

# FEDERAL RESERVE statistical release



G.17 (419) Supplement

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## INDUSTRIAL PRODUCTION AND CAPACITY UTILIZATION

Industrial production rose 0.7 percent in March for a third consecutive monthly increase. At 138.8 percent of its 1992 average, output reached its highest level since August 2001 but was 2.9 percent below its level in March 2001. Manufacturing output climbed 0.8 percent; the output at utilities increased 1.6 percent, but production at mines declined by the same amount. For the first quarter as a whole, total industrial production increased at an annual rate of 2.5 percent. The rate of capacity utilization for total industry moved up in March to 75.4 percent but was still below its 1967–2001 average of 81.9 percent.

### Market Groups

The output of consumer goods rose 0.6 percent in March; gains were widespread across durables and nondurables. Among durables, the production of automotive products and home electronics moved up slightly after two months of decline. Much larger gains occurred in the production of appliances, furniture, and carpeting, which increased  
(over)

## INDUSTRIAL PRODUCTION AND CAPACITY UTILIZATION: SUMMARY

Seasonally adjusted

Industrial Production	Index, 1992=100				Percent change				Mar. 01 to Mar. 02
	2001 Dec. <sup>r</sup>	2002 Jan. <sup>r</sup>	Feb. <sup>r</sup>	Mar. <sup>P</sup>	2001 Dec. <sup>r</sup>	2002 Jan. <sup>r</sup>	Feb. <sup>r</sup>	Mar. <sup>P</sup>	
<b>Total index</b>	136.7	137.4	137.9	138.8	-.4	.5	.3	.7	-2.9
Previous estimates	136.8	137.1	137.6		-.3	.2	.4		
<b>Major market groups:</b>									
Products, total	126.5	126.5	126.8	127.5	-.2	.0	.2	.6	-3.5
Consumer goods	120.6	120.5	121.0	121.7	.5	-.1	.5	.6	-.1
Business equipment	164.3	164.7	163.5	163.7	-1.7	.2	-.7	.1	-11.7
Construction supplies	135.6	135.7	137.5	139.2	1.2	.1	1.3	1.2	-.2
Materials	153.6	155.7	156.5	157.9	-.8	1.4	.5	.9	-1.9
<b>Major industry groups:</b>									
Manufacturing	141.6	142.5	142.7	143.9	-.3	.6	.2	.8	-2.7
Durable	174.1	175.4	175.8	177.5	-.1	.7	.2	1.0	-3.9
Nondurable	109.7	110.3	110.4	111.0	-.5	.6	.1	.5	-1.3
Mining	97.4	97.3	96.6	95.1	-1.6	-.1	-.7	-1.6	-7.2
Utilities	115.2	114.9	118.3	120.2	-.8	-.3	3.0	1.6	-1.3
<b>Capacity Utilization</b>	Percent of capacity								Capacity growth
	Average 1967–01	1982 Low	1988–89 High	2001 Mar.	2001 Dec. <sup>r</sup>	2002 Jan. <sup>r</sup>	Feb. <sup>r</sup>	Mar. <sup>P</sup>	Mar. 01 to Mar. 02
<b>Total industry</b>	81.9	71.1	85.4	78.5	74.4	74.7	74.9	75.4	1.1
Previous estimates					74.4	74.5	74.8		
Manufacturing	80.9	69.0	85.7	76.7	72.9	73.3	73.4	73.9	1.0
Advanced processing	80.3	71.0	84.2	76.6	73.0	72.9	72.8	73.1	.6
Primary processing	82.0	65.7	88.3	76.8	72.7	73.9	74.4	75.1	1.6
Mining	87.6	80.3	88.0	91.6	86.4	86.2	85.6	84.3	.8
Utilities	87.6	75.9	92.6	90.2	82.0	81.4	83.6	84.6	5.2

1.3 percent, and in the production of miscellaneous durable goods, which jumped 2.5 percent. These two groups accounted for most of the rise of consumer durables. The production indexes both for energy and non-energy nondurables rose 0.5 percent. Within the non-energy category, the output of clothing increased 2.0 percent. Clothing production rose at an annual rate of more than 11 percent in the first quarter, a near reversal of its decline in the fourth quarter of last year. In contrast, the production of paper products remained weak; it has posted eleven consecutive monthly declines and was 9.6 percent below its level in March 2001.

The production of business equipment edged up 0.1 percent in March. Gains of 1.1 percent in the information-processing group and in the industrial and other equipment group were almost completely offset by a 3.2 percent drop in the output of transit equipment. The drop in transit equipment largely reflects a further curtailment of commercial aircraft production. Despite the gain in March, the output of business equipment declined in the first quarter at an annual rate of 5.2 percent and was about 12 percent below its level in March 2001. The production of defense and space equipment rose 1.1 percent.

The output of construction supplies climbed 1.2 percent in March and was led by an increase in the production of lumber. In the first quarter, the output of construction supplies rose at an annual rate of more than 8 percent, which nearly reversed its decline in the fourth quarter of 2001. The production of business supplies moved up 0.8 percent, its largest increase since May 2000; the output of both general business supplies and commercial energy products contributed to the rise.

The production of materials continued to be strong; output rose 0.9 percent in March and returned to a level not seen since May of last year. Continuing the pattern of increases that began in January of this year, gains in March were widespread across both durable and nondurable categories. Among durable materials, consumer parts posted the largest gain. Among nondurables, textile materials recorded the greatest increase. The production of energy materials fell 0.4 percent.

#### Industry Groups

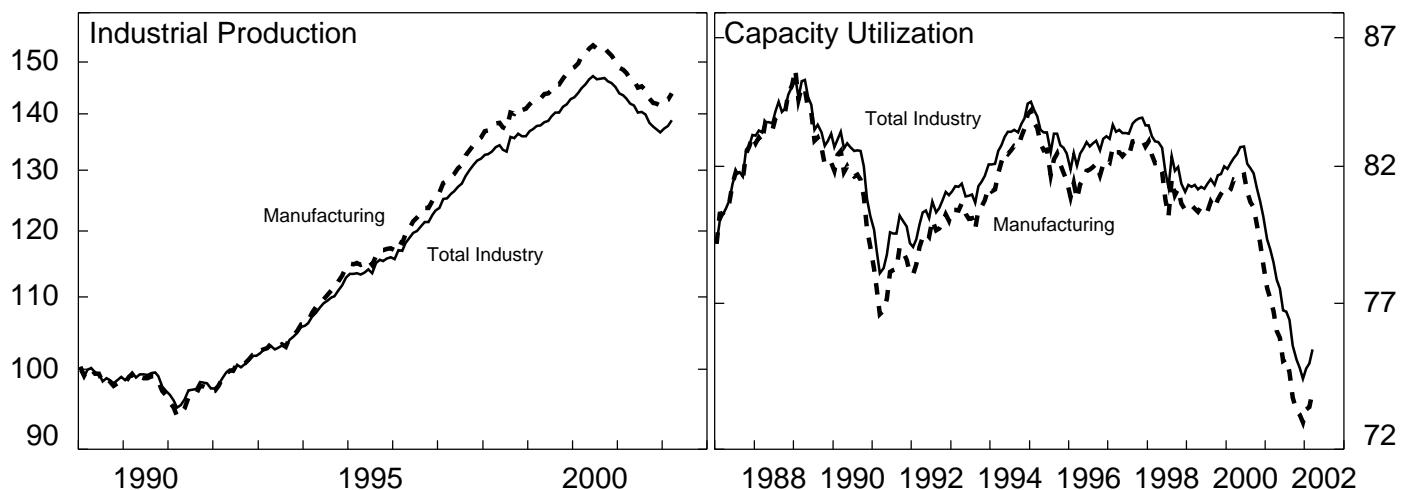
Manufacturing output rose 0.8 percent in March. The production of both durable and nondurable goods increased, and gains were evident in nearly all major industry groups. Within durables, output for nearly all industries advanced 1.0 percent or more; the only exceptions were motor vehicles and parts and instruments, which posted smaller gains, and aerospace and miscellaneous transportation equipment, which continued to slide. Among nondurables, textile mill products, apparel, and paper and products all increased at least 1.0 percent. The output of petroleum products fell back 0.3 percent, and production in the printing and publishing industry continued to recede.

The factory operating rate rose 0.5 percentage point in March, to 73.9 percent, its highest level since August 2001. The utilization rate for advanced-processing industries moved up 0.3 percentage point, to 73.1 percent, and the rate for primary-processing industries increased to 75.1 percent. The operating rate at utilities climbed to 84.6 percent, but the operating rate for mining declined for the sixth consecutive month, to 84.3 percent.

## Industrial Production and Capacity Utilization

(March data, seasonally adjusted)

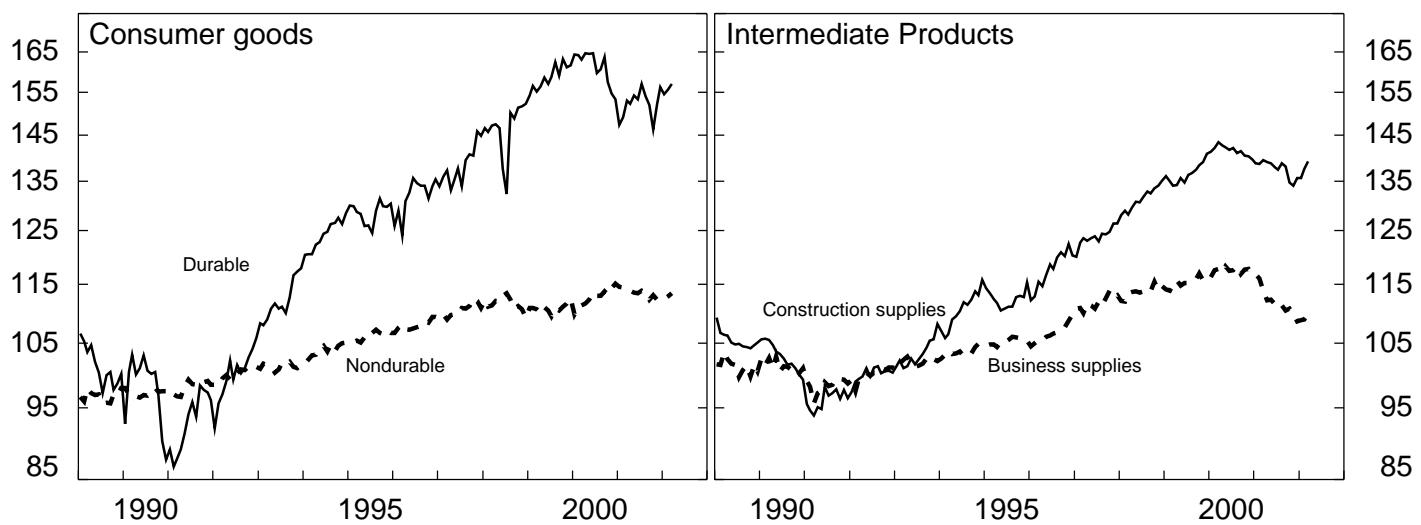
Ratio scale, 1992=100



Ratio scale, 1992=100

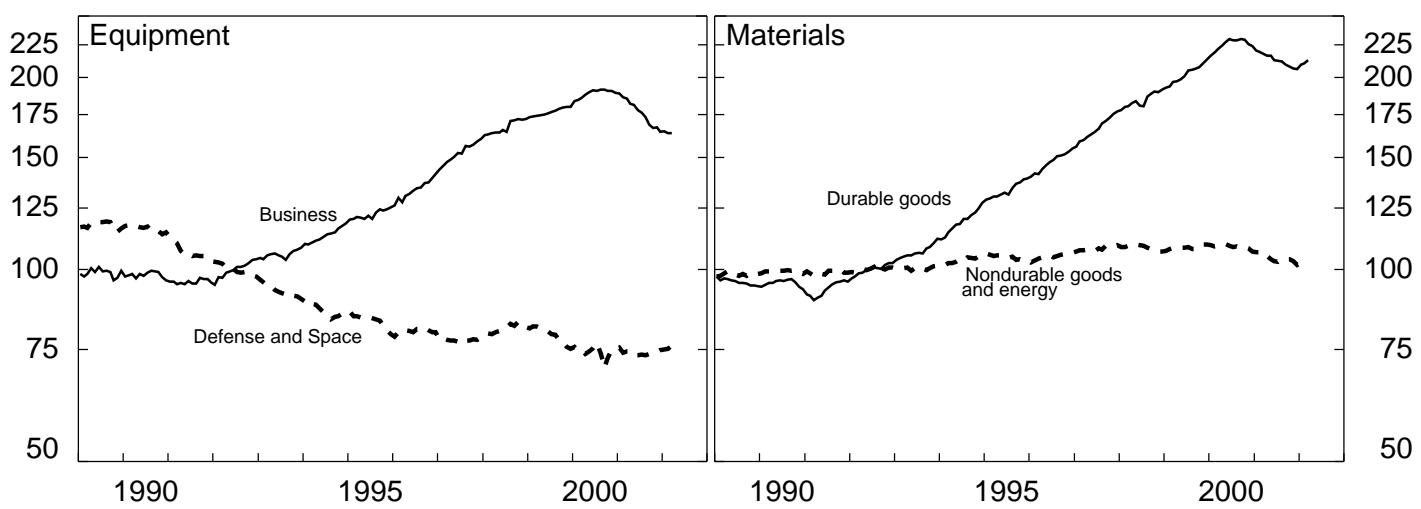
### Industrial Production, Market Groups

Ratio scale, 1992=100



Ratio scale, 1992=100

Ratio scale, 1992=100































## **Explanatory Note**

The statistical release of **Industrial Production and Capacity Utilization** reports measures of output, capacity, and capacity utilization in manufacturing, mining, and the electric and gas utilities industries. The release also includes monthly indexes on the use of electric power in manufacturing and mining. Files containing data in the release and historical data are available under "Research and Data" at [www.federalreserve.gov](http://www.federalreserve.gov), the Board's World Wide Web site. For paid access to these files through the Department of Commerce's Economic Bulletin Board or World Wide Web site, please call STAT-USA at 1-800-STAT-USA or (202) 452-1986. Diskettes containing historical data and the data published in this release are available from the Board of Governors of the Federal Reserve System, Publications Services, (202) 452-3245.

### **Industrial Production**

**Coverage.** The industrial production (IP) index measures output in the manufacturing, mining, and electric and gas utilities industries; the reference period for the index is 1992. For the period since 1997, the total IP index has been constructed from 276 individual series based on the 1987 Standard Industrial Classification (SIC). These individual series are classified in two ways: (1) market groups (shown in table 1), such as consumer goods, equipment, intermediate products, and materials; and (2) industry groups (shown in tables 2 and 6), such as two-digit SIC industries and major aggregates of these industries—for example, durable and nondurable manufacturing, mining, and utilities.

**Market groups.** For purposes of analysis, the individual IP series are grouped into final products, intermediate products, and materials. Final products are assumed to be purchased by consumers, businesses, or government for final use. Intermediate products are expected to become inputs in nonindustrial sectors, such as construction, agriculture, and services. Materials are industrial output requiring further processing within the industrial sector. Total products comprise final and intermediate products; final products are divided into consumer goods and equipment.

**Timing.** The first estimate of output for a month is published around the 15th of the following month. The estimate is preliminary (denoted by the superscript "p" in tables) and subject to revision in each of the subsequent three months as new source data become available. (Revised estimates are denoted by the superscript "r" in tables.) After the fourth month, indexes are not revised further until the time of an annual revision or a benchmark revision. The last three benchmark revisions were published in 1990, 1985, and 1976.

**Source data.** In annual or benchmark revisions, the individual IP indexes are constructed from a variety of source data, such as the quinquennial *Censuses of Manufactures and Mineral Industries* and the *Annual Survey of Manufactures*, prepared by the Bureau of the Census; the *Minerals Yearbook*, prepared by the U.S. Geological Survey; and publications of the Department of Energy. On a monthly basis, the individual indexes of industrial production are constructed from two main types of source data: (1) output measured in physical units and (2) data on inputs to the production process, from which output is inferred. Data on physical products, such as tons of steel or barrels of oil, are obtained from private trade associations as well as from government agencies including those listed above; data of this type are used to estimate monthly IP where possible and appropriate. When suitable data on physical product are unavailable, estimates of output are based on either production-worker hours or electric power use by industry. Data on hours worked by production workers are collected in the monthly establishment survey conducted by the Bureau of Labor Statistics. The data on electric power use are described below. The factors used to convert inputs into estimates of production are based on historical relationships between the inputs and the comprehensive data used to benchmark the IP indexes; these factors also may be influenced by technological or cyclical developments. Especially for the first and second estimates for a given month, the available source data are limited and subject to revision.

**Weights.** In the index, series that measure the output of an individual industry are weighted according to their proportion in the total value-added output of all industries. The industrial production index, which extends back to 1919, is built as a chain-type index since 1977. The components of IP are combined using annual estimates of value added per unit of output; for the data since 1992, the annual unit-value-added estimates are linearly interpolated to get monthly weights. The IP proportions shown in column 1 of tables 1A, 2A, and 6 are estimates of the industries' relative contributions to overall growth in the following year. For example, a 1 percent increase in durable goods manufacturing in 1997 would account for an increase in total IP of nearly 1/2 percent.

**Seasonal adjustment.** Individual series are seasonally adjusted by the X-11 ARIMA method, developed at Statistics Canada. For series based on production-worker hours, the current seasonal factors were estimated with data through October 2000; for other series, the factors were estimated with data through at least June 2000. Series are preadjusted for the effects of holidays or the business cycle where appropriate. For the data since 1977, all seasonally adjusted aggregate indexes are calculated by aggregating the seasonally adjusted indexes of the individual series.

**Reliability.** The average revision to the *level* of the total IP index, without regard to sign, between the first and the fourth estimates was 0.27 percent during the 1987–99 period. The average revision to the *percent change* in total IP, without regard to sign, from the first to the fourth estimates was 0.21 percentage point during the 1987–99

period. In most cases (about 83 percent), the direction of change in output indicated by the first estimate for a given month is the same as that shown by the fourth estimate.

**Rounding.** The published percent changes are calculated from unrounded indexes, and may not be the same as percent changes calculated from the rounded indexes shown in the release.

### **Capacity Utilization**

**Definition.** Capacity utilization is calculated for the manufacturing, mining, and electric and gas utilities industries. For a given industry, the utilization rate is equal to an output index divided by a capacity index. Output is measured by seasonally adjusted indexes of industrial production. The capacity indexes attempt to capture the concept of sustainable practical capacity, which is defined as the greatest level of output that a plant can maintain within the framework of a realistic work schedule, taking account of normal downtime, and assuming sufficient availability of inputs to operate the machinery and equipment in place. The 76 individual capacity indexes are based on a variety of data, including capacity data measured in physical units compiled by trade associations, surveys of utilization rates and investment, and estimates of growth of the capital input.

**Groups.** Estimates of capacity and utilization are available for a variety of groups, including primary and advanced processing industries within manufacturing, durable and nondurable manufacturing, total manufacturing, mining, utilities, and total industry. Component industries of the primary and advanced processing groups within manufacturing are listed in the note on tables 2 and 3 of the release.

**Weights.** Although each utilization rate is the result of dividing an IP series by a corresponding capacity index, aggregate utilization rates are equivalent to combinations of individual utilization rates aggregated with proportions that reflect current capacity levels of output valued in current-period value added per unit of actual output. The implied proportions of individual industry operating rates in the rate for total industry for the most recent year are shown in the first column of table 3.

**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 total industry and total manufacturing, utilization rates have exceeded 90 percent only in wartime.

### **Electric Power**

Data on electric power (expressed in kilowatt hours) are collected by the Federal Reserve District Banks from electric utilities and also from manufacturing and mining establishments that generate electric power for their own use (cogenerators). The indexes of power use shown in table 9 are sums of kilowatt hours used by an industry or industry group expressed as a percentage of that industry's or group's usage in 1992. The first column of the table shows, for reference, electric power use in billions of kilowatt hours as reported by manufacturing and mining industries in the 1992 censuses of those industries. The supplementary group, "Total, less nuclear nondefense," is shown separately because the value-added proportion for the nondefense nuclear material series (part of SIC 2819) in total IP is considerably smaller than its share of total electric power use. Excluding this component from total power use facilitates comparisons with total IP.

### **References**

The annual revision published on December 5, 2000 was described more completely in the *Federal Reserve Bulletin*, vol. 87 (March 2001), pp. 132–148.

A description of the aggregation methods for industrial production and capacity utilization is included in an article in the *Federal Reserve Bulletin*, vol. 83 (February 1997), pp. 67–92. *Industrial Production—1986 Edition* contains a more detailed description of the other methods used to compile the industrial production index, plus a history of its development, a glossary of terms, and a bibliography. To obtain *Industrial Production—1986 Edition* (\$9.00 per copy), write to Board of Governors of the Federal Reserve System, Publications Services, Washington, DC 20551. The basic methodology used to estimate capacity and utilization was discussed in an article in the *Federal Reserve Bulletin*, vol. 86 (March 2000), pp. 188–205. The major revisions to the IP indexes and capacity utilization since 1990 have been described in the *Federal Reserve Bulletin* (April 1990, June 1990, June 1993, March 1994, January 1995, January 1996, February 1997, February 1998, January 1999, and March 2000).

### **Release Schedule**

At 9:15 a.m. on:

**2002:** January 16, February 15, March 15, April 16, May 15, June 14, July 16, August 15, September 17, October 17, November 15, and December 17.