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# FEDERAL RESERVE statistical release

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**G.17 (419) Annual Revision**

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## **Industrial Production and Capacity Utilization**

The Federal Reserve has revised the index of industrial production (IP) and the related measures of capacity and capacity utilization for the January 1992 to October 2001 period.

Measured fourth quarter to fourth quarter, industrial output and capacity are now reported to have increased at a slower rate in 1999 and 2000 than previously reported, but the revision still places the decline in IP in 2001 at about 5-1/2 percent at an annual rate.<sup>1</sup> The estimated rate of increase in capacity in 2001 was lowered by 0.7 percentage point, to 1.7 percent.

Despite the downward revision to IP in 1999 and 2000, the general contour is the same as in the earlier estimates. After having picked up in the second half of 1999 and after having posted rapid gains in the first half of 2000, increases in industrial output abated noticeably at mid-year. According to the revised data, however, industrial output was weaker in the second half of 2000 than in the earlier estimates.

The rate of industrial capacity utilization (the ratio of production to capacity) as of the third quarter of 2001 was little changed by the revision; at 76.2 percent, the rate is 2-1/2 percentage points below the low of the 1990-91 recession but 4-1/2 percentage points above the low of the 1982 recession.<sup>2</sup> For the fourth quarter of 2000, capacity utilization was revised down 0.6 percentage point, to 80.7 percent; a downward revision to the operating rate in manufacturing of 1.2 percentage points was partly offset by an upward revision to the operating rates in mining and utilities.

The updated measures reflect the incorporation of newly available, more comprehensive source data and the introduction of improved methods for compiling a few series. The new source data are for recent years, primarily 1999 on, and the modified methods affect the indexes from 1992 onward.

The statistical revisions to the IP index were principally derived from the inclusion of information contained in annual reports issued by the Bureau of the Census: the 1999 Annual Survey of Manufactures and selected 2000 Current Industrial Reports. Revised annual data from the U.S. Geological Survey (USGS) on minerals (except fuels) for 1999 and some new data for 2000 were also introduced. In addition, the new monthly production estimates for 2000 and 2001 reflect updated seasonal factors and the inclusion of monthly source data that became available (or were revised) after the closing of the regular four-month reporting window.

The capacity indexes and capacity utilization rates incorporate the revised production indexes, results from the Census Bureau's 2000 Survey of Plant Capacity for the fourth quarter of the year, and newly available 2000 data on industrial capacity from the USGS, the Energy Information Agency (EIA) of the Department of Energy, and other organizations. In addition, the relationships used to estimate the current growth of manufacturing capacity reflect the inclusion of the Census data on capital spending by industry for 1999 and indicators of the rate of change in manufacturing capital spending in 2000 and 2001.

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1. The peak in IP is now in June 2000. The cumulative decline in IP since then is 7.0 percent. The revised data show consecutive declines in monthly IP for the nine months ending June 2001, a 0.1 percent increase in July 2001, and decreases for the three months ending October 2001; the earlier data showed declines in monthly IP for all thirteen months.

2. These comparisons use quarterly average data.

The revised indexes of industrial production and capacity also reflect the updating of the value-added weights used in aggregating the individual indexes to the major industry and market group subtotals and to total industry. The industry groups in IP and capacity continue to be based on the 1987 Standard Industrial Classification (SIC); in the 2002 revision, the industrial production and capacity utilization data will be constructed and grouped according to the North American Industry Classification System (NAICS).

Beginning with this revision, the capacity index for the extraction of natural gas is based on newly available estimates from the EIA; the new data substantially lower the estimate of the industry's capacity for the 1995 to 1999 period. The revision also incorporates new source data for another capacity series (silver); refinements to the methods used to compile two monthly production series (construction machinery and original equipment motor vehicle parts); and new methods and new source data to derive the value-added weights for the IP and capacity series for electric utilities. The rates of change in the new weights were applied to the old 1992 weight to derive a new series of annual weights ("best-change" method) and result in slightly larger value-added proportions for the electric utility industry.

## **RESULTS OF THE REVISION**

For the third quarter of 2001, the revision places the production index at 139.6 percent of output in 1992 and the capacity index at 183.2 percent of output in 1992 (table 1); both indexes are lower than reported previously (chart 1). As noted earlier, the capacity utilization rate was little changed for the third quarter of 2001.

Tables 2, 3, and 4 show new data for monthly manufacturing IP and capacity utilization as well as the results for total and manufacturing excluding selected high-technology industries. Tables 5 and 6 show the revised rates of change of industrial production for market groups, industry groups, special aggregates, and selected detail for the years 1997 through 2001:Q3; tables 7 and 8 show the revised figures for capacity utilization and capacity. For production and capacity, the tables also show the difference between the revised and earlier rates of change. For capacity utilization, the tables show difference between revised and previous rates for the final quarter of the year (third quarter used for 2001).

### **Industrial production**

The revision lowered the increase in industrial output by 0.7 percentage point for 1999 and 1.6 percentage points for 2000 (measured from the fourth quarter of the preceding year to the fourth quarter of the year indicated); the increase in industrial production was raised slightly for 1997 and 1998.

The somewhat faster increase in IP now shown for 1997 and 1998 reflect both the incorporation of recently issued revisions to the annual Census data and the introduction of refinements and revisions to the price deflators used to construct the annual indexes that determine the trend in each industrial production series from one year to the next.<sup>3</sup>

For most two-digit manufacturing industries, the new annual reports issued by the Census Bureau implied only small changes to previously published IP figures for 1999. The output indexes for the transportation equipment industry, the apparel and products industry, and the rubber and plastics industry were revised. However, new data for the computer industry, mainly for printers and other peripheral equipment, implied a weaker gain in output for the industrial machinery and equipment group. The output of that industry was also lowered in 2000 because of the inclusion of available data from the Current Industrial Reports. Nonetheless, on balance, the revised data still indicate that the production of industrial machinery and equipment increased at a robust rate in both years.

The revision now places the rise in the production index for the output of high-technology industries—computers and office equipment (SIC 357), semiconductors and related devices (SIC 3672–9), and communications equipment (SIC 366)—at about 40 percent in 2000. The previously published estimate was appreciably stronger; the new estimates show less rapid gains in the output of semiconductors, computers, and peripherals. The downward revisions to the indexes for semiconductor output reflect the incorporation of data from the 2000 Current Industrial Report and more comprehensive information on prices.

Excluding high-technology industries, the revised IP series show more pronounced weakness, mainly in manufacturing, in the second half of 2000. The change reflects the updating of seasonal factors and the inclusion of

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3. The general methods used to measure individual IP series were reviewed in an article published in the March 2001 issue of the *Federal Reserve Bulletin* ([www.federalreserve.gov/pubs/bulletin/2001/0301scnd.pdf](http://www.federalreserve.gov/pubs/bulletin/2001/0301scnd.pdf)).

revisions to monthly source data. The more-pronounced weakness appears in the durable goods manufacturing industries, especially the industrial machinery, motor vehicle parts, instruments, furniture, and stone, clay, and glass products industries.

Among major market groups, the revised production indexes for consumer goods and for construction supplies showed, on balance, little change for 2000 and 2001. The revised indexes for business equipment and materials production showed slower gains in 2000 but little change in the decline for 2001.

## **Capacity**

For 2001, manufacturing capacity is estimated to be rising 1.6 percent, more than one percentage point lower than previously published. On average, manufacturing capacity increased 4.6 percent per year in 1999 and 2000 (previously estimated at about 5 percent) and, on average, expanded 6 percent per year from 1994 to 1998 (virtually unchanged from the previous estimates). The rapid gains in capacity during the second half of the 1990s were concentrated in industries producing high-technology goods and devices. Given the downward revision to output in these industries, the pace of capacity expansion was also revised down; nonetheless, from 1994 to 2000 it still averaged nearly 40 percent per year. The relatively slow expansion of capacity in these industries in 2001, now estimated at 12.9 percent, is in large part the result of a downshift in capital spending by semiconductor manufacturers. Outside of the selected high-technology industries, plant capacity for 2001 is estimated to be edging up 0.3 percent, down from the 2 percent pace in 1999 and the 3.2 percent annual average for 1994 to 1998.

Capacity in mining was revised down noticeably for the 1995 to 2000 period, but was revised up substantially for 2001. The changes were primarily the result of incorporating new EIA measures for the capability to extract natural gas; in value-added terms, natural gas extraction is about 30 percent of mining output. According to the revised data, from 1995 to 1998, capacity at mines increased a scant 0.2 percent per year, and in 1999 and 2000 it declined about 2 percent per year. For 2001, however, mining capacity is estimated to be increasing 0.4 percent.

Capacity at electric and gas utilities increased a bit more slowly from 1997 to 2000 than previously reported. The North American Electric Reliability Council reduced its estimate of generating capacity for 2000 but sharply increased the estimate for 2001; as a result, the rise in capacity at utilities for 2001 was revised up more than one percentage point, to 5.2 percent. In both the previous and revised data, the rate of expansion of utility capacity for 2001 is the largest since 1974, a surge reflecting the response of producers to the significant shortfall in generating capacity last winter.

## **Capacity utilization**

The Survey of Plant Capacity indicated that the factory operating rate was lower in the fourth quarter of 2000 than previously estimated. The revised utilization rate for manufacturing is 79.1 percent in the final quarter of 2000, more than 1 percentage point lower than reported earlier.

Capacity utilization in manufacturing reached 81.7 percent in the middle of 2000, 0.6 percentage point above its long-term (1967–2000) average. The factory operating rate had climbed to 83 percent in 1997, before the onset of economic turmoil in Asia, but dropped back more than 2 percentage points by the end of 1998. From the middle of 2000 to the third quarter of 2001, the utilization of manufacturing capacity plummeted more than 7 percentage points.

Among manufacturing industries in the third quarter of 2001, the utilization rates for primary processors were nearly the same as those for advanced processors. Since the middle of 2000, the decline in the rate for primary processing industries—nearly 11 percentage points—has been especially sharp. Primary processors were operating at relatively elevated rates in the second quarter of 2000; the rates for primary metals, semiconductors, stone, clay and glass products, petroleum products, and motor vehicle parts were above their long-term averages. By the third quarter of 2001, the only primary processing industries that were operating at rates above their long-term averages were petroleum and products and stone, clay, and glass products. Among advanced processors, only the producers of light trucks and of chemical products were operating at above-average rates.

Capacity utilization in mining was an upwardly revised 90.8 percent in the third quarter of 2001, more than 3 percentage points above its long-term average. The utilization rate for electric and gas utilities in the third quarter of 2001 was little changed by the revision, but the rates in 1998, 1999, and 2000 were raised.

## TECHNICAL ASPECTS OF THE REVISION

As noted earlier, the annual revision incorporated more comprehensive annual data on industry output, utilization, value added, and capital spending for 1999 and 2000, along with an update of all seasonal factors and monthly data on production, production worker hours, and electric power use. In addition, the capital input measures used in the construction of capacity indexes incorporate more-recent overall business investment and price data from the Bureau of Economic Analysis.<sup>4</sup> Previously issued annual data on output and prices for 1997 and 1998 that were slightly revised by the original source were also included.

The industrial production and capacity utilization data continue to be based on the 1987 Standard Industrial Classification (SIC). The Census Bureau reported its new 1999 and 2000 data on industry output and capacity utilization, as well as its revisions to 1997 and 1998 data, on the new North American Industrial Classification System (NAICS). Before being included in the IP and capacity indexes, the data were recategorized by the Federal Reserve according to the SIC system.

In the 2002 revision, the industrial production and capacity utilization data will be derived according to the NAICS; data from at least 1977 onward will be subject to revision; and the indexes will be rebased, with 1997 equal to 100. The new NAICS production data will be derived from annual output measures constructed by reclassifying the establishments in historical Censuses of Manufactures and Mineral Industries according to NAICS categories; annual output indexes constructed in this way maximize the reliability and historical consistency of the IP industry detail.

### Revised Monthly Data

The product data that are used to measure the monthly movements of many IP indexes were updated to capture data that became available after the closing of the regular four-month reporting window. For example, monthly data from the Department of the Treasury on the production of alcoholic beverages and cigarettes may be unavailable initially but available for inclusion in the annual revision.

The input measures were also updated to incorporate revised data on monthly production worker hours (based on the BLS benchmark of employment to March 2000 comprehensive measures) and on monthly electric power use since 1997. Besides benchmarking data on production worker hour to March 2000 comprehensive measures, the BLS also incorporated data derived from new sampling procedures from 1999 on. The new estimates reduced the change in manufacturing production worker hours in the second half of 2000, with the bulk of the reduction in industries in which the data on production worker hours are used as the monthly production indicator in IP.

Seasonal factors for all series were re-estimated using data that extend into 2001. Factors for production worker hours, which adjust for timing, holiday, and monthly seasonal patterns, were updated with data through October 2001. Factors for the electric power series, which are developed using multivariate methods, were re-estimated using data through May 2001. The updated factors for the physical product series, which include adjustments for holiday and workday patterns, used data through at least June 2001. Seasonal factors for unit motor vehicle assemblies have been updated with data through September 2001 and are on the Board's website at [www.federalreserve.gov/releases/g17/mvsf.htm](http://www.federalreserve.gov/releases/g17/mvsf.htm).

### Weights for aggregation

The weights for the aggregation of IP indexes and capacity utilization rates are derived from annual estimates of industry value added. For manufacturing, the Census Bureau provides such data annually; for mining, quinquennial figures are provided. For the electric and gas utility industries, the Federal Reserve derives estimates of value added from annual revenue and expense data issued by other organizations. Estimates of industry value added were updated with annual data through 1999, and the weights for aggregation (unit value added) have been estimated using the most recent data on producer prices. Table 9 reports the annual value-added proportions incorporated in the IP index from 1993 on.

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4. The general methods used to measure individual capacity series were summarized in the March 2001 article in the *Federal Reserve Bulletin*. A fuller description of the models used to develop the Federal Reserve's capacity estimates were reported in the March 2000 issue of the *Bulletin* ([www.federalreserve.gov/pubs/bulletin/2000/0300secnd.pdf](http://www.federalreserve.gov/pubs/bulletin/2000/0300secnd.pdf)).

Beginning with this revision, the methods and data used to obtain estimates of value added in the electric utility industry have been improved. A change was necessary for several reasons. First, much of the data that had been used to compute value added was contained in an EIA publication that has been discontinued. Second, the EIA data on “utilities” include regulated entities only, and data covering all producers of electric power (that is, including the unregulated power generators) are required to avoid a severe understatement of the value added by the entire industry in 2000. Last, a review of the earlier methods suggested value added was understated for the period preceding the deregulation of the industry.

The Federal Reserve’s new estimates of value added for the electric utility industry were constructed according to the Census definition of value added, that is, industry revenue less the cost of purchased material inputs. Data on industry revenue (including all establishments that distribute power to final users) were obtained from Statistical Yearbooks issued by the Edison Electric Institute; these data were combined with EIA measures of fuel costs to obtain an estimate of Census value added. The new figures were applied on a best-change basis for the period from 1992 onward; the 2002 revision will introduce refined results as well as revised figures for earlier years.

### **Changes to individual series**

With this revision, the capacity series for natural gas extraction (part of SIC 13) incorporates new estimates developed by the EIA; the new estimates are substantially lower than the agency’s previous figures that were used to derive the capacity for natural gas extraction. The new figures are designed to better reflect the ability of producing wells to deliver gas into the gathering and pipeline system, whereas previous EIA figures measured capacity at the wellhead only.

The source data for one other capacity series has changed. The index for silver capacity is now based on data from the USGS; previously it was derived using a trend-through-peak method.

The monthly production indicators for construction machinery and original equipment motor vehicle parts were refined. For construction machinery, the weights used to combine the available product data were updated. For motor vehicle parts, the indicator is developed from monthly product data (engines, brakes, axles, and transmissions), production worker hours, and motor vehicle assemblies; previously, the series was derived from the product data only.

Last, the annual estimates of motor vehicle repair parts were improved; their derivation now includes information on the average age of the motor vehicle fleet.

### **LAN Equipment**

The 2000 revision introduced a new IP series for the production of local area network (LAN) equipment (routers, switches, and hubs). The new series is not published in the monthly statistical release, but it is included in the broader IP aggregate for communications equipment and updated on an ongoing basis (see the March 2001 *Bulletin* article). The table below updates the results for LAN equipment originally issued a year ago.

| U.S. LAN Equipment, 1992 to 2001              |                  |             |                                              |
|-----------------------------------------------|------------------|-------------|----------------------------------------------|
|                                               | Production index | Price index | Value of Production<br>(millions of dollars) |
| Annual Estimates (indexes are 1992=100)       |                  |             |                                              |
| 1992                                          | 100.000          | 100.000     | 1,684.8                                      |
| 1993                                          | 190.691          | 83.556      | 2,684.4                                      |
| 1994                                          | 298.728          | 74.243      | 3,736.6                                      |
| 1995                                          | 604.349          | 62.153      | 6,328.3                                      |
| 1996                                          | 953.621          | 57.123      | 9,177.7                                      |
| 1997                                          | 1,610.035        | 47.548      | 12,897.7                                     |
| 1998                                          | 2,480.329        | 34.327      | 14,344.5                                     |
| 1999                                          | 3,191.443        | 28.130      | 15,124.9                                     |
| 2000                                          | 4,163.164        | 24.406      | 17,118.2                                     |
| Quarterly Estimates (indexes are 1996:Q1=100) |                  |             |                                              |
| 1996:Q1                                       | 100.000          | 100.000     | 7,923.2                                      |
| Q2                                            | 113.744          | 98.967      | 8,919.0                                      |
| Q3                                            | 128.626          | 93.735      | 9,552.8                                      |
| Q4                                            | 150.302          | 86.623      | 10,315.7                                     |
| 1997:Q1                                       | 161.797          | 84.029      | 10,772.1                                     |
| Q2                                            | 183.502          | 79.683      | 11,585.3                                     |
| Q3                                            | 224.022          | 77.535      | 13,762.2                                     |
| Q4                                            | 262.123          | 74.493      | 15,471.1                                     |
| 1998:Q1                                       | 290.487          | 62.795      | 14,452.9                                     |
| Q2                                            | 326.083          | 59.075      | 15,262.7                                     |
| Q3                                            | 328.499          | 53.487      | 13,921.3                                     |
| Q4                                            | 329.790          | 52.587      | 13,741.0                                     |
| 1999:Q1                                       | 417.721          | 48.619      | 16,091.2                                     |
| Q2                                            | 419.060          | 47.117      | 15,644.2                                     |
| Q3                                            | 394.817          | 46.808      | 14,642.6                                     |
| Q4                                            | 402.795          | 44.249      | 14,121.6                                     |
| 2000:Q1                                       | 449.375          | 43.459      | 15,473.4                                     |
| Q2                                            | 493.979          | 41.718      | 16,327.9                                     |
| Q3                                            | 599.868          | 39.456      | 18,752.6                                     |
| Q4                                            | 604.171          | 37.433      | 17,919.0                                     |
| 2001:Q1                                       | 538.767          | 34.889      | 14,893.0                                     |
| Q2                                            | 481.771          | 33.144      | 12,651.6                                     |
| Q3                                            | 446.587          | 33.388      | 11,814.1                                     |

### **Data Availability and Publication Changes**

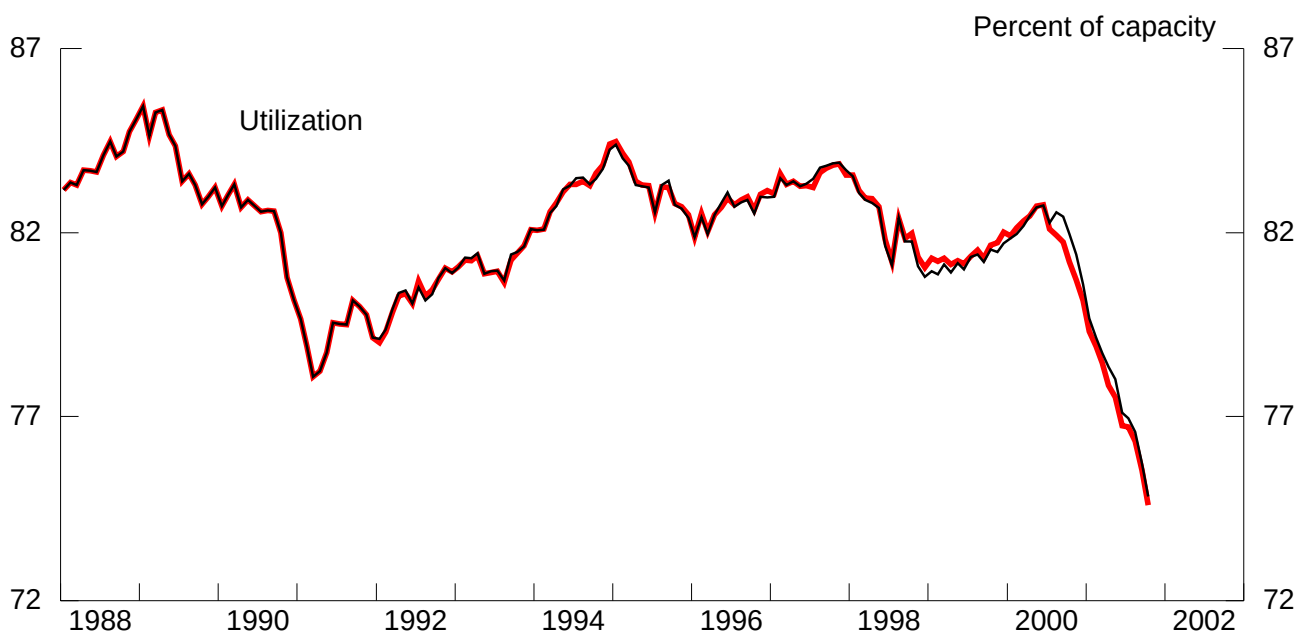
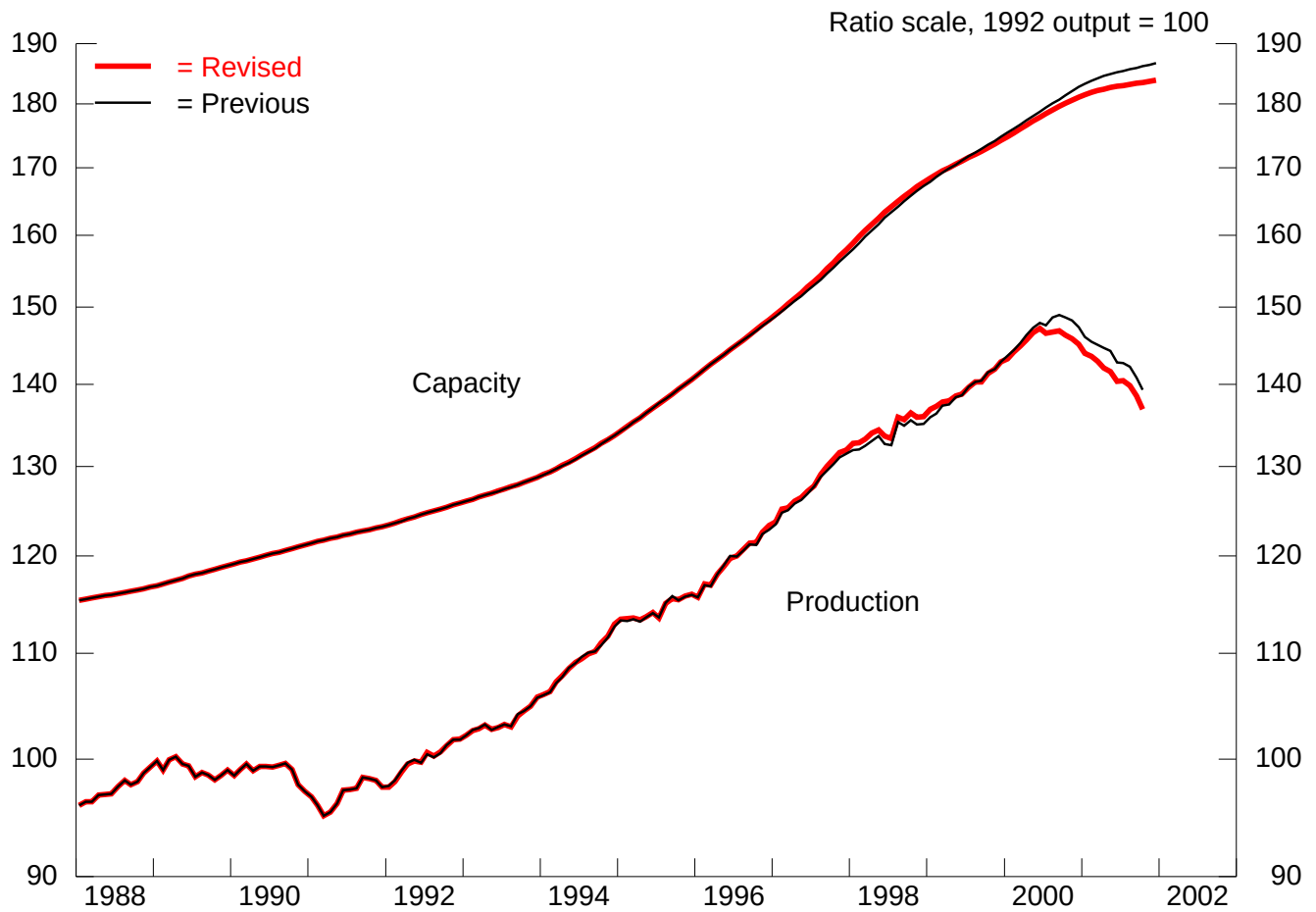
Files containing the revised data and the text and tables from this release are available on the Board's web site, at [www.federalreserve.gov/releases/g17](http://www.federalreserve.gov/releases/g17), and on diskettes from Publications Services (telephone 202-452-3245). Updated data for all of the regularly issued series on industrial production, capacity, capacity utilization, and electric power use are available on the website. The revised data will also be available through the STAT-USA web site of the Department of Commerce ([www.stat-usa.gov](http://www.stat-usa.gov)). Further information on these revisions is available from the Board's Industrial Output Section (telephone 202-452-3197).

A document with printed tables of the revised estimates of series shown in the G.17 release is available upon request to the Industrial Output Section, Mail Stop 82, Division of Research and Statistics, Board of Governors of the Federal Reserve System, Washington, DC 20551.

An expanded version of this release will be published in a forthcoming article in the Federal Reserve Bulletin.



## 1. Industrial production, capacity, and utilization





**Table 1**  
**INDUSTRIAL PRODUCTION, CAPACITY AND UTILIZATION:<sup>1</sup> Total Industry**  
Seasonally adjusted

| Year                                     | Jan.  | Feb.  | Mar.  | Apr.  | May   | June  | July  | Aug.  | Sep.  | Oct.  | Nov.  | Dec.  | Q1    | Q2    | Q3    | Q4    | Annual <sup>2</sup> |
|------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
| <b>IP (percent change)</b>               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1979                                     | -5    | .8    | .3    | -9    | 1.2   | .0    | -7    | -4    | .1    | .4    | -5    | -2    | 2.2   | 1.1   | -2.3  | -.3   | 3.3                 |
| 1980                                     | .5    | .1    | .0    | -1.9  | -2.5  | -1.3  | -6    | 1.2   | 1.5   | .7    | 1.6   | .5    | .8    | -15.0 | -4.2  | 14.2  | -2.8                |
| 1981                                     | -9    | .5    | .5    | -7    | .8    | .6    | .9    | -4    | -8    | -8    | -1.4  | -1.1  | 1.9   | 2.2   | 4.1   | -10.5 | 1.6                 |
| 1982                                     | -1.6  | 2.2   | -7    | -9    | -8    | -3    | -8    | -5    | -7    | -8    | -3    | -8    | -6.4  | -5.2  | -7.3  | -7.5  | -5.4                |
| 1983                                     | 2.1   | -2    | 1.0   | 1.3   | 1.2   | .6    | 1.8   | 1.3   | 1.7   | .8    | -1    | .5    | 6.8   | 11.9  | 17.3  | 10.3  | 3.7                 |
| 1984                                     | 2.1   | -2    | 1.1   | .5    | .6    | .5    | .2    | .0    | -1    | -5    | .1    | -4    | 11.1  | 7.2   | 2.6   | -2.6  | 8.9                 |
| 1985                                     | .4    | .9    | .3    | .2    | .2    | -2    | -4    | .6    | .6    | -9    | .6    | .7    | 3.0   | 2.8   | .3    | 1.4   | 1.6                 |
| 1986                                     | .6    | -7    | -1.0  | .8    | -2    | -3    | .3    | .3    | -1    | .9    | .5    | .9    | 2.0   | -1.7  | .7    | 6.5   | 1.1                 |
| 1987                                     | -6    | 1.2   | .4    | .4    | .4    | .9    | .6    | .1    | -1    | 1.4   | .3    | .6    | 4.2   | 6.7   | 5.6   | 7.1   | 4.6                 |
| 1988                                     | .1    | .3    | .0    | .6    | .1    | .1    | .7    | .5    | -4    | .3    | .8    | .5    | 3.2   | 3.1   | 3.9   | 3.6   | 4.5                 |
| 1989                                     | .6    | -8    | .9    | .2    | -6    | -2    | -1.0  | .4    | -2    | -5    | .4    | .5    | 3.8   | .5    | -4.4  | -.1   | 1.8                 |
| 1990                                     | -5    | .5    | .5    | -6    | .4    | .0    | .0    | .2    | .1    | -6    | -1.3  | -6    | 2.0   | .6    | 1.0   | -5.8  | -.2                 |
| 1991                                     | -5    | -8    | -9    | .3    | .8    | 1.2   | .1    | .1    | 1.0   | -1    | -1    | -6    | -8.3  | 1.5   | 6.2   | 1.1   | -2.0                |
| 1992                                     | .0    | .5    | .9    | .7    | .3    | -1    | .9    | -3    | .4    | .5    | .6    | .0    | .6    | 6.6   | 3.3   | 4.4   | 3.1                 |
| 1993                                     | .3    | .4    | .2    | .3    | -4    | .2    | .2    | -2    | 1.0   | .4    | .5    | .8    | 3.6   | 1.5   | 1.8   | 6.5   | 3.4                 |
| 1994                                     | .2    | .3    | .8    | .6    | .7    | .5    | .3    | .4    | .2    | .8    | .6    | 1.1   | 5.7   | 7.6   | 5.2   | 7.5   | 5.5                 |
| 1995                                     | .5    | .0    | .1    | -2    | .3    | .4    | -5    | 1.3   | .4    | -1    | .3    | .2    | 5.9   | .8    | 3.6   | 3.6   | 4.8                 |
| 1996                                     | -3    | 1.2   | -1    | 1.0   | .7    | .7    | .2    | .6    | .5    | .0    | 1.0   | .6    | 2.9   | 8.4   | 6.3   | 5.8   | 4.6                 |
| 1997                                     | .4    | 1.1   | .1    | .6    | .3    | .5    | .5    | 1.0   | .7    | .7    | .6    | .2    | 7.7   | 6.0   | 7.7   | 8.2   | 6.9                 |
| 1998                                     | .6    | .1    | .3    | .5    | .3    | -6    | -2    | 1.9   | -2    | .6    | -4    | .0    | 4.5   | 3.2   | 2.8   | 3.5   | 5.1                 |
| 1999                                     | .7    | .2    | .4    | .1    | .4    | .2    | .6    | .5    | .0    | .8    | .4    | .7    | 3.6   | 3.3   | 4.7   | 5.8   | 3.7                 |
| 2000                                     | .2    | .6    | .6    | .5    | .7    | .4    | -4    | .1    | .1    | -4    | -3    | -4    | 5.8   | 7.0   | .6    | -2.6  | 4.5                 |
| 2001                                     | -8    | -3    | -4    | -6    | -3    | -9    | .1    | -4    | -9    | -1.2  |       |       | -6.1  | -5.9  | -4.8  |       |                     |
| <b>IP (1992=100)</b>                     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1999                                     | 136.9 | 137.2 | 137.8 | 137.9 | 138.5 | 138.8 | 139.6 | 140.2 | 140.3 | 141.3 | 141.9 | 142.9 | 137.3 | 138.4 | 140.0 | 142.0 | 139.4               |
| 2000                                     | 143.2 | 144.0 | 144.9 | 145.6 | 146.6 | 147.2 | 146.5 | 146.7 | 146.8 | 146.3 | 145.8 | 145.1 | 144.0 | 146.5 | 146.7 | 145.7 | 145.7               |
| 2001                                     | 143.9 | 143.5 | 142.9 | 142.0 | 141.6 | 140.3 | 140.4 | 139.8 | 138.5 | 136.9 |       |       | 143.5 | 141.3 | 139.6 |       |                     |
| <b>Capacity (percent of 1992 output)</b> |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1999                                     | 168.4 | 168.9 | 169.5 | 170.0 | 170.5 | 171.0 | 171.5 | 172.0 | 172.5 | 173.1 | 173.6 | 174.2 | 168.9 | 170.5 | 172.0 | 173.6 | 171.3               |
| 2000                                     | 174.8 | 175.4 | 176.0 | 176.6 | 177.2 | 177.9 | 178.5 | 179.0 | 179.6 | 180.1 | 180.6 | 181.1 | 175.4 | 177.2 | 179.0 | 180.6 | 178.1               |
| 2001                                     | 181.5 | 181.8 | 182.2 | 182.4 | 182.6 | 182.8 | 183.0 | 183.2 | 183.3 | 183.5 |       |       | 181.8 | 182.6 | 183.2 |       |                     |
| <b>Utilization (percent)</b>             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1979                                     | 86.7  | 87.1  | 87.1  | 86.1  | 86.9  | 86.7  | 85.9  | 85.4  | 85.3  | 85.5  | 84.9  | 84.5  | 87.0  | 86.6  | 85.5  | 85.0  | 86.0                |
| 1980                                     | 84.7  | 84.6  | 84.4  | 82.6  | 80.4  | 79.2  | 78.5  | 79.3  | 80.3  | 80.7  | 81.8  | 82.1  | 84.6  | 80.7  | 79.4  | 81.5  | 81.5                |
| 1981                                     | 81.2  | 81.4  | 81.6  | 80.9  | 81.4  | 81.8  | 82.3  | 81.8  | 80.9  | 80.1  | 78.8  | 77.7  | 81.4  | 81.4  | 81.7  | 78.9  | 80.8                |
| 1982                                     | 76.3  | 77.8  | 77.1  | 76.2  | 75.4  | 75.0  | 74.2  | 73.7  | 73.0  | 72.2  | 71.9  | 71.1  | 77.1  | 75.6  | 73.6  | 71.7  | 74.5                |
| 1983                                     | 72.5  | 72.3  | 72.9  | 73.7  | 74.5  | 74.8  | 76.1  | 77.0  | 78.2  | 78.7  | 78.6  | 78.9  | 72.6  | 74.4  | 77.1  | 78.7  | 75.7                |
| 1984                                     | 80.4  | 80.1  | 80.8  | 81.0  | 81.3  | 81.5  | 81.5  | 81.3  | 81.0  | 80.5  | 80.4  | 79.8  | 80.4  | 81.3  | 81.3  | 80.2  | 80.8                |
| 1985                                     | 79.9  | 80.4  | 80.4  | 80.3  | 80.3  | 79.9  | 79.4  | 79.6  | 79.9  | 79.0  | 79.2  | 79.5  | 80.2  | 80.2  | 79.6  | 79.2  | 79.8                |
| 1986                                     | 79.8  | 79.2  | 78.2  | 78.7  | 78.4  | 78.1  | 78.2  | 78.3  | 78.2  | 78.8  | 79.1  | 79.7  | 79.1  | 78.4  | 78.2  | 79.2  | 78.7                |
| 1987                                     | 79.1  | 80.0  | 80.2  | 80.5  | 80.7  | 81.4  | 81.8  | 81.8  | 81.6  | 82.6  | 82.8  | 83.2  | 79.8  | 80.8  | 81.7  | 82.9  | 81.3                |
| 1988                                     | 83.2  | 83.4  | 83.3  | 83.7  | 83.7  | 83.6  | 84.1  | 84.5  | 84.1  | 84.2  | 84.8  | 85.1  | 83.3  | 83.7  | 84.2  | 84.7  | 84.0                |
| 1989                                     | 85.4  | 84.6  | 85.3  | 85.3  | 84.7  | 84.4  | 83.4  | 83.6  | 83.3  | 82.8  | 83.0  | 83.2  | 85.1  | 84.8  | 83.4  | 83.0  | 84.1                |
| 1990                                     | 82.7  | 83.0  | 83.3  | 82.7  | 82.9  | 82.7  | 82.6  | 82.6  | 82.6  | 82.0  | 80.8  | 80.2  | 83.0  | 82.8  | 82.6  | 81.0  | 82.3                |
| 1991                                     | 79.6  | 78.9  | 78.1  | 78.2  | 78.7  | 79.6  | 79.5  | 79.5  | 80.2  | 80.0  | 79.8  | 79.2  | 78.9  | 78.8  | 79.7  | 79.6  | 79.3                |
| 1992                                     | 79.0  | 79.3  | 79.8  | 80.3  | 80.3  | 80.1  | 80.7  | 80.3  | 80.4  | 80.7  | 81.0  | 80.9  | 79.4  | 80.2  | 80.5  | 80.9  | 80.2                |
| 1993                                     | 81.1  | 81.3  | 81.2  | 81.4  | 80.9  | 80.9  | 81.0  | 80.6  | 81.3  | 81.4  | 81.6  | 82.1  | 81.2  | 81.1  | 81.0  | 81.7  | 81.2                |
| 1994                                     | 82.1  | 82.1  | 82.6  | 82.8  | 83.1  | 83.3  | 83.3  | 83.4  | 83.3  | 83.6  | 83.8  | 84.4  | 82.3  | 83.1  | 83.3  | 84.0  | 83.2                |
| 1995                                     | 84.5  | 84.2  | 83.9  | 83.4  | 83.3  | 83.3  | 82.5  | 83.2  | 83.2  | 82.8  | 82.7  | 82.5  | 84.2  | 83.3  | 83.0  | 82.7  | 83.3                |
| 1996                                     | 81.9  | 82.5  | 82.0  | 82.5  | 82.7  | 82.9  | 82.7  | 82.9  | 83.0  | 82.6  | 83.0  | 83.1  | 82.1  | 82.7  | 82.9  | 82.9  | 82.7                |
| 1997                                     | 83.1  | 83.6  | 83.3  | 83.4  | 83.3  | 83.3  | 83.2  | 83.6  | 83.7  | 83.8  | 83.9  | 83.6  | 83.3  | 83.3  | 83.5  | 83.8  | 83.5                |
| 1998                                     | 83.6  | 83.1  | 82.9  | 82.9  | 82.7  | 81.8  | 81.2  | 82.4  | 81.8  | 82.0  | 81.3  | 81.1  | 83.2  | 82.5  | 81.8  | 81.5  | 82.2                |
| 1999                                     | 81.3  | 81.2  | 81.3  | 81.1  | 81.2  | 81.2  | 81.4  | 81.5  | 81.3  | 81.7  | 81.7  | 82.0  | 81.3  | 81.2  | 81.4  | 81.8  | 81.4                |
| 2000                                     | 81.9  | 82.1  | 82.3  | 82.5  | 82.7  | 82.8  | 82.1  | 81.9  | 81.7  | 81.2  | 80.7  | 80.2  | 82.1  | 82.6  | 81.9  | 80.7  | 81.8                |
| 2001                                     | 79.3  | 78.9  | 78.5  | 77.8  | 77.5  | 76.7  | 76.7  | 76.3  | 75.5  | 74.6  |       |       | 78.9  | 77.4  | 76.2  |       |                     |

1. Estimates from August 2001 through October 2001 are subject to further revision in the upcoming monthly releases.
2. Annual averages of industrial production are calculated from not seasonally adjusted indexes.

**Table 2**  
**INDUSTRIAL PRODUCTION, CAPACITY AND UTILIZATION:<sup>1</sup> Manufacturing**

Seasonally adjusted

| Year                                     | Jan.  | Feb.  | Mar.  | Apr.  | May   | June  | July  | Aug.  | Sep.  | Oct.  | Nov.  | Dec.  | Q1    | Q2    | Q3    | Q4    | Annual <sup>2</sup> |
|------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
| <b>IP (percent change)</b>               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1979                                     | -.3   | .7    | .4    | -1.5  | 1.5   | .1    | -.5   | -.9   | .0    | .5    | -.7   | -.1   | 3.4   | .3    | -2.4  | -1.5  | 3.6                 |
| 1980                                     | .2    | .3    | -.4   | -2.1  | -3.1  | -1.5  | -.7   | 1.7   | 1.5   | 1.1   | 1.7   | .3    | -.4   | -17.7 | -4.7  | 16.8  | -3.9                |
| 1981                                     | -.6   | .6    | .3    | .2    | .7    | -.1   | .6    | -.8   | -.8   | -1.1  | -1.6  | -1.6  | 2.5   | 4.2   | -.1   | -13.1 | 1.6                 |
| 1982                                     | -2.0  | 2.9   | -.7   | -.9   | -.4   | .0    | -.8   | -.5   | -.5   | -1.2  | -.3   | -.7   | -7.6  | -2.7  | -5.6  | -8.0  | -5.9                |
| 1983                                     | 2.5   | .4    | 1.4   | 1.1   | 1.4   | .8    | 1.5   | 1.1   | 2.2   | .6    | .3    | -.1   | 11.5  | 14.7  | 17.1  | 11.2  | 5.7                 |
| 1984                                     | 2.5   | .6    | .7    | .5    | .4    | .7    | .3    | .1    | -.2   | .0    | .1    | -.3   | 13.2  | 6.6   | 3.4   | -.4   | 9.9                 |
| 1985                                     | .1    | .6    | .7    | .2    | .5    | -.3   | -.4   | .9    | .4    | -.8   | 1.1   | -.1   | 2.1   | 4.2   | 1.1   | 1.6   | 2.3                 |
| 1986                                     | 1.5   | -.5   | -.9   | 1.4   | -.1   | -.3   | .3    | .6    | .0    | .8    | .4    | 1.2   | 4.5   | 1.7   | 1.7   | 6.7   | 2.8                 |
| 1987                                     | -.8   | 1.6   | .2    | .5    | .3    | 1.0   | .7    | -.2   | .1    | 1.3   | .5    | .6    | 5.0   | 7.0   | 5.5   | 7.6   | 5.3                 |
| 1988                                     | -.2   | .4    | -.1   | 1.0   | -.1   | .0    | .7    | .3    | .2    | .2    | .9    | .6    | 2.3   | 4.1   | 3.7   | 5.2   | 4.7                 |
| 1989                                     | .9    | -1.2  | .8    | .1    | -.7   | .0    | -1.1  | .3    | -.3   | -.6   | .4    | .1    | 4.3   | -.7   | -4.5  | -1.4  | 1.9                 |
| 1990                                     | -.2   | .9    | .3    | -.8   | .4    | -.1   | .0    | .3    | -.1   | -.6   | -1.3  | -.6   | 2.9   | -.1   | .8    | -6.3  | -.5                 |
| 1991                                     | -.9   | -.7   | -.1   | .3    | .7    | 1.4   | .2    | .2    | 1.1   | -.1   | -.2   | -.5   | -9.7  | 1.2   | 7.8   | 1.7   | -2.4                |
| 1992                                     | .1    | .7    | 1.0   | .6    | .4    | .0    | .9    | -.3   | .3    | .5    | .6    | -.1   | 2.0   | 7.4   | 4.1   | 3.7   | 4.0                 |
| 1993                                     | .7    | .2    | .2    | .5    | -.3   | .0    | .2    | -.3   | 1.1   | .4    | .5    | .9    | 4.2   | 2.1   | 1.3   | 6.9   | 3.7                 |
| 1994                                     | .1    | .4    | 1.1   | .8    | .8    | .3    | .5    | .6    | .3    | .9    | .8    | 1.1   | 5.9   | 9.4   | 6.0   | 9.0   | 6.1                 |
| 1995                                     | .6    | -.1   | .2    | -.3   | .1    | .5    | -.7   | 1.2   | .7    | .0    | .1    | .1    | 6.4   | .4    | 3.0   | 4.2   | 5.3                 |
| 1996                                     | -.3   | 1.2   | -.2   | 1.2   | .8    | .9    | .6    | .6    | .6    | .0    | 1.0   | .7    | 2.4   | 9.2   | 8.4   | 6.2   | 4.9                 |
| 1997                                     | .4    | 1.2   | .3    | .5    | .4    | .7    | .4    | 1.3   | .6    | .6    | .7    | .3    | 8.8   | 6.8   | 8.9   | 8.7   | 7.9                 |
| 1998                                     | .9    | .0    | .2    | .7    | .2    | -.7   | -.2   | 2.3   | -.2   | .8    | -.2   | .2    | 6.0   | 3.0   | 3.2   | 5.2   | 5.9                 |
| 1999                                     | .6    | .4    | .2    | .2    | .6    | .1    | .4    | .8    | .0    | .8    | .6    | .6    | 3.9   | 3.6   | 4.8   | 6.9   | 4.2                 |
| 2000                                     | .3    | .5    | .9    | .3    | .7    | .5    | -.4   | -.1   | .1    | -.5   | -.5   | -.7   | 6.3   | 7.1   | .4    | -4.0  | 4.8                 |
| 2001                                     | -.8   | -.3   | -.4   | -.8   | -.2   | -1.0  | .2    | -.6   | -1.0  | -1.3  |       |       | -7.1  | -6.2  | -5.0  |       |                     |
| <b>IP (1992=100)</b>                     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1999                                     | 141.8 | 142.4 | 142.7 | 143.0 | 143.8 | 143.9 | 144.4 | 145.6 | 145.7 | 146.8 | 147.7 | 148.6 | 142.3 | 143.6 | 145.2 | 147.7 | 144.7               |
| 2000                                     | 149.0 | 149.8 | 151.1 | 151.6 | 152.6 | 153.3 | 152.7 | 152.6 | 152.8 | 152.0 | 151.2 | 150.1 | 149.9 | 152.5 | 152.7 | 151.1 | 151.6               |
| 2001                                     | 148.9 | 148.4 | 147.9 | 146.7 | 146.4 | 145.0 | 145.2 | 144.4 | 142.9 | 141.1 |       |       | 148.4 | 146.0 | 144.2 |       |                     |
| <b>Capacity (percent of 1992 output)</b> |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1999                                     | 176.1 | 176.8 | 177.4 | 178.0 | 178.6 | 179.2 | 179.8 | 180.4 | 181.1 | 181.7 | 182.4 | 183.1 | 176.8 | 178.6 | 180.4 | 182.4 | 179.5               |
| 2000                                     | 183.8 | 184.6 | 185.4 | 186.1 | 186.9 | 187.7 | 188.4 | 189.1 | 189.8 | 190.4 | 191.0 | 191.5 | 184.6 | 186.9 | 189.1 | 191.0 | 187.9               |
| 2001                                     | 192.0 | 192.4 | 192.7 | 193.0 | 193.2 | 193.4 | 193.5 | 193.6 | 193.8 | 193.9 |       |       | 192.3 | 193.2 | 193.6 |       |                     |
| <b>Utilization (percent)</b>             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1979                                     | 86.4  | 86.7  | 86.9  | 85.3  | 86.4  | 86.3  | 85.6  | 84.5  | 84.3  | 84.5  | 83.6  | 83.3  | 86.7  | 86.0  | 84.8  | 83.8  | 85.3                |
| 1980                                     | 83.3  | 83.3  | 82.7  | 80.8  | 78.1  | 76.7  | 75.9  | 77.0  | 77.9  | 78.6  | 79.7  | 79.7  | 83.1  | 78.5  | 76.9  | 79.3  | 79.5                |
| 1981                                     | 79.0  | 79.2  | 79.3  | 79.3  | 79.6  | 79.3  | 79.6  | 78.8  | 78.0  | 77.0  | 75.6  | 74.2  | 79.2  | 79.4  | 78.8  | 75.6  | 78.3                |
| 1982                                     | 72.6  | 74.6  | 73.9  | 73.1  | 72.7  | 72.6  | 71.8  | 71.4  | 70.9  | 69.9  | 69.6  | 69.0  | 73.7  | 72.8  | 71.4  | 69.5  | 71.8                |
| 1983                                     | 70.6  | 70.8  | 71.8  | 72.5  | 73.4  | 73.9  | 74.8  | 75.6  | 77.2  | 77.6  | 77.7  | 77.5  | 71.1  | 73.2  | 75.9  | 77.6  | 74.4                |
| 1984                                     | 79.3  | 79.5  | 79.8  | 80.0  | 80.1  | 80.3  | 80.4  | 80.2  | 79.8  | 79.6  | 79.5  | 79.0  | 79.5  | 80.1  | 80.1  | 79.4  | 79.8                |
| 1985                                     | 78.9  | 79.1  | 79.3  | 79.2  | 79.4  | 78.9  | 78.3  | 78.8  | 78.8  | 77.9  | 78.5  | 78.2  | 79.1  | 79.2  | 78.6  | 78.2  | 78.8                |
| 1986                                     | 79.1  | 78.6  | 77.8  | 78.7  | 78.5  | 78.1  | 78.2  | 78.6  | 78.4  | 78.9  | 79.1  | 79.9  | 78.5  | 78.5  | 78.4  | 79.3  | 78.7                |
| 1987                                     | 79.1  | 80.2  | 80.3  | 80.6  | 80.7  | 81.4  | 81.8  | 81.5  | 81.5  | 82.5  | 82.8  | 83.1  | 79.9  | 80.9  | 81.6  | 82.8  | 81.3                |
| 1988                                     | 82.9  | 83.1  | 82.9  | 83.7  | 83.5  | 83.4  | 83.8  | 84.0  | 84.0  | 84.1  | 84.8  | 85.1  | 83.0  | 83.5  | 83.9  | 84.7  | 83.8                |
| 1989                                     | 85.7  | 84.5  | 85.0  | 85.0  | 84.2  | 84.1  | 83.0  | 83.1  | 82.7  | 82.1  | 82.2  | 82.1  | 85.1  | 84.4  | 82.9  | 82.1  | 83.6                |
| 1990                                     | 81.8  | 82.5  | 82.6  | 81.8  | 82.0  | 81.8  | 81.6  | 81.7  | 81.5  | 80.9  | 79.7  | 79.0  | 82.3  | 81.9  | 81.6  | 79.9  | 81.4                |
| 1991                                     | 78.2  | 77.5  | 76.6  | 76.8  | 77.1  | 78.1  | 78.2  | 78.2  | 79.0  | 78.9  | 78.6  | 78.1  | 77.5  | 77.3  | 78.5  | 78.5  | 77.9                |
| 1992                                     | 78.0  | 78.4  | 79.0  | 79.4  | 79.5  | 79.4  | 80.0  | 79.6  | 79.7  | 79.9  | 80.2  | 80.0  | 78.5  | 79.4  | 79.8  | 80.0  | 79.4                |
| 1993                                     | 80.4  | 80.4  | 80.4  | 80.6  | 80.2  | 80.0  | 80.1  | 79.7  | 80.4  | 80.5  | 80.7  | 81.2  | 80.4  | 80.3  | 80.0  | 80.8  | 80.4                |
| 1994                                     | 81.1  | 81.1  | 81.8  | 82.2  | 82.5  | 82.5  | 82.6  | 82.8  | 82.7  | 83.1  | 83.4  | 84.0  | 81.3  | 82.4  | 82.7  | 83.5  | 82.5                |
| 1995                                     | 84.1  | 83.7  | 83.5  | 82.9  | 82.6  | 82.6  | 81.7  | 82.3  | 82.5  | 82.1  | 81.8  | 81.5  | 83.8  | 82.7  | 82.1  | 81.8  | 82.6                |
| 1996                                     | 80.9  | 81.4  | 80.8  | 81.3  | 81.5  | 81.8  | 81.9  | 82.0  | 82.1  | 81.7  | 82.1  | 82.2  | 81.0  | 81.6  | 82.0  | 82.0  | 81.6                |
| 1997                                     | 82.1  | 82.7  | 82.5  | 82.5  | 82.4  | 82.5  | 82.4  | 83.0  | 83.0  | 83.0  | 83.0  | 82.7  | 82.5  | 82.5  | 82.8  | 82.9  | 82.7                |
| 1998                                     | 83.0  | 82.4  | 82.1  | 82.2  | 81.8  | 80.8  | 80.1  | 81.5  | 80.9  | 81.2  | 80.6  | 80.4  | 82.5  | 81.6  | 80.9  | 80.7  | 81.4                |
| 1999                                     | 80.5  | 80.6  | 80.4  | 80.3  | 80.5  | 80.3  | 80.3  | 80.7  | 80.5  | 80.8  | 81.0  | 81.1  | 80.5  | 80.4  | 80.5  | 81.0  | 80.6                |
| 2000                                     | 81.0  | 81.1  | 81.5  | 81.4  | 81.6  | 81.7  | 81.0  | 80.7  | 80.5  | 79.8  | 79.2  | 78.4  | 81.2  | 81.6  | 80.7  | 79.1  | 80.7                |
| 2001                                     | 77.6  | 77.2  | 76.7  | 76.0  | 75.8  | 75.0  | 75.1  | 74.6  | 73.7  | 72.8  |       |       | 77.2  | 75.6  | 74.4  |       |                     |

1. Estimates from August 2001 through October 2001 are subject to further revision in the upcoming monthly releases.

2. Annual averages of industrial production are calculated from not seasonally adjusted indexes.

**Table 3****INDUSTRIAL PRODUCTION, CAPACITY AND UTILIZATION:<sup>1</sup> Total Industry Excluding Selected High-Technology Industries<sup>2</sup>**

Seasonally adjusted

| Year                                     | Jan.  | Feb.  | Mar.  | Apr.  | May   | June  | July  | Aug.  | Sep.  | Oct.  | Nov.  | Dec.  | Q1    | Q2    | Q3    | Q4    | Annual <sup>3</sup> |
|------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
| <b>IP (percent change)</b>               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1979                                     | -.7   | .8    | .2    | -1.1  | 1.1   | -.1   | -.8   | -.5   | .0    | .3    | -.6   | -.3   | .9    | -.1   | -3.5  | -1.4  | 2.2                 |
| 1980                                     | .3    | .0    | -.1   | -2.2  | -2.7  | -1.3  | -.8   | 1.2   | 1.6   | .6    | 1.6   | .5    | -.7   | -16.6 | -4.9  | 13.8  | -4.0                |
| 1981                                     | -.9   | .4    | .4    | -.8   | .8    | .5    | .9    | -.5   | -1.0  | -.8   | -1.6  | -1.4  | 1.3   | 1.1   | 3.2   | -11.8 | .8                  |
| 1982                                     | -1.6  | 2.0   | -.8   | -.9   | -.9   | -.4   | -1.0  | -.4   | -1.0  | -1.0  | -.3   | -1.2  | -7.7  | -5.8  | -8.2  | -9.1  | -6.5                |
| 1983                                     | 2.5   | -.4   | .8    | 1.2   | 1.2   | .4    | 1.8   | 1.4   | 1.6   | .6    | -.2   | .5    | 6.9   | 10.6  | 16.8  | 8.7   | 2.8                 |
| 1984                                     | 1.9   | -.3   | 1.0   | .4    | .4    | .3    | .1    | -.1   | -.2   | -.5   | .0    | -.5   | 9.7   | 5.3   | 1.0   | -3.5  | 7.5                 |
| 1985                                     | .3    | .9    | .2    | .1    | .2    | -.1   | -.5   | .6    | .7    | -.8   | .3    | .7    | 2.3   | 2.5   | .5    | 1.0   | .9                  |
| 1986                                     | .7    | -.8   | -1.1  | .8    | -.3   | -.2   | .0    | .2    | -.2   | 1.0   | .4    | 1.0   | 1.7   | -1.8  | -.6   | 6.3   | .8                  |
| 1987                                     | -.8   | 1.2   | .3    | .4    | .5    | .8    | .5    | .1    | -.2   | 1.3   | .3    | .5    | 3.5   | 6.8   | 5.0   | 6.5   | 4.2                 |
| 1988                                     | .1    | .2    | .1    | .4    | -.2   | .1    | .6    | .5    | -.3   | .4    | .6    | .5    | 2.8   | 1.8   | 3.3   | 3.5   | 3.9                 |
| 1989                                     | .5    | -.7   | .9    | .1    | -.7   | -.3   | -.9   | .4    | -.3   | -.3   | .2    | .3    | 3.5   | -.3   | -4.8  | -.4   | 1.4                 |
| 1990                                     | -.4   | .5    | .5    | -.5   | .3    | -.1   | .0    | .1    | .2    | -.6   | -1.4  | -.7   | 1.7   | .6    | .7    | -6.4  | -.5                 |
| 1991                                     | -.5   | -.9   | -1.0  | .4    | .8    | 1.2   | .1    | .0    | 1.0   | -.2   | -.2   | -.7   | -8.8  | 1.4   | 6.1   | .4    | -2.4                |
| 1992                                     | -.3   | .5    | .8    | .7    | .2    | -.3   | .8    | -.4   | .3    | .4    | .5    | .1    | -.9   | 5.8   | 2.2   | 3.3   | 2.2                 |
| 1993                                     | .4    | .4    | .1    | .3    | -.5   | .2    | .2    | -.3   | .9    | .3    | .4    | .7    | 3.5   | .8    | 1.0   | 5.3   | 2.7                 |
| 1994                                     | .2    | .3    | .6    | .3    | .5    | .4    | .2    | .3    | .1    | .6    | .5    | .8    | 4.8   | 5.5   | 3.3   | 5.3   | 4.1                 |
| 1995                                     | .2    | -.2   | -.1   | -.4   | .1    | .3    | -.6   | 1.1   | .1    | -.4   | .1    | .0    | 2.8   | -1.4  | 1.4   | .3    | 2.4                 |
| 1996                                     | -.5   | 1.1   | -.3   | .8    | .5    | .5    | -.1   | .3    | .3    | -.3   | .8    | .4    | .6    | 6.1   | 3.2   | 2.8   | 2.0                 |
| 1997                                     | .2    | .9    | -.2   | .4    | .1    | .3    | .2    | .8    | .6    | .6    | .3    | -.2   | 4.9   | 2.8   | 5.0   | 6.1   | 4.1                 |
| 1998                                     | .2    | -.2   | .3    | .5    | .2    | -.9   | -.6   | 1.8   | -.5   | .5    | -.5   | -.2   | .7    | 1.9   | -.4   | 1.3   | 2.5                 |
| 1999                                     | .4    | .0    | .2    | -.1   | .3    | -.1   | .2    | .4    | -.1   | .6    | .1    | .3    | .7    | .8    | 2.1   | 3.7   | 1.1                 |
| 2000                                     | -.2   | .3    | .2    | .2    | .3    | .3    | -.7   | .0    | -.1   | -.5   | -.4   | -.5   | 1.2   | 2.8   | -2.0  | -3.9  | 1.3                 |
| 2001                                     | -.7   | -.2   | -.3   | -.4   | -.1   | -.8   | .3    | -.4   | -.9   | -1.2  |       |       | -5.4  | -3.9  | -3.3  |       |                     |
| <b>IP (1992=100)</b>                     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1999                                     | 119.6 | 119.6 | 119.9 | 119.7 | 120.1 | 120.0 | 120.3 | 120.7 | 120.6 | 121.4 | 121.6 | 122.0 | 119.7 | 119.9 | 120.6 | 121.7 | 120.5               |
| 2000                                     | 121.7 | 122.0 | 122.3 | 122.5 | 122.9 | 123.2 | 122.3 | 122.3 | 122.2 | 121.6 | 121.1 | 120.5 | 122.0 | 122.8 | 122.2 | 121.0 | 122.0               |
| 2001                                     | 119.6 | 119.4 | 119.1 | 118.6 | 118.5 | 117.6 | 117.9 | 117.4 | 116.3 | 115.0 |       |       | 119.4 | 118.2 | 117.2 |       |                     |
| <b>Capacity (percent of 1992 output)</b> |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1999                                     | 147.1 | 147.3 | 147.6 | 147.8 | 148.0 | 148.2 | 148.4 | 148.6 | 148.7 | 148.8 | 149.0 | 149.1 | 147.3 | 148.0 | 148.6 | 148.9 | 148.2               |
| 2000                                     | 149.2 | 149.3 | 149.4 | 149.5 | 149.6 | 149.7 | 149.7 | 149.8 | 149.9 | 150.0 | 150.1 | 150.2 | 149.3 | 149.6 | 149.8 | 150.1 | 149.7               |
| 2001                                     | 150.2 | 150.3 | 150.4 | 150.5 | 150.5 | 150.6 | 150.7 | 150.7 | 150.8 | 150.8 |       |       | 150.3 | 150.5 | 150.7 |       |                     |
| <b>Utilization (percent)</b>             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1979                                     | 86.6  | 87.1  | 87.1  | 86.1  | 86.8  | 86.6  | 85.8  | 85.2  | 85.1  | 85.3  | 84.7  | 84.3  | 86.9  | 86.5  | 85.4  | 84.7  | 85.9                |
| 1980                                     | 84.4  | 84.3  | 84.1  | 82.1  | 79.8  | 78.7  | 78.0  | 78.8  | 80.0  | 80.4  | 81.6  | 81.8  | 84.3  | 80.2  | 78.9  | 81.3  | 81.2                |
| 1981                                     | 81.0  | 81.2  | 81.5  | 80.7  | 81.3  | 81.6  | 82.2  | 81.6  | 80.7  | 79.9  | 78.5  | 77.3  | 81.2  | 81.2  | 81.5  | 78.6  | 80.6                |
| 1982                                     | 76.0  | 77.4  | 76.7  | 75.9  | 75.1  | 74.7  | 73.9  | 73.5  | 72.6  | 71.8  | 71.5  | 70.5  | 76.7  | 75.2  | 73.3  | 71.3  | 74.1                |
| 1983                                     | 72.3  | 72.0  | 72.6  | 73.4  | 74.2  | 74.5  | 75.8  | 76.8  | 78.0  | 78.4  | 78.2  | 78.6  | 72.3  | 74.0  | 76.9  | 78.4  | 75.4                |
| 1984                                     | 80.0  | 79.7  | 80.4  | 80.6  | 80.8  | 81.0  | 80.9  | 80.7  | 80.5  | 80.0  | 79.9  | 79.3  | 80.1  | 80.8  | 80.7  | 79.7  | 80.3                |
| 1985                                     | 79.5  | 80.0  | 80.1  | 80.0  | 80.0  | 79.8  | 79.3  | 79.6  | 80.0  | 79.1  | 79.2  | 79.6  | 79.9  | 79.9  | 79.6  | 79.3  | 79.7                |
| 1986                                     | 80.1  | 79.4  | 78.5  | 79.0  | 78.7  | 78.5  | 78.4  | 78.5  | 78.3  | 79.0  | 79.3  | 80.0  | 79.3  | 78.7  | 78.4  | 79.4  | 79.0                |
| 1987                                     | 79.4  | 80.2  | 80.5  | 80.8  | 81.1  | 81.7  | 82.1  | 82.2  | 81.9  | 83.0  | 83.2  | 83.5  | 80.0  | 81.2  | 82.1  | 83.2  | 81.6                |
| 1988                                     | 83.6  | 83.7  | 83.7  | 84.0  | 83.8  | 83.9  | 84.3  | 84.6  | 84.3  | 84.6  | 85.0  | 85.3  | 83.7  | 83.9  | 84.4  | 85.0  | 84.2                |
| 1989                                     | 85.7  | 85.0  | 85.6  | 85.6  | 84.9  | 84.6  | 83.6  | 83.9  | 83.5  | 83.2  | 83.3  | 83.4  | 85.4  | 85.0  | 83.7  | 83.3  | 84.4                |
| 1990                                     | 83.0  | 83.3  | 83.7  | 83.1  | 83.3  | 83.1  | 83.0  | 83.0  | 83.0  | 82.4  | 81.1  | 80.5  | 83.3  | 83.2  | 83.0  | 81.4  | 82.7                |
| 1991                                     | 80.0  | 79.2  | 78.4  | 78.6  | 79.1  | 80.0  | 80.0  | 79.9  | 80.6  | 80.4  | 80.2  | 79.5  | 79.2  | 79.2  | 80.2  | 80.0  | 79.7                |
| 1992                                     | 79.2  | 79.5  | 80.1  | 80.5  | 80.6  | 80.3  | 80.9  | 80.4  | 80.5  | 80.8  | 81.0  | 81.0  | 79.6  | 80.5  | 80.6  | 80.9  | 80.4                |
| 1993                                     | 81.2  | 81.4  | 81.4  | 81.5  | 81.0  | 81.0  | 81.1  | 80.8  | 81.4  | 81.5  | 81.8  | 82.2  | 81.3  | 81.2  | 81.1  | 81.8  | 81.3                |
| 1994                                     | 82.2  | 82.3  | 82.7  | 82.8  | 83.1  | 83.3  | 83.3  | 83.2  | 83.2  | 83.5  | 83.7  | 84.2  | 82.4  | 83.1  | 83.3  | 83.8  | 83.1                |
| 1995                                     | 84.2  | 83.9  | 83.6  | 83.1  | 83.1  | 83.1  | 82.4  | 83.2  | 83.1  | 82.6  | 82.5  | 82.3  | 83.9  | 83.1  | 82.9  | 82.5  | 83.1                |
| 1996                                     | 81.7  | 82.4  | 82.0  | 82.5  | 82.8  | 83.0  | 82.8  | 82.9  | 83.0  | 82.6  | 83.1  | 83.2  | 82.1  | 82.8  | 82.9  | 83.0  | 82.7                |
| 1997                                     | 83.2  | 83.7  | 83.3  | 83.5  | 83.3  | 83.3  | 83.3  | 83.7  | 84.0  | 84.2  | 84.2  | 83.8  | 83.4  | 83.4  | 83.7  | 84.1  | 83.6                |
| 1998                                     | 83.7  | 83.2  | 83.2  | 83.3  | 83.2  | 82.2  | 81.4  | 82.6  | 82.0  | 82.2  | 81.5  | 81.1  | 83.4  | 82.9  | 82.0  | 81.6  | 82.5                |
| 1999                                     | 81.3  | 81.2  | 81.2  | 81.0  | 81.1  | 80.9  | 81.1  | 81.3  | 81.1  | 81.6  | 81.6  | 81.8  | 81.2  | 81.0  | 81.2  | 81.7  | 81.3                |
| 2000                                     | 81.6  | 81.8  | 81.8  | 81.9  | 82.2  | 82.3  | 81.7  | 81.6  | 81.5  | 81.1  | 80.7  | 80.2  | 81.7  | 82.1  | 81.6  | 80.7  | 81.5                |
| 2001                                     | 79.6  | 79.5  | 79.2  | 78.8  | 78.7  | 78.1  | 78.3  | 77.9  | 77.2  | 76.2  |       |       | 79.4  | 78.5  | 77.8  |       |                     |

1. Estimates from August 2001 through October 2001 are subject to further revision in the upcoming monthly releases.

2. Computers, communications equipment, and semiconductors and related electronic components.

3. Annual averages of industrial production are calculated from not seasonally adjusted indexes.

**Table 4**  
**INDUSTRIAL PRODUCTION, CAPACITY AND UTILIZATION:**<sup>1</sup> Manufacturing Excluding Selected High-Technology Industries<sup>2</sup>  
Seasonally adjusted

| Year                                     | Jan.  | Feb.  | Mar.  | Apr.  | May   | June  | July  | Aug.  | Sep.  | Oct.  | Nov.  | Dec.  | Q1    | Q2    | Q3    | Q4    | Annual <sup>3</sup> |
|------------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
| <b>IP (percent change)</b>               |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1979                                     | -7    | .7    | .3    | -1.7  | 1.4   | .0    | -6    | -1.1  | -1    | .4    | -9    | -2    | 1.9   | -1.2  | -3.8  | -2.9  | 2.2                 |
| 1980                                     | .0    | .1    | -6    | -2.4  | -3.4  | -1.5  | -9    | 1.7   | 1.6   | 1.0   | 1.7   | .2    | -2.3  | -19.9 | -5.6  | 16.5  | -5.4                |
| 1981                                     | -6    | .4    | .2    | .1    | .7    | -.3   | .5    | -9    | -1.1  | -1.2  | -1.8  | -2.0  | 1.8   | 2.8   | -1.7  | -15.0 | .5                  |
| 1982                                     | -2.1  | 2.7   | -8    | -9    | -5    | -1    | -1.0  | -3    | -9    | -1.4  | -4    | -1.1  | -9.4  | -3.4  | -6.7  | -10.2 | -7.4                |
| 1983                                     | 3.1   | .3    | 1.3   | 1.0   | 1.4   | .6    | 1.5   | 1.1   | 2.1   | .4    | .1    | -1    | 12.1  | 13.2  | 16.3  | 9.1   | 4.7                 |
| 1984                                     | 2.3   | .4    | .6    | .3    | .1    | .5    | .2    | -1    | -3    | .0    | .0    | -4    | 11.6  | 4.0   | 1.4   | -1.3  | 8.1                 |
| 1985                                     | .0    | .6    | .6    | .1    | .5    | -.1   | -.5   | .9    | .4    | -.8   | .8    | -1    | 1.2   | 4.0   | 1.4   | 1.1   | 1.5                 |
| 1986                                     | 1.6   | -6    | -1.0  | 1.5   | -2    | -1    | -1    | .6    | -1    | .9    | .3    | 1.3   | 4.4   | 1.9   | .3    | 6.6   | 2.5                 |
| 1987                                     | -1.0  | 1.6   | .1    | .6    | .4    | .9    | .6    | -2    | .0    | 1.3   | .5    | .5    | 4.1   | 7.1   | 4.8   | 6.9   | 4.8                 |
| 1988                                     | -.2   | .2    | .1    | .8    | -.4   | .0    | .6    | .1    | .3    | .4    | .8    | .5    | 1.8   | 2.6   | 2.9   | 5.3   | 4.0                 |
| 1989                                     | .9    | -1.1  | .8    | .0    | -.7   | -.1   | -1.0  | .3    | -3    | -.4   | .2    | -1    | 4.1   | -1.7  | -5.0  | -1.8  | 1.4                 |
| 1990                                     | -1    | .9    | .4    | -.7   | .4    | -.2   | .1    | .2    | .0    | -.7   | -1.4  | -.7   | 2.7   | -1    | .4    | -7.1  | -.9                 |
| 1991                                     | -.8   | -.8   | -1.2  | .4    | .7    | 1.5   | .2    | .1    | 1.2   | -2    | -.3   | -.6   | -10.3 | 1.0   | 7.8   | 1.0   | -2.8                |
| 1992                                     | -.2   | .6    | .9    | .6    | .3    | -.1   | .8    | -.4   | .2    | .3    | .5    | -1    | .1    | 6.4   | 2.8   | 2.3   | 2.9                 |
| 1993                                     | .8    | .1    | .1    | .5    | -.4   | -.1   | .2    | -.4   | 1.0   | .3    | .5    | .7    | 4.0   | 1.3   | .3    | 5.6   | 2.8                 |
| 1994                                     | .0    | .4    | .8    | .6    | .6    | .1    | .4    | .4    | .1    | .7    | .6    | .8    | 4.8   | 7.0   | 3.8   | 6.5   | 4.6                 |
| 1995                                     | .3    | -.4   | -1    | -.5   | -.1   | .4    | -.9   | 1.0   | .4    | -.4   | -1    | -1    | 2.8   | -2.1  | .5    | .4    | 2.5                 |
| 1996                                     | -.5   | 1.0   | -.5   | 1.0   | .5    | .7    | .3    | .3    | .3    | -.4   | .8    | .5    | -.4   | 6.7   | 4.9   | 2.6   | 1.9                 |
| 1997                                     | .2    | .9    | -1    | .3    | .1    | .5    | .1    | 1.1   | .5    | .6    | .4    | -1    | 5.7   | 3.1   | 5.7   | 6.3   | 4.6                 |
| 1998                                     | .5    | -.3   | .2    | .6    | .1    | -1.0  | -.7   | 2.1   | -.5   | .7    | -.4   | -1    | 1.7   | 1.4   | -.4   | 2.8   | 2.9                 |
| 1999                                     | .3    | .2    | .0    | -.1   | .5    | -.2   | .0    | .7    | -.1   | .6    | .4    | .2    | .6    | .8    | 1.8   | 4.5   | 1.4                 |
| 2000                                     | -.2   | .1    | .4    | -.1   | .2    | .3    | -.7   | -.3   | .0    | -.6   | -.7   | -.8   | 1.0   | 2.2   | -2.5  | -5.6  | 1.1                 |
| 2001                                     | -.7   | -.2   | -.3   | -.5   | .0    | -.8   | .5    | -.6   | -1.0  | -1.3  |       |       | -6.3  | -3.9  | -3.2  |       |                     |
| <b>IP (1992=100)</b>                     |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1999                                     | 121.5 | 121.8 | 121.8 | 121.7 | 122.2 | 122.0 | 122.0 | 122.8 | 122.7 | 123.5 | 123.9 | 124.2 | 121.7 | 121.9 | 122.5 | 123.9 | 122.5               |
| 2000                                     | 123.9 | 124.1 | 124.6 | 124.5 | 124.8 | 125.2 | 124.3 | 124.0 | 123.9 | 123.2 | 122.4 | 121.3 | 124.2 | 124.9 | 124.1 | 122.3 | 123.9               |
| 2001                                     | 120.5 | 120.4 | 120.0 | 119.4 | 119.4 | 118.5 | 119.0 | 118.3 | 117.1 | 115.6 |       |       | 120.3 | 119.1 | 118.1 |       |                     |
| <b>Capacity (percent of 1992 output)</b> |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1999                                     | 151.1 | 151.4 | 151.7 | 152.0 | 152.2 | 152.5 | 152.7 | 152.9 | 153.1 | 153.3 | 153.4 | 153.6 | 151.4 | 152.2 | 152.9 | 153.4 | 152.5               |
| 2000                                     | 153.8 | 153.9 | 154.1 | 154.2 | 154.3 | 154.5 | 154.6 | 154.7 | 154.8 | 154.9 | 155.0 | 155.0 | 153.9 | 154.3 | 154.7 | 155.0 | 154.5               |
| 2001                                     | 155.1 | 155.2 | 155.2 | 155.2 | 155.3 | 155.3 | 155.3 | 155.3 | 155.3 | 155.4 |       |       | 155.1 | 155.3 | 155.3 |       |                     |
| <b>Utilization (percent)</b>             |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |                     |
| 1979                                     | 86.3  | 86.7  | 86.8  | 85.2  | 86.2  | 86.0  | 85.4  | 84.2  | 84.0  | 84.2  | 83.3  | 83.0  | 86.6  | 85.8  | 84.5  | 83.5  | 85.1                |
| 1980                                     | 82.8  | 82.8  | 82.2  | 80.1  | 77.2  | 75.9  | 75.1  | 76.3  | 77.4  | 78.0  | 79.2  | 79.2  | 82.6  | 77.8  | 76.3  | 78.8  | 78.8                |
| 1981                                     | 78.6  | 78.8  | 78.9  | 78.8  | 79.3  | 78.9  | 79.2  | 78.4  | 77.5  | 76.5  | 75.0  | 73.4  | 78.8  | 79.0  | 78.4  | 75.0  | 77.8                |
| 1982                                     | 71.9  | 73.8  | 73.2  | 72.5  | 72.0  | 71.9  | 71.1  | 70.9  | 70.2  | 69.2  | 68.8  | 68.0  | 72.9  | 72.1  | 70.7  | 68.7  | 71.1                |
| 1983                                     | 70.1  | 70.3  | 71.2  | 71.9  | 72.9  | 73.3  | 74.4  | 75.2  | 76.8  | 77.0  | 77.1  | 77.0  | 70.5  | 72.7  | 75.5  | 77.1  | 73.9                |
| 1984                                     | 78.7  | 79.0  | 79.3  | 79.4  | 79.3  | 79.6  | 79.6  | 79.4  | 79.0  | 78.9  | 78.8  | 78.4  | 79.0  | 79.4  | 79.3  | 78.7  | 79.1                |
| 1985                                     | 78.2  | 78.5  | 78.8  | 78.7  | 78.9  | 78.7  | 78.1  | 78.7  | 78.8  | 78.0  | 78.5  | 78.2  | 78.5  | 78.8  | 78.5  | 78.2  | 78.5                |
| 1986                                     | 79.4  | 78.8  | 78.0  | 79.0  | 78.8  | 78.6  | 78.4  | 78.8  | 78.6  | 79.2  | 79.3  | 80.2  | 78.7  | 78.8  | 78.6  | 79.6  | 78.9                |
| 1987                                     | 79.3  | 80.5  | 80.5  | 80.9  | 81.1  | 81.8  | 82.2  | 82.0  | 81.9  | 82.9  | 83.2  | 83.6  | 80.1  | 81.3  | 82.0  | 83.2  | 81.7                |
| 1988                                     | 83.3  | 83.5  | 83.4  | 84.0  | 83.6  | 83.6  | 84.1  | 84.1  | 84.3  | 84.5  | 85.1  | 85.4  | 83.4  | 83.8  | 84.2  | 85.0  | 84.1                |
| 1989                                     | 86.1  | 85.0  | 85.5  | 85.3  | 84.5  | 84.3  | 83.2  | 83.4  | 82.9  | 82.5  | 82.5  | 82.3  | 85.5  | 84.7  | 83.2  | 82.4  | 83.9                |
| 1990                                     | 82.1  | 82.8  | 83.0  | 82.3  | 82.4  | 82.1  | 82.1  | 82.1  | 81.9  | 81.3  | 80.0  | 79.3  | 82.6  | 82.3  | 82.0  | 80.2  | 81.8                |
| 1991                                     | 78.5  | 77.8  | 76.8  | 77.0  | 77.5  | 78.5  | 78.6  | 78.6  | 79.5  | 79.3  | 78.9  | 78.4  | 77.7  | 77.7  | 78.9  | 78.9  | 78.3                |
| 1992                                     | 78.2  | 78.6  | 79.2  | 79.6  | 79.7  | 79.6  | 80.1  | 79.7  | 79.8  | 79.9  | 80.1  | 80.0  | 78.7  | 79.6  | 79.9  | 80.0  | 79.5                |
| 1993                                     | 80.5  | 80.4  | 80.4  | 80.7  | 80.3  | 80.1  | 80.2  | 79.7  | 80.5  | 80.5  | 80.8  | 81.3  | 80.5  | 80.4  | 80.1  | 80.9  | 80.5                |
| 1994                                     | 81.1  | 81.3  | 81.8  | 82.1  | 82.5  | 82.4  | 82.5  | 82.7  | 82.6  | 83.0  | 83.3  | 83.8  | 81.4  | 82.3  | 82.6  | 83.3  | 82.4                |
| 1995                                     | 83.8  | 83.3  | 83.0  | 82.5  | 82.3  | 82.4  | 81.5  | 82.1  | 82.2  | 81.7  | 81.4  | 81.2  | 83.4  | 82.4  | 81.9  | 81.4  | 82.3                |
| 1996                                     | 80.6  | 81.2  | 80.6  | 81.3  | 81.5  | 81.8  | 81.9  | 82.0  | 82.0  | 81.5  | 82.0  | 82.2  | 80.8  | 81.5  | 82.0  | 81.9  | 81.6                |
| 1997                                     | 82.2  | 82.8  | 82.5  | 82.5  | 82.3  | 82.5  | 82.4  | 83.0  | 83.1  | 83.3  | 83.4  | 82.9  | 82.5  | 82.5  | 82.8  | 83.2  | 82.7                |
| 1998                                     | 83.0  | 82.5  | 82.3  | 82.5  | 82.2  | 81.1  | 80.3  | 81.7  | 81.0  | 81.3  | 80.7  | 80.4  | 82.6  | 81.9  | 81.0  | 80.8  | 81.6                |
| 1999                                     | 80.4  | 80.4  | 80.2  | 80.0  | 80.3  | 80.0  | 79.9  | 80.3  | 80.2  | 80.6  | 80.8  | 80.8  | 80.4  | 80.1  | 80.1  | 80.7  | 80.3                |
| 2000                                     | 80.6  | 80.6  | 80.9  | 80.8  | 80.9  | 81.1  | 80.4  | 80.1  | 80.1  | 79.5  | 79.0  | 78.3  | 80.7  | 80.9  | 80.2  | 78.9  | 80.2                |
| 2001                                     | 77.7  | 77.6  | 77.4  | 76.9  | 76.9  | 76.3  | 76.6  | 76.2  | 75.4  | 74.4  |       |       | 77.5  | 76.7  | 76.1  |       |                     |

1. Estimates from August 2001 through October 2001 are subject to further revision in the upcoming monthly releases.
2. Computers, communications equipment, and semiconductors and related electronic components.
3. Annual averages of industrial production are calculated from not seasonally adjusted indexes.

**Table 5**  
**RATES OF CHANGE IN INDUSTRIAL PRODUCTION, MARKET AND INDUSTRY GROUP SUMMARY: 1997–2001<sup>1</sup>**

| Item                                                    | Revised change<br>(percent) |      |       |       |       | Difference between<br>revised and earlier changes<br>(percentage points) |      |       |       |       |
|---------------------------------------------------------|-----------------------------|------|-------|-------|-------|--------------------------------------------------------------------------|------|-------|-------|-------|
|                                                         | 1997                        | 1998 | 1999  | 2000  | 2001  | 1997                                                                     | 1998 | 1999  | 2000  | 2001  |
| <b>Total IP</b>                                         | 7.4                         | 3.5  | 4.3   | 2.6   | -5.6  | .2                                                                       | .3   | -.7   | -1.6  | -.1   |
| <b>MARKET GROUPS</b>                                    |                             |      |       |       |       |                                                                          |      |       |       |       |
| <b>Products</b>                                         | 6.0                         | 2.9  | 2.6   | 1.8   | -4.5  | .0                                                                       | -.3  | -.8   | -1.2  | .2    |
| <b>Consumer goods</b>                                   | 3.7                         | .2   | 2.5   | .7    | -1.2  | -.3                                                                      | .0   | -.6   | .1    | .5    |
| <b>Durable</b>                                          | 7.6                         | 5.6  | 6.7   | -4.2  | -.7   | -.8                                                                      | 1.3  | -1.5  | .2    | -.1   |
| Automotive products                                     | 8.8                         | 7.4  | 5.8   | -7.3  | 7.3   | -1.8                                                                     | 2.1  | 2.5   | -.4   | .4    |
| Home electronics                                        | 19.5                        | 12.4 | 30.8  | 7.4   | -27.7 | -.3                                                                      | .7   | -22.6 | 4.5   | -3.6  |
| Appliances, furniture, carpeting                        | 4.4                         | 6.0  | 2.6   | -2.0  | -2.9  | .2                                                                       | -.9  | -3.4  | -.7   | -1.0  |
| Miscellaneous goods                                     | 4.4                         | -.4  | 3.8   | -2.0  | -8.9  | -.1                                                                      | 2.1  | -.8   | 2.2   | -2.5  |
| <b>Nondurable</b>                                       | 2.6                         | -1.3 | 1.3   | 2.2   | -1.3  | -.1                                                                      | -.4  | -.4   | .2    | .6    |
| Non-energy                                              | 2.8                         | -1.0 | 1.2   | 1.1   | -.1   | -.1                                                                      | -.5  | -.4   | -.1   | 1.1   |
| Foods and tobacco                                       | 1.9                         | -.1  | .7    | .4    | -1.1  | -.3                                                                      | -.7  | .4    | -.5   | .5    |
| Clothing                                                | -3.3                        | -6.4 | -2.8  | -8.5  | -9.7  | -.2                                                                      | 1.8  | 2.1   | -4.1  | 2.3   |
| Chemical products                                       | 4.9                         | 2.5  | 4.4   | 5.4   | 6.6   | -.5                                                                      | -.8  | -1.4  | 2.9   | 2.8   |
| Paper products                                          | 6.5                         | -6.1 | .1    | 2.4   | -2.7  | 1.3                                                                      | -.8  | -2.5  | -.8   | -.9   |
| Energy                                                  | 1.6                         | -3.4 | 2.3   | 8.6   | -7.4  | -.2                                                                      | .6   | -.3   | 1.9   | -1.9  |
| <b>Business equipment</b>                               | 14.0                        | 8.4  | 4.4   | 5.8   | -11.9 | .8                                                                       | -.6  | -1.2  | -5.2  | -1.0  |
| Transit                                                 | 25.5                        | 15.4 | -3.9  | -7.5  | -7.9  | 2.1                                                                      | 2.5  | 5.0   | 1.3   | -.6   |
| Information processing                                  | 17.9                        | 14.4 | 15.6  | 16.4  | -12.5 | 1.4                                                                      | -2.4 | -5.4  | -6.7  | -2.3  |
| Industrial and other                                    | 5.8                         | -.5  | -1.8  | 3.0   | -13.5 | -.3                                                                      | -.4  | -.2   | -5.6  | -.2   |
| <b>Defense and space equipment</b>                      | -2.5                        | 5.5  | -7.6  | -2.2  | -1.3  | 2.5                                                                      | -2.7 | -4.6  | 1.1   | -1.6  |
| <b>Construction supplies</b>                            | 4.0                         | 6.6  | 3.9   | .5    | -2.2  | .1                                                                       | -.9  | -.6   | .2    | .6    |
| <b>Business supplies</b>                                | 4.2                         | 1.3  | 1.4   | .9    | -7.2  | -.6                                                                      | -.5  | -.8   | -.3   | .7    |
| <b>Materials</b>                                        | 9.5                         | 4.5  | 7.2   | 3.9   | -7.2  | .1                                                                       | .8   | -.8   | -2.4  | -.5   |
| <b>Durable</b>                                          | 14.3                        | 8.8  | 10.4  | 7.5   | -8.7  | .2                                                                       | 1.6  | -.5   | -4.6  | -.7   |
| Consumer parts                                          | 8.5                         | 3.6  | 5.9   | -2.1  | -2.9  | -1.8                                                                     | 3.5  | -1.2  | -2.3  | 2.8   |
| Equipment parts                                         | 28.6                        | 22.0 | 19.7  | 25.1  | -14.5 | 2.5                                                                      | 1.4  | -2.3  | -11.0 | -4.0  |
| Other                                                   | 4.7                         | .2   | 4.4   | -3.1  | -5.9  | -.7                                                                      | .7   | .9    | -1.3  | 1.0   |
| <b>Nondurable</b>                                       | 5.7                         | -3.3 | 3.9   | -4.7  | -7.4  | .5                                                                       | -.5  | -1.7  | .5    | 1.1   |
| Textile                                                 | 4.9                         | -6.2 | 4.6   | -12.8 | -11.7 | 1.5                                                                      | 2.2  | 5.9   | -3.2  | 3.7   |
| Paper                                                   | 4.3                         | -2.7 | 4.5   | -4.5  | -5.5  | -.3                                                                      | .2   | .3    | .0    | .1    |
| Chemical                                                | 6.5                         | -5.6 | 5.3   | -4.2  | -9.3  | .2                                                                       | -1.6 | -4.2  | 2.0   | 1.1   |
| <b>Energy</b>                                           | .1                          | -.4  | .6    | 1.6   | -3.1  | .0                                                                       | .3   | .1    | .2    | -1.9  |
| <b>INDUSTRY GROUPS</b>                                  |                             |      |       |       |       |                                                                          |      |       |       |       |
| <b>Manufacturing</b>                                    | 8.3                         | 4.3  | 4.8   | 2.3   | -6.1  | .3                                                                       | .3   | -.8   | -1.9  | .1    |
| <b>Durable</b>                                          | 11.9                        | 8.4  | 6.9   | 4.8   | -8.0  | .4                                                                       | .4   | -1.3  | -3.6  | -.5   |
| Lumber and products                                     | 24                          | 2.8  | 5.6   | 1.8   | -6.8  | -.9                                                                      | .1   | 1.3   | .6    | -1.0  |
| Furniture and fixtures                                  | 25                          | 8.1  | 6.1   | 5.0   | .8    | -.2                                                                      | -.2  | 1.9   | -4.8  | .2    |
| Stone, clay, and glass products                         | 32                          | 2.5  | 5.8   | 3.2   | -.9   | -.9                                                                      | .2   | 1.0   | -1.8  | .7    |
| Primary metals                                          | 33                          | 5.8  | -3.5  | 6.7   | -5.2  | -.2                                                                      | .0   | -1.3  | .5    | -2.2  |
| Fabricated metals                                       | 34                          | 6.5  | 1.7   | 1.2   | 2.2   | -.3                                                                      | .2   | -.5   | 1.3   | 1.4   |
| Industrial machinery and equipment                      | 35                          | 7.8  | 9.1   | 7.1   | 7.5   | -.5                                                                      | -2.5 | -6.5  | -6.9  | 1.3   |
| Electrical machinery                                    | 36                          | 31.3 | 22.2  | 23.7  | 27.3  | -19.0                                                                    | 2.9  | 1.8   | -1.5  | -11.7 |
| Motor vehicles and parts                                | 371                         | 14.3 | 6.7   | 7.5   | -8.0  | 3.0                                                                      | -1.7 | 3.5   | 1.6   | -.7   |
| Aerospace and miscellaneous<br>transportation equipment | 372–6.9                     | 13.7 | 11.3  | -8.9  | .2    | -6.0                                                                     | .8   | .9    | 2.7   | .5    |
| Instruments                                             | 38                          | 2.9  | 4.2   | .6    | 1.3   | -4.1                                                                     | .0   | .3    | -3.9  | -.6   |
| Miscellaneous                                           | 39                          | 2.0  | -.5   | 4.8   | -1.0  | -6.5                                                                     | -1.1 | -1.2  | -1.9  | -1.0  |
| <b>Nondurable</b>                                       | 3.9                         | -.7  | 2.1   | -.7   | -3.8  | -.3                                                                      | -.3  | -.5   | .0    | .9    |
| Food and tobacco products                               | 20,21                       | 2.6  | .1    | .7    | .4    | -1.1                                                                     | -.1  | -.7   | .4    | -.5   |
| Textile mill products                                   | 22                          | .7   | -6.1  | .4    | -10.6 | -9.6                                                                     | -.8  | .4    | .6    | -2.7  |
| Apparel products                                        | 23                          | 1.8  | -3.1  | .3    | -6.7  | -8.7                                                                     | 2.0  | 3.3   | 4.3   | -1.4  |
| Paper and products                                      | 26                          | 4.5  | -.5   | 2.3   | -3.0  | -5.6                                                                     | -.4  | -.4   | -.6   | .1    |
| Printing and publishing                                 | 27                          | 5.1  | -2.4  | .7    | .5    | -8.2                                                                     | .0   | -.6   | -1.1  | -1.0  |
| Chemicals and products                                  | 28                          | 4.8  | -.6   | 4.1   | .8    | -1.6                                                                     | -.5  | -.7   | -2.6  | 2.2   |
| Petroleum products                                      | 29                          | 3.0  | 1.3   | -.6   | 2.0   | -2.2                                                                     | -.1  | -.8   | -.7   | .8    |
| Rubber and plastics products                            | 30                          | 6.1  | 3.0   | 5.9   | -2.8  | -4.0                                                                     | -.9  | 1.4   | 2.3   | -.9   |
| <b>Mining</b>                                           | 10–14                       | 1.4  | -5.3  | -.2   | 1.7   | 1.1                                                                      | -.1  | .1    | .3    | .3    |
| <b>Utilities</b>                                        | 491,2,3pt                   | 2.0  | -.6   | 2.2   | 6.8   | -6.1                                                                     | -.3  | .7    | -.1   | .2    |
| Electric                                                |                             | 2.8  | 1.8   | 1.8   | 5.2   | -4.0                                                                     | -.4  | .3    | .1    | -1.1  |
| Gas                                                     |                             | -1.4 | -11.5 | 4.7   | 12.9  | -12.9                                                                    | .1   | .4    | .1    | 5.4   |

1. Rates of change are calculated as the percent change in the seasonally adjusted index from the fourth quarter of the previous year to the fourth quarter of the year specified in the column heading. For 2001, the rates of change are calculated from the fourth quarter of 2000 to the third quarter of 2001 and annualized.

Table 6

RATES OF CHANGE IN INDUSTRIAL PRODUCTION, SPECIAL AGGREGATES AND SELECTED DETAIL: 1997–2001<sup>1</sup>

| Item                                                          | Revised change<br>(percent) |       |      |       |       | Difference between<br>revised and earlier changes<br>(percentage points) |       |       |       |      |
|---------------------------------------------------------------|-----------------------------|-------|------|-------|-------|--------------------------------------------------------------------------|-------|-------|-------|------|
|                                                               | 1997                        | 1998  | 1999 | 2000  | 2001  | 1997                                                                     | 1998  | 1999  | 2000  | 2001 |
| <b>Total industry</b>                                         | 7.4                         | 3.5   | 4.3  | 2.6   | -5.6  | .2                                                                       | .3    | -.7   | -1.6  | -.1  |
| <b>Energy</b>                                                 | 1.4                         | -2.5  | 1.2  | 4.5   | -3.2  | -.2                                                                      | .6    | .1    | .4    | -1.6 |
| Consumer products                                             | 1.6                         | -3.4  | 2.3  | 8.6   | -7.4  | -.2                                                                      | .6    | -.3   | 1.9   | -1.9 |
| Commercial products                                           | 5.0                         | -.1   | .7   | 7.3   | 2.3   | .1                                                                       | .4    | -.3   | .1    | .0   |
| Oil and gas well drilling                                     | 8.7                         | -26.3 | 5.7  | 19.1  | 4.8   | .0                                                                       | .1    | -.1   | .2    | -.2  |
| Converted fuel                                                | 1.2                         | -.2   | 2.7  | 5.6   | -10.0 | .8                                                                       | .0    | -.1   | .4    | .4   |
| Primary materials                                             | -.5                         | -.5   | -.6  | -.2   | .0    | -.4                                                                      | .5    | .1    | .0    | -2.5 |
| <b>Non-energy</b>                                             | 8.4                         | 4.3   | 4.8  | 2.3   | -6.0  | .3                                                                       | .3    | -.8   | -1.9  | .1   |
| <b>Selected high-technology industries</b>                    | 40.2                        | 35.8  | 34.0 | 39.5  | -20.9 | 4.5                                                                      | -1.4  | -6.6  | -15.8 | -5.4 |
| Computers and office equipment 357                            | 24.5                        | 40.5  | 33.0 | 33.4  | -11.4 | 3.0                                                                      | -13.5 | -21.3 | -8.7  | -1.1 |
| Communications equipment 366                                  | 27.6                        | 6.5   | 21.1 | 25.4  | -24.1 | 3.0                                                                      | -2.5  | 7.7   | -10.2 | -9.2 |
| Semiconductors and related electronic components 3672–9       | 55.0                        | 50.5  | 41.1 | 48.6  | -23.5 | 6.1                                                                      | 4.9   | -6.7  | -24.8 | -4.8 |
| <b>Excluding selected high-technology industries</b>          | 5.3                         | 1.4   | 2.0  | -1.4  | -4.4  | -.3                                                                      | .1    | -.3   | -.7   | .7   |
| <b>Motor vehicles and parts</b> 371                           | 14.3                        | 6.7   | 7.5  | -8.0  | 3.0   | -1.7                                                                     | 3.5   | 1.6   | -1.6  | .7   |
| Motor vehicles 3711,3                                         | 14.2                        | 9.0   | 6.3  | -11.4 | 6.3   | .0                                                                       | 2.1   | 4.2   | .9    | -1.1 |
| Motor vehicle parts 3714                                      | 14.1                        | 3.7   | 9.2  | -1.2  | .1    | -4.0                                                                     | 5.4   | -1.6  | -4.5  | 2.2  |
| <b>Excluding motor vehicles and parts</b>                     | 4.6                         | 1.0   | 1.5  | -.8   | -5.0  | -.2                                                                      | -.1   | -.5   | -.6   | .7   |
| Consumer goods                                                | 3.2                         | -.5   | 1.9  | .5    | -1.2  | -.1                                                                      | -.2   | -.6   | .1    | .6   |
| Business equipment                                            | 9.0                         | 4.1   | -3.1 | 1.9   | -10.8 | -.3                                                                      | .9    | -.8   | -3.4  | .9   |
| Business supplies                                             | 4.0                         | 1.7   | 1.6  | -.5   | -9.6  | -.8                                                                      | -.7   | -1.0  | -.4   | 1.0  |
| Materials                                                     | 5.2                         | -.8   | 3.3  | -2.7  | -6.1  | -.2                                                                      | .2    | .0    | -.4   | .7   |
| <b>Measures excluding selected high-technology industries</b> |                             |       |      |       |       |                                                                          |       |       |       |      |
| Total industry                                                | 4.7                         | .9    | 1.8  | -.5   | -4.2  | -.3                                                                      | .2    | -.3   | -.5   | .4   |
| Manufacturing                                                 | 5.2                         | 1.4   | 1.9  | -1.3  | -4.5  | -.2                                                                      | .2    | -.4   | -.7   | .7   |
| Durable                                                       | 6.5                         | 3.3   | 1.8  | -1.8  | -5.2  | -.3                                                                      | .7    | -.4   | -1.4  | .5   |
| Industrial machinery 351–6,8,9                                | 3.4                         | .5    | -.4  | .1    | -11.9 | -.2                                                                      | -.1   | -1.6  | -4.8  | 2.2  |
| Electrical machinery 361–5,9,71                               | 5.2                         | .9    | 3.9  | -1.2  | -8.3  | -.2                                                                      | 1.2   | -2.6  | -1.2  | -1.4 |
| <b>Measures excluding motor vehicles and parts</b>            |                             |       |      |       |       |                                                                          |       |       |       |      |
| Total industry                                                | 7.0                         | 3.3   | 4.1  | 3.4   | -6.1  | .2                                                                       | .1    | -.9   | -1.5  | -.2  |
| Manufacturing                                                 | 7.9                         | 4.2   | 4.5  | 3.2   | -6.8  | .4                                                                       | .1    | -1.0  | -1.8  | .0   |
| Durable                                                       | 11.6                        | 8.6   | 6.8  | 6.8   | -9.6  | .7                                                                       | .0    | -1.8  | -3.7  | -.8  |
| <b>Primary processing</b>                                     | 11.0                        | 5.7   | 8.0  | 3.7   | -7.7  | .5                                                                       | 1.3   | -.9   | -1.9  | -.1  |
| <b>Advanced processing</b>                                    | 6.6                         | 3.5   | 2.8  | 1.4   | -5.1  | .2                                                                       | -.4   | -.9   | -1.9  | .3   |

1. Rates of change are calculated as the percent change in the seasonally adjusted index from the fourth quarter of the previous year to the fourth quarter of the year specified in the column heading. For 2001, the rates of change are calculated from the fourth quarter of 2000 to the third quarter of 2001 and annualized.

Note—Primary processing manufacturing includes textile mill products, paper and products, industrial chemicals, synthetic materials, and fertilizers, petroleum products, rubber and plastics products, lumber and products, primary metals, fabricated metals, stone, clay, and glass products, semiconductors and related electronic components, and motor vehicle parts.

Advanced processing manufacturing includes foods, tobacco products, apparel products, printing and publishing, chemical products and other agricultural chemicals, leather and products, furniture and fixtures, industrial and commercial machinery and computer equipment, electrical machinery except semiconductors and related electronic components, transportation equipment except motor vehicle parts, instruments, and miscellaneous manufactures.

**Table 7**  
**REVISED AND EARLIER CAPACITY UTILIZATION RATES, BY INDUSTRY GROUPS**

Percent of capacity, seasonally adjusted

| Item                                                          | Revised Rate   |                |               |         |         |         | Difference between revised and earlier rates (percentage points) |         |         |
|---------------------------------------------------------------|----------------|----------------|---------------|---------|---------|---------|------------------------------------------------------------------|---------|---------|
|                                                               | 1967–2000 Ave. | 1988–1989 High | 1990–1991 Low | 1999 Q4 | 2000 Q4 | 2001 Q3 | 1999 Q4                                                          | 2000 Q4 | 2001 Q3 |
| <b>Total industry</b>                                         | 82.1           | 85.4           | 78.1          | 81.8    | 80.7    | 76.2    | .2                                                               | -.6     | -.2     |
| <b>Manufacturing</b>                                          | 81.1           | 85.7           | 76.6          | 81.0    | 79.1    | 74.4    | .1                                                               | -1.2    | -.5     |
| <b>Durable</b>                                                |                |                |               |         |         |         |                                                                  |         |         |
| Lumber and products                                           | 24             | 79.6           | 84.6          | 73.1    | 81.2    | 78.6    | 72.0                                                             | .2      | -2.0    |
| Furniture and fixtures                                        | 25             | 82.6           | 93.6          | 75.5    | 84.7    | 77.3    | 77.3                                                             | 1.4     | 1.1     |
| Stone, clay, and glass products                               | 25             | 81.4           | 86.6          | 72.5    | 80.5    | 78.7    | 74.0                                                             | 1.7     | -1.4    |
| Primary metals                                                | 32             | 78.9           | 83.5          | 69.7    | 85.2    | 82.3    | 79.9                                                             | -.1     | -1.7    |
| Fabricated metals                                             | 33             | 81.7           | 92.7          | 73.7    | 88.5    | 83.6    | 78.2                                                             | -.1     | .6      |
| Industrial machinery and equipment                            | 34             | 78.0           | 82.0          | 71.9    | 76.7    | 76.3    | 72.3                                                             | -.2     | .6      |
| Electrical machinery                                          | 35             | 81.3           | 85.4          | 72.3    | 79.1    | 78.4    | 69.8                                                             | -.7     | -4.1    |
| Motor vehicles and parts                                      | 36             | 81.4           | 84.0          | 75.0    | 85.0    | 82.8    | 64.9                                                             | 1.6     | -4.3    |
| Aerospace and miscellaneous transportation equipment          | 371            | 77.1           | 89.1          | 55.9    | 84.8    | 76.3    | 76.5                                                             | 1.9     | .3      |
| Instruments                                                   | 372,6–9        | 75.2           | 87.3          | 79.2    | 74.7    | 74.0    | 70.7                                                             | 1.9     | 1.2     |
| Miscellaneous                                                 | 38             | 81.3           | 81.4          | 77.2    | 76.4    | 76.6    | 74.1                                                             | -4.0    | -3.9    |
| Miscellaneous                                                 | 39             | 76.0           | 79.0          | 71.7    | 79.7    | 78.4    | 74.4                                                             | -1.9    | -2.2    |
| <b>Nondurable</b>                                             |                |                |               |         |         |         |                                                                  |         |         |
| Food and tobacco products                                     | 20,21          | 83.2           | 87.3          | 80.7    | 80.7    | 79.8    | 77.6                                                             | -.3     | .0      |
| Textile mill products                                         | 22             | 83.2           | 85.9          | 81.6    | 80.2    | 80.4    | 79.8                                                             | -.3     | -.9     |
| Apparel products                                              | 23             | 85.6           | 90.4          | 77.7    | 84.6    | 77.4    | 73.6                                                             | 2.2     | .3      |
| Paper and products                                            | 26             | 80.9           | 85.1          | 75.5    | 77.3    | 72.2    | 68.5                                                             | 5.6     | 2.8     |
| Printing and publishing                                       | 27             | 88.6           | 93.5          | 85.0    | 84.9    | 81.5    | 77.7                                                             | -1.8    | -1.8    |
| Chemicals and products                                        | 28             | 85.2           | 91.7          | 79.6    | 77.8    | 78.5    | 73.9                                                             | -2.9    | -3.5    |
| Petroleum products                                            | 29             | 79.3           | 86.2          | 79.3    | 77.6    | 77.7    | 76.5                                                             | -.8     | 2.1     |
| Rubber and plastics products                                  | 30             | 87.3           | 88.5          | 85.1    | 93.0    | 94.5    | 92.5                                                             | -.1     | .2      |
| Rubber and plastics products                                  | 30             | 84.7           | 89.6          | 77.4    | 87.1    | 82.0    | 78.4                                                             | 1.8     | 1.1     |
| <b>Mining</b>                                                 |                |                |               |         |         |         |                                                                  |         |         |
| <b>Utilities</b>                                              |                |                |               |         |         |         |                                                                  |         |         |
| Mining                                                        |                | 87.6           | 88.0          | 87.0    | 87.1    | 90.3    | 90.8                                                             | 2.5     | 3.8     |
| Utilities                                                     |                | 87.7           | 92.6          | 83.4    | 90.1    | 93.6    | 86.1                                                             | .9      | 1.6     |
| <b>Selected high-technology industries</b>                    |                |                |               |         |         |         |                                                                  |         |         |
| Computers and office equipment                                | 357            | 80.5           | 81.9          | 72.4    | 83.2    | 81.2    | 61.2                                                             | 2.4     | -3.9    |
| Communications equipment                                      | 366            | 81.1           | 86.9          | 66.9    | 77.4    | 75.0    | 63.4                                                             | .9      | -3.2    |
| Semiconductors and related electronic components              | 3672–9         | 80.5           | 84.8          | 73.4    | 81.6    | 81.6    | 62.7                                                             | 6.4     | -5.6    |
| Semiconductors and related electronic components              | 3672–9         | 80.0           | 81.1          | 75.6    | 86.7    | 83.6    | 59.4                                                             | .7      | -4.3    |
| <b>Measures excluding selected high-technology industries</b> |                |                |               |         |         |         |                                                                  |         |         |
| Total industry                                                |                | 82.2           | 85.7          | 78.4    | 81.7    | 80.7    | 77.8                                                             | .0      | .0      |
| Manufacturing                                                 |                | 81.1           | 86.1          | 76.8    | 80.7    | 78.9    | 76.1                                                             | -.2     | -.6     |
| Industrial machinery                                          | 351–6,8,9      | 81.2           | 85.5          | 74.0    | 79.5    | 79.6    | 72.4                                                             | -1.3    | -4.6    |
| Electrical machinery                                          | 361–5,9,71     | 83.4           | 87.5          | 74.3    | 85.1    | 81.8    | 76.0                                                             | -.3     | -1.0    |
| <b>Primary processing</b>                                     |                | 82.2           | 88.3          | 76.7    | 84.2    | 81.1    | 74.6                                                             | -.4     | -1.7    |
| <b>Advanced processing</b>                                    |                | 80.5           | 84.2          | 76.6    | 79.0    | 77.9    | 74.3                                                             | -.3     | -1.7    |

Note—Primary processing manufacturing includes textile mill products, paper and products, industrial chemicals, synthetic materials, and fertilizers, petroleum products, rubber and plastics products, lumber and products, primary metals, fabricated metals, stone, clay, and glass products, semiconductors and related electronic components, and motor vehicle parts.

Advanced processing manufacturing includes foods, tobacco products, apparel products, printing and publishing, chemical products and other agricultural chemicals, leather and products, furniture and fixtures, industrial and commercial machinery and computer equipment, electrical machinery except semiconductors and related electronic components, transportation equipment except motor vehicle parts, instruments, and miscellaneous manufactures.



**Table 8**  
**RATES OF CHANGE IN CAPACITY, BY INDUSTRY GROUPS: 1997 to 2001<sup>1</sup>**

| Item                                                                 | Revised change<br>(percent) |      |      |      |      | Difference between<br>revised and earlier changes<br>(percentage points) |      |      |      |      |
|----------------------------------------------------------------------|-----------------------------|------|------|------|------|--------------------------------------------------------------------------|------|------|------|------|
|                                                                      | 1997                        | 1998 | 1999 | 2000 | 2001 | 1997                                                                     | 1998 | 1999 | 2000 | 2001 |
| <b>Total industry</b>                                                | 6.4                         | 6.4  | 3.9  | 4.0  | 1.7  | .4                                                                       | -.1  | -.7  | -.5  | -.7  |
| <b>Manufacturing</b>                                                 | 7.1                         | 7.2  | 4.5  | 4.7  | 1.6  | .5                                                                       | -.1  | -.6  | -.3  | -1.0 |
| Durable                                                              | 10.2                        | 10.4 | 6.6  | 8.1  | 3.0  | .9                                                                       | .2   | -1.7 | -.7  | -1.9 |
| Nondurable                                                           | 3.3                         | 3.2  | 1.7  | .4   | -.2  | -.1                                                                      | -.9  | .4   | -.5  | -.1  |
| <b>Mining</b>                                                        | 1.3                         | -.6  | -2.4 | -1.9 | .4   | -.6                                                                      | -.5  | -.9  | -1.1 | 1.8  |
| <b>Utilities</b>                                                     | .6                          | .1   | 2.4  | 2.9  | 5.2  | -.4                                                                      | -1.0 | .1   | -.5  | 1.1  |
| <b>Selected high-technology industries</b>                           | 44.4                        | 36.6 | 28.6 | 42.9 | 12.9 | 4.1                                                                      | -2.8 | -9.2 | -4.7 | -8.6 |
| <b>Manufacturing ex. selected<br/>    high-technology industries</b> | 3.6                         | 4.4  | 2.0  | 1.0  | .3   | .0                                                                       | -.1  | .0   | -.3  | -.3  |
| <b>Primary processing</b>                                            | 9.4                         | 9.8  | 5.0  | 7.8  | 2.7  | 1.0                                                                      | .4   | .1   | -.3  | -1.4 |
| <b>Advanced processing</b>                                           | 5.6                         | 5.5  | 4.2  | 2.9  | .9   | .7                                                                       | -.2  | -1.0 | -.1  | -.9  |

1. Rates of change are calculated as the percent change in the seasonally adjusted index from the fourth quarter of the previous year to the fourth quarter of the year specified in the column heading.

Note—Primary processing manufacturing includes textile mill products, paper and products, industrial chemicals, synthetic materials, and fertilizers, petroleum products, rubber and plastics products, lumber and products, primary metals, fabricated metals, stone, clay, and glass products, semiconductors and related electronic components, and motor vehicle parts.

Advanced processing manufacturing includes foods, tobacco products, apparel products, printing and publishing, chemical products and other agricultural chemicals, leather and products, furniture and fixtures, industrial and commercial machinery and computer equipment, electrical machinery except semiconductors and related electronic components, transportation equipment except motor vehicle parts, instruments, and miscellaneous manufactures.

**Table 9**  
**ANNUAL PROPORTIONS IN INDUSTRIAL PRODUCTION, MARKET AND INDUSTRY GROUP SUMMARY**

| Item                                                 | 1993      | 1994  | 1995  | 1996  | 1997  | 1998  | 1999  | 2000  |
|------------------------------------------------------|-----------|-------|-------|-------|-------|-------|-------|-------|
| <b>Total IP</b>                                      | 100.0     | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| <b>MARKET GROUPS</b>                                 |           |       |       |       |       |       |       |       |
| <b>Products</b>                                      | 61.1      | 60.2  | 59.5  | 59.9  | 60.6  | 61.5  | 60.8  | 59.9  |
| <b>Consumer goods</b>                                | 29.0      | 28.6  | 28.3  | 28.4  | 28.3  | 28.7  | 28.6  | 28.4  |
| <b>Durable</b>                                       | 6.0       | 6.2   | 6.1   | 6.3   | 6.3   | 6.3   | 6.7   | 6.5   |
| Automotive products                                  | 2.6       | 2.7   | 2.7   | 2.8   | 2.9   | 2.9   | 3.3   | 3.4   |
| Home electronics                                     | .4        | .5    | .5    | .5    | .5    | .5    | .5    | .4    |
| Appliances, furniture, carpeting                     | 1.4       | 1.4   | 1.3   | 1.3   | 1.3   | 1.4   | 1.3   | 1.3   |
| Miscellaneous goods                                  | 1.6       | 1.6   | 1.6   | 1.6   | 1.6   | 1.6   | 1.5   | 1.5   |
| <b>Nondurable</b>                                    | 23.0      | 22.4  | 22.2  | 22.1  | 22.0  | 22.3  | 21.9  | 21.8  |
| Non-energy                                           | 19.8      | 19.3  | 19.1  | 19.0  | 19.2  | 19.5  | 18.8  | 18.6  |
| Foods and tobacco                                    | 9.9       | 9.7   | 9.7   | 9.6   | 9.7   | 10.1  | 10.0  | 10.1  |
| Clothing                                             | 2.3       | 2.3   | 2.1   | 2.0   | 1.9   | 1.7   | 1.5   | 1.4   |
| Chemical products                                    | 4.6       | 4.5   | 4.5   | 4.5   | 4.6   | 4.7   | 4.5   | 4.3   |
| Paper products                                       | 3.0       | 2.8   | 2.8   | 2.8   | 3.0   | 3.0   | 2.8   | 2.8   |
| Energy                                               | 3.2       | 3.1   | 3.1   | 3.1   | 2.9   | 2.8   | 3.1   | 3.2   |
| <b>Business equipment</b>                            | 13.3      | 13.3  | 13.4  | 13.7  | 14.3  | 14.7  | 14.2  | 13.7  |
| Transit                                              | 2.5       | 2.4   | 2.3   | 2.3   | 2.6   | 3.1   | 3.2   | 3.1   |
| Information processing                               | 5.4       | 5.2   | 5.2   | 5.4   | 5.6   | 5.6   | 5.5   | 5.5   |
| Industrial and other                                 | 5.5       | 5.6   | 5.9   | 6.0   | 6.0   | 6.0   | 5.4   | 5.2   |
| <b>Defense and space equipment</b>                   | 3.1       | 2.7   | 2.5   | 2.3   | 2.1   | 2.2   | 2.1   | 1.9   |
| <b>Construction supplies</b>                         | 5.5       | 5.7   | 5.6   | 5.7   | 5.9   | 6.2   | 6.3   | 6.4   |
| <b>Business supplies</b>                             | 9.2       | 9.0   | 8.9   | 8.9   | 8.9   | 8.9   | 8.8   | 8.7   |
| <b>Materials</b>                                     | 38.9      | 39.8  | 40.5  | 40.1  | 39.4  | 38.5  | 39.2  | 40.1  |
| <b>Durable</b>                                       | 21.3      | 22.2  | 22.8  | 23.0  | 23.2  | 23.1  | 23.2  | 23.5  |
| Consumer parts                                       | 4.3       | 4.6   | 4.5   | 4.5   | 4.5   | 4.6   | 4.8   | 4.7   |
| Equipment parts                                      | 7.5       | 7.6   | 8.2   | 8.4   | 8.4   | 8.5   | 8.5   | 9.0   |
| Other                                                | 9.5       | 9.9   | 10.1  | 10.2  | 10.2  | 10.1  | 9.9   | 9.7   |
| <b>Nondurable</b>                                    | 8.7       | 9.4   | 9.3   | 8.5   | 8.6   | 8.3   | 8.0   | 7.9   |
| Textile                                              | 1.1       | 1.1   | 1.0   | 1.0   | 1.0   | .9    | .9    | .8    |
| Paper                                                | 1.7       | 2.0   | 2.1   | 1.7   | 1.7   | 1.7   | 1.7   | 1.6   |
| Chemical                                             | 3.9       | 4.2   | 4.1   | 3.9   | 4.0   | 3.8   | 3.6   | 3.7   |
| <b>Energy</b>                                        | 8.9       | 8.3   | 8.4   | 8.6   | 7.7   | 7.1   | 8.0   | 8.8   |
| <b>INDUSTRY GROUPS</b>                               |           |       |       |       |       |       |       |       |
| <b>Manufacturing</b>                                 | 85.7      | 86.5  | 86.6  | 86.5  | 87.6  | 88.5  | 87.7  | 86.5  |
| <b>Durable</b>                                       | 45.5      | 46.2  | 46.6  | 47.3  | 48.1  | 48.9  | 48.8  | 48.3  |
| Lumber and products                                  | 24        | 2.2   | 2.2   | 2.1   | 2.1   | 2.1   | 2.3   | 2.2   |
| Furniture and fixtures                               | 25        | 1.4   | 1.3   | 1.4   | 1.5   | 1.6   | 1.6   | 1.5   |
| Stone, clay, and glass products                      | 32        | 2.1   | 2.2   | 2.2   | 2.3   | 2.4   | 2.5   | 2.5   |
| Primary metals                                       | 33        | 3.3   | 3.5   | 3.5   | 3.6   | 3.4   | 3.3   | 3.2   |
| Fabricated metals                                    | 34        | 5.1   | 5.2   | 5.3   | 5.4   | 5.6   | 5.7   | 5.8   |
| Industrial machinery and equipment                   | 35        | 8.1   | 8.4   | 8.8   | 9.0   | 9.1   | 9.0   | 8.2   |
| Electrical machinery                                 | 36        | 7.4   | 7.8   | 8.3   | 8.5   | 8.7   | 8.7   | 9.1   |
| Motor vehicles and parts                             | 371       | 5.0   | 5.5   | 5.4   | 5.6   | 5.6   | 6.4   | 6.5   |
| Aerospace and miscellaneous transportation equipment | 372-6,9   | 4.4   | 3.8   | 3.5   | 3.4   | 3.6   | 4.3   | 3.9   |
| Instruments                                          | 38        | 5.3   | 4.9   | 4.8   | 4.8   | 4.7   | 4.7   | 4.4   |
| Miscellaneous                                        | 39        | 1.3   | 1.3   | 1.3   | 1.3   | 1.3   | 1.2   | 1.2   |
| <b>Nondurable</b>                                    | 40.2      | 40.3  | 40.0  | 39.2  | 39.6  | 39.6  | 38.9  | 38.2  |
| Food and tobacco products                            | 20,21     | 10.7  | 10.5  | 10.5  | 10.3  | 10.8  | 10.6  | 10.7  |
| Textile mill products                                | 22        | 1.8   | 1.8   | 1.7   | 1.6   | 1.5   | 1.4   | 1.3   |
| Apparel products                                     | 23        | 2.1   | 2.1   | 2.0   | 1.9   | 1.9   | 1.7   | 1.5   |
| Paper and products                                   | 26        | 3.4   | 3.8   | 3.9   | 3.5   | 3.5   | 3.4   | 3.3   |
| Printing and publishing                              | 27        | 6.8   | 6.6   | 6.6   | 6.6   | 6.9   | 6.8   | 6.4   |
| Chemicals and products                               | 28        | 9.9   | 10.0  | 9.9   | 9.7   | 9.9   | 9.3   | 9.2   |
| Petroleum products                                   | 29        | 1.5   | 1.5   | 1.5   | 1.7   | 1.6   | 1.6   | 1.9   |
| Rubber and plastics products                         | 30        | 3.6   | 3.8   | 3.7   | 3.7   | 3.8   | 3.9   | 3.8   |
| <b>Mining</b>                                        | 10-14     | 6.3   | 5.9   | 5.9   | 6.2   | 5.6   | 5.8   | 6.8   |
| <b>Utilities</b>                                     | 491,2,3pt | 7.9   | 7.6   | 7.5   | 7.3   | 6.8   | 6.5   | 6.7   |
| Electric                                             |           | 6.3   | 6.0   | 5.9   | 5.8   | 5.5   | 5.3   | 5.2   |
| Gas                                                  |           | 1.6   | 1.6   | 1.6   | 1.5   | 1.3   | 1.3   | 1.5   |

Note—The IP proportion data are estimates of the industries' relative contributions to overall IP change between the reference year and the following year. For example, a 1 percent increase in durable goods manufacturing between 2000 and 2001 would account for a 0.483 percent increase in total IP.

## Explanatory Note

The **Industrial Production and Capacity Utilization** statistical release, which is published around the middle of the month, 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. More detailed descriptions of industrial production, capacity utilization, and electric power are available at [www.federalreserve.gov/releases/G17](http://www.federalreserve.gov/releases/G17) at the Board's World Wide Web site. In addition, files containing data shown in the release, more detailed series that were published in the G.17 prior to December 2000, and historical data are available at the Board's Web site. Instructions for searching for and downloading specific series are provided as well. For paid access to the data 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 also 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 the real output of 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) codes. These individual series are classified in two ways: (1) market groups, and (2) industry groups. Market groups consist of products and materials. Total products are the aggregate of final products, such as consumer goods and equipment, and intermediate products (which are inputs to nonindustrial sectors). Materials are inputs in the manufacture of products. Major industry groups include two-digit SIC industries and aggregates of these industries—for example, durable and nondurable manufacturing, mining, and utilities. A complete description of the market and industry structures, including details regarding series classification, relative importance weights, and data sources, is available on the Board's web site ([www.federalreserve.gov/releases/G17/About.html](http://www.federalreserve.gov/releases/G17/About.html)). Changes in output for the market and industry groups are summarized in table 1 and the levels of output (in index form) are shown in table 4. Special aggregates, that highlight the relative importance and contributions of several key industries, such as high-technology and motor vehicles, are summarized in tables 2 and 5. For a detailed description of the contents of the statistical tables, see below.

**Source data.** 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 and from government agencies; data of this type are used to estimate monthly IP wherever possible and appropriate. Production indexes for a few industries are derived by dividing estimated nominal output (calculated using unit production or sales and unit values) by a corresponding Fisher price index; the most notable of these fall within the high-technology grouping and include computers and semiconductors. When suitable data on physical product are not available, 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 annual data used to benchmark the IP indexes; these factors also may be influenced by technological or cyclical developments. The annual data used in benchmarking 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 United States Geological Survey of the Department of the Interior; and publications of the Department of Energy.

**Aggregation Methodology and Weights.** The aggregation method for the IP index is a version of the Fisher-ideal index formula. (For a detailed

discussion of the aggregation method, see *Federal Reserve Bulletin* February 1997 and March 2001.) In the IP index, series that measure the output of an individual industry are combined using weights derived from their proportion in the total value-added output of all industries. The IP index, which extends back to 1919, is built as a chain-type index since 1977. Between 1977 and 1992, the weights for months from January to June were drawn from the year containing the month being estimated and the preceding year; for months from July to December, the weights are drawn from the current and following year. Since mid-1992, the weights change monthly, eliminating distortions in the contributions of several high-technology industries—sectors where weights shift noticeably year-to-year. Thus, the current formula for the growth in monthly IP (or any of the sub-aggregates) since mid 1992 is the geometric mean of the change in output ( $I$ ), and, as can be seen below, is computed using the unit value added estimate for the current month ( $p_m$ ) and the estimate for previous month:

$$\frac{I_m^A}{I_{m-1}^A} = \sqrt{\frac{\sum I_m p_{m-1}}{\sum I_{m-1} p_{m-1}} \times \frac{\sum I_m p_m}{\sum I_{m-1} p_m}}$$

The IP proportions (typically shown in the first column of the relevant tables in the G.17 release) are estimates of the industries' relative contributions to overall growth in the following year. For example, the relative importance weight of the motor vehicles and parts industry is about 5 percent. If output in this industry increased 10 percent in a month, then this gain would boost growth in total IP by ½ percentage point ( $0.05 \times 10\% = 0.5\%$ ). To assist users with calculations, the Federal Reserve's web site provides supplemental monthly statistics that represent the exact proportionate contribution of a monthly change in a component index to the monthly change in the total index ([www.federalreserve.gov/releases/G17/ipdisk/ipweights.sa](http://www.federalreserve.gov/releases/G17/ipdisk/ipweights.sa)).

**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.) For the first estimate of output for a given month, about 48 percent of the source data (in value-added terms) are available; the fraction of available source data increases to about 85 percent for estimates in the second month that the estimate is published, 96 percent in the third month, and 97 percent in the fourth month. Data availability by data type is summarized in the table below:

### Proportion (in percent) of industrial production covered by data available in successive monthly estimates, 1999.

| Type of data                           | Month of estimate |     |                 |                |
|----------------------------------------|-------------------|-----|-----------------|----------------|
|                                        | 1st               | 2nd | 3rd             | 4th            |
| Physical product                       | 19 <sup>1</sup>   | 33  | 46 <sup>2</sup> | 47             |
| Production-worker hours                | 28 <sup>3</sup>   | 28  | 28              | 28             |
| Electric power use                     | 0                 | 22  | 22              | 22             |
| Federal Reserve estimates <sup>4</sup> | 53                | 17  | 3               | 3 <sup>5</sup> |
| Total industrial production            | 100               | 100 | 100             | 100            |

1. Includes provisional series totaling nearly 13 percent of IP that are derived from weekly data and for which the actual data may lag several months.
2. Includes quarterly data totaling 6 percent of IP that, on average, are received for the third estimate of industrial production. Specifically, data are available for the second estimate of the last month of a quarter, the third estimate of the second month of a quarter, and the fourth estimate of the first month of a quarter.
3. This figure refers only to those individual series that both initially and ultimately are based on the hours data.
4. Estimates for series not yet covered by data for physical product or electric power use.

5. Includes monthly and quarterly physical product data totaling 3 percent of IP that typically are available too late for inclusion in the current index but are included at the time of an annual revision.

Until the source data for a particular series become available for a given month, estimates for the missing observations are based on other available data, such as labor input, recent trends in output and orders, and anecdotal reports from industry sources. After the fourth month that an estimate is published, indexes are not revised further until the time of an annual revision or a benchmark revision. These historical revisions are typically published in the late fall of each year; the most recent revision was published on December 5, 2000, and incorporated revised source data as well as data from the 1998 *Annual Survey of Manufactures* and the 1997 *Census of Manufactures*.

**Seasonal adjustment.** Individual series are seasonally adjusted using Census X-12 ARIMA. 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 pre-adjusted for the effects of holidays or the business cycle when 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

**Overview.** The Federal Reserve Board constructs estimates of capacity and capacity utilization for industries in manufacturing, mining, and electric and gas utilities. For a given industry, the capacity utilization rate is equal to an output index (seasonally adjusted) divided by a capacity index. The Federal Reserve Board's capacity indexes attempt to capture the concept of *sustainable maximum output*—the greatest level of output a plant can maintain within the framework of a realistic work schedule, after factoring in normal downtime and assuming sufficient availability of inputs to operate the capital in place.

**Coverage.** Capacity indexes are constructed for 76 detailed industries (56 in manufacturing, 18 in mining, and 2 in utilities), which mostly correspond to industries at the two- and three-digit SIC level. 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. Also, special aggregates are available, such as high-tech industries and manufacturing excluding high-tech industries. Component industries of the primary- and advanced-processing groups within manufacturing are listed in the note on table 2 of the release.

**Source Data.** The monthly rates of capacity utilization are designed to be consistent with both the monthly data on production and the periodically available data on capacity and utilization. Because there is no direct monthly information on overall industrial capacity or utilization rates, the Federal Reserve first estimates annual capacity indexes from the source data. Capacity data reported in physical units from government sources (primarily from the U.S. Geological Survey and the Department of Energy's Energy Information Administration) and trade sources are available for portions of several industries in manufacturing (e.g., paper, industrial chemicals, petroleum refining, motor vehicles), as well as for electric utilities and mining; these industries represent about 15 percent of total industrial capacity. When physical product data are unavailable for manufacturing industries, capacity indexes are based on responses to the Bureau of the Census's *Survey of Plant Capacity* (SPC); these industries account for a bit more than 80 percent of total industry capacity. In the absence of utilization data for a few mining and petroleum series, capacity is based on trends through peaks in production (roughly 4 percent of total industry capacity). A detailed description of the methodology used to

construct the capacity indexes is available on the Board's web site ([www.federalreserve.gov/releases/G17/cap\\_notes.html](http://www.federalreserve.gov/releases/G17/cap_notes.html)).

**Aggregation Methodology.** Monthly capacity aggregates are calculated in three steps: (1) utilization aggregates are calculated on an annual basis through the most recent full year as capacity-weighted aggregates of individual utilization rates; (2) the annual aggregate capacity is derived from the corresponding production and utilization aggregates; (3) the monthly capacity aggregate is obtained by interpolating with a Fisher index of its constituent monthly capacity series. Utilization rates for the individual series and aggregates are calculated by dividing the pertinent monthly production index by the related capacity index.

**Consistency.** A major aim is that the Federal Reserve utilization rates be consistent over time so that, for example, a rate of 85 percent means about the same degree of tightness that it meant in the past. A major task for the Federal Reserve in developing reasonable and consistent time series of capacity and utilization is dealing with inconsistencies between the movements of the industrial production index and the survey-based utilization rates. The McGraw-Hill/DRI Survey, now discontinued, was the primary source of manufacturing utilization rates for many years. This was a survey of large companies that reported, on average, higher utilization rates than those reported by establishments covered by the SPC (currently the primary source of factory operating rates) for the fourteen years they overlapped. Adjustments have been made to keep the industry utilization rates currently reported by the Federal Reserve roughly in line with rates formerly reported by McGraw-Hill. As a consequence, the rates reported by the Federal Reserve tend to be higher than the rates reported in the SPC.

**Perspective.** Over the 1967–1999 period, the average total industry utilization rate is 82.0 percent; for manufacturing, the average factory operating rate has been 81.1 percent. 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. The highs and lows in capacity utilization shown in table 6 are specific to each series and do not all occur in the same month.

### Electric Power

**Coverage.** Electric power data for sales by utilities to industry users and for electric power produced by cogenerators (manufacturing and mining firms that produce electricity for their own use or to sell to a utility) are generally collected at the 3-digit SIC level for mining and manufacturing. Aggregates for 2-digit industries, as well as for total mining, durable, nondurable, total manufacturing and total industrial electric power use, are computed. An aggregate showing total industry excluding 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 less than its share of total electric power use. In addition, aggregates for utility sales to industrial users and industry generation are computed. While only the major aggregates are shown in the release, data for the 2- and 3-digit industries are available on the Board's web site ([www.federalreserve.gov/releases/G17](http://www.federalreserve.gov/releases/G17)).

**Source Data.** Electric power data are collected from a sample of utilities and cogenerators covering all twelve Federal Reserve Districts. The primary criterion for inclusion of a utility in the panel is whether the utility provides electric power to industrial customers. A comparison of Federal Reserve kilowatt-hour aggregates to estimates from the 1998 *Annual Survey of Manufactures* (the most recent available) suggests the Federal Reserve data cover about 75 percent of the overall sales to manufacturing in that year. The cogeneration panel covers about 50 percent of cogeneration used directly by manufacturers. In order to provide more complete coverage and correct for any shortcomings of the survey, the series are benchmarked at the 3-digit industry level to the latest available data from the *Annual Survey of Manufactures* and the *Census of Manufactures*.

**Methodology.** The data we receive from utilities and cogenerators are edited for anomalies and aggregated, using self weights, to the 3-digit SIC industry levels and above. Where reports are late or unavailable for some reason, responses are estimated.

**Seasonal Adjustment.** Series are seasonal adjusted at the 3-digit SIC level, with seasonally-adjusted aggregates typically computed as sums of seasonally adjusted components. The seasonal adjustment procedure

(Census X-12 program) is used without trading-day adjustments because the reporting periods of the various utilities are not the same. A leap year adjustment is also made where appropriate.

#### **References and Release Dates**

**References.** The annual revision published in early December 2000 was described in an article published in the March 2001 *Federal Reserve Bulletin*. The annual revision published late 1999 is described more completely in the *Federal Reserve Bulletin*, vol.86 (March 2000). 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. The Federal Reserve methodology for constructing industry-level measures of capital is detailed in “Capital Stock Estimates for Manufacturing Industries: Methods and Data” by Mike Mohr and Charles Gilbert (1996), which can be obtained at [www.federalreserve.gov/releases/g17/capital\\_stock\\_doc-latest.pdf](http://www.federalreserve.gov/releases/g17/capital_stock_doc-latest.pdf).

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. 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

**2001:** January 17, February 16, March 16, April 17, May 14, June 15, July 17, August 15, September 14, October 16, November 16, and December 14.

**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.