

# FEDERAL RESERVE statistical release



G.3 (402)

## CAPACITY UTILIZATION

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

For release at 9:15 a.m. (EST)  
January 18, 1989

Capacity utilization in manufacturing, mining, and utilities edged up 0.1 percentage point in December to 84.2 percent, the highest rate since November 1979. The overall operating rate has risen 4.5 percentage points over the past two years with most industries posting gains. Industries with especially strong increases in utilization during that period include primary metals, chemicals, fabricated metal products, nonelectrical machinery, and motor vehicles and parts. The chemical industry, with 89.8 percent utilization in November 1988, reached its highest level since June 1951.

In December 1988, both manufacturing and mining showed small increases in utilization, while the operating rate at utilities rose somewhat faster. Within manufacturing, utilization at primary processing industries continued upward, despite some further easing in the primary metals industry. The largest increase within primary processing came in petroleum refining, where utilization has fluctuated considerably since spring. The month-to-month variation in this industry can be partially attributed to supply disruptions caused by several refinery fires and extreme weather conditions. Within advanced processing industries, the operating rate for the motor vehicles and parts increased strongly again in December to 88.1 percent, its highest rate since March 1979. Production of automobiles, trucks, and parts are all well above their levels at the end of 1987; however, automakers have scheduled a lower rate of production in the first quarter of 1989.

Utilization at producers of industrial materials was unchanged in December at 85 percent. Declines in operating rates at durable goods and energy materials industries were offset by an increase for nondurable goods materials.

### Capacity Utilization: Summary

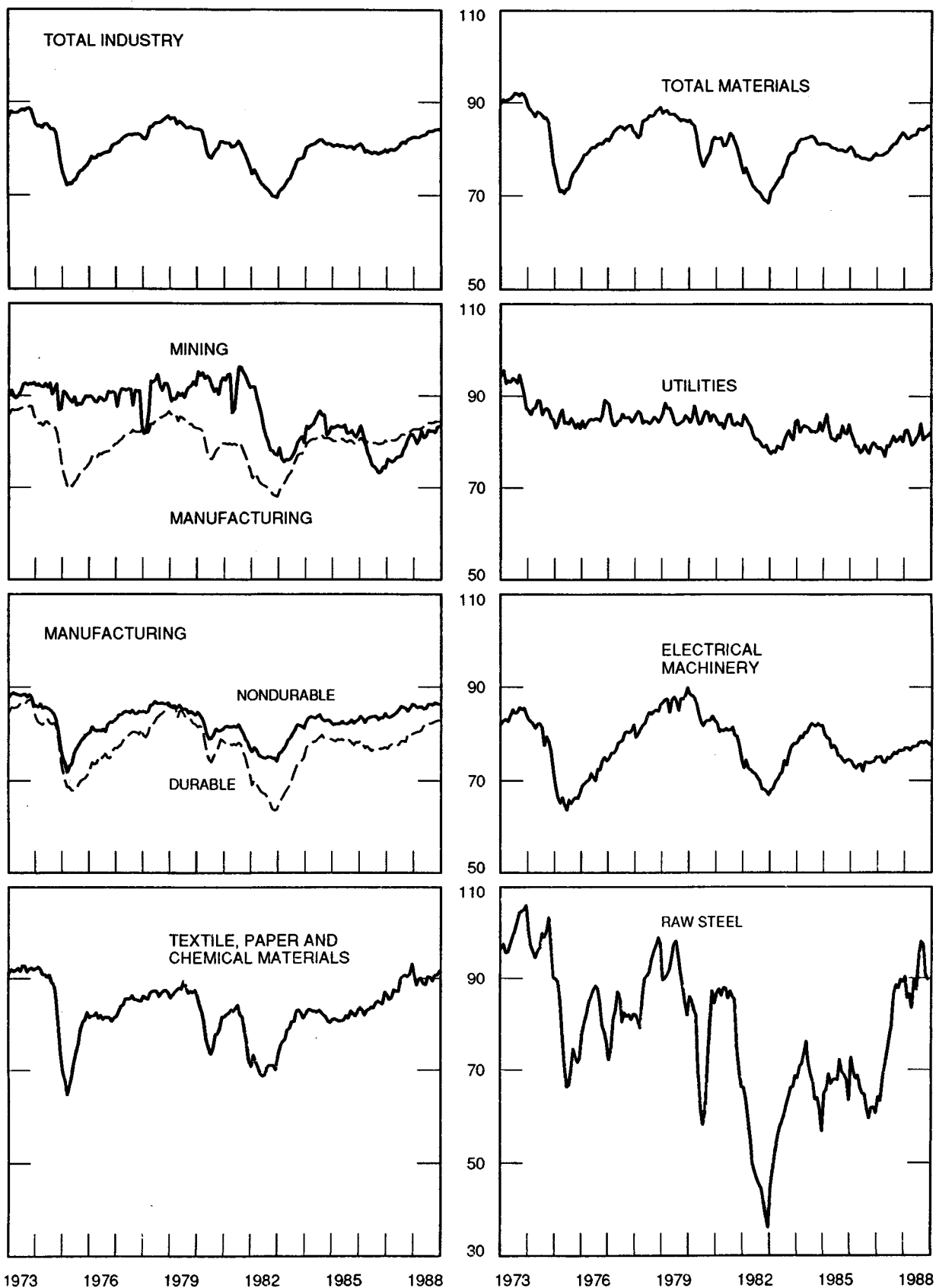
Percent of capacity, seasonally adjusted

Series	1973 High	1975 Low	1978 -80 High	1982 Low	1987 -87 Avg.	1988			
						SEP	OCT	NOV	DEC
Total Industry	88.6	72.1	86.9	69.5	81.5	83.7	84.0	84.1	84.2
Manufacturing	87.7	69.9	86.5	68.0	80.6	84.0	84.3	84.3	84.4
Durable	87.4	67.9	86.3	63.7	78.7	82.5	82.7	82.9	83.0
Nondurable	88.8	71.8	87.0	74.2	83.5	86.2	86.7	86.5	86.4
Mining	92.8	87.6	95.2	76.9	86.7	82.3	81.9	83.2	83.3
Utilities	95.6	82.9	88.5	78.0	86.9	80.4	81.1	81.3	81.9
Industrial Materials	92.0	70.5	89.1	68.5	82.2	84.1	84.5	85.0	85.0

# CAPACITY UTILIZATION

DECEMBER 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 -87 Avg.	1987 DEC	1988											
							APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC			
Total Industry	88.6	72.1	86.9	69.5	81.5	82.4	82.7	82.9	83.0	83.7	83.8	83.7	84.0	84.1	84.2			
Manufacturing	87.7	69.9	86.5	68.0	80.6	82.6	82.9	83.3	83.3	84.0	84.0	84.0	84.3	84.3	84.4			
Primary processing	91.9	68.3	89.1	65.0	81.7	87.6	86.9	87.0	86.6	87.8	87.4	87.2	87.9	88.1	88.4			
Advanced processing	86.0	71.1	85.1	69.5	80.1	80.3	81.2	81.7	81.7	82.2	82.4	82.4	82.6	82.6	82.6			
Durable manufacturing	87.4	67.9	86.3	63.7	78.7	80.1	80.9	81.8	81.7	82.3	82.3	82.5	82.7	82.9	83.0			
Stone, clay and glass products	89.3	67.1	86.6	62.9	78.3	81.4	81.9	81.8	83.0	82.1	82.3	82.2	82.1	83.4				
Primary metals	101.9	67.0	97.1	45.8	79.6	89.1	83.7	87.5	85.8	89.5	88.8	90.9	92.0	90.0	89.6			
Iron and steel, subtotal	105.8	66.6	100.3	37.6	78.6	91.6	83.5	88.0	83.0	89.7	88.2	90.9	92.8	88.9				
Nonferrous metals, subtotal	95.6	62.1	91.1	60.8	81.2	85.8	84.1	86.8	89.5	89.3	89.6	90.9	91.0	91.5				
Fabricated metal products	85.0	64.7	87.4	61.3	77.8	80.8	82.3	82.9	83.1	83.8	84.0	84.1	84.0	84.9	84.9			
Nonelectrical machinery	89.0	68.2	80.0	62.9	78.1	77.8	80.1	81.4	81.6	82.4	82.7	82.8	81.9	82.4	82.3			
Electrical machinery	85.7	63.7	89.9	66.9	78.1	76.5	77.3	77.4	77.4	78.2	78.4	78.1	78.5	78.1	77.7			
Motor vehicles and parts	97.1	52.7	93.3	47.0	78.1	77.7	80.5	83.8	83.3	81.5	82.0	82.6	84.7	85.5	88.1			
Automobiles				36.6		63.9	69.3	75.3	75.3	71.4	70.7	74.2	77.0	76.7	79.8			
Aerospace and misc. trans. eqp.	77.0	69.6	87.1	70.7	77.7	87.9	86.6	86.4	86.2	86.7	85.8	85.9	86.2	86.0	86.0			
Instruments	89.2	74.9	88.9	77.8	83.0	78.5	80.2	80.3	81.0	82.5	82.5	82.8	83.6	83.3	83.4			
Other durables	87.7	69.0	81.0	69.1	81.6	81.8	82.2	82.2	81.3	81.4	80.9	80.7	81.1	81.5	81.9			
Nondurable manufacturing	88.8	71.8	87.0	74.2	83.5	86.4	85.9	85.4	85.5	86.4	86.4	86.2	86.7	86.5	86.4			
Food and kindred products	85.8	77.6	85.1	76.5	82.2	80.3	79.6	79.7	79.7	80.6	80.4	80.1	81.1	81.0				
Textile mill products	92.1	58.9	88.3	70.6	85.0	93.3	91.3	88.9	88.3	90.2	89.3	88.8	89.1	88.4				
Paper and products	95.6	67.7	92.7	80.2	88.5	97.0	94.9	94.8	93.9	95.9	94.8	94.5	94.7	93.7				
Chemicals and products	88.6	69.2	82.9	67.6	78.9	86.5	86.2	86.1	86.7	88.1	88.6	88.7	89.4	89.8				
Petroleum products	99.6	83.7	91.7	68.8	86.9	86.6	88.5	85.5	84.4	85.2	86.0	83.9	86.2	84.7	87.3			
Rubber and plastics products	97.5	59.5	89.4	71.2	84.8	88.8	88.0	88.1	88.2	88.3	87.8	87.3	88.0	88.3				
Other nondurables	86.4	72.3	92.4	78.9	86.0	86.2	86.3	85.4	85.6	85.8	86.1	86.3	85.8	85.2	84.7			
Mining	92.8	87.8	95.2	76.9	86.7	81.5	82.3	80.8	81.2	82.5	82.2	82.3	81.9	83.2	83.3			
Utilities	95.6	82.9	88.5	78.0	86.9	80.0	79.3	79.7	80.8	81.5	83.9	80.4	81.1	81.3	81.9			
Electric utilities	98.7	83.0	87.6	78.2	88.0	81.4	82.2	83.5	84.9	86.4	88.9	84.6	85.0	85.1	85.7			

Table 2

## Output, Capacity, and Capacity Utilization

Quarterly, seasonally adjusted

Series	OUTPUT					CAPACITY					UTILIZATION				
	1987 Q4	1988 Q1	Q2	Q3	Q4	1987 Q4	1988 Q1	Q2	Q3	Q4	1987 Q4	1988 Q1	Q2	Q3	Q4
Total Industry	133.2	134.5	136.0	138.4	139.8	162.2	163.1	164.2	165.2	166.2	82.1	82.4	82.8	83.8	84.1
Manufacturing	138.1	139.6	141.5	144.0	145.7	167.7	168.9	170.2	171.5	172.7	82.3	82.7	83.2	84.0	84.4
Primary processing	122.2	123.0	123.9	125.9	127.9	140.0	141.6	142.7	143.9	145.1	86.9	86.9	86.8	87.5	88.2
Advanced processing	147.6	149.7	152.3	154.9	156.4	184.1	185.4	186.7	188.1	189.4	80.1	80.7	81.5	82.4	82.6
Durable manufacturing	136.9	138.4	141.0	143.3	145.0	171.1	172.0	173.0	174.0	174.9	80.0	80.4	81.5	82.4	82.9
Stone, clay and glass products	119.8	121.5	122.1	122.5		147.2	147.9	148.4	148.9		81.4	82.1	82.2	82.2	
Primary metals	90.5	86.0	87.3	91.8	92.9	101.8	101.6	102.0	102.3	102.6	88.4	84.7	85.7	89.7	90.5
Iron and steel, subtotal	81.2	76.5	75.8	80.2		89.8	89.2	89.3	89.5		90.4	85.8	84.8	89.6	
Nonferrous metals, subtotal	108.0	104.1	109.1	113.7		124.6	125.1	125.8	126.4		86.7	83.2	86.8	89.9	
Fabricated metal products	114.3	117.8	119.7	122.1	123.8	143.0	143.8	144.6	145.5	146.3	79.9	81.9	82.7	83.9	84.6
Nonelectrical machinery	158.7	163.7	169.6	174.0	174.2	206.7	208.0	209.3	210.6	211.9	76.8	78.7	81.0	82.6	82.2
Electrical machinery	175.7	177.2	179.1	181.8	182.3	229.6	230.5	231.5	232.5	233.5	76.5	76.9	77.4	78.2	78.1
Motor vehicles and parts	113.4	110.6	117.9	117.5	123.9	141.7	142.3	142.8	143.3	143.8	80.0	77.8	82.5	82.0	86.1
Automobiles	102.8	92.6	109.9	108.2	116.9	149.3	149.8	149.9	150.1	150.2	68.9	61.8	73.3	72.1	77.8
Aerospace and misc. trans. eqp.	152.9	153.9	151.5	152.0	152.7	173.2	174.2	175.3	176.4	177.5	88.3	88.3	86.4	86.2	86.1
Instruments	146.7	149.0	151.6	157.0	160.1	184.9	186.6	188.3	190.1	191.8	79.3	79.9	80.5	82.6	83.4
Other durables	135.4	137.8	138.1	137.6	139.5	165.8	167.3	168.6	169.9	171.2	81.7	82.3	81.9	81.0	81.5
Nondurable manufacturing	139.7	141.4	142.3	145.0	146.8	163.1	164.6	166.3	168.0	169.7	85.6	85.9	85.6	86.3	86.5
Food and kindred products	139.0	141.4	140.9	143.3		174.1	175.4	176.8	178.2		79.8	80.6	79.7	80.4	
Textile mill products	117.4	116.2	115.4	116.6		126.6	127.5	128.9	130.4		92.8	91.1	89.5	89.4	
Paper and products	148.3	149.0	149.1	151.4		154.9	156.2	157.7	159.2		95.7	95.4	94.5	95.1	
Chemicals and products	144.6	146.6	149.5	154.5		170.5	171.7	173.2	174.6		84.8	85.3	86.3	88.5	
Petroleum products	94.7	96.9	95.9	94.9	96.3	110.8	111.1	111.4	111.6	111.9	85.4	87.2	86.1	85.0	86.0
Rubber and plastics products	169.1	171.7	173.4	175.3		191.3	193.9	196.8	199.7		88.4	88.5	88.1	87.8	
Other nondurables	141.4	143.0	144.5	147.2	147.7	163.9	166.2	168.6	170.9	173.3	86.3	86.1	85.7	86.1	85.2
Mining	104.3	102.5	103.4	103.9	103.9	128.4	127.7	127.0	126.2	125.5	81.2	80.3	81.5	82.3	82.8
Utilities	112.3	114.7	111.9	115.1	114.6	139.4	139.8	140.1	140.4	140.7	80.6	82.0	79.9	81.9	81.4
Electric utilities	126.6	130.0	129.8	135.2	133.6	154.0	154.8	155.4	156.1	156.7	82.2	84.0	83.5	86.6	85.3

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 -87 Avg.	1987 DEC	1988									
							APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
Industrial Materials	92.0	70.5	89.1	68.5	82.2	83.6	82.9	83.0	83.2	84.4	84.3	84.1	84.5	85.0	85.0	
Durable goods materials	91.8	64.4	89.8	60.9	79.0	80.0	79.7	80.8	80.7	81.7	81.4	81.9	82.3	82.6	82.4	
Metal materials	99.2	67.1	93.6	45.7	77.7	86.3	79.3	82.1	80.8	84.9	83.4	86.0	87.4	86.1	85.7	
Raw steel	106.0	66.4	98.9	36.1	80.2	89.2	83.4	89.7	87.5	95.1	98.0	97.5	90.8	89.8		
Aluminum	95.7	73.0	97.4	58.8	87.3	95.8	99.5	98.8	99.5	100.8	100.5	100.3	99.8	100.5		
Nondurable goods materials	91.1	66.7	88.1	70.7	83.4	90.8	88.7	87.7	87.4	88.9	88.8	88.2	89.2	89.3	90.0	
Textile, paper, and chemical materials	92.8	64.8	89.4	68.8	83.8	93.1	90.1	88.8	88.6	90.4	90.3	89.4	90.7	90.7	91.5	
Pulp and paper materials	98.4	70.6	97.3	79.9	91.7	101.6	98.1	98.1	97.1	100.0	98.4	97.9	97.8	96.8		
Chemical materials	92.5	64.4	87.9	63.5	81.0	90.9	88.0	86.9	87.0	88.8	89.0	88.0	90.1	90.8		
Energy materials	94.6	86.9	94.0	82.3	89.0	84.8	84.5	83.3	84.9	86.2	86.6	85.3	85.0	86.3	86.1	

Table 4

## Output, Capacity, and Capacity Utilization

Quarterly, seasonally adjusted

Series	OUTPUT					CAPACITY					UTILIZATION				
	1987 Q4	1988 Q1	Q2	Q3	Q4	1987 Q4	1988 Q1	Q2	Q3	Q4	1987 Q4	1988 Q1	Q2	Q3	Q4
Industrial Materials	122.5	122.5	124.0	126.5	128.1	147.8	148.5	149.3	150.1	150.9	82.9	82.5	83.0	84.3	84.9
Durable goods materials	130.3	131.5	134.1	137.1	139.3	164.7	165.7	166.8	167.9	169.0	79.1	79.4	80.4	81.6	82.4
Metal materials	91.4	86.2	88.1	92.7	94.8	108.9	108.8	109.1	109.4	109.7	84.0	79.2	80.8	84.8	86.4
Raw steel	79.5	77.7	77.1	85.9		89.4	88.7	88.7	88.7		88.9	87.5	86.9	96.8	
Aluminum	88.4	92.5	94.8	97.2		93.9	94.3	95.5	96.7		94.1	98.1	99.2	100.5	
Nondurable goods materials	130.1	129.4	130.4	132.8	135.5	145.6	146.8	148.3	149.8	151.4	89.3	88.1	87.9	88.6	89.5
Textile, paper and chemical materials	133.0	131.6	132.4	135.3	138.3	145.4	146.7	148.5	150.2	152.0	91.5	89.7	89.2	90.0	91.0
Pulp and paper materials	145.1	145.7	145.9	148.9		146.2	147.6	149.2	150.7		99.2	98.7	97.8	98.8	
Chemical materials	135.5	133.5	135.7	139.4		152.0	153.5	155.4	157.3		89.1	87.0	87.3	88.6	
Energy materials	102.1	100.9	100.6	102.5	102.0	119.9	119.7	119.4	119.1	118.8	85.2	84.3	84.2	86.0	85.8

### 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. 754-86. 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 1989.** At 9:15 a.m. on January 18, February 15, March 16, April 14, May 15, June 15, July 14, August 16, September 15, October 17, November 14, and December 15.