FEDERAL RESERVE statistical release

G.17 (419) 2002 Historical and 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. The primary feature of the historical revision is the reclassification of production and capacity indexes for individual industries from the Standard Industrial Classification, or SIC, to the North American Industry Classification System, or NAICS, back to 1972. In addition, the annual revision, as usual, updates all industrial production and capacity utilization measures to incorporate newly available and more comprehensive source data for recent years. The 2002 revision also introduces improved methods for measuring the annual real output of communications equipment manufacturing.

Along with the updating and the restatement of the data using NAICS, all production and capacity indexes are now expressed as percentages of output in 1997; previously, the comparison base was 1992. The rebasing affects all series from their start dates, which are 1919 for total IP and manufacturing IP, 1948 for manufacturing capacity, and 1967 for total industrial capacity. The Federal Reserve's accompanying indexes of industrial electric power use, which begin in 1972, have also been restated to accord with NAICS, rebased to use 1997 as a comparison year, and revised to incorporate previously unavailable data.

Reflecting the new information, industrial production and capacity are now reported to have increased at a faster rate from 1997 to 2000 (chart 1 and tables 1A, 1B, 5, and 8). Improved estimates for the production of communications equipment and semiconductor manufacturing account for most of the upward revision; revised estimates of the output of newspapers and related publishers also contributed. The upward revision to the increase in production was greater than the upward revision to the pace of capacity expansion. As a result, between 1997 and 2000, the average rate of industrial capacity utilization—the ratio of production to capacity—is 0.7 percentage point higher than previously reported. The higher utilization rates are concentrated in the selected high-technology group of industries (semiconductors, computers, and communications equipment); the motor vehicle, fabricated metal product, and machinery manufacturing industries; and in utilities.

On balance, the picture of the industrial sector in recent years is little changed by the revision. The most recent business cycle peak in monthly IP is still June 2000, at 116.2 percent of 1997 output, and the drop in the index from then until December 2001 is 6-3/4 percent, about the same as the previously reported decline. Accordingly, the second quarter of 2000 remains the peak in the rate of industrial capacity utilization, and the low is the fourth quarter of 2001. The revised utilization rate reaches 83.5 percent in the second quarter of 2000—0.9 percentage point higher than previously reported—before falling 2 percentage points by the end of 2000 and 6-1/2 percentage points further by the fourth quarter of 2001; the cumulative drop in the rate of capacity utilization is 0.6 percentage point steeper than previously reported.

In January 2002, industrial production rose; as in the earlier data, the January increase was the first monthly increase since September 2000. Monthly gains in industrial production then averaged 0.4 percent per month through July 2002, but from August to October 2002, industrial production retreated, on balance. In the third quarter of 2002, the revised and rebased production and capacity indexes stood at 111.4 and 146.2 percent of 1997 output, respectively. The rate of industrial capacity utilization in the third quarter of 2002, at 76.2 percent, is essentially unchanged from previously reported data (table 7). The rate was more than 5 percentage points below its 1972-2001 average and about 3 percentage points below the low in the 1990–91

recession, but 5 percentage points above the trough in the 1982 recession.[1]

The updated measures continue to show that, after having increased rapidly in 1999 and the first half of 2000, manufacturing IP fell sharply in 2001 and rose at a tepid rate, on balance, in the first three quarters of 2002 (chart 2 and table 2A). On the basis of the revised production indexes and results of the 2001 Survey of Plant Capacity, issued by the Census Bureau, capacity utilization in manufacturing continues to show a sharp drop in 2001 (table 2B) and the expansion of manufacturing capacity a noticeable slowing from the rapid pace posted in the last half of the 1990s. The factory operating rate has moved up since its business cycle low in the fourth quarter of 2001, but as of the third quarter of 2002, its level of 74.3 percent was more than 6 percentage points below its long-term average.[2]

The output of the selected high-technology industries—computers, semiconductors, and communications equipment—increased at an average rate of more than 40 percent per year from 1994 to 2000, but dropped off sharply in 2001, as in the earlier data. Their production still increases in 2002, but at a more modest rate than previously reported (chart 3). The rate of capacity utilization in these industries has hovered at or below 63 percent for nearly one year, a level more than 17 percentage points below its 1972–2001 average of about 80 percent. Within this group of industries, the output index for computers was revised down in 1999 and 2000, a move reflecting updated results from the Census Bureau on the value of production in those years. In addition, the indexes for semiconductors and communications equipment were revised up, primarily in 1999 and 2000, a move reflecting new and refined estimates of prices.

The revisions to the IP index for recent years were principally derived from the inclusion of information contained in annual reports issued by the Bureau of the Census: the 2000 Annual Survey of Manufactures (ASM) and selected 2001 Current Industrial Reports. Revised annual data from the U.S. Geological Survey (USGS) on minerals (except fuels) for 2000 and some new data for 2001 have also been introduced. In addition, the new monthly production estimates for 2001 and 2002 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 2001 Survey of Plant Capacity for the fourth quarter of that year, and newly available 2001 data on industrial capacity from the USGS, the Energy Information Agency, and other organizations. In addition, the relationships used to estimate the current change in manufacturing capacity reflect the inclusion of ASM data on capital spending by industry for 2000 and updated indicators of capital spending by manufacturers in 2001 and 2002.

Summary of the Historical Revision

The Federal Reserve has adopted NAICS for its statistics on the industrial sector, but to facilitate business cycle analysis, research, and forecasting, it has done so without changing the scope or continuity of the industrial production and capacity utilization measures. Specifically, the basic industry coverage of the total and manufacturing IP, capacity, and capacity utilization measures was not affected by the introduction of the new classification system, and the NAICS component industry statistics are available on a consistent basis at least back to 1972.

The consistency of the production and capacity indexes was further improved by recompiling the indexes using current methods, when possible, back to 1972. (These changes are detailed below in the section on "Current Methods Applied to Earlier Data.") Table A summarizes the revised rates of change in the basic measures from 1972 to 1997. The application of current methods for benchmarking IP to annual real output measures, estimating changes in capacity, and aggregating individual series resulted in a small downward revision to the average rate of change in industrial production and capacity from 1972 to 1987. All told, however, the average utilization rate, at 81.5 percent of total industrial capacity from 1972 to 1997, was little changed by the revision.

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[1] These comparisons are based on quarterly averages of utilization rates.

[2] For comparison with rates for industry subsectors, the period 1972–2001 will be used to represent the long-term average for capacity utilization rates.

Table A

REVISED RATES OF CHANGE OF INDUSTRIAL PRODUCTION AND CAPACITY, AND REVISED AVERAGE RATES OF CAPACITY UTILIZATION, 1972–97

	Revised rates of change (percent)			Difference between revised and earlier rates of change (percentage points)		
	1972–77	1977–87	1987–97	1972–77	1977–87	1987–97
Production						
1. Total IP	2.7	2.0	3.2	-.2	-.2	.0
2. Manufacturing	3.0	2.4	3.5	-.1	-.3	.0
3. Excl. high-tech	2.5	1.5	1.9	-.2	-.1	-.1
Memo:						
4. Manufacturing (NAICS)	3.0	2.4	3.7	—	—	—
Capacity						
5. Total industrial	2.8	2.1	3.1	-.2	-.3	-.1
6. Manufacturing	3.0	2.4	3.5	-.1	-.4	-.0
7. Excl. high-tech	2.5	1.5	2.0	-.2	-.2	-.1
Memo:						
8. Manufacturing (NAICS)	3.0	2.5	3.6	—	—	—

	Average rate, January 1972 to December 1997	Difference between revised and earlier average rate (percentage points)	Memo: Average rate January 1972 to December 2001
Capacity utilization (percent)			
9. Total industrial	81.5	-.2	81.5
10. Manufacturing	80.4	-.2	80.4
11. Excl. high-tech	80.5	-.2	80.4
Memo:			
12. Manufacturing (NAICS)	80.3	—	80.3

Note. The rates of change are the average percentage change in the seasonally adjusted index from the fourth quarter of the first year specified to the fourth quarter of the last year specified. For 1972 the calculations begin in the third quarter. Estimates not available are denoted by "—".

The 2002 revision also introduces refined methods for grouping individual industry IP series into major market groups for analysis of industrial production and for grouping industrial capacity and capacity utilization rates by stage of process. These changes, which are explained below in the section on "New Market and Stage-of-Process Aggregates," begin with data for 1967; the revised rates of change in IP by major market groups from 1967 on are shown in table B. The revisions shown reflect not only the refined industry composition of the groups but also, as mentioned above, the application of current methods and available source data to estimates for earlier periods.

Table B

REVISED RATES OF CHANGE OF SELECTED IP GROUPS, 1967–2002

	Revised rates of change (percent)			Difference between revised and earlier rates of change (percentage points)		
	1967 to 1987	1987 to 2000	2000 to 2002	1967 to 1987	1987 to 2000	2000 to 2002
1. Total IP	2.6	3.5	-1.7	-.2	.1	.1
2. Final products	2.9	3.1	-2.0	.1	.2	.0
3. Consumer goods	2.5	2.5	-.2	-.2	.5	-.1
4. Business equipment	4.6	6.0	-7.1	.8	-.3	-.8
5. Nonindustrial supplies	2.9	3.9	-1.4	-.3	2.2	.3
6. Construction	2.0	2.3	-2.4	-.2	.0	-1.6
7. Other business	3.5	4.9	-.8	-.4	3.7	1.7
8. Industrial materials	2.3	3.8	-1.5	-.3	-1.0	-.1
9. Non-energy	2.8	4.8	-2.1	-.5	-1.1	-.3
10. Energy	1.1	.6	.4	.3	.0	.5

Note. The rates of change are the average percentage change in the seasonally adjusted index from the fourth quarter of the first year specified to the fourth quarter of the last year specified. For 1967, the calculation begins in the third quarter. For 2000, the calculations end and begin in the second quarter.

The changes in monthly IP reflect the updating of seasonal factors for all years using current methods and the inclusion, when possible, of current monthly and quarterly source data. All told, the revised rates of change in monthly IP from 1972 on are highly correlated with the previously reported rates; the simple correlation coefficient between them is 0.91, and the correlation between the revised and earlier quarterly rates of change is 0.97. In addition to revised changes in production, the monthly changes in capacity utilization reflect the application of current methods for interpolating annual changes in capacity.

The monthly peaks and troughs in industrial production since 1972 are shown in the table below. The peaks and troughs associated with the recessions that began in 1973, 1981, and 2000 are unchanged. The peaks in IP before the onset of 1980-81 and 1990-91 episodes were changed with this revision. As in the earlier data, however, industrial production remained within a narrow range for more than a year before both downturns, and the changes did not alter the picture of cyclical activity in either period. The profile of the industrial expansion in the 1990s—rapid increases in IP punctuated by a slowdown in 1995 and again in 1998 in the aftermath of the Asian crisis—also is unchanged.

Table C
BUSINESS CYCLE PEAKS AND TROUGHS IN MONTHLY IP SINCE 1972

Peak	Trough
November 1973	May 1975
March 1979 *(May 1979)*	July 1980
July 1981	November 1982
September 1990 *(April 1989)*	March 1991
June 2000	December 2001

Note. The dates shown in parentheses are as reported in earlier data.

Although the timing of the business cycle episodes in industrial production is essentially unchanged by the revision, the 1973–74 recession is now reported to be somewhat shallower. As a result, the drop in capacity utilization—about 14-1/2 percentage points from November 1973 to May 1975—is about 1-1/4 percentage points less than in the earlier data. Also, the recovery from 1975 to 1979 is now a bit less strong, and the peak reached by capacity utilization is not as high as previously reported. Finally, as discussed above, the revised rate of capacity utilization for total industry averages at a high rate from 1997 to 2000, but then it drops a bit more steeply in 2001 than previously reported.

New NAICS Industry Structure

The Federal Reserve still defines the industrial sector as manufacturing, mining, and electric and gas utilities. The changes from the SIC system to NAICS, however, altered the industry composition of manufacturing. Specifically, NAICS moved the logging and the newspaper, periodical, book, and directory publishing industries from manufacturing to other sectors; the former was placed in agriculture, and the latter was placed in the new information sector.[3] For the statistics reported in the Federal Reserve's monthly G.17 statistical release, the manufacturing measures will continue to be composed of those industries included in the NAICS definition of manufacturing *plus* those industries—logging and newspaper, periodical, book, and directory publishing—that have traditionally been considered to be manufacturing.

Table D illustrates the new industry structure (in abbreviated form). The G.17 release will publish the aggregate of industries representing the NAICS definition of manufacturing, along with the aggregate of industries representing the traditional definition of manufacturing. For the most part, the two series are similar, in terms of their long-term trends (see memo item on table A), and their basic cyclical profile. The average annual proportion of the traditional manufacturing measure in total industrial production is about 85 percent, however, whereas the proportion of manufacturing (NAICS) is about 80 percent (see table 10).

[3] See www.census.gov/epcd/www/naics.html for further information on NAICS.

Table D
REVISED INDUSTRIAL PRODUCTION, CAPACITY, AND CAPACITY UTILIZATION INDUSTRY STRUCTURE (ABBREVIATED)

New with the 2002 Revision	Correspondence to Previous Structure
Total industry	Total industry
Major industry groups:	Major industry groups:
Manufacturing (see note below)	Manufacturing (SIC)
Manufacturing (NAICS)	——
Durable	Durable (SIC) less logging
Nondurable	Nondurable (SIC) less newspaper, periodical, book, and directory publishing
Other manufacturing (non-NAICS)	——
Mining	Mining
Utilities	Utilities

Notes. The industrial sector is defined as manufacturing, mining, and electric and gas utilities. Manufacturing consists of those industries included in the North American Industry Classification System (NAICS) definition of manufacturing plus those industries—logging and newspaper, periodical, book, and directory publishing—that traditionally have been considered to be manufacturing and included in the industrial sector.
The correspondences shown in the table are illustrative.

Conversion of the data to NAICS

The historical source data needed to compile IP and capacity utilization are not publicly available on a NAICS basis before 1997; hence, the issuance of thirty years of NAICS industry statistics represents a major effort by the Federal Reserve to preserve the historical continuity of the basic measures presented in its G.17 release. As a result, many frequently used industry series whose definition and coverage were altered by NAICS—communications equipment, construction equipment, and chemicals, to name a few—are still available with substantial history.

The restatement of the industrial production and capacity utilization data from 1972 to present on a NAICS basis relies on results of a research project conducted by the Federal Reserve Board and the Center for Economic Studies of the Bureau of the Census.[4] The project developed NAICS codes for each establishment in the files of seven Censuses of Manufactures (COM)—1963, 1967, 1972, 1977, 1982, 1987, and 1992. (The Census Bureau issued data for its 1997 COM on both a SIC and NAICS basis, which was the starting point of the analysis.) The information needed to derive NAICS-based source data for industrial production and capacity utilization was obtained by tabulating the historical COM establishment-level data using the NAICS codes developed by the research project.

The derivation of NAICS-based source data was an extensive effort involving the reconstruction of many of the working data sets that underlie the estimation of IP and capacity, including the annual comprehensive estimates of industry value added and value of production and the annual (fourth quarter) survey data for industry utilization rates. All in all, annual figures for most variables reported in the Censuses and Annual Surveys of Manufactures (shipments, value added, cost of materials, inventories, capital spending, production worker hours, and the like) were derived at the 6-digit NAICS level from 1972 on. Utilization rates from the Survey of Plant Capacity were reconstructed beginning in the fourth quarter of 1974, the start date of the survey. The Federal Reserve's data on monthly electric power use were derived at the 4-digit NAICS industry level from data in the Annual Survey of Manufactures that were also restated to accord with NAICS. The 2002 NAICS was used for all restatements and conversions.

Restructuring of industry subsectors

NAICS substantially restructured many industries within manufacturing. One significant change was the

[4] Kimberly Bayard and Shawn Klimek, "Reclassifying the Census of Manufactures from the Standard Industrial Classification System to the North American Industry Classification System, 1963 to 1992" (forthcoming working paper).

reorganization of high-technology industries. NAICS created a new subsector for high–technology manufacturing, computer and electronic product manufacturing (NAICS 334), which combined into a sensible aggregate industries that had been scattered across various 2-digit SIC industry groups. For some time, the G.17 has reported output, capacity, and capacity utilization for selected high-technology industries consisting of semiconductors, computers, and communications equipment manufacturing. These industries account for most of the new NAICS 334 subsector; the new subsector also contains audio and video equipment and navigational, measuring, electromedical, and control instruments. The output, capacity, and capacity utilization measures for selected high-technology industries will continue to be reported in the monthly G.17 release along with data for the new NAICS subsector.

Within the transportation equipment manufacturing subsector, NAICS introduced a new industry group for motor vehicle parts manufacturing (NAICS 3363). The group contains eleven new 6-digit motor vehicles parts industries, many of which—metal stamping, vehicular lighting and electronic equipment, motor vehicle seating and interior trim, and motor vehicle air–conditioning manufacturing—were previously pieces of a wide range of 2-digit SIC major groups, including fabricated metals, furniture, apparel, and electrical and nonelectrical machinery. Reflecting these changes, the monthly IP index for motor vehicle manufacturing is now composed of nine NAICS-based industry series; some of these series, such as metal stamping and motor vehicle air-conditioning manufacturing, were separate series in the structure of the previous IP index, and the change simply entailed a rearrangement of the data. However, as in the previous structure, but with the exception of metal stamping, each industry series in motor vehicle parts is further disaggregated into two sub-industry indexes, one for the production of original equipment and the other for the production of replacement parts. All told, the motor vehicle parts industry group is now represented by seventeen individual IP series, and the proportion of the industry group in the overall index now is 3.4 percent, about 1-1/4 percentage points larger than it was in the SIC–based IP data.

Another change was the splitting of the SIC 2-digit textiles and products major group (SIC 22) into two NAICS subsectors, textile mills (NAICS 313) and textile product mills (NAICS 314). Within these subsectors, a few industries that were in SIC 22 were moved to apparel manufacturing (NAICS 315), and a few others, previously not in the SIC textile group, were newly included (mainly from the SIC 2-digit group, apparel). The implementation of the NAICS structure for textiles in the IP index was accompanied by an extensive review of available source data, resulting in the introduction of several product series new to the IP system. In particular, the IP physical product measures for NAICS 3131 (fiber, yarn, and thread mills) were broadened relative to the corresponding SIC series to include wool fibers. In addition, IP measures for NAICS 3132 (fabric mills) now use a quarterly production series for cotton and synthetic fabrics. Finally, tire cord production (part of NAICS 3149) is now being compiled as a separate IP series derived from physical product data.

The industrial production index now contains monthly output indexes for 227 NAICS 6-digit (or combination of 6-digit) industries; previously, the index represented 207 SIC-based industries. Of course, the industrial production index contains many sub-industry indexes, developed from product data, that are used to compile market groups and, ultimately, the total index. The introduction of NAICS does not change the way in which product data are used to compile monthly IP; taking these product-based sub-industry indexes into account, the revised IP index is now built from 295 individual component series. The detailed new NAICS structure and monthly data sources for all NAICS subsector, industry, and sub-industry IP indexes are in the updated "Source and Description" table at www.federalreserve.gov/releases/g17/sdtab1.pdf.

The implementation of NAICS for capacity and capacity utilization resulted in the introduction of, on net, nine new series in the system. The new industry series are mainly in the chemical and machinery manufacturing subsectors (NAICS 325 and 333, respectively); a new capacity series for lime and gypsum product manufacturing (NAICS 3274) was derived using capacity data issued by the Gypsum Association and introduced from 1972 on. All told, the capacity measures now are built from eighty-five industry series, most of which are NAICS 4-digit industries (or combinations of them). The detailed new structure for capacity and capacity utilization is shown in the updated table at www.federalreserve.gov/releases/g17/captab1.pdf.

The NAICS subsectors that will be published in the regular monthly release are shown in the bottom

half of table 5 (which reports changes in IP), and on table 7 (which shows capacity utilization rates); additional industry detail will be published in tables available from the Board's web page for the G.17.[5] The annual proportions of the new industry subsectors in total IP from 1994 on are shown on the bottom portion of table 10.

New Methods in the Revision

In this revision, new or refined methods for three series were introduced as follows: (1) a new benchmark index for the real output of communications equipment manufacturing, (2) a refined structure of the monthly IP index for semiconductors, and (3) improved methods for estimating light vehicle capacity.

IP series for communications equipment manufacturing

The Federal Reserve Board staff improved the methods it uses for compiling the production series for communications equipment manufacturing (NAICS 3342) from 1987 on.[6] In recent years, the Federal Reserve has made numerous improvements in its measures of real output for the high-tech sector. Two years ago, it introduced a new production index for one component of communications equipment, local area network (LAN) equipment. With this revision, new results for other types of communications equipment, namely fiber optic equipment, cable modems, public branch exchanges, and cellular communication equipment have been introduced. Overall, value added in communications equipment manufacturing was 2.0 percent of total IP from 1994 to 2000.

The new results are annual measures that more accurately reflect the technical advances and quality change in the equipment produced by this industry. The measures affect the annual change in the IP index for communications equipment manufacturing from 1988 on, with the changes from 1999 to 2001 about 8 percentage points per year higher than those in the earlier data. By itself, the new IP index for communications equipment boosts the 1999 to 2001 change in the total index by 0.2 percentage point per year.

Semiconductors

The IP series for the manufacture of semiconductors and related devices (NAICS 334413) is now built from five sub-industry indexes—microprocessor units (MPUs), metal oxide semiconductor (MOS) logic devices excluding MPUs, MOS memory, other integrated circuits (linear and analog), and optoelectronics and other discrete devices—from 1992 on. The new series are not published separately, but their inclusion in the IP structure improves the accuracy and compilation of the published monthly index for semiconductor and related electronic components (NAICS 334412–9). Value added for this series averaged 3.4 percent of total IP from 1994 to 2000.

The data on the value of production for the new subcategories of semiconductors, which are not available in reports from the Census Bureau, were developed from information issued by trade associations, private research companies, and company reports. The basic data, which are monthly and quarterly and largely based on reports issued by the Semiconductor Industries Association and Dataquest, have been controlled to comprehensive annual measures for NAICS 334413 issued by the Census Bureau. The price measures for each component, which are updated annually and thus subject to revision each year, are developed from (1) revised data from the same sources, (2) quarterly data on microprocessor prices available annually from Micro Design Resources, and (3) producer price indexes issued by the Bureau of Labor Statistics.

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[5] A prototype of the tables that will be used in the monthly G.17 statistical release beginning in December 2002 is available at www.federalreserve.gov/releases/g17/g17_rev_2002_1 1.txt

The format of the release is little changed from the format that was introduced in February 2001. At that time, the monthly G.17 release was redesigned to include, for IP, major market and 2-digit SIC industry groups; for capacity utilization, major 2-digit SIC groups; and for capacity and electric power, major aggregates. The more detailed market and industry data that were previously provided in the G.17 continued to be published in tables available from the Board's web site.

[6] See Mark Doms, "Prices for Communications Equipment," in Carol Corrado, John Haltiwanger, and Daniel Sichel, eds., *Measuring Capital in a New Economy.* (Chicago: University of Chicago Press) (forthcoming).

Light vehicle capacity

The capacity of light motor vehicle manufacturing (NAICS 33611) is estimated from plant-level data; in the most recent model year, sixty-six light vehicle assembly plants were operating in the United States. For each of these facilities, capacity in units was developed from data on the actual number of shifts, the length of the shifts, and the speed of the assembly line (linespeed). The plant capacities were aggregated using model-specific prices from 1987 on, which yielded a capacity index consistent with the production index.

The methods for determining plant capacity from shift and linespeed data were refined to better reflect current operating practices and technology.[7] The revision introduces a nonstandard shift configuration, with plants able to rotate three crews over two ten-hour shifts, six days per week; previously, plants were assumed to operate two or three standard-length shifts. In recent years, two to four plants have used the nonstandard configuration, about the same number that have used the standard three-shift configuration. Also with this revision, a plant's linespeed at capacity was determined by the peak within the past ten years; previously, the peak linespeed was obtained from all available data, which may have covered more than ten years.

The improved use of data by shift and the greater discounting of past peaks in linespeeds lowered the estimates of unit capacity for light vehicles. As a result, the average utilization rate for light vehicles in the revised data was about 0.8 percentage point higher than in the earlier data. Also, consistent with the revised production index, as noted below, the new capacity series for light vehicles begins in 1972, five years earlier than the previous measure.

Current Methods Applied to Earlier Data

The consistency of the production and capacity indexes was further improved by recompiling the new NAICS indexes using current methods—in so far as possible—back to 1972. Many changes and refinements to methods were introduced in the historical and annual revisions issued in the 1990s and in 2000 and 2001; the historical revisions affected IP beginning in 1977 and capacity beginning in 1967, but the regular annual revisions were implemented only from 1987 or 1992 on. The revision to the 1972 to 1977 segment of the IP index is the first since the issuance of the 1985 historical revision.

The revised IP index was compiled as a chain-type index with monthly weights beginning with data for 1972. Previously, a linked-Laspeyres formulation was used to aggregate data from 1972 to 1977 and a chain-type formulation (with annual weights) was used for data from 1977 to 1992.[8] In addition, the annual real industry output benchmark indexes from 1972 to 1987 were newly compiled using current methods, as well as NAICS-based source data. With the exception of computers and semiconductors, annual output benchmarks for those years were not previously compiled as chain-type indexes. Moreover, annual revision and benchmark methods established in the mid-1990s, previously applied to data from 1987 on, were newly applied to data for all years in so far as possible.[9]

The monthly changes in IP beginning in 1972 also now reflect the improved seasonal adjustment techniques introduced in the 1993 and 1995 annual revisions; previously these techniques, which include adjustments for holiday and other calendar effects derived using a regression approach, were applied to data starting in 1987.[10] Seasonal factors for all years continue to be derived using the "intervention approach"

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[7] The basic method used to estimate light vehicle capacity was reviewed on pp. 442-3 of Richard Raddock, "Recent Developments in Industrial Capacity and Utilization," *Federal Reserve Bulletin*, vol. 76 (June 1990), pp. 411-435.

[8] An annually weighted version of the Fisher-ideal index formula was introduced as the aggregation method for the IP index in a historical revision issued in January 1997; the formulation was refined to use monthly weights in the fall 2000 annual revision. The refined version affected data from February 1992 on, whereas the original formulation was applied beginning July 1977.

See pp. 72–76 in Carol Corrado, Charles Gilbert, and Richard Raddock, "Industrial Production and Capacity Utilization: Historical Revision and Recent Developments," *Federal Reserve Bulletin*, vol. 83 (February 1997), pp. 67-92, and page 137 in Carol Corrado, "Industrial Production and Capacity Utilization: the 2000 Annual Revision," vol. 87 (March 2001), pp.132-148 for further information on this formulation for aggregation. The derivation of the weights used in aggregation is also discussed in these articles.

introduced in the 1985 revision; this approach shields the estimates from extreme business cycle movements.[11]

The monthly IP indexes that use the Federal Reserve's electric power data as a production indicator were further refined by (1) excluding the systematic influence of the weather on seasonally adjusted electricity use (this modification, introduced in the fall 1998 annual revision, previously applied to data from 1992 on)[12] and (2) including data that were issued in a major revision of the electric power data in early 1997.[13] While these data were previously included in the IP index from 1987 on, the 1997 revision modified the electric power data from their start date of 1972.

The annual changes in capacity are estimated from improved models that were initially introduced in the 1999 annual revision and used to develop capacity indexes beginning 1992.[14] The capacity estimates prior to 1992 are also affected by the application of an interpolation procedure that allows the rate of change in monthly capacity to evolve slowly over time; the procedure was introduced in March 1999 and applied to data from 1992 on in that year's fall revision. Previously, monthly capacity figures were computed on the assumption of a constant rate of change in capacity through a year, with potentially abrupt changes between the last months of one year and the first months of the next. Of course, the rates of change in the monthly capacity indexes are, all else equal, revised in line with industrial production. The application of the current aggregation formula to earlier periods of production and capacity data, however, does not materially affect the monthly utilization rates.

Other changes in basic methods include the extension back to 1967 of various refinements to the structure of market groups, including the changes within business equipment introduced in the 1990 historical revision and implemented from 1977 forward, and the new structure of groups within consumer durables introduced with the new release format in February 2001 and implemented from 1982 forward. The new materials subgroup, semiconductors, printed circuit boards, and other electronic components, which was introduced in the 1998 revision and implemented from 1992 forward, was extended back to 1972. Finally, the improvements to the methods and data used to estimate value added in the electric utility industry, which were introduced last year and implemented on a best-change basis from 1992 forward, were fully implemented and linked back to 1972 in this revision; and the refined methods and source data used to determine the consumer and business shares of motor vehicle production were newly included in the market

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[9] In particular, the May 1993 revision introduced explicit adjustments for "drift" in the data from the Annual Survey of Manufacturers from 1987 to 1991; the adjustments were refined with the availability of results from the 1992 Census and incorporated in the fall 1994 annual revision. For further discussion, see pp. 24-25 in Richard Raddock, "Industrial Production and Capacity Utilization: A Revision," vol. 81 (January 1995), *Federal Reserve Bulletin*, pp. 16-26.

These adjustments are newly applied to data from 1982 to 1986. Other methods, such as the controlling of all industry output series in manufacturing to comprehensive real output indexes, were applied to data for all years.

[10] See pp. 23-24 in Richard Raddock, "A Revision to Industrial Production and Capacity Utilization, 1991-95," vol. 82 (January 1996), *Federal Reserve Bulletin*, pp 16-25, for a description of seasonal factors in the production indexes.

[11] See *Industrial Production: 1986 Edition.* (Washington D.C.: Board of Governors of the Federal Reserve System). 1986, pp. 77-86.

[12] See p. 24 in Charles Gilbert and Richard Raddock, "Industrial Production and Capacity Utilization: the 1998 Annual Revision," vol. 85 (January 1999), *Federal Reserve Bulletin*, pp. 20-33 for a further elaboration of the adjustment.

[13] This revision was reviewed in appendix B (pp. 89–92) of Carol Corrado, Charles Gilbert, and Richard Raddock, "Industrial Production and Capacity Utilization: Historical Revision and Recent Developments" (February 1997).

[14] Models are used to develop most of the Federal Reserve's estimates of the annual change in industry capacity. The models related an implied capacity measure (calculated as the industrial production index for an industry divided by survey data on utilization rates for the industry) to an industry capital input measure and a variable that measures the average age of the industry's net capital stocks.

See pp. 196–97 in Charles Gilbert, Norman Morin, and Richard Raddock, "Industrial Production and Capacity Utilization: The 1999 Annual Revision," vol. 86 (March 2000), pp.188-205 for a description of how capacity is modeled with utilization rates and information on industry capital stocks and capital input.

group indexes for the years preceding 1992.[15]

Since the 1990 historical revision, new or refined procedures for measuring nearly sixty individual production and capacity series from product data were introduced. Most of the improvements were implemented beginning in, or near, the start year of the source data for the series. For about a dozen series, however, the revision incorporated new source data and methods for earlier years (see box).

Individual series for which the 2002 revision applied current source data and methods to earlier years

For the production index, the affected series include:

- Coal mining (NAICS 2121). The current coal production measures were taken back to 1972; the measures weight the tonnage produced in a region by the energy content typical of a ton of coal mined in that region and were introduced in the 1998 revision from 1992 forward.
- Stone mining and quarrying (NAICS 21231) and sand and gravel mining (NAICS 21232,1). A single series, based on quarterly product data from the USGS and interpolated monthly using railroad car loadings, was introduced in the January 1997 revision from 1992 on; two series using the same data now begin in 1987. From 1982 to 1987, for each series, monthly railroad car loadings are used as the production indicator; from 1972 to 1981, production worker-hour data are used.
- Support activities for oil and gas operations (NAICS 213112). The activity was newly represented in the fall 1997 revision from 1987 on; monthly product data from the same source are now used as the indicator from 1972 on.
- Gypsum product (NAICS 32742). The gypsum series newly introduced in the 1993 revision from 1987 on was taken back to 1972; monthly product data from the same source are used as the indicator from 1977 on; production worker hours are the monthly indicator from 1972 to 1977.
- Room air-conditioners (NAICS 33341pt). Seasonal adjustment factors derived using an additive approach, which were previously applied to the data from 1992 on, are now used from 1972 on.
- Completed aircraft, civilian (NAICS 336411pt). The methods used to compile the current measure of civilian aircraft, which approximately equals a forward-looking ten-month moving average of actual or future planned completions (deliveries plus the change in stock) of commercial aircraft by Boeing Corporation from 1992 on, were extended back to 1972.
- Automobiles and light duty trucks (NAICS 33611). The monthly series for the production of automobiles (NAICS 336111) and the production of light duty trucks (NAICS 33612) are now compiled as annually weighted chain-type indexes from 1987 on; the refined within-year estimates of light vehicle production were introduced in the 1999 revision and previously applied to data from 1992 on. In addition, the series for light trucks now begins in 1972, whereas it previously began with data for 1977.
- Motor vehicle parts, original equipment (NAICS 3363pt). The series are now constructed in two segments: From 1972 to 1992, the monthly changes are proportional to changes in production worker hours and motor vehicle assemblies; from 1992 on, the series also reflect product data when available. (Product data were newly introduced in the revision issued in January 1997.)
- Motor vehicle parts, repair (NAICS 3363pt). The Federal Reserve's annual estimates of motor vehicle repair parts were reestimated from 1972 on using a procedure introduced in the 2001 revision; the procedure sets the indexes proportional to an estimate of the outstanding stock of vehicles (in units) times the average age of the fleet, modified by (1) a cyclical pattern identified using data on consumer replacement tires and (2) a trend adjustment to control the combination of repair and original equipment parts production to the output of the industry.

For the capacity system, the affected series include

- Natural gas extraction (NAICS 211111pt). The new annual source data from Energy Information Agency introduced in the 2001 annual revision from 1992 were taken back to 1983.
- Automobile and light duty trucks (NAICS 33611). As with the production index, the annual weighting of the unit data by model-year prices was extended back to 1987; also see the new methods discussion above.
- Heavy duty trucks (NAICS 33612). The series, which previously began in 1987, was extended back to 1972 using current methods.

New Market and Stage-of-Process Aggregates

To complement the industry measures, the monthly G.17 statistical release presents IP indexes for market groups (such as consumer goods, business equipment, and the like) as well as stage-of-process groups for utilization rates in *manufacturing* (advanced and primary processing). The 2002 revision introduces (1) new allocations of individual industry production indexes into market groups and (2) the assignment of utilization rates for *total industry* to more refined stage-of-process groups.

[15] In the industrial production index, a consumer vehicle that is leased is included in consumer goods. Information on retail purchases and leases is used to determine the overall share.

The new groups for capacity and capacity utilization are developed from a stage-of-process classification of the 227 industries in the IP industry structure; the classification is also used to develop new supplementary output indexes on industrial output by stage of process. The supplementary statistics on the gross value of products now provided in the G.17 release have been updated and revised to reflect the new allocation of industry series to the IP market groups.

Market Groups

The IP market groups depict industrial output as flowing from the production of industrial materials and nonindustrial supplies to the production of final products. Because a market group index represents the *input* to a defined economic activity (such as the production of goods for household consumption), an industry's output cannot generally be assigned to only one market group. (For example, the outputs of petroleum refineries and motor vehicle producers are inputs to multiple markets.) As a result, twenty-six industry series in the industrial production index are further disaggregated, based on detailed product and end-use statistics (for example, gasoline and jet fuel, autos and heavy trucks), so that their output can be assigned to multiple market groups.

With this revision, when appropriate, all industries in the IP index have their output allocated to multiple market groups. Market group shares for the 181 industries represented by individual series in the industrial production index were derived using relationships in the 1992 input-output (I-O) tables issued by the Bureau of Economic Analysis.[16] The resulting changes in industry composition of the market group indexes led to a renaming of two major aggregates. The new names are highlighted in table E, which shows the new IP market structure (in abbreviated form). The index representing the input for nonindustrial use is named "nonindustrial supplies" (rather than "intermediate products"), and the index that combines inputs to final demand and nonindustrial use is named "final products and nonindustrial supplies" (rather than "total products").

The more noticeable revisions to the industry composition of the IP market groups were in the indexes for (1) business equipment, (2) other business supplies, a subgroup of the broader grouping of inputs for nonindustrial use; and (3) materials. Table F shows the revised and previous proportion of the major groups in the total index (in value-added terms) at five-year intervals starting in 1972 and for recent years. The revision lowered somewhat the estimate of the proportion of final products in total industrial output, primarily because the proportion for business equipment has been reduced. Many industries whose entire output was previously included in business equipment also produce equipment parts, and that portion is now included in materials. The composition of the consumer goods group was, on balance, little changed.[17]

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[16] The I-O make, use, and bridge tables can be used to express the total domestic production of a good as the sum of its use as an intermediate input and its absorption by final demand (consumption, investment, government, exports).

The market group shares were derived from the allocation of the gross value of industrial output (in producer prices) to following major components: inputs for intermediate industrial use; inputs for intermediate nonindustrial use (construction and other business supplies); and inputs to final demand (consumer goods, producers' durable equipment, and government defense purchases).

The IP market shares will be updated with the availability of I-O tables for 1997 in next year's fall revision of industrial production and capacity utilization.

[17] Note that, as in the previously reported measures, the consumer goods group contains replacement car parts, canned and bottled beverages, and pharmaceutical preparations even though these products are distributed to consumers by nonindustrial businesses.

Table E
REVISED INDUSTRIAL PRODUCTION MARKET STRUCTURE (ABBREVIATED)

New with the 2002 Revision	Correspondence to Previous Structure
Total index	Total index
Major market groups:	Major market groups:
Final products and nonindustrial supplies	Total products
Final products	Final products
Consumer goods	Consumer goods
Equipment, total	Equipment, total
Nonindustrial supplies	Intermediate products
Construction	Construction supplies
Other business	Business supplies
Materials	Materials
Non-energy	—-
Durable	Durable
Nondurable	Nondurable
Energy	Energy

Table F
REVISED ANNUAL PROPORTIONS OF MAJOR MARKET GROUPS IN INDUSTRIAL PRODUCTION, SELECTED YEARS

Item	1972	1977	1982	1987	1992	1997	2000	2001
				—Billions of dollars—				
Total Index	414.6	711.3	1,118.5	1,429.6	1,718.4	2,252.5	2,489.3	—
(previous)	413.2	697.2	1,090.9	1,387.7	1,668.4	2,193.5	—	—
				—Percentage distribution—				
Total Index	100	100	100	100	100	100	100	100
Final products and nonindustrial supplies	55.6	52.3	51.7	55.6	57.2	57.5	58.1	59.5
(previous)	61.9	57.3	56.0	59.2	60.8	60.6	59.9	61.9
Final products	39.5	37.1	37.9	39.8	41.3	40.7	41.2	42.5
(previous)	47.7	44.1	43.9	44.4	46.3	45.8	44.8	46.4
Consumer goods	26.1	23.8	23.0	25.3	27.5	27.1	27.7	29.2
(previous)	27.9	25.8	24.3	27.1	29.0	28.3	28.4	30.5
Equipment, total	13.4	13.4	14.9	14.5	13.8	13.6	13.6	13.3
(previous)	19.8	18.3	19.5	17.3	17.3	17.4	16.4	16.0
Business	10.5	10.6	10.5	10.2	10.4	10.9	11.1	10.7
(previous)	14.1	14.5	13.8	12.3	13.2	14.3	13.7	13.1
Nonindustrial supplies	16.1	15.2	13.9	15.8	16.0	16.8	16.9	17.0
(previous)	14.2	13.2	12.2	14.8	14.5	14.8	15.1	15.5
Construction	7.5	7.0	5.6	6.4	6.0	6.5	6.7	6.8
(previous)	6.8	6.1	4.6	5.9	5.4	5.9	6.4	6.6
Other business	8.6	8.2	8.3	9.4	10.0	10.2	10.2	10.2
(previous)	7.4	7.1	7.5	8.9	9.1	9.0	8.7	8.9

The input-output analysis resulted in a substantial refinement of the composition of the "other business" component of nonindustrial supplies. Outside of energy, newspaper advertising, job printing, and periodical publishing still are the predominant components in this grouping; but, with this revision, noticeable portions of the output of plastics products, microprocessor units (for computers assembled by nonindustrial business), and of numerous other smaller industries have been added. The resulting market group is now a noticeably larger proportion of the overall index. The detailed series that compose each market group are documented in the table at www.federalreserve.gov/releases/g17/sdtab2.pdf.

Charts 4–7 show the cyclical profile of each major group and their components. Despite the changed

composition of most of these series, their cyclical patterns are not materially changed by the revision. (The revisions to the indexes for consumer durables and business equipment during the 1980s reflect, in large part, a reallocation of the consumer—as opposed to business—share of total light vehicle production on the basis of the data that have been introduced for those years; see the previous section).

Stage-of-process groups

Production in the economy can be subdivided into distinct segments so that, when arranged sequentially, the outputs of earlier segments become inputs to subsequent ones; the sequence ends with final demand. This structure of the production process allows *industry data* to be grouped into stages of processing. In this revision, input-output methods were used to classify the industries in the IP index into four stages of processing—crude, primary, semifinished, and finished.[18] For example, the organic chemical industry sells to makers of plastic materials, who sell to makers of plastic bottles, who sell to soft drink bottlers, who sell soda to consumers; these industries would be placed in sequential stages, reflecting the way the transactions flow, ending with final demand.

These stage-of-process (SOP) groupings, which assign each IP industry series to a single processing stage, may be used in two ways: (1) to construct indexes for the *input* to each stage of process and (2) to construct indexes for the *output* of each stage of process. The existing IP market groups are akin to SOP input indexes; for example, the IP index for final products is the industrial input to final demand (less exports), and the IP index for nonindustrial supplies is the input to nonindustrial finished processors. From a stage-of-process perspective, however, the IP materials index, which combines the production for all earlier stages of process in one group, is broader than desirable for analysis of industrial production.

In this revision the SOP groups are applied to the industrial production and capacity utilization data in three ways:

1. The IP index for materials represents all domestically produced inputs for intermediate industrial use, that is, for finished, semifinished, and primary industrial processors. With this revision, the SOP classification of IP industries was used to develop two new components for the IP materials index: (1) non-energy inputs to finished processors and (2) non-energy inputs to primary and semifinished processors. The new indexes are shown as memo items on table 5.

The two SOP-based materials subaggregates are new combinations of the individual series in non-energy materials. The index for inputs to finished processors is mainly composed of consumer durable parts, equipment parts, textile product materials, and paper product materials. The index for inputs to primary and semifinished processors combines basic metals, miscellaneous durable materials, chemical materials, and other nondurable materials.

2. The SOP classification of IP industries was used to develop three aggregates of industries within total industrial capacity and capacity utilization: (1) crude processing, (2) primary and semifinished processing, and (3) finished processing. These aggregates have been compiled from 1972 on. The results are linked to sparser data for earlier years to form continuous times series from 1967 on.

The relationship between the new stage-of-process groups for capacity and capacity utilization and the previous published aggregates is summarized in table G. The first new aggregate, crude processing, covers a relatively small portion of total industrial capacity and consists of logging (NAICS 1133), much of mining (excluding stone, sand, and gravel mining and oil and gas drilling, which are NAICS 21231, 21221–2, and 213111) and some basic manufacturing industries, including basic chemicals (NAICS 3251); fertilizers, pesticides, and other agricultural chemicals (NAICS 32531,2); pulp, paper, and paperboard mills (NAICS 3221); and alumina, aluminum, and other nonferrous production and processing mills (NAICS 3313,4).[19]

[18] The analysis, which was conducted using 1992 input-output relationships, was similar to the analysis reported in Robert Gaddie and Maureen Zoller, "New Stage of Process Price System Developed for the Producer Price Index," *Monthly Labor Review* (April 1988), pp. 3-16.

Table G
REVISED INDUSTRIAL CAPACITY STAGE-OF-PROCESS STRUCTURE

New with the 2002 Revision	Correspondence to Previous Structure
Total industry	Total industry
Stage-of-process groups:	Stage-of-process groups:
Crude processing	Most of mining and some basic manufacturing industries
Primary and semi-finished processing	Primary processing and utilities
Finished processing	Advanced processing and oil and gas well drilling

Note. The correspondences shown in the table are illustrative. See text for fuller discussion.

Primary and semifinished processing, which is the second new aggregate for capacity, combines the two middle SOP groups to obtain an aggregate that loosely corresponds to the previously published aggregate, primary processing. The new aggregate excludes the basic manufacturing industries involved in crude processing, as well as part of textile mill products (carpet and rug mills and curtain and linen mills), which is now included in the third SOP capacity aggregate. Primary and semifinished processing also includes utilities and portions of several 2-digit SIC industries included in the former advanced processing group.[20]

The third SOP capacity aggregate is finished processing, which generally corresponds to the previously published aggregate, advanced processing. In addition to the industries previously classified as advanced processing, this new group includes oil and gas well drilling (a mining industry, previously not included in the capacity SOP aggregates) and carpet and rug mills (previously included in primary processing). Finished processing excludes, however, those portions of 2-digit SIC industries included in the former advanced processing group but which have been moved to primary and semifinished processing.

Despite the many differences from the previously published manufacturing aggregates, the new aggregates are quite similar in cyclical profile. Chart 8 plots the rates of capacity utilization for these three stages of processing.

3. Lastly, given the availability of SOP classifications for all detailed industries in the IP index, new supplementary output indexes measuring industrial output by stage-of-process—formed by using gross value weights to combine the IP indexes in each stage-of-process group—are introduced for publication in the regular monthly release.

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[19] The crude processing capacity aggregate excludes a few other manufacturing industries that are classified as crude processors in the IP industry structure, but, because they are not included as individual series in the capacity system, they could not be included in the capacity aggregate for crude processing.

These include alumina refining (NAICS 331311), primary aluminum production (NAICS 331312), nonferrous metal (except aluminum) smelting and refining (NAICS 33141), wood container and pallet (NAICS 32192), support activities for printing (NAICS 32312), and lime (NAICS 32741).

[20] These include printing and related support activities (NAICS 3231); paints and adhesives (NAICS 3255); and newspaper, periodical, book, and directory publishers (NAICS 5111).

The primary and semifinished capacity aggregate includes turbine and turbine generator set units (NAICS 333611). This industry is included in finished processing in the SOP classification of IP industries, but the capacity system combines NAICS 333611 with other industries in NAICS 3336. The resulting aggregate consists mainly of industries classified as semifinished processors.

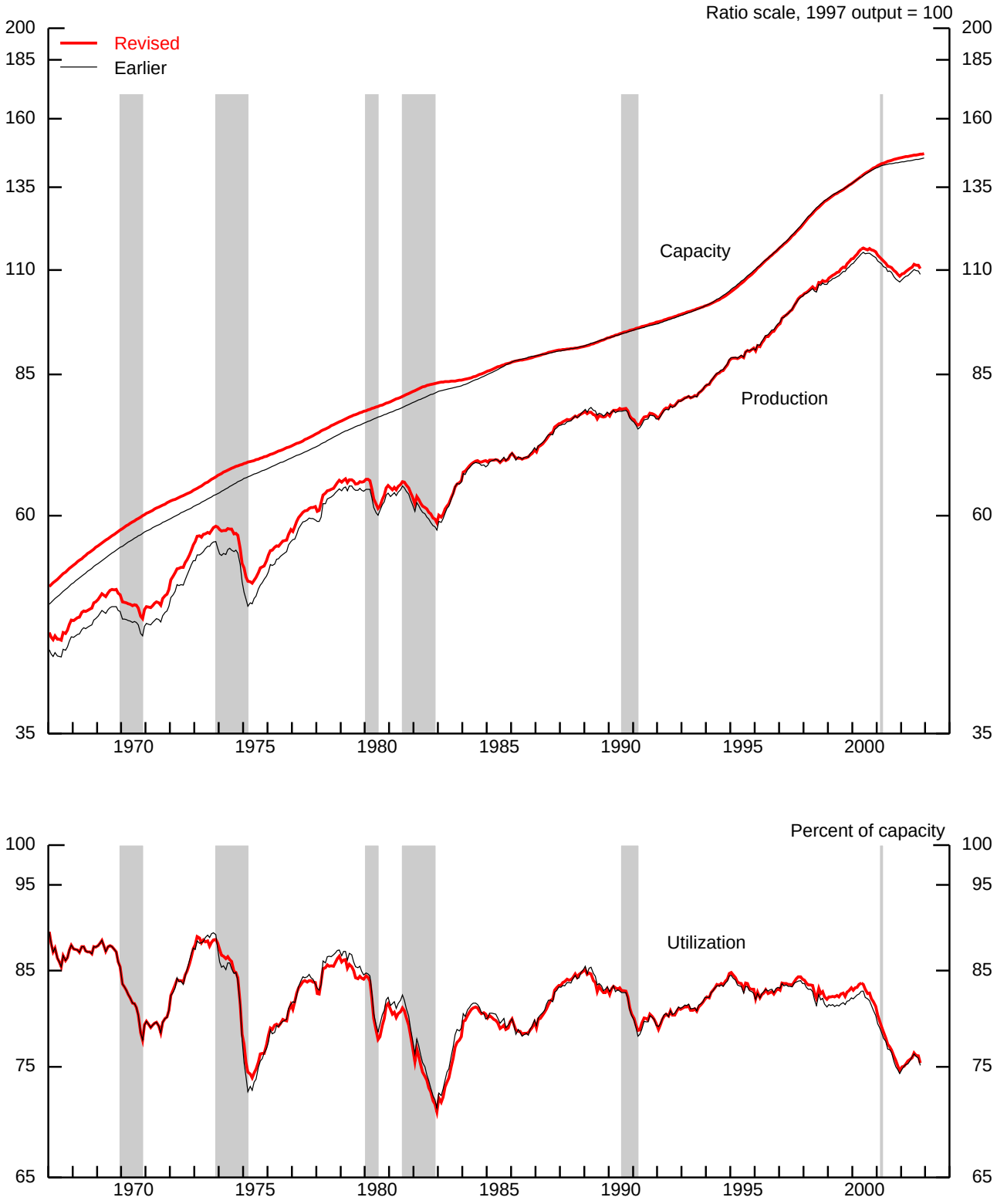
Data Availability and Publication Changes

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. The revised data will also be available through the STAT-USA web site of the Department of Commerce (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 will be 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.

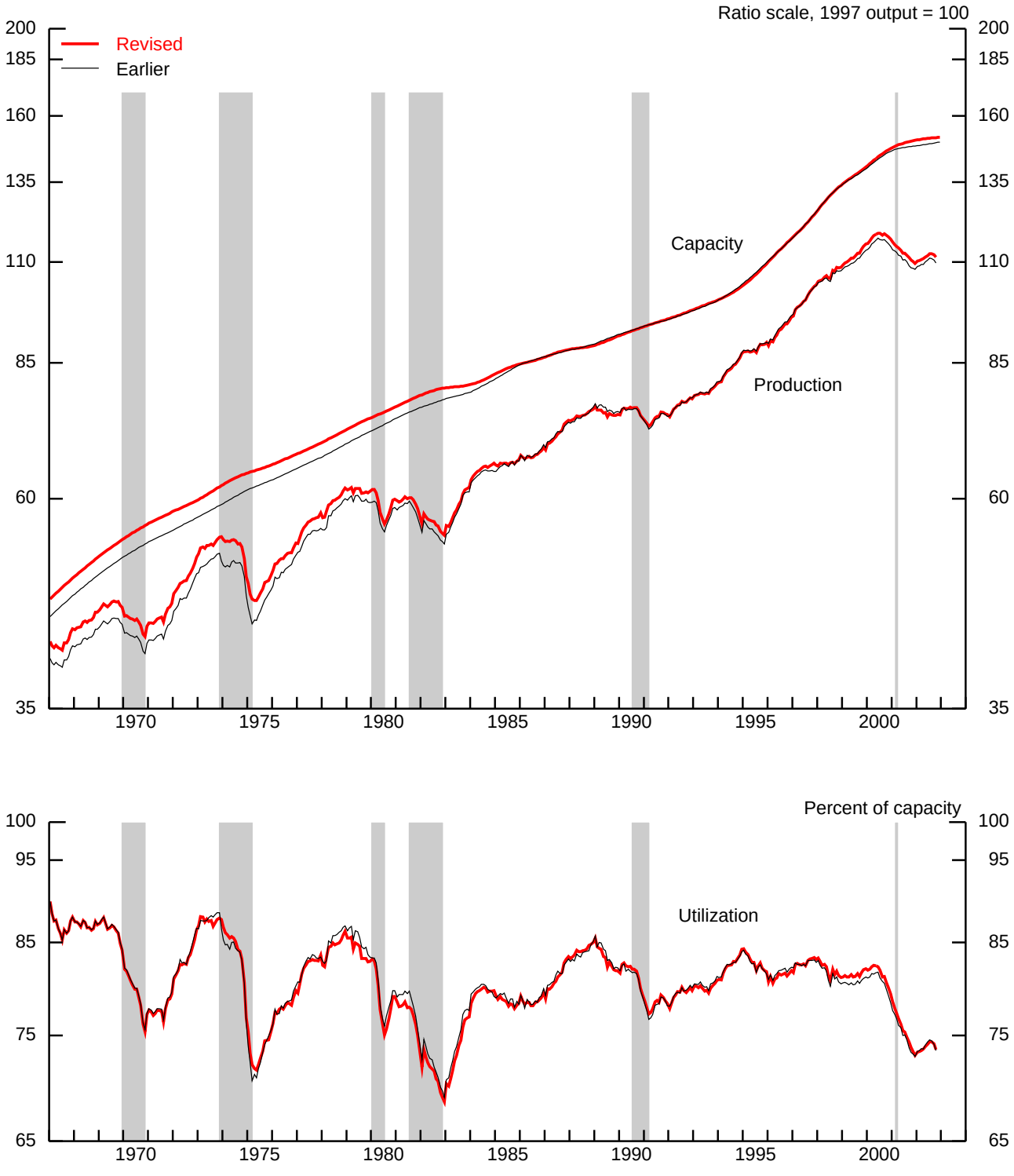
An expanded version of this release will be published in a forthcoming article in the Federal Reserve Bulletin.

1. Total industrial production, capacity, and utilization



Note: The shaded areas are periods of business recession as defined by the National Bureau of Economic Research (NBER). The line plotted at March 2001 is the most recent business cycle peak.

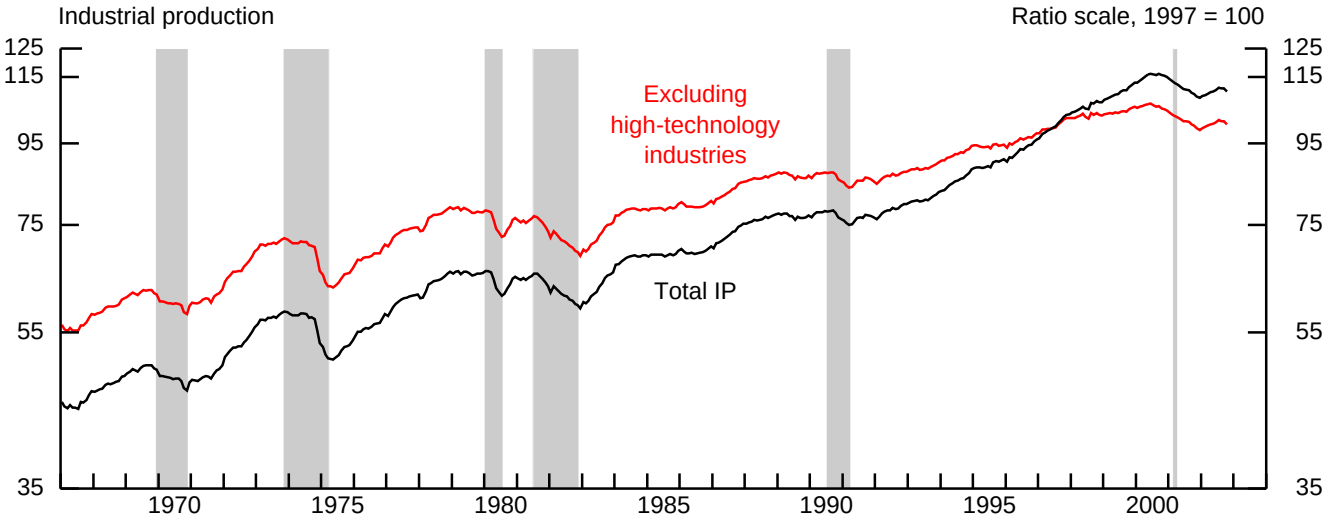
2. Manufacturing industrial production, capacity, and utilization

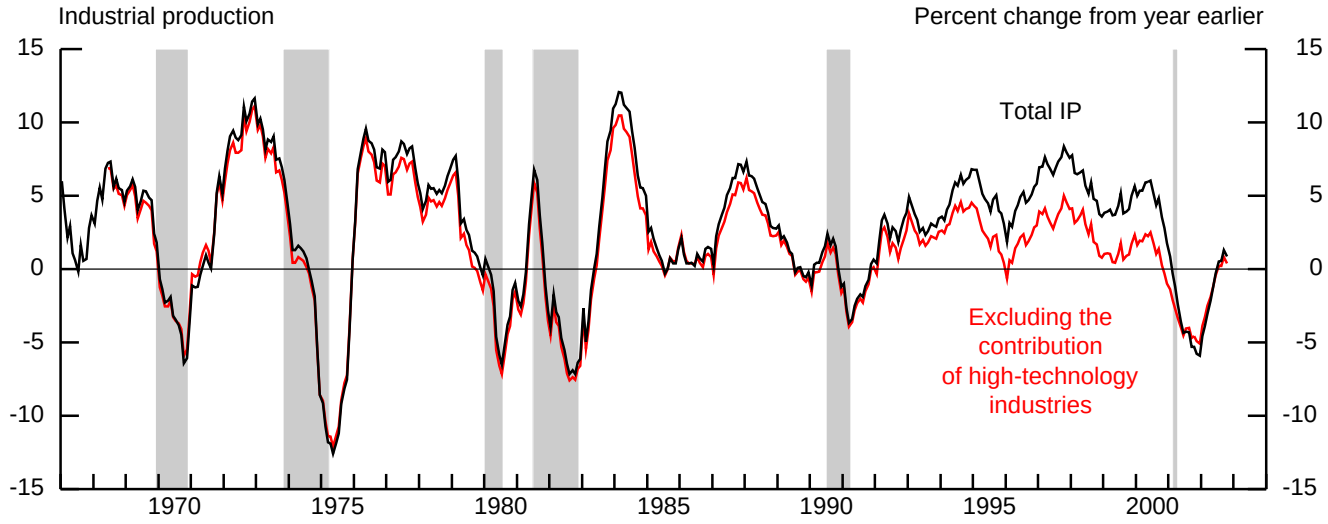


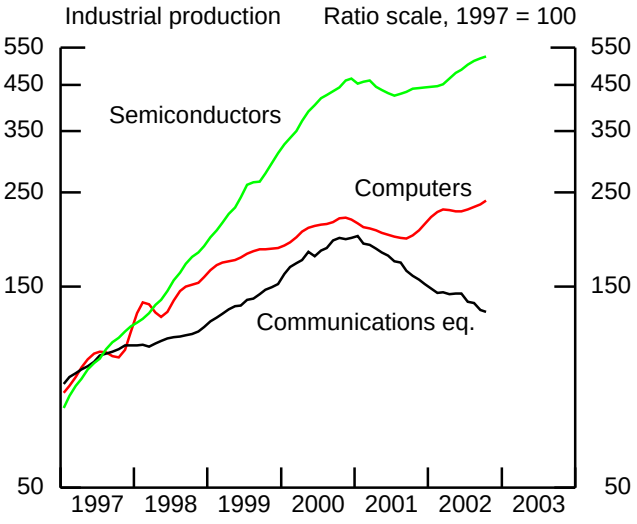
Notes: The shaded areas are periods of business recession as defined by the NBER. The line plotted at March 2001 is the most recent business cycle peak.

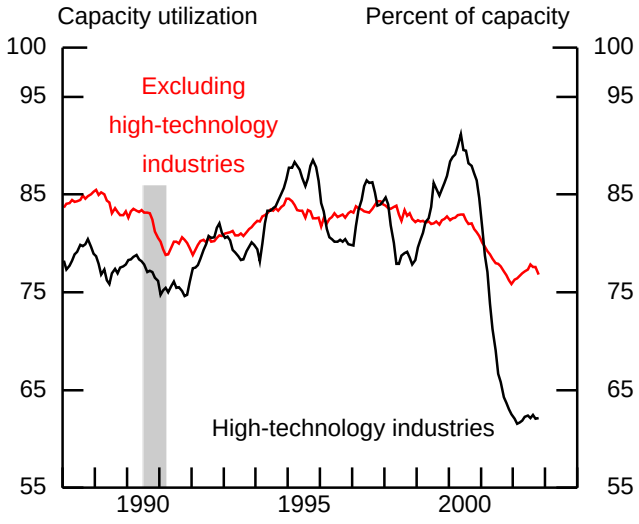
Manufacturing consists of those industries in the North American Industry Classification System, or NAICS, definition of manufacturing plus those industries--logging and newspaper, periodical, book and directory publishing--that have traditionally been considered to be manufacturing and included in the industrial sector.

3. Industrial production and capacity utilization



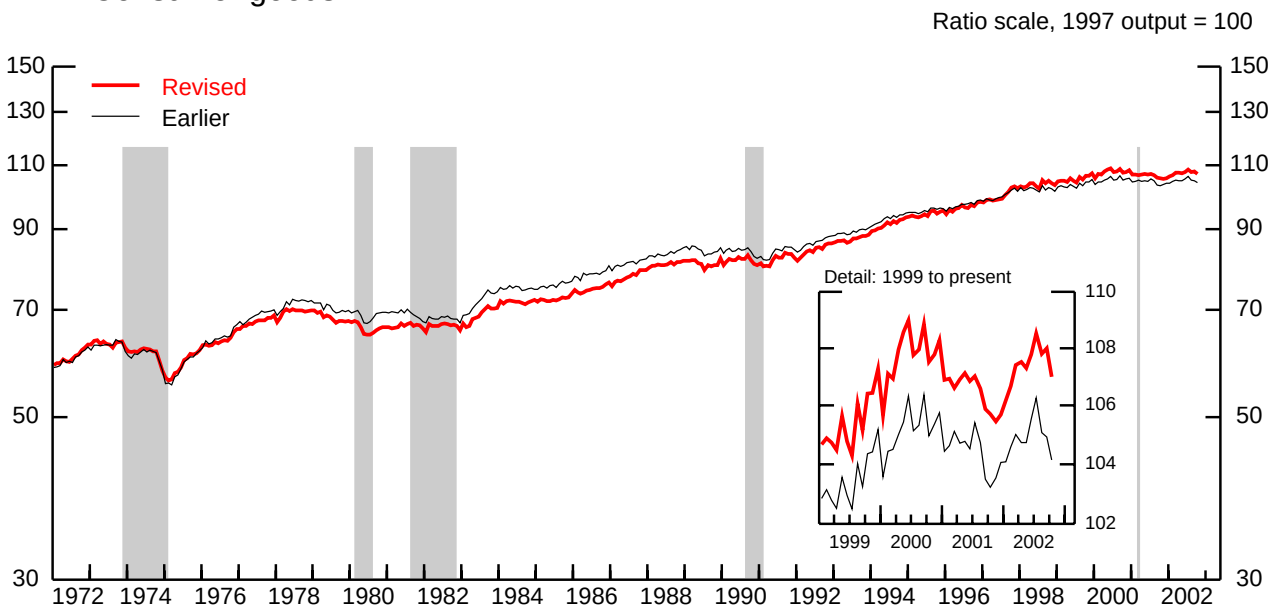




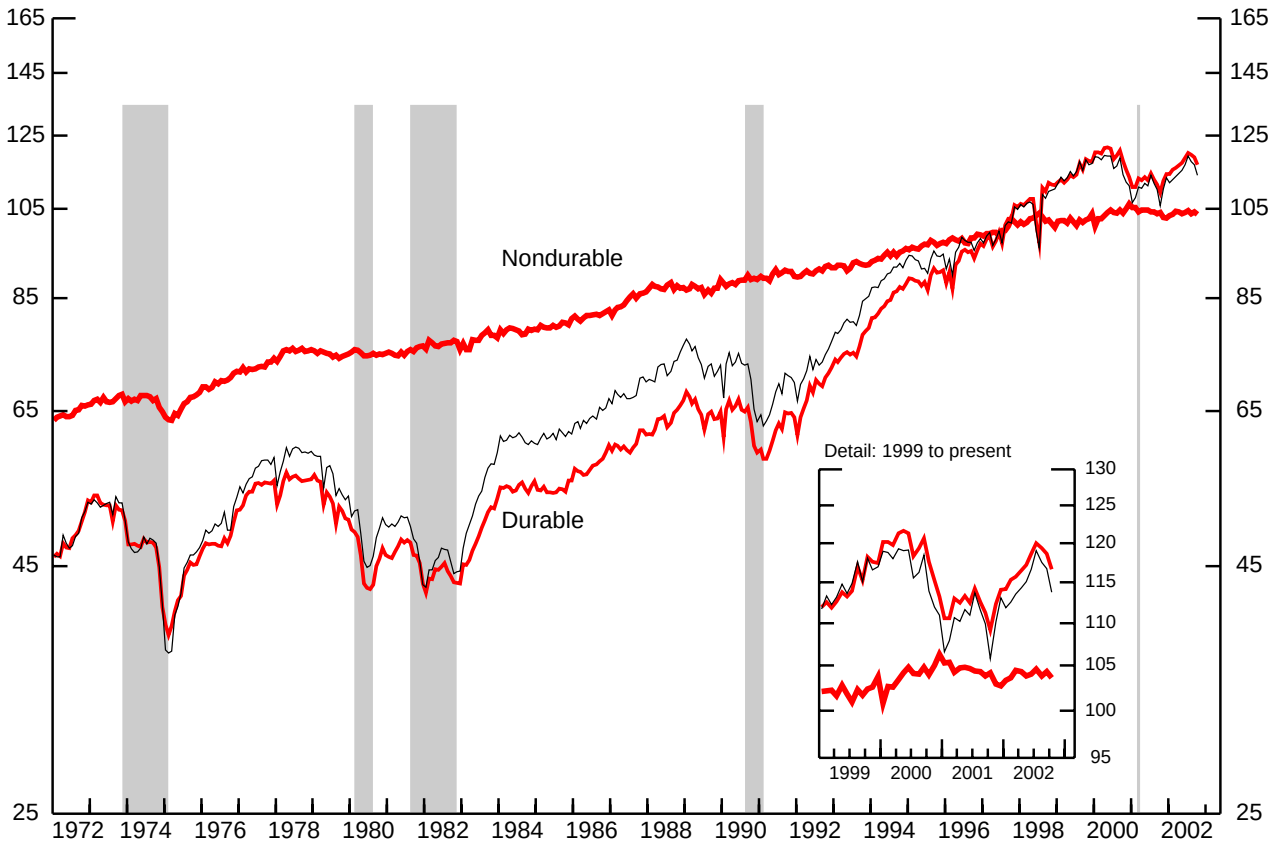


Notes: High-technology industries are defined as semiconductors and related electronic components (NAICS 334412-9), computers (NAICS 3341),and communications equipment (NAICS 3342).
The shaded areas are periods of business recession as defined by the NBER. The line plotted at March 2001 is the most recent business cycle peak.

4. Consumer goods

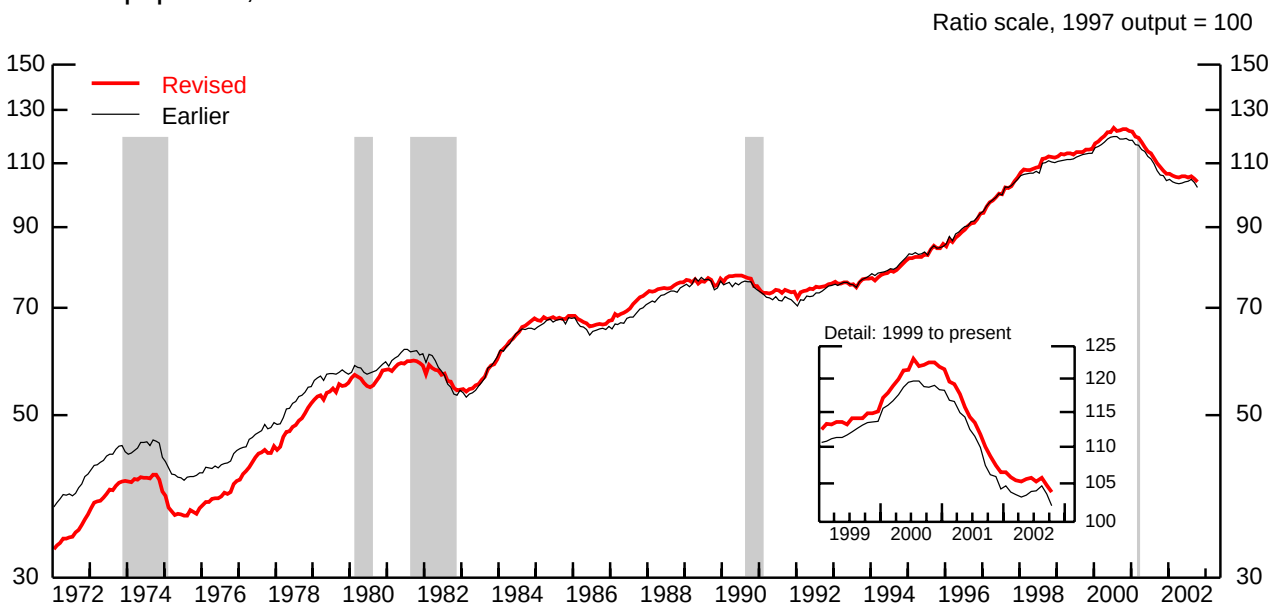


Components of consumer goods

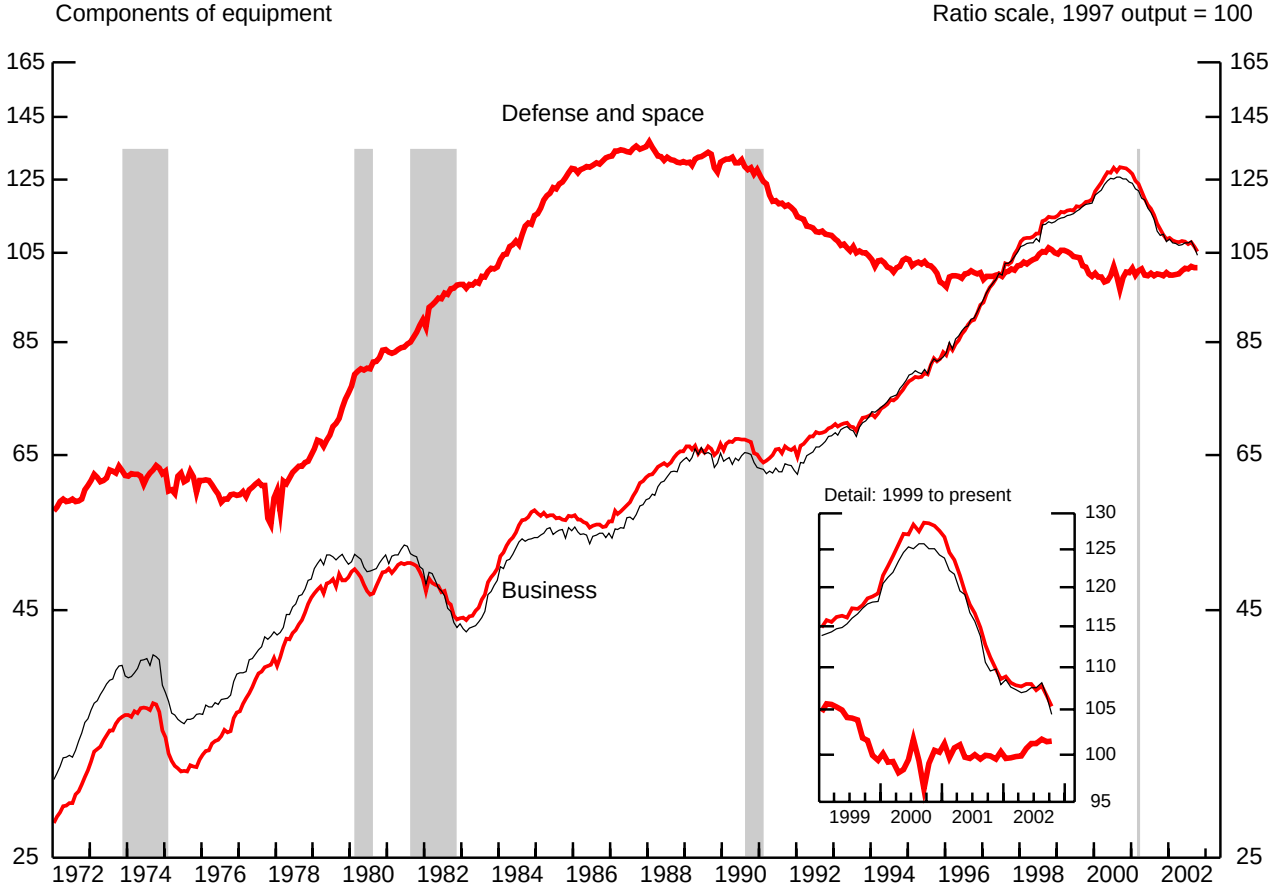


Note: The shaded areas represent periods of business recession as defined by the NBER. The line plotted at March 2001 is the most recent business cycle peak.

5. Equipment, total

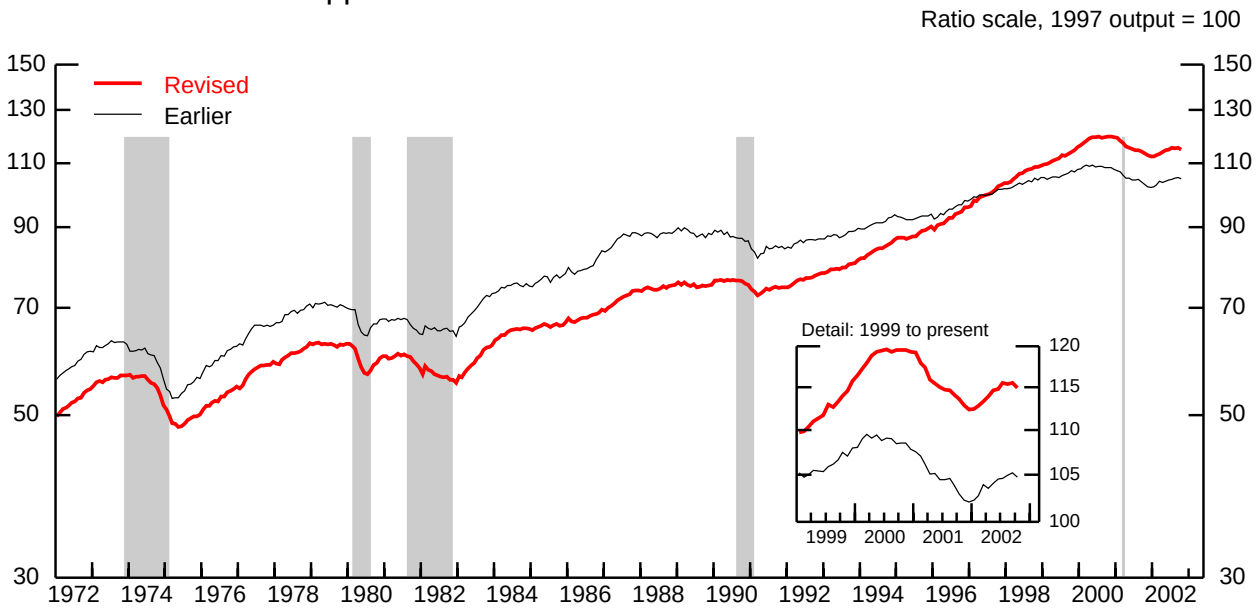


Components of equipment

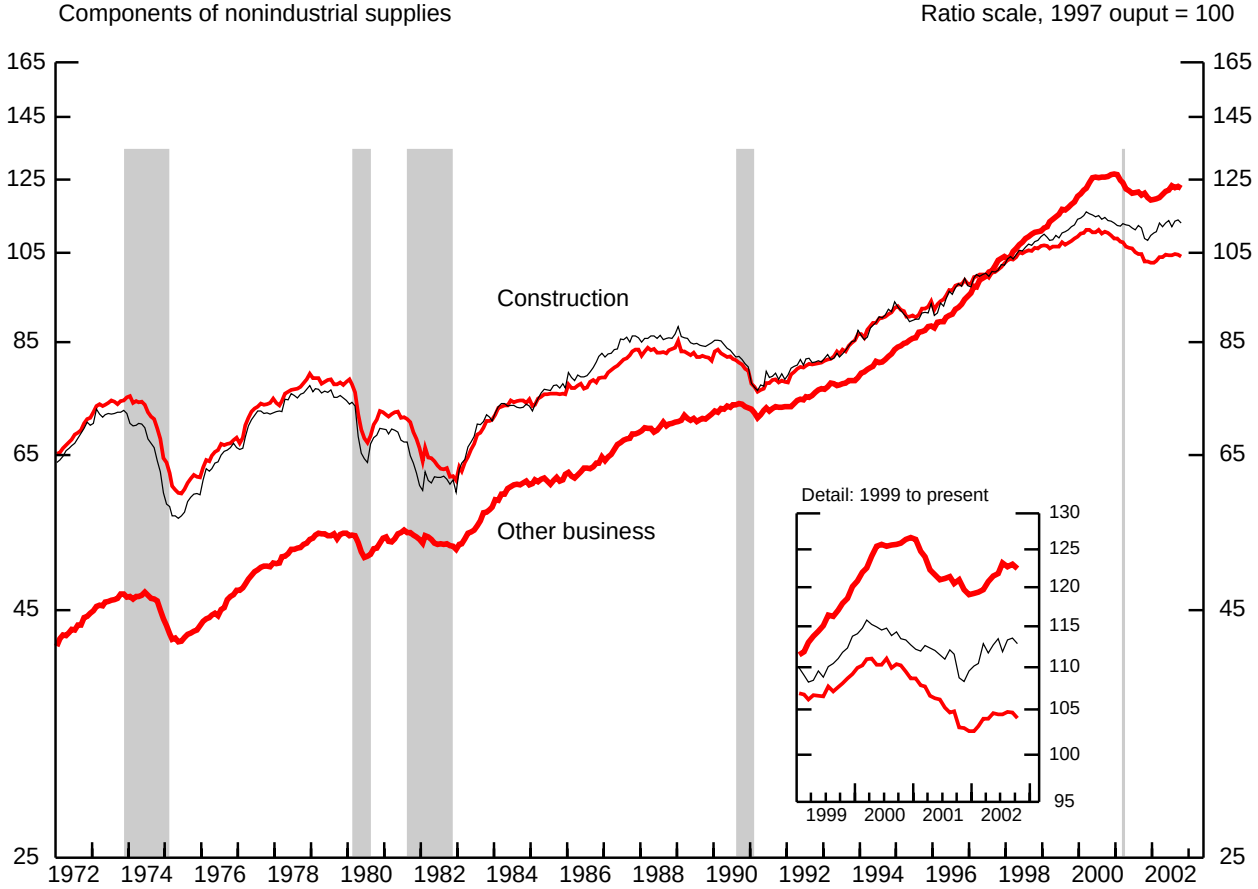


Note: The shaded areas represent periods of business recession as defined by the NBER. The line plotted at March 2001 is the most recent business cycle peak.

6. Nonindustrial supplies

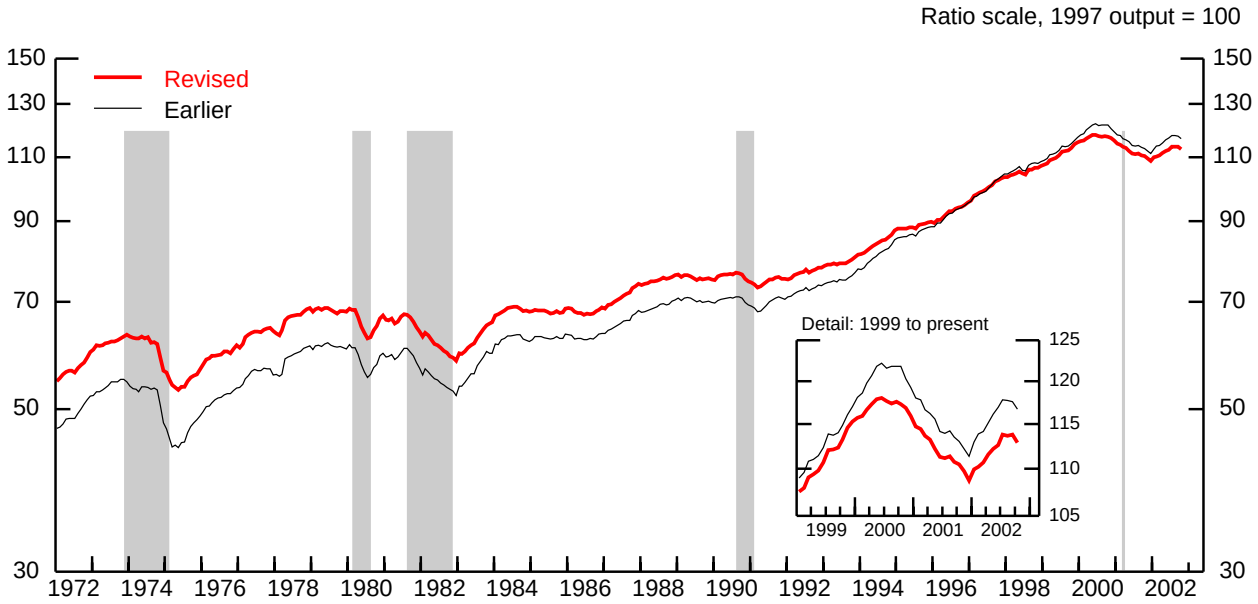


Components of nonindustrial supplies

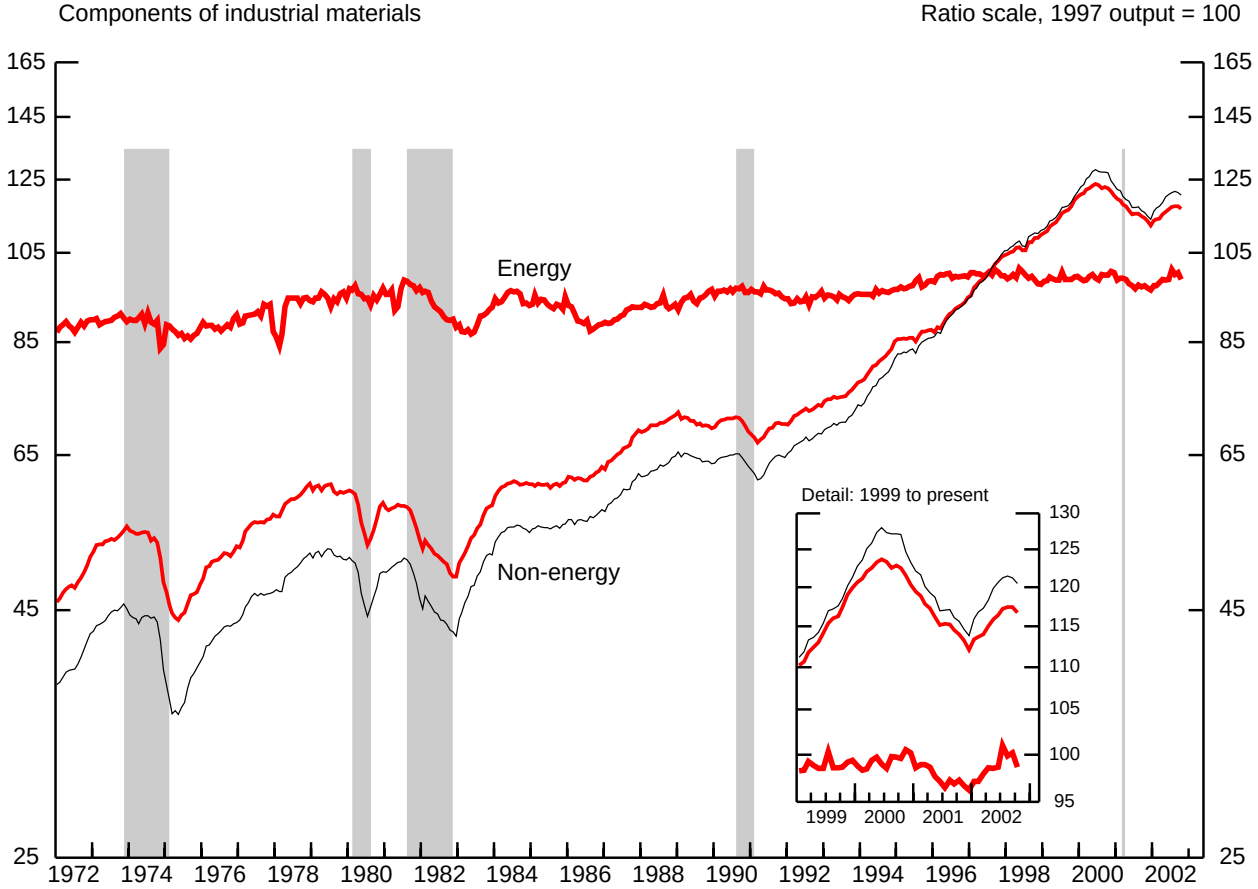


Note: The shaded areas represent periods of business recession as defined by the NBER. The line plotted at March 2001 is the most recent business cycle peak.

7. Industrial materials

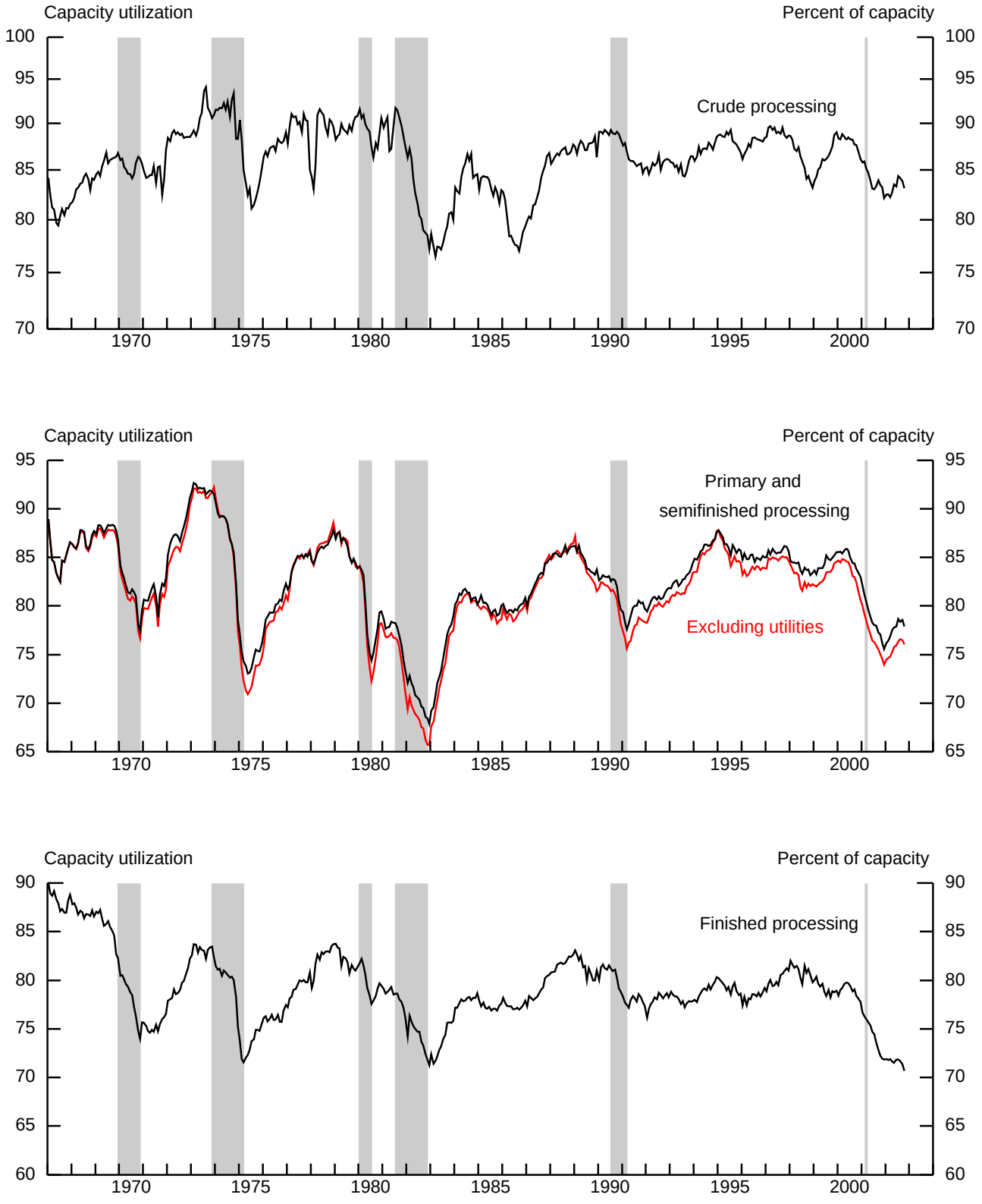


Components of industrial materials



Note: The shaded areas represent periods of business recession as defined by the NBER. The line plotted at March 2001 is the most recent business cycle peak.

8. Capacity utilization by stage of process



Note: The shaded areas are periods of business recession as defined by the NBER. The line plotted at March 2001 is the most recent business cycle peak.

Table 1A
INDUSTRIAL PRODUCTION: Total
Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual[1]
IP *(percent change)*																	
1972	2.4	1.0	.8	.9	.1	.2	.0	1.2	.7	1.2	1.1	1.4	18.2	7.9	5.1	14.1	9.6
1973	.8	1.4	.1	-.3	.7	.1	.4	-.3	.8	.6	.3	-.2	12.7	2.8	3.1	5.0	8.0
1974	-.5	-.4	.1	.0	.5	-.1	.0	-1.1	.1	-.5	-3.3	-3.6	-3.2	.9	-2.6	-15.3	-.5
1975	-1.1	-2.2	-1.1	-.1	-.3	.7	.7	1.1	1.2	.2	.2	1.3	-23.1	-5.9	9.3	8.2	-9.1
1976	1.4	1.2	.0	.7	.3	.0	.6	.7	.1	.1	1.5	1.1	13.3	5.5	4.7	7.4	7.6
1977	-.5	1.2	1.3	.9	.7	.6	.4	.1	.4	.2	.1	.2	8.5	12.0	5.0	2.8	7.5
1978	-1.1	.2	1.9	2.0	.4	.6	.0	.3	.2	.7	.7	.6	-.8	16.1	3.6	6.9	5.4
1979	-.5	.5	.3	-.9	.7	-.1	-.3	-.7	.1	.5	.0	.1	2.2	-.3	-2.2	1.2	2.9
1980	.6	.0	-.3	-2.0	-2.4	-1.3	-1.0	.5	1.7	1.1	1.8	.6	2.2	-16.0	-7.0	16.2	-2.7
1981	-.6	-.4	.5	-.5	.7	.5	.7	-.1	-.7	-.7	-1.1	-1.2	1.1	1.4	4.1	-9.0	1.2
1982	-1.7	1.9	-.7	-.8	-.8	-.4	-.3	-.8	-.4	-1.0	-.3	-.9	-7.2	-5.3	-5.8	-7.9	-5.2
1983	1.9	-.5	.7	1.3	.7	.6	1.5	1.1	1.5	.7	.4	.5	4.5	9.8	14.5	10.4	2.6
1984	2.1	.2	.7	.6	.5	.3	.3	.1	-.3	-.1	.3	.0	12.6	6.6	2.7	.0	9.0
1985	-.3	.5	.0	.0	.1	-.1	-.6	.4	.4	-.4	.3	1.0	.8	.6	-.7	2.2	1.1
1986	.5	-.6	-.6	.0	.1	-.3	.3	.1	.2	.4	.5	.8	2.6	-2.6	.9	4.9	.9
1987	-.6	1.3	.2	.6	.6	.6	.7	.7	.2	1.3	.4	.4	4.5	7.1	7.6	8.8	4.8
1988	.1	.4	.2	.4	-.1	.1	.3	.6	-.3	.5	.3	.4	3.4	2.7	2.4	2.9	4.8
1989	.3	-.5	.4	.0	-.7	-.1	-1.0	.9	-.3	-.1	.2	.7	1.8	-1.5	-3.0	1.3	.8
1990	-.6	.9	.5	.0	.0	.4	-.2	.1	.1	-.6	-1.3	-.6	2.9	3.2	.8	-6.0	.8
1991	-.4	-.7	-.5	.2	1.0	.9	.1	-.1	.9	-.2	-.2	-.3	-7.3	2.3	5.2	.6	-1.7
1992	-.6	.8	.8	.6	.4	-.1	.8	-.4	.2	.7	.5	.1	-.5	6.8	3.0	4.1	2.7
1993	.4	.3	.2	.2	-.4	.2	.4	-.1	.7	.5	.5	.6	3.5	1.0	2.1	5.9	3.3
1994	.5	.1	.9	.6	.6	.7	.2	.5	.1	.8	.6	1.1	5.7	7.4	4.9	7.6	5.3
1995	.5	.1	.0	-.1	.3	.4	-.4	1.4	.4	-.2	.4	.4	6.0	.8	4.0	3.7	4.8
1996	-.8	1.4	-.2	.9	.7	.9	.0	.6	.6	.1	.9	.6	2.0	8.0	5.7	6.4	4.4
1997	.3	1.4	.4	.5	.4	.5	.4	1.0	.9	.8	.6	.3	8.6	6.5	7.6	9.2	7.3
1998	.5	.3	.3	.6	.5	-.5	-.1	1.8	-.2	.7	-.3	.1	4.5	4.2	3.3	4.0	5.6
1999	.7	.3	.4	.2	.5	.1	.7	.5	-.1	.9	.6	.7	4.2	4.1	4.9	6.5	4.3
2000	.1	.7	.4	.7	.6	.2	-.2	-.2	.3	-.4	-.1	-.3	5.4	7.1	.2	-1.6	4.7
2001	-.8	-.5	-.5	-.5	-.6	-.6	-.1	-.3	-.7	-.4	-.6	-.5	-6.1	-6.1	-4.6	-5.8	-3.5
2002	.6	.2	.4	.4	.3	.3	.7	-.2	.0	-.8			1.4	4.4	3.5		
IP *(1997=100)*																	
1972	51.2	51.7	52.1	52.6	52.6	52.8	52.8	53.4	53.8	54.4	55.1	55.8	51.7	52.7	53.3	55.1	53.2
1973	56.2	57.0	57.1	56.9	57.3	57.3	57.6	57.4	57.8	58.2	58.4	58.3	56.8	57.2	57.6	58.3	57.5
1974	58.0	57.7	57.8	57.8	58.1	58.0	58.0	57.4	57.4	57.1	55.3	53.3	57.8	58.0	57.6	55.2	57.2
1975	52.7	51.5	51.0	50.9	50.8	51.1	51.5	52.1	52.7	52.8	53.0	53.6	51.7	51.0	52.1	53.1	52.0
1976	54.4	55.0	55.0	55.4	55.6	55.6	55.9	56.3	56.4	56.5	57.3	57.9	54.8	55.6	56.2	57.2	56.0
1977	57.7	58.4	59.2	59.7	60.1	60.5	60.7	60.7	61.0	61.2	61.2	61.3	58.4	60.1	60.8	61.2	60.1
1978	60.7	60.8	61.9	63.1	63.4	63.8	63.8	64.0	64.2	64.6	65.1	65.5	61.1	63.4	64.0	65.1	63.4
1979	65.2	65.5	65.7	65.1	65.6	65.5	65.3	64.8	64.9	65.2	65.2	65.2	65.4	65.4	65.0	65.2	65.3
1980	65.6	65.6	65.4	64.1	62.5	61.7	61.1	61.4	62.4	63.1	64.3	64.6	65.6	62.8	61.6	64.0	63.5
1981	64.2	64.0	64.3	64.0	64.4	64.7	65.2	65.1	64.7	64.2	63.5	62.8	64.2	64.4	65.0	63.5	64.3
1982	61.7	62.9	62.4	61.9	61.4	61.2	61.0	60.5	60.2	59.6	59.5	58.9	62.3	61.5	60.6	59.3	60.9
1983	60.1	59.8	60.2	61.0	61.4	61.8	62.8	63.4	64.4	64.8	65.1	65.4	60.0	61.4	63.5	65.1	62.5
1984	66.8	67.0	67.4	67.8	68.2	68.4	68.6	68.7	68.5	68.4	68.7	68.7	67.1	68.2	68.6	68.6	68.1
1985	68.5	68.8	68.8	68.8	68.9	68.8	68.4	68.7	69.0	68.7	68.9	69.6	68.7	68.8	68.7	69.1	68.8
1986	69.9	69.5	69.1	69.1	69.2	69.0	69.2	69.2	69.4	69.7	70.0	70.6	69.5	69.1	69.2	70.1	69.5
1987	70.2	71.1	71.2	71.7	72.1	72.5	73.0	73.5	73.7	74.7	74.9	75.3	70.8	72.1	73.4	75.0	72.8
1988	75.3	75.6	75.8	76.1	76.0	76.1	76.3	76.8	76.5	76.9	77.1	77.3	75.6	76.1	76.5	77.1	76.3
1989	77.6	77.2	77.5	77.5	77.0	76.9	76.2	76.8	76.6	76.5	76.6	77.2	77.4	77.1	76.5	76.8	77.0
1990	76.7	77.4	77.8	77.8	77.8	78.1	78.0	78.1	78.2	77.7	76.7	76.2	77.3	77.9	78.1	76.9	77.6
1991	76.0	75.4	75.0	75.2	75.9	76.6	76.7	76.6	77.3	77.1	77.0	76.7	75.4	75.9	76.8	77.0	76.3
1992	76.2	76.9	77.5	78.0	78.3	78.2	78.9	78.6	78.7	79.2	79.6	79.7	76.9	78.1	78.7	79.5	78.3
1993	80.0	80.2	80.4	80.6	80.3	80.4	80.7	80.6	81.2	81.6	82.0	82.4	80.2	80.4	80.8	82.0	80.9
1994	82.9	82.9	83.6	84.1	84.6	85.2	85.3	85.8	85.9	86.6	87.1	88.0	83.1	84.6	85.7	87.2	85.2
1995	88.5	88.5	88.5	88.4	88.7	89.0	88.6	89.8	90.2	90.0	90.4	90.8	88.5	88.7	89.6	90.4	89.3
1996	90.1	91.3	91.1	91.9	92.5	93.4	93.3	93.9	94.5	94.6	95.5	96.1	90.8	92.6	93.9	95.4	93.2
1997	96.3	97.7	98.1	98.5	98.9	99.4	99.8	100.8	101.7	102.5	103.1	103.4	97.4	98.9	100.7	103.0	100.0
1998	103.8	104.1	104.4	105.0	105.5	105.0	104.9	106.7	106.6	107.3	107.0	107.1	104.1	105.2	106.1	107.1	105.6
1999	107.8	108.2	108.6	108.9	109.4	109.6	110.3	110.8	110.7	111.7	112.3	113.1	108.2	109.3	110.6	112.4	110.1
2000	113.2	113.9	114.4	115.3	116.0	116.2	115.9	115.7	116.1	115.6	115.5	115.1	113.9	115.8	115.9	115.4	115.3
2001	114.2	113.6	113.1	112.5	111.8	111.1	111.0	110.7	109.9	109.5	108.8	108.3	113.6	111.8	110.5	108.9	111.2
2002	109.0	109.2	109.6	110.1	110.4	110.8	111.6	111.3	111.3	110.4			109.3	110.5	111.4		

NOTE Estimates from August 2002 through October 2002 are subject to further revision in the upcoming monthly releases.
1. Annual averages of industrial production are calculated from not seasonally adjusted indexes.

Table 1B
CAPACITY AND UTILIZATION: Total
Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual[1]
Capacity *(percent of 1997 output)*																	
1972	62.2	62.3	62.5	62.6	62.7	62.9	63.0	63.2	63.3	63.5	63.7	63.8	62.3	62.7	63.2	63.7	63.0
1973	64.0	64.2	64.4	64.6	64.8	65.0	65.2	65.4	65.6	65.8	66.0	66.2	64.2	64.8	65.4	66.0	65.1
1974	66.4	66.6	66.8	67.0	67.1	67.3	67.4	67.6	67.7	67.9	68.0	68.1	66.6	67.1	67.6	68.0	67.3
1975	68.2	68.3	68.4	68.5	68.6	68.8	68.9	69.0	69.1	69.2	69.4	69.5	68.3	68.7	69.0	69.4	68.8
1976	69.6	69.8	69.9	70.0	70.2	70.3	70.5	70.6	70.8	70.9	71.1	71.2	69.8	70.2	70.6	71.1	70.4
1977	71.4	71.5	71.7	71.8	72.0	72.2	72.4	72.5	72.7	72.9	73.1	73.3	71.5	72.0	72.5	73.1	72.3
1978	73.5	73.7	73.9	74.1	74.3	74.5	74.7	74.9	75.1	75.3	75.5	75.6	73.7	74.3	74.9	75.5	74.6
1979	75.8	76.0	76.2	76.3	76.5	76.7	76.9	77.0	77.2	77.3	77.5	77.6	76.0	76.5	77.0	77.5	76.7
1980	77.7	77.9	78.0	78.2	78.3	78.4	78.6	78.7	78.9	79.0	79.2	79.3	77.9	78.3	78.7	79.2	78.5
1981	79.5	79.7	79.8	80.0	80.2	80.4	80.6	80.7	80.9	81.1	81.3	81.5	79.7	80.2	80.7	81.3	80.5
1982	81.7	81.9	82.1	82.2	82.4	82.6	82.7	82.9	83.0	83.1	83.2	83.3	81.9	82.4	82.8	83.2	82.6
1983	83.3	83.4	83.4	83.5	83.5	83.6	83.6	83.6	83.7	83.7	83.8	83.9	83.4	83.5	83.6	83.8	83.6
1984	83.9	84.0	84.1	84.2	84.4	84.5	84.7	84.8	85.0	85.2	85.3	85.5	84.0	84.4	84.8	85.3	84.6
1985	85.7	85.9	86.1	86.3	86.4	86.6	86.8	87.0	87.1	87.3	87.4	87.5	85.9	86.4	87.0	87.4	86.7
1986	87.6	87.8	87.9	88.0	88.1	88.1	88.2	88.3	88.4	88.6	88.7	88.8	87.8	88.1	88.3	88.7	88.2
1987	88.9	89.1	89.2	89.3	89.5	89.6	89.8	89.9	90.0	90.1	90.2	90.3	89.1	89.5	89.9	90.2	89.7
1988	90.4	90.4	90.5	90.5	90.6	90.6	90.7	90.7	90.8	90.9	91.0	91.1	90.4	90.6	90.7	91.0	90.7
1989	91.2	91.3	91.4	91.6	91.7	91.9	92.1	92.3	92.4	92.6	92.8	93.0	91.3	91.7	92.3	92.8	92.0
1990	93.1	93.3	93.5	93.7	93.8	94.0	94.2	94.3	94.5	94.6	94.8	94.9	93.3	93.8	94.3	94.8	94.1
1991	95.1	95.2	95.4	95.5	95.7	95.8	95.9	96.1	96.2	96.4	96.5	96.7	95.2	95.7	96.1	96.5	95.9
1992	96.8	97.0	97.1	97.3	97.4	97.6	97.8	97.9	98.1	98.3	98.4	98.6	97.0	97.4	97.9	98.4	97.7
1993	98.8	99.0	99.1	99.3	99.5	99.6	99.8	100.0	100.1	100.3	100.5	100.7	99.0	99.5	100.0	100.5	99.7
1994	100.9	101.1	101.3	101.5	101.8	102.0	102.3	102.6	102.9	103.2	103.6	104.0	101.1	101.8	102.6	103.6	102.3
1995	104.3	104.7	105.2	105.6	106.0	106.5	107.0	107.4	107.9	108.4	108.9	109.5	104.7	106.0	107.4	108.9	106.8
1996	110.0	110.5	111.0	111.6	112.1	112.6	113.2	113.7	114.2	114.7	115.2	115.8	110.5	112.1	113.7	115.2	112.9
1997	116.3	116.8	117.3	117.9	118.4	119.0	119.6	120.3	120.9	121.6	122.3	123.0	116.8	118.5	120.3	122.3	119.5
1998	123.7	124.4	125.2	125.9	126.6	127.3	127.9	128.6	129.1	129.7	130.3	130.8	124.4	126.6	128.5	130.3	127.5
1999	131.3	131.7	132.2	132.6	133.0	133.4	133.8	134.3	134.7	135.2	135.6	136.1	131.7	133.0	134.3	135.6	133.7
2000	136.6	137.1	137.7	138.2	138.7	139.2	139.7	140.2	140.7	141.1	141.5	142.0	137.1	138.7	140.2	141.5	139.4
2001	142.3	142.7	143.0	143.4	143.6	143.9	144.1	144.4	144.6	144.8	145.0	145.1	142.7	143.6	144.4	145.0	143.9
2002	145.3	145.4	145.6	145.7	145.9	146.0	146.1	146.2	146.4	146.5			145.4	145.9	146.2		
Utilization *(percent)*																	
1972	82.3	82.9	83.4	84.0	83.9	83.9	83.7	84.5	84.9	85.8	86.5	87.4	82.9	83.9	84.4	86.6	84.4
1973	87.9	88.8	88.6	88.1	88.4	88.2	88.3	87.7	88.2	88.5	88.5	88.0	88.4	88.2	88.1	88.3	88.3
1974	87.3	86.7	86.6	86.3	86.5	86.2	86.0	84.9	84.8	84.2	81.3	78.3	86.9	86.4	85.2	81.3	84.9
1975	77.2	75.4	74.5	74.3	74.0	74.4	74.8	75.5	76.3	76.3	76.3	77.2	75.7	74.2	75.5	76.6	75.5
1976	78.1	78.9	78.8	79.2	79.3	79.1	79.3	79.8	79.7	79.6	80.6	81.3	78.6	79.2	79.6	80.5	79.5
1977	80.8	81.6	82.5	83.1	83.5	83.8	83.9	83.8	83.9	83.9	83.7	83.7	81.7	83.4	83.9	83.8	83.2
1978	82.5	82.5	83.8	85.2	85.3	85.6	85.4	85.5	85.5	85.9	86.3	86.6	82.9	85.4	85.5	86.3	85.0
1979	86.0	86.2	86.2	85.2	85.7	85.4	85.0	84.2	84.1	84.3	84.1	84.1	86.1	85.4	84.4	84.2	85.0
1980	84.4	84.3	83.8	82.0	79.9	78.6	77.7	78.0	79.2	79.9	81.2	81.4	84.2	80.2	78.3	80.8	80.9
1981	80.8	80.3	80.5	79.9	80.4	80.6	81.0	80.7	80.0	79.2	78.1	77.0	80.5	80.3	80.5	78.1	79.9
1982	75.5	76.8	76.0	75.2	74.5	74.1	73.7	73.0	72.6	71.8	71.5	70.8	76.1	74.6	73.1	71.3	73.8
1983	72.1	71.6	72.1	73.1	73.6	74.0	75.1	75.9	76.9	77.4	77.7	78.0	71.9	73.5	75.9	77.7	74.8
1984	79.6	79.7	80.2	80.5	80.8	81.0	81.1	81.0	80.6	80.4	80.5	80.3	79.8	80.8	80.9	80.4	80.5
1985	79.9	80.2	80.0	79.8	79.7	79.4	78.8	79.0	79.2	78.8	78.9	79.5	80.0	79.6	79.0	79.1	79.4
1986	79.8	79.2	78.7	78.6	78.5	78.2	78.4	78.3	78.4	78.7	78.9	79.5	79.2	78.5	78.4	79.0	78.8
1987	78.9	79.8	79.9	80.2	80.5	80.9	81.3	81.8	81.9	82.9	83.1	83.4	79.5	80.5	81.6	83.1	81.2
1988	83.4	83.7	83.8	84.0	83.9	84.0	84.2	84.6	84.3	84.6	84.7	84.9	83.6	84.0	84.4	84.7	84.2
1989	85.1	84.6	84.7	84.6	83.9	83.7	82.7	83.3	82.9	82.6	82.6	83.0	84.8	84.1	82.9	82.7	83.6
1990	82.4	83.0	83.2	83.1	83.0	83.1	82.8	82.8	82.8	82.1	80.9	80.3	82.9	83.1	82.8	81.1	82.5
1991	79.9	79.2	78.6	78.7	79.4	79.9	79.9	79.7	80.3	80.0	79.8	79.4	79.2	79.3	80.0	79.7	79.6
1992	78.7	79.2	79.8	80.1	80.3	80.1	80.6	80.2	80.2	80.6	80.9	80.8	79.3	80.2	80.4	80.8	80.1
1993	81.0	81.1	81.1	81.1	80.7	80.7	80.9	80.6	81.0	81.3	81.6	81.9	81.1	80.8	80.9	81.6	81.1
1994	82.1	82.0	82.6	82.9	83.1	83.5	83.4	83.6	83.4	83.8	84.1	84.7	82.2	83.1	83.5	84.2	83.3
1995	84.8	84.5	84.2	83.7	83.6	83.6	82.9	83.6	83.6	83.0	83.0	82.9	84.5	83.6	83.4	83.0	83.6
1996	81.9	82.6	82.0	82.4	82.5	82.9	82.5	82.6	82.7	82.4	82.8	83.0	82.2	82.6	82.6	82.8	82.5
1997	82.9	83.6	83.6	83.6	83.5	83.5	83.4	83.8	84.1	84.3	84.3	84.0	83.4	83.5	83.8	84.2	83.7
1998	83.9	83.6	83.4	83.4	83.4	82.5	82.0	83.0	82.5	82.7	82.1	81.9	83.7	83.1	82.5	82.2	82.9
1999	82.1	82.1	82.2	82.1	82.3	82.1	82.4	82.5	82.2	82.6	82.8	83.1	82.1	82.2	82.4	82.9	82.4
2000	82.9	83.1	83.1	83.4	83.6	83.5	83.0	82.5	82.5	81.9	81.6	81.1	83.0	83.5	82.7	81.6	82.7
2001	80.2	79.6	79.0	78.5	77.9	77.2	77.0	76.7	76.0	75.6	75.1	74.6	79.6	77.9	76.6	75.1	77.3
2002	75.0	75.1	75.3	75.6	75.7	75.9	76.4	76.1	76.1	75.4			75.1	75.7	76.2		

NOTE Estimates from August 2002 through October 2002 are subject to further revision in the upcoming monthly releases.
1. Annual averages of industrial production are calculated from not seasonally adjusted indexes.

Table 2A
INDUSTRIAL PRODUCTION: Manufacturing[1]
Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual[2]
IP *(percent change)*																	
1972	2.6	.8	.8	1.0	.2	.4	.2	1.1	.7	1.3	1.2	1.6	17.6	8.7	6.0	15.2	10.4
1973	.8	1.5	.2	-.3	.7	.0	.4	-.5	.8	.8	.6	.1	14.5	3.3	2.6	6.4	8.9
1974	-.7	-.4	.0	-.1	.5	.1	-.2	-.9	.1	-.8	-2.9	-4.5	-2.9	.3	-2.3	-16.7	-.4
1975	-1.7	-2.7	-1.3	-.4	.0	.8	1.0	1.2	1.6	.3	.2	1.4	-27.6	-7.3	12.3	9.7	-10.6
1976	1.3	1.7	.1	.8	.4	.0	.7	.7	.0	.1	1.3	1.2	14.6	7.2	5.5	6.4	8.8
1977	-.1	1.5	1.6	1.1	.7	.7	.3	.5	.1	.2	.2	1.1	10.9	14.0	5.5	3.9	8.6
1978	-1.2	.1	1.7	1.5	.4	.8	.0	.4	.4	.7	.9	.8	.9	13.3	4.4	8.2	6.0
1979	-.6	.3	.4	-1.3	1.1	.1	.0	-1.4	.2	.2	-.2	.3	2.3	-1.0	-1.6	-.5	3.0
1980	.5	-.1	-.8	-2.0	-3.0	-1.6	-1.3	1.0	1.7	1.6	1.9	.3	1.4	-18.7	-8.4	19.3	-3.8
1981	-.4	-.4	.3	.5	.6	-.5	.3	.0	-.6	-1.1	-1.2	-1.7	.8	3.2	-.1	-10.6	1.0
1982	-2.2	2.6	-.8	-.6	-.3	-.2	-.1	-.9	-.3	-1.3	-.6	-.5	-8.8	-2.1	-3.9	-9.0	-5.5
1983	2.5	-.2	1.0	1.2	1.3	.8	1.5	.7	1.8	1.1	.3	.3	9.0	12.5	15.0	12.1	4.6
1984	2.0	.8	.8	.5	.3	.4	.5	.1	-.3	.4	.3	.4	13.0	6.7	3.7	2.2	9.9
1985	-.4	-.2	.7	-.2	.1	.1	-.4	.5	.1	-.4	.6	.4	-.1	1.4	.1	1.7	1.6
1986	1.2	-.5	-.4	.4	.1	-.4	.1	.6	.2	.4	.5	.9	4.8	-.1	1.7	5.6	2.1
1987	-.6	1.6	.2	.5	.6	.5	.8	.5	.5	1.4	.6	.5	4.9	7.2	7.4	10.2	5.4
1988	-.1	.3	.3	.7	-.1	.0	.2	.1	.3	.5	.3	.4	2.7	3.8	1.6	4.3	5.1
1989	.8	-1.0	.0	.1	-.8	.1	-1.1	.9	-.3	-.2	.1	.2	1.8	-3.2	-3.2	.0	.7
1990	-.2	1.4	.4	-.1	.1	.3	-.2	.1	-.1	-.7	-1.2	-.7	4.4	2.9	.4	-6.7	.6
1991	-.7	-.7	-.7	.4	.7	1.1	.4	.0	1.1	-.1	-.3	-.1	-8.6	2.0	6.8	1.4	-2.0
1992	-.6	1.0	.9	.5	.6	.2	.8	-.3	.0	.6	.5	-.2	.8	7.8	3.9	3.0	3.5
1993	.9	.2	.0	.4	-.1	-.2	.3	-.2	.9	.6	.5	.6	4.3	1.4	1.3	6.7	3.4
1994	.4	.1	1.2	.8	.7	.3	.4	.8	.2	.9	.8	1.1	5.9	9.3	5.9	9.3	6.0
1995	.5	-.1	.1	-.1	.1	.5	-.6	1.2	.9	-.2	.2	.5	6.3	.3	3.2	4.4	5.3
1996	-.9	1.3	-.3	1.1	.7	1.1	.4	.6	.7	.1	.9	.8	1.0	9.1	8.2	6.7	4.6
1997	.3	1.6	.6	.3	.5	.7	.3	1.4	.8	.7	.8	.4	10.0	7.7	8.7	9.7	8.5
1998	.9	.2	.2	.8	.3	-.6	-.1	2.1	-.3	1.0	-.1	.2	6.5	3.8	3.8	6.1	6.5
1999	.5	.6	.2	.4	.7	.0	.5	.8	.0	1.0	.8	.6	4.4	4.7	4.9	8.0	4.9
2000	.2	.6	.8	.7	.4	.3	-.1	-.5	.4	-.4	-.4	-.6	6.1	7.1	.1	-2.9	5.0
2001	-.8	-.5	-.5	-.5	-.6	-.7	.0	-.5	-.6	-.6	-.4	-.4	-7.1	-6.2	-4.9	-6.1	-4.1
2002	.6	.1	.2	.3	.4	.4	.4	.0	-.2	-.7			1.2	3.5	3.0		
IP *(1997=100)*																	
1972	47.0	47.4	47.8	48.3	48.4	48.6	48.6	49.2	49.5	50.2	50.8	51.6	47.4	48.4	49.1	50.9	48.9
1973	52.1	52.8	53.0	52.8	53.2	53.2	53.4	53.2	53.6	54.0	54.3	54.4	52.6	53.1	53.4	54.2	53.3
1974	54.0	53.8	53.8	53.7	54.0	54.0	53.9	53.4	53.4	53.0	51.4	49.1	53.8	53.9	53.6	51.2	53.1
1975	48.3	47.0	46.4	46.2	46.2	46.6	47.1	47.6	48.4	48.5	48.6	49.3	47.2	46.3	47.7	48.8	47.5
1976	49.9	50.7	50.8	51.2	51.4	51.5	51.8	52.2	52.2	52.2	52.9	53.5	50.5	51.4	52.1	52.9	51.7
1977	53.4	54.2	55.1	55.7	56.1	56.4	56.6	56.9	56.9	57.1	57.2	57.8	54.3	56.1	56.8	57.4	56.1
1978	57.1	57.2	58.1	59.0	59.2	59.7	59.7	60.0	60.2	60.6	61.2	61.7	57.5	59.3	60.0	61.1	59.5
1979	61.3	61.5	61.7	60.9	61.5	61.6	61.6	60.8	60.9	61.1	60.9	61.1	61.5	61.3	61.1	61.0	61.2
1980	61.4	61.4	60.9	59.7	57.9	56.9	56.2	56.8	57.7	58.6	59.8	59.9	61.2	58.2	56.9	59.4	58.9
1981	59.7	59.4	59.6	59.9	60.3	60.0	60.1	60.1	59.8	59.2	58.5	57.5	59.6	60.0	60.0	58.4	59.5
1982	56.2	57.7	57.2	56.9	56.7	56.6	56.6	56.1	55.9	55.2	54.9	54.6	57.1	56.8	56.2	54.9	56.2
1983	56.0	55.9	56.4	57.1	57.9	58.3	59.2	59.6	60.7	61.4	61.6	61.7	56.1	57.8	59.8	61.5	58.8
1984	62.9	63.5	64.0	64.3	64.5	64.8	65.1	65.2	65.0	65.2	65.4	65.7	63.5	64.5	65.1	65.4	64.6
1985	65.4	65.2	65.7	65.6	65.7	65.7	65.4	65.8	65.8	65.6	66.0	66.3	65.4	65.7	65.7	65.9	65.7
1986	67.0	66.7	66.4	66.7	66.8	66.6	66.7	67.1	67.2	67.5	67.8	68.4	66.7	66.7	67.0	67.9	67.1
1987	68.0	69.0	69.1	69.5	69.9	70.3	70.8	71.2	71.5	72.5	72.9	73.3	68.7	69.9	71.2	72.9	70.7
1988	73.2	73.4	73.6	74.1	74.1	74.1	74.2	74.4	74.6	75.0	75.2	75.4	73.4	74.1	74.4	75.2	74.3
1989	76.0	75.3	75.2	75.3	74.7	74.8	74.0	74.6	74.4	74.2	74.3	74.4	75.5	74.9	74.3	74.3	74.8
1990	74.3	75.3	75.6	75.5	75.6	75.8	75.7	75.8	75.7	75.2	74.3	73.8	75.1	75.6	75.7	74.4	75.2
1991	73.3	72.7	72.2	72.5	73.0	73.8	74.1	74.0	74.8	74.8	74.5	74.4	72.7	73.1	74.3	74.6	73.7
1992	74.0	74.7	75.4	75.8	76.2	76.4	77.0	76.8	76.8	77.2	77.6	77.5	74.7	76.1	76.9	77.4	76.3
1993	78.2	78.3	78.3	78.6	78.5	78.4	78.7	78.5	79.2	79.6	80.0	80.5	78.2	78.5	78.8	80.1	78.9
1994	80.8	80.9	81.9	82.6	83.1	83.4	83.7	84.4	84.6	85.4	86.0	87.0	81.2	83.0	84.2	86.1	83.7
1995	87.5	87.4	87.5	87.4	87.4	87.8	87.3	88.3	89.1	88.9	89.1	89.5	87.4	87.5	88.2	89.2	88.1
1996	88.7	89.9	89.6	90.6	91.2	92.3	92.6	93.2	93.8	93.9	94.8	95.5	89.4	91.4	93.2	94.7	92.2
1997	95.8	97.3	97.9	98.3	98.8	99.5	99.7	101.1	101.9	102.6	103.4	103.8	97.0	98.8	100.9	103.3	100.0
1998	104.7	104.9	105.1	105.9	106.2	105.5	105.5	107.7	107.4	108.4	108.3	108.5	104.9	105.9	106.9	108.4	106.5
1999	109.1	109.8	110.0	110.4	111.1	111.1	111.6	112.5	112.5	113.6	114.4	115.1	109.6	110.9	112.2	114.4	111.8
2000	115.3	116.0	116.9	117.7	118.1	118.5	118.4	117.8	118.2	117.8	117.3	116.6	116.1	118.1	118.1	117.2	117.4
2001	115.7	115.1	114.5	114.0	113.3	112.5	112.5	111.9	111.2	110.6	110.1	109.6	115.1	113.3	111.9	110.1	112.6
2002	110.3	110.4	110.7	111.0	111.4	111.9	112.3	112.3	112.1	111.3			110.5	111.4	112.2		

NOTE. Estimates from August 2002 through October 2002 are subject to further revision in the upcoming monthly releases.
1. Manufacturing consists of those industries included in the North American Industry Classification System, or NAICS, definition of manufacturing plus those industries – logging and newspaper, periodical, book and directory publishing – that have traditionally been considered to be manufacturing and included in the industrial sector.
2. Annual averages of industrial production are calculated from not seasonally adjusted indexes.

Table 2B
CAPACITY AND UTILIZATION: Manufacturing[1]
Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual[2]
Capacity *(percent of 1997 output)*																	
1972	58.1	58.2	58.4	58.5	58.6	58.8	58.9	59.0	59.2	59.4	59.5	59.7	58.2	58.6	59.1	59.5	58.9
1973	59.9	60.0	60.2	60.4	60.6	60.8	61.0	61.2	61.4	61.6	61.8	62.0	60.0	60.6	61.2	61.8	60.9
1974	62.2	62.4	62.6	62.8	63.0	63.1	63.3	63.4	63.6	63.7	63.8	64.0	62.4	63.0	63.4	63.8	63.2
1975	64.1	64.2	64.3	64.4	64.5	64.6	64.7	64.8	65.0	65.1	65.2	65.4	64.2	64.5	64.8	65.2	64.7
1976	65.5	65.6	65.8	65.9	66.1	66.2	66.4	66.5	66.7	66.9	67.0	67.2	65.6	66.1	66.5	67.0	66.3
1977	67.3	67.5	67.6	67.8	67.9	68.1	68.3	68.4	68.6	68.8	69.0	69.1	67.5	67.9	68.4	69.0	68.2
1978	69.3	69.5	69.7	69.9	70.1	70.3	70.5	70.7	70.8	71.0	71.3	71.5	69.5	70.1	70.7	71.3	70.4
1979	71.7	71.9	72.1	72.3	72.4	72.6	72.8	73.0	73.2	73.4	73.5	73.7	71.9	72.4	73.0	73.5	72.7
1980	73.9	74.0	74.2	74.4	74.5	74.7	74.9	75.1	75.3	75.5	75.6	75.8	74.0	74.5	75.1	75.6	74.8
1981	76.0	76.2	76.4	76.6	76.8	77.0	77.2	77.4	77.6	77.8	77.9	78.1	76.2	76.8	77.4	77.9	77.1
1982	78.3	78.4	78.6	78.7	78.9	79.0	79.2	79.3	79.4	79.5	79.6	79.6	78.4	78.9	79.3	79.6	79.0
1983	79.7	79.7	79.8	79.8	79.9	79.9	79.9	80.0	80.0	80.1	80.2	80.3	79.7	79.9	80.0	80.2	79.9
1984	80.4	80.5	80.6	80.8	81.0	81.1	81.3	81.5	81.8	82.0	82.2	82.4	80.5	81.0	81.5	82.2	81.3
1985	82.6	82.9	83.1	83.3	83.5	83.7	83.9	84.1	84.2	84.4	84.5	84.6	82.9	83.5	84.0	84.5	83.7
1986	84.7	84.9	85.0	85.1	85.2	85.3	85.4	85.5	85.6	85.8	85.9	86.1	84.9	85.2	85.5	85.9	85.4
1987	86.3	86.4	86.6	86.8	87.0	87.1	87.3	87.4	87.6	87.7	87.8	87.9	86.4	87.0	87.4	87.8	87.2
1988	88.0	88.0	88.1	88.1	88.2	88.2	88.3	88.4	88.4	88.5	88.6	88.8	88.0	88.2	88.4	88.6	88.3
1989	88.9	89.0	89.2	89.4	89.5	89.7	89.9	90.1	90.3	90.5	90.7	90.9	89.0	89.6	90.1	90.7	89.9
1990	91.1	91.3	91.5	91.7	91.9	92.1	92.2	92.4	92.6	92.8	92.9	93.1	91.3	91.9	92.4	92.9	92.1
1991	93.3	93.4	93.6	93.8	93.9	94.1	94.2	94.4	94.5	94.7	94.9	95.0	93.4	93.9	94.4	94.9	94.1
1992	95.2	95.3	95.5	95.7	95.9	96.1	96.3	96.4	96.6	96.8	97.1	97.3	95.3	95.9	96.4	97.1	96.2
1993	97.5	97.7	97.9	98.1	98.3	98.5	98.7	98.9	99.1	99.3	99.5	99.7	97.7	98.3	98.9	99.5	98.6
1994	99.9	100.1	100.4	100.6	100.9	101.2	101.5	101.8	102.2	102.5	102.9	103.3	100.2	100.9	101.8	102.9	101.5
1995	103.7	104.2	104.6	105.1	105.6	106.1	106.6	107.2	107.7	108.3	108.9	109.5	104.2	105.6	107.2	108.9	106.5
1996	110.1	110.7	111.3	112.0	112.6	113.2	113.8	114.4	115.0	115.6	116.1	116.7	110.7	112.6	114.4	116.1	113.5
1997	117.3	117.9	118.5	119.1	119.8	120.4	121.1	121.8	122.6	123.3	124.1	125.0	117.9	119.8	121.8	124.1	120.9
1998	125.8	126.6	127.4	128.2	129.1	129.8	130.6	131.3	132.0	132.6	133.3	133.9	126.6	129.0	131.3	133.3	130.0
1999	134.4	135.0	135.5	136.0	136.5	137.0	137.5	138.0	138.5	139.1	139.7	140.3	135.0	136.5	138.0	139.7	137.3
2000	140.9	141.5	142.1	142.8	143.4	144.0	144.6	145.1	145.6	146.1	146.6	147.1	141.5	143.4	145.1	146.6	144.1
2001	147.5	147.9	148.2	148.5	148.8	149.1	149.3	149.5	149.7	149.9	150.1	150.2	147.9	148.8	149.5	150.1	149.1
2002	150.4	150.5	150.6	150.8	150.9	151.0	151.1	151.1	151.2	151.3			150.5	150.9	151.1		
Utilization *(percent)*																	
1972	81.0	81.4	81.9	82.5	82.5	82.6	82.6	83.3	83.7	84.6	85.4	86.5	81.4	82.6	83.2	85.5	83.2
1973	87.0	88.0	88.0	87.4	87.7	87.5	87.6	86.9	87.3	87.7	87.9	87.7	87.7	87.5	87.2	87.7	87.5
1974	86.8	86.1	85.9	85.5	85.7	85.5	85.2	84.2	84.0	83.2	80.6	76.8	86.3	85.6	84.4	80.2	84.1
1975	75.3	73.2	72.1	71.7	71.6	72.1	72.7	73.4	74.5	74.5	74.5	75.4	73.5	71.8	73.5	74.8	73.4
1976	76.2	77.3	77.2	77.7	77.8	77.7	78.1	78.4	78.3	78.1	78.9	79.7	76.9	77.7	78.2	78.9	77.9
1977	79.4	80.4	81.5	82.1	82.5	82.9	82.9	83.1	83.0	83.0	82.9	83.6	80.4	82.5	83.0	83.2	82.3
1978	82.4	82.3	83.4	84.4	84.5	85.0	84.7	84.9	85.0	85.3	85.8	86.3	82.7	84.6	84.9	85.8	84.5
1979	85.5	85.5	85.6	84.3	84.9	84.8	84.6	83.2	83.2	83.2	82.8	82.9	85.6	84.7	83.7	83.0	84.2
1980	83.1	82.9	82.1	80.2	77.6	76.2	75.0	75.6	76.7	77.7	79.0	79.0	82.7	78.0	75.8	78.6	78.8
1981	78.5	77.9	78.0	78.2	78.5	77.9	77.9	77.7	77.1	76.1	75.0	73.6	78.1	78.2	77.6	74.9	77.2
1982	71.8	73.6	72.8	72.3	71.9	71.7	71.5	70.7	70.5	69.4	69.0	68.6	72.7	72.0	70.9	69.0	71.1
1983	70.2	70.0	70.7	71.5	72.5	73.0	74.0	74.5	75.8	76.6	76.8	76.9	70.3	72.3	74.8	76.8	73.5
1984	78.3	78.8	79.3	79.5	79.6	79.8	80.0	79.9	79.5	79.6	79.6	79.7	78.8	79.7	79.8	79.6	79.5
1985	79.1	78.7	79.1	78.7	78.6	78.5	78.0	78.2	78.2	77.7	78.1	78.3	79.0	78.6	78.1	78.0	78.4
1986	79.1	78.6	78.2	78.4	78.4	78.1	78.1	78.4	78.5	78.7	78.9	79.4	78.6	78.3	78.3	79.0	78.6
1987	78.8	79.9	79.8	80.1	80.4	80.7	81.1	81.4	81.7	82.7	83.1	83.4	79.5	80.4	81.4	83.1	81.1
1988	83.2	83.4	83.6	84.1	84.0	83.9	84.1	84.1	84.3	84.7	84.8	85.0	83.4	84.0	84.2	84.8	84.1
1989	85.5	84.5	84.4	84.2	83.4	83.3	82.2	82.8	82.3	82.0	81.8	81.8	84.8	83.7	82.4	81.9	83.2
1990	81.6	82.5	82.7	82.4	82.3	82.3	82.0	82.0	81.8	81.0	79.9	79.2	82.3	82.3	81.9	80.1	81.6
1991	78.5	77.9	77.2	77.3	77.8	78.4	78.6	78.4	79.2	78.9	78.6	78.3	77.9	77.8	78.7	78.6	78.3
1992	77.7	78.4	79.0	79.2	79.5	79.5	80.0	79.6	79.4	79.7	80.0	79.7	78.4	79.4	79.7	79.8	79.3
1993	80.2	80.1	80.0	80.2	79.9	79.6	79.7	79.4	79.9	80.2	80.4	80.8	80.1	79.9	79.7	80.5	80.0
1994	80.9	80.8	81.6	82.0	82.4	82.4	82.5	82.9	82.8	83.2	83.6	84.2	81.1	82.3	82.7	83.7	82.4
1995	84.3	83.9	83.6	83.1	82.8	82.8	81.8	82.4	82.7	82.1	81.8	81.7	83.9	82.9	82.3	81.9	82.8
1996	80.6	81.2	80.5	80.9	81.1	81.5	81.4	81.4	81.6	81.3	81.6	81.8	80.7	81.2	81.5	81.6	81.2
1997	81.6	82.5	82.6	82.5	82.5	82.6	82.4	83.0	83.1	83.2	83.3	83.1	82.3	82.5	82.8	83.2	82.7
1998	83.2	82.9	82.5	82.6	82.3	81.3	80.8	82.0	81.4	81.8	81.3	81.1	82.9	82.0	81.4	81.4	81.9
1999	81.2	81.3	81.2	81.1	81.4	81.1	81.2	81.5	81.2	81.6	81.9	82.1	81.2	81.2	81.3	81.9	81.4
2000	81.9	82.0	82.2	82.4	82.4	82.3	81.9	81.2	81.2	80.6	80.0	79.3	82.0	82.4	81.4	80.0	81.4
2001	78.5	77.8	77.3	76.8	76.1	75.5	75.3	74.8	74.3	73.8	73.4	73.0	77.9	76.1	74.8	73.4	75.6
2002	73.3	73.4	73.5	73.6	73.9	74.1	74.3	74.3	74.1	73.6			73.4	73.9	74.3		

NOTE. Estimates from August 2002 through October 2002 are subject to further revision in the upcoming monthly releases.
1. See note to table 2A.
2. Annual averages of industrial production are calculated from not seasonally adjusted indexes.

Table 3A

INDUSTRIAL PRODUCTION: Total Industry Excluding Selected High-Technology Industries[1]

Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual[2]
IP *(percent change)*																	
1972	2.3	1.0	.8	1.0	.1	.3	.0	1.2	.7	1.2	1.1	1.3	17.5	8.2	5.0	13.9	9.2
1973	.7	1.3	.1	-.4	.6	.0	.4	-.5	.8	.6	.3	-.3	12.2	2.0	2.3	4.3	7.6
1974	-.7	-.5	.1	.0	.5	-.2	.0	-.9	-.1	-.4	-3.3	-3.6	-4.2	.6	-2.4	-15.6	-1.1
1975	-1.1	-2.1	-1.1	-.1	-.3	.8	.7	1.1	1.2	.2	.2	1.2	-22.9	-5.6	9.5	7.8	-9.0
1976	1.4	1.1	.0	.7	.2	-.1	.5	.7	.0	.0	1.4	1.1	12.9	4.7	3.8	6.5	7.2
1977	-.5	1.1	1.3	.8	.6	.5	.4	.0	.4	.2	.1	.1	8.0	11.1	4.2	2.0	6.7
1978	-1.2	.1	1.8	2.0	.4	.6	.0	.3	.2	.7	.6	.5	-1.5	15.6	2.8	6.0	4.7
1979	-.6	.4	.2	-.9	.7	-.2	-.4	-.9	.0	.4	-.2	.0	1.1	-1.1	-3.5	.1	2.0
1980	.6	-.1	-.4	-2.2	-2.5	-1.4	-1.0	.4	1.7	1.1	1.8	.5	1.2	-17.0	-7.5	15.9	-3.7
1981	-.7	-.5	.5	-.7	.7	.5	.7	-.2	-.7	-.8	-1.2	-1.3	.2	.5	3.4	-10.0	.5
1982	-1.8	1.8	-.8	-.9	-.9	-.4	-.4	-.8	-.4	-1.1	-.4	-1.0	-8.1	-6.2	-6.5	-8.5	-6.0
1983	1.9	-.6	.7	1.3	.6	.5	1.4	1.2	1.2	.7	.3	.5	3.6	9.0	13.6	9.2	1.8
1984	2.1	.1	.6	.5	.4	.2	.2	-.1	-.3	-.1	.3	.0	11.4	5.2	1.5	-.8	7.8
1985	-.3	.6	.0	.1	.1	-.1	-.5	.4	.5	-.4	.3	1.0	.5	1.1	-.3	2.3	.8
1986	.6	-.6	-.7	-.1	.0	-.1	.0	.0	.2	.4	.4	.8	2.7	-2.9	-.1	4.4	.8
1987	-.7	1.3	.2	.5	.5	.5	.6	.6	.2	1.3	.3	.3	3.4	6.4	6.5	8.1	4.0
1988	.1	.5	.1	.3	-.2	.1	.2	.6	-.4	.4	.3	.4	3.0	2.0	1.8	2.8	4.2
1989	.3	-.5	.4	-.1	-.7	-.1	-1.2	.8	-.3	-.2	.1	.7	2.0	-1.7	-3.9	.6	.6
1990	-.7	.9	.5	-.1	.0	.4	-.2	.1	.1	-.7	-1.3	-.7	2.2	2.7	.6	-6.6	.2
1991	-.3	-.9	-.6	.2	1.0	.8	.1	-.1	.9	-.2	-.3	-.5	-7.8	1.8	5.0	.1	-2.1
1992	-.8	.8	.8	.5	.3	-.2	.7	-.4	.1	.5	.4	.1	-1.9	5.8	1.8	3.1	1.7
1993	.4	.2	.1	.3	-.5	.1	.4	-.2	.6	.4	.3	.5	3.0	.6	1.3	4.7	2.5
1994	.5	.1	.7	.3	.4	.6	.0	.4	-.1	.6	.4	.9	4.9	5.0	3.1	5.3	4.0
1995	.2	-.1	-.2	-.3	.1	.2	-.6	1.1	.1	-.6	.2	.3	3.4	-1.5	1.6	.3	2.4
1996	-.9	1.2	-.4	.7	.4	.7	-.3	.4	.4	-.2	.8	.4	.2	5.7	2.4	3.5	1.8
1997	.1	1.1	.0	.1	.0	.2	.2	.8	.8	.7	.3	-.1	5.5	2.4	4.9	7.1	4.2
1998	.1	.0	.2	.5	.4	-.8	-.5	1.6	-.5	.5	-.5	-.2	1.1	2.6	-.2	1.3	2.9
1999	.4	.1	.2	-.1	.3	-.2	.3	.4	-.2	.6	.3	.4	.8	.9	1.7	3.9	1.2
2000	-.4	.4	.2	.4	.2	.1	-.5	-.4	.1	-.6	-.3	-.4	1.4	3.4	-2.5	-3.6	1.4
2001	-.8	-.4	-.5	-.3	-.5	-.5	.0	-.3	-.7	-.4	-.7	-.5	-6.0	-5.1	-3.7	-6.1	-4.1
2002	.6	.2	.4	.4	.2	.3	.7	-.3	.0	-.9			1.2	3.9	3.2		
IP *(1997=100)*																	
1972	63.7	64.3	64.8	65.5	65.5	65.7	65.7	66.5	66.9	67.7	68.5	69.4	64.3	65.6	66.4	68.5	66.2
1973	69.9	70.8	70.9	70.6	71.1	71.0	71.3	71.0	71.6	72.0	72.2	72.0	70.5	70.9	71.3	72.1	71.2
1974	71.5	71.2	71.2	71.2	71.6	71.4	71.4	70.8	70.7	70.4	68.1	65.6	71.3	71.4	71.0	68.0	70.4
1975	64.9	63.5	62.8	62.8	62.6	63.1	63.5	64.3	65.0	65.1	65.3	66.1	63.7	62.8	64.3	65.5	64.1
1976	67.0	67.8	67.8	68.2	68.4	68.3	68.6	69.1	69.1	69.1	70.1	70.9	67.5	68.3	68.9	70.0	68.7
1977	70.5	71.3	72.3	72.9	73.3	73.7	74.0	73.9	74.2	74.4	74.4	74.5	71.4	73.3	74.1	74.4	73.3
1978	73.6	73.7	75.1	76.5	76.8	77.3	77.2	77.4	77.6	78.1	78.6	79.0	74.1	76.9	77.4	78.5	76.7
1979	78.5	78.8	79.0	78.2	78.8	78.6	78.3	77.6	77.6	78.0	77.8	77.8	78.8	78.5	77.8	77.9	78.2
1980	78.2	78.2	77.9	76.2	74.2	73.2	72.5	72.8	74.0	74.8	76.2	76.5	78.1	74.5	73.1	75.8	75.4
1981	76.0	75.6	76.0	75.5	76.0	76.4	76.9	76.7	76.2	75.5	74.6	73.7	75.9	76.0	76.6	74.6	75.8
1982	72.4	73.7	73.1	72.4	71.8	71.5	71.2	70.6	70.3	69.6	69.3	68.6	73.1	71.9	70.7	69.1	71.2
1983	69.9	69.5	69.9	70.9	71.3	71.7	72.7	73.6	74.5	75.0	75.2	75.5	69.8	71.3	73.6	75.2	72.5
1984	77.1	77.1	77.6	78.0	78.3	78.5	78.7	78.6	78.4	78.3	78.5	78.5	77.3	78.3	78.6	78.4	78.1
1985	78.2	78.7	78.6	78.7	78.8	78.7	78.3	78.6	79.0	78.7	78.9	79.7	78.5	78.7	78.6	79.1	78.7
1986	80.1	79.6	79.1	79.0	79.1	79.0	79.0	79.0	79.1	79.5	79.8	80.4	79.6	79.0	79.0	79.9	79.4
1987	79.8	80.8	81.0	81.4	81.8	82.2	82.7	83.2	83.4	84.4	84.7	85.0	80.5	81.8	83.1	84.7	82.5
1988	85.1	85.4	85.6	85.8	85.7	85.8	85.9	86.4	86.1	86.5	86.7	87.1	85.4	85.8	86.2	86.8	86.0
1989	87.4	86.9	87.3	87.2	86.7	86.6	85.6	86.3	86.0	85.8	86.0	86.5	87.2	86.8	86.0	86.1	86.5
1990	85.9	86.7	87.1	87.1	87.1	87.4	87.2	87.3	87.4	86.8	85.6	85.0	86.6	87.2	87.3	85.8	86.7
1991	84.8	84.0	83.5	83.7	84.5	85.2	85.3	85.2	86.0	85.9	85.6	85.2	84.1	84.5	85.5	85.5	84.9
1992	84.5	85.1	85.8	86.2	86.5	86.3	87.0	86.6	86.7	87.1	87.5	87.6	85.1	86.3	86.7	87.4	86.4
1993	87.9	88.1	88.2	88.4	88.0	88.1	88.4	88.2	88.7	89.1	89.4	89.9	88.1	88.2	88.5	89.5	88.6
1994	90.3	90.4	91.0	91.3	91.6	92.1	92.1	92.5	92.5	93.0	93.4	94.3	90.6	91.7	92.4	93.6	92.1
1995	94.5	94.4	94.2	93.9	94.0	94.2	93.7	94.7	94.8	94.2	94.4	94.7	94.4	94.0	94.4	94.5	94.3
1996	93.9	95.0	94.6	95.3	95.7	96.4	96.0	96.4	96.7	96.6	97.4	97.8	94.5	95.8	96.4	97.2	96.0
1997	97.8	98.9	98.9	99.0	99.1	99.3	99.5	100.3	101.1	101.8	102.2	102.1	98.5	99.1	100.3	102.0	100.0
1998	102.2	102.3	102.5	103.0	103.4	102.6	102.0	103.6	103.1	103.7	103.2	103.0	102.3	103.0	102.9	103.3	102.9
1999	103.4	103.4	103.6	103.6	103.9	103.7	104.0	104.4	104.1	104.8	105.1	105.6	103.5	103.7	104.2	105.2	104.1
2000	105.2	105.6	105.8	106.2	106.5	106.6	106.0	105.6	105.7	105.1	104.8	104.4	105.5	106.4	105.8	104.8	105.6
2001	103.6	103.2	102.7	102.4	101.8	101.3	101.3	101.0	100.3	99.9	99.3	98.7	103.2	101.8	100.9	99.3	101.3
2002	99.3	99.6	99.9	100.3	100.5	100.8	101.5	101.2	101.2	100.3			99.6	100.6	101.3		

NOTE. Estimates from August 2002 through October 2002 are subject to further revision in the upcoming monthly releases.

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

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

Table 3B

CAPACITY AND UTILIZATION: Total Industry Excluding Selected High-Technology Industries[1]

Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual[2]
Capacity *(percent of 1992 output)*																	
1972	77.4	77.5	77.7	77.8	78.0	78.1	78.3	78.4	78.6	78.8	78.9	79.1	77.5	78.0	78.4	78.9	78.2
1973	79.3	79.5	79.7	79.9	80.1	80.4	80.6	80.8	81.0	81.2	81.4	81.6	79.5	80.1	80.8	81.4	80.5
1974	81.9	82.1	82.3	82.5	82.6	82.8	83.0	83.1	83.3	83.4	83.6	83.7	82.1	82.6	83.1	83.6	82.9
1975	83.8	84.0	84.1	84.2	84.3	84.4	84.5	84.6	84.7	84.9	85.0	85.1	84.0	84.3	84.6	85.0	84.5
1976	85.2	85.4	85.5	85.6	85.7	85.9	86.0	86.1	86.3	86.4	86.6	86.7	85.4	85.7	86.1	86.6	86.0
1977	86.8	87.0	87.2	87.3	87.5	87.7	87.9	88.1	88.3	88.5	88.7	88.9	87.0	87.5	88.1	88.7	87.8
1978	89.1	89.3	89.5	89.7	89.9	90.1	90.3	90.5	90.7	90.8	91.0	91.2	89.3	89.9	90.5	91.0	90.2
1979	91.3	91.5	91.6	91.8	91.9	92.1	92.2	92.3	92.4	92.6	92.7	92.8	91.5	91.9	92.3	92.7	92.1
1980	92.9	93.0	93.1	93.3	93.4	93.5	93.6	93.7	93.8	93.9	94.1	94.2	93.0	93.4	93.7	94.1	93.5
1981	94.3	94.5	94.6	94.7	94.9	95.0	95.2	95.4	95.5	95.7	95.8	96.0	94.5	94.9	95.4	95.8	95.1
1982	96.1	96.3	96.4	96.6	96.7	96.8	96.9	97.0	97.1	97.2	97.2	97.2	96.3	96.7	97.0	97.2	96.8
1983	97.3	97.3	97.3	97.3	97.2	97.2	97.2	97.2	97.2	97.2	97.2	97.2	97.3	97.2	97.2	97.2	97.2
1984	97.2	97.2	97.3	97.3	97.4	97.5	97.6	97.7	97.8	97.9	98.0	98.1	97.2	97.4	97.7	98.0	97.6
1985	98.3	98.4	98.6	98.7	98.8	99.0	99.1	99.3	99.4	99.5	99.6	99.7	98.4	98.8	99.3	99.6	99.0
1986	99.8	99.9	100.0	100.1	100.2	100.3	100.3	100.4	100.5	100.6	100.6	100.7	99.9	100.2	100.4	100.6	100.3
1987	100.8	100.9	101.0	101.1	101.2	101.3	101.3	101.4	101.5	101.5	101.6	101.6	100.9	101.2	101.4	101.6	101.3
1988	101.6	101.7	101.7	101.7	101.7	101.7	101.8	101.8	101.9	101.9	102.0	102.1	101.7	101.7	101.8	102.0	101.8
1989	102.2	102.3	102.4	102.6	102.7	102.9	103.0	103.2	103.4	103.5	103.7	103.9	102.3	102.7	103.2	103.7	103.0
1990	104.0	104.1	104.3	104.5	104.6	104.8	104.9	105.0	105.2	105.3	105.4	105.6	104.1	104.6	105.0	105.4	104.8
1991	105.7	105.8	106.0	106.1	106.2	106.3	106.5	106.6	106.7	106.8	106.9	107.1	105.8	106.2	106.6	106.9	106.4
1992	107.2	107.3	107.4	107.5	107.6	107.7	107.8	107.9	108.0	108.2	108.3	108.4	107.3	107.6	107.9	108.3	107.8
1993	108.5	108.6	108.7	108.8	108.9	109.0	109.1	109.2	109.3	109.4	109.5	109.6	108.6	108.9	109.2	109.5	109.1
1994	109.8	109.9	110.0	110.1	110.2	110.4	110.5	110.7	110.9	111.1	111.3	111.5	109.9	110.2	110.7	111.3	110.5
1995	111.7	112.0	112.2	112.5	112.8	113.0	113.3	113.6	113.8	114.1	114.3	114.6	112.0	112.8	113.6	114.3	113.2
1996	114.8	115.1	115.3	115.5	115.7	116.0	116.2	116.4	116.6	116.9	117.1	117.4	115.1	115.7	116.4	117.1	116.1
1997	117.7	118.0	118.3	118.6	119.0	119.3	119.7	120.0	120.4	120.8	121.2	121.6	118.0	119.0	120.1	121.2	119.5
1998	121.9	122.3	122.7	123.0	123.3	123.6	123.9	124.2	124.5	124.8	125.0	125.3	122.3	123.3	124.2	125.0	123.7
1999	125.5	125.7	125.9	126.2	126.4	126.6	126.7	126.9	127.1	127.3	127.4	127.6	125.7	126.4	126.9	127.4	126.6
2000	127.7	127.9	128.0	128.2	128.3	128.5	128.6	128.8	128.9	129.0	129.2	129.3	127.9	128.3	128.8	129.2	128.5
2001	129.4	129.6	129.7	129.8	129.8	129.9	130.0	130.1	130.1	130.2	130.2	130.2	129.5	129.8	130.1	130.2	129.9
2002	130.2	130.3	130.3	130.3	130.4	130.4	130.4	130.5	130.5	130.6			130.3	130.4	130.5		
Utilization *(percent)*																	
1972	82.3	83.0	83.5	84.1	84.0	84.1	83.9	84.7	85.1	86.0	86.8	87.7	82.9	84.1	84.6	86.8	84.6
1973	88.2	89.1	88.9	88.3	88.7	88.4	88.5	87.9	88.4	88.6	88.6	88.2	88.7	88.5	88.3	88.5	88.5
1974	87.4	86.7	86.5	86.3	86.6	86.3	86.1	85.1	84.9	84.3	81.5	78.4	86.9	86.4	85.3	81.4	85.0
1975	77.4	75.7	74.7	74.6	74.3	74.8	75.2	75.9	76.8	76.8	76.8	77.6	75.9	74.6	76.0	77.1	75.9
1976	78.6	79.4	79.3	79.7	79.7	79.6	79.8	80.2	80.1	80.0	81.0	81.7	79.1	79.7	80.0	80.9	79.9
1977	81.2	82.0	82.9	83.4	83.8	84.0	84.2	84.0	84.1	84.1	83.9	83.8	82.1	83.8	84.1	83.9	83.5
1978	82.6	82.6	83.9	85.3	85.5	85.8	85.5	85.6	85.6	86.0	86.3	86.6	83.0	85.5	85.6	86.3	85.1
1979	85.9	86.1	86.2	85.2	85.7	85.4	84.9	84.1	84.0	84.2	84.0	83.8	86.1	85.4	84.3	84.0	85.0
1980	84.2	84.0	83.6	81.7	79.5	78.3	77.4	77.6	78.9	79.6	81.0	81.2	83.9	79.8	78.0	80.6	80.6
1981	80.5	80.1	80.3	79.7	80.1	80.4	80.8	80.5	79.7	78.9	77.9	76.8	80.3	80.0	80.3	77.9	79.6
1982	75.3	76.5	75.8	75.0	74.2	73.8	73.4	72.8	72.4	71.6	71.3	70.5	75.9	74.3	72.9	71.1	73.6
1983	71.8	71.4	71.9	72.9	73.3	73.7	74.8	75.7	76.6	77.2	77.4	77.7	71.7	73.3	75.7	77.4	74.5
1984	79.3	79.3	79.8	80.1	80.4	80.5	80.6	80.5	80.1	79.9	80.1	79.9	79.5	80.4	80.4	80.0	80.1
1985	79.6	79.9	79.8	79.7	79.7	79.5	79.0	79.2	79.5	79.1	79.2	79.9	79.8	79.6	79.2	79.4	79.5
1986	80.3	79.7	79.1	79.0	78.9	78.8	78.7	78.6	78.7	79.0	79.3	79.8	79.7	78.9	78.7	79.4	79.2
1987	79.2	80.1	80.2	80.5	80.8	81.2	81.6	82.1	82.1	83.2	83.4	83.7	79.8	80.8	81.9	83.4	81.5
1988	83.7	84.1	84.1	84.4	84.3	84.3	84.5	84.9	84.5	84.8	85.0	85.3	84.0	84.3	84.6	85.1	84.5
1989	85.5	85.0	85.2	85.0	84.4	84.2	83.1	83.6	83.2	82.9	82.9	83.3	85.2	84.5	83.3	83.0	84.0
1990	82.6	83.3	83.5	83.3	83.2	83.4	83.1	83.1	83.1	82.4	81.2	80.6	83.1	83.3	83.1	81.4	82.7
1991	80.2	79.4	78.8	78.9	79.6	80.2	80.1	80.0	80.6	80.4	80.0	79.6	79.5	79.5	80.2	80.0	79.8
1992	78.8	79.3	79.9	80.2	80.4	80.1	80.6	80.2	80.2	80.6	80.8	80.8	79.3	80.2	80.4	80.7	80.2
1993	81.0	81.1	81.1	81.3	80.8	80.8	81.0	80.8	81.2	81.4	81.6	82.0	81.1	81.0	81.0	81.7	81.2
1994	82.3	82.3	82.7	82.9	83.1	83.5	83.4	83.6	83.4	83.7	84.0	84.5	82.4	83.2	83.4	84.1	83.3
1995	84.6	84.3	83.9	83.4	83.3	83.3	82.7	83.4	83.3	82.6	82.6	82.7	84.3	83.4	83.1	82.6	83.3
1996	81.7	82.6	82.1	82.5	82.7	83.1	82.7	82.8	82.9	82.6	83.1	83.3	82.1	82.8	82.8	83.0	82.7
1997	83.1	83.8	83.6	83.5	83.3	83.2	83.1	83.6	84.0	84.3	84.3	84.0	83.5	83.3	83.5	84.2	83.6
1998	83.8	83.6	83.6	83.7	83.9	83.0	82.3	83.4	82.8	83.1	82.5	82.2	83.7	83.5	82.9	82.6	83.2
1999	82.4	82.3	82.3	82.1	82.2	82.0	82.1	82.2	81.9	82.3	82.5	82.8	82.3	82.1	82.1	82.5	82.3
2000	82.4	82.6	82.6	82.9	83.0	82.9	82.4	82.0	82.0	81.5	81.1	80.8	82.5	82.9	82.1	81.1	82.2
2001	80.1	79.7	79.2	78.9	78.4	78.0	77.9	77.7	77.1	76.8	76.2	75.8	79.6	78.4	77.6	76.3	78.0
2002	76.3	76.4	76.7	77.0	77.1	77.3	77.9	77.6	77.6	76.8			76.5	77.1	77.7		

NOTE. Estimates from August 2002 through October 2002 are subject to further revision in the upcoming monthly releases.

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

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

Table 4A

INDUSTRIAL PRODUCTION: Manufacturing[1] Excluding Selected High-Technology Industries[2]

Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual[3]
IP *(percent change)*																	
1972	2.4	.8	.8	1.1	.2	.4	.1	1.1	.7	1.3	1.2	1.6	16.8	9.2	6.0	14.9	10.0
1973	.7	1.5	.2	-.4	.6	-.1	.4	-.6	.8	.7	.5	.0	13.9	2.4	1.7	5.6	8.4
1974	-.8	-.6	.0	-.1	.5	.0	-.2	-.7	-.1	-.8	-2.9	-4.6	-4.0	-.1	-2.1	-17.0	-1.1
1975	-1.7	-2.6	-1.3	-.3	.0	.9	1.1	1.2	1.6	.2	.2	1.3	-27.6	-6.9	12.6	9.3	-10.5
1976	1.2	1.7	.0	.8	.3	.0	.6	.6	-.1	.0	1.2	1.1	14.1	6.3	4.4	5.3	8.3
1977	-.1	1.4	1.6	.9	.6	.6	.3	.4	.0	.2	.1	1.1	10.3	12.9	4.5	3.0	7.6
1978	-1.2	.0	1.6	1.5	.4	.7	-.1	.4	.3	.6	.8	.7	.1	12.7	3.4	7.1	5.1
1979	-.8	.2	.3	-1.4	1.0	-.1	-.1	-1.6	.2	.2	-.4	.2	.9	-2.0	-3.1	-1.9	1.8
1980	.4	-.2	-.9	-2.3	-3.1	-1.7	-1.4	.9	1.8	1.6	1.9	.2	.2	-20.1	-9.2	19.1	-5.0
1981	-.6	-.5	.3	.3	.5	-.6	.2	-.2	-.6	-1.2	-1.2	-1.9	-.4	2.2	-1.1	-11.9	.0
1982	-2.3	2.5	-.8	-.7	-.4	-.2	-.3	-.8	-.3	-1.5	-.7	-.6	-10.1	-3.1	-4.7	-9.9	-6.7
1983	2.5	-.3	.9	1.2	1.3	.7	1.3	.9	1.5	1.0	.2	.2	8.1	11.6	13.9	10.7	3.6
1984	1.8	.7	.7	.3	.2	.3	.4	.0	-.4	.3	.2	.3	11.5	4.8	2.1	1.3	8.4
1985	-.5	-.2	.7	.0	.1	.0	-.3	.5	.2	-.4	.6	.4	-.5	2.1	.7	1.7	1.3
1986	1.3	-.5	-.4	.4	.1	-.2	-.2	.5	.2	.4	.4	.8	4.9	-.3	.5	5.0	2.1
1987	-.8	1.5	.2	.4	.5	.5	.6	.4	.5	1.4	.5	.4	3.6	6.3	6.1	9.3	4.4
1988	-.2	.3	.2	.6	-.2	-.1	.1	.1	.3	.5	.3	.4	2.2	3.1	.8	4.2	4.3
1989	.8	-1.1	.0	.0	-.8	.1	-1.3	.8	-.3	-.3	.0	.2	2.1	-3.4	-4.2	-.9	.3
1990	-.3	1.4	.3	-.2	.1	.2	-.2	.2	-.1	-.8	-1.3	-.7	3.7	2.3	.1	-7.4	-.1
1991	-.7	-.8	-.8	.4	.7	1.0	.4	-.1	1.1	-.1	-.4	-.3	-9.3	1.3	6.7	.8	-2.6
1992	-.8	1.0	.9	.4	.5	.0	.7	-.4	-.1	.4	.4	-.2	-.9	6.7	2.5	1.6	2.5
1993	.9	.1	.0	.4	-.2	-.3	.3	-.4	.8	.5	.4	.6	3.8	.9	.4	5.3	2.5
1994	.3	.1	.9	.5	.5	.2	.2	.6	.0	.7	.6	.9	4.9	6.5	3.7	6.7	4.4
1995	.2	-.3	-.2	-.4	-.2	.3	-.9	.9	.5	-.6	-.1	.3	3.1	-2.4	.3	.4	2.5
1996	-1.1	1.1	-.5	1.0	.4	.9	.1	.3	.4	-.3	.7	.6	-1.2	6.4	4.5	3.3	1.6
1997	.0	1.2	.2	.0	.1	.4	.0	1.2	.7	.6	.5	.0	6.3	2.9	5.5	7.2	4.8
1998	.5	-.1	.1	.7	.2	-1.0	-.6	1.9	-.6	.8	-.3	-.1	2.6	1.9	-.4	3.1	3.4
1999	.1	.3	-.1	.0	.5	-.4	.0	.7	-.2	.7	.5	.3	.4	1.1	1.2	5.1	1.4
2000	-.3	.3	.5	.3	-.1	.2	-.4	-.7	.2	-.7	-.6	-.7	1.5	2.7	-3.0	-5.5	1.3
2001	-.7	-.5	-.5	-.3	-.5	-.6	.1	-.6	-.6	-.7	-.4	-.5	-7.1	-4.9	-3.8	-6.5	-4.9
2002	.6	.1	.2	.2	.3	.4	.4	.0	-.2	-.8			1.1	2.8	2.6		
IP *(1997=100)*																	
1972	61.2	61.7	62.2	62.9	63.0	63.3	63.4	64.1	64.5	65.3	66.1	67.2	61.7	63.1	64.0	66.2	63.7
1973	67.7	68.7	68.9	68.6	69.0	68.9	69.2	68.8	69.4	69.8	70.2	70.2	68.4	68.8	69.1	70.1	69.1
1974	69.6	69.2	69.2	69.1	69.4	69.5	69.3	68.9	68.8	68.2	66.2	63.1	69.4	69.3	69.0	65.8	68.4
1975	62.1	60.5	59.7	59.5	59.5	60.0	60.7	61.4	62.3	62.5	62.6	63.4	60.7	59.7	61.5	62.8	61.2
1976	64.2	65.3	65.3	65.8	66.0	66.0	66.4	66.8	66.7	66.7	67.5	68.3	64.9	65.9	66.6	67.5	66.3
1977	68.2	69.1	70.2	70.9	71.3	71.7	71.9	72.2	72.2	72.3	72.4	73.2	69.2	71.3	72.1	72.7	71.3
1978	72.3	72.3	73.4	74.5	74.8	75.3	75.2	75.5	75.7	76.2	76.8	77.4	72.7	74.9	75.5	76.8	75.0
1979	76.8	76.9	77.2	76.1	76.9	76.8	76.7	75.5	75.7	75.8	75.5	75.6	77.0	76.6	76.0	75.6	76.3
1980	75.9	75.8	75.2	73.5	71.1	69.9	69.0	69.6	70.8	72.0	73.3	73.5	75.6	71.5	69.8	72.9	72.5
1981	73.0	72.7	72.9	73.1	73.5	73.1	73.3	73.2	72.7	71.8	70.9	69.6	72.9	73.2	73.0	70.8	72.5
1982	68.0	69.7	69.1	68.6	68.3	68.2	68.0	67.4	67.2	66.2	65.8	65.4	68.9	68.4	67.5	65.8	67.6
1983	67.0	66.8	67.4	68.2	69.1	69.6	70.5	71.1	72.2	72.9	73.1	73.2	67.1	69.0	71.2	73.1	70.1
1984	74.6	75.1	75.6	75.8	75.9	76.2	76.5	76.5	76.1	76.4	76.6	76.8	75.1	76.0	76.4	76.6	76.0
1985	76.4	76.3	76.8	76.8	76.9	77.0	76.7	77.1	77.3	77.0	77.4	77.7	76.5	76.9	77.1	77.4	77.0
1986	78.7	78.3	77.9	78.3	78.3	78.2	78.0	78.4	78.6	78.9	79.2	79.8	78.3	78.2	78.3	79.3	78.6
1987	79.2	80.4	80.5	80.8	81.3	81.6	82.1	82.4	82.8	83.9	84.3	84.7	80.0	81.2	82.5	84.3	82.0
1988	84.5	84.8	85.0	85.5	85.4	85.3	85.4	85.5	85.8	86.2	86.5	86.8	84.8	85.4	85.6	86.5	85.6
1989	87.5	86.6	86.6	86.6	85.9	86.0	84.9	85.6	85.3	85.0	85.0	85.1	86.9	86.2	85.2	85.0	85.8
1990	84.9	86.1	86.4	86.2	86.3	86.5	86.3	86.4	86.3	85.6	84.5	83.9	85.8	86.3	86.3	84.7	85.8
1991	83.3	82.6	82.0	82.3	82.8	83.7	84.0	83.9	84.9	84.8	84.4	84.1	82.6	82.9	84.3	84.4	83.6
1992	83.4	84.3	85.0	85.3	85.7	85.8	86.4	86.1	86.0	86.3	86.7	86.5	84.2	85.6	86.1	86.5	85.6
1993	87.3	87.3	87.3	87.7	87.5	87.3	87.6	87.3	87.9	88.3	88.7	89.2	87.3	87.5	87.6	88.7	87.8
1994	89.4	89.6	90.4	90.9	91.3	91.5	91.7	92.2	92.2	92.9	93.5	94.3	89.8	91.2	92.1	93.6	91.7
1995	94.5	94.2	94.1	93.7	93.6	93.9	93.0	93.9	94.4	93.8	93.8	94.1	94.3	93.7	93.8	93.9	93.9
1996	93.1	94.1	93.6	94.5	94.9	95.7	95.8	96.0	96.5	96.2	96.9	97.5	93.6	95.0	96.1	96.9	95.4
1997	97.5	98.7	98.9	98.9	99.0	99.4	99.4	100.6	101.2	101.8	102.3	102.3	98.4	99.1	100.4	102.2	100.0
1998	102.9	102.8	102.8	103.5	103.8	102.7	102.1	104.1	103.5	104.3	104.0	103.8	102.8	103.3	103.2	104.0	103.4
1999	104.0	104.3	104.2	104.2	104.7	104.3	104.3	105.1	104.9	105.6	106.1	106.4	104.2	104.4	104.7	106.0	104.8
2000	106.1	106.4	106.9	107.1	107.1	107.2	106.8	106.0	106.2	105.5	104.9	104.1	106.4	107.2	106.3	104.8	106.2
2001	103.4	102.9	102.4	102.1	101.7	101.1	101.2	100.6	100.1	99.4	99.0	98.5	102.9	101.6	100.6	98.9	101.0
2002	99.1	99.2	99.4	99.5	99.9	100.2	100.6	100.6	100.3	99.6			99.2	99.9	100.5		

NOTE. Estimates from August 2002 through October 2002 are subject to further revision in the upcoming monthly releases.

1. See note to table 2A.
2. Computers, communications equipment, and semiconductors and related electronic components.
3. Annual averages of industrial production are calculated from not seasonally adjusted indexes.

Table 4B

CAPACITY AND UTILIZATION: Manufacturing[1] Excluding Selected High-Technology Industries[2]

Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual[3]
Capacity *(percent of 1997 output)*																	
1972	75.7	75.8	76.0	76.1	76.3	76.4	76.6	76.7	76.9	77.1	77.2	77.4	75.8	76.3	76.7	77.2	76.5
1973	77.6	77.8	78.0	78.2	78.4	78.6	78.9	79.1	79.3	79.5	79.7	80.0	77.8	78.4	79.1	79.7	78.8
1974	80.2	80.4	80.6	80.8	81.0	81.2	81.4	81.6	81.7	81.9	82.0	82.2	80.4	81.0	81.6	82.0	81.2
1975	82.3	82.4	82.5	82.6	82.8	82.9	83.0	83.1	83.2	83.3	83.4	83.6	82.4	82.8	83.1	83.4	82.9
1976	83.7	83.8	84.0	84.1	84.3	84.4	84.5	84.7	84.8	85.0	85.1	85.3	83.8	84.3	84.7	85.1	84.5
1977	85.4	85.6	85.8	85.9	86.1	86.3	86.4	86.6	86.8	87.0	87.2	87.4	85.6	86.1	86.6	87.2	86.4
1978	87.6	87.7	87.9	88.1	88.3	88.5	88.7	88.9	89.1	89.3	89.5	89.6	87.7	88.3	88.9	89.5	88.6
1979	89.8	90.0	90.2	90.3	90.5	90.7	90.8	91.0	91.2	91.3	91.5	91.6	90.0	90.5	91.0	91.4	90.7
1980	91.7	91.9	92.0	92.2	92.3	92.5	92.6	92.8	92.9	93.1	93.3	93.4	91.9	92.3	92.8	93.3	92.6
1981	93.6	93.8	93.9	94.1	94.2	94.4	94.5	94.7	94.8	94.9	95.1	95.2	93.8	94.2	94.7	95.1	94.4
1982	95.3	95.4	95.5	95.6	95.7	95.8	95.8	95.9	95.9	96.0	96.0	96.0	95.4	95.7	95.9	96.0	95.7
1983	96.0	95.9	95.9	95.9	95.8	95.8	95.8	95.7	95.7	95.7	95.7	95.8	95.9	95.8	95.7	95.7	95.8
1984	95.8	95.8	95.9	96.0	96.1	96.2	96.3	96.5	96.6	96.8	96.9	97.1	95.8	96.1	96.5	96.9	96.3
1985	97.2	97.4	97.6	97.7	97.9	98.0	98.2	98.3	98.4	98.6	98.7	98.8	97.4	97.9	98.3	98.7	98.1
1986	98.9	99.0	99.1	99.1	99.2	99.3	99.4	99.5	99.6	99.7	99.8	100.0	99.0	99.2	99.5	99.8	99.4
1987	100.1	100.2	100.3	100.4	100.6	100.7	100.8	100.9	100.9	101.0	101.0	101.1	100.2	100.6	100.9	101.0	100.7
1988	101.1	101.1	101.1	101.2	101.2	101.2	101.2	101.3	101.3	101.4	101.5	101.6	101.1	101.2	101.3	101.5	101.3
1989	101.7	101.9	102.0	102.2	102.3	102.5	102.7	102.9	103.1	103.3	103.5	103.7	101.9	102.3	102.9	103.5	102.6
1990	103.8	104.0	104.1	104.3	104.5	104.6	104.8	105.0	105.1	105.3	105.4	105.6	104.0	104.5	105.0	105.4	104.7
1991	105.7	105.9	106.0	106.2	106.3	106.4	106.6	106.7	106.8	107.0	107.1	107.2	105.9	106.3	106.7	107.1	106.5
1992	107.3	107.4	107.6	107.7	107.8	107.9	108.1	108.2	108.3	108.5	108.6	108.7	107.4	107.8	108.2	108.6	108.0
1993	108.9	109.0	109.2	109.3	109.4	109.6	109.7	109.8	109.9	110.0	110.2	110.3	109.0	109.4	109.8	110.2	109.6
1994	110.4	110.5	110.7	110.8	110.9	111.1	111.2	111.4	111.6	111.8	112.0	112.3	110.5	110.9	111.4	112.0	111.2
1995	112.5	112.8	113.0	113.3	113.6	113.9	114.2	114.5	114.8	115.1	115.4	115.7	112.8	113.6	114.5	115.4	114.1
1996	115.9	116.2	116.5	116.7	117.0	117.2	117.5	117.7	118.0	118.2	118.5	118.8	116.2	117.0	117.7	118.5	117.4
1997	119.1	119.4	119.8	120.1	120.5	120.9	121.3	121.7	122.1	122.6	123.0	123.4	119.4	120.5	121.7	123.0	121.2
1998	123.8	124.2	124.6	125.0	125.4	125.7	126.1	126.4	126.7	127.0	127.3	127.6	124.2	125.4	126.4	127.3	125.8
1999	127.8	128.1	128.4	128.6	128.9	129.1	129.3	129.6	129.8	130.0	130.2	130.5	128.1	128.9	129.6	130.2	129.2
2000	130.7	130.9	131.0	131.2	131.4	131.5	131.7	131.8	132.0	132.1	132.2	132.3	130.8	131.4	131.8	132.2	131.6
2001	132.4	132.5	132.5	132.6	132.6	132.7	132.7	132.7	132.7	132.7	132.7	132.7	132.5	132.6	132.7	132.7	132.6
2002	132.7	132.7	132.6	132.6	132.6	132.6	132.6	132.6	132.6	132.6			132.7	132.6	132.6		
Utilization *(percent)*																	
1972	80.9	81.4	81.9	82.6	82.6	82.8	82.7	83.5	83.9	84.8	85.6	86.8	81.4	82.7	83.4	85.7	83.3
1973	87.2	88.3	88.3	87.7	88.0	87.7	87.8	87.0	87.5	87.8	88.0	87.8	87.9	87.8	87.4	87.9	87.8
1974	86.8	86.1	85.9	85.5	85.7	85.5	85.2	84.4	84.1	83.3	80.7	76.8	86.3	85.6	84.6	80.3	84.2
1975	75.4	73.4	72.3	72.0	71.9	72.4	73.1	73.9	74.9	75.0	75.0	75.9	73.7	72.1	74.0	75.3	73.8
1976	76.7	77.9	77.8	78.2	78.4	78.2	78.5	78.9	78.7	78.5	79.3	80.1	77.5	78.3	78.7	79.3	78.4
1977	79.8	80.8	81.9	82.5	82.9	83.2	83.2	83.3	83.2	83.2	83.1	83.8	80.8	82.8	83.2	83.3	82.6
1978	82.6	82.4	83.5	84.6	84.7	85.1	84.8	84.9	85.0	85.4	85.9	86.3	82.8	84.8	84.9	85.8	84.6
1979	85.5	85.5	85.6	84.2	84.9	84.7	84.5	83.0	83.0	83.0	82.5	82.5	85.5	84.6	83.5	82.7	84.1
1980	82.8	82.5	81.7	79.7	77.1	75.6	74.5	75.0	76.2	77.3	78.6	78.6	82.3	77.5	75.2	78.2	78.3
1981	78.0	77.5	77.6	77.7	78.0	77.5	77.5	77.3	76.7	75.6	74.6	73.1	77.7	77.7	77.1	74.4	76.8
1982	71.3	73.0	72.3	71.8	71.4	71.2	70.9	70.3	70.1	69.0	68.6	68.1	72.2	71.4	70.4	68.6	70.7
1983	69.8	69.7	70.3	71.2	72.1	72.6	73.6	74.2	75.4	76.2	76.3	76.5	69.9	72.0	74.4	76.3	73.2
1984	77.8	78.3	78.8	79.0	79.0	79.2	79.4	79.3	78.8	79.0	79.0	79.1	78.3	79.0	79.1	79.0	78.9
1985	78.6	78.3	78.8	78.6	78.6	78.5	78.2	78.4	78.5	78.1	78.5	78.7	78.5	78.6	78.4	78.4	78.5
1986	79.6	79.1	78.7	78.9	78.9	78.7	78.5	78.8	78.9	79.1	79.3	79.9	79.1	78.9	78.7	79.4	79.0
1987	79.1	80.2	80.2	80.5	80.8	81.1	81.5	81.7	82.0	83.1	83.5	83.8	79.9	80.8	81.8	83.5	81.5
1988	83.6	83.8	84.0	84.6	84.4	84.3	84.4	84.5	84.7	85.0	85.2	85.5	83.8	84.4	84.5	85.2	84.5
1989	86.1	85.0	84.9	84.8	83.9	83.9	82.6	83.2	82.7	82.3	82.1	82.1	85.3	84.2	82.8	82.2	83.6
1990	81.8	82.8	83.0	82.7	82.6	82.6	82.3	82.3	82.1	81.3	80.2	79.5	82.6	82.6	82.3	80.3	81.9
1991	78.8	78.1	77.3	77.5	77.9	78.6	78.8	78.6	79.4	79.2	78.8	78.5	78.1	78.0	79.0	78.9	78.5
1992	77.7	78.4	79.0	79.2	79.5	79.5	80.0	79.6	79.4	79.6	79.8	79.5	78.4	79.4	79.6	79.6	79.3
1993	80.2	80.1	80.0	80.2	80.0	79.7	79.8	79.5	80.0	80.3	80.5	80.8	80.1	80.0	79.8	80.5	80.1
1994	81.0	81.0	81.7	82.0	82.3	82.3	82.4	82.8	82.7	83.1	83.4	84.0	81.2	82.2	82.6	83.5	82.4
1995	84.0	83.6	83.2	82.7	82.4	82.4	81.5	82.0	82.2	81.5	81.3	81.3	83.6	82.5	81.9	81.4	82.3
1996	80.3	81.0	80.4	81.0	81.1	81.7	81.5	81.6	81.8	81.4	81.8	82.1	80.5	81.2	81.6	81.7	81.3
1997	81.8	82.6	82.6	82.3	82.1	82.2	81.9	82.6	82.9	83.1	83.2	82.9	82.3	82.2	82.5	83.1	82.5
1998	83.1	82.7	82.5	82.8	82.8	81.7	81.0	82.4	81.7	82.1	81.7	81.4	82.8	82.4	81.7	81.7	82.2
1999	81.3	81.4	81.2	81.0	81.3	80.8	80.6	81.1	80.8	81.2	81.5	81.6	81.3	81.0	80.8	81.4	81.1
2000	81.2	81.3	81.5	81.7	81.5	81.5	81.1	80.4	80.5	79.9	79.3	78.7	81.3	81.6	80.7	79.3	80.7
2001	78.1	77.7	77.3	77.0	76.6	76.2	76.3	75.8	75.4	74.9	74.6	74.2	77.7	76.6	75.8	74.6	76.2
2002	74.7	74.8	74.9	75.1	75.3	75.6	75.9	75.9	75.7	75.1			74.8	75.3	75.8		

NOTE. Estimates from August 2002 through October 2002 are subject to further revision in the upcoming monthly releases.

1. See note to table 2A.

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: 1998–2002[1]

Item		Revised change (percent)					Difference between revised and earlier changes (percentage points)				
		1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Total IP		4.0	4.9	2.7	-5.7	3.1	.5	.6	.1	.2	-.3
MARKET GROUPS											
Final products and nonindustrial supplies		4.3	3.3	3.2	-5.4	1.8	1.4	.8	1.4	-.2	.3
Consumer goods		1.4	2.6	1.1	-2.1	3.2	1.2	.0	.4	-.4	.8
Durable		6.3	5.7	-2.0	-3.0	9.0	.7	-1.0	2.2	-.7	-.9
Automotive products		8.3	5.4	-4.8	1.7	15.3	.8	-.4	2.6	-2.0	-2.0
Home electronics		16.3	19.7	9.2	-13.5	-8.2	4.0	-11.1	1.8	4.8	-13.7
Appliances, furniture, carpeting		4.6	2.3	-1.0	-4.6	1.3	-1.4	-.3	1.0	-2.4	2.8
Miscellaneous goods		.1	4.3	.6	-9.5	3.2	.5	.5	2.6	1.8	1.0
Nondurable		-.4	1.4	2.2	-1.8	1.3	1.0	.2	.0	-.3	1.0
Non-energy		.2	1.2	1.1	-1.0	-.5	1.2	.0	-.1	-.5	.5
Foods and tobacco		-.4	.3	-.4	-2.2	.5	-.3	-.4	-.7	-1.4	.7
Clothing		-6.6	-2.8	-6.2	-12.6	-2.1	-.2	.0	2.2	-1.8	-1.8
Chemical products		2.2	4.8	6.5	4.8	-2.0	-.2	.4	1.1	-1.3	-.3
Paper products		2.8	2.0	1.0	-.3	-1.9	8.9	2.0	-1.3	5.1	1.6
Energy		-3.4	3.0	7.6	-5.2	10.8	.0	.7	-1.0	1.6	1.7
Business equipment		9.3	4.0	7.9	-14.3	-3.1	.9	-.5	2.0	-1.7	-1.1
Transit		16.1	-10.2	-8.6	-12.1	-16.4	.7	-6.3	-1.1	1.0	-10.2
Information processing		18.8	18.7	20.0	-13.4	-1.9	4.5	3.1	3.5	-1.9	-.4
Industrial and other		.0	.2	6.3	-15.7	1.3	.4	2.0	3.3	-2.2	1.5
Defense and space equipment		4.5	-5.2	-.4	.0	2.1	-1.0	2.5	1.8	-.2	-3.7
Construction supplies		4.7	2.1	.7	-6.0	2.4	-1.9	-1.8	.2	-2.2	-2.6
Business supplies		6.5	7.6	6.3	-5.1	3.4	5.2	6.1	5.4	1.5	1.5
Materials		3.6	7.3	2.0	-6.0	5.0	-.8	.0	-1.8	.8	-1.6
Non-energy		5.1	8.8	2.3	-6.9	5.0	-.4	.1	-2.1	1.1	-2.5
Durable		8.5	11.8	5.6	-7.7	5.8	-.3	1.4	-1.9	.8	-2.3
Consumer parts		4.3	7.0	-6.3	-3.7	11.0	.7	1.1	-4.3	.7	-2.9
Equipment parts		20.0	23.2	23.4	-10.2	5.0	-2.0	3.6	-1.7	1.0	-4.8
Other		.3	3.9	-3.5	-7.2	3.7	.2	-.5	-.5	.8	-.2
Nondurable		-.5	3.7	-3.5	-5.4	3.7	2.8	-.2	1.2	.7	-2.1
Textile		-5.0	.2	-9.6	-12.6	3.7	1.2	-4.4	3.2	.1	-3.1
Paper		.2	2.7	-3.8	-5.6	3.4	2.9	-1.8	.7	-.6	.1
Chemical		-2.4	7.4	-4.1	-5.4	6.0	3.2	2.2	.1	1.9	-2.7
Energy		-2.0	1.3	1.0	-3.4	5.1	-1.6	.7	-.6	-.2	2.0
INDUSTRY GROUPS											
Manufacturing		5.0	5.5	2.5	-6.1	2.6	.7	.7	.2	.1	-.7
Manufacturing (NAICS)		5.1	5.6	2.6	-6.2	2.9	—	—	—	—	—
Durable manufacturing		9.0	7.8	5.4	-8.2	3.6	—	—	—	—	—
Wood products	321	7.1	1.8	-6.7	-3.1	3.9	—	—	—	—	—
Nonmetallic mineral products	327	6.1	-.1	-.2	.1	2.4	—	—	—	—	—
Primary metal	331	-3.5	3.9	-9.6	-11.6	5.5	—	—	—	—	—
Fabricated metal products	332	1.0	2.6	.5	-7.8	2.2	—	—	—	—	—
Machinery	333	-.5	.3	4.8	-17.8	2.0	—	—	—	—	—
Computer and electronic products	334	27.0	30.6	30.7	-9.6	4.3	—	—	—	—	—
Electrical equip., appliances, and components	335	2.7	2.9	2.7	-10.9	-1.8	—	—	—	—	—
Motor vehicles and parts	3361–3	7.1	5.7	-8.4	-1.2	17.0	—	—	—	—	—
Aerospace and other miscellaneous transportation equipment	3364–9	12.1	-11.2	-4.9	-5.0	-13.8	—	—	—	—	—
Furniture and related products	337	4.8	2.3	.7	-8.9	-.8	—	—	—	—	—
Miscellaneous	339	5.1	2.0	3.8	-5.7	3.3	—	—	—	—	—
Nondurable manufacturing		-.2	2.5	-1.2	-3.4	2.1	—	—	—	—	—
Food, beverage, and tobacco products	311,2	-.1	.2	-.4	-1.8	.7	—	—	—	—	—
Textile and product mills	313,4	-4.2	1.9	-6.3	-12.4	2.2	—	—	—	—	—
Apparel and leather	315,6	-6.5	-3.1	-5.9	-12.9	-2.1	—	—	—	—	—
Paper	322	-.2	2.1	-4.0	-5.7	3.9	—	—	—	—	—
Printing and support	323	2.2	.3	-.8	-5.6	3.1	—	—	—	—	—
Petroleum and coal products	324	.9	1.6	-.5	-.3	1.5	—	—	—	—	—
Chemical	325	-.4	5.5	.4	-1.1	1.9	—	—	—	—	—
Plastics and rubber products	326	2.8	6.2	-1.9	-5.7	5.9	—	—	—	—	—
Other manufacturing (non-NAICS)	**1133,5111**	3.7	3.8	.4	-3.9	-2.7	—	—	—	—	—
Mining	**21**	-4.8	.2	.8	-.6	-1.9	.5	.4	-.9	1.9	1.6
Utilities 2211,2		-.9	2.0	6.0	-5.4	11.7	-.3	-.3	-.7	.7	.5
Electric	2211	.8	1.7	4.8	-4.0	11.6	—	—	—	—	—
Natural gas	2212	-11.1	4.1	12.8	-12.5	13.0	—	—	—	—	—

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 2002, the rates are calculated from the fourth quarter of 2001 to the third quarter of 2002 and annualized.

Table 6
Rates Of Change in Industrial Production, Special Aggregates and Selected Detail: 1998–2002[1]

Item		Revised change (percent)					Difference between revised and earlier changes (percentage points)				
		1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Total industry		4.0	4.9	2.7	-5.7	3.1	.5	.6	.1	.2	-.3
Energy		-2.3	1.9	3.7	-3.5	6.2	.2	.6	-.8	.7	1.8
Consumer products		-3.4	3.0	7.6	-5.2	10.8	.0	.7	-1.0	1.6	1.7
Commercial products		.1	1.8	7.0	.3	7.4	.2	1.1	-.3	-.3	-.3
Oil and gas well drilling		-17.5	9.7	29.4	-10.9	-20.4	.1	.2	.3	.1	-2.4
Converted fuel		-.1	2.4	5.3	-7.7	6.8	.1	-.3	-.3	.5	-2.0
Primary materials		-3.2	.4	-1.3	-1.0	4.0	-2.7	1.1	-1.1	-.1	4.0
Non-energy		5.1	5.4	2.5	-6.1	2.5	.7	.6	.2	.1	-.8
Selected high-technology industries		38.9	41.6	40.0	-9.6	7.3	3.1	7.6	.6	6.0	-9.9
Computers and office equipment	3341	42.3	19.6	17.7	-5.9	18.2	1.8	-13.3	-15.6	2.3	1.4
Communications equipment	3342	9.0	27.0	30.3	-20.2	-16.7	2.5	5.9	4.9	4.2	-2.5
Semiconductors and related electronic components	334412–9	55.0	62.0	55.8	-3.4	21.7	4.5	20.9	7.2	11.5	-8.9
Excluding selected high–technology industries		1.8	1.9	-1.2	-5.6	2.1	.5	-.1	.2	-.5	-.2
Motor vehicles and parts	3361–3	7.1	5.7	-8.4	-1.2	17.0	—	—	—	—	—
Motor vehicles	3361	9.8	2.6	-12.0	2.0	22.3	.8	-3.6	-.6	-.1	-.9
Motor vehicle parts	3363	4.8	7.8	-4.3	-2.1	11.8	—	—	—	—	—
Excluding motor vehicles and parts		1.4	1.5	-.5	-6.0	.7	.4	.0	.3	-.5	.1
Consumer goods		.5	1.9	.8	-2.2	-.2	1.0	.0	.4	-.6	.6
Business equipment		3.8	-2.7	5.4	-13.7	-5.7	-.3	.4	3.4	-2.0	.9
Construction supplies		4.9	1.9	.3	-5.9	2.5	—	—	—	—	—
Business supplies		8.1	8.9	6.1	-6.4	2.4	6.4	7.3	6.6	2.0	1.9
Materials		.0	3.1	-2.8	-7.3	2.8	.8	-.2	-.1	-.5	-.4
Measures excluding selected high–technology industries											
Total industry		1.2	1.8	-.4	-5.2	2.8	.4	.0	.1	-.3	.2
Manufacturing[2]		1.8	1.9	-1.1	-5.6	2.1	.5	.0	.1	-.5	-.1
Durable		3.3	1.2	-1.3	-7.8	2.8	.0	-.6	.5	-1.1	-.4
Measures excluding motor vehicles and parts											
Total industry		3.8	4.9	3.5	-6.0	2.1	.5	.7	.2	.2	-.1
Manufacturing[2]		4.9	5.4	3.5	-6.5	1.4	.7	.9	.3	.1	-.5
Durable		9.3	8.0	7.9	-9.3	1.1	.6	1.3	1.0	.1	-1.2
Measure of non-energy material inputs to											
Finished processors		10.5	13.7	8.0	-7.9	6.4	—	—	—	—	—
Semifinished and primary processors		.1	4.2	-3.1	-5.9	3.8	—	—	—	—	—
STAGE-OF-PROCESS GROUPS											
Crude		-3.9	2.5	-3.2	-3.7	1.5	—	—	—	—	—
Primary and semifinished		5.1	7.1	3.4	-5.9	5.5	—	—	—	—	—
Finished		4.5	2.6	3.3	-5.8	.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 2002, the rates are calculated from the fourth quarter of 2001 to the third quarter of 2002 and annualized.
2. See note to Table 2A.

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)		
		1972–2001 Ave.	1988–1989 High	1990–1991 Low	2000 Q4	2001 Q4	2002 Q3	2000 Q4	2001 Q4	2002 Q3
Total industry		81.5	85.1	78.6	81.6	75.1	76.2	.9	.4	.1
Manufacturing		80.4	85.5	77.2	80.0	73.4	74.3	.8	.3	-.1
Manufacturing (NAICS)		80.3	85.5	77.0	79.7	72.9	73.8	—	—	—
Durable manufacturing		78.8	84.5	73.4	79.7	69.9	70.5	—	—	—
Wood products	321	80.5	88.7	73.1	76.6	73.5	75.6	—	—	—
Nonmetallic mineral products	327	79.5	85.6	72.1	81.8	80.3	81.0	—	—	—
Primary metal	331	81.1	95.3	75.2	78.8	73.0	77.6	—	—	—
Fabricated metal products	332	77.3	80.1	71.0	77.2	70.5	71.3	—	—	—
Machinery	333	80.3	84.7	72.9	82.6	67.3	68.3	—	—	—
Computer and electronic products	334	80.2	81.5	76.4	83.0	64.1	62.6	—	—	—
Electrical equip., appliances, and components	335	83.5	87.5	75.0	84.9	75.9	75.7	—	—	—
Motor vehicles and parts	3361–3	77.2	90.0	56.6	78.4	75.3	82.7	—	—	—
Aerospace and other miscellaneous transportation equipment	3364–9	73.5	88.9	81.9	68.7	65.3	58.7	—	—	—
Furniture and related products	337	79.5	84.1	68.1	79.7	71.4	71.0	—	—	—
Miscellaneous	339	77.2	81.7	77.5	81.3	74.6	75.5	—	—	—
Nondurable manufacturing		82.4	86.9	81.8	79.7	77.0	78.5	—	—	—
Food, beverage, and tobacco products	311,2	82.5	85.5	81.3	80.3	79.0	79.6	—	—	—
Textile and product mills	313,4	83.9	91.1	77.1	80.4	71.9	74.2	—	—	—
Apparel and leather	315,6	80.5	83.9	77.2	73.0	65.4	65.0	—	—	—
Paper		88.7	94.0	85.4	84.6	81.0	84.1	—	—	—
Printing and support	323	85.0	91.7	82.7	79.3	76.2	79.7	—	—	—
Petroleum and coal products	324	86.3	88.9	82.5	90.0	88.7	89.0	—	—	—
Chemical	325	78.8	85.6	80.8	76.6	74.7	75.5	—	—	—
Plastics and rubber products	326	83.8	91.2	77.1	80.8	75.9	80.3	—	—	—
Other manufacturing (non-NAICS)	**1133,5111**	83.6	90.2	79.1	84.0	81.9	81.7	—	—	—
Mining	**21**	87.0	85.6	83.3	89.0	86.6	85.5	-1.3	-1.0	.5
Utilities	**2211,2**	86.7	92.6	84.2	93.6	85.0	88.2	.0	1.4	.4
Selected high-technology industries		79.8	80.4	74.6	86.1	63.1	62.2	4.9	2.4	-1.7
Computers and office equipment	3341	78.7	79.7	67.0	76.2	68.7	74.4	1.2	5.9	8.3
Communications equipment	3342	79.2	82.2	73.3	86.5	60.7	52.1	4.9	2.8	1.3
Semiconductors and related electronic components	334412–9	81.8	81.4	78.7	90.2	63.2	66.4	6.6	2.3	-1.5
Measures excluding selected high–technology industries										
Total industry		81.6	85.5	78.8	81.1	76.3	77.7	.5	.0	.2
Manufacturing[1]		80.4	86.1	77.3	79.3	74.6	75.8	.4	-.1	.0
STAGE-OF-PROCESS GROUPS										
Crude		86.5	88.6	84.7	86.9	82.9	84.1	.0	.0	.0
Primary and semifinished		82.4	86.2	77.6	83.4	76.3	78.5	—	—	—
Finished		78.7	83.1	77.2	78.1	72.0	71.6	—	—	—

1. See note to Table 2A

Table 8
RATES OF CHANGE IN CAPACITY, BY INDUSTRY GROUPS: 1998 to 2002[1]

Item	Revised change (percent)					Difference between revised and earlier changes (percentage points)				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Total industry	6.5	4.1	4.3	2.4	1.1	.1	.2	.3	.7	.1
Manufacturing[2]	7.3	4.8	5.0	2.4	.9	.2	.4	.2	.8	-.1
Durable	11.4	7.4	8.3	4.6	2.3	—	—	—	—	—
Nondurable	2.4	2.0	1.3	.0	-.6	—	—	—	—	—
Mining	.3	-2.6	-.4	2.2	-.2	.9	-.2	1.5	1.6	-.5
Utilities	.4	1.3	2.9	4.1	6.5	.3	-1.1	.0	-1.0	2.5
Selected high-technology industries	49.2	28.5	40.3	23.2	8.7	12.6	-.2	-2.6	10.5	-1.4
Manufacturing[2] ex. selected high-technology industries	3.5	2.3	1.5	.4	-.1	-.9	.3	.5	.1	-.3
STAGE–OF–PROCESS GROUPS										
Crude	.6	-2.2	-.4	.8	-.6	.0	.0	.0	.0	.0
Primary and semifinished	8.5	5.0	5.6	3.0	1.7	—	—	—	—	—
Finished	5.1	4.5	4.0	2.0	.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.
2. See note to Table 2A.

Table 9
RATES OF CHANGE IN ELECTRIC POWER USE: 1998 to 2002[1]

Item	Revised change (percent)					Difference between revised and earlier changes (percentage points)				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Total Industry	-1.4	1.1	-2.0	-9.3	1.4	.8	1.4	-.9	-.9	1.4
Manufacturing[2]	-1.4	1.4	-2.0	-9.8	2.0	.9	1.5	-.9	-.9	1.6
Durable	-2.3	1.7	-3.4	-10.1	3.8	.2	.4	-2.5	.2	2.0
Nondurable	-.7	1.1	-1.0	-9.5	.7	1.4	2.4	.3	-1.9	1.4
Mining	-.7	-3.1	-2.6	-3.3	-6.4	-.5	.3	.4	.3	-.5
Total ex. nuclear nondefense	-1.6	1.2	-2.9	-8.3	.9	.8	1.4	-.9	-.9	1.5
Utility sales to industry	-1.7	.9	-2.3	-10.0	-.9	.6	1.2	-1.2	-1.2	-1.7
Industrial generation	5.7	4.7	5.3	-1.7	-1.2	5.3	5.9	4.7	5.3	1.2

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 2002, the percent change is calculated from the fourth quarter of 2001 to the third quarter of 2002.
2. See note to Table 2A.

Table 10
ANNUAL PROPORTIONS IN INDUSTRIAL PRODUCTION, MARKET AND INDUSTRY GROUP SUMMARY

Item		1994	1995	1996	1997	1998	1999	2000	2001
Total IP		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
MARKET GROUPS									
Final products and nonindustrial supplies		57.2	56.9	57.3	57.8	59.0	58.6	58.5	59.8
Consumer goods		27.3	27.1	27.3	27.1	27.6	27.8	27.8	29.4
Durable		6.9	6.9	7.1	7.2	7.2	7.3	7.2	7.1
Automotive products		3.4	3.5	3.7	3.8	3.8	4.0	3.9	3.9
Home electronics		.5	.5	.5	.5	.5	.5	.5	.4
Appliances, furniture, carpeting		1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3
Miscellaneous goods		1.7	1.7	1.7	1.7	1.6	1.6	1.6	1.6
Nondurable		20.4	20.2	20.1	19.9	20.4	20.4	20.6	22.3
Non-energy		16.8	16.7	16.5	16.6	17.2	17.0	17.0	18.5
Foods and tobacco		8.9	8.9	8.8	8.8	9.3	9.2	9.2	9.9
Clothing		2.0	1.9	1.8	1.6	1.5	1.3	1.2	1.1
Chemical products		3.6	3.6	3.7	3.7	3.9	3.9	4.0	4.7
Paper products		1.8	1.8	1.8	1.9	2.0	2.0	2.0	2.2
Energy		3.6	3.6	3.6	3.3	3.2	3.5	3.6	3.8
Business equipment		10.3	10.4	10.6	11.1	11.6	11.3	11.3	10.7
Transit		1.9	1.8	1.8	2.0	2.4	2.4	2.1	2.0
Information processing		3.1	3.2	3.4	3.7	3.8	3.8	3.9	3.6
Industrial and other		5.2	5.3	5.4	5.4	5.4	5.2	5.3	5.1
Defense and space equipment		2.7	2.5	2.4	2.3	2.4	2.2	2.0	2.1
Construction supplies		6.3	6.3	6.4	6.5	6.8	6.7	6.6	6.8
Business supplies		10.2	10.2	10.2	10.2	10.2	10.2	10.3	10.3
Materials		42.8	43.1	42.7	42.2	41.0	41.4	41.5	40.2
Non-energy		33.0	33.2	32.6	32.9	32.5	32.2	31.7	30.5
Durable		19.8	20.1	20.2	20.5	20.3	20.2	19.9	18.9
Consumer parts		4.1	4.0	4.0	4.0	4.0	4.2	4.0	3.9
Equipment parts		6.9	7.3	7.4	7.6	7.4	7.4	7.5	6.7
Other		8.8	8.8	8.9	8.9	8.8	8.7	8.4	8.3
Nondurable		13.2	13.1	12.4	12.4	12.2	12.0	11.8	11.7
Textile		1.2	1.1	1.1	1.1	1.0	1.0	.9	.8
Paper		3.4	3.5	3.2	3.0	3.0	3.1	3.0	3.0
Chemical		4.9	4.8	4.6	4.7	4.5	4.3	4.2	4.1
Energy		9.8	9.9	10.2	9.3	8.5	9.1	9.8	9.7
INDUSTRY GROUPS									
Manufacturing		84.5	84.6	84.5	85.7	86.6	86.1	85.0	84.7
Manufacturing (NAICS)		80.4	80.5	80.4	81.3	81.9	81.2	80.2	79.5
Durable manufacturing		44.4	44.9	45.6	46.5	47.2	46.8	46.2	44.5
Wood products	321	1.6	1.5	1.5	1.5	1.5	1.6	1.4	1.4
Nonmetallic mineral products	327	2.1	2.1	2.2	2.2	2.3	2.3	2.2	2.4
Primary metal	331	3.1	3.0	3.0	3.1	3.0	2.8	2.6	2.5
Fabricated metal products	332	5.6	5.8	6.0	6.0	6.1	6.0	6.0	6.0
Machinery	333	6.0	6.2	6.2	6.2	6.2	5.8	6.0	5.6
Computer and electronic products	334	9.1	9.7	10.0	10.4	10.3	10.4	10.8	9.5
Electrical equip., appliances, and components	335	2.6	2.6	2.6	2.6	2.6	2.5	2.5	2.5
Motor vehicles and parts	3361–3	6.5	6.4	6.5	6.7	6.6	7.0	6.6	6.5
Aerospace and other miscellaneous transportation equipment	3364–9	3.6	3.3	3.2	3.5	4.1	3.8	3.4	3.6
Furniture and related products	337	1.5	1.4	1.5	1.6	1.7	1.7	1.7	1.7
Miscellaneous	339	2.7	2.7	2.8	2.8	2.8	2.8	2.9	3.0
Nondurable manufacturing		35.9	35.6	34.8	34.8	34.7	34.4	33.9	35.0
Food, beverage, and tobacco products	311,2	10.3	10.3	10.1	10.1	10.6	10.4	10.5	11.2
Textile and product mills	313,4	1.8	1.7	1.7	1.7	1.6	1.5	1.4	1.3
Apparel and leather	315,6	2.1	2.0	1.9	1.8	1.6	1.4	1.3	1.2
Paper	322	3.5	3.7	3.3	3.2	3.2	3.2	3.1	3.1
Printing and support	323	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.6
Petroleum and coal products	324	1.5	1.5	1.6	1.6	1.5	1.8	1.8	1.8
Chemical	325	10.3	10.1	10.0	10.1	9.9	9.6	9.5	10.0
Plastics and rubber products	326	3.6	3.6	3.6	3.7	3.7	3.8	3.7	3.7
Other manufacturing (non-NAICS)	**1133,5111**	4.1	4.1	4.1	4.4	4.7	4.8	4.9	5.2
Mining	**21**	5.7	5.7	6.1	5.4	4.8	5.6	6.4	6.3
Utilities 2211,2		9.9	9.6	9.5	8.9	8.5	8.4	8.6	9.0
Electric	2211	8.3	8.1	8.0	7.6	7.3	7.1	7.2	7.6
Natural gas	2212	1.6	1.5	1.5	1.3	1.2	1.2	1.4	1.4

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 0.462 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** 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 1997. For the period since 1997, the total IP index has been constructed from 295 individual series based on the 1997 North American Industrial Classification System (NAICS) 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 three-digit NAICS 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**) . 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:

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

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 x 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**).

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.

	Month of estimate			
Type of data	1st	2nd	3rd	4th
Physical product	19[1]	33	46[2]	47
Production-worker hours	28[3]	28	28	28
Electric power use	0	22	22	22
Federal Reserve estimates[4]	53	17	3	3[5]
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 three- and four-digit NAICS 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**).

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 4-digit NAICS level for mining and manufacturing. Aggregates for 3-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 NAICS 3251) 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**).

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 4-digit NAICS industry levels and above. Where reports are late or unavailable for some reason, responses are estimated.

Seasonal Adjustment. Series are seasonal adjusted at the 4-digit NAICS 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.** 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.