

Productivity increased in 1981 in most industries measured

Although productivity growth slowed during 1976–81 for most measured industries, a majority of significant industries show productivity gains in 1981

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Productivity, as measured by output per employee hour, increased in 1981 in more than half of the industries for which the Bureau of Labor Statistics regularly publishes data. The growth in industry productivity was consistent with the gain in the nonfarm business sector of the economy, which grew 1.4 percent. In 1980, however, productivity declined in a majority of the measured industries.

Table 1 shows productivity trends in industries measured by the Bureau and includes measures for additional industries: millwork, office furniture (including separate measures for wood office furniture and metal office furniture), cosmetics, hand and edge tools, farm and garden machinery (including separate measures for farm machinery and equipment, and lawn and garden equipment), pumps and compressors (including separate measures for pumps and pumping equipment and air and gas compressors), and commercial banking.¹

Changes by industry

Manufacturing. The steel industry, one of the more economically significant industries covered, gained 9.0 percent in productivity after two consecutive annual declines. This industry had a very good first half in 1981, buoyed by strong sales to the oil and gas industry. Despite a falloff in demand from many steel markets in the second half, output was up 9.8 percent while hours grew only 0.7 percent, leading to the significant

productivity advance. Motor vehicle manufacturing, another key industry, had a notable gain in productivity of 4.7 percent in 1981 after three consecutive declines. Output was up 5.9 percent and hours grew 1.2 percent, as compared to a very poor previous year, when output fell 27.2 percent.

In tire manufacturing, productivity was up 13.3 percent. Output had a large gain of 8.6 percent, sustained by demand from the replacement market, while hours continued declining (–4.2 percent) in 1981. Many old and inefficient tire plants were closed in 1980, aiding the sharp productivity gain in 1981. Other large manufacturing industries with productivity increases included synthetic fibers (6.3 percent), gray iron foundries (5.9 percent), machine tools (4.6 percent), soft drinks (2.9 percent), corrugated and solid fiber boxes (2.7 percent), and pulp and paper (2.0 percent). All of these industries, except machine tools, experienced output growth in 1981.

Productivity declines were also recorded in a number of manufacturing industries in 1981. Many of these were construction related, such as construction machinery, brick and structural clay tile, and hydraulic cement. Output was down in these industries as overall construction activity continued to fall off during the year. Among other manufacturing industries with declining productivity, large drops were recorded by steel foundries (–5.5 percent), sugar (–5.2 percent), aluminum rolling and drawing (–4.0 percent), footwear (–3.6 percent), and folding paperboard boxes (–3.3 percent).

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Table 1. Indexes of output per employee hour in selected industries, 1976-81, and percent changes, 1980-81 and 1976-81

[1977 = 100]

SIC code ¹	Industry	1976	1977	1978	1979	1980	1981 ²	Percent change, 1980-81	Average annual percent change, 1976-81
Mining									
1011	Iron mining, crude ore	113.5	100.0	116.8	125.5	129.0	138.3	7.2	5.3
1011	Iron mining, usable ore	115.9	100.0	119.2	125.6	127.5	136.1	6.7	4.6
1021	Copper mining, crude ore	99.2	100.0	109.6	103.8	100.3	100.6	0.3	0.1
1021	Copper mining, recoverable metal	94.7	100.0	107.6	97.8	91.3	96.3	5.5	-0.8
111,121	Coal mining	103.1	100.0	106.4	99.4	112.5	122.9	9.2	3.4
121	Bituminous coal and lignite mining	103.0	100.0	106.7	99.6	112.6	123.3	9.5	3.4
14	Nonmetallic minerals, except fuels	96.2	100.0	104.6	102.4	96.3	97.9	1.7	-0.1
142	Crushed and broken stone	93.7	100.0	109.0	108.4	103.3	104.1	0.8	1.8
Manufacturing									
2026	Fluid milk	99.5	100.0	108.1	116.2	124.8	130.7	4.7	6.2
203	Preserved fruits and vegetables	100.1	100.0	104.4	99.3	101.2	(³)	(³)	*0.1
2033	Canned fruits and vegetables	102.3	100.0	103.7	101.4	100.6	(³)	(³)	*-0.2
204	Grain mill products	91.1	100.0	100.4	102.2	107.5	(³)	(³)	*3.6
2041	Flour and other grain mill products	85.1	100.0	101.5	98.5	99.8	103.9	4.1	2.8
2043	Cereal breakfast foods	100.0	100.0	101.7	107.6	106.5	(³)	(³)	*2.0
2044	Rice milling	88.7	100.0	92.7	96.3	111.8	(³)	(³)	*4.3
2045	Blended and prepared flour	110.9	100.0	92.5	91.0	104.8	(³)	(³)	*-2.1
2046	Wet corn milling	83.2	100.0	102.0	110.8	129.2	(³)	(³)	*10.3
2047,48	Prepared feeds for animals and fowls	90.1	100.0	100.8	102.0	106.2	(³)	(³)	*3.5
205	Bakery products	93.9	100.0	97.2	94.1	92.3	98.0	6.2	-0.2
2061,62,63	Sugar	95.8	100.0	101.0	108.6	109.1	103.4	-5.2	2.1
2061,62	Raw and refined cane sugar	92.5	100.0	100.8	107.3	107.8	(³)	(³)	*3.8
2063	Beet sugar	101.7	100.0	101.2	110.9	111.7	(³)	(³)	*3.0
2082	Malt beverages	95.5	100.0	100.0	107.4	112.1	117.0	4.4	4.2
2086	Bottled and canned soft drinks	94.2	100.0	104.5	105.6	109.8	113.0	2.9	3.5
2111,21,31	All tobacco products	97.8	100.0	102.8	102.2	102.2	101.4	-0.8	0.7
2111,31	Cigarettes, chewing and smoking tobacco	96.7	100.0	103.8	102.1	101.1	99.5	-1.6	0.5
2121	Cigars	99.9	100.0	98.2	103.7	110.3	114.5	3.8	3.0
2251,52	Hosiery	106.4	100.0	101.8	106.5	105.3	113.4	7.7	1.5
2281	Nonwool yarn mills	93.5	100.0	104.2	103.9	99.8	100.1	0.3	1.0
2421	Sawmills and planing mills, general	103.2	100.0	101.4	104.8	102.0	99.3	-2.6	-0.3
2431	Millwork	99.1	100.0	91.5	93.9	93.7	(³)	(³)	*-1.7
2435,36	Veneer and plywood	97.9	100.0	101.7	95.7	98.5	(³)	(³)	*-0.3
2435	Hardwood veneer and plywood	89.1	100.0	100.7	101.2	100.5	(³)	(³)	*2.6
2436	Softwood veneer and plywood	102.1	100.0	102.1	93.4	98.2	(³)	(³)	*-1.5
251	Household furniture	99.7	100.0	104.6	101.3	99.7	(³)	(³)	*0.1
2511,17	Wood household furniture	101.3	100.0	104.9	101.6	97.1	(³)	(³)	*-0.7
2512	Upholstered household furniture	98.1	100.0	108.8	104.9	101.9	(³)	(³)	*1.2
2514	Metal household furniture	96.3	100.0	97.4	89.9	93.1	(³)	(³)	*-1.7
2515	Mattresses and bedsprings	99.2	100.0	101.5	102.7	111.9	(³)	(³)	*2.7
252	Office furniture	89.7	100.0	100.1	107.3	108.9	(³)	(³)	*4.7
2521	Wood office furniture	81.9	100.0	100.7	110.7	109.2	(³)	(³)	*7.0
2522	Metal office furniture	94.8	100.0	99.9	104.8	108.6	(³)	(³)	*3.2
2611,21,31,61	Paper, paperboard, and pulp mills	95.0	100.0	103.2	105.4	105.4	107.5	2.0	2.3
2643	Paper and plastic bags	100.5	100.0	99.9	97.6	94.0	(³)	(³)	*-1.6
2651	Folding paperboard boxes	102.8	100.0	102.8	101.4	97.1	93.9	-3.3	-1.6
2653	Corrugated and solid fiberboard boxes	101.5	100.0	103.5	107.1	111.3	114.3	2.7	2.7
2823,24	Synthetic fibers	89.5	100.0	105.2	115.0	115.7	123.0	6.3	6.2
2834	Pharmaceutical preparations	98.4	100.0	99.0	106.4	108.2	(³)	(³)	*2.6
2841	Soaps and detergents	100.1	100.0	105.2	104.0	108.4	(³)	(³)	*2.0
2844	Cosmetics and other toiletries	94.4	100.0	99.3	93.1	82.5	(³)	(³)	*-3.4
2851	Paints and allied products	97.3	100.0	104.7	105.7	101.8	102.6	0.8	0.9
2911	Petroleum refining	93.0	100.0	101.3	94.9	94.2	(³)	(³)	*-0.3
3011	Tires and inner tubes	99.8	100.0	108.8	109.5	105.6	119.6	13.3	3.1
314	Footwear	102.1	100.0	102.5	100.2	101.2	97.6	-3.6	-0.6
3221	Glass containers	98.2	100.0	101.4	106.7	112.0	113.9	1.7	3.3
3241	Hydraulic cement	92.4	100.0	101.3	96.0	87.0	84.9	-2.4	-2.5
325	Structural clay products	94.9	100.0	102.6	96.1	97.6	93.6	-4.1	-0.6
3251,3,9	Clay construction products	94.2	100.0	102.6	92.1	94.6	85.1	-10.0	-2.2
3251	Brick and structural clay tile	102.2	100.0	96.5	85.8	85.6	76.1	-11.1	-5.7
3253	Ceramic wall and floor tile	89.0	100.0	115.3	111.8	120.3	(³)	(³)	*7.4
3255	Clay refractories	97.1	100.0	102.9	109.1	108.0	123.3	14.2	4.3
3271,72	Concrete products	95.0	100.0	98.6	94.6	93.2	(³)	(³)	*-0.9
3273	Ready-mixed concrete	98.8	100.0	103.1	99.9	93.1	(³)	(³)	*-1.2
331	Steel	99.0	100.0	108.3	106.9	102.9	112.2	9.0	2.0
3321	Gray iron foundries	96.4	100.0	102.1	96.8	90.8	96.2	5.9	-1.0
3324,25	Steel foundries	105.7	100.0	98.1	99.4	99.1	93.6	-5.5	-1.8
3331,32,33	Primary copper, lead, and zinc	96.0	100.0	96.5	106.5	103.5	118.3	14.1	3.6
3331	Primary copper	95.2	100.0	99.4	113.4	105.0	127.4	21.0	5.1
3334	Primary aluminum	101.4	100.0	99.6	99.7	100.0	100.9	0.9	-0.1
3351	Copper rolling and drawing	86.1	100.0	95.5	98.8	94.3	101.1	7.2	1.8
3353,54,55	Aluminum rolling and drawing	101.7	100.0	104.6	101.5	101.3	97.2	-4.0	-0.6

See footnotes at end of table.

Table 1. Continued — Indexes of output per employee hour in selected industries, 1976–81, and percent changes, 1980–81 and 1976–81

[1977 = 100]

SIC code ¹	Industry	1976	1977	1978	1979	1980	1981 ²	Percent change, 1980-81	Average annual percent change, 1976-81
Manufacturing — Continued									
3411	Metals cans	93.4	100.0	102.3	103.6	102.6	110.9	7.2	2.6
3423	Hand and edge tools	97.6	100.0	100.6	104.3	99.0	(³)	(³)	4.0
3441	Fabricated structural metal	98.9	100.0	100.4	102.0	101.9	106.7	4.7	1.3
352	Farm and garden machinery	101.1	100.0	100.8	103.2	96.3	(³)	(³)	4 -0.7
3523	Farm machinery	102.2	100.0	98.4	100.2	94.0	(³)	(³)	4 -1.6
3524	Lawn and garden machinery	94.3	100.0	108.6	113.9	107.4	(³)	(³)	4.0
3531	Construction machinery and equipment	96.3	100.0	105.8	100.3	97.4	92.1	-5.4	-1.0
3541,42	Machine tools	98.4	100.0	102.5	101.9	98.7	103.2	4.6	0.6
3541	Metal cutting machine tools	97.3	100.0	103.6	103.1	100.9	106.7	5.7	1.4
3542	Metal forming machine tools	101.7	100.0	99.9	98.4	92.4	92.8	0.4	-2.0
3561,63	Pumps and compressors	96.8	100.0	102.6	102.5	99.8	(³)	(³)	4.0
3561	Pumps and pumping equipment	92.7	100.0	101.1	100.7	97.2	(³)	(³)	4.1
3562	Ball and roller bearings	106.4	100.0	105.5	106.0	105.7	(³)	(³)	-1.5
3563	Air and gas compressors	99.0	100.0	105.6	105.3	94.7	92.0	-2.9	4.0
3612	Transformers	90.1	100.0	103.4	108.5	110.7	(³)	(³)	4.5
3621	Motors and generators	95.9	100.0	98.6	97.9	94.9	96.1	1.3	-0.4
3631,2,3,9	Major household appliances	96.6	100.0	100.5	108.7	106.0	108.7	2.5	2.4
3631	Household cooking equipment	100.7	100.0	100.3	108.5	103.7	116.4	12.2	2.6
3632	Household refrigerators and freezers	94.0	100.0	98.4	112.2	114.6	113.2	-1.2	4.3
3633	Household laundry equipment	99.0	100.0	102.3	108.2	102.2	97.8	-4.3	0.2
3639	Household appliances, N.E.C.	93.0	100.0	104.0	104.3	101.6	100.8	-0.8	1.3
3641	Electric lamps	102.9	100.0	103.0	106.2	104.7	107.5	2.7	1.1
3645,46,47,48	Lighting fixtures	95.1	100.0	100.6	94.9	94.1	(³)	(³)	-0.7
3651	Radio and television receiving sets	100.8	100.0	113.1	118.1	115.0	(³)	(³)	4.4
371	Motor vehicles and equipment	93.9	100.0	99.7	98.5	92.2	96.5	4.7	-0.3
Other									
401	Railroad transportation — revenue traffic	95.4	100.0	104.5	104.7	107.3	112.9	5.2	3.1
401	Railroad transportation — car miles	100.1	100.0	102.8	102.9	106.4	(³)	(³)	4.5
4111,31,414 pt	Class I bus carriers	93.8	100.0	99.7	101.5	104.8	(³)	(³)	4.2
4213 pt	Intercity trucking ⁵	100.3	100.0	99.8	98.6	94.3	98.7	4.7	0.8
4213 pt	Intercity trucking — general freight ⁶	96.1	100.0	98.6	96.6	87.9	92.5	5.2	-1.7
4511,4521 pt	Air transportation ⁵	95.5	100.0	109.3	113.1	106.2	105.9	-0.3	2.1
4612,13	Petroleum pipelines	95.2	100.0	101.7	101.7	93.0	85.3	-8.3	-2.2
4811	Telephone communications	93.3	100.0	105.8	110.8	118.1	124.5	5.4	5.8
491,492,493	Gas and electric utilities	98.2	100.0	98.2	97.6	96.2	94.8	-1.5	-0.8
491,493 pt	Electric utilities	95.6	100.0	96.8	95.4	94.0	93.3	-0.7	-0.9
492,493 pt	Gas utilities	103.5	100.0	101.4	103.4	102.0	98.1	-3.8	-0.5
54	Retail food stores ⁶	102.0	100.0	95.4	97.3	99.7	101.2	1.5	-0.1
5511	Franchised new-car dealers	98.6	100.0	98.6	94.6	99.5	100.3	0.8	0.2
5541	Gasoline service stations ⁶	94.3	100.0	102.8	106.8	104.1	105.4	1.2	2.1
58	Eating and drinking places ⁶	101.4	100.0	97.7	96.0	94.6	92.8	-1.9	-1.8
5912	Drug and proprietary stores ⁶	97.1	100.0	102.1	102.7	105.3	102.5	-2.7	1.2
602	Commercial banking	95.0	100.0	100.7	98.5	92.7	(³)	(³)	4 -0.6
7011	Hotels, motels, and tourist courts ⁶	95.7	100.0	103.1	102.4	96.1	94.3	-1.9	-0.6
721	Laundry and cleaning services ⁶	97.4	100.0	100.6	94.0	87.7	84.9	-3.2	-3.2

¹ As defined in the 1972 *Standard Industrial Classification Manual* published by the Office of Management and Budget.
² Preliminary.
³ Not available.
⁴ Percent change 1976–80.
⁵ Output per employee.
⁶ Output per hour of all persons.

NOTE: Although the output per employee hour measures relate output to the hours of all employees engaged in each industry, they do not measure the specific contribution of labor, capital, or any other single factor of production. Rather, they reflect the joint effects of many influences, including new technology, capital investment, the level of output, capacity utilization, energy use, and managerial skills, as well as the skills and efforts of the work force. Some of these measures use a labor input series that is based on hours paid and some use a labor input series that is based on plant hours.
 N.E.C. = Not elsewhere classified.

Mining. All the mining industries measured experienced productivity gains in 1981. Coal mining posted its second consecutive large gain, growing 9.2 percent. Although coal output was down slightly (-1.3 percent) from the previous year, hours continued to decline sharply, resulting in the productivity gain. Productivity advances in the other mining industries were not as great as for coal. Iron mining (usable ore) rose 6.7 percent, copper mining (recoverable metal) increased 5.5 percent, and nonmetallic minerals gained 1.7 percent. Both copper and iron mining had large output increases in contrast to sharp declines in 1980. The productivity

gain in nonmetallic minerals, however, was based on a drop in output, because of poor demand from the construction industry, and an even larger decline in hours.

Transportation and utilities. Productivity changes varied among transportation and utility industries. In railroads (revenue traffic), productivity gained 5.2 percent. Output in the railroad industry declined for the second straight year, dropping 0.7 percent, while hours continued to fall by 5.6 percent. Although output in the trucking industry fell 4.9 percent, employment dropped even more, resulting in a 4.7-percent productivity gain.

By contrast, productivity fell 0.3 percent in air transportation, as output continued to decline, by 2.8 percent, while employment dropped 2.5 percent.

In telephone communications, productivity was up 5.4 percent as output grew 5.6 percent. However, productivity fell in both gas (-3.8 percent) and electric utilities (-0.7 percent). Output was down in gas utilities, as many consumers curtailed usage because of rising prices, while hours increased owing to the growing number of customers. Output was up only 0.8 percent in electric utilities, well below the long-term rate of 6.6 percent, while hours grew 1.6 percent, resulting in the productivity falloff. Productivity dropped sharply (-8.3 percent) in petroleum pipelines as output fell for the second consecutive year because of declining demand for petroleum products, while hours increased.

Trade and services. Productivity changes also were varied among trade and service industries. Productivity grew 1.5 percent in retail food stores, as output was up 1.9 percent and hours grew 0.4 percent. New-car dealer productivity was up 1.4 percent. Gasoline service station productivity rose 1.2 percent. Output was down 2.1 percent in this industry, as demand was off because of increased gasoline prices and higher mileage cars, while hours fell even more, as marginal stations were closed and self-service stations became more prevalent. Productivity declined 1.9 percent in both eating and drinking places and hotels and motels, as small gains in output were compensated for by larger gains in hours. In drug stores, productivity fell 2.7 percent as output declined 1.9 percent and hours were up slightly. In the laundry and cleaning industry, productivity fell 3.2 percent because of a continued decline in demand for the industry's services which resulted in a 7.2-percent decrease in output, while hours fell 4.2 percent.

Trends, 1976-81

With the exception of the metal forming machine tools industry, all of the measured industries recorded gains over the long term (generally 1947-81 or 1958-81). Over the more recent period, 1976-81, a large number of the industries had declining productivity rates. In addition, about three-quarters of the industries had lower productivity during 1976-81 than over the preceding long-term period (1947-76 or 1958-76). This slowdown

in productivity is consistent with the trends in the non-farm business sector of the economy, where productivity increased at a rate of only 0.1 percent during 1976-81, compared with 2.3-percent growth from 1947-76.

Gains. In recent years the wet corn milling industry had the highest rate of productivity increase, growing 10.3 percent per year from 1976 to 1980 (1981 data are not yet available). Output in this industry grew at the high rate of 8.6 percent, as demand for high-fructose syrup, one of the industry's major products, continued to expand. At the same time, the industry continued to build new plants utilizing highly automatic equipment and hours declined at a rate of 1.6 percent.

The second highest rate of gain was recorded by the ceramic wall and floor tile industry, in which productivity grew at a rate of 7.4 percent from 1976 to 1980. Output increased 9.2 percent, while hours grew 1.7 percent. A new technique for firing tile became widespread, which, coupled with changes in materials handling, resulted in significant labor savings. The wood office furniture industry recorded a productivity gain averaging 7.0 percent during 1976-80. Output grew at the very high rate of 19.3 percent, as demand shifted from metal to wood office furniture, while hours grew at a rate of 11.5 percent.

Other industries with high rates of gain included synthetic fibers and fluid milk, both 6.2 percent from 1976 to 1981, and telephone communications, with 5.8-percent growth over the same period.

Declines. Among the many industries posting declining productivity from 1976 to 1981, the brick and structural clay tile industry had the largest average falloff, down 5.7 percent. Output dropped at a rate of 7.1 percent, because of declining demand from the construction industry, while hours fell 1.5 percent. Other industries with significant declines over this period included cosmetics (-3.4 percent during 1976-80), laundries (-3.2 percent), hydraulic cement (-2.5 percent), and clay construction products and petroleum pipelines (both -2.2 percent).

A full report, *Productivity Measures for Selected Industries, 1954-81*, BLS Bulletin 2155, is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402. □

FOOTNOTES

¹ For a detailed report on these industries, see the following *Monthly Labor Review* articles: Jack Veigle and Horst Brand, "Millwork industry shows slow growth in productivity," September 1982, pp. 21-26; Arthur S. Herman and John W. Ferris, "Productivity growth average in farm machinery manufacturing," October 1982, pp. 6-10; and

Mary K. Farris and James D. York, "Hand and edge tools industry experiences slow rise in productivity," October 1982, pp. 11-14. Articles on the cosmetics, office furniture, pumps and compressors, and commercial banking industries appear elsewhere in this issue.