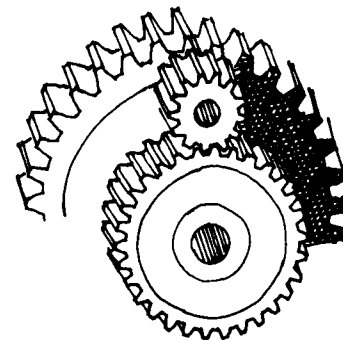


# Productivity Reports



## Productivity declined in 1982 in a majority of industries measured

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Productivity, as measured by output per employee hour, declined in 1982 in more than half of the industries for which the Bureau of Labor Statistics regularly publishes data. This falloff is in contrast to 1981, when most industries recorded productivity gains. The 1982 productivity drop in a majority of the industries is consistent with the situation in the nonfarm business sector of the economy, where productivity declined 0.1 percent.

Table 1 shows productivity trends in industries measured by the Bureau and includes new measures introduced for additional industries: miscellaneous plastics products, instruments to measure electricity, valves and pipefittings, fabricated pipe, red meat products (including separate measures for meatpacking plants and sausages), switchgear and switchboard apparatus, and apparel and accessory stores (including separate measures for men's and boys' clothing stores, women's ready-to-wear clothing stores, family clothing stores, and shoe stores).<sup>1</sup>

### Changes by industry

**Manufacturing.** The steel industry, one of the more important industries covered, had a steep 1982 productivity decline of 19.5 percent as output dropped sharply—40.1 percent. These declines in productivity and output were the largest since the measure was begun in 1947. Demand fell in almost all steel markets, as the industry was severely affected by the economic slowdown. The 1982 productivity falloff in this industry is in contrast to a large gain (8.8 percent) in 1981. Another key industry, motor vehicle manufacturing, posted a productivity gain of 5.7 percent in 1982, its second annual productivity increase after 3 years of declines. A drop in output of motor vehicles of 6.5 percent was more than offset by a decline in employee hours.

Many of the basic metal and metal fabricating industries also were adversely affected by the economic downturn and experienced large declines in productivity. Steel foundries had a productivity decrease of 21.5 percent, as output fell 41.2 percent. As in the basic steel industry, both the productivity and the output drops in steel foundries were the

greatest since the measure for this industry was begun in 1954. Other metal-related industries with large productivity drops included: metal forming machine tools (-13.1 percent); copper rolling and drawing (-9.4 percent); primary aluminum (-6.5 percent); primary copper (-4.2 percent); and gray iron foundries (-4.0 percent). These industries recorded output declines of more than 20 percent in 1982.

Many other manufacturing industries recorded large productivity drops in 1982. Several of these can be attributed to the lowered construction activity in 1982: construction machinery, in which productivity declined 16.0 percent as output dropped steeply, 37.9 percent; brick and structural clay tile, with productivity down 11.9 percent and output down 26.0 percent; clay refractories, in which productivity fell 10.2 percent and output dropped 34.0 percent; and clay construction products, in which productivity decreased 6.1 percent and output fell 20.3 percent.

Although some manufacturing industries posted productivity gains in 1982, most of these advances resulted from hours dropping more sharply than output. Among the industries with large increases were: metal cans (12.5 percent); glass containers (7.8 percent); household furniture (7.4 percent); household refrigerators and freezers (6.6 percent); sawmills and planing mills (4.4 percent); corrugated and solid fiber boxes, and folding paperboard boxes (both 4.1 percent); and flour and other grain mill products (4.0 percent). Of these industries, only metal cans and flour had gains in output in 1982 and these were less than 1 percent.

**Mining.** With the exception of copper mining, all of the mining industries covered experienced productivity declines in 1982, whereas in 1981, all the industries except nonmetallic minerals posted gains. Iron mining (usable ore) had a large 1982 drop in productivity of 14.9 percent. Productivity decreased 7.5 percent in nonmetallic minerals, as output fell 13.7 percent, because of the slowdown in construction activity. Construction is the major market for nonmetallic minerals. Productivity in coal mining dropped 5.2 percent as output was up slightly, but hours increased even more. On the other hand, copper mining (recoverable metal) recorded a large productivity increase of 14.5 percent. However, this gain was based on a very large decline in output of 25.9 percent, as demand for copper fell off sharply, and an even larger drop in hours as many mines were closed in 1982.

**Transportation and utilities.** Productivity changes were mixed among transportation and utility industries. Produc-

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**Table 1. Indexes of output per employee hour in selected industries, 1977-82, and percent changes 1981-82 and 1977-82**

SIC code <sup>1</sup>	Industry	1977	1978	1979	1980	1981	1982 <sup>2</sup>	Percent change, 1981-82	Average annual percent change, 1977-82
<b>Mining</b>									
1011	Iron mining, crude ore	100.0	116.8	125.5	129.0	139.0	116.0	-16.5	3.8
1011	Iron mining, usable ore	100.0	119.2	125.6	127.5	136.8	116.4	-14.9	3.5
1021	Copper mining, crude ore	100.0	109.6	108.8	99.1	101.4	103.1	1.7	-0.5
1021	Copper mining, recoverable metal	100.0	107.6	97.8	91.3	97.2	111.3	14.5	0.5
111,121	Coal mining	100.0	106.4	99.4	112.5	122.2	115.9	-5.2	3.7
121	Bituminous coal and lignite mining	100.0	106.7	99.6	112.6	122.7	116.9	-4.7	3.9
14	Nonmetallic minerals, except fuels	100.0	104.6	102.4	96.2	96.0	88.8	-7.5	-2.6
142	Crushed and broken stone	100.0	109.0	108.4	103.3	100.7	96.5	-4.2	-1.3
<b>Manufacturing</b>									
2011,13	Red meat products	100.0	99.1	102.9	108.1	109.8	(3)	(3)	42.8
2011	Meatpacking plants	100.0	101.4	106.5	110.9	116.8	(3)	(3)	44.1
2013	Sausages and other prepared meats	100.0	93.6	94.6	101.8	94.3	(3)	(3)	4 -0.3
2026	Fluid milk	100.0	108.0	116.3	124.8	129.3	133.4	3.2	-6.0
203	Preserved fruits and vegetables	100.0	104.4	99.3	101.2	99.6	(3)	(3)	4 -0.4
2033	Canned fruits and vegetables	100.0	103.7	101.4	100.6	99.7	(3)	(3)	4 -0.4
204	Grain mill products	100.0	100.4	102.2	107.5	112.9	(3)	(3)	43.2
2041	Flour and other grain mill products	100.0	101.5	98.5	99.8	98.8	102.8	4.0	0.2
2043	Cereal breakfast foods	100.0	101.7	107.6	106.5	110.0	(3)	(3)	42.4
2044	Rice milling	100.0	92.7	96.3	111.8	117.9	(3)	(3)	45.3
2045	Blended and prepared flour	100.0	92.5	91.0	104.8	104.6	(3)	(3)	42.2
2046	Wet corn milling	100.0	102.0	110.8	129.2	143.8	(3)	(3)	410.1
2047,48	Prepared feeds for animals and fowls	100.0	100.8	102.0	106.2	112.6	(3)	(3)	42.9
205	Bakery products	100.0	97.2	94.1	92.3	94.3	91.7	-2.8	-1.5
2061,62,63	Sugar	100.0	101.0	109.1	109.1	111.2	110.4	-0.7	2.3
2061,62	Raw and refined cane sugar	100.0	100.7	107.3	107.8	111.1	108.7	-2.2	2.1
2063	Beet sugar	100.0	101.2	110.9	111.7	111.4	113.1	1.5	2.6
2082	Malt beverages	100.0	100.0	107.4	112.1	113.0	112.7	-0.3	2.9
2086	Bottled and canned soft drinks	100.0	104.5	105.6	109.8	114.3	117.8	3.1	3.3
2111,21,31	All tobacco products	100.0	102.8	102.2	102.2	100.6	100.3	-0.3	-0.1
2111,31	Cigarettes, chewing and smoking tobacco	100.0	103.8	102.1	101.1	98.9	98.5	-0.4	-0.7
2121	Cigars	100.0	98.2	103.7	110.3	112.5	113.0	0.4	3.1
2251,52	Hosiery	100.0	101.4	106.5	105.3	118.6	115.0	-3.0	3.4
2281	Nonwool yarn mills	100.0	104.2	103.9	99.8	103.2	103.1	-0.1	0.2
2421	Sawmills and planing mills, general	100.0	101.4	104.6	101.8	104.5	109.1	4.4	1.4
2431	Millwork	100.0	90.4	92.3	92.7	96.9	(3)	(3)	4 -0.4
2435,36	Veneer and plywood	100.0	101.7	94.6	102.7	107.8	(3)	(3)	41.6
2435	Hardwood veneer and plywood	100.0	100.7	97.8	104.1	102.2	(3)	(3)	40.8
2436	Softwood veneer and plywood	100.0	102.1	93.4	102.7	112.4	(3)	(3)	42.4
251	Household furniture	100.0	104.6	101.3	99.7	102.6	110.2	7.4	1.2
2511,17	Wood household furniture	100.0	104.9	101.5	97.1	97.0	(3)	(3)	4 -1.4
2512	Upholstered household furniture	100.0	108.8	104.9	101.9	110.1	(3)	(3)	41.3
2514	Metal household furniture	100.0	97.4	89.9	93.1	97.9	(3)	(3)	4 -0.9
2515	Mattresses and bedsprings	100.0	101.4	102.6	111.9	113.7	(3)	(3)	43.6
252	Office furniture	100.0	100.1	107.3	112.5	109.1	(3)	(3)	43.0
2521	Wood office furniture	100.0	100.7	110.7	109.2	99.4	(3)	(3)	40.7
2522	Metal office furniture	100.0	99.9	104.8	114.4	114.7	(3)	(3)	44.2
2611,21,31,61	Paper, paperboard, and pulp mills	100.0	103.2	105.4	105.2	105.2	106.6	1.3	1.1
2643	Paper and plastic bags	100.0	99.9	97.6	94.0	91.7	(3)	(3)	4 -2.3
2651	Folding paperboard boxes	100.0	102.8	101.4	97.1	98.6	102.6	4.1	-0.1
2653	Corrugated and solid fiberboard boxes	100.0	103.5	107.1	111.3	110.2	114.7	4.1	2.6
2823,24	Synthetic fibers	100.0	105.2	115.0	115.7	120.9	105.4	-12.8	2.0
2834	Pharmaceutical preparations	100.0	99.0	106.4	107.3	105.8	(3)	(3)	42.0
2841	Soaps and detergents	100.0	105.2	104.0	108.4	105.9	(3)	(3)	41.5
2844	Cosmetics and other toiletries	100.0	99.3	93.1	82.5	74.9	(3)	(3)	4 -7.3
2851	Paints and allied products	100.0	104.7	105.7	101.8	102.5	98.7	-3.7	-0.5
2911	Petroleum refining	100.0	101.3	94.9	94.2	83.7	82.5	-1.4	-4.3
301	Tires and inner tubes	100.0	108.8	109.5	105.6	123.2	122.0	-1.0	3.9
3079	Miscellaneous plastics products	100.0	100.8	94.8	95.7	98.5	(3)	(3)	4 -0.8
314	Footwear	100.0	102.5	100.2	99.1	97.0	91.1	-6.1	-1.8
3221	Glass containers	100.0	101.4	106.7	112.0	118.7	127.9	7.8	5.1
3241	Hydraulic cement	100.0	101.3	96.0	87.0	91.1	92.0	1.0	-2.4
325	Structural clay products	100.0	102.6	96.1	97.8	100.9	93.7	-7.1	-1.0
3251,53,59	Clay construction products	100.0	102.6	92.1	94.8	98.4	92.4	-6.1	-1.4
3251	Brick and structural clay tile	100.0	96.5	85.8	85.6	85.2	75.1	-11.9	-5.0
3253	Ceramic wall and floor tile	100.0	115.3	111.8	120.3	126.5	(3)	(3)	45.3
3255	Clay refractories	100.0	102.9	109.1	108.0	109.0	97.9	-10.2	0.2
3271,72	Concrete products	100.0	98.6	94.6	93.2	92.5	(3)	(3)	4 -2.1
3273	Ready-mixed concrete	100.0	103.1	99.9	93.1	95.4	(3)	(3)	4 -1.9
331	Steel	100.0	108.3	106.9	102.9	112.0	90.2	-19.5	-1.3
3321	Gray iron foundries	100.0	102.1	96.8	90.8	92.5	88.8	-4.0	-2.7
3324,25	Steel foundries	100.0	98.1	99.4	99.1	90.8	71.3	-21.5	-5.4
3331,32,33	Primary copper, lead, and zinc	100.0	96.5	106.5	103.7	118.5	116.7	-1.5	4.0

See footnotes at end of table.

**Table 1. Continued—Indexes of output per employee hour in selected industries, 1977–82, and percent changes 1981–82 and 1977–82**

SIC code <sup>1</sup>	Industry	1977	1978	1979	1980	1981	1982 <sup>2</sup>	Percent change, 1981–82	Average annual percent change, 1977–82
331	Primary copper	100.0	99.4	113.3	105.3	124.4	119.2	-4.2	4.3
334	Primary aluminum	100.0	99.6	99.7	100.0	103.8	97.1	-6.5	-0.1
3351	Copper rolling and drawing	100.0	100.3	98.5	95.0	99.3	90.0	-9.4	-1.7
3353,54,55	Aluminum rolling and drawing	100.0	104.6	101.5	101.9	99.4	99.9	0.5	-0.4
3411	Metal cans	100.0	102.3	103.6	102.6	108.1	121.6	12.5	3.3
3423	Hand and edge tools	100.0	100.6	104.3	99.0	95.8	(3)	(3)	<sup>4</sup> -1.0
3441	Fabricated structural metal	100.0	100.4	102.0	101.9	98.3	(3)	(3)	<sup>4</sup> -0.2
3494	Valves and pipe fittings	100.0	100.9	104.3	101.4	103.5	(3)	(3)	<sup>4</sup> 0.7
3498	Fabricated pipe and fittings	100.0	100.7	90.1	89.9	93.1	(3)	(3)	<sup>4</sup> -2.5
352	Farm and garden machinery	100.0	101.0	103.3	96.3	98.6	(3)	(3)	<sup>4</sup> -0.8
3523	Farm machinery	100.0	98.4	100.2	94.0	98.0	(3)	(3)	<sup>4</sup> -0.9
3524	Lawn and garden equipment	100.0	108.6	113.9	107.0	101.3	(3)	(3)	<sup>4</sup> 0.1
3531	Construction machinery and equipment	100.0	105.8	100.3	97.4	96.1	80.7	-16.0	-3.9
3541,42	Machine tools	100.0	102.5	101.9	98.7	96.5	87.5	-9.3	-2.5
3541	Metal cutting machine tools	100.0	103.6	103.1	100.9	99.3	91.3	-8.1	-1.7
3542	Metal forming machine tools	100.0	99.9	98.4	92.4	88.0	76.5	-13.1	-5.0
3561,63	Pumps and compressors	100.0	102.6	102.5	99.6	102.7	(3)	(3)	<sup>4</sup> 0.2
3561	Pumps and pumping equipment	100.0	101.1	100.7	96.9	100.6	(3)	(3)	<sup>4</sup> -0.3
3563	Air and gas compressors	100.0	105.5	106.1	105.5	106.8	(3)	(3)	<sup>4</sup> 1.3
3562	Ball and roller bearings	100.0	105.6	105.3	94.7	93.4	86.4	-7.5	<sup>4</sup> -3.4
3612	Transformers	100.0	103.4	108.5	110.8	107.0	103.1	-3.6	0.8
3613	Switchgear and switchboard apparatus	100.0	102.4	102.7	102.6	98.4	97.1	-1.3	-0.8
3621	Motors and generators	100.0	98.6	97.9	94.9	97.7	101.3	3.7	(3)
3631,32,33,39	Major household appliances	100.0	100.5	108.9	105.9	108.1	106.3	-1.7	1.4
3631	Household cooking equipment	100.0	100.3	108.5	103.4	104.9	91.2	-13.1	-1.1
3632	Household refrigerators and freezers	100.0	98.4	112.2	114.3	117.2	124.9	6.6	4.8
3633	Household laundry equipment	100.0	102.3	108.2	102.2	104.0	103.5	-0.5	0.5
3639	Household appliances, not elsewhere classified	100.0	104.0	104.3	101.6	103.9	113.0	8.8	1.7
3641	Electric lamps	100.0	103.0	106.2	104.7	108.8	111.5	2.5	2.0
3645,46,47,48	Lighting fixtures	100.0	100.6	95.0	93.9	89.4	85.1	-4.8	-3.3
3651	Radio and television receiving sets	100.0	113.1	118.2	116.4	126.9	(3)	(3)	<sup>4</sup> 5.2
371	Motor vehicles and equipment	100.0	99.7	98.5	92.2	95.0	100.4	5.7	-0.5
3825	Instruments to measure electricity	100.0	100.3	99.0	106.3	109.1	(3)	(3)	<sup>4</sup> 2.4
	<b>Other</b>								
401	Railroad transportation, revenue traffic	100.0	104.5	104.7	107.3	111.7	115.9	3.8	2.8
401	Railroad transportation, car miles	100.0	102.8	102.9	107.9	107.6	109.7	2.0	1.9
4111,31,414	Class I bus carriers	100.0	96.7	98.3	100.8	90.9	92.7	2.0	-1.5
PT	Intercity trucking <sup>6</sup>	100.0	99.8	98.6	94.3	98.7	(3)	(3)	<sup>4</sup> -0.8
4213 PT	Intercity trucking, general freight <sup>6</sup>	100.0	98.6	96.6	87.9	92.5	(3)	(3)	<sup>4</sup> -2.7
4213 PT	Air transportation <sup>6</sup>	100.0	109.3	113.1	106.2	104.9	114.4	9.1	1.4
4511,21 PT	Petroleum pipelines	100.0	101.7	101.7	93.0	86.0	85.9	-0.1	-3.8
4612,13	Telephone communications	100.0	105.8	110.8	118.1	124.4	130.1	4.6	5.5
4811	Gas and electric utilities	100.0	98.2	97.6	96.2	94.4	90.0	-4.7	-1.9
491,492,493	Electric utilities	100.0	96.8	95.4	94.0	93.1	89.8	-3.5	-1.9
491,493 PT	Gas utilities	100.0	101.4	103.4	102.1	98.0	90.2	-8.0	-1.8
492,493 PT	Retail food stores <sup>7</sup>	100.0	96.0	98.3	101.3	100.7	101.6	0.9	0.7
54									
5511	Franchised new-car dealers	100.0	98.6	94.6	99.5	96.6	97.0	0.4	-0.5
5541	Gasoline service stations <sup>7</sup>	100.0	104.5	109.8	108.3	111.7	119.7	7.2	3.1
56	Apparel and accessory stores <sup>7</sup>	100.0	110.0	112.0	116.4	123.6	129.4	4.7	4.9
5611	Men's and boys' clothing stores <sup>7</sup>	100.0	105.4	110.5	110.0	117.5	118.6	0.9	3.4
5621	Women's ready-to-wear stores <sup>7</sup>	100.0	111.3	115.0	116.2	124.3	130.1	4.7	4.8
5651	Family clothing stores <sup>7</sup>	100.0	96.4	99.6	109.6	116.3	114.9	-1.2	3.9
5661	Shoe stores <sup>7</sup>	100.0	108.7	111.2	107.7	109.3	115.2	5.4	2.0
58	Eating and drinking places <sup>7</sup>	100.0	99.3	99.4	99.5	97.2	98.9	1.7	-0.3
5912	Drug and proprietary stores <sup>7</sup>	100.0	102.3	102.9	105.6	104.7	103.3	-1.3	0.7
602	Commercial banking	100.0	101.2	99.3	92.7	90.6	(3)	(3)	<sup>4</sup> -2.8
7011	Hotels, motels, and tourist courts <sup>7</sup>	100.0	103.1	102.4	98.6	96.7	90.1	-6.8	-2.1
721	Laundry and cleaning services <sup>7</sup>	100.0	100.6	94.0	87.7	85.0	87.1	2.5	-3.6

<sup>1</sup>As defined in the *Standard Industrial Classification Manual 1972* published by the U.S. Office of Management and Budget.

<sup>2</sup>Preliminary data.

<sup>3</sup>Not available.

<sup>4</sup>Percent change, 1977–81.

<sup>5</sup>Rate of change is less than 0.05 percent.

<sup>6</sup>Output per employee.

<sup>7</sup>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.

tivity was up 9.1 percent in air transportation, as output grew 3.7 percent and employee hours fell 5.0 percent. In railroads (revenue traffic), productivity grew 3.8 percent. Although railroad output dropped 12.1 percent because of declines in freight and passenger service caused in part by the economic downturn, hours fell even more. This was the third consecutive year that railroad output declined. Productivity grew 2.0 percent for bus carriers, as output was up 1.0 percent and hours fell 1.0 percent. The 1982 productivity gain in this industry was in contrast to a sharp decline of 9.8 percent in 1981. In petroleum pipelines, productivity dropped 0.1 percent, the third consecutive annual decline in this industry.

Productivity was up 4.6 percent in the telephone communications industry as output grew 2.9 percent and employee hours dropped 1.6 percent. This increase extended the gains in this industry which have been recorded since the measure was begun in 1951. Productivity continued to decline in gas utilities (-8.0 percent) and electric utilities (-3.5 percent) in 1982. Output of gas utilities fell 7.1 percent because of a lack of demand from the industrial sector which can be attributed to the economic slowdown; however, employee hours were up slightly, because of growth in the overall number of customers. In electric utilities, where output declines have been very unusual, output fell 0.5 percent, while hours were up slightly, resulting in the 1982 falloff.

*Trade and services.* Productivity increased in most of the trade and service industries. Gasoline service stations posted a productivity advance of 7.2 percent as output grew slightly (0.9 percent), and employee hours fell 5.9 percent. Other industries with gains were: laundries and cleaning services (2.5 percent); eating and drinking places (1.7 percent); retail food stores (0.9 percent); and franchised new-car dealers (0.4 percent). However, productivity in the hotel and motel industry declined sharply, 6.8 percent. There was a large drop in output in this industry because of the economic slowdown, which affected both business and vacation travel, but hours were up slightly as new buildings were completed and staffed. Productivity also fell in the drug and proprietary store industry (-1.3 percent).

### **Trends, 1977-82**

Except for metal forming machine tools, all the industries measured have recorded average annual rates of gain in productivity over the long term (1947-82 for many of the industries). However, over the more recent period, 1977-82, nearly half of the industries posted declining rates of productivity. In addition, about three-quarters of the industries had lower rates of productivity during 1977-82 than in the preceding long-term period (1947-77 for many industries). This slowdown in productivity in the more current period matches the trend in the nonfarm business sector of

the economy, in which productivity recorded no growth from 1977 to 1982, compared with an average annual gain of 2.3 percent from 1947 to 1977.

*Gains.* In recent years, the wet corn milling industry had the highest rate of productivity gain, an average of 10.1 percent per year from 1977 to 1981 (1982 data are not yet available). Output in this industry increased at the high rate of 8.6 percent per year as the markets for high fructose syrup, one of the industry's key products, continued to expand. Especially noteworthy was the growth in demand for the syrup from the soft drink industry. During this period, several new plants in the wet corn milling industry were opened and a significant amount of highly automatic manufacturing equipment came on line. The industry with the second highest rate of productivity growth was fluid milk, with an annual rate of gain of 6.0 percent from 1977 to 1982. Although output did not grow over the period, hours dropped sharply, as large new plants, using highly automatic computerized processing equipment, replaced older, less efficient plants. Other industries with high rates of growth were: telephone communications (5.5 percent); rice milling and ceramic wall and floor tile (both 5.3 percent from 1977 to 1981); radio and television sets (5.2 percent from 1977 to 1981); and glass containers (5.1 percent).

*Declines.* Among the numerous industries with declining productivity rates over the more recent period, the largest falloff was in cosmetics—7.3 percent annually from 1977 to 1981. Output in this industry dropped sharply, in contrast to its previous high rate of gain, partly because of the impact of the economic slowdown as consumers purchased fewer impulse and luxury items.

Other industries with large declines during 1977-82 included: steel foundries (-5.4 percent); brick and structural clay tile and metal forming machine tools (both -5.0 percent); petroleum refining (-4.3 percent); construction machinery (-3.9 percent); and petroleum pipelines (-3.8 percent). Except for petroleum pipelines, these industries recorded average annual declines in output from 1977 to 1982. Many of these decreases were quite large.

A full report, *Productivity Measures for Selected Industries, 1954-82*, BLS Bulletin 2189, is available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. □

#### —FOOTNOTE—

<sup>1</sup>For a detailed report on these industries, see the following *Monthly Labor Review* articles: James D. York, "Productivity growth in plastics lower than all manufacturing average," September 1983, pp. 17-21; Barbara J. Bingham, "Instruments to measure electricity: industry's productivity growth rises," October 1983, pp. 11-17; and Horst Brand and Clyde Huffstutler, "Productivity in two fabricated metals industries," October 1983, pp. 18-24. Articles on the red meat products, switchgear, and apparel and accessory stores industries will appear in forthcoming issues of the *Review*.