Industrial Production and Capacity Utilization: The 2006 Annual Revision

Charles Gilbert and Maria Otoo, of the Board's Division of Research and Statistics, prepared this article. Betsy Wang provided research assistance.

On December 11, 2006, the Federal Reserve published revisions to its index of industrial production and the related measures of capacity and capacity utilization. The revision affected the data from 1972 through October 2006, but the largest changes were for the period beginning in 2003. From the fourth quarter of 2002 to the third quarter of 2006, industrial production, as revised, increased about 1¾ percentage points less than previously reported. By year, the change in output was revised down a little for 2003, down substantially for 2004, up a little for 2005, and down a touch for 2006 (table 1).[1] Revisions for previous years were small.

On balance, the revision to capacity utilization was relatively small. For the fourth quarter of 2005, the rate of capacity utilization for total industry was revised up ¼ percentage point, to 80.7 percent. For the third quarter of 2006, capacity utilization, at 82.3 percent, was only slightly lower than previously reported and was 1.3 percentage points above its 1972–2005 (long-run) average.[2] The operating rate for manufacturing was revised down about ¼ percentage point for both the fourth quarter of 2005 and the third quarter of 2006. Downward revisions in several industries, including computers, communications equipment, and textiles, were partly offset by sizable upward revisions in the semiconductor and chemical industries.

In mining, the capacity utilization rate was revised up 2¼ percentage points for the fourth quarter of 2005, to 85 percent, but the revised rate for the third quarter of 2006, at 90.9 percent, was only a bit above the previous estimate. The operating rate for utilities was revised down in both 2005 and 2006.

Compared with the previous estimates, total industrial capacity is now reported to have grown more slowly in 2003, 2004, and 2005. In 2006, total industrial capacity expanded more rapidly than previously estimated, and the gains appeared in all three major industrial sectors—manufacturing, mining, and utilities.

The updated measures of production, which incorporate the Census Bureau's 2004 and 2005 Annual Surveys of Manufactures (ASM), show slightly lower annual levels of output than previously estimated. Other new source data for the revision include selected 2005 Current Industrial Reports (also from the Census Bureau), new annual data on mineral extraction for 2004 and 2005 from the U.S. Geological Survey, and updated deflators from the Bureau of Economic Analysis. The new monthly production estimates reflect the incorporation of updated seasonal factors and monthly source data that became available (or were revised) after the close of the regular four-month reporting window.[3]

The revised capacity utilization rates incorporate the results from the Census Bureau's 2005 Survey of Plant Capacity for the fourth quarter of that year. In addition, the revisions to the capacity indexes and capacity utilization rates incorporate the revised production indexes and newly available data on industrial capacity from the U.S. Geological Survey, the Energy Information Agency of the Department of Energy, and other organizations.

NOTE: Charles Gilbert directed the 2006 revision and, with Kimberly Bayard, David Byrne, Wendy Dunn, Christopher Kurz, Paul Lengermann, Norman Morin, Maria Otoo, John Stevens, and Daniel Vine, prepared the revised estimates of industrial production. David Byrne prepared the improved estimates for communications equipment. Norman Morin, John Stevens, and Daniel Vine prepared the revised estimates of capacity and capacity utilization.

1. Revised data reported in this article extend through year-end 2006 and were first published in the Board of Governors of the Federal Reserve System (2007), Statistical Release G.17, ''Industrial Production and Capacity Utilization'' (May 16). Data referred to in this article as ''previous,'' which appeared in the G.17 release published on November 16, 2006, extend through year-end 2006 for capacity but only through the third quarter of 2006 for production and capacity utilization. Therefore, for 2006, statements comparing revised with previously reported data for production and capacity utilization cover the year only through the third quarter, whereas such comparisons for capacity in 2006 cover the entire year.

2. These comparisons use quarterly average data.

3. After the initial estimate of industrial production is issued, it may be revised in the next three monthly releases and will then be left unchanged until the next major revision to industrial production.

1. Revised rates of change in industrial production and capacity, revised rates of capacity utilization, and the difference between revised and previously reported rates, 2002–06

Percent except as noted

Item	Memo: 2006 proportion	Revised rate						Difference between rates (revised minus previous, percentage points)					
		2002–06 avg.	2002	2003	2004	2005	2006	2002–06 avg.	2002	2003	2004	2005	2006
Production													
Total index	100.0	2.7	2.7	1.2	3.0	3.2	3.5	–.2	.5	–.4	–1.4	.2	–.1
Manufacturing	81.9	3.0	2.7	1.3	3.4	4.4	3.4	–.2	.6	–.4	–1.7	.2	.1
Excluding selected high-tech industries[1]	77.0	2.1	2.3	.3	3.0	2.9	2.0	–.2	.3	–.2	–1.3	.0	.0
Selected high-tech industries	4.8	17.7	8.3	17.2	10.4	28.1	24.6	–.8	3.5	–4.0	–8.0	2.4	2.0
Mining and utilities	18.1	1.2	2.7	.5	.7	–1.6	3.9	–.1	.0	–.1	.2	.4	–1.2
Capacity													
Total index	100.0	.7	.8	–.9	.1	1.1	2.4	–.2	.1	–.7	–.5	–.5	.4
Manufacturing	82.5	.8	.4	–.9	.0	1.7	2.7	–.3	.0	–.8	–.5	–.3	.1
Excluding selected high-tech industries[1]	77.0	.1	–.4	–.8	–.2	.6	1.4	–.3	–.2	–.4	–.3	.0	–.4
Selected high-tech industries	5.5	11.2	12.6	1.4	4.3	18.3	19.6	.2	3.1	–6.6	–2.5	–2.5	7.4
Mining and utilities	17.5	1.1	2.6	1.0	1.2	–.9	1.4	.3	.3	–.4	.0	–.8	1.8
Capacity utilization													
Total index	100.0	78.7	75.3	76.8	79.0	80.7	81.5	.0	.0	.3	–.4	.2	–.2
Manufacturing	82.5	77.1	73.4	75.0	77.6	79.6	80.1	–.2	.0	.3	–.6	–.2	–.3
Excluding selected high-tech industries[1]	77.0	77.7	74.8	75.7	78.1	79.8	80.3	–.2	.1	.2	–.5	–.5	–.4
Selected high-tech industries	5.5	70.3	57.8	66.8	70.7	76.5	79.7	–.5	–.7	1.1	–2.1	.8	–1.5
Mining and utilities	17.5	86.8	87.2	86.8	86.4	85.8	87.9	.2	–.1	.2	.3	1.3	–.5

NOTE: For production, the revised rates of change are from the fourth quarter of the previous year to the fourth quarter of the year indicated; the differences between revised and previously reported production are also calculated from Q4-to-Q4 rates except for 2006, for which they are calculated from annualized rates of change between 2005:Q4 and 2006:Q3.

For capacity, the revised rates of change are calculated in a manner identical to that for production; the differences between revised and previous capacity, including those for 2006, are calculated from Q4-to-Q4 rates.

Capacity utilization rates are for the fourth quarter of the year indicated; differences between revised and previously reported capacity utilization are calculated from Q4 rates except for 2006, for which they are calculated from Q3 rates.

1. Manufacturing excluding semiconductors and related electronic components, computers and peripheral equipment, and communications equipment.

RESULTS OF THE REVISION

As revised, total industrial production for the third quarter of 2006 was 112.3 percent of output in 2002, and capacity stood at 136.5 percent of output in 2002. Both indexes are lower than reported previously. The capacity utilization rate for total industry in the third quarter of last year, at 82.3 percent, was revised down slightly. Results of the revision can be found in the appendix tables.[4]

Industrial Production

The overall contour of industrial production (IP) in this revision is similar to that published previously. As reported earlier, total IP increased in each year from 2003 through 2006, albeit at a slower pace for this period as a whole. Data from the 2004 and the 2005 Annual Survey of Manufactures, the most significant contributors to the revision, show that the slower growth in total output over this period was due mostly to a downward revision of 1.4 percentage points in 2004. Revisions in other years were relatively modest (figure 1).[5]

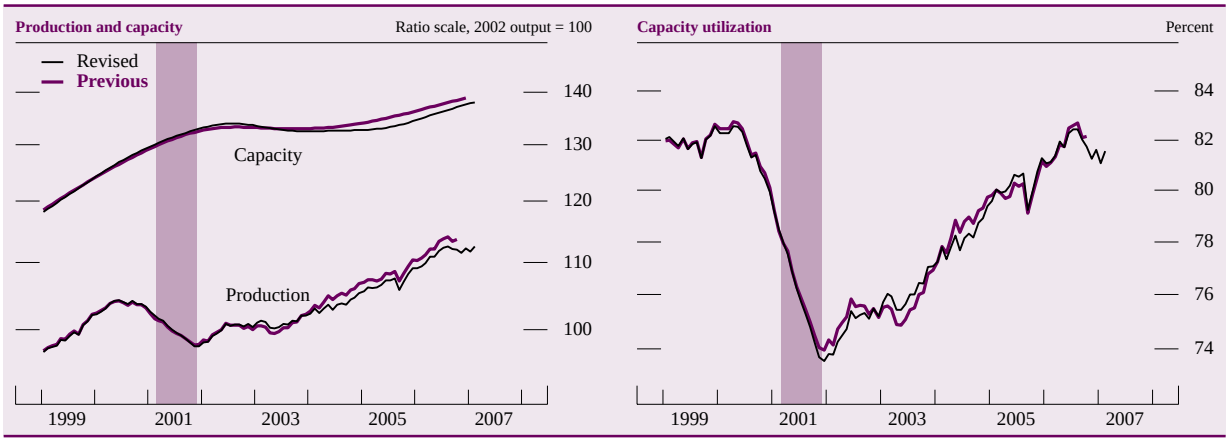
Market Groups

The most prominent change to the production index for final products and nonindustrial supplies occurred in 2004, when widespread revisions caused growth in this index to be adjusted down 1.7 percentage points (figure 2 and table A.3). In addition, gains in the index were revised down ½ percentage point in 2003 and ¼ percentage point in 2006. No change was made to the increase in the index in 2005. Nevertheless, the output of this market group accelerated from 2003 through 2005 and advanced further in 2006; it is now

4. Table A.1 shows the revised data for total industrial production, and table A.2 shows the revised data for capacity and capacity utilization for total industry. Tables A.3 and A.4 show the revised rates of change (fourth quarter to fourth quarter) of industrial production for market groups, industry groups, special aggregates, and selected detail for the years 2002 through 2006. Table A.5 shows the revised rates of change of annual industrial production indexes for market and industry groups for the years 2002 through 2006. Tables A.6 and A.7 show the revised figures for capacity and capacity utilization. Table A.8 shows the annual proportions of market groups and industry groups in total IP. Tables A.3, A.4, A.5, and A.6 also show the difference between the revised and previous rates of change. Table A.7 shows the difference between the revised and previous rates of capacity utilization for the final quarter of the year.

5. The gains in total industrial production were revised up 0.5 percentage point in 2002, down 0.4 percentage point in 2003, down 1.4 percentage points in 2004, up 0.2 percentage point in 2005, and down 0.1 percentage point in 2006.

1. Industrial production, capacity, and capacity utilization: Total industry, January 1999–April 2007

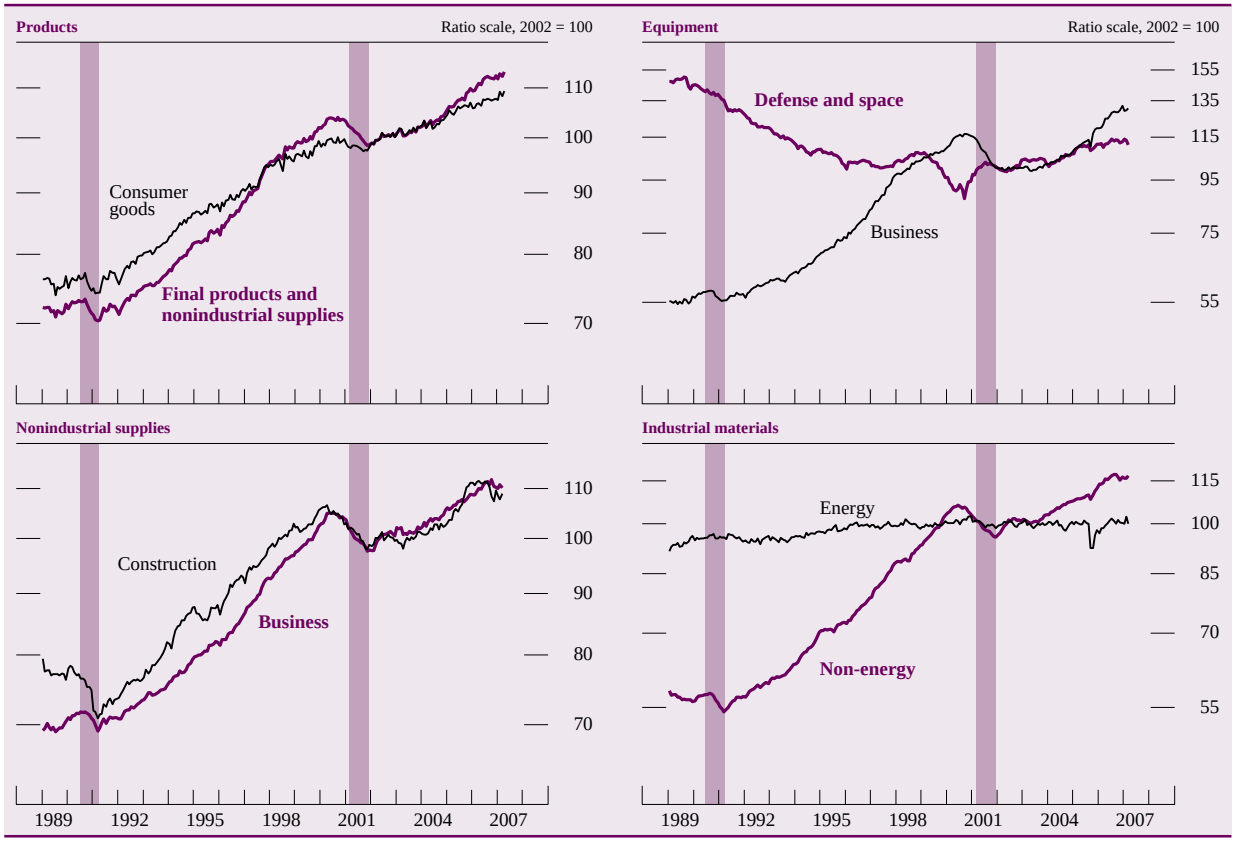


NOTE: Here and in the following figures, the shaded areas are periods of business recession as defined by the National Bureau of Economic Research. Data labeled "revised" are the corresponding data in the Federal Reserve Statistical Release G.17," Industrial Production and Capacity Utilization," published on May 16, 2007. Data labeled "previous" are those published before the December 11, 2006, annual revision. The "previous" data for capacity extend through the end of 2006 because the capacity indexes are based on annual projections that are converted to a monthly basis.

reported to have increased 1.3 percent in 2003, 2.6 percent in 2004, 4.8 percent in 2005, and 2.6 percent in 2006.

Over the 2003–06 period, revisions to the index for consumer goods were small, on balance, as substantial downward revisions to the output of consumer durable goods were in large part offset by upward revisions for nondurables. Among durable goods producers, the output of automotive products was revised down sharply and is now shown to have increased 4.8 percent in 2003 but to have fallen each year from 2004 through 2006. In contrast, the production gains

2. Industrial production: Market groups, January 1989–April 2007



for home electronics in 2004 and 2006 were revised up appreciably. Among consumer nondurables, the production indexes for foods and tobacco, consumer chemical products, and consumer energy products were revised up overall. The indexes for clothing and for paper products are now noticeably lower than estimated previously.

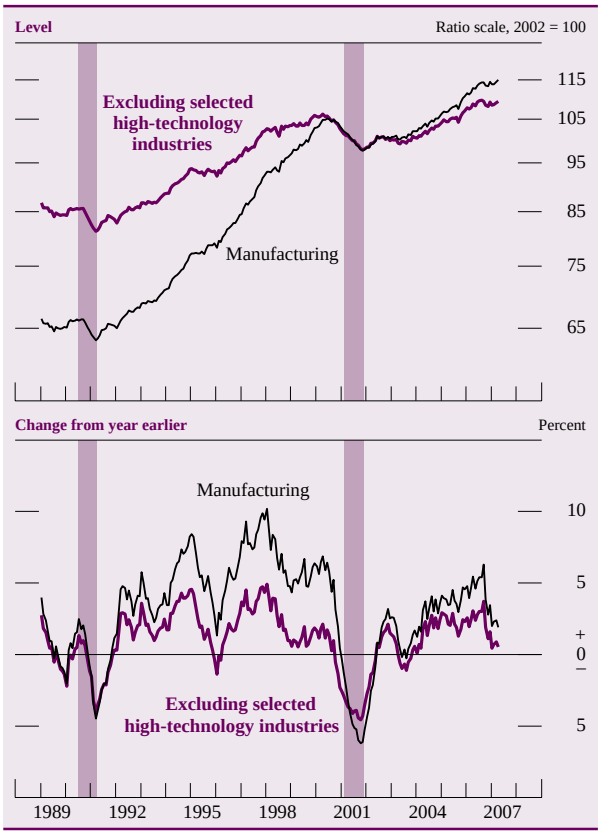
The increase in the production of business equipment since 2002 is now reported to have been weaker. Although the increase in transit equipment over this period was revised up a bit, the gains in information processing equipment and in industrial and other equipment were both revised down noticeably. The production of defense and space equipment also increased less over the 2003–06 period than reported initially.

The 2004 increase for construction supplies was revised down to 1.6 percent and is now about in line with the increases in 2002 and 2003. A strong gain in 2005—8.0 percent—was followed by a decrease of 2.1 percent in 2006. Increases in the output of business supplies over the 2003–06 period were revised down slightly. After rising about 1 percent in 2003, production of business supplies advanced nearly 3 percent, on average, from 2004 to 2006.

The increase in the output of materials over the 2003–06 period was little changed, on balance. The production of energy materials was about the same in 2003 and 2004. In 2005, the output of energy materials was revised up and is now reported to have fallen less than initially reported. In contrast, the 2006 rebound in output, at 5.4 percent, is a lower estimate than that initially reported. Excluding energy, the production of materials grew briskly, on average, from 2003 through 2006 despite downward revisions in 2003 and 2004. Durable goods materials were revised down, on balance. The index for consumer parts, in which motor vehicle parts is a sizable component, was revised down as well. Although growth in the production of equipment parts is now lower from 2003 to 2005 than previously reported, output still advanced at a brisk pace in recent years. Revisions to the index of other durable materials were largely offsetting and left the overall level about the same.

The production of nondurable materials was revised up, on balance, from 2003 to 2006; the output indexes for textile, paper, and chemical materials were all revised upward. This index is now shown to have fallen less in 2003 and 2005 and to have increased more in 2004 and 2006.

3. Industrial production: Manufacturing, and manufacturing excluding selected high-technology industries, January 1989–April 2007



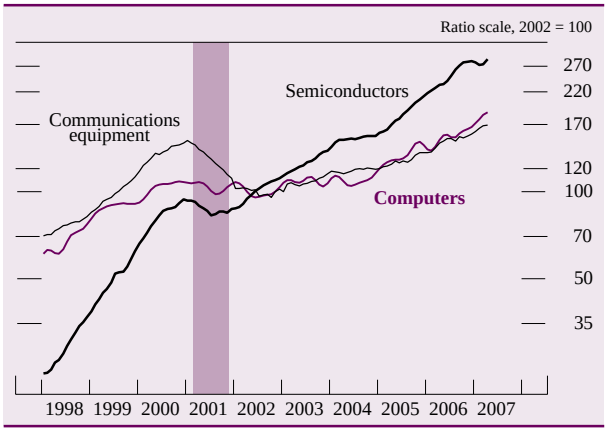
NOTE: For definition of manufacturing, refer to text note 6.
The selected high-technology industries are semiconductors and related electronic components (NAICS 334412–9), computers and peripheral equipment (NAICS 3341), and communications equipment (NAICS 3342).

Industry Groups

Manufacturing production has expanded in each year since 2002, albeit at a somewhat slower rate, on average, than previously reported (figure 3 and table A.3). Increases in the output of durable goods have remained robust in recent years despite downward revisions in 2003 and 2004. For nondurable goods, increases in output were revised up from 2002 to 2005 and little changed in 2006. Excluding selected high-technology industries, factory output advanced ¼ percent in 2003, about 3 percent in 2004 and 2005, and about 2 percent in 2006 (table A.4).

Across industry groups, downward revisions in the durable goods sector were widespread. Increases in the output of computer and electronic products were revised down from 2003 through 2005, in part because of downward revisions to the strong advances

4. Industrial production: Selected high-technology industries, January 1998–April 2007



NOTE: For the NAICS categories of these industries, refer to the note to figure 3.

for communications equipment and for semiconductors and related electronics (figure 4). The production of motor vehicles and parts over this period is now reported to have been weaker than originally estimated. For 2004, the output of machinery was revised down substantially, but gains for that year and subsequent years were still strong. Within the nondurable goods sector, the indexes for apparel and leather goods and for plastics and rubber products were revised down for the period since 2002. The cumulative increases since 2003 for all the other major components of nondurable goods are now higher than previously reported.

The revision lowered the rate of change in the output of the publishing and logging industries about 1 percentage point per year, on average, from 2003 to 2006; the IP index continues to include these two industries under manufacturing, although they are classified elsewhere under the North American Industry Classification System (NAICS).[6]

The output of mining received small revisions in 2003 and 2004 and is now reported to have decreased somewhat less in 2005. Although it rose 2 percentage points more slowly than initially reported for 2006, the mining index still surged 8 percent. The output of utilities is now estimated to have grown more slowly from 2003 through 2006.

6. In the IP index, manufacturing comprises the following NAICS categories: the manufacturing sector, the logging industry, and the newspaper, periodical, book, and directory publishing industries. Logging and publishing are not classified under manufacturing in NAICS (they are under agriculture and information respectively), but historically they were considered to be manufacturing industries and were classified as such under the Standard Industrial Classification (SIC) system. In December 2002, the Federal Reserve reclassified all its industrial output data from the SIC system to NAICS.

Capacity

Total industrial capacity is estimated to have expanded less rapidly over the 2003–06 period (table A.6). Relative to previous reports, it is estimated to have fallen ¾ percentage point more rapidly in 2003 and to have risen ½ percentage point more slowly in both 2004 and 2005. In 2006, however, capacity is estimated to have increased nearly 2½ percent, roughly ½ percentage point more quickly than initially published. The contour of manufacturing capacity and the revisions to that contour are similar to those for total industry. The revision shows that, relative to previous reports, aggregate capacity for the selected high-technology industries rose less quickly from 2003 to 2005 but increased more rapidly in 2006. Excluding high-technology industries, manufacturing capacity declined in 2003 and 2004 and expanded in 2005 and 2006; the rates of increase were marked down in each year except 2005, which was unrevised.

Capacity at mines is still estimated to have contracted from 2003 to 2005 but is now shown to have increased in 2006. Capacity at electric and gas utilities was revised upward in 2006 but was revised little in previous years.

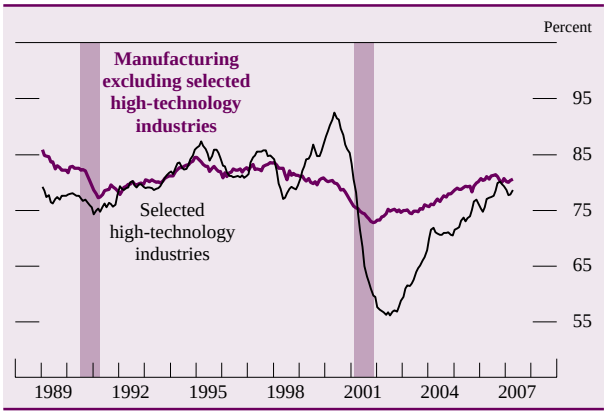
By stage of processing, capacity in the crude stage fell from 2003 to 2005 and is estimated to have edged up 0.3 percent in 2006. Capacity at the primary and semifinished stages declined in 2003 but rose from 2004 through 2006. Capacity for finished goods expanded from 2003 to 2006.

Capacity Utilization

Overall, capacity utilization for total industry was little changed by the revision from 2003 to 2006 (table A.7). In the third quarter of 2006, the capacity utilization rate for total industry was 82.3 percent, 1.3 percentage points above its 1972–2005 average and 0.2 percentage point lower than reported previously. The utilization rate for total industry was revised up ¼ percentage point in the fourth quarters of 2003 and 2005 and revised down 0.4 percentage point in the fourth quarter of 2004 and 0.2 percentage point in 2006.

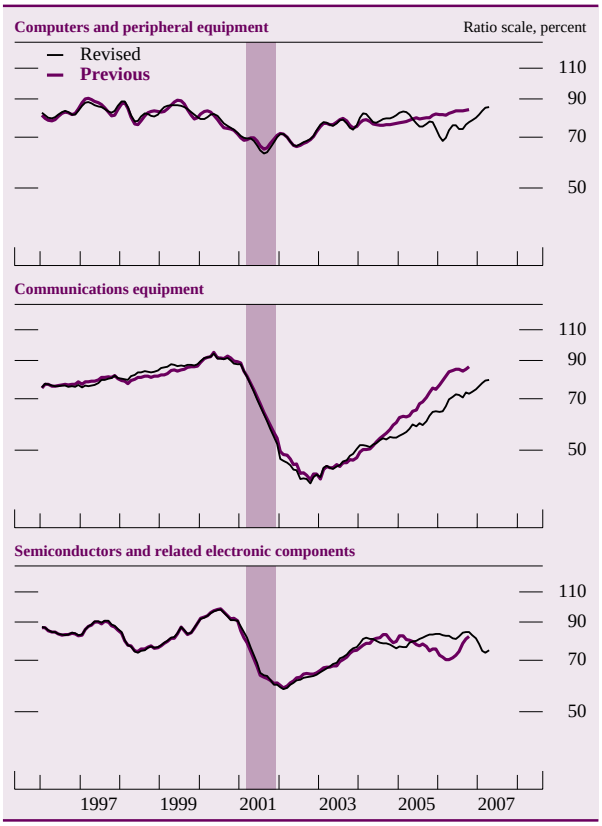
The manufacturing operating rate was 80.9 percent in the third quarter of 2006, 0.3 percentage point below the previous estimate but 1.1 percentage points above its 1972–2005 average. For 2004 and 2005, the rates were also marked down: 0.6 percentage point and 0.2 percentage point, respectively. For 2003, the rate was revised up 0.3 percentage point. Utilization rates for durable goods manufacturers were lower

5. Capacity utilization: Selected high-technology industries, and manufacturing excluding selected high-technology industries, January 1989–April 2007



NOTE: The high-technology industries are identified in the note to figure 3.

6. Capacity utilization: Selected high-technology industries, January 1996–April 2007



from 2004 to 2006 than previously published. Some of the largest downward revisions were in machinery and in electrical equipment, appliances, and components. Revisions generally were upward for wood products, primary metals, fabricated metal products, and furniture. On balance, utilization rates for nondurable goods industries were revised upward; the largest upward revisions were in textile and product mills, petroleum and coal products, and chemicals. The largest downward revisions were in food, apparel and leather, and plastics and rubber products. Capacity utilization in the other (non-NAICS) manufacturing industries was revised upward in 2003 and 2004 and downward in 2005 and 2006.

Among selected high-technology industries, the operating rates for computers and peripheral equipment and for communications equipment were lowered noticeably in recent years, whereas utilization in the semiconductor industry was revised up substantially (figures 5 and 6). On balance, the aggregate of selected high-technology industries now shows that utilization was lower in 2004 and 2006 but higher in 2003 and 2005. By the third quarter of 2006, the operating rate had climbed to 78.8 percent, ¾ percentage point above its 1972–2005 average.

Capacity utilization in mining was revised up between 2003 and 2006, mainly because of higher operating rates in the oil and gas extraction industries. As of the third quarter of 2006, the utilization rate for mining is now estimated to be 90.9 percent, up 5.9 percentage points from the fourth quarter of 2005, when the effects of Hurricane Katrina reduced the operating rates of oil and gas extraction facilities. In electric and gas utilities, capacity utilization rates were revised down in 2005 and 2006 but were little changed in previous years. At 86.4 percent in the third quarter of 2006, the operating rate for utilities was 0.4 percentage point below its long-run average.

TECHNICAL ASPECTS OF THE REVISION

The benchmark indexes for manufacturing—defined for each six-digit NAICS industry as nominal gross output divided by a price index—were updated to include new as well as revised information for 2003, 2004, and 2005 from the 2004 and 2005 ASMs. This revision also incorporates the 2005 Survey of Plant Capacity, other annual industry reports, recent information on prices, and revised monthly source data on physical product and production-worker hours.

As in the 2003 ASM, the reports for 2004 and 2005 did not provide data for all six-digit NAICS industries but combined some of them into higher-level industry aggregates. The benchmark indexes for manufacturing IP are calculated from gross output for six-digit industries and then aggregated to the IP industry level using proportions based on value added. To maintain benchmark references that are consistent over time, the Federal Reserve imputed estimates of gross output for industries no longer reported separately, which are based on values for the aggregate industries that

contained them and the gross output shares for the disaggregate industries in 2002.

Communications Equipment

The Federal Reserve's production indexes for communications equipment (NAICS 3342) have been developed, updated, and expanded over a period of years. The benchmark production indexes developed for the 2000 revision incorporated a quality-adjusted price index for the networking equipment (routers, switches, and hubs) used by businesses and telecommunications service providers; the detail underlying the series was expanded to include wireless networking equipment in the 2005 revision. The 2002 revision introduced a new annual price index for other types of communications equipment that included, among other items, the transmission (fiber optic) equipment that had grown rapidly in relative importance in the 1990s. The 2005 revision updated and refined that effort.[7]

This revision introduced further enhancements to the IP index for communications equipment. The improvements affected data from 1972 forward and included (1) refined estimates of the annual value of U.S. production for detailed product groups, (2) newly developed annual price indexes for mobile phones and related equipment and for satellites and related equipment, (3) updated annual and quarterly price indexes for networking equipment that use new source data for selected components, (4) new benchmark price indexes that incorporate price indexes for secondary products and miscellaneous receipts, and (5) newly incorporated indicator data for networking equipment—a part of the index for telephone apparatus manufacturing (NAICS 334210).[8]

The first four of these improvements affect the benchmark indexes for communications equipment (discussed in the sections below on specific types of equipment), and the fifth affects a monthly indicator used in IP (discussed in ''Changes to Individual Production Series'').[9]

The refinements to values of production for detailed product groups were based in large part on information in the Census Bureau's restructured Current Industrial Report (CIR) on Telecommunications, which was issued in August 2006. The report presented new groupings of data that better represent the communications equipment industry and that are better aligned with the price indexes estimated by the Federal Reserve. Previously issued data for 2004 were restated to be consistent with the new groupings, and the Federal Reserve developed historical series for the new data groupings based on data in previous years' CIRs.

In addition to the new price and production indexes for mobile phones and for satellite-based equipment that were developed for this revision, industry and government sources on prices were used to update the previously developed indexes for networking equipment, central office equipment, transmission (fiber optic) equipment, and PBX (private branch exchange) equipment. The remaining price indexes for communications equipment products and for secondary products and miscellaneous receipts were updated based on producer price indexes from the Bureau of Labor Statistics.[10]

The new product prices for communications equipment declined more than estimated previously (figure 7). Accordingly, the output of communications equipment is now shown to have risen about 6 percent more per year, on average, from 1972 through 2005. The yearly pattern was little changed; exceptions were 2004 and 2005, when upward revisions from faster falling prices were more than offset by downward revisions caused by benchmarking to the 2004 and the 2005 ASM.

Mobile Phones and Related Equipment

The revision incorporated a new price index for mobile phones (excluding satellite phones) and related network equipment that was constructed from detailed data available from Gartner. Previously, the IP index relied on the producer price index for these products. The revised index fell 17.2 percent, on average, from 1994 to 2005 (table 2).

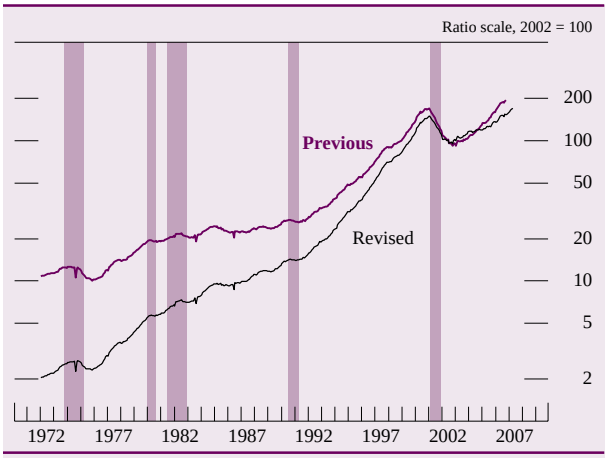
7. Refer to the following *Bulletin* articles on the 2000, 2002, and 2005 revisions for further details: Carol Corrado (2001), ''Industrial Production and Capacity Utilization: The 2000 Annual Revision'' *Federal Reserve Bulletin*, vol. 87 (March), pp. 132–48; Carol Corrado (2003), ''Industrial Production and Capacity Utilization: The 2002 Historical and Annual Revision,'' *Federal Reserve Bulletin*, vol. 89 (April), pp. 151–76; and Kimberly Bayard and Charles Gilbert (2006), ''Industrial Production and Capacity Utilization: The 2005 Annual Revision,'' *Federal Reserve Bulletin*, vol. 92, www.federalreserve.gov/pubs/bulletin.

8. The price indexes for secondary products (noted in item 4 above) fall notably slower than the indexes for primary products. The resulting industry price index falls about 1 percentage point slower, on average, than the index for primary products.

9. The benchmark indexes for most industries in the Federal Reserve's IP index incorporate updated price indexes from the industry output program of the Bureau of Economic Analysis. However, the price indexes for semiconductors and communications equipment are constructed by the Federal Reserve from alternative sources.

10. Producer price indexes are used as price indexes for broadcast and studio equipment, alarm systems, vehicular and pedestrian traffic equipment, intercom systems, and other voice equipment.

7. Industrial production: Communications equipment, January 1972–April 2007



Average annual percent change

Period	Previous	Revised
1972–94 average	6.8	12.7
1995–2002 average	13.2	19.7
2001	–10.2	–3.1
2002	–30.0	–23.5
2003	.1	7.6
2004	16.6	9.7
2005	24.4	7.9

Data on U.S. unit sales and prices of mobile phones categorized by function (basic, enhanced, smart, and cellular PDA) and type of signal (that is, GSM, CDMA, TDMA, and so on) were used to create a Fisher price index, which fell, on average, 17.8 percent per year.[11] For mobile phone network equipment, a price index was constructed using prices and units for U.S. sales of base stations, which transmit signals to and receive signals from mobile phones, and related switching equipment. This index declined an average of 14 percent per year from 1994 to 2005. In contrast, the producer price index for this category was little changed over this period.

The combined price index for mobile phones and related equipment was extended backward to 1972 using the producer price index for the product class containing mobile phones adjusted by the average bias (14 percent) from 1994 to 2005.[12]

Estimates of the annual gross value of U.S. production of mobile phones and related equipment were developed using information from Current Industrial Reports issued by the U.S. Census Bureau and other government and industry sources. These gross value estimates were deflated by the price indexes just described to obtain benchmark indexes of real output of mobile phones and related equipment.

11. GSM (Global System for Mobile Communications), CMDA (Code Division Multiple Access), and TDMA (Time Division Multiple Access) are common types of cell phone signals.

12. Jerry Hausman (1999), ''Cellular Telephone, New Products, and the CPI,'' *Journal of Business & Economic Statistics*, vol. 17 (April), pp. 188–94; Hausman suggests that mobile phone prices dropped substantially during the years before 1994, whereas the producer price index for that product class changes very little between 1972 and 1994.

2. Price changes for communications equipment, by type, 1994–2005

Type	Annual average percent change
Satellites and related equipment	–14.8
Mobile phones and related equipment	–17.2
Networking equipment	–18.5
Previous	–19.8

NOTE: The previous estimate for networking equipment is that published for the 2005 annual revision to industrial production.

Satellites and Related Equipment

Data from industry groups on prices for satellites and related ground equipment were used to construct a price index for this product class. The index fell 14.8 percent, on average, from 1994 to 2005 (table 2).

Information from Futron on satellite manufacturing revenues and total satellite capacity launched, proxied by transponder bandwidth, was used to construct an estimate of satellite unit costs, which fell 27 percent, on average, over the 2000–05 period. Pricing information for the highly diverse ground equipment category is not widely available. Detailed information from the NPD Group on one such product—GPS navigation equipment—yielded a price index that fell an average of 12.2 percent per year from 2002 to 2006. The technologies underlying mobile phone networking equipment and satellite ground equipment are similar, so the geometric mean of the GPS index and the price index for mobile phone networking equipment was used as a deflator for ground equipment.

From 2000 to 2005, the FRB price index for satellites and related equipment fell about 15 percent per year on average, more than 12 percentage points faster than the annual PPI that previously represented these products in the deflator used to calculate the benchmark index for IP. The FRB price index was extended back before 2000 using a bias-adjusted PPI.

Networking Equipment

The IP series for the production of networking equipment is not published in the monthly statistical release, but it is included in the broader IP aggregate for communications equipment and updated on an ongoing basis. Tables 3 and 4 report the price index

3. Price indexes for communications equipment manufacturing, 1997–2005

2002 price = 100

Year	Total	Networking equipment and service-provider routers	Other communications equipment
1997	210.7	333.8	186.2
1998	179.3	240.7	164.8
1999	157.3	197.2	147.3
2000	140.4	175.3	131.5
2001	119.1	132.7	114.0
2002	100.0	100.0	100.0
2003	86.5	80.6	88.6
2004	78.4	67.3	81.7
2005	71.3	60.5	74.6
MEMO			
Average percent change, 1997–2005	–12.5	–18.5	–10.9

for networking equipment. For the 1994–2000 period, the price index is based on detailed price and quantity information from Gartner on routers, switches, and hubs. With this revision, the component price indexes for routers and switches are based on data from Synergy from 2001 on. The price index for wireless networking equipment, such as adapters and access ports, is based on data from Gartner from 1994 to 2005.

The previous price indexes for routers and switches required a downward adjustment of 8 percentage points to align their results with quality-adjusted price indexes based on research using item-level prices and characteristics for 1995–2000.[13] A similar exercise was conducted to update the bias adjustment. A price index was computed from data for constant-quality, high-end routers (that is, specific models of a particular type and brand of router) from 2002 to 2005. The Fisher price index based on the quarterly Synergy data yielded results that were very close to the price index based on the specific models, so the previous downward adjustment was phased out between 2000 and 2004.

On average, the movements in the overall networking price index and the component price indexes are revised only slightly, but the pattern is somewhat different, particularly in the router index, primarily because of the switch to Synergy source data.

Changes to Individual Production Series

With this revision, the monthly production indicators for some series have changed, and some new series have been created.

13. Mark Doms and Christopher Forman (2005), ''Prices for Local Area Network Equipment,'' *Information Economics and Policy*, vol. 17 (July), pp. 365–88.

4. Production and prices for U.S. networking equipment, 1998–2005

Period	Index, 2002=100		Value of production (millions of dollars)
	Production	Prices	
Annual estimates			
1998	58.7	240.7	20,556.4
1999	82.5	197.2	23,781.6
2000	113.8	175.3	29,160.7
2001	124.7	132.7	25,202.6
2002	100.0	100.0	15,747.5
2003	90.7	80.6	13,088.5
2004	89.1	67.3	11,151.3
2005	102.0	60.5	11,455.9
Quarterly estimates			
1998:Q1	49.9	288.3	19,361.9
Q2	59.1	255.3	21,667.2
Q3	62.5	198.5	20,516.9
Q4	63.3	220.3	20,806.8
1999:Q1	78.3	225.3	23,513.5
Q2	82.7	202.0	23,906.1
Q3	82.1	173.7	23,545.0
Q4	87.0	185.8	24,224.3
2000:Q1	103.3	199.9	27,993.8
Q2	113.9	178.8	28,940.9
Q3	117.4	153.7	29,722.5
Q4	120.6	166.7	29,970.2
2001:Q1	136.7	160.2	29,004.9
Q2	124.1	143.6	25,699.2
Q3	120.5	110.1	23,512.1
Q4	117.4	118.3	22,504.3
2002:Q1	101.1	126.2	17,062.0
Q2	102.5	122.7	16,765.8
Q3	98.5	74.6	14,914.0
Q4	97.9	82.4	14,158.7
2003:Q1	94.0	103.5	13,208.2
Q2	86.7	95.6	13,634.8
Q3	89.8	64.5	13,349.1
Q4	92.3	64.0	12,057.9
2004:Q1	95.9	81.8	12,689.1
Q2	89.6	75.2	10,716.9
Q3	86.3	55.9	10,995.1
Q4	84.5	58.7	10,241.2
2005:Q1	88.7	72.7	10,456.8
Q2	109.9	64.6	11,598.7
Q3	100.9	52.7	11,607.9
Q4	108.4	54.3	12,090.7

Ethanol

A new industrial production index for ethyl alcohol (also known as ethanol, NAICS 325193) was introduced with this revision. The index begins in 1997 and uses as a monthly indicator data on fuel-ethanol production from the Monthly Oxygenate Report, published by the Energy Information Agency of the Department of Energy. Previously, ethanol production had been included in the production index for organic chemicals (NAICS 32511, 32519), which used the output of eight basic organic chemicals as its high-frequency indicator. The data for those eight chemicals now serve as the indicator for a new series that covers the combined output of petrochemicals (NAICS 32511) and other organic chemicals (NAICS 32519), except ethanol. The new ethanol series is classified both in the energy materials market group (86.5 percent by weight) and in the business supply market group (13.5 percent by weight). Like the old series for all of organic chemicals, the new series for organic chemicals other than ethanol is classified both in

non-energy chemical materials (86.5 percent) and in business supplies (13.5 percent).

Unitary Air Conditioners

The output of unitary air conditioners is now represented by separate production indexes for residential and nonresidential units for the period 1997 to the present. Unitary air conditioners include both central air units and heat pumps and are a part of NAICS industry 333415, which covers air conditioners, nonhousehold refrigeration equipment, and warm air furnaces. Previously, a single production index for unitary air conditioners was based on data for shipments and inventories from the Air-Conditioning and Refrigeration Institute (ARI).

The new indexes take advantage of additional detail available in the ARI report both to develop indexes for the residential and nonresidential markets and to weight units of various sizes by relative prices. The ARI shipments data are available for seventeen size categories that range from units with cooling capacity of less than 16,500 British Thermal Units per hour (BTUH) to those with cooling capacity of 640,000 BTUH or more. The shipments for each size category are split between residential and nonresidential units; the bulk of the units with cooling capacity less than 65,000 BTUH are assumed to be residential, and the bulk of the units with cooling capacity of at least 65,000 BTUH are assumed to be nonresidential. The shipments of the smaller units are split into eight size categories; the units are assumed to be 97 percent residential in the smallest category, 96 percent in the next smallest category, and so on, until the share decreases to 90 percent in the largest of these mostly residential categories. A share of the larger-sized units is assumed to be for use in apartments and other multifamily residential buildings. The residential share of units with cooling capacity between 65,000 and 96,000 BTUH is assumed to be 20 percent. This share decreases 2 percentage points for each larger category, falling to 4 percent for units with cooling capacity of 640,000 BTUH or more.

Relative prices for the various size categories are derived from the Current Industrial Report (CIR) on Refrigeration, Air Conditioning, and Warm Air Heating Equipment from the Census Bureau for 2004 and 2005; previously, the single index was based on an unweighted sum of units. Annual shipments in terms of both unit volumes and dollars are available from the CIR for several types of unitary air conditioners broken down by size categories very similar to the ARI size categories. Unit values were calculated for the various size categories in the CIR. These values were very nearly proportional to the midpoint of the cooling capacity range in each category, which allowed the calculation of unit values for those ARI size categories that did not exactly line up with the CIR categories. The relative prices appeared stable across time, so the indicators for the new IP indexes were constructed as fixed-weight aggregates of the ARI shipments series.

ARI published estimates of the change in manufacturers' overall inventories—not broken into size categories—up through the summer of 2006. Previously, the inventory change figures had been added to unit shipments to construct an estimate of unit production. These data on inventory change were extended with model-based estimates of inventory change and used the method implemented for other industries in recent annual revisions to industrial production.[14] The weighted shipments aggregates are then multiplied by the ratio of implicit production to shipments for overall unitary air conditioners to compute the monthly product indicators for the residential and nonresidential production indexes.

Audio and Video Equipment

The monthly indicator for audio and video equipment (NAICS 3343) was updated to include both digital televisions and speakers for the period 2002 to the present. Previously, the index reflected shipments of analog televisions with diagonal sizes of 24 inches or larger that were adjusted for imports, but the rapid transition of the market from analog to digital televisions in the past few years made it necessary to expand the scope of the index. In addition, data on the output of speakers were included in the new indicator; shipments of speakers and commercial sound systems account for about 15 percent to 20 percent of U.S. audio and video equipment shipments in recent years.[15]

The new monthly indicator is a Fisher quantity index, which in late 2006 was based on eighteen distinct components. Unit and dollar sales of digital televisions are available by technology (plasma, LCD, projection, and digital tube) and by size (length of diagonal) from the Consumer Electronics Association (CEA). In late 2006, sales of plasma TVs were available for three size groupings: sets with diagonals up to 49 inches, sets with diagonals between 50 and 59 inches, and sets with diagonals 60 inches and above. In addition, sales of LCD TVs were available

14. Kimberly Bayard and Charles Gilbert (2005), "Industrial Production and Capacity Utilization: The 2004 Annual Revision," *Federal Reserve Bulletin*, vol. 91 (Winter), pp. 9–25.

15. U.S. Census Bureau, Current Industrial Reports, *Consumer Electronics: 2005*, www.census.gov/cir/www/334/ma334m.html.

in seven size categories that ranged from sets with diagonals up through 18 inches to those with diagonals 40 inches and longer. Data for projection TVs were grouped into four categories: diagonals less than 50 inches, diagonals from 50 to 54 inches, diagonals from 55 to 59 inches, and diagonals 60 inches and above. Data for digital tube sets were available for two groups: those with diagonals less than 30 inches and those with diagonals of 30 inches or more. Speakers and analog television sets with diagonals 24 inches and above were included as separate components of the Fisher index. Smaller analog TV sets are generally imported.

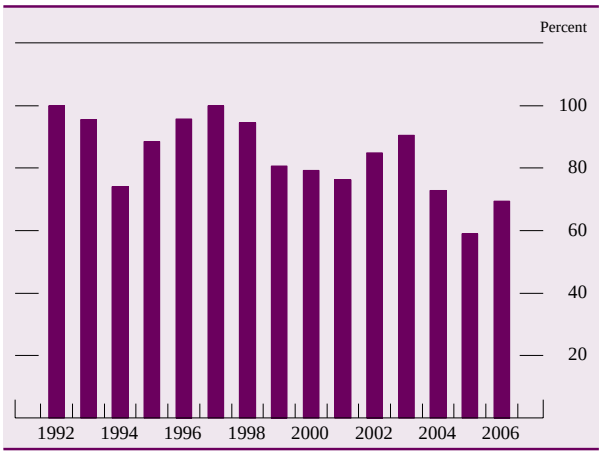
A price index was derived for each of the components of the Fisher index. For the digital televisions, the price indexes were just the unit values calculated from the dollar and unit sales figures. For the analog televisions, the price index was assumed to equal the price index for personal consumption expenditures on televisions from the national income and product accounts. For speakers, a producer price index was used.

The source data from the CEA are sales figures, so an adjustment was made so they better represent U.S. production. The Current Industrial Report for Consumer Electronics includes domestic factory shipments data for speaker systems, flat panel televisions (plasma and LCD), projection TVs, and tube TVs (digital and analog). The ratios of these data to the nominal sales data were used to adjust the nominal values for each of the components in the Fisher index.[16]

Semiconductors

As in previous years, the index for the production of semiconductors is based on worldwide sales data from the Semiconductor Industry Association, adjusted for net trade using a domestic production share estimated from various government and industry sources. Before this revision, Current Industrial Reports issued by the U.S. Census Bureau and announcements from major manufacturers of microprocessor units (MPUs) were used to estimate shares. With this revision, annual information from Gartner on the location of specific facilities and information from Instat on quarterly production at specific establishments were used to refine production share estimates (figure 8). The resulting shares are noticeably different from previous estimates; the revised pattern of production of MPUs contains more-noticeable decelerations in 1994, 2001, and 2005 and a more rapid acceleration in 1995. Abrupt and pronounced movements in the series coincide with changes to the small number of facilities that account for the bulk of worldwide production, such as idling a plant to install upgraded equipment.

8. U.S. share of worldwide production of microprocessors, 1992–2006



Communications Equipment Quarterly Indicator

This revision introduced a new data source, Synergy Research Group, for the quarterly indicator for data networking equipment, which is part of telephone apparatus manufacturing (NAICS 334210). Synergy provided data from 2002 forward on U.S. sales of routers and switches that were more comprehensive and timely than the previous source.

Periodicals and Other Publishers

The index for periodicals and other publishers (NAICS 51112, 51114, and 51119) was split into separate indexes for periodicals (NAICS 51112) and other publishers (NAICS 51114, 51119). Both new indexes use production-worker hours as monthly indicators and begin in 1987. The separate indicators will allow comparisons to other industry data.

Series Switched from Product Data to Production-Worker Hours

Product data used as indicators for several IP indexes were discontinued in the past few years and have been replaced by production-worker hours for 2002 to the present. The industries affected are coffee (NAICS 31192), cotton and synthetic fabrics (part of NAICS 31321), wool fabrics (part of NAICS 31321),

16. Nominal sales data from the CEA are used for the digital televisions and the speakers. Nominal sales of analog TVs are derived as the product of the unit sales and the price index.

5. Industrial production data, by type, available in reporting window, 2005

Percentage

Type of data	Month of estimate			
	1st	2nd	3rd	4th
Product-based	27	42	54	54
Production-worker hours	43	43	43	43
Total available	70	84	96	97
Federal Reserve estimates	30	16	4	3

NOTE: Industrial production for a month is issued in the middle of the following month and revised in the subsequent three monthly G.17 releases. The columns in this table show the percentages of industrial production, based on value added, that have been derived from different types of source data for the initial estimate and subsequent revisions.

tire cord (NAICS 314992), hosiery (NAICS 31511), pigments (NAICS 31523), synthetic rubber (NAICS 325212), and electron tubes (NAICS 334411).

Reliability of Monthly Estimates

The first estimate of output for a month is preliminary and is subject to revision in each of the subsequent three months as new source data become available. By the third revision (the fourth month of estimate), the product-based content of IP is 54 percent (table 5).

Changes to Individual Capacity Series

The capacity index for organic chemicals (NAICS 32511, 9) was split into two series—ethyl alcohol (or ethanol, NAICS 325193) and organic chemicals excluding ethanol (NAICS 32511, 9 except 325193)—for 1997 and onward. The capacity indicator for ethanol is gallons of ethanol capacity from the Renewable Fuels Association (RFA). The capacity index and corresponding index of capacity utilization were constructed as follows: A physical utilization rate was calculated as the ratio of production data from the Monthly Oxygenate Report (published by the Energy Information Agency of the Department of Energy) and the physical capacity indictor from the RFA. This physical utilization rate was then divided into the industrial production index for ethanol to create a corresponding capacity index.[17] The capacity indicator for organic chemicals excluding ethanol is based on utilization rates from the Survey of Plant Capacity.

Capacity for synthetic rubber is now based on utilization rates from the Survey of Plant Capacity and begins in 2002. Capacity for previous years is still derived from physical capacity data from the International Institute of Synthetic Rubber Producers.

Weights for Aggregation

The IP index is a Fisher index. This revision uses information from the Census of Manufactures to obtain updated estimates of the industry value-added weights used in the aggregation of IP indexes and capacity utilization rates. The Federal Reserve derives estimates of value added for the electric and gas utility industries from annual revenue and expense data issued by other organizations. The weights for aggregation, expressed as unit value added, were estimated using the latest data on producer prices. Table A.8 shows the annual value-added proportions in the IP index from 1997 through 2005.

Revised Monthly Data

This revision incorporates product data that became available after the regular four-month reporting window for monthly IP was closed. These data are released with too great a lag to be included with monthly IP estimates; however, the data are available for inclusion in the annual revision.

Revised Seasonal Factors

Seasonal factors for all series were reestimated using data that extend into 2006. Factors for production-worker hours—which adjust for timing, holiday, and monthly seasonal patterns—were updated with data through September 2006 and were prorated to correspond with the seasonal factors for hours aggregated to the three-digit NAICS level. The updated factors for the physical product series, which include adjustments for holiday and workday patterns, used data through 2006. Seasonal factors for unit motor vehicle assemblies have been updated, and projections through June 2007 are on the Federal Reserve Board's website at www.federalreserve.gov/releases/g17/mvsf.htm. □

17. Typically, the capacity indexes resulting from this methodology are further smoothed using a model-based approach that accounts for features of the data collection process or different measurement errors. With the short history of these series, we did not find it necessary to smooth the resulting capacity indexes as a part of this revision. However, the capacity index was constructed using the production index before applying the correction factor that aligns the production indicator to the benchmark output information in the Census of Manufactures and Annual Surveys of Manufactures. This correction factor was then applied to both the production and the capacity indexes.

Appendix tables start on page A29

Appendix Tables Based on the G.17 Statistical Release, May 16, 2007

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)																
1977	–.6	1.5	1.3	.9	.8	.7	.2	.1	.5	.3	.0	.2	8.4	12.8	4.9	2.9	7.7
1978	–1.3	.4	1.8	2.1	.3	.7	.0	.4	.3	.9	.7	.6	–1.2	16.8	3.6	7.6	5.5
1979	–.7	.6	.3	–1.1	.8	.0	–.2	–.7	.1	.6	–.1	.1	2.0	–.5	–1.4	1.4	3.1
1980	.5	.0	–.3	–2.0	–2.5	–1.3	–.6	.3	1.6	1.3	1.7	.6	1.7	–15.9	–6.2	16.2	–2.6
1981	–.5	–.5	.6	–.5	.7	.5	.7	.0	–.6	–.7	–1.1	–1.1	1.0	1.5	4.3	–8.5	1.4
1982	–1.9	2.0	–.7	–.8	–.7	–.4	–.3	–.8	–.4	–.8	–.4	–.8	–7.6	–4.9	–5.9	–7.4	–5.1
1983	1.9	–.6	.9	1.2	.7	.6	1.6	1.1	1.5	.9	.3	.5	4.4	9.6	14.8	11.0	2.7
1984	2.0	.5	.5	.6	.5	.4	.3	.1	–.1	–.1	.4	.1	12.5	6.5	2.9	.5	9.1
1985	–.3	.4	.2	–.2	.1	.1	–.6	.5	.4	–.4	.3	1.0	1.2	.7	–.5	2.7	1.4
1986	.5	–.8	–.6	.1	.2	–.3	.6	–.2	.2	.4	.5	.9	2.4	–2.4	1.7	4.6	1.1
1987	–.3	1.3	.2	.6	.7	.5	.6	.7	.3	1.5	.5	.5	5.4	7.2	7.3	9.9	5.1
1988	.0	.4	.3	.5	–.1	.2	.2	.5	–.3	.6	.2	.4	3.4	3.4	2.1	3.3	5.1
1989	.2	–.5	.3	.0	–.7	.0	–.9	1.0	–.3	–.1	.3	.7	1.5	–1.8	–2.4	1.8	.9
1990	–.6	.9	.5	–.1	.2	.3	–.2	.3	.2	–.7	–1.2	–.7	3.0	2.8	1.4	–5.9	1.0
1991	–.5	–.7	–.5	.2	1.0	1.0	.0	.2	.9	–.2	–.1	–.3	–7.6	2.7	5.7	1.0	–1.5
1992	–.5	.7	.8	.7	.4	.1	.8	–.5	.2	.7	.4	.1	–.3	7.1	3.1	4.0	2.9
1993	.5	.3	.0	.3	–.4	.3	.4	.0	.5	.8	.4	.6	3.7	1.1	2.4	6.4	3.4
1994	.5	.0	1.0	.5	.5	.7	.2	.5	.3	.9	.7	1.1	5.6	7.3	5.1	8.3	5.5
1995	.4	.1	.1	–.1	.2	.3	–.4	1.3	.4	–.2	.3	.3	6.0	1.0	3.8	3.5	5.0
1996	–.8	1.5	–.2	.9	.7	.9	–.2	.7	.5	.0	.9	.7	2.0	8.4	5.2	6.1	4.3
1997	.2	1.2	.8	–.1	.6	.4	.5	1.3	.9	.8	1.0	.4	8.3	5.5	9.0	11.1	7.2
1998	.5	.1	.0	.5	.7	–.5	–.3	2.2	–.2	.7	–.1	.4	4.7	3.3	3.8	5.3	6.1
1999	.6	.5	.2	.2	.8	–.1	.7	.5	–.4	1.3	.6	.9	4.9	4.0	4.4	8.2	4.7
2000	.1	.4	.4	.8	.3	.1	–.3	–.3	.5	–.5	.0	–.4	5.3	5.9	–.5	–1.6	4.5
2001	–.7	–.6	–.4	–.3	–.7	–.6	–.4	–.4	–.4	–.6	–.5	.0	–5.7	–5.4	–5.6	–5.1	–3.5
2002	.5	.1	.8	.4	.4	.9	–.3	.2	.1	–.3	.4	–.4	2.7	6.4	2.3	–.4	.0
2003	.6	.3	–.2	–.8	–.1	.2	.4	–.1	.5	–.1	.8	.0	2.3	–3.2	2.5	3.3	1.1
2004	.2	.7	–.6	.6	.6	–.7	.6	.2	–.2	.7	.2	.6	3.3	2.5	1.8	4.3	2.5
2005	.3	.6	–.1	.1	.4	.6	.0	.3	–1.6	1.2	1.1	.8	4.6	2.8	.8	4.7	3.2
2006	.0	.3	.5	.9	–.1	.9	.4	.2	–.3	–.2	–.4	.6	5.0	6.5	4.0	–1.5	3.9
2007	–.5	.8	–.3	.7	...	...	...	...	...	...	...	...	.9	...	...	...	...
	Industrial production (2002=100)																
1977	49.7	50.5	51.1	51.6	52.0	52.4	52.5	52.5	52.8	52.9	53.0	53.1	50.4	52.0	52.6	53.0	52.0
1978	52.3	52.6	53.5	54.7	54.8	55.2	55.2	55.4	55.6	56.0	56.5	56.8	52.8	54.9	55.4	56.4	54.9
1979	56.4	56.8	56.9	56.3	56.8	56.8	56.7	56.3	56.3	56.6	56.6	56.7	56.7	56.6	56.4	56.6	56.6
1980	56.9	56.9	56.8	55.6	54.2	53.5	53.2	53.4	54.2	54.9	55.9	56.2	56.9	54.5	53.6	55.7	55.1
1981	55.9	55.6	55.9	55.6	56.0	56.3	56.7	56.7	56.4	55.9	55.3	54.7	55.8	56.0	56.6	55.3	55.9
1982	53.7	54.7	54.4	53.9	53.5	53.3	53.2	52.7	52.5	52.1	51.8	51.4	54.3	53.6	52.8	51.8	53.1
1983	52.4	52.1	52.5	53.2	53.6	53.9	54.7	55.3	56.2	56.7	56.9	57.1	52.3	53.5	55.4	56.9	54.5
1984	58.3	58.6	58.9	59.2	59.5	59.8	59.9	60.0	59.9	59.8	60.1	60.1	58.6	59.5	59.9	60.0	59.5
1985	60.0	60.2	60.4	60.2	60.3	60.3	60.0	60.2	60.5	60.3	60.5	61.1	60.2	60.3	60.2	60.6	60.3
1986	61.4	60.9	60.6	60.6	60.7	60.5	60.9	60.8	60.9	61.2	61.5	62.0	61.0	60.6	60.9	61.6	61.0
1987	61.8	62.6	62.7	63.1	63.5	63.8	64.2	64.7	64.9	65.8	66.2	66.5	62.4	63.5	64.6	66.1	64.1
1988	66.5	66.7	66.9	67.2	67.2	67.3	67.4	67.8	67.6	68.0	68.1	68.4	66.7	67.3	67.6	68.2	67.4
1989	68.6	68.2	68.4	68.4	68.0	68.0	67.3	68.0	67.8	67.7	67.9	68.4	68.4	68.1	67.7	68.0	68.1
1990	68.0	68.6	68.9	68.8	68.9	69.1	69.0	69.2	69.4	68.9	68.1	67.6	68.5	69.0	69.2	68.2	68.7
1991	67.2	66.8	66.5	66.6	67.3	68.0	68.0	68.1	68.7	68.5	68.4	68.2	66.8	67.3	68.2	68.4	67.7
1992	67.9	68.3	68.8	69.3	69.6	69.6	70.2	69.9	70.0	70.5	70.8	70.9	68.3	69.5	70.0	70.7	69.7
1993	71.2	71.5	71.5	71.7	71.4	71.6	71.9	71.9	72.3	72.8	73.1	73.5	71.4	71.6	72.0	73.1	72.0
1994	73.9	73.9	74.7	75.0	75.4	75.9	76.1	76.4	76.6	77.3	77.8	78.7	74.1	75.4	76.4	77.9	76.0
1995	79.0	79.0	79.2	79.1	79.2	79.5	79.2	80.2	80.6	80.4	80.7	81.0	79.1	79.3	80.0	80.7	79.8
1996	80.3	81.6	81.4	82.1	82.7	83.4	83.3	83.8	84.3	84.3	85.1	85.7	81.1	82.8	83.8	85.1	83.2
1997	85.9	86.9	87.6	87.5	88.0	88.4	88.8	89.9	90.8	91.5	92.4	92.8	86.8	87.9	89.9	92.3	89.2
1998	93.3	93.3	93.4	93.8	94.4	94.0	93.7	95.7	95.5	96.1	96.1	96.4	93.3	94.1	95.0	96.2	94.6
1999	96.9	97.5	97.6	97.8	98.6	98.5	99.2	99.7	99.3	100.6	101.3	102.1	97.4	98.3	99.4	101.3	99.1
2000	102.2	102.7	103.1	103.9	104.2	104.3	104.0	103.8	104.2	103.7	103.7	103.3	102.7	104.1	104.0	103.6	103.6
2001	102.6	102.0	101.6	101.3	100.6	100.0	99.6	99.2	98.8	98.3	97.8	97.7	102.1	100.7	99.2	97.9	100.0
2002	98.3	98.4	99.1	99.5	99.9	100.9	100.6	100.7	100.8	100.5	100.9	100.4	98.6	100.1	100.7	100.6	100.0
2003	101.1	101.4	101.1	100.3	100.2	100.4	100.8	100.8	101.3	101.2	102.0	102.0	101.2	100.3	101.0	101.8	101.1
2004	102.3	103.0	102.4	103.1	103.7	102.9	103.6	103.8	103.6	104.4	104.7	105.3	102.6	103.2	103.7	104.8	103.6
2005	105.6	106.2	106.1	106.2	106.6	107.3	107.3	107.6	105.8	107.1	108.2	109.1	106.0	106.7	106.9	108.1	106.9
2006	109.1	109.4	110.0	110.9	110.9	111.9	112.3	112.5	112.2	112.0	111.5	112.2	109.5	111.2	112.3	111.9	111.1
2007	111.7	112.6	112.2	113.0	...	...	...	...	...	...	...	...	112.2	...	...	...	...

NOTE: Monthly percent change figures show the change from the previous month; quarterly figures show the change from the previous quarter at a compound annual rate of change. Production and capacity indexes are expressed as percentages of output in 2002.

Estimates from February 2007 through April 2007 are subject to further revision in the upcoming monthly releases.

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

... Not available as of May 16, 2007.

Appendix Tables Based on the G.17 Statistical Release, May 16, 2007—*Continued*

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

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.[1]
	Capacity (percent of 2002 output)																
1977	61.5	61.7	61.8	62.0	62.2	62.4	62.5	62.7	62.9	63.1	63.3	63.5	61.7	62.2	62.7	63.3	62.5
1978	63.7	63.9	64.1	64.2	64.4	64.6	64.8	65.0	65.1	65.3	65.5	65.6	63.9	64.4	65.0	65.5	64.7
1979	65.8	65.9	66.1	66.2	66.4	66.5	66.7	66.8	66.9	67.1	67.2	67.4	65.9	66.4	66.8	67.2	66.6
1980	67.5	67.6	67.8	67.9	68.0	68.2	68.3	68.5	68.6	68.8	68.9	69.1	67.6	68.0	68.5	68.9	68.3
1981	69.2	69.4	69.6	69.7	69.9	70.1	70.2	70.4	70.6	70.8	70.9	71.1	69.4	69.9	70.4	70.9	70.2
1982	71.3	71.4	71.6	71.8	71.9	72.1	72.2	72.3	72.4	72.5	72.6	72.7	71.4	71.9	72.3	72.6	72.1
1983	72.7	72.8	72.8	72.9	72.9	72.9	73.0	73.0	73.0	73.1	73.2	73.2	72.8	72.9	73.0	73.2	73.0
1984	73.3	73.4	73.5	73.6	73.7	73.8	74.0	74.1	74.3	74.5	74.7	74.8	73.4	73.7	74.1	74.7	74.0
1985	75.0	75.2	75.4	75.6	75.8	76.0	76.2	76.3	76.5	76.6	76.8	76.9	75.2	75.8	76.3	76.8	76.0
1986	77.0	77.1	77.2	77.3	77.4	77.5	77.6	77.7	77.8	77.9	78.0	78.1	77.1	77.4	77.7	78.0	77.5
1987	78.2	78.4	78.5	78.7	78.9	79.0	79.2	79.3	79.5	79.6	79.7	79.8	78.4	78.9	79.3	79.7	79.1
1988	79.9	79.9	80.0	80.1	80.1	80.1	80.2	80.2	80.3	80.4	80.5	80.5	79.9	80.1	80.2	80.5	80.2
1989	80.6	80.8	80.9	81.0	81.2	81.3	81.5	81.6	81.8	82.0	82.2	82.3	80.8	81.2	81.6	82.2	81.4
1990	82.5	82.7	82.8	83.0	83.2	83.3	83.5	83.6	83.8	83.9	84.1	84.2	82.7	83.2	83.6	84.1	83.4
1991	84.4	84.5	84.6	84.8	84.9	85.0	85.1	85.3	85.4	85.5	85.6	85.8	84.5	84.9	85.3	85.6	85.1
1992	85.9	86.1	86.2	86.4	86.5	86.7	86.9	87.0	87.2	87.4	87.5	87.7	86.1	86.5	87.0	87.5	86.8
1993	87.8	87.9	88.1	88.2	88.3	88.4	88.6	88.7	88.8	89.0	89.1	89.3	87.9	88.3	88.7	89.1	88.5
1994	89.5	89.7	89.9	90.1	90.4	90.6	90.9	91.2	91.5	91.8	92.2	92.5	89.7	90.4	91.2	92.2	90.9
1995	92.9	93.2	93.6	94.0	94.4	94.8	95.1	95.5	95.9	96.4	96.8	97.2	93.2	94.4	95.5	96.8	95.0
1996	97.6	98.1	98.5	98.9	99.4	99.8	100.3	100.7	101.2	101.7	102.1	102.6	98.1	99.4	100.7	102.1	100.1
1997	103.1	103.6	104.1	104.7	105.2	105.8	106.4	107.1	107.7	108.4	109.1	109.8	103.6	105.3	107.1	109.1	106.3
1998	110.6	111.3	112.0	112.7	113.5	114.1	114.8	115.4	116.0	116.5	117.1	117.6	111.3	113.4	115.4	117.1	114.3
1999	118.2	118.7	119.2	119.7	120.2	120.7	121.2	121.7	122.2	122.7	123.2	123.7	118.7	120.2	121.7	123.2	120.9
2000	124.3	124.8	125.3	125.8	126.3	126.8	127.2	127.6	128.1	128.5	128.9	129.3	124.8	126.3	127.6	128.9	126.9
2001	129.6	130.0	130.3	130.6	131.0	131.3	131.6	131.9	132.1	132.4	132.7	132.9	130.0	131.0	131.8	132.7	131.4
2002	133.1	133.3	133.5	133.6	133.7	133.8	133.9	133.9	133.8	133.8	133.7	133.6	133.3	133.7	133.9	133.7	133.6
2003	133.5	133.3	133.2	133.0	132.9	132.8	132.7	132.6	132.5	132.5	132.4	132.4	133.3	132.9	132.6	132.4	132.8
2004	132.4	132.4	132.5	132.5	132.5	132.5	132.6	132.6	132.6	132.6	132.6	132.7	132.4	132.5	132.6	132.6	132.5
2005	132.7	132.7	132.8	132.9	133.0	133.1	133.2	133.4	133.6	133.8	134.1	134.3	132.7	133.0	133.4	134.1	133.3
2006	134.6	134.8	135.1	135.4	135.7	136.0	136.2	136.5	136.8	137.0	137.3	137.5	134.9	135.7	136.5	137.3	136.1
2007	137.8	138.0	138.2	138.5	...	...	...	...	...	...	...	...	138.0	...	...	...	...
	Capacity utilization (percent)																
1977	80.8	81.8	82.7	83.2	83.6	84.0	83.9	83.8	83.9	83.9	83.7	83.6	81.8	83.6	83.9	83.7	83.2
1978	82.2	82.3	83.6	85.1	85.1	85.5	85.2	85.3	85.3	85.8	86.2	86.5	82.7	85.2	85.3	86.2	84.9
1979	85.8	86.1	86.2	85.1	85.5	85.4	85.0	84.2	84.1	84.4	84.2	84.1	86.0	85.3	84.5	84.3	85.0
1980	84.3	84.2	83.8	81.9	79.7	78.5	77.9	77.9	79.0	79.8	81.0	81.3	84.1	80.1	78.3	80.7	80.8
1981	80.7	80.1	80.3	79.8	80.2	80.4	80.7	80.5	79.8	79.1	78.0	77.0	80.4	80.1	80.4	78.0	79.7
1982	75.3	76.6	75.9	75.1	74.4	74.0	73.6	72.9	72.5	71.8	71.4	70.8	75.9	74.5	73.0	71.3	73.7
1983	72.0	71.5	72.1	73.0	73.5	73.9	75.0	75.8	76.9	77.5	77.7	78.0	71.9	73.4	75.9	77.8	74.8
1984	79.5	79.8	80.1	80.5	80.8	80.9	81.0	80.9	80.6	80.3	80.5	80.4	79.8	80.7	80.8	80.4	80.4
1985	80.0	80.1	80.0	79.7	79.6	79.4	78.7	78.9	79.1	78.6	78.8	79.5	80.0	79.6	78.9	79.0	79.4
1986	79.8	79.0	78.4	78.4	78.4	78.1	78.5	78.3	78.3	78.6	78.8	79.4	79.1	78.3	78.4	78.9	78.7
1987	79.0	79.9	79.9	80.2	80.5	80.8	81.1	81.6	81.6	82.7	83.0	83.3	79.6	80.5	81.4	83.0	81.1
1988	83.2	83.5	83.6	84.0	83.9	84.0	84.1	84.5	84.2	84.6	84.7	84.9	83.4	84.0	84.2	84.7	84.1
1989	85.0	84.5	84.6	84.4	83.7	83.6	82.6	83.3	82.8	82.6	82.7	83.1	84.7	83.9	82.9	82.8	83.6
1990	82.4	83.0	83.2	82.9	82.9	83.0	82.7	82.8	82.8	82.1	80.9	80.2	82.9	82.9	82.7	81.1	82.4
1991	79.7	79.0	78.5	78.6	79.3	79.9	79.8	79.8	80.4	80.1	79.9	79.5	79.1	79.3	80.0	79.9	79.6
1992	79.0	79.4	79.9	80.3	80.4	80.3	80.8	80.3	80.3	80.8	80.9	80.8	79.4	80.3	80.5	80.8	80.3
1993	81.1	81.3	81.1	81.3	80.9	81.0	81.2	81.1	81.4	81.8	82.0	82.3	81.2	81.1	81.2	82.1	81.4
1994	82.6	82.4	83.1	83.3	83.5	83.8	83.7	83.8	83.8	84.2	84.4	85.1	82.7	83.5	83.8	84.6	83.6
1995	85.1	84.8	84.6	84.1	84.0	83.9	83.2	84.0	84.0	83.5	83.4	83.3	84.8	84.0	83.7	83.4	84.0
1996	82.3	83.2	82.6	83.0	83.2	83.6	83.0	83.2	83.3	83.0	83.3	83.5	82.7	83.3	83.2	83.3	83.1
1997	83.3	83.8	84.1	83.6	83.6	83.5	83.5	84.0	84.3	84.4	84.7	84.5	83.7	83.6	83.9	84.5	83.9
1998	84.3	83.9	83.3	83.2	83.2	82.3	81.6	82.9	82.3	82.5	82.0	81.9	83.8	82.9	82.3	82.2	82.8
1999	82.1	82.1	81.9	81.8	82.1	81.6	81.8	81.9	81.3	82.0	82.2	82.6	82.0	81.8	81.7	82.3	81.9
2000	82.3	82.3	82.3	82.6	82.5	82.3	81.8	81.3	81.4	80.8	80.5	79.9	82.3	82.5	81.5	80.4	81.7
2001	79.2	78.5	78.0	77.5	76.8	76.2	75.7	75.3	74.8	74.2	73.7	73.6	78.5	76.9	75.3	73.8	76.1
2002	73.8	73.8	74.3	74.5	74.7	75.4	75.1	75.2	75.3	75.1	75.5	75.2	74.0	74.9	75.2	75.3	74.8
2003	75.7	76.0	75.9	75.4	75.4	75.7	76.0	76.0	76.4	76.4	77.1	77.1	75.9	75.5	76.1	76.8	76.1
2004	77.2	77.8	77.3	77.8	78.2	77.7	78.1	78.3	78.2	78.7	78.9	79.4	77.5	77.9	78.2	79.0	78.1
2005	79.6	80.0	79.9	79.9	80.2	80.6	80.5	80.7	79.2	80.0	80.7	81.3	79.8	80.2	80.1	80.7	80.2
2006	81.1	81.1	81.4	81.9	81.7	82.3	82.4	82.4	82.0	81.7	81.3	81.6	81.2	82.0	82.3	81.5	81.7
2007	81.1	81.6	81.2	81.6	...	...	...	...	...	...	...	...	81.3	...	...	...	...

NOTE: Estimates from February 2007 through April 2007 are subject to further revision in the upcoming monthly releases.

Refer also to the general note in table A.1.

... Not available as of May 16, 2007.

Appendix Tables Based on the G.17 Statistical Release, May 16, 2007—*Continued*

A.3. Rates of change in industrial production, by market and industry groups, 2002–06[1]

Item	NAICS code[2]	Revised rate of change (percent)					Difference between rates of change: revised minus previous (percentage points)				
		2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Total industry	...	**2.7**	**1.2**	**3.0**	**3.2**	**3.5**	**.5**	**–.4**	**–1.4**	**.2**	**–.1**
MARKET GROUPS											
Final products and nonindustrial supplies	...	1.8	1.3	2.6	4.8	2.6	.4	–.5	–1.7	.0	–.2
Consumer goods	...	2.7	1.4	1.8	2.7	1.1	.0	.0	–.2	.4	.0
Durable	...	7.1	3.4	–.2	2.3	–2.5	–.8	–.9	–1.5	–.8	.1
Automotive products	...	11.7	4.8	–3.2	–1.8	–4.6	–.7	–1.7	–3.6	–4.3	–1.3
Home electronics	...	–10.1	20.4	14.2	16.8	13.1	–2.4	2.0	17.9	–.4	11.2
Appliances, furniture, carpeting	...	1.9	2.3	2.2	3.1	–4.7	–2.1	.1	–.2	.9	–.7
Miscellaneous goods	...	5.1	–1.3	2.1	6.4	–.6	.2	–.5	–.9	3.2	–.2
Nondurable	...	1.0	.6	2.6	2.9	2.2	.3	.4	.2	.8	–.3
Non-energy	...	–.6	1.1	2.2	3.4	2.7	.4	.5	–.2	1.2	–.6
Foods and tobacco	...	–2.9	2.7	2.3	4.8	2.2	.2	.5	.4	1.9	–1.0
Clothing	...	–10.6	–10.9	–10.5	–.3	.7	–3.5	–1.6	–7.7	1.0	–3.5
Chemical products	...	5.6	2.3	3.8	.9	3.8	1.6	1.3	.8	.6	.7
Paper products	...	–.2	–4.3	3.2	2.2	3.3	.3	–.8	–2.7	–1.5	–.6
Energy	...	9.2	–1.7	3.7	1.7	.7	–.3	.2	2.0	.0	.7
Business equipment	...	–1.0	1.1	5.3	11.2	9.7	1.3	–1.7	–5.5	.7	–1.1
Transit	...	–10.8	.4	6.0	20.5	16.9	.0	–3.2	–3.7	5.5	4.0
Information processing	...	–6.7	7.0	7.2	13.7	10.1	2.2	.5	–7.4	–5.7	–5.1
Industrial and other	...	6.6	–2.0	3.9	6.7	6.9	1.2	–2.4	–5.2	2.4	–.7
Defense and space equipment	...	.6	1.5	2.5	3.8	2.3	–.2	–3.9	–7.2	–5.5	–1.3
Construction supplies	...	1.7	1.0	1.6	8.0	–2.1	.4	–.7	–3.1	1.4	.0
Business supplies	...	3.1	.9	2.9	3.4	2.4	.6	.0	–.9	–.4	.4
Materials	...	4.0	1.0	3.4	1.1	4.7	.6	–.2	–.8	.5	.0
Non-energy	...	5.2	1.4	4.8	3.5	4.5	.8	–.3	–1.2	.2	.8
Durable	...	6.0	2.9	5.4	7.0	5.6	.6	–.9	–2.2	.0	1.3
Consumer parts	...	7.5	–1.5	.2	1.7	–3.2	1.5	–.3	–1.8	–.5	–.7
Equipment parts	...	8.3	8.8	9.4	16.0	19.4	.9	–3.0	–4.7	–.2	4.7
Other	...	3.2	.5	4.5	2.7	–.7	–.1	.5	–.5	.6	.1
Nondurable	...	3.7	–1.1	3.8	–2.1	2.6	1.0	.6	.6	1.0	.2
Textile	...	5.7	–7.6	–3.4	.2	–7.3	.7	–1.1	3.0	4.6	–1.6
Paper	...	1.4	–5.2	3.9	–.2	2.5	.5	1.3	–.7	.7	.2
Chemical	...	6.0	2.4	7.7	–6.5	4.7	2.1	.9	2.4	2.1	.0
Energy	...	.5	.1	–.2	–4.2	5.4	.1	.2	.0	1.2	–1.9
INDUSTRY GROUPS											
Manufacturing[3]	...	2.7	1.3	3.4	4.4	3.4	.6	–.4	–1.7	.2	.1
Manufacturing (NAICS)	31–33	3.1	1.6	3.5	4.6	3.6	.6	–.4	–1.7	.3	.2
Durable manufacturing	...	4.3	2.6	3.7	7.9	4.7	.5	–1.4	–3.4	.2	.6
Wood products	321	1.5	4.6	1.8	10.5	–14.5	.6	.6	–1.3	3.1	.8
Nonmetallic mineral products	327	1.2	1.9	3.8	5.8	–1.9	.2	–.2	–1.2	2.9	1.1
Primary metal	331	5.5	4.3	7.4	–2.3	–3.5	–1.1	3.3	3.6	–.6	2.7
Fabricated metal products	332	1.8	–2.2	1.6	6.1	3.8	.6	–1.5	–3.7	2.1	–.5
Machinery	333	6.3	–2.0	5.0	8.2	5.3	2.2	–3.0	–6.5	1.9	.4
Computer and electronic products	334	4.3	13.6	10.2	18.3	18.3	1.5	–2.1	–5.9	–4.7	2.5
Electrical equipment, appliances, and components	335	–3.8	–1.0	2.0	3.8	2.4	–1.7	–.3	–3.1	–3.2	–5.8
Motor vehicles and parts	3361–3	12.4	3.1	–1.6	.2	–3.8	.2	–1.5	–4.3	–2.1	–.1
Aerospace and miscellaneous transportation equipment	3364–9	–7.3	–3.7	2.0	15.0	14.7	.0	–3.3	–3.3	3.1	2.2
Furniture and related products	337	5.8	.1	3.5	1.7	–1.2	–1.6	–.1	1.3	3.7	.2
Miscellaneous	339	9.1	.1	2.2	8.7	4.8	–.5	–.5	–1.7	3.9	–1.1
Nondurable manufacturing	...	1.5	.4	3.2	.9	2.3	.7	.8	.4	.9	–.1
Food, beverage, and tobacco products	311,2	–1.7	2.6	1.2	5.3	2.6	.5	.9	–.5	1.9	–1.0
Textile and product mills	313,4	2.8	–4.7	–.7	2.0	–7.7	.6	–.5	3.1	2.3	–.1
Apparel and leather	315,6	–10.7	–10.5	–9.6	.4	–.1	–3.8	–1.1	–7.5	.8	–3.3
Paper	322	4.1	–5.4	3.0	–.1	–.1	.7	.6	–1.5	.6	.7
Printing and support	323	–3.3	–2.4	1.9	1.9	5.2	–.1	.7	.4	.2	–1.1
Petroleum and coal products	324	2.3	1.0	10.0	–3.6	2.6	–.6	.7	3.7	2.4	–.2
Chemical	325	5.4	2.0	6.1	–2.5	3.8	1.8	1.3	1.8	1.0	.3
Plastics and rubber products	326	5.0	–.2	.8	3.0	.2	.6	.0	–2.4	–.9	–.5
Other manufacturing (non-NAICS)	1133, 5111	–2.5	–3.4	2.6	.6	.2	.1	–.4	–1.2	–1.2	–1.1
Mining	21	–3.7	.6	–.8	–5.5	8.0	.1	.1	–.3	1.4	–2.3
Utilities	2211,2	7.0	.6	1.6	2.1	.3	.0	–.2	.4	–.7	.1
Electric	2211	5.6	1.8	2.2	3.4	.0	.0	–.1	.2	–.4	–.1
Natural gas	2212	15.7	–6.0	–1.4	–3.4	1.9	.1	–.4	1.5	–1.8	1.4

1. Rates of change are calculated as the percent change in the seasonally adjusted index from the fourth quarter of the previous year to the fourth quarter of the year specified in the column heading. For 2006, the differences between the rates of change are calculated from annualized rates of change between the fourth quarter of 2005 and the third quarter of 2006.

2. North American Industry Classification System.

3. Manufacturing comprises North American Industry Classification System (NAICS) manufacturing industries (sector 31–33) plus the logging industry and the newspaper, periodical, book, and directory publishing industries. Logging and publishing are classified elsewhere in NAICS (under agriculture and information respectively), but historically they were considered to be manufacturing industries and were included in the industrial sector under the Standard Industrial Classification (SIC) system. In December 2002, the Federal Reserve reclassified all its industrial output data from the SIC system to NAICS.

... Not applicable.

Appendix Tables Based on the G.17 Statistical Release, May 16, 2007—*Continued*

A.4. Rates of change in industrial production, special aggregates and selected detail, 2002–06[1]

Item	NAICS code[2]	Revised rate of change (percent)					Difference between rates of change: revised minus previous (percentage points)				
		2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Total industry	**...**	**2.7**	**1.2**	**3.0**	**3.2**	**3.5**	**.5**	**–.4**	**–1.4**	**.2**	**–.1**
Energy	...	2.8	.6	1.5	–1.8	4.0	.0	.1	.8	.7	–.8
Consumer products	...	9.2	–1.7	3.7	1.7	.7	–.3	.2	2.0	.0	.7
Commercial products	...	4.3	4.8	4.5	.5	2.3	–.2	–.4	2.0	–2.3	2.5
Oil and gas well drilling	213111	–15.2	21.2	8.3	11.8	14.7	.0	.0	.0	.0	.5
Converted fuel	...	4.3	1.0	2.1	–2.5	2.2	.2	.4	.5	–.3	–1.9
Primary materials	...	–1.5	–.3	–1.3	–4.9	6.8	.1	.1	–.3	1.9	–1.9
Non-energy	...	2.7	1.3	3.3	4.6	3.3	.6	–.4	–1.8	.2	.0
Selected high-technology industries	...	8.3	17.2	10.4	28.1	24.6	3.5	–4.0	–8.0	2.4	2.0
Computers and peripheral equipment	3341	–2.9	4.8	6.6	30.4	12.1	–.3	–.9	2.0	18.3	–4.9
Communications equipment	3342	–13.6	13.9	6.2	12.9	14.8	9.0	4.0	–16.1	–12.5	–8.9
Semiconductors and related electronic components	334412–9	28.0	24.4	13.7	33.8	34.8	2.0	–9.6	–7.7	3.9	12.1
Excluding selected high-technology industries	...	2.2	.3	2.8	3.1	1.9	.3	–.2	–1.4	.1	–.2
Motor vehicles and parts	3361–3	12.4	3.1	–1.6	.2	–3.8	.2	–1.5	–4.3	–2.1	–.1
Motor vehicles	3361	13.7	7.8	–3.0	–2.5	–6.0	–.7	–2.6	–4.6	–2.4	–.3
Motor vehicle parts	3363	11.1	–2.1	–1.1	1.3	–.2	.9	–.6	–3.3	–2.0	–.5
Excluding motor vehicles and parts	...	1.3	.0	3.2	3.4	2.4	.3	–.1	–1.2	.2	–.3
Consumer goods	...	.2	1.0	2.4	3.6	1.8	.2	.4	.1	1.3	–.5
Business equipment	...	.5	–1.5	4.4	8.9	10.2	.2	–2.0	–4.6	–.7	.3
Construction supplies	...	1.8	.8	1.5	8.0	–2.2	.4	–.8	–3.1	1.5	–.1
Business supplies	...	2.0	–1.0	2.1	3.1	1.0	.6	.5	–1.3	.4	–.6
Materials	...	2.3	–.4	4.4	.7	2.3	.5	.4	–.3	.1	.0
Measures excluding selected high-technology industries											
Total industry	...	2.3	.3	2.5	1.9	2.4	.3	–.2	–1.0	.1	–.3
Manufacturing[3]	...	2.3	.3	3.0	2.9	2.0	.3	–.2	–1.3	.0	.0
Durable	...	3.5	.7	2.8	5.2	2.0	.0	–1.0	–2.8	–.3	.1
Measures excluding motor vehicles and parts											
Total industry	...	2.0	1.0	3.3	3.4	3.9	.5	–.3	–1.1	.3	–.2
Manufacturing[3]	...	1.9	1.1	3.9	4.7	3.9	.6	–.3	–1.4	.3	.0
Durable	...	2.7	2.5	4.8	9.3	6.0	.5	–1.3	–3.2	.4	.4
Measures excluding selected high-technology industries and motor vehicles and parts											
Total industry	...	1.5	.1	2.9	2.1	2.8	.3	.0	–.7	.2	–.4
Manufacturing[3]	...	1.3	.0	3.4	3.1	2.5	.3	.0	–1.0	.2	–.1
Measures of non-energy materials inputs to											
Finished processors	...	6.7	2.2	5.2	8.3	9.0	1.0	–1.3	–2.8	.0	1.9
Primary and semifinished processors	...	3.8	.7	4.4	–.1	1.3	.5	.5	.1	.7	.2
Stage-of-process groups											
Crude	...	–.2	–.4	3.1	–7.2	6.9	.9	1.3	1.1	1.5	–1.4
Primary and semifinished	...	4.5	.6	3.2	4.3	2.3	.3	–.6	–1.3	.1	.6
Finished	...	1.2	2.4	2.6	5.6	4.1	.6	–.5	–2.2	.2	–.8

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 2006, the differences between the rates of change are calculated from annualized rates of change between the fourth quarter of 2005 and the third quarter of 2006.

2. North American Industry Classification System.

3. Refer to footnote 3 in table A.3.

... Not applicable.

Appendix Tables Based on the G.17 Statistical Release, May 16, 2007—*Continued*

A.5. Rates of change for annual industrial production indexes, 2002–06[1]

Item	Revised rate of change (percent)					Difference between rates of change: revised minus previous (percentage points)				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Total industry	**.0**	**1.1**	**2.5**	**3.2**	**4.1**	**–.1**	**.4**	**–1.6**	**.1**	**–.2**
MARKET GROUPS										
Consumer goods	1.9	1.3	1.4	2.8	1.3	–.3	.3	–.7	.7	–.2
Durable	5.4	3.4	1.4	1.0	.0	–.9	–.6	–1.4	–.9	–.5
Nondurable	.6	.5	1.4	3.5	1.7	–.1	.7	–.3	1.3	–.1
Business equipment	–7.1	.2	4.3	7.9	11.7	.7	.2	–5.0	–1.1	–.8
Defense and space equipment	–.6	3.8	.2	5.5	2.3	–.4	–1.2	–7.6	–5.2	–4.0
Construction supplies	–.5	–.2	2.0	4.8	3.5	–.3	.7	–3.5	.8	–.5
Business supplies	.0	1.5	2.2	3.4	3.2	–.2	.8	–1.0	–.2	–.1
Materials	.9	.9	3.1	2.2	4.7	–.1	.5	–1.2	.2	.3
Non-energy	1.2	1.3	4.3	3.6	5.9	–.1	.6	–1.5	.1	.5
Energy	.0	–.1	–.2	–1.3	1.8	.0	.3	–.2	.5	.0
INDUSTRY GROUPS										
Manufacturing[2]	.0	1.1	2.9	3.9	4.7	–.1	.5	–1.9	.0	–.2
Manufacturing (NAICS)	.2	1.3	3.0	4.0	5.0	–.1	.6	–2.0	.1	–.1
Durable manufacturing	–.4	2.3	4.0	5.5	7.6	–.2	.0	–3.3	–1.0	.3
Nondurable manufacturing	1.0	.1	1.9	2.4	2.1	.0	1.3	–.3	1.6	–.2
Other manufacturing (non-NAICS)	–3.1	–3.0	.9	1.8	–1.3	–.1	–.1	–.9	–1.3	–.9
Mining	–4.3	–.1	–.6	–1.6	2.7	.0	.1	–.4	.5	–.2
Utilities	3.1	1.9	1.4	2.0	.7	.0	–.1	.2	–.4	.1

1. The rates of change are calculated from annual averages of seasonally adjusted industrial production indexes rather than between the fourth quarter of one year and the fourth quarter of the next. The differences between revised and earlier changes for 2006 are computed from annualized rates of change between the full year 2005 and the first three quarters of 2006.

2. Refer to footnote 3 in table A.3.

A.6. Rates of change in capacity, by industry groups, 2002–06[1]

Item	Revised rate of change (percent)					Difference between rates of change: revised minus previous (percentage points)				
	2002	2003	2004	2005	2006	2002	2003	2004	2005	2006
Total industry	**.8**	**–.9**	**.1**	**1.1**	**2.4**	**.1**	**–.7**	**–.5**	**–.5**	**.4**
Manufacturing[2]	.4	–.9	.0	1.7	2.7	.0	–.8	–.5	–.3	.1
Manufacturing (NAICS)	.5	–.7	.0	1.8	2.8	.0	–.8	–.5	–.4	.1
Durable manufacturing	.9	–.2	.5	3.3	4.2	–.2	–1.4	–.9	–.7	.5
Nondurable manufacturing	.1	–1.1	–.3	.3	1.0	.4	.0	.4	.5	–.3
Other manufacturing (non-NAICS)	–2.4	–3.8	–.1	.6	.9	.3	–.7	–.5	.1	.8
Mining	–.5	–2.1	–.3	–1.7	.6	.8	–1.1	.3	–1.1	2.0
Utilities	4.5	3.2	2.6	.0	2.1	.0	.1	.0	.0	1.4
Selected high-technology industries	12.6	1.4	4.3	18.3	19.6	3.1	–6.6	–2.5	–2.5	7.4
Manufacturing except selected high-technology industries[2]	–.4	–.8	–.2	.6	1.4	–.2	–.4	–.3	.0	–.4
Stage-of-process groups										
Crude	.2	–2.2	–.1	–1.1	.3	1.3	–.1	1.0	–.2	1.4
Primary and semifinished	.9	–1.4	.4	1.4	3.0	.0	–1.3	–.5	–1.1	1.0
Finished	.6	.3	.5	2.0	2.3	.0	–.3	–.3	.8	–.5

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

2. Refer to footnote 3 in table A.3.

Appendix Tables Based on the G.17 Statistical Release, May 16, 2007—*Continued*

A.7. Capacity utilization rates, by industry groups, 1972–2006

Item	NAICS code[1]	Revised rate (percent of capacity, seasonally adjusted)					Difference between rates of change: revised minus previous (percentage points)			
		1972–2005 avg.	2003:Q4	2004:Q4	2005:Q4	2006:Q3	2003:Q4	2004:Q4	2005:Q4	2006:Q3
Total industry	**...**	**81.0**	**76.8**	**79.0**	**80.7**	**82.3**	**.3**	**–.4**	**.2**	**–.2**
Manufacturing[2]	...	79.8	75.0	77.6	79.6	80.9	.3	–.6	–.2	–.3
Manufacturing (NAICS)	31–33	79.5	74.6	77.2	79.3	80.8	.2	–.6	–.2	–.2
Durable manufacturing	...	78.0	72.4	74.8	78.1	79.5	.2	–1.5	–.9	–.9
Wood products	321	80.2	80.3	81.3	88.5	80.4	1.8	.3	1.4	1.3
Nonmetallic mineral products	327	79.4	79.2	81.1	83.8	82.3	–.2	–1.3	.6	1.0
Primary metal	331	80.6	80.4	86.8	83.7	88.8	–.2	1.8	.2	2.2
Fabricated metal products	332	77.2	72.2	73.6	78.0	80.7	2.1	–.3	1.9	2.1
Machinery	333	78.6	70.2	73.5	78.8	82.1	.8	–4.8	–4.7	–5.4
Computer and electronic products	334	78.4	67.1	71.7	75.1	77.2	.1	–1.2	–3.1	–3.7
Electrical equipment, appliances, and components	335	83.2	75.9	79.1	83.4	85.4	.1	–2.0	–4.3	–8.0
Motor vehicles and parts	3361–3	77.6	79.9	79.0	78.6	75.6	–.4	–1.5	–1.0	–.3
Aerospace and miscellaneous transportation equipment	3364–9	72.4	60.4	61.5	70.3	77.6	–1.9	–3.7	–1.4	–.4
Furniture and related products	337	78.5	72.4	76.5	78.6	79.5	–1.3	1.3	5.3	5.7
Miscellaneous	339	76.7	75.3	75.0	78.2	78.1	.6	–1.7	–.2	–.8
Nondurable manufacturing	...	81.7	77.4	80.1	80.6	82.4	.2	.2	.5	.6
Food, beverage, and tobacco products	311,2	81.6	77.8	78.2	81.4	81.1	–.5	–1.2	–.5	–.8
Textile and product mills	313,4	82.4	73.3	75.6	79.8	78.3	–1.3	.6	2.6	2.7
Apparel and leather	315,6	78.9	66.2	67.9	71.5	74.1	–.5	–5.0	–8.8	–11.3
Paper	322	87.9	81.7	84.5	85.0	85.4	.4	–1.0	–.1	.4
Printing and support	323	83.8	72.9	76.0	78.0	79.3	1.3	1.1	.7	–1.1
Petroleum and coal products	324	86.1	89.0	94.4	87.9	93.1	.6	1.0	.6	.5
Chemical	325	78.3	75.2	78.5	75.7	79.5	.7	1.2	1.6	2.1
Plastics and rubber products	326	83.8	81.6	85.0	87.3	87.5	.4	.1	–1.7	–2.5
Other manufacturing (non-NAICS)	1133, 5111	84.8	82.9	85.2	85.2	83.2	.8	.2	–.9	–2.0
Mining	21	87.3	88.8	88.4	85.0	90.9	.7	.1	2.3	–.1
Utilities	2211,2	86.8	85.5	84.7	86.5	86.4	–.1	.2	–.4	–1.2
Selected high-technology industries	...	78.0	66.8	70.7	76.5	78.7	1.1	–2.1	.8	–1.5
Computers and peripheral equipment	3341	78.2	74.5	79.8	76.2	74.5	–.4	3.5	–4.2	–8.6
Communications equipment	3342	75.6	49.0	54.4	63.8	71.8	1.9	–4.3	–10.4	–12.8
Semiconductors and related electronic components	334412–9	80.5	75.6	76.8	83.2	83.5	1.4	–2.6	8.0	5.7
Measures excluding selected high-technology industries										
Total industry	...	81.1	77.5	79.5	80.9	82.6	.2	–.3	.0	–.2
Manufacturing[2]	...	79.9	75.7	78.1	79.8	81.3	.2	–.5	–.5	–.4
Stage-of-process groups										
Crude	...	86.4	85.2	88.0	83.0	89.4	.2	.2	1.6	.2
Primary and semifinished	...	82.2	79.3	81.3	83.5	84.1	.7	.0	.9	.6
Finished	...	77.8	72.2	73.9	76.5	77.9	–.2	–1.4	–1.8	–1.9

1. North American Industry Classification System.
2. Refer to footnote 3 in table A.3.
... Not applicable.

Appendix Tables Based on the G.17 Statistical Release, May 16, 2007—*Continued*

A.8. Annual proportion in industrial production, by market groups and industry groups, 1998–2006

Item	NAICS code[1]	1998	1999	2000	2001	2002	2003	2004	2005	2006
Total industry	...	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**
MARKET GROUPS										
Final products and non-industrial supplies	...	58.1	57.6	57.6	59.1	58.9	58.3	57.3	57.5	57.4
Consumer goods	...	28.1	28.2	28.6	30.1	31.1	31.1	30.4	30.3	29.3
Durable	...	7.9	8.0	7.9	8.1	8.9	8.7	8.0	7.5	7.2
Automotive products	...	3.7	3.9	3.7	4.0	4.7	4.6	4.0	3.6	3.3
Home electronics	...	.4	.4	.4	.4	.4	.4	.4	.4	.4
Appliances, furniture, carpeting	...	1.4	1.4	1.4	1.4	1.4	1.4	1.3	1.3	1.2
Miscellaneous goods	...	2.4	2.4	2.4	2.3	2.4	2.3	2.2	2.2	2.2
Nondurable	...	20.2	20.2	20.7	22.0	22.2	22.4	22.5	22.8	22.2
Non-energy	...	16.9	16.7	16.9	18.2	18.3	18.1	17.4	17.0	16.9
Foods and tobacco	...	9.2	9.2	9.4	10.0	9.8	9.8	9.5	9.3	9.2
Clothing	...	1.5	1.4	1.2	1.1	.9	.8	.7	.6	.6
Chemical products	...	3.8	3.8	3.9	4.5	5.0	5.0	4.9	4.8	4.8
Paper products	...	1.9	1.9	1.9	2.0	2.0	1.9	1.9	1.8	1.8
Energy	...	3.2	3.5	3.7	3.8	3.9	4.3	5.1	5.8	5.3
Business equipment	...	12.2	11.8	11.6	11.1	10.1	9.6	9.4	9.4	9.9
Transit	...	2.5	2.3	2.0	2.0	1.8	1.6	1.6	1.7	2.0
Information processing	...	4.0	4.0	4.0	3.7	3.0	2.9	2.8	2.7	2.8
Industrial and other	...	5.8	5.5	5.6	5.4	5.3	5.1	4.9	4.9	5.1
Defense and space equipment	...	1.9	1.8	1.5	1.8	1.8	1.8	1.7	1.7	1.7
Construction supplies	...	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.4	4.6
Business supplies	...	11.2	11.1	11.2	11.2	11.2	11.1	11.0	11.1	11.0
Materials	...	41.9	42.4	42.4	40.9	41.1	41.7	42.7	42.5	42.6
Non-energy	...	33.3	33.1	32.3	30.9	30.7	30.2	30.2	29.8	30.8
Durable	...	21.4	21.4	20.9	19.6	19.1	18.7	18.6	18.3	19.2
Consumer parts	...	4.2	4.4	4.1	3.8	4.0	3.8	3.6	3.4	3.3
Equipment parts	...	8.1	8.1	8.1	7.3	6.7	6.5	6.4	6.2	6.6
Other	...	9.1	9.0	8.6	8.4	8.4	8.3	8.6	8.7	9.2
Nondurable	...	11.9	11.7	11.4	11.3	11.6	11.5	11.6	11.5	11.6
Textile	...	1.0	1.0	.9	.8	.8	.8	.7	.6	.6
Paper	...	2.8	2.9	2.8	2.8	2.7	2.5	2.4	2.3	2.3
Chemical	...	4.6	4.5	4.3	4.2	4.5	4.7	5.2	5.3	5.5
Energy	...	8.6	9.3	10.1	10.1	10.4	11.5	12.5	12.7	11.8
INDUSTRY GROUPS										
Manufacturing[2]	...	86.4	85.8	84.5	84.1	83.9	82.5	81.5	80.9	81.8
Manufacturing (NAICS)	31–33	81.8	81.0	79.7	79.2	79.0	77.9	77.0	76.6	77.7
Durable manufacturing	...	47.1	46.6	45.5	44.2	43.4	42.3	41.0	40.2	41.5
Wood products	321	1.5	1.6	1.5	1.4	1.5	1.6	1.6	1.5	1.4
Nonmetallic mineral products	327	2.3	2.3	2.2	2.3	2.3	2.2	2.2	2.3	2.4
Primary metal	331	2.9	2.8	2.5	2.3	2.3	2.4	2.8	2.8	3.3
Fabricated metal products	332	6.1	6.0	6.1	5.9	5.7	5.6	5.4	5.4	5.6
Machinery	333	6.2	5.8	6.0	5.6	5.3	5.0	4.9	4.9	5.1
Computer and electronic products	334	10.2	10.3	10.3	9.1	8.0	7.9	7.8	7.4	7.5
Electrical equipment, appliances, and components	335	2.6	2.5	2.5	2.4	2.2	2.0	2.0	1.9	2.0
Motor vehicles and parts	3361–3	6.6	7.0	6.6	6.5	7.5	7.3	6.5	5.9	5.5
Aerospace and miscellaneous transportation equipment	3364–9	4.1	3.8	3.3	3.8	3.6	3.3	3.1	3.3	3.8
Furniture and related products	337	1.7	1.7	1.7	1.7	1.8	1.7	1.6	1.6	1.6
Miscellaneous	339	2.8	2.8	2.9	3.1	3.3	3.3	3.1	3.2	3.2
Nondurable manufacturing	...	34.7	34.4	34.2	35.0	35.6	35.6	36.0	36.4	36.2
Food, beverage, and tobacco products	311,2	10.6	10.4	10.7	11.4	11.4	11.5	11.1	10.8	10.8
Textile and product mills	313,4	1.6	1.5	1.4	1.4	1.4	1.3	1.2	1.1	1.1
Apparel and leather	315,6	1.6	1.4	1.3	1.2	1.0	.9	.7	.7	.6
Paper	322	3.2	3.2	3.2	3.1	3.1	2.9	2.8	2.6	2.6
Printing and support	323	2.6	2.6	2.6	2.6	2.4	2.3	2.1	2.0	2.0
Petroleum and coal products	324	1.5	1.7	1.9	1.8	1.8	2.2	3.3	4.2	3.8
Chemical	325	9.9	9.6	9.4	9.8	10.8	10.9	11.4	11.5	11.8
Plastics and rubber products	326	3.7	3.8	3.7	3.7	3.8	3.7	3.5	3.4	3.5
Other manufacturing (non-NAICS)	1133, 5111	4.7	4.8	4.9	4.9	4.8	4.6	4.5	4.3	4.2
Mining	21	4.8	5.5	6.5	6.4	6.4	7.5	8.7	9.2	8.6
Utilities	2211,2	8.7	8.7	9.0	9.5	9.7	9.9	9.8	9.9	9.6
Electric	2211	7.6	7.4	7.6	8.1	8.3	8.3	8.1	8.1	8.1
Natural gas	2212	1.2	1.2	1.4	1.4	1.4	1.6	1.7	1.7	1.5

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 2006 and 2007 would account for a 0.415 percent increase in total IP.

1. North American Industry Classification System.
2. Refer to footnote 3 in table A.3.
... Not applicable.