

# FEDERAL RESERVE statistical release



G.3 (402)

For immediate release

## CAPACITY UTILIZATION

### Manufacturing, Mining, Utilities, and Industrial Materials

December 16, 1986

Capacity utilization in manufacturing, mining, and utilities rose 0.3 percentage point in November to 79.3 percent from the 79.0 percent rate that prevailed in the two preceding months. Despite the November increase, utilization has changed little since March and was 2.5 percentage point below the peak rate for this cyclical expansion, which was reached in mid-1984.

The rate for manufacturing industries rose 0.4 percentage point to 79.9 percent in November. The increases were moderate but widespread. Within manufacturing, the rate for nondurable manufacturing rose 0.6 percentage point to 85.0 percent while that for durable manufacturing increased 0.3 percentage point to 76.5 percent. Since the 1984 peak in the overall utilization rate, the operating rate for nondurable goods industries has increased about 1 percentage point, but the rate for durable goods industries has fallen 3 percentage points. During November, the largest gains—about one percentage point—were in primary metals, and paper and products; the former industry, especially the iron and steel component, was operating far below capacity while the latter was relatively near to capacity limits. The only manufacturing industries with declines in November were petroleum products, down 0.6 percentage point, and instruments, down 0.3 percentage point.

Utilization in the mining industry declined for the tenth consecutive month to 71.5 percent of capacity. Although coal production and oil and gas well drilling increased, the production of crude oil declined further in November. The rate for utilities increased 0.2 percentage point to 80.6 percent.

Producers of industrial materials operated at 78.2 percent of capacity in November, up from 77.8 percent in October. Utilization increased broadly with the exception of the rate for energy materials which was unchanged.

### Capacity Utilization: Summary

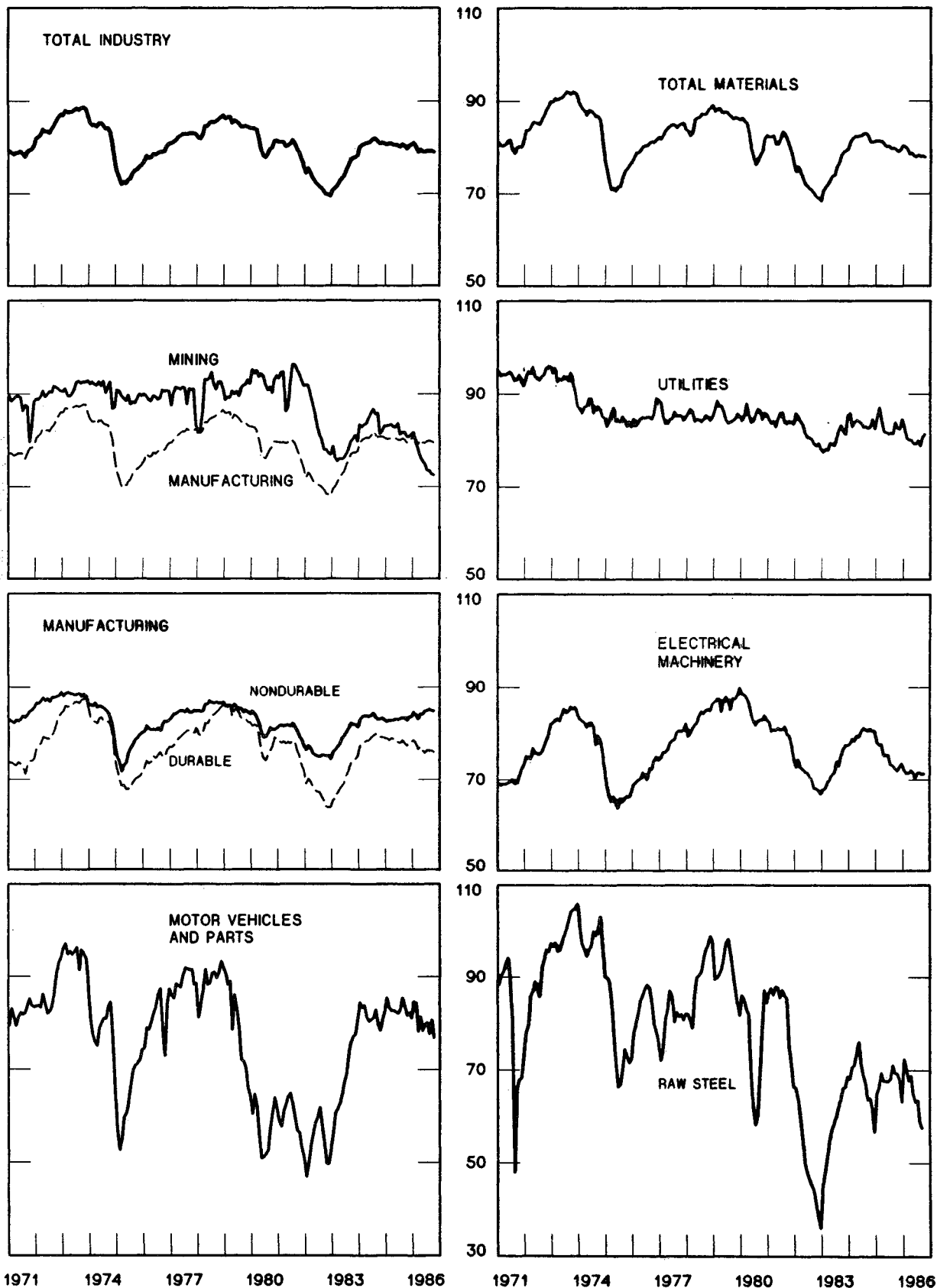
Percent of capacity, seasonally adjusted

Series	1973 High	1975 Low	1978 -80 High	1982 Low	1987 -85 Avg.	1986			
						AUG	SEP	OCT	NOV
Total Industry	88.6	72.1	86.9	69.5	81.7	79.2	79.0	79.0	79.3
Manufacturing	87.7	69.9	86.5	68.0	80.6	79.7	79.6	79.5	79.9
Durable	87.4	67.9	86.3	63.7	78.7	76.2	76.4	76.2	76.5
Nondurable	88.8	71.8	87.0	74.4	83.5	85.0	84.4	84.4	85.0
Mining	92.8	87.8	95.2	76.9	87.7	73.1	72.4	72.0	71.5
Utilities	95.6	82.9	88.5	78.0	87.9	78.8	79.7	80.4	80.6
Industrial Materials	92.0	70.5	89.1	68.4	82.5	77.9	78.0	77.8	78.2

# CAPACITY UTILIZATION

NOVEMBER DATA

SEASONALLY ADJUSTED, PERCENT



# MANUFACTURING, MINING AND UTILITIES

Table 1

## Capacity Utilization

Monthly, seasonally adjusted, percent of capacity

Series	1973 High	1975 Low	1978 -80 High	1982 Low	1987 -85 Avg.	1985 NOV	1986									
							MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	
Total Industry	88.6	72.1	86.9	69.5	81.7	80.3	79.0	79.5	79.1	79.0	79.2	79.2	79.0	79.0	79.3	
Manufacturing	87.7	69.9	86.5	68.0	80.6	80.1	79.1	79.9	79.4	79.3	79.7	79.7	79.6	79.5	79.9	
Primary processing	91.9	68.3	89.1	65.1	81.7	82.8	82.4	83.2	82.9	82.7	82.9	83.2	83.6	83.5	83.9	
Advanced processing	86.0	71.1	85.1	69.5	80.1	78.9	77.4	78.5	78.0	77.7	78.4	78.0	77.7	77.7	78.1	
Durable manufacturing	87.4	67.9	86.3	63.7	78.7	77.9	76.5	77.1	76.3	75.7	76.3	76.2	76.4	76.2	76.5	
Stone, clay and glass products	89.3	67.1	86.6	62.9	77.8	81.0	82.6	83.6	82.4	82.7	81.7	81.6	82.8	80.9		
Primary metals	101.9	67.0	97.1	45.8	80.1	74.9	69.3	71.0	68.1	65.1	67.2	67.1	67.8	67.7	68.9	
Iron and steel, subtotal	105.8	66.6	100.3	37.6	79.4	71.2	62.6	64.0	58.9	57.1	60.7	59.9	60.3	60.7		
Nonferrous metals, subtotal	95.6	62.1	91.1	60.8	81.3	80.8	79.7	81.9	82.5	77.6	77.2	78.3	79.3	78.4		
Fabricated metal products	85.0	64.7	87.4	61.3	77.9	80.7	80.6	81.0	79.7	79.8	79.1	79.2	80.2	80.7	80.7	
Nonelectrical machinery	89.0	68.2	86.0	62.9	78.5	74.0	71.7	71.0	71.1	70.5	71.4	71.2	70.2	70.6	70.8	
Electrical machinery	85.7	63.7	89.9	66.9	78.3	72.9	71.4	72.0	71.5	70.1	71.5	71.5	71.4	71.4	71.8	
Motor vehicles and parts	97.1	52.7	93.3	47.0	77.9	82.2	78.2	81.3	78.4	79.7	80.0	77.7	80.5	76.7	77.1	
Automobiles			93.3	36.6		76.2	74.6	80.3	75.6	79.3	76.1	70.2	77.0	73.7	74.1	
Aerospace and misc. trans. eqp.	77.0	69.6	87.1	70.7	76.4	85.8	86.0	87.3	87.3	87.0	87.1	88.7	89.0	89.4	89.4	
Instruments	89.2	74.9	88.9	77.8	83.4	81.6	81.7	81.7	80.2	79.7	80.5	80.4	80.0	79.2	78.9	
Other durables	87.7	69.0	81.0	69.1	81.7	81.9	82.7	83.2	83.5	82.9	83.0	83.2	83.2	84.1	84.7	
Nondurable manufacturing	88.8	71.8	87.0	74.4	83.5	83.5	83.0	84.1	84.1	84.7	84.8	85.0	84.4	84.4	85.0	
Food and kindred products	85.8	77.6	85.1	76.5	82.3	78.9	78.5	78.8	78.9	79.3	78.9	79.1	78.5	77.7		
Textile mill products	92.1	58.9	88.3	70.6	84.5	89.3	87.4	90.2	90.1	91.1	91.6	92.6	93.6			
Paper and products	95.6	67.7	92.7	80.8	88.4	91.7	93.4	94.4	93.6	96.2	96.6	96.8	95.6	95.6		
Chemicals and products	88.6	69.2	82.9	67.6	78.6	78.4	79.1	80.5	79.6	81.1	80.9	81.0	80.5	80.1		
Petroleum products	99.6	83.7	91.7	69.7	87.7	85.6	86.9	89.6	93.9	90.1	89.0	92.3	91.7	90.5	89.9	
Rubber and plastics products	97.5	59.5	89.4	71.2	84.6	87.2	84.4	83.5	85.0	85.9	87.4	87.0	86.4	86.8		
Other nondurables	86.4	72.3	92.4	78.9	86.0	87.6	86.0	87.5	87.2	87.3	87.9	87.3	86.5	87.9	88.3	
Mining	92.8	87.8	95.2	76.9	87.7	80.7	77.9	76.4	75.5	74.9	73.5	73.1	72.4	72.0	71.5	
Utilities	95.6	82.9	88.5	78.0	87.9	82.5	80.1	80.0	79.3	79.2	79.9	78.8	79.7	80.4	80.6	
Electric utilities	98.7	83.0	87.6	78.2	88.7	82.2	81.2	82.3	82.2	83.0	84.3	82.1	82.9	83.7	83.9	

Table 2

## Output, Capacity, and Capacity Utilization

Quarterly, seasonally adjusted

Series	OUTPUT					CAPACITY					UTILIZATION				
	1985 Q3	Q4	1986 Q1	Q2	Q3	1985 Q3	Q4	1986 Q1	Q2	Q3	1985 Q3	Q4	1986 Q1	Q2	Q3
Total Industry	124.0	124.7	125.0	124.4	125.0	154.4	155.4	156.3	157.1	157.9	80.3	80.2	80.0	79.2	79.2
Manufacturing	126.8	127.4	128.4	128.4	129.4	158.4	159.5	160.5	161.4	162.4	80.1	79.9	80.0	79.5	79.7
Primary processing	109.2	110.3	111.5	111.1	112.1	132.7	133.1	133.6	134.0	134.6	82.3	82.8	83.5	82.9	83.2
Advanced processing	137.4	137.8	138.5	138.9	139.8	173.9	175.3	176.7	177.9	179.1	79.0	78.6	78.4	78.0	78.0
Durable manufacturing	127.5	127.9	128.3	127.1	127.6	163.4	164.5	165.5	166.4	167.3	78.0	77.7	77.5	76.4	76.3
Stone, clay and glass products	116.8	117.0	119.8	120.8	120.3	143.2	144.1	144.9	145.8	146.6	81.5	81.2	82.6	82.9	82.1
Primary metals	80.5	82.2	79.7	74.8	73.7	111.0	110.6	110.2	109.8	109.4	72.5	74.3	72.3	68.1	67.4
Iron and steel, subtotal	70.1	72.6	68.7	61.4	61.2	104.3	103.7	103.0	102.2	101.5	67.3	70.0	66.7	60.0	60.3
Nonferrous metals, subtotal	100.2	100.3	100.5	100.0	97.2	123.7	123.8	123.9	124.1	124.2	81.0	81.0	81.1	80.6	78.3
Fabricated metal products	106.8	107.9	108.4	107.1	106.3	133.3	133.4	133.5	133.6	133.7	80.1	80.9	81.2	80.1	79.5
Nonelectrical machinery	145.0	144.3	143.5	140.9	142.0	194.2	195.7	197.2	198.7	200.2	74.6	73.7	72.8	70.9	70.9
Electrical machinery	165.3	166.6	165.4	165.3	167.1	226.6	228.9	230.7	232.2	233.7	72.9	72.8	71.7	71.2	71.5
Motor vehicles and parts	113.7	111.8	113.7	110.6	110.5	135.4	137.0	138.1	138.6	139.2	84.0	81.6	82.3	79.8	79.4
Automobiles	114.5	108.4	116.6	112.2	106.2	141.0	142.9	143.6	143.1	142.7	81.2	75.9	81.2	78.4	74.5
Aerospace and misc. trans. eqp.	137.1	140.6	143.0	144.8	147.3	164.1	164.7	165.4	166.1	166.9	83.5	85.3	86.5	87.2	88.3
Instruments	140.1	139.6	141.8	140.9	141.8	169.7	171.5	173.2	174.9	176.6	82.6	81.4	81.9	80.5	80.3
Other durables	123.7	123.6	126.0	127.2	128.0	149.3	150.6	151.7	152.8	153.9	82.9	82.1	83.1	83.2	83.2
Nondurable manufacturing	125.9	126.8	128.6	130.2	131.8	151.3	152.4	153.5	154.5	155.6	83.2	83.2	83.8	84.3	84.7
Food and kindred products	131.4	131.0	132.3	133.8	134.0	165.3	166.7	168.1	169.4	170.7	79.5	78.6	78.7	79.0	78.8
Textile mill products	105.1	108.5	108.6	111.8	114.7	122.9	123.2	123.4	123.6	123.8	85.5	88.1	88.0	90.4	92.6
Paper and products	127.7	129.3	132.8	134.8	138.0	139.8	140.6	141.4	142.3	143.2	91.4	92.0	93.9	94.7	96.4
Chemicals and products	128.1	127.9	131.3	132.8	134.1	162.5	163.4	164.3	165.2	166.0	78.8	78.2	79.9	80.4	80.8
Petroleum products	87.2	88.2	91.1	93.0	92.6	102.6	102.3	102.0	101.9	101.8	85.0	86.2	89.3	91.2	91.0
Rubber and plastics products	148.2	149.5	149.7	149.7	155.4	170.0	172.1	174.3	176.5	178.7	87.1	86.8	85.9	84.8	86.9
Other nondurables	127.4	129.4	129.9	131.8	132.7	147.1	148.4	149.6	150.9	152.1	86.6	87.2	86.8	87.3	87.2
Mining	107.9	107.1	105.4	99.9	96.3	132.4	132.5	132.4	132.1	131.9	81.5	80.9	79.6	75.6	73.0
Utilities	111.1	112.8	110.5	108.9	109.2	135.0	135.7	136.3	136.9	137.5	82.3	83.2	81.1	79.5	79.4
Electric utilities	118.6	120.6	119.6	122.2	123.9	144.9	146.0	147.1	148.1	149.0	81.8	82.6	81.3	82.5	83.1

Note. Data for output are percentages of 1977 output as shown in the Federal Reserve's seasonally adjusted indexes of industrial production. Capacity is also expressed as a percentage of

1977 actual output. Capacity utilization percentages are calculated as ratios of production to capacity.

# INDUSTRIAL MATERIALS

Table 3

## Capacity Utilization

Monthly, seasonally adjusted, percent of capacity

Series	1973 High	1975 Low	1978 -80 High	1982 Low	1967 -85 Avg.	1985 NOV	1986									
							MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	
Industrial Materials	92.0	70.5	89.1	68.4	82.5	79.4	78.5	78.7	78.1	78.0	78.3	77.9	78.0	77.8	78.2	
Durable goods materials	91.8	64.4	89.8	60.9	79.3	76.2	74.5	74.9	73.7	73.2	73.7	73.5	73.5	73.5	74.0	
Metal materials	99.2	67.1	93.6	45.7	78.4	72.3	66.0	68.3	65.2	63.2	63.8	63.8	64.7	65.1	65.9	
Raw steel	106.0	66.4	98.9	36.1	81.1	67.9	67.7	68.8	64.9	63.2	63.5	58.9	57.6	60.1		
Aluminum	95.7	73.0	97.4	58.8	88.1	68.0	71.3	72.1	72.4	64.7	61.4	62.6	62.4	63.8		
Nondurable goods materials	91.1	66.7	88.1	70.6	83.2	81.7	82.5	83.6	83.5	84.3	85.0	85.5	86.1	85.9	86.3	
Textile, paper, and chemical materials	92.8	64.8	89.4	68.6	83.6	82.2	83.4	83.6	84.2	85.1	85.6	86.5	87.4	86.9	87.4	
Pulp and paper materials	98.4	70.6	97.3	79.9	91.4	90.5	93.0	93.6	93.1	95.9	97.8	97.9	96.1	95.9		
Chemical materials	92.5	64.4	87.9	63.3	80.8	78.3	79.4	79.4	80.2	80.4	80.2	81.2	82.6	82.0		
Energy materials	94.6	86.9	94.0	82.2	89.7	84.2	83.7	82.8	82.9	83.1	82.3	80.6	80.6	79.8	79.8	

Table 4

## Output, Capacity, and Capacity Utilization

Quarterly, seasonally adjusted

Series	OUTPUT 1986					CAPACITY 1986					UTILIZATION 1986				
	Q3	Q4	Q1	Q2	Q3	Q3	Q4	Q1	Q2	Q3	Q3	Q4	Q1	Q2	Q3
Industrial Materials	113.8	114.3	114.5	113.3	113.4	142.8	143.6	144.2	144.7	145.3	79.7	79.6	79.4	78.3	78.1
Durable goods materials	120.4	121.1	120.9	118.8	118.8	157.8	159.0	159.9	160.7	161.5	76.3	76.2	75.6	73.9	73.6
Metal materials	79.6	82.6	79.0	75.1	73.1	115.9	115.5	115.0	114.5	114.0	68.7	71.5	68.7	65.6	64.1
Raw steel	71.8	68.6	71.4	66.2	60.0	103.3	102.7	101.8	100.9	99.9	69.5	66.8	70.1	65.6	60.0
Aluminum	84.2	78.6	79.1	77.7	68.1	115.8	114.7	113.2	111.4	109.7	72.7	68.5	69.9	69.7	62.1
Nondurable goods materials	113.4	113.9	115.7	116.9	119.7	138.1	138.6	139.0	139.5	139.9	82.1	82.2	83.2	83.8	85.6
Textile, paper and chemical materials	113.3	114.0	116.2	117.0	120.5	137.5	138.0	138.4	138.8	139.2	82.4	82.7	83.9	84.3	86.5
Pulp and paper materials	123.8	124.8	128.8	130.1	135.1	135.8	136.5	137.3	138.1	138.9	91.1	91.4	93.8	94.2	97.3
Chemical materials	113.6	113.4	115.3	115.4	117.7	143.1	143.6	144.0	144.3	144.7	79.4	79.0	80.1	80.0	81.3
Energy materials	102.5	102.6	102.2	100.6	98.6	120.6	120.9	121.1	121.3	121.4	85.0	84.9	84.4	82.9	81.2

### Explanatory Notes

**Definition.** This release contains estimates of output, capacity, and capacity utilization for the nation's factories, mines, and electric and gas utilities. Output data are the Federal Reserve's seasonally adjusted indexes of industrial production, which express output as percentages of 1977 output. The capacity estimates are expressed as percentages of 1977 output as well. Capacity utilization percentages are calculated as ratios of production to capacity. The capacity indexes are based on a variety of data, including capacity data in physical units compiled by trade associations, private and government surveys of capacity growth and utilization rates, and estimates of capital stock growth. The concept of practical capacity is applied, which is defined as the greatest level of output that a plant can maintain within the framework of a realistic work pattern, taking account of normal downtime, and assuming sufficient availability of inputs to operate machinery and equipment in place. When the capacity indexes for individual industries are aggregated—for example to total manufacturing—no explicit account is taken of possible general equilibrium constraints such as emerging industry bottlenecks. Because of the large and heterogeneous database, changes in utilization rates may be more meaningful in the analysis of business conditions than any particular level of these rates.

**Groupings.** Estimates of capacity and industrial production for manufacturing industries are aggregated to primary processing and advanced processing industries, to durable and nondurable manufacturing industries, and to total manufacturing. The mining, manufacturing, and utilities estimates aggregate to the total index. Primary processing includes textile mill products, paper and products, industrial chemicals, petroleum products, rubber and plastics products, lumber and products, primary metals, fabricated metal products, and stone, clay, and glass products. Advanced processing includes foods, tobacco products, apparel products, printing and publishing, chemical products such as drugs and toiletries, leather and products, furniture and fixtures, machinery, transportation equipment, instruments, miscellaneous manufactures, and government-owned-and-operated ordnance facilities. Industrial materials are items produced and used as inputs by manufacturing plants, mines, and utilities. Industrial materials include many of the items included in the primary processing grouping of manufacturing, as well as some of the output of the advanced processing industries, mines, and utilities—such as iron ore, crude oil, semiconductors, and electricity sold to industry.

**Perspective.** The historical highs and lows in capacity utilization shown in the tables above are specific to each series and did not all occur in the same month. Industrial plants usually operate at capacity utilization rates that are well below 100 percent; none of the broad aggregates has ever reached 100 percent. For mining, manufacturing, and utilities as a whole, and for total manufacturing, utilization rates as high as 90 percent have been exceeded only in wartime.

**Revisions.** The first estimates for a month are published about the 17th of the following month. These estimates may revise in each of the next three months as new data become available. After the fourth month no further revisions are undertaken until an annual or benchmark revision. The median of the revisions in the total manufacturing utilization rate between the first and fourth estimate is 0.3 of a percentage point; that is, in about half of the cases, the absolute value of the revision from the first to the fourth estimate is less than 0.3 of a percentage point.

**Sources.** The basic methodology used to estimate the series is discussed in Richard D. Rad-dock, "Revised Federal Reserve Rates of Capacity Utilization," *Federal Reserve Bulletin*, Vol. 71 (October 1985), pp. 754-66. Revised data for 1984-85 as well as historical utilization rates since 1967 (1948 in the case of manufacturing) are included in the statistical supplement to the September 1986 capacity utilization release. Copies may be obtained from Publications Services, Board of Governors of the Federal Reserve System, Washington, D.C. 20551

**Rounding.** Utilization rates are calculated from unrounded capacity and production indexes. Aggregates are derived from unrounded detailed components.

**Release schedule for 1986.** Approximately 11 a.m. on January 17, February 18, March 17, April 16, May 16, June 16, July 16, August 18, September 17, October 17, November 17, and December 17.