Industrial Production and Capacity Utilization: The 2002 Historical and Annual Revision

Carol Corrado, of the Board's Division of Research and Statistics, prepared this article. Kristen Hamden provided research assistance.

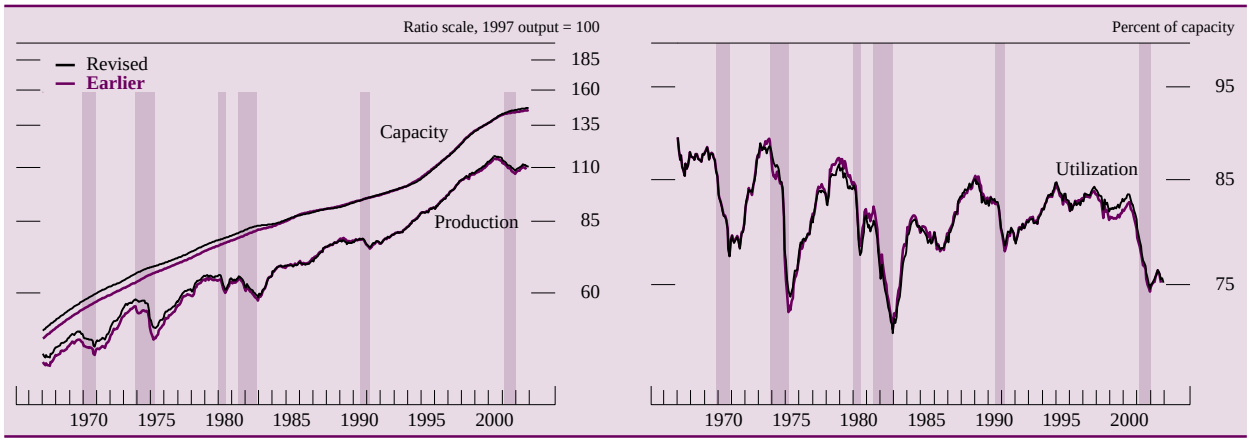
In late 2002, the Federal Reserve published a revision of its index of industrial production (IP) and the related measures of capacity and capacity utilization. The primary feature of the revision was the reclassification back to 1972 of production and capacity indexes for individual industries from the Standard Industrial Classification, or SIC, to the North American Industry Classification System, or NAICS. Also, the revision, as usual, updated all measures to incorporate newly available and more comprehensive source data for recent years, and it introduced improved methods for measuring the annual real output of communications equipment manufacturing.

Along with the updating and the restatement of the data using NAICS, the base year used for comparison has changed. Now all production and capacity indexes are expressed as percentages of output in 1997; the previous 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.

The new information resulted in an upward revision to the rate of increase in industrial production and capacity from 1997 to 2000 (chart 1). Improved estimates for the production of communications equipment and semiconductor manufacturing accounted for most of the upward revision; revised estimates for the output of newspapers and related publishers also contributed. The upward revision to the rate of increase in production was greater than the upward revision to the pace of capacity expansion. As a result, for the 1997–2000 period, the average rate of industrial capacity utilization—the ratio of production to capacity—is 0.7 percentage point higher than that previously reported. The higher utilization rates were concentrated in the selected high-technology group of industries (semiconductors, computers, and communications equipment); in the

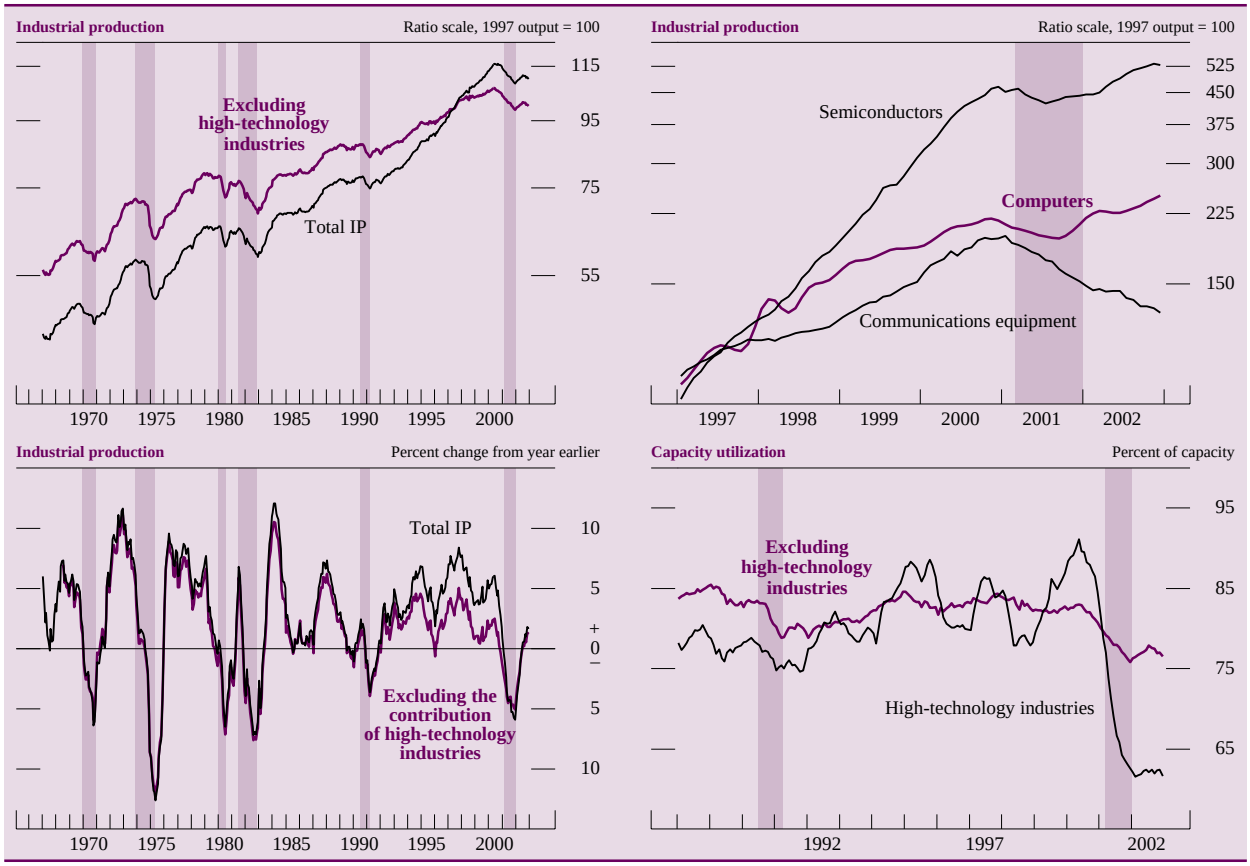
NOTE. Charles Gilbert directed the 2002 revision and, along with Kimberly Bayard, William Cleveland, and Dixon Tranum, prepared the revised estimates of industrial production. Norman Morin and John Stevens prepared the revised estimates of capacity and capacity utilization.

1. Total industrial production and capacity utilization



NOTE. The shaded areas are periods of business recession as defined by the National Bureau of Economic Research (NBER). The NBER has not yet established a trough for the recession beginning in 2001; the shaded area arbitrarily stops at the end of that year.

2. High-technology industrial production and capacity utilization



NOTES. The shaded areas are periods of business recession as defined by the National Bureau of Economic Research (NBER). The NBER has not yet established a trough for the recession beginning in 2001; the shaded area arbitrarily stops at the end of that year.

High-technology industries are defined as semiconductors and related electronic components (NAICS 334412–9), computers (NAICS 3341), and communications equipment (NAICS 3342).

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 (see appendix tables A.1–A.10 for detailed revision results). The most recent business-cycle peak in monthly IP is still June 2000, at 116.2 percent of 1997 output (table A.1), and the drop in the index from then until December 2001 is 6¾ 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 (table A.2). 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 6½ percentage points further by the fourth quarter of 2001; the cumulative drop in the rate of capacity utilization is 0.5 percentage point steeper than that 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 the previously reported data (table A.7). The rate is more than 5 percentage points below its 1972–2001 average and about 3 percentage points below the trough in the 1990–91 recession but 5 percentage points above the trough in the 1982 recession.[1]

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

1. Revised rates of change of industrial production and capacity and the revised average rates of capacity utilization, 1972–97

Item	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						
Total IP	2.7	2.0	3.2	–.2	–.2	.0
Manufacturing[1]	3.0	2.4	3.5	–.1	–.3	.0
Excluding high-tech industries	2.5	1.5	1.9	–.2	–.1	–.1
MEMO						
Manufacturing (NAICS)	3.0	2.4	3.7	. . .	. . .	. . .
Capacity						
Total industrial	2.8	2.1	3.1	–.2	–.3	–.1
Manufacturing[1]	3.0	2.4	3.5	–.1	–.4	–.0
Excluding high-tech industries	2.5	1.5	2.0	–.2	–.2	–.1
MEMO						
Manufacturing (NAICS)	3.0	2.5	3.6	. . .	. . .	. . .

Item	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)			
Total industrial	81.5	–.15	81.5
Manufacturing[1]	80.4	–.22	80.4
Excluding high-tech industries	80.5	–.24	80.4
MEMO			
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.

1. Manufacturing comprises those industries included in the North American Industry Classification System, or NAICS, definition of manufacturing plus the logging and newspaper, periodical, book, and directory publishing industries that traditionally have been considered manufacturing and have been included in the industrial sector. See also discussion under ''New NAICS Industry Structure.''

. . . Not applicable.

The updated measures continue to show that manufacturing IP, after having increased rapidly in 1999 and the first half of 2000, fell sharply in 2001 and rose at a tepid rate, on balance, in the first three quarters of 2002 (table A.3). On the basis of the revised production indexes and the results of the Census Bureau's 2001 Survey of Plant Capacity, capacity utilization in manufacturing still shows a sharp drop in 2001 (table A.4), and the expansion of manufacturing capacity still exhibits a noticeable slowing from the rapid pace posted in the last half of the 1990s. The factory operating rate has increased 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]

As in the earlier data, the output of 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 (chart 2). For 2002, the revised measures show a more modest rate of increase for their production than previously reported. 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 for 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 for 1999 and 2000, a move reflecting new and refined estimates of prices.

The revisions to the IP index for recent years were derived principally 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. Also, the new monthly production estimates for 2001

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.

2. Revised rates of change of selected industrial production market group indexes, 1967–2002

Item	Revised rates of change (percent)			Difference between revised and earlier rates of change (percentage points)		
	1967–87	1987–2000	2000–02	1967–87	1987–2000	2000–02
Total industrial production	**2.6**	**3.5**	**–1.8**	**–.2**	**.1**	**.0**
Final products	3.0	3.1	–2.2	.1	.2	.0
Consumer goods	2.5	2.5	–.5	–.2	.5	–.1
Business equipment	4.6	6.0	–7.0	.9	–.3	–.7
Nonindustrial supplies	2.9	3.9	–1.4	–.3	2.2	.3
Construction	2.0	2.3	–2.5	–.2	.0	–1.6
Other business	3.6	4.9	–.7	–.4	3.7	1.7
Industrial materials	2.3	3.8	–1.7	–.3	–1.0	–.2
Non-energy	2.8	4.8	–2.2	–.5	–1.1	–.3
Energy	1.1	.6	–.1	.2	.0	.2

NOTE. The rate of change is 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 calculation ends and begins in the second quarter. The difference between the revised and earlier rates of change for 2000 to 2002 is for the first three quarters of the year.

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 annual industry source data used to construct industrial production and capacity utilization are now being reported using NAICS. The Federal Reserve has adopted NAICS for its monthly statistics on the industrial sector; but to facilitate business-cycle analysis, research, and forecasting, it has done so without changing the scope or historical continuity of these statistics. Specifically, the introduction of the new classification system did not affect the coverage of production and capacity utilization for total industry and manufacturing, and the individual industry components of these measures are available on a NAICS basis back at least to 1972.

The consistency of the production and capacity indexes was further improved by the recompilation of the indexes using current methods, when possible, back to 1972. (These changes are detailed in the section "Current Methods Applied to Earlier Data.") Table 1 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.

The 2002 revision also introduced 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 in the section "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 to 2002 on are shown in table 2. 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.

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

3. Business-cycle peaks and troughs in the monthly industrial production index 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.

in capacity utilization reflect the application of current methods for interpolating annual changes in capacity.

The months and years of the peaks and troughs in industrial production since 1972 are shown in table 3. The months of the peaks and troughs associated with the recessions that began in 1973, 1981, and 2000 are unchanged with this revision. The months of the peaks in IP before the onset of the episodes leading to the troughs in 1980 and 1991 did change. 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.

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 than previously reported. As a result, the drop in capacity utilization—about 14½ percentage points from November 1973 to May 1975—is about 1¾ percentage points smaller 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 already discussed, the revised rate of capacity utilization for total industry is higher, on average, 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 industry and the newspaper, periodical, book, and directory publishing industries from manufacturing to other sectors; logging was placed in agriculture, and the publishing industries were placed in the new information sector.[3] For the statistics reported in the Federal Reserve's monthly G.17 release, the manufacturing measures will continue to comprise those industries included in the NAICS definition of manufacturing *plus* the logging and newspaper, periodical, book, and directory publishing industries that have traditionally been considered manufacturing.

4. Revised industrial production, capacity, and capacity utilization industry structure (abbreviated)

The 2002 revision	Correspondence to previous structure
Total industry	Total industry
Major industry groups Manufacturing (see note below)	**Major industry groups** Manufacturing (SIC)
Manufacturing (NAICS) Durable Nondurable	. . . Durable (SIC) less logging Nondurable (SIC) less newspaper, periodical, book, and directory publishing . . .
Other manufacturing (non-NAICS)	
Mining	Mining
Utilities	Utilities

NOTE. The industrial sector is defined as manufacturing, mining, and electric and gas utilities. For components of manufacturing, see table 1, note 1.
The correspondences shown in the table are illustrative.
NAICS North American Industry Classification System.
SIC Standard Industrial Classification.
. . . Not applicable.

An abbreviated version of the new industry structure appears in table 4. The G.17 release shows 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 items in table 1) and their basic cyclical profile. However, the average annual proportion of the traditional manufacturing measure in total industrial production is about 85 percent, whereas the proportion of manufacturing (NAICS) is about 80 percent (see table A.10).

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

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

Technical Note on Reclassifying Data in the Census of Manufactures from the SIC to NAICS

The industrial production and capacity utilization measures are developed, either directly or indirectly, from industry-level data in the Census of Manufactures. Beginning with the 1997 Census, these data are classified according to the North American Industry Classification System (NAICS), but the data from previous censuses are classified according to the Standard Industrial Classification (SIC) system. Because some SIC industries map into several NAICS industries, the construction of historical NAICS-based industrial production and capacity indexes is not straightforward; information on the share of the value of production in each SIC industry that should be assigned to *each* NAICS industry in *each* census year is required. Historical plant-level data, or microdata, in the Census Bureau's Longitudinal Research Database was used to develop this information.

Recoding the Historical Microdata

The Census Bureau published its detailed industry-level data from the 1997 Census of Manufactures (COM) using both classification systems. These statistics provide sufficient detail to determine the proportion of each SIC industry that should be assigned to its corresponding NAICS industries for one year, 1997. For many industries, however, the shares derived from the 1997 data will not accurately reflect the industrial distribution of activity in earlier years. Historical SIC-to-NAICS shares for industry-level COM variables (value added, shipments, and the like) were calculated from the results of a Board research project that assigned a NAICS industry code to each establishment in the microdata files of the historical censuses back to 1963.[1]

The plant-level records from the 1997 Census of Manufactures, which contained both SIC and NAICS industry codes for each plant, was the jumping-off point. Then, each earlier census year was re-assessed sequentially, and industry codes were assigned to each plant using two methods: exact matching and statistical matching. ''Exact match'' cases were those plants for which the 1997 information permitted the assignment of a NAICS code with a high degree of certainty. These cases included (1) plants with NAICS codes that could be identified directly from product information, (2) plants in earlier censuses that also appear in the 1997 census, and (3) plants in industries with an SIC code corresponding to one, and only one, NAICS code. These exact matches accounted for more than three-fourths of the cases (see the table for more detail on the prevalence of each method of assignment).

For the remaining plants, the ''statistical matches,'' a model-based procedure was employed. The COM contains information that is common to plants in a specific industry, and these data were used to determine the probability that a

NOTE. Kimberly Bayard developed the material reported in this technical note.

1. See 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'' (Board of Governors, forthcoming working paper).

Establishment by methods of assignment, proportion of total

Percent

Method of matching	Census year						
	1992	1987	1982	1977	1972	1967	1963
Exact	.820	.810	.794	.776	.809	.799	.813
Product data	.462	.262	.164	.108	.111	.029	.098
Establishment links	.247	.379	.404	.388	.461	.519	.504
Industry correspondence	.111	.169	.226	.280	.237	.251	.211
Statistical	.179	.190	.205	.219	.188	.201	.183

NOTE. Details may not sum to total due to rounding and minor use of other methods.

SOURCE. See Bayard and Klimek.

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 the results of a research project conducted by the Federal Reserve Board and the Center for Economic Studies of the Bureau of the Census (see ''Technical Note on Reclassifying Data in the Census of Manufactures from the SIC to NAICS'' for further information). In a nutshell, 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 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 assigned by the research project.

Technical Note on Reclassifying Data—Continued

plant would be assigned to a given NAICS industry. Specifically, the likelihood that a plant with a given set of characteristics (such as the value of shipments per worker, the hourly wage of production workers, the geographic location, and the like) should be classified in a particular NAICS industry was generated using predictions from a multinomial logit regression model. A bootstrapping technique was employed to determine the final assignment of each plant to a NAICS industry. See the Bayard and Klimek paper, noted earlier, for a discussion of this procedure and of the robustness of the results.

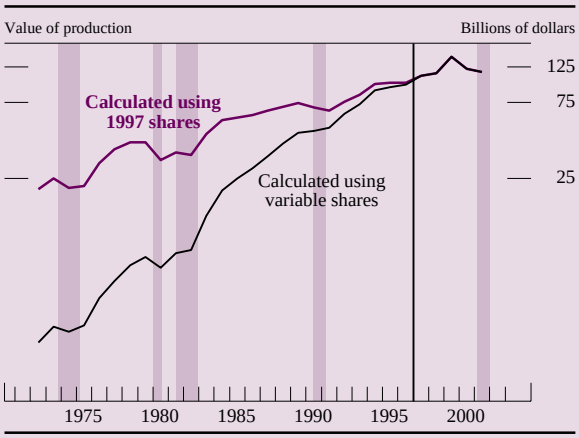
All in all, plant-level observations in seven censuses—1992, 1987, 1982, 1977, 1972, 1967, and 1963—were coded with a NAICS industry assignment along with their ''native'' SIC code. With the dual coding, the economic data on value added, value shipments, and the like were tabulated to obtain the SIC-to-NAICS share of each variable in each census year.

The Importance of Variable Shares

The motor vehicle industry provides an example of the importance of variable shares and the reason that information for one year is insufficient for developing historical NAICS-based industry data. Before 1997, the Census Bureau reported statistics for motor vehicles and passenger car bodies (SIC 3711) as a single aggregate. From 1997 on, under NAICS, these data are split into five industries: automobiles, light trucks, heavy duty trucks, (part of) motor vehicle bodies, and (part of) military armored vehicles.

The 1997 census data provide the share of the total output in SIC 3711 that should be attributed to its NAICS counterparts for automobiles, for light trucks, and so on in that year. The NAICS-coded microdata (the work of Bayard and Klimek) yield the share of total motor vehicle output that should be attributed to autos, to light trucks, and to the other industries in each census year before 1997—that is, 1992, 1987, and so on. The chart shows the path for the value of production of light trucks from 1972 to 2000 using these variable shares. The chart also shows a path that would be obtained if the 1997 share had been applied to earlier years. As may be seen, the application of the 1997 industry structure to all years would result in a dramatic overestimation of light truck production, particularly before the early 1990s.

Light trucks (NAICS 336112)



NOTE. The shaded areas are periods of business recession as defined by the National Bureau of Economic Research (NBER). The NBER has not yet established a trough for the recession beginning in 2001; the shaded area arbitrarily stops at the end of that year.

The derivation of NAICS-based source data was an extensive effort. It involved reconstructing many 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 six-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 four-digit NAICS industry level from data in the Annual Survey of Manufactures, which were also restated to accord with NAICS. The 2002 NAICS was used for all restatements and conversions.[4]

Restructuring of Industry Subsectors

NAICS substantially restructured many industries within manufacturing. One significant change was the reorganization of high-technology industries. NAICS created a new subsector for high-technology manufacturing, computer and electronic product

4. Further information on the Federal Reserve's work to construct historical NAICS industry-level data will be available in the proceedings of the session ''Industrial Production and Capacity Utilization: The Construction of Current and Historical NAICS-based Measures'' to be held at the 2003 Joint Statistical Meetings (August 3–9, 2003, San Francisco).

manufacturing (NAICS 334), which combined into a sensible aggregate industries that had been scattered across various two-digit SIC industry groups. For some time, the G.17 has reported output, capacity, and capacity utilization for selected high-technology industries: 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 six-digit industries for motor vehicles parts, many of which—metal stamping, vehicular lighting and electronic equipment, motor vehicle seating and interior trim, and motor vehicle air-conditioning manufacturing—were previously parts of a wide range of two-digit SIC major groups, including fabricated metals, furniture, apparel, and electrical and nonelectrical machinery. As a result of these changes, the monthly IP index for motor vehicle manufacturing now comprises nine NAICS-based industry series. Some of these series, such as metal stamping and motor vehicle air-conditioning manufacturing, were separate series in the previous IP index, and the change entailed a simple rearrangement of the data. As in the previous structure, each industry series in motor vehicle parts, except for metal stamping, 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 is 3.4 percent, about 1¼ percentage points larger than it was in the SIC-based IP data.

Another change split the SIC two-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 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 two-digit group for apparel). The implementation of the NAICS structure for textiles in the IP index was accompanied by an extensive review of available source data; the result was 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 revised industrial production index contains monthly output indexes for 227 NAICS six-digit (or combination of six-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.[5]

The implementation of NAICS for capacity and capacity utilization resulted in the introduction on net of 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 four-digit industries (or combinations of them).[6]

The NAICS subsectors that are now being published in the regular monthly release are shown in the bottom half of table A.5 (which reports changes in IP) and in table A.7 (which shows capacity utilization rates); additional industry detail are being published in the supplemental tables available from the Board's web page for the G.17. The annual proportions of the new industry subsectors in total IP from 1994 on are shown on the bottom portion of table A.10.

5. 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.

6. The detailed new structure for capacity and capacity utilization is shown in the updated table at www.federalreserve.gov/releases/g17/captab1.pdf.

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.

Communications Equipment Manufacturing IP

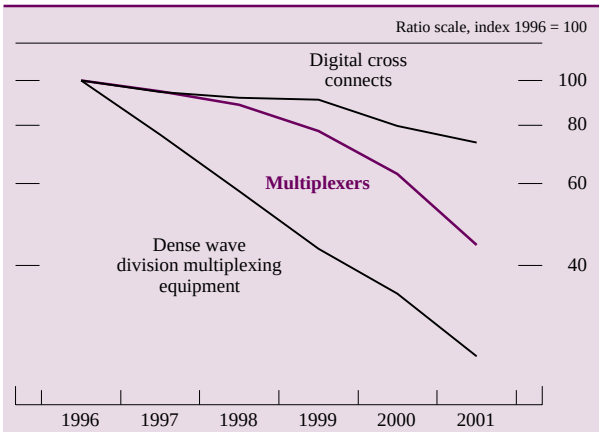
The Federal Reserve improved the methods it uses for compiling the production series for communications equipment manufacturing (NAICS 3342) from 1988 on. In recent years, the Federal Reserve has made numerous improvements in its measures of real output for the high-tech sector. Two years ago, it introduced a new production index for one component of communications equipment, local area network (LAN) equipment. With the current 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.[7]

Price indexes for three types of equipment that are used to run fiber optic networks—multiplexers, dense wave division multiplexing equipment, and digital cross connects—are shown in chart 3. As may be seen, prices for fiber optic equipment declined noticeably from 1996 to 2001. The value of the production of these devices also grew rapidly in the late 1990s and reached more than 10 percent of the total value of communications equipment production in 2000. Overall, value added in communications equipment manufacturing was 2.0 percent of total IP from 1994 to 2000.

The new results are annual price measures that more accurately reflect the technical advances and quality change in the equipment produced by the communications equipment industry. An annual price index for communications equipment manufacturing, which incorporates the previously issued statistics on LAN equipment as well as the new results, is shown in table 5. This index was used to construct the annual IP benchmark index for communications equipment manufacturing and affects the annual changes in that index from 1988 on.

7. The new results are from Mark Doms, "Prices for Communications Equipment," in C. Corrado, J. Haltiwanger, and D. Sichel, eds., *Measuring Capital in the New Economy*, vol. 64, Studies in Income and Wealth (Chicago: University of Chicago Press, forthcoming).

3. Price indexes for fiber optic equipment



Average annual percent change	
Fiber optic equipment	−13.5
Multiplexers	−15.2
Dense wave division multiplexing equipment	−24.0
Digital cross connects	−6.0

SOURCE. Mark Doms, "Prices of Communications Equipment."

5. Price index for communications equipment manufacturing

Year	Price index
1988	100.000
1989	96.069
1990	94.939
1991	92.921
1992	90.891
1993	86.054
1994	82.271
1995	77.840
1996	74.023
1997	69.091
1998	62.858
1999	57.291
2000	53.308
2001	48.764
MEMO	
Average percent change, 1988–2001	−5.34

Semiconductors and Related Devices IP

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 chips, 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 based largely on reports issued by the Semiconductor Industries Association and Dataquest, are adjusted to comprehensive annual measures issued by the Census Bureau. The price measures for each component, which are updated annually and are thus subject to revision each year, are developed from (1) revised data from the same sources, (2) quarterly data on microprocessor prices that are available annually from Micro Design Resources, and (3) producer price indexes issued by the Bureau of Labor Statistics.

Light Vehicle Capacity

The capacity of automobile and light duty 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 (line speed). Aggregation of the plant capacities using model-specific prices from 1987 on yielded a capacity index consistent with the production index.

The methods for determining plant capacity from shift and line speed data were refined to better reflect current operating practices and technology.[8] With this revision, a plant's line speed at capacity was determined by the peak within the past ten years; previously, the peak line speed was obtained from all available data, which may have covered more than ten years. The revision also introduced 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. Last, the revision refined the assumptions used to determine annual plant hours at capacity for plants with standard-length shifts.

The greater discounting of past peaks in line speeds and the improved assumptions and use of data by shift lowered, on balance, 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, 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 1972–1977 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.[9] In addition, the annual benchmark indexes for real industry output 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

8. The basic method used to estimate light vehicle capacity was reviewed on pp. 442–43 of Richard Raddock, "Recent Developments in Industrial Capacity and Utilization," *Federal Reserve Bulletin*, vol. 76 (June 1990).

9. 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), and page 137 in Carol Corrado, "Industrial Production and Capacity Utilization: the 2000 Annual Revision," vol. 87 (March 2001), for further information on this formulation for aggregation. The derivation of the weights used in aggregation is also discussed in these articles.

from 1987 on, were newly applied to data for all years in so far as possible.[10]

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.[11] Seasonal factors for all years continue to be derived using the ''intervention approach'' introduced in the 1985 revision; this approach shields the estimates from extreme business-cycle movements.[12]

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) and (2) including data that were issued in a major revision of the electric power data in early 1997.[13] Although these electric power data had been included in the IP index from 1987 on, the 1997 revision modified them from their start date of 1972.

The annual changes in capacity are estimated from improved models that were introduced in the 1999 annual revision and were used to develop capacity indexes beginning with 1992.[14] The capacity estimates before 1992 are also affected by the application of an interpolation procedure that allows the rate of change in monthly capacity to evolve slowly; the procedure was introduced in March 1999 and, in that year's fall revision, applied to data from 1992 on. Previously, monthly capacity figures had been 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. The rates of change in the monthly capacity indexes are, all else being 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 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 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

10. In particular, the May 1993 revision introduced explicit adjustments for ''drift'' in the data from the Annual Survey of Manufactures 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,'' *Federal Reserve Bulletin*, vol. 81 (January 1995).

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

11. See pp. 23–24 in Richard Raddock, ''A Revision to Industrial Production and Capacity Utilization, 1991–95,'' *Federal Reserve Bulletin*, vol. 82 (January 1996), for a description of seasonal factors in the production indexes.

12. See pp. 77–86 in Board of Governors of the Federal Reserve System, *Industrial Production—1986 Edition* (Board of Governors, 1986).

13. For a further elaboration of the weather adjustment, see p. 24 in Charles Gilbert and Richard Raddock, ''Industrial Production and Capacity Utilization: the 1998 Annual Revision,'' *Federal Reserve Bulletin*, vol. 85 (January 1999).

The electric power data revision was reviewed 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), appendix B, pp. 89–92.

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,'' *Federal Reserve Bulletin*, vol. 86 (March 2000), for a description of the way capacity is modeled with utilization rates and information on industry capital stocks and capital input.

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 consumer share.

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 Btu 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 U.S. Geological Survey and interpolated using monthly data on 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 1982, data on production-worker hours 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 that had been used to compile civilian aircraft production from 1992 on (approximately a forward-looking ten-month moving average of actual or future planned completions of commercial aircraft by Boeing Corporation) were extended back to 1972.

• Automobile 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; these 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 re-estimated 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 capacity system, the affected series include

• Natural gas extraction (NAICS 211111pt). The new annual source data, issued by the Energy Information Agency and introduced in the 2001 annual revision from 1992 on, were included 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.

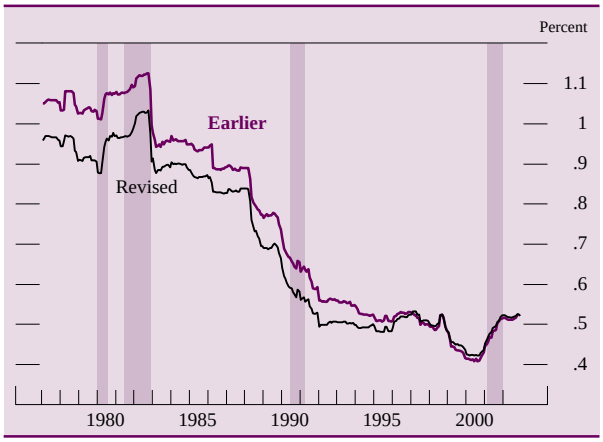
Series for Which the 2002 Revision Applied Current Source Data and Methods to Earlier Years'').

As noted earlier, the revised changes in monthly IP overall are highly correlated with the previously published rates of change. Nonetheless, the application of current seasonal adjustment and compilation methods to the pre-1987 data reduced the volatility of changes in the monthly IP index. The reduction is illustrated in chart 4, which shows an eight-year moving standard deviation of the percentage change in the revised and earlier monthly IP data.

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 (1) introduces new allocations of individual industry production indexes into market groups and (2) assigns utili-

4. Percent change in monthly IP, eight-year moving standard deviation



NOTE. The shaded areas are periods of business recession as defined by the National Bureau of Economic Research (NBER). The NBER has not yet established a trough for the recession beginning in 2001; the shaded area arbitrarily stops at the end of that year.

zation rates to more-refined stage-of-process groups for *total industry*.

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 and 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

6. Revised industrial production market structure (abbreviated)

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 (or *Industrial materials*)	Materials
Non-energy	. . .
Durable	Durable
Nondurable	Nondurable
Energy	Energy

NOTE. The names in italics are new with the 2002 revision.
. . . Not applicable.

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 6, 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 7 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

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 the 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 the 1997 I–O table in this year's fall revision of industrial production and capacity utilization.

7. Revised and previous annual proportions in industrial production, by major market groups, for selected years

Item	1972	1977	1982	1987	1992	1997	2000	2001
Total index	**100**	**100**	**100**	**100**	**100**	**100**	**100**	**100**
Final products and nonindustrial supplies	55.6 (61.9)	52.3 (57.3)	51.7 (56.0)	55.6 (59.2)	57.2 (60.8)	57.5 (60.6)	58.1 (59.9)	59.5 (61.9)
Final products	39.5 (47.7)	37.1 (44.1)	37.9 (43.9)	39.8 (44.4)	41.3 (46.3)	40.7 (45.8)	41.2 (44.8)	42.5 (46.4)
Consumer goods	26.1 (27.9)	23.8 (25.8)	23.0 (24.3)	25.3 (27.1)	27.5 (29.0)	27.1 (28.3)	27.7 (28.4)	29.2 (30.5)
Equipment total	13.4 (19.8)	13.4 (18.3)	14.9 (19.5)	14.5 (17.3)	13.8 (17.3)	13.6 (17.4)	13.6 (16.4)	13.3 (16.0)
Business	10.5 (14.1)	10.6 (14.5)	10.4 (13.8)	10.2 (13.2)	10.4 (13.2)	10.9 (14.3)	11.1 (13.7)	10.7 (13.1)
Nonindustrial supplies	16.1 (14.2)	15.2 (13.2)	13.9 (12.2)	15.8 (14.8)	16.0 (14.5)	16.8 (14.8)	16.9 (15.1)	17.0 (15.5)
Construction	7.5 (6.8)	7.0 (6.1)	5.6 (4.6)	6.4 (5.9)	6.0 (5.4)	6.5 (5.9)	6.7 (6.4)	6.8 (6.6)
Other business	8.6 (7.4)	8.2 (7.1)	8.3 (7.5)	9.4 (8.9)	10.0 (9.1)	10.2 (9.0)	10.2 (8.7)	10.2 (8.9)
Materials	44.4 (38.1)	47.7 (42.7)	48.3 (44.0)	44.4 (40.8)	42.8 (39.2)	42.5 (39.4)	41.9 (40.1)	40.5 (38.1)
Non-energy	34.8 (29.6)	34.2 (30.8)	27.9 (25.5)	32.0 (30.1)	31.6 (29.6)	33.3 (31.7)	32.0 (31.3)	30.8 (30.0)
Energy	9.6 (8.5)	13.5 (11.9)	20.4 (18.5)	12.4 (10.7)	11.2 (9.6)	9.3 (7.7)	9.9 (8.8)	9.7 (8.1)
MEMO Total index (billions of dollars)	414.6 (413.2)	711.3 (697.2)	1,118.5 (1,090.9)	1,429.6 (1,387.7)	1,718.4 (1,668.4)	2,496.7 (2,193.5)	2,489.3 (. . .)	. . . (. . .)

NOTE. Proportions not in parentheses are revised; proportions within parentheses are previous.
. . . Not applicable.

entire output was previously included in business equipment also produce equipment parts; that portion is now included in materials. The composition of the consumer goods group was, on balance, little changed.[17]

The input–output analysis resulted in a substantial refinement of the composition of the "other business" component of nonindustrial supplies. Outside 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, and of numerous other smaller industries have been added. The resulting market group is now more than 2 percentage points larger as a proportion of the overall index.[18]

Chart 5 shows the cyclical profile of the major market group components. Though most of the series changed in composition, their cyclical patterns were not materially altered by the revision. (Revisions to the indexes for consumer durables and business equipment were noticeable during the 1980s, but they reflected mostly a reallocation of the consumer—as opposed to business—share of total light vehicle production on the basis of the data that were introduced for those years; see the previous section).

Stage-of-Process Groups

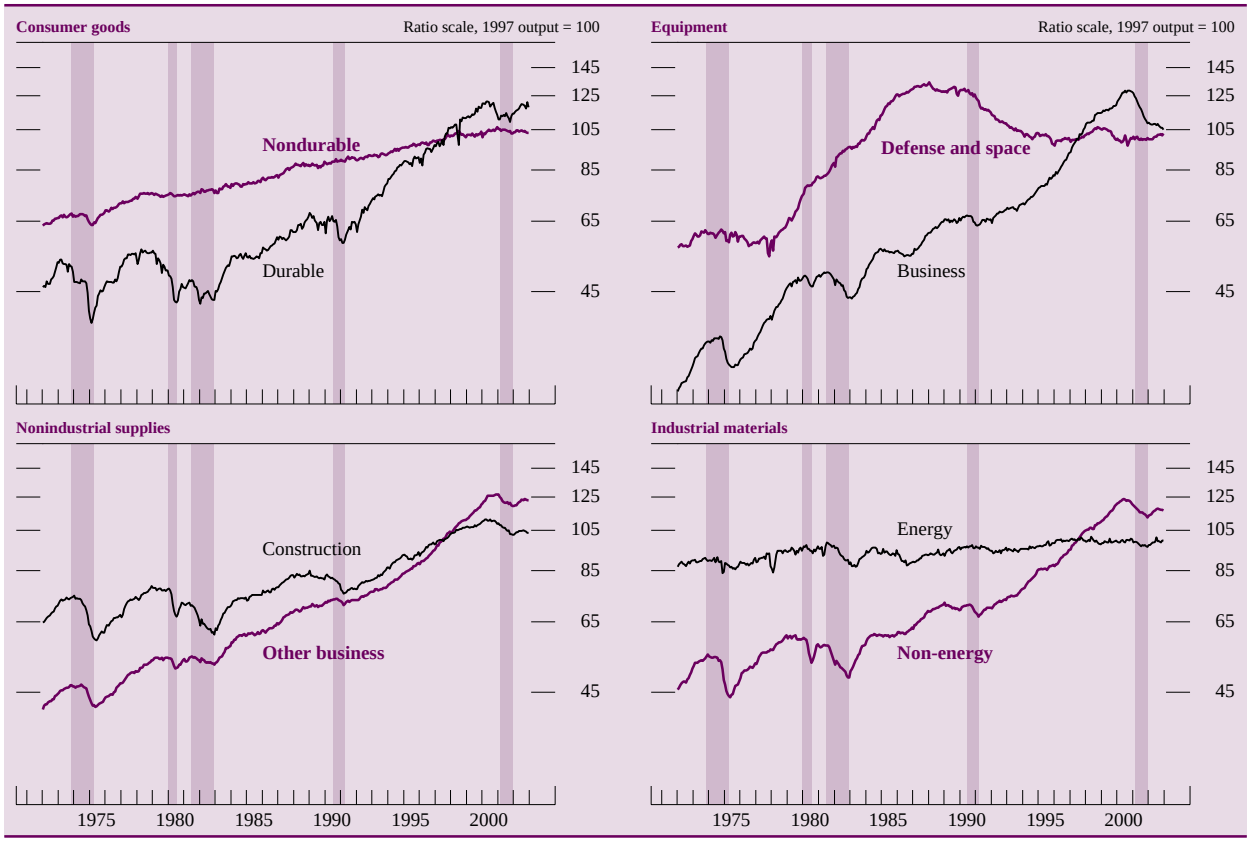
Production in the economy can be subdivided into distinct segments so that, when arranged sequentially, the outputs of earlier segments become inputs to subsequent ones; the sequence ends with final demand. This structure of the production process allows *industry data* to be grouped into stages of processing. 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.[19] For example, the organic chemical industry sells to makers of plastic materials,

17. 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.

18. The detailed series that compose each market group are documented in the table on the Board's web site at www.federalreserve.gov/releases/g17/sdtab2.pdf.

19. The analysis, which was conducted using 1992 input–output relationships, was similar to the analysis reported in Robert Gaddie

5. Industrial production by market groups, 1972–2002



NOTE. The shaded areas are periods of business recession as defined by the National Bureau of Economic Research (NBER). The NBER has not yet established a trough for the recession beginning in 2001; the shaded area arbitrarily stops at the end of that year.

who sell to makers of plastic bottles, who sell to soft drink bottlers, who sell soda to consumers; these industries are in a sequence that reflects the way the transactions flow, one that ends 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 were 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 use by 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 two SOP-based materials sub-aggregates are new combinations of the individual series in non-energy materials. The index for inputs to finished processors mainly comprises consumer durable parts, equipment parts, textile product materials, and paper product materials. The index for inputs to primary and semifinished processors comprises basic metals, miscellaneous durable materials, chemical materials, and other nondurable materials.

and Maureen Zoller, "New Stage of Process Price System Developed for the Producer Price Index," *Monthly Labor Review*, vol. 111 (April 1988), pp. 3–16.

8. Revised industrial capacity stage-of-process structure

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 semifinished 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 the full discussion.

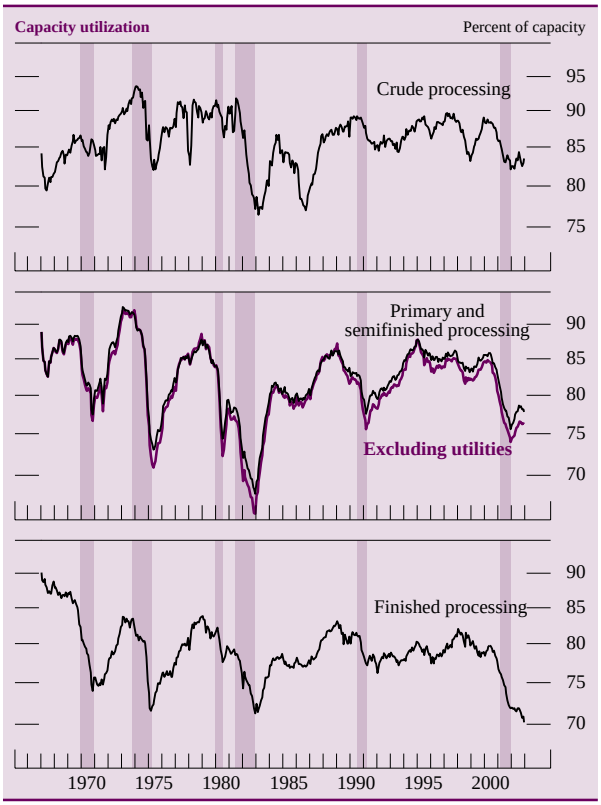
The new indexes are shown as memo items in table 5 of the regular release (see also table A.5).

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 8. 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).[20]

The second new aggregate for capacity, primary and semifinished processing, is a combination of the two middle SOP groups; it corresponds loosely 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

6. Capacity utilization by stage of process



NOTE. The shaded areas are periods of business recession as defined by the National Bureau of Economic Research (NBER). The NBER has not yet established a trough for the recession beginning in 2001; the shaded area arbitrarily stops at the end of that year.

third SOP capacity aggregate. Primary and semifinished processing also includes utilities and portions of several two-digit SIC industries included in the former advanced-processing group.[21]

The third SOP capacity aggregate is finished processing, which generally corresponds to the previously published aggregate, advanced processing. Besides 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 those portions of two-digit SIC industries that were in the former advanced-processing group but are now in primary and semifinished processing.

20. 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. They are 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).

21. 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.

Despite the many differences from the previously published manufacturing aggregates, the new aggregates are similar in cyclical profile. Chart 6 plots the rates of capacity utilization for these three stages of processing.

3. 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 have been introduced for publication in a new table in the regular monthly release. They are formed using gross value weights to combine the IP indexes in each stage-of-process group. □

Appendix tables start on page 168.

Appendix A: Tables Based on the G.17 Release, January 14, 2003

A.1. Revised data for industrial production for total industry

Seasonally adjusted data except as noted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Quarter				Annual avg.[1]
													1	2	3	4	
	Industrial production (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	−.1	−.6	.2	−.4	1.4	4.4	3.4	−2.9	−.7
	Industrial production (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	111.2	110.6	110.8	110.3	109.3	110.5	111.4	110.6	110.5

Note. Monthly percent change figures show change from the previous month; quarterly figures show the change from the previous quarter at a compound annual rate of growth. Production and capacity indexes are expressed as percentages of output in 1997.

Estimates for November 2002 and December 2002 are subject to further revision in the upcoming monthly releases.

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

A.2. Revised data for capacity and utilization for total industry

Seasonally adjusted data except as noted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Quarter				Annual avg.[1]
													1	2	3	4	
	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	146.6	146.7	145.4	145.9	146.2	146.6	146.0
	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	76.0	75.5	75.6	75.2	75.1	75.7	76.2	75.4	75.6

NOTE. See also general note to table A.1.

A.3. Revised data for industrial production for manufacturing industries[1]

Seasonally adjusted data except as noted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual avg.[2]
	Industrial production (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	.1	−.2	−.6	.1	−.4	1.2	3.5	3.0	−3.0	−1.1
	Industrial production (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	112.4	112.1	111.4	111.6	111.1	110.5	111.4	112.3	111.4	111.4

NOTE. Estimates for November 2002 and December 2002 are subject to further revision in the upcoming monthly releases.

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

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

A.4. Revised data for capacity and utilization for manufacturing industries [1]

Seasonally adjusted data except as noted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Quarter 1	Quarter 2	Quarter 3	Quarter 4	Annual avg.[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	151.4	151.4	150.5	150.9	151.1	151.4	151.0
	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	73.7	73.7	73.4	73.4	73.9	74.3	73.6	73.8

NOTE. Estimates for November 2002 and December 2002 are subject to further revision in the upcoming monthly releases.

1. See footnote 1 to table A.3.

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

A.5. Rates of change in industrial production, by market and industry group, 1998–2002[1]

Item	NAICS code[2]	Revised rate of change (percent)					Difference between rates of change: revised minus earlier (percentage points)				
		1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Total index	. . .	**4.0**	**4.9**	**2.7**	**–5.7**	**1.5**	**.5**	**.6**	**.1**	**.2**	**–.4**
MARKET GROUP											
Final products and nonindustrial supplies	. . .	4.3	3.3	3.2	–5.4	.6	1.4	.8	1.4	–.2	.3
Consumer goods	. . .	1.4	2.6	1.1	–2.1	1.5	1.2	.0	.4	–.4	.8
Durable	. . .	6.3	5.7	–2.0	–3.0	6.1	.7	–1.0	2.2	–.7	–.9
Automotive products	. . .	8.3	5.4	–4.8	1.7	9.6	.8	–.4	2.6	–2.0	–2.0
Home electronics	. . .	16.3	19.7	9.2	–13.5	–2.0	4.0	–11.1	1.8	4.8	–11.7
Appliances, furniture, carpeting	. . .	4.6	2.3	–1.0	–4.6	1.7	–1.4	–.3	1.0	–2.4	2.2
Miscellaneous goods	. . .	.1	4.3	.6	–9.5	2.2	.5	.5	2.6	1.8	.8
Nondurable	. . .	–.4	1.4	2.2	–1.8	.0	1.0	.2	.0	–.3	.9
Non-energy	. . .	.2	1.2	1.1	–1.0	–1.6	1.2	.0	–.1	–.5	.5
Foods and tobacco	. . .	–.4	.3	–.4	–2.2	–.9	–.3	–.4	–.7	–1.4	.8
Clothing	. . .	–6.6	–2.8	–6.2	–12.6	–4.5	–.2	.0	2.2	–1.8	–2.2
Chemical products	. . .	2.2	4.8	6.5	4.8	–3.1	–.2	.4	1.1	–1.3	–.8
Paper products	. . .	2.8	2.0	1.0	–.3	–.2	8.9	2.0	–1.3	5.1	1.9
Energy	. . .	–3.4	3.0	7.6	–5.2	8.4	.0	.7	–1.0	1.6	1.5
Business equipment	. . .	9.3	4.0	7.9	–14.3	–3.8	.9	–.5	2.0	–1.7	–.9
Transit	. . .	16.1	–10.2	–8.6	–12.1	–16.3	.7	–6.3	–1.1	1.0	–9.2
Information processing	. . .	18.8	18.7	20.0	–13.4	–1.7	4.5	3.1	3.5	–1.9	–.5
Industrial and other	. . .	.0	.2	6.3	–15.7	–.4	.4	2.0	3.3	–2.2	1.6
Defense and space equipment	. . .	4.5	–5.2	–.4	.0	2.5	–1.0	2.5	1.8	–.2	–3.3
Construction supplies	. . .	4.7	2.1	.7	–6.0	.9	–1.9	–1.8	.2	–2.2	–2.7
Business supplies	. . .	6.5	7.6	6.3	–5.1	2.4	5.2	6.1	5.4	1.5	1.6
Materials	. . .	3.6	7.3	2.0	–6.0	3.0	–.8	.0	–1.8	.8	–1.8
Non-energy	. . .	5.1	8.8	2.3	–6.9	3.1	–.4	.1	–2.1	1.1	–2.6
Durable	. . .	8.5	11.8	5.6	–7.7	4.1	–.3	1.4	–1.9	.8	–2.4
Consumer parts	. . .	4.3	7.0	–6.3	–3.7	8.1	.7	1.1	–4.3	.7	–3.0
Equipment parts	. . .	20.0	23.2	23.4	–10.2	3.8	–2.0	3.6	–1.7	1.0	–4.7
Other	. . .	.3	3.9	–3.5	–7.2	2.3	.2	–.5	–.5	.8	–.4
Nondurable	. . .	–.5	3.7	–3.5	–5.4	1.5	2.8	–.2	1.2	.7	–2.1
Textile	. . .	–5.0	.2	–9.6	–12.6	.7	1.2	–4.4	3.2	.1	–3.0
Paper	. . .	.2	2.7	–3.8	–5.6	3.5	2.9	–1.8	.7	–.6	.3
Chemical	. . .	–2.4	7.4	–4.1	–5.4	1.4	3.2	2.2	.1	1.9	–3.0
Energy	. . .	–2.0	1.3	1.0	–3.4	2.5	–1.6	.7	–.6	–.2	1.3
INDUSTRY GROUP											
Manufacturing	. . .	5.0	5.5	2.5	–6.1	1.1	.7	.7	.2	.1	–.7
Manufacturing (NAICS)	. . .	5.1	5.6	2.6	–6.2	1.3	. . .	. . .	. . .	. . .	. . .
Durable manufacturing	. . .	9.0	7.8	5.4	–8.2	2.1	. . .	. . .	. . .	. . .	. . .
Wood products	321	7.1	1.8	–6.7	–3.1	–1.6	. . .	. . .	. . .	. . .	. . .
Nonmetallic mineral products	327	6.1	–.1	–.2	.1	3.3	. . .	. . .	. . .	. . .	. . .
Primary metal	331	–3.5	3.9	–9.6	–11.6	4.6	. . .	. . .	. . .	. . .	. . .
Fabricated metal products	332	1.0	2.6	.5	–7.8	1.4	. . .	. . .	. . .	. . .	. . .
Machinery	333	–.5	.3	4.8	–17.8	–.8	. . .	. . .	. . .	. . .	. . .
Computer and electronic products	334	27.0	30.6	30.7	–9.6	4.0	. . .	. . .	. . .	. . .	. . .
Electrical equipment, appliances, and components	335	2.7	2.9	2.7	–10.9	–1.3	. . .	. . .	. . .	. . .	. . .
Motor vehicles and parts	3361–3	7.1	5.7	–8.4	–1.2	10.7	. . .	. . .	. . .	. . .	. . .
Aerospace and miscellaneous transportation equipment	3364–9	12.1	–11.2	–4.9	–5.0	–10.8	. . .	. . .	. . .	. . .	. . .
Furniture and related products	337	4.8	2.3	.7	–8.9	–1.0	. . .	. . .	. . .	. . .	. . .
Miscellaneous	339	5.1	2.0	3.8	–5.7	1.9	. . .	. . .	. . .	. . .	. . .
Nondurable manufacturing	. . .	–.2	2.5	–1.2	–3.4	.3	. . .	. . .	. . .	. . .	. . .
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	.0	. . .	. . .	. . .	. . .	. . .
Apparel and leather	315,6	–6.5	–3.1	–5.9	–12.9	–4.4	. . .	. . .	. . .	. . .	. . .
Paper	322	–.2	2.1	–4.0	–5.7	3.3	. . .	. . .	. . .	. . .	. . .
Printing and support	323	2.2	.3	–.8	–5.6	3.4	. . .	. . .	. . .	. . .	. . .
Petroleum and coal products	324	.9	1.6	–.5	–.3	1.8	. . .	. . .	. . .	. . .	. . .
Chemical	325	–.4	5.5	.4	–1.1	–.9	. . .	. . .	. . .	. . .	. . .
Plastics and rubber products	326	2.8	6.2	–1.9	–5.7	3.0	. . .	. . .	. . .	. . .	. . .
Other manufacturing (non-NAICS)	1133,5111	3.7	3.8	.4	–3.9	–1.5	. . .	. . .	. . .	. . .	. . .
Mining	21	–4.8	.2	.8	–.6	–2.1	.5	.4	–.9	1.9	.7
Utilities	2211,2	–.9	2.0	6.0	–5.4	7.7	–.3	–.3	–.7	.7	.5
Electric	2211	.8	1.7	4.8	–4.0	7.1	. . .	. . .	. . .	. . .	. . .
Natural gas	2212	–11.1	4.1	12.8	–12.5	12.0	. . .	. . .	. . .	. . .	. . .

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. The difference in the rate of change for 2002 is calculated for the third quarter of 2002.

2. North American Industry Classification System.
. . . Not applicable.

A.6. Rates of change in industrial production, special aggregates and selected detail, 1998–2002[1]

Item	NAICS code[2]	Revised rate of change (percent)					Difference between rates of change: revised minus earlier (percentage points)				
		1998	1999	2000	2001	1997	1998	1999	2000	2001	2002
Total index	**. . .**	**4.0**	**4.9**	**2.7**	**–5.7**	**1.5**	**.5**	**.6**	**.1**	**.2**	**–.4**
Energy	. . .	–2.3	1.9	3.7	–3.5	3.8	.2	.6	–.8	.7	1.4
Consumer products	. . .	–3.4	3.0	7.6	–5.2	8.4	.0	.7	–1.0	1.6	1.5
Commercial products	. . .	.1	1.8	7.0	.3	4.5	.2	1.1	–.3	–.3	–.1
Oil and gas well drilling	. . .	–17.5	9.7	29.4	–10.9	–14.8	.1	.2	.3	.1	–2.4
Converted fuel	. . .	–.1	2.4	5.3	–7.7	2.9	.1	–.3	–.3	.5	–2.5
Primary materials	. . .	–3.2	.4	–1.3	–1.0	2.2	–2.7	1.1	–1.1	–.1	3.1
Non-energy	. . .	5.1	5.4	2.5	–6.1	1.1	.7	.6	.2	.1	–.8
Selected high-technology industries	. . .	38.9	41.6	40.0	–9.6	7.1	3.1	7.6	.6	6.0	–9.9
Computers and office equipment	3341	42.3	19.6	17.7	–5.9	19.9	1.8	–13.3	–15.6	2.3	1.4
Communications equipment	3342	9.0	27.0	30.3	–20.2	–16.5	2.5	5.9	4.9	4.2	–2.6
Semiconductors and related electronic components	334412–9	55.0	62.0	55.8	–3.4	19.6	4.5	20.9	7.2	11.5	–9.1
Excluding selected high-technology industries	. . .	1.8	1.9	–1.2	–5.6	.6	.5	–.1	.2	–.5	–.1
Motor vehicles and parts	3361–3	7.1	5.7	–8.4	–1.2	10.7	. . .	. . .	. . .	. . .	. . .
Motor vehicles	3361	9.8	2.6	–12.0	2.0	11.8	.8	–3.6	–.6	–.1	–.8
Motor vehicle parts	3363	4.8	7.8	–4.3	–2.1	8.7	. . .	. . .	. . .	. . .	. . .
Excluding motor vehicles and parts	. . .	1.4	1.5	–.5	–6.0	–.3	.4	.0	.3	–.5	.2
Consumer goods	. . .	.4	1.8	.8	–2.2	–1.2	1.0	–.1	.4	–.5	.3
Business equipment	. . .	3.8	–2.7	5.4	–13.7	–5.8	–.3	.4	3.4	–2.0	1.2
Construction supplies	. . .	4.9	1.9	.3	–5.9	1.0	. . .	. . .	. . .	. . .	. . .
Business supplies	. . .	1.8	2.0	1.2	–4.9	1.6	. . .	. . .	. . .	. . .	. . .
Materials	. . .	.0	3.1	–2.8	–7.3	1.1	.8	–.2	–.1	–.5	–.4
Measures excluding selected high-technology industries											
Total industry	. . .	1.2	1.8	–.4	–5.2	1.1	.4	.0	.1	–.3	.2
Manufacturing[3]	. . .	1.8	1.9	–1.1	–5.6	.7	.5	.0	.1	–.5	–.1
Durable	. . .	3.3	1.2	–1.3	–7.8	1.2	.0	–.6	.5	–1.1	–.4
Measures excluding motor vehicles and parts											
Total industry	. . .	3.8	4.9	3.5	–6.0	.9	.5	.7	.2	.2	–.1
Manufacturing[3]	. . .	4.9	5.4	3.5	–6.5	.3	.7	.9	.3	.1	–.5
Durable	. . .	9.3	8.0	7.9	–9.3	.5	.6	1.3	1.0	.1	–1.2
Measures of non-energy material inputs to											
Finished processors	. . .	10.5	13.7	8.0	–7.9	4.8	. . .	. . .	. . .	. . .	. . .
Semifinished and primary processors	. . .	.1	4.2	–3.1	–5.9	1.6	. . .	. . .	. . .	. . .	. . .
Stage-of-process groups											
Crude	. . .	–3.9	2.5	–3.2	–3.7	–.4	. . .	. . .	. . .	. . .	. . .
Primary and semifinished	. . .	5.1	7.1	3.4	–5.9	3.8	. . .	. . .	. . .	. . .	. . .
Finished	. . .	4.5	2.6	3.3	–5.8	–1.0	. . .	. . .	. . .	. . .	. . .

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.

2. North American Industry Classification System.

3. See footnote 1 to table A.3.

. . . Not applicable.

A.7. Capacity utilization rates, by industry group, 1972–2002

Item	NAICS code[1]	Revised rate (percent of capacity, seasonally adjusted)						Difference between rates: revised minus earlier (percentage points)		
		1972–2001 avg.	1988–89 high	1990–91 low	2000:Q4	2001:Q4	2002:Q4	2000:Q4	2001:Q4	2002:Q3
Total index	**. . .**	**81.5**	**85.1**	**78.6**	**81.6**	**75.1**	**75.4**	**.9**	**.4**	**.1**
Manufacturing	. . .	80.4	85.5	77.2	80.0	73.4	73.6	.8	.3	–.1
Manufacturing (NAICS)	. . .	80.3	85.5	77.0	79.7	72.9	73.1	. . .	. . .	. . .
Durable manufacturing	. . .	78.8	84.5	73.4	79.7	69.9	69.8	. . .	. . .	. . .
Wood products	321	80.5	88.7	73.1	76.6	73.5	72.2	. . .	. . .	. . .
Nonmetallic mineral products	327	79.5	85.6	72.1	81.8	80.3	82.0	. . .	. . .	. . .
Primary metal	331	81.1	95.3	75.2	78.8	73.0	78.3	. . .	. . .	. . .
Fabricated metal products	332	77.3	80.1	71.0	77.2	70.5	71.1	. . .	. . .	. . .
Machinery	333	80.3	84.7	72.9	82.6	67.3	66.8	. . .	. . .	. . .
Computer and electronic products	334	80.2	81.5	76.4	83.0	64.1	62.2	. . .	. . .	. . .
Electrical equipment, appliances, and components	335	83.5	87.5	75.0	84.9	75.9	76.0	. . .	. . .	. . .
Motor vehicles and parts	3361–3	77.2	90.0	56.6	78.4	75.3	80.8	. . .	. . .	. . .
Aerospace and miscellaneous transportation equipment	3364–9	73.5	88.9	81.9	68.7	65.3	58.6	. . .	. . .	. . .
Furniture and related products	337	79.5	84.1	68.1	79.7	71.4	70.7	. . .	. . .	. . .
Miscellaneous	339	77.2	81.7	77.5	81.3	74.6	74.8	. . .	. . .	. . .
Nondurable manufacturing	. . .	82.4	86.9	81.8	79.7	77.0	77.7	. . .	. . .	. . .
Food, beverage, and tobacco products	311,2	82.5	85.5	81.3	80.3	79.0	78.7	. . .	. . .	. . .
Textile and product mills	313,4	83.9	91.1	77.1	80.4	71.9	73.4	. . .	. . .	. . .
Apparel and leather	315,6	80.5	83.9	77.2	73.0	65.4	63.3	. . .	. . .	. . .
Paper	322	88.7	94.0	85.4	84.6	81.0	84.5	. . .	. . .	. . .
Printing and support	323	85.0	91.7	82.7	79.3	76.2	81.2	. . .	. . .	. . .
Petroleum and coal products	324	86.3	88.9	82.5	90.0	88.7	89.3	. . .	. . .	. . .
Chemical	325	78.8	85.6	80.8	76.6	74.7	73.7	. . .	. . .	. . .
Plastics and rubber products	326	83.8	91.2	77.1	80.8	75.9	79.6	. . .	. . .	. . .
Other manufacturing (non-NAICS)	1133,5111	83.6	90.2	79.1	84.0	81.9	82.5	. . .	. . .	. . .
Mining	21	87.0	85.6	83.3	89.0	86.6	84.9	–1.3	–1.0	–.1
Utilities	2211,2	86.7	92.6	84.2	93.6	85.0	86.0	.0	1.4	.4
Selected high-technology industries	. . .	79.8	80.4	74.6	86.1	63.1	62.1	4.9	2.4	–1.7
Computers and office equipment	3341	78.7	79.7	67.0	76.2	68.7	77.1	1.2	5.9	8.3
Communications equipment	3342	79.2	82.2	73.3	86.5	60.7	49.9	4.9	2.8	1.3
Semiconductors and related electronic components	334412-9	81.8	81.4	78.7	90.2	63.2	66.9	6.6	2.3	–1.6
Measures excluding selected high-technology industries										
Total industry	. . .	81.6	85.5	78.8	81.1	76.3	76.9	.5	.0	.1
Manufacturing[2]	. . .	80.4	86.1	77.3	79.3	74.6	75.1	.4	–.1	.0
Stage-of-process groups										
Crude	. . .	86.5	88.6	84.7	86.9	82.9	83.0	. . .	. . .	. . .
Primary and semifinished	. . .	82.4	86.2	77.6	83.4	76.3	78.1	. . .	. . .	. . .
Finished	. . .	78.7	83.1	77.2	78.1	72.0	70.6	. . .	. . .	. . .

1. North American Industry Classification System.
2. See footnote 1 to table A.3.

. . . Not applicable.

A.8. Rates of change in capacity, by industry group, 1998–2002[1]

Industry group	Revised rate of change (percent)					Difference between rates of change: revised minus earlier (percentage points)				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Total index	**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 except selected high-technology industries[2]	3.5	2.3	1.5	.4	–.1	–.9	.3	.5	.1	–.3
Stage-of-process groups										
Crude	.6	–2.2	–.4	.8	–.6	. . .	. . .	. . .	. . .	. . .
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. The difference between revised and earlier rates is calculated from the fourth quarter of 2001 to the third quarter of 2002 and annualized.

2. See footnote 1 to table A.3.

. . . Not applicable.

A.9. Rates of change in electric power use, by industry group, 1998–2002[1]

Industry group	Revised rate of change (percent)					Difference between rates of change: revised minus earlier (percentage points)				
	1998	1999	2000	2001	2002	1998	1999	2000	2001	2002
Total index	**–1.4**	**1.1**	**–2.0**	**–9.3**	**1.5**	**.8**	**1.4**	**–.9**	**–.9**	**1.8**
Manufacturing[2]	–1.4	1.4	–2.0	–9.8	1.8	.9	1.5	–.9	–.9	2.0
Durable	–2.3	1.7	–3.4	–10.1	3.4	.2	.4	–2.5	.2	2.6
Nondurable	–.7	1.1	–1.0	–9.5	.7	1.4	2.4	.3	–1.9	1.6
Mining	–.7	–3.1	–2.6	–3.3	–3.7	–.5	.3	.4	.3	–.6
Total excluding nuclear nondefense	–1.6	1.2	–2.9	–8.3	1.5	.8	1.4	–.9	–.9	1.9
Utility sales to industry	–1.7	.9	–2.3	–10.0	1.8	.6	1.2	–1.2	–1.2	–1.2
Industrial generation	5.7	4.7	5.3	–1.7	.6	5.3	5.9	4.7	5.3	1.6

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. The difference between revised and earlier rates is calculated from the fourth quarter of 2001 to the third quarter of 2002 and annualized.

2. See footnote 1 to table A.3.

A.10. Annual proportion in industrial production, by market and industry groups, 1994–2001

Item	NAICS code[1]	1994	1995	1996	1997	1998	1999	2000	2001
Total industrial production	. . .	**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 equipment, 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 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	1.5	1.5	1.4	1.3	1.2	1.2	1.4	1.3

NOTE. The IP proportion data are estimates of the industries' relative contributions to the 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.

1. North American Industry Classification System.