

# FEDERAL RESERVE statistical release



G.3 (402)

For Immediate release

## CAPACITY UTILIZATION

January 19, 1988

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

Capacity utilization in manufacturing, mining, and utilities edged up 0.1 percentage point in December to 82.1 percent. The slight increase during December reflected widespread gains within nondurable manufacturing and mining that were almost offset by declines in durable manufacturing and utilities. Utilization rates for October and November were revised up, and for the fourth quarter as a whole, the average operating rate was 82 percent--its highest value since early 1980.

Manufacturing industries. Utilization in most manufacturing industries changed little in December; the automobile industry was a notable exception, as a drop in car assemblies brought its utilization rate down more than 6 percentage points. Although operating rates at manufacturers were little changed last month, utilization rates rose substantially earlier in 1987. Increases were especially notable in primary processing industries (where utilization was more than 87 percent in December 1987), with much of the gain coming in the second half of the year. The iron and steel industry was a major contributor to the rise; utilization in November 1987 was 91.1 percent, sharply higher than the 64.9 percent rate in December 1986. Likewise, nonferrous metals industries now are operating at nearly 90 percent of capacity, more than 10 percentage points higher than at the end of 1986. Most manufacturing industries now have operating rates above their 1967-86 average, but a few remain below. In particular, the machinery industries do not appear to have fully recovered from their downturn in 1985 and 1986.

Industrial materials. Capacity utilization at producers of industrial materials rose 0.2 percentage point in December to 82.8 percent. Gains came at both producers of durable and nondurable goods materials, while operating rates at energy materials industries eased somewhat. Materials industries, many of which also are included in the manufacturing primary processing grouping, have shown a broad-based rise in utilization in the past year.

### Capacity Utilization: Summary

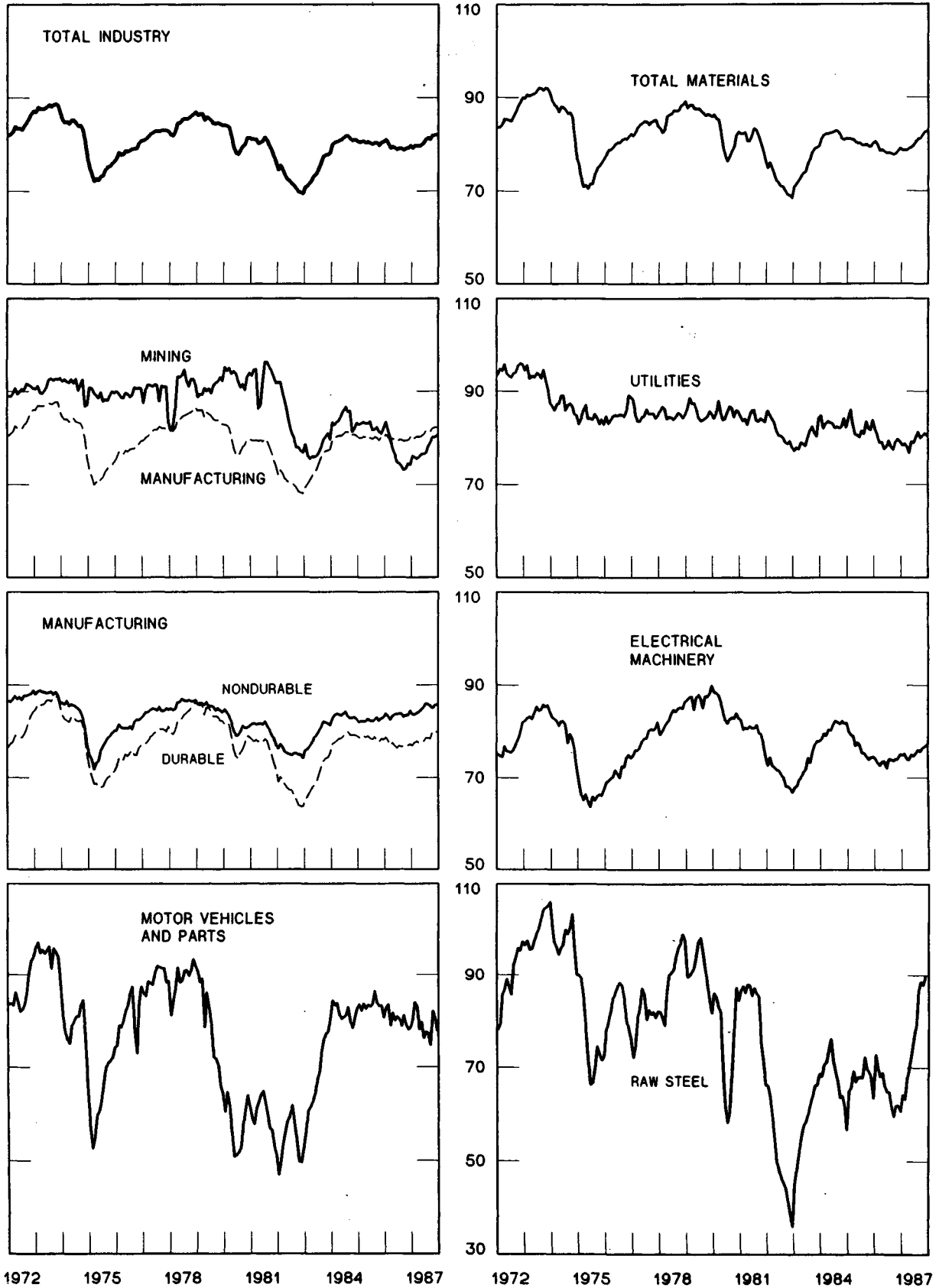
Percent of capacity, seasonally adjusted

Series	1973 High	1975 Low	1978 -80 High	1982 Low	1967 -86 Avg.	1987			
						SEP	OCT	NOV	DEC
Total Industry	88.6	72.1	86.9	69.5	81.5	81.1	81.9	82.0	82.1
Manufacturing	87.7	69.9	86.5	68.0	80.6	81.3	82.1	82.3	82.2
Durable	87.4	67.9	86.3	63.7	78.7	78.4	80.0	80.1	79.8
Nondurable	88.8	71.8	87.0	74.2	83.5	85.5	85.0	85.5	85.8
Mining	92.8	87.8	95.2	76.9	87.2	79.1	80.2	80.2	80.6
Utilities	95.6	82.9	88.5	78.0	87.3	80.0	80.5	81.0	80.5
Industrial Materials	92.0	70.5	89.1	68.5	82.3	81.2	82.0	82.6	82.8

# CAPACITY UTILIZATION

DECEMBER DATA

SEASONALLY ADJUSTED, PERCENT



# MANUFACTURING, MINING AND UTILITIES

Table 1

## Capacity Utilization

Monthly, seasonally adjusted, percent of capacity

Series	1973	1975	1978	1982	1967	1986	1987									
	High	Low	-80	Low	-86	DEC	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
Total Industry	88.6	72.1	86.9	69.5	81.5	79.7	79.6	79.9	80.3	81.1	81.4	81.1	81.9	82.0	82.1	
Manufacturing	87.7	69.9	86.5	68.0	80.6	80.2	80.2	80.4	80.8	81.5	81.5	81.3	82.1	82.3	82.2	
Primary processing	91.9	68.3	89.1	65.0	81.6	83.1	83.5	83.2	84.0	85.4	85.3	85.1	86.1	87.0	87.4	
Advanced processing	86.0	71.1	85.1	69.5	80.1	78.7	78.7	79.2	79.2	79.8	79.9	79.5	80.2	80.2	80.0	
Durable manufacturing	87.4	67.9	86.3	63.7	78.7	77.3	77.5	77.6	77.8	78.6	78.6	78.4	80.0	80.1	79.8	
Stone, clay and glass products	89.3	67.1	86.6	62.9	78.1	83.2	83.3	80.8	81.1	81.5	79.7	81.0	81.0	80.6		
Primary metals	101.9	67.0	97.1	45.8	79.6	70.1	73.6	74.5	76.4	79.2	83.0	82.6	88.6	89.6	89.2	
Iron and steel, subtotal	105.8	66.6	100.3	37.6	78.6	64.7	69.9	71.0	74.2	77.4	83.4	82.3	90.9	91.1		
Nonferrous metals, subtotal	95.6	62.1	91.1	60.8	81.2	78.0	78.7	79.5	79.5	81.6	82.3	83.1	85.5	87.6		
Fabricated metal products	85.0	64.7	87.4	61.3	77.7	78.1	77.8	76.7	78.4	78.2	77.4	78.0	79.2	79.4	79.6	
Nonelectrical machinery	89.0	68.2	86.0	62.9	78.2	71.7	73.8	73.3	74.2	75.8	75.1	76.1	76.6	76.3	75.6	
Electrical machinery	85.7	63.7	89.9	66.9	78.2	75.1	73.9	75.0	74.7	75.4	76.1	75.7	76.5	76.8	77.3	
Motor vehicles and parts	97.1	52.7	93.3	47.0	78.0	78.4	78.1	79.6	76.2	77.5	77.2	74.7	82.0	80.4	77.8	
Automobiles			93.3	36.6		74.5	70.3	71.6	67.4	66.5	59.0	60.7	72.5	70.2	63.9	
Aerospace and misc. trans. eqp.	77.0	69.6	87.1	70.7	77.1	88.6	89.2	89.5	88.9	88.7	89.4	88.4	88.7	88.5	88.3	
Instruments	89.2	74.9	88.9	77.8	83.2	78.4	78.8	78.2	79.3	78.7	79.8	79.2	79.9	80.6	80.9	
Other durables	87.7	69.0	81.0	69.1	81.6	83.8	81.0	81.7	81.9	82.0	81.2	80.3	81.1	82.1	82.4	
Nondurable manufacturing	88.8	71.8	87.0	74.2	83.5	84.4	84.2	84.6	85.2	85.9	85.8	85.5	85.0	85.5	85.8	
Food and kindred products	85.8	77.6	85.1	76.5	82.3	80.6	79.4	80.1	80.1	80.3	80.3	80.5	79.7	80.0		
Textile mill products	92.1	58.9	88.3	70.6	84.7	90.8	92.9	92.1	93.1	93.9	95.0	93.6	92.8	94.3		
Paper and products	95.6	67.7	92.7	80.2	88.2	93.9	92.5	92.7	93.3	97.1	96.9	95.7	94.3	96.3		
Chemicals and products	88.6	69.2	82.9	67.6	78.7	81.2	81.5	81.9	82.4	83.2	83.9	83.8	83.3	84.1		
Petroleum products	99.6	83.7	91.7	68.8	87.0	85.3	85.5	84.1	83.7	85.3	84.1	84.5	85.4	85.0	86.1	
Rubber and plastics products	97.5	59.5	89.4	71.2	84.7	86.2	86.5	87.0	88.4	89.0	87.3	87.1	87.5	87.9		
Other nondurables	86.4	72.3	92.4	78.9	85.9	86.0	85.8	86.9	87.5	87.4	87.2	86.3	86.2	86.1	86.1	
Mining	92.8	87.8	95.2	76.9	87.2	74.2	75.9	76.5	76.6	76.8	78.2	79.1	80.2	80.2	80.6	
Utilities	95.6	82.9	88.5	78.0	87.3	79.3	76.8	79.2	79.0	80.2	81.3	80.0	80.5	81.0	80.5	
Electric utilities	98.7	83.0	87.6	78.2	88.3	81.6	80.7	84.8	84.6	85.9	86.3	83.2	82.5	82.6	82.1	

Table 2

## Output, Capacity, and Capacity Utilization

Quarterly, seasonally adjusted

Series	OUTPUT					CAPACITY					UTILIZATION				
	1986	1987	1986	1987	1986	1986	1987	1986	1987	1986	1986	1987	1986	1987	1986
	Q4	Q1	Q2	Q3	Q4	Q4	Q1	Q2	Q3	Q4	Q4	Q1	Q2	Q3	Q4
Total Industry	125.9	126.9	128.2	131.0	133.0	158.7	159.5	160.4	161.3	162.2	79.4	79.5	79.9	81.2	82.0
Manufacturing	130.4	131.6	133.2	135.7	137.9	163.4	164.5	165.6	166.7	167.7	79.8	80.0	80.5	81.4	82.2
Primary processing	113.4	114.3	116.1	119.2	122.1	137.5	138.2	139.0	139.8	140.6	82.5	82.7	83.5	85.3	86.9
Advanced processing	140.6	142.0	143.5	145.8	147.5	179.1	180.3	181.6	182.9	184.1	78.5	78.7	79.0	79.7	80.1
Durable manufacturing	129.1	130.5	131.4	133.7	136.8	167.6	168.4	169.3	170.2	171.1	77.0	77.5	77.6	78.5	80.0
Stone, clay and glass products	118.5	120.2	118.6	118.0		143.3	144.0	145.1	146.1		82.7	83.4	81.7	80.7	
Primary metals	74.0	75.0	77.3	83.7	90.8	105.1	104.0	103.3	102.6	101.8	70.4	72.1	74.8	81.6	89.2
Iron and steel, subtotal	61.9	62.4	66.3	73.8		95.6	93.8	92.5	91.1		64.8	66.5	71.7	81.0	
Nonferrous metals, subtotal	96.7	98.7	98.0	102.2	108.7	123.0	123.2	123.7	124.1		78.6	80.1	79.2	82.4	
Fabricated metal products	108.9	109.1	109.9	110.8	113.5	140.0	140.8	141.5	142.3	143.0	77.8	77.5	77.6	77.8	79.4
Nonelectrical machinery	144.8	145.8	150.6	155.4	157.4	201.4	202.8	204.1	205.4	206.7	71.9	71.9	73.8	75.7	76.1
Electrical machinery	168.5	169.9	170.0	173.4	176.5	226.5	227.4	228.1	228.9	229.6	74.4	74.7	74.5	75.7	76.9
Motor vehicles and parts	109.7	115.4	109.7	108.0	113.5	139.7	140.2	140.7	141.2	141.7	78.5	82.3	78.0	76.5	80.1
Automobiles	109.6	113.7	103.1	92.2	102.8	146.1	147.1	147.8	148.6	149.3	75.0	77.3	69.7	62.0	68.9
Aerospace and misc. trans. eqp.	150.8	152.8	152.6	152.9	153.3	169.0	170.0	171.1	172.1	173.2	89.2	89.9	89.2	88.8	88.5
Instruments	139.5	140.6	143.1	145.2	148.8	178.3	180.0	181.6	183.3	184.9	78.2	78.1	78.8	79.2	80.5
Other durables	131.2	130.7	132.2	133.1	135.7	158.7	160.3	162.2	164.0	165.8	82.7	81.5	81.5	81.2	81.8
Nondurable manufacturing	132.1	133.1	135.7	138.6	139.3	157.6	158.9	160.3	161.7	163.1	83.8	83.7	84.7	85.7	85.5
Food and kindred products	135.2	136.1	137.0	138.9		169.1	170.3	171.6	172.8		80.0	79.9	79.9	80.4	
Textile mill products	111.9	110.9	116.5	118.8		124.8	125.2	125.7	126.1		89.7	88.5	92.7	94.2	
Paper and products	139.8	139.9	141.5	148.4	148.9	149.9	151.1	152.4	153.6		93.3	92.5	92.8	96.6	
Chemicals and products	133.8	135.8	138.2	141.8		166.9	167.8	168.7	169.6		80.2	80.9	81.9	83.6	
Petroleum products	92.8	93.1	93.0	93.5	94.8	109.4	109.8	110.1	110.5	110.8	84.9	84.8	84.4	84.6	85.5
Rubber and plastics products	155.5	156.7	162.7	165.7		181.5	183.8	186.3	188.8		85.7	85.2	87.3	87.8	
Other nondurables	133.5	134.6	138.4	140.7	141.2	155.5	157.5	159.6	161.8	163.9	85.9	85.5	86.7	87.0	86.1
Mining	96.9	98.8	99.0	100.7	103.2	130.8	130.4	129.7	129.0	128.4	74.1	75.8	76.3	78.0	80.3
Utilities	109.1	108.1	108.3	111.8	112.5	137.3	137.7	138.3	138.8	139.4	79.4	78.5	78.3	80.5	80.7
Electric utilities	123.7	122.5	126.6	130.2	126.8	150.0	150.8	151.9	152.9	154.0	82.5	81.2	83.4	85.1	82.4

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	1975	1978	1982	1967	1986	1987											
	High	Low	High	Low	-86 Avg.	DEC	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC			
Industrial Materials	92.0	70.5	89.1	68.5	82.3	79.1	79.1	79.3	79.8	80.6	81.1	81.2	82.0	82.6	82.8			
Durable goods materials	91.8	64.4	89.8	60.9	79.1	75.2	75.0	75.1	75.9	76.5	76.6	77.0	78.2	78.8	79.1			
Metal materials	99.2	67.1	93.6	45.7	77.8	68.5	68.8	69.7	71.5	73.9	77.5	78.3	82.4	83.8	85.1			
Raw steel	106.0	66.4	98.9	36.1	80.3	60.7	70.6	73.4	76.7	79.5	86.5	88.5	87.8	89.8				
Aluminum	95.7	73.0	97.4	58.8	87.4	74.4	80.8	80.3	84.7	86.8	88.6	90.3	91.8	94.7				
Nondurable goods materials	91.1	66.7	88.1	70.7	83.2	86.0	86.5	86.2	86.1	88.4	88.6	88.7	88.2	88.8	89.3			
Textile, paper, and chemical materials	92.8	64.8	89.4	68.8	83.6	87.0	87.5	87.1	87.1	90.0	90.5	90.7	90.3	91.1	91.5			
Pulp and paper materials	98.4	70.6	97.3	79.9	91.4	98.7	95.1	95.7	96.3	100.5	99.9	98.5	97.3	98.8				
Chemical materials	92.5	64.1	87.9	63.5	80.8	83.0	83.9	83.9	83.1	85.1	86.4	87.4	88.0	88.4				
Energy materials	94.6	86.9	94.0	82.3	89.3	81.1	81.3	82.1	82.8	82.4	84.0	83.5	84.6	85.2	84.9			

Table 4

## Output, Capacity, and Capacity Utilization

Quarterly, seasonally adjusted

Series	OUTPUT					CAPACITY					UTILIZATION				
	1986 Q4	1987 Q1	Q2	Q3	Q4	1986 Q4	1987 Q1	Q2	Q3	Q4	1986 Q4	1987 Q1	Q2	Q3	Q4
Industrial Materials	114.3	115.0	116.5	119.2	121.9	145.6	146.1	146.7	147.2	147.8	78.5	78.7	79.4	81.0	82.5
Durable goods materials	120.7	121.4	122.9	125.7	129.6	161.6	162.3	163.1	163.9	164.7	74.7	74.8	75.4	76.7	78.7
Metal materials	75.4	74.7	77.0	83.8	91.1	111.5	110.6	110.0	109.4	108.8	67.7	67.5	70.0	76.5	83.8
Raw steel	58.6	60.9	67.8	77.0		95.3	93.6	92.2	90.8		61.5	65.1	73.6	84.8	
Aluminum	70.8	74.9	77.8	83.6		97.4	95.4	94.9	94.4		72.7	78.5	81.9	88.6	
Nondurable goods materials	120.3	121.2	124.0	128.2	129.3	142.1	142.9	143.8	144.7	145.6	84.7	84.8	86.2	88.6	88.8
Textile, paper and chemical materials	120.9	122.3	125.1	130.5	132.3	141.6	142.4	143.4	144.4	145.4	85.4	85.9	87.2	90.4	91.0
Pulp and paper materials	137.0	136.4	137.7	144.6		141.7	142.8	143.9	145.1		96.7	95.5	95.7	99.6	
Chemical materials	120.3	122.9	125.3	130.2		147.8	148.8	149.8	150.9		81.4	82.6	83.6	86.3	
Energy materials	97.8	98.3	98.7	100.0	101.8	120.4	120.3	120.2	120.1	119.9	81.2	81.7	82.1	83.3	84.9

### 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 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 third 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. Lasker, "Revised Federal Reserve Rates of Capacity Utilization," *Federal Reserve Bulletin*, 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 1988.** Approximately 11 a.m. on January 19, February 18, March 18, April 18, May 18, June 16, July 18, August 17, September 16, October 17, November 16, December 16.