent per year during the 1995-2000 period. Output growth

also slowed minimally from 6.3 to 6.1 percent per year, on average, while growth in hours rose marginally from 1.8 percent per year to 1.9 percent per year. Growth in video tape and disc rental output continued to slow after 2000, and declined in 2002. Growth in the video-by-mail segment of the industry, however, has continued to increase.

Output per hour in the travel agencies industry increased 1.6 percent per year from 1987 to 2002, reflecting an annual average rise in output of 2.0 percent and an average annual increase in hours of 0.4 percent. This modest growth masked different trends in the 1990-95 and 1995-2000 periods. From 1990 to 1995, productivity in the industry increased at a rate of 0.2 percent per year. The increase in output of 2.4 percent per year during this period was largely offset by the rate of growth in hours of 2.1 percent per year. From 1995 to 2000, however, productivity increased more rapidly, rising at an average annual rate of 2.9 percent. The productivity growth was driven by output growth of 3.0 percent per year with only a 0.1 percent per year growth in hours. The industry composition shifted in the late 1990s, as the share of very small establishments declined and Internet-only firms gained market share. The operations of Internet-only firms require less labor partly because the firms do not need to staff local offices. The terrorist attacks in 2001 precipitated a significant drop in air travel, adversely affecting travel agencies, as output fell by 13.1 percent and hours by 7.0 percent that year. In 2002, the decline in hours accelerated (-13.1 percent), as output fell again (-0.4 percent), leading to an increase in productivity of 14.7 percent.

Output per hour in the janitorial services industry increased at an average annual rate of 3.5 percent per year between 1987 and 2002, reflecting an average annual increase in output of 5.5 percent and an average gain in hours of 2.0 percent per year. From 1990 to 1995, productivity grew slowly, at an average annual rate of 0.8 percent per year. In this period, hours fell 0.1 percent and output rose 0.7 percent per year on average. Between 1995 and 2000, however, productivity in the janitorial services industry accelerated to a rapid 6.1 percent per year. Output grew strongly, 8.5 percent per year, while hours increased 2.2 percent per year. In 2002, productivity rose 1.1 percent as output increased 1.6 percent and hours rose 0.5 percent.

Table 1. **Average annual percent change in output per hour and related series for selected service industries, selected periods 1987-2000**

NAICS code	Industry	1987-2002				2001-2002			
		Output per hour	Output	Hours	Unit labor cost	Output per hour	Output	Hours	Unit labor cost
53223	Video tape and disc rental	4.0	7.2	3.1	-1.9	-1.9	-1.4	0.4	3.6
56151	Travel agencies	1.6	2.0	.4	3.8	14.7	-.4	-13.1	-5.9
56172	Janitorial services	3.5	5.5	2.0	.5	1.1	1.6	.5	-.1

NAICS code	Industry	1990-1995				1995-2000			
		Output per hour	Output	Hours	Unit labor cost	Output per hour	Output	Hours	Unit labor cost
53223	Video tape and disc rental	4.4	6.3	1.8	-1.5	4.1	6.1	1.9	-0.6
56151	Travel agencies	.2	2.4	2.1	3.3	2.9	3.0	.1	3.5
56172	Janitorial services	.8	.7	-.1	1.6	6.1	8.5	2.2	-1.7

Table 2. Annual indexes of productivity, output, hours, and unit labor costs for selected service industries, 1987-2002

(1997=100)

NAICS code	Industry	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
53223	Video tape and disc rental																
	Output per hour	76.6	90.5	90.1	92.6	89.7	100.7	109.3	117.5	115.0	102.3	100.0	116.6	134.1	140.7	141.6	139.0
	Output	49.8	62.8	70.4	77.5	75.1	79.9	88.9	101.0	105.5	98.8	100.0	115.2	135.1	141.5	144.3	142.2
	Hours	65.0	69.4	78.1	83.7	83.7	79.3	81.3	86.0	91.7	96.6	100.0	98.8	100.7	100.5	101.9	102.3
	Unit labor cost	109.4	86.7	89.5	91.5	96.9	92.8	90.0	81.4	84.8	93.2	100.0	91.0	80.7	82.2	79.1	81.9
56151	Travel agencies																
	Output per hour	90.1	92.4	91.8	91.1	85.1	89.3	86.1	89.0	92.2	98.6	100.0	98.9	105.0	106.5	99.4	114.0
	Output	64.7	69.4	74.4	77.1	70.0	74.1	74.4	77.8	86.7	96.0	100.0	99.8	107.2	100.5	87.3	86.9
	Hours	71.8	75.1	81.1	84.7	82.3	82.9	86.5	87.5	94.1	97.4	100.0	100.9	102.1	94.4	87.8	76.3
	Unit labor cost	71.1	74.2	79.0	83.7	92.7	92.9	100.2	99.9	98.6	95.9	100.0	106.9	102.4	116.9	131.7	124.0
56172	Janitorial services																
	Output per hour	72.9	74.8	84.6	87.2	86.8	93.2	86.5	87.7	90.9	96.5	100.0	111.1	113.4	122.2	120.1	121.4
	Output	59.2	66.2	77.1	82.9	79.4	81.4	77.6	83.5	86.0	94.0	100.0	110.9	118.9	129.1	131.0	133.0
	Hours	81.2	88.4	91.1	95.2	91.5	87.4	89.6	95.2	94.6	97.4	100.0	99.9	104.8	105.6	109.0	109.5
	Unit labor cost	89.9	94.6	89.9	93.7	96.6	93.4	102.4	100.6	101.7	100.5	100.0	95.5	94.3	93.1	96.3	96.2

Technical Note

The output indexes for the industries included in this report are based on current-dollar industry revenues. The industry revenues, which are published by the U.S. Census Bureau, are deflated with price measures from various sources. Annual current-dollar revenues for travel agencies are from the *Transportation Annual Survey* through 1996 and the *Service Annual Survey* from 1997 forward. Annual revenues for the video tape and disc rental and janitorial services industries are from the *Service Annual Survey*. These data are benchmarked every 5 years (in 1987, 1992, and 1997) to data from the Census Bureau's *Census of Transportation Industries* or *Census of Service Industries*. The indexes of output used in measuring labor productivity and unit labor costs are, whenever possible, calculated with a Tornqvist formula. This formula aggregates the growth rates of the various industry products between two periods using the products' shares in industry value of production, averaged over the two periods, as weights.

The revenue series for the industries included in this report were deflated primarily using BLS price measures. For the video tape and disc rental industry, research series consumer price indexes (CPI-U-RS) were used to deflate receipts data prior to 1997. Beginning in 1997, detailed receipts data were deflated using a combination of research series consumer price indexes and newly available BLS special relative calculation (SRC) indexes.

Producer price indexes (PPIs) were used to deflate the revenue series for travel agencies and the janitorial services industry for much of the period covered by this study. Beginning in 1997, detailed receipts data were deflated with matching PPIs. In earlier years, total revenues were deflated with an aggregate producer price index. The PPIs, however, do not cover the entire period for either of these industries, and they are extrapolated backward for the early years of the period using movements in alternative related series. For travel agencies, an aggregate producer price index is available beginning in 1990. The index is extrapolated back to 1987 using changes in the average hourly earnings of nonsupervisory workers. An aggregate producer price index for janitorial services begins in 1995. This PPI was extrapolated back to 1987 using changes in a weighted combination of CPIs.

The indexes of labor input are all-worker-hour indexes, representing the hours of all employees, the self-employed, and unpaid family workers. These indexes are developed primarily with data from the BLS Current Employment Statistics survey (a monthly survey of establishments) and the

Current Population Survey (a monthly household survey conducted by the Census Bureau for BLS). Because of data limitations, all hours are treated as homogenous and additive, with no distinction made between hours of different groups of workers.

The industry 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. Although these measures relate output to hours of all workers engaged in an industry, they do not measure the specific contribution of labor. Rather, they reflect the joint effects of many influences, including changes in technology; capital investment; 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 somewhat erratic, particularly in the smaller industries. The annual changes in an industry's productivity are based on sample data, which are likely to differ from data that would be 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.

The unit labor cost series represent labor compensation costs per unit of output produced, and are computed by dividing an index of labor compensation by an index of output. Labor compensation includes payroll as well as supplemental benefits (both legally required expenditures and payments for voluntary programs). For the industries included in this report, labor compensation measures were calculated using data from the BLS Quarterly Census of Employment and Wages (ES-202) program, adjusted with data on employer costs for fringe benefits from the *Census of Service Industries* and the *Census of Transportation Industries*.

Published productivity and unit labor cost data for selected NAICS industries are available on the Internet at <http://www.bls.gov/lpc/home.htm>. Productivity and labor costs series for additional industries are available but not published. Unpublished data can be requested by phoning 202-691-5618 or by sending e-mail to dipsweb@bls.gov.

Material in this report is in the public domain and, with appropriate credit, may be used without permission. This information is available to sensory impaired individuals upon request. Voice phone: 202-691-5200; Federal Relay Service: 1-800-877-8339.