

# Industrial Production and Capacity Utilization: The 2009 Annual Revision

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On March 27, 2009, the Federal Reserve published revisions to its index of industrial production (IP) and the related measures of capacity and capacity utilization. Although the revision affected the data from January 1972 through February 2009, most of the changes were for the period beginning in 2004.<sup>1</sup> The overall contour of total IP is little changed by the revision. Industrial output rose steadily at an average annual rate of 2.3 percent from 2004 through 2007, then fell sharply in 2008 at a rate of negative 6.7 percent (table 1). Measured from fourth quarter to fourth quarter, the increase in total IP in 2007 is now reported to have been 0.3 percentage point less, and the decrease in total IP in 2008 is now reported to have been 0.6 percentage point more, than earlier estimates.<sup>2</sup>

The revision shows that the rates of capacity utilization for total industry in the fourth quarters of 2007 and 2008 were both about ½ percentage point lower than previously estimated. Utilization in 2007 was 80.4 percent, about ½ percentage point below its long-run (1972 through 2008) average, and, in 2008, it was 74.2 percent, 6.7 percentage points below its long-run average. The operating rate for manufacturing was revised down 0.6 percentage point in 2007 and 0.8 percentage point in 2008; for the fourth

quarter of 2008, the factory operating rate stood at 70.9 percent, 8¾ percentage points below its long-run average.<sup>3</sup> The utilization rate for mines was revised down about ½ percentage point in 2006 but was little revised in other years; at the end of 2008, it stood at 89.6 percent, about 2 percentage points above its long-run average. The operating rate for utilities was revised down 0.7 percentage point in both 2006 and 2007; in 2008, it was revised down 0.6 percentage point, to 83.6 percent, and was 3.2 percentage points below its long-run average.

Compared with the previous estimates, total industrial capacity is now reported to have risen 0.4 percentage point less in 2008 and is expected to fall 0.6 percentage point more in 2009. The smaller increase in 2008 reflected a substantial downward revision to capacity in the high-technology manufacturing industries; the capacity indexes for mining, for utilities, and for manufacturing outside of the high-technology industries are all now reported to have been higher in 2008 than stated previously. The larger decrease in total industrial capacity in 2009 reflects downward revisions to the indexes for both durable and nondurable manufacturing and for mining; the capacity indexes for other manufacturing (logging and publishing) and utilities were little changed from their previous estimates.

Although comprehensive benchmark production data for manufacturing for 2007 are not yet available, the updated measures of production incorporate several newly available sources of data. Estimates of manufacturing (NAICS) production were updated with data from selected 2007 Current Industrial Reports (CIRs) from the U.S. Census Bureau. Estimates of other manufacturing (logging and publishing) were updated with annual data on logging for 2007 from the U.S. Forest Service and with annual data on the publishing industry from the Census Bureau's Service Annual Survey. The index for min-

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NOTE: Charles Gilbert directed the 2009 revision and, with Kimberly Bayard, David Byrne, Norman Morin, and Daniel Vine, prepared the revised estimates of industrial production. Norman Morin and Daniel Vine prepared the revised estimates of capacity and capacity utilization.

1. When necessary to maintain consistency with any revisions to the data for 1972 and subsequent years, the levels of the production and capacity indexes for the years before 1972 were multiplied by a constant. However, utilization rates and rates of change in IP for the years before 1972 were not revised.

2. Revised data reported in this article were published in Board of Governors of the Federal Reserve System (2009), Statistical Release G.17, "Industrial Production and Capacity Utilization" (July 15), [www.federalreserve.gov/releases/g17/releases\\_2009.htm](http://www.federalreserve.gov/releases/g17/releases_2009.htm). Data referred to in this article as "previous" appeared in the G.17 release issued on March 16, 2009. That release was the last G.17 published before the annual revision was issued on March 27.

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

1. Revised rates of change in industrial production and capacity, revised rates of capacity utilization, and the difference between revised and previously reported rates, 2004–08

Item	MEMO: 2007 pro- portion	Revised rate (percent)						Difference between rates (revised minus previous, percentage points)					
		2004–08 avg.	2004	2005	2006	2007	2008	2004–08 avg.	2004	2005	2006	2007	2008
<i>Production</i>													
Total index.....	100.0	.5	3.0	2.6	1.8	1.8	-6.7	-2	-1	.0	.1	-3	-6
Manufacturing.....	78.6	.3	3.6	3.8	1.2	1.9	-8.7	-2	-1	.1	.1	-4	-8
Excluding selected high-tech industries <sup>1</sup> .....	74.4	-.4	3.2	2.5	.4	.9	-8.9	-.1	-.1	.1	.3	-.2	-.4
Selected high-tech industries.....	4.2	11.1	8.6	22.6	13.1	18.2	-6.9	-3.1	-.7	.2	-4.2	-4.1	-6.4
Mining and utilities.....	21.4	1.1	.6	-1.6	4.2	1.6	.6	.1	.0	.0	.3	.1	.2
<i>Capacity</i>													
Total index.....	100.0	1.1	-.1	.8	1.5	2.0	1.1	-.1	-.3	.0	.2	.2	-.4
Manufacturing.....	80.9	1.2	-.1	1.3	1.4	2.2	1.3	-.1	-.3	-.1	.1	.3	-.5
Excluding selected high-tech industries <sup>1</sup> .....	76.2	.7	-.2	.6	1.1	1.0	1.0	.1	.0	.0	.3	.3	.2
Selected high-tech industries.....	4.7	9.7	1.7	11.9	5.7	22.9	6.3	-3.9	-3.8	-1.2	-4.7	1.5	-11.2
Mining and utilities.....	19.1	1.0	.4	.0	1.9	1.2	1.4	.1	-.4	.4	.8	-.3	.0
<i>Capacity utilization</i>													
Total index.....	100.0	78.9	79.0	80.4	80.6	80.4	74.2	-.3	-.1	.0	-.1	-.5	-.7
Manufacturing.....	80.9	77.0	77.3	79.2	79.0	78.7	70.9	-.3	-.1	.0	.0	-.6	-.8
Excluding selected high-tech industries <sup>1</sup> .....	76.2	77.1	77.8	79.3	78.8	78.7	71.0	-.4	-.2	-.2	-.2	-.5	-1.0
Selected high-tech industries.....	4.7	76.1	70.7	77.4	82.8	79.6	69.8	1.3	1.1	2.2	2.9	-.9	1.5
Mining and utilities.....	19.1	86.8	86.8	85.4	87.3	87.7	86.9	-.2	.1	-.2	-.6	-.3	-.2

NOTE: For production and capacity, 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.

Capacity utilization rates are for the fourth quarter of the year indicated; differences between revised and previously reported capacity utilization are also calculated from Q4 rates.

ing was updated with new annual data on mineral extraction for 2006 and 2007 from the U.S. Geological Survey (USGS). The weights that allocate individual production indexes into multiple market groups were previously derived from the benchmark input-output accounts for 1997 from the Bureau of Economic Analysis (BEA); with this revision, these weights were updated using data from the benchmark input-output accounts for 2002.<sup>4</sup> Updated price deflators from the BEA were used in the construction of the revised production estimates. Finally, the new monthly production estimates also reflect the incorporation of updated seasonal factors and monthly source data that became available (or were revised) after the closing of the reporting window. The results of both the 2007 Census of Manufactures and the 2008 Annual Survey of Manufactures (both from the Census Bureau) should be available for the 2010 revision to the IP indexes.

Results from the Census Bureau's Quarterly Survey of Plant Capacity for the fourth quarters of 2007 and 2008 were used to update the capacity indexes and capacity utilization rates. In addition, the revisions to the capacity indexes and capacity utilization

4. The updated weights are based on the original release of the benchmark input-output accounts from September 2007, not on the revised version of the accounts released in January 2008.

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

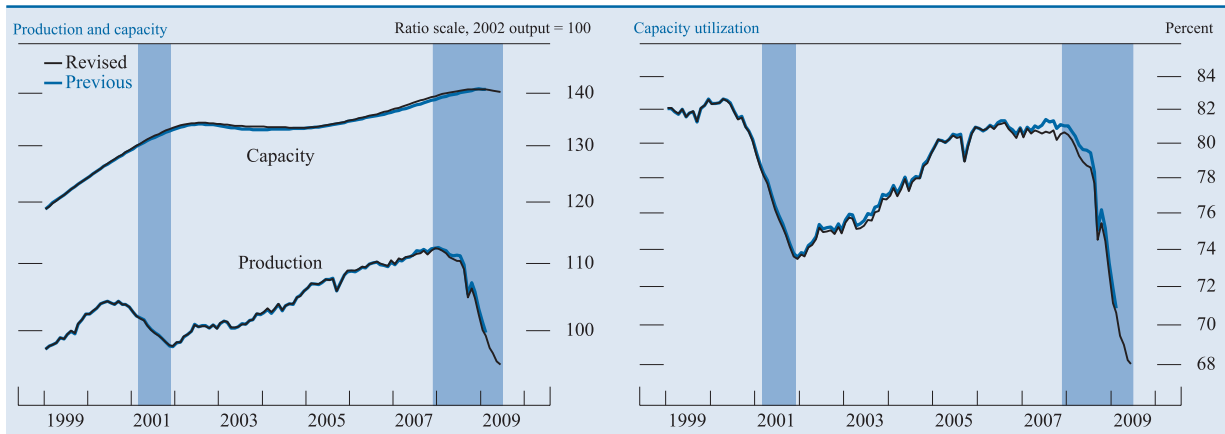
rates incorporate the revised production indexes and newly available data on industrial capacity from the USGS, the Energy Information Administration of the U.S. Department of Energy (DOE), and other organizations.

### RESULTS OF THE REVISION

As revised, total IP for the fourth quarter of 2008 was 104.4 percent of output in 2002, and capacity stood at 140.7 percent of output in 2002. Both indexes are lower than reported previously. The capacity utilization rate for total industry in the fourth quarter of 2008 was 74.2 percent, 0.7 percentage point below what was stated earlier. Detailed results of the revision can be found in the appendix tables.<sup>5</sup>

5. Table A.1 shows the revised data for total IP, 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 IP for market groups, industry groups, special aggregates, and selected detail for the years 2004 through 2008. Table A.5 shows the revised rates of change of annual IP indexes for market and industry groups for the years 2004 through 2008. 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. Table A.9 shows

1. Industrial production, capacity, and capacity utilization: Total industry, January 1999–June 2009



NOTE: Here and in the following figures, the shaded areas are periods of business recession as defined by the National Bureau of Economic Research (NBER). The last shaded area begins with the peak as defined by the NBER and ends at the trough of a three-month moving average of manufacturing IP.

Data labeled “revised” correspond to the data in the Federal Reserve’s Statistical Release G.17, “Industrial Production and Capacity Utilization,” published on July 15, 2009. Data labeled “previous” are those published before the March 27, 2009, annual revision.

**Industrial Production**

The overall contour of IP in this revision is similar to that reported previously (figure 1). The total index rose modestly each year from 2004 through 2007 and then dropped in 2008. Relative to the previous estimates, total IP increased 0.3 percentage point less in 2007 and fell 0.6 percentage point more in 2008. Revisions to the changes in other recent years were smaller. The change in total IP was revised down 0.1 percentage point in 2004 and was revised up 0.1 percentage point in 2006; it was not revised noticeably in 2005.

**Market Groups**

Although the aggregate index for IP was little revised before 2007, revisions to the indexes for some market groups were significant. These revisions largely resulted from the incorporation of the 2002 benchmark input-output accounts from the BEA, which, as discussed further in the section on technical aspects of the revision, updated the weights used to allocate individual production indexes to multiple market groups.

The production index for final products and nonindustrial supplies follows an output path similar to that for total IP; moderate gains in 2004 through 2007 were followed by a drop in 2008 (figure 2 and table A.3). Compared with the previous estimates, the

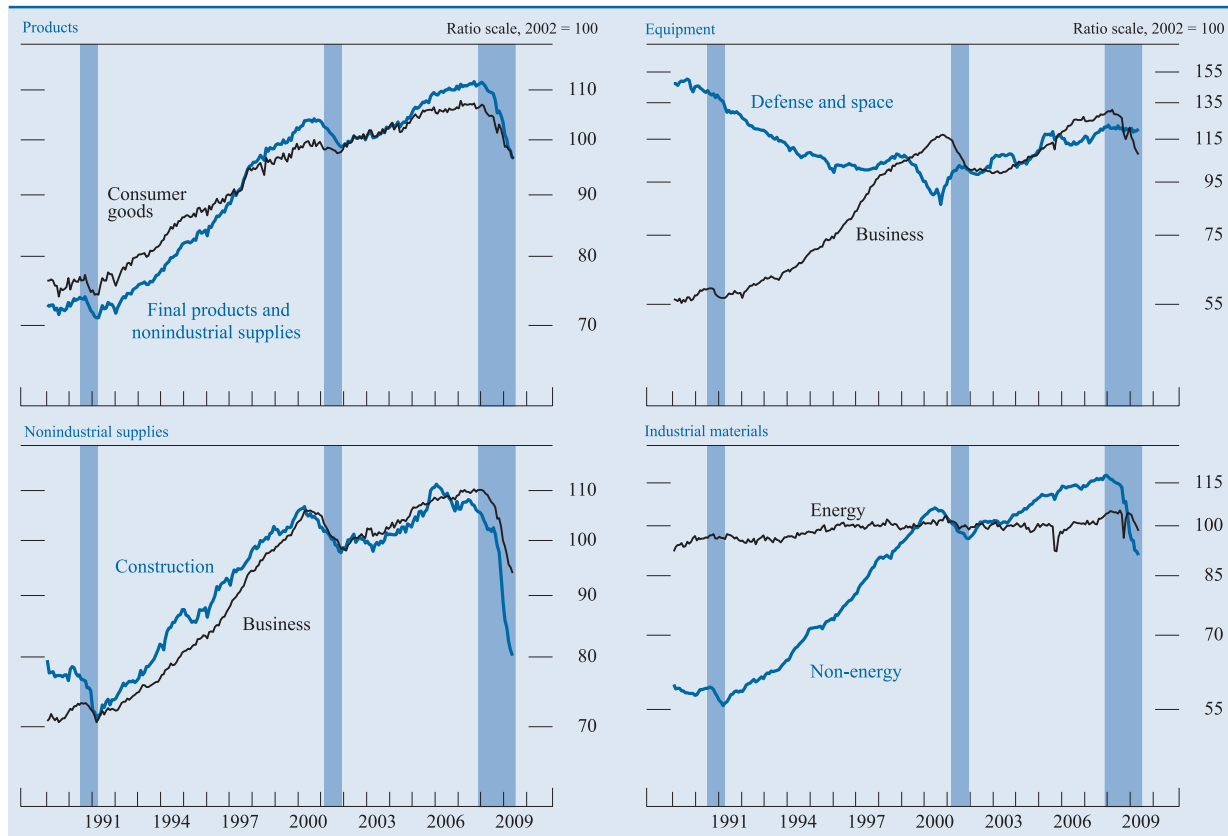
index for final products and nonindustrial supplies is now reported to have advanced 0.5 percentage point less in 2007 and to have decreased 0.4 percentage point more in 2008. Overall changes to the rates of increase in other years were minimal; the change in the index was revised down 0.1 percentage point in 2004 and was essentially unrevised in 2005 and 2006.

The change in the output of consumer goods was revised down 1 percentage point in 2007; revisions to other years were small. The output of durable consumer goods declined in 2004 and 2006, rose slightly in 2005 and 2007, and dropped sharply in 2008. The rates of change are now higher than earlier estimates suggested in 2004 and in 2006 through 2008, and they are a touch lower in 2005 than previously reported. Among durable consumer goods, the most significant revisions were in the index for home electronics, which now is estimated to have increased less rapidly in 2005 and 2006, to have increased more rapidly in 2004 and 2007, and to have posted an advance instead of a decline in 2008. Elsewhere within durable consumer goods, the index for miscellaneous durable consumer goods is now estimated to have increased less rapidly in 2005, and to have decreased less rapidly in 2006, than previously reported. Revisions to the indexes for the other major categories of durable consumer goods were smaller.

The index for consumer nondurables shows moderate gains in output in 2004 through 2006, but, with this revision, it now posts a decline instead of an advance in 2007. The index also drops slightly in 2008. Revisions in recent years besides 2007 were small. Among consumer nondurables, the changes in the index for clothing were revised down for 2004

the annual production and price indexes for selected categories of communications equipment, and table A.10 shows the quarterly production and price indexes for some of the same categories of communications equipment. Table A.11 shows the quarterly price indexes for selected categories of semiconductors.

## 2. Industrial production: Market groups, January 1989–June 2009



through 2006 and revised up for 2007 and 2008. The index for chemical products, which was previously flat in 2007 and declined slightly in 2008, now moves down significantly in both years. The index for paper products was revised up for 2005 and 2006, revised down for 2004 and 2007, and stood below its previous level for the fourth quarter of 2008. The index for consumer energy products was revised up in 2008 and posted moderate increases, on net, over the past few years.

The production of business equipment increased solidly from 2004 through 2006, rose slightly in 2007, and then fell in 2008. Relative to previous estimates, the rates of change in the index were noticeably lower in 2005 and 2007; the revisions to the data for other recent years were smaller. For transit equipment, output rose substantially, on net, from 2004 through 2006 and decreased in 2007; the index plummeted in 2008, partly because of weakness in the motor vehicle industry and partly because of a strike at a major aircraft producer in the second half of the year. Although the rates of change in the index for transit equipment were revised down in 2004, 2005, and 2008 and were revised up in 2007, the level of output at the end of 2008 was nearly the same as

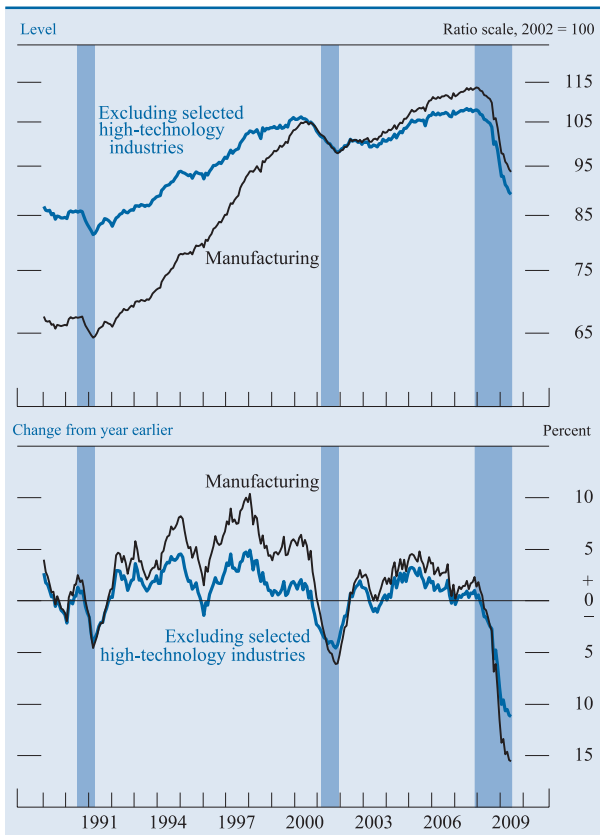
reported previously. The production of information processing equipment is now estimated to have expanded less rapidly over the past few years than reported earlier, and the production of industrial and other equipment in 2007 and 2008 appears slightly weaker. The production of defense and space equipment is now higher than estimated previously in 2005 through 2008.

After posting gains in 2004 and 2005, the output of construction supplies decreased moderately in 2006 and 2007 and then dropped sharply in 2008. The revisions to this index were relatively small, and its level in the fourth quarter of 2008 is nearly the same as reported earlier. The production of business supplies rose modestly from 2004 through 2007 and then slumped in 2008; the rates of change are higher than reported earlier for 2005 through 2007 but are lower for 2004 and 2008.

The production of materials expanded over the years 2004 through 2007, then fell markedly in 2008; the rates of change for this index are little revised before 2008, but the drop in 2008 is larger than estimated previously. The indexes for durable and nondurable materials both fell more than 10 percent in 2008 after having increased moderately, on net,



### 3. Industrial production: Manufacturing, and manufacturing excluding selected high-technology industries, January 1989–June 2009



NOTE: For definition of manufacturing, see text note 3.

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).

from 2004 through 2007. The production of durable materials is now estimated to have risen more slowly in 2006 and 2007 and to have fallen more quickly in 2008. These revisions were due in large part to revisions to the index for equipment parts. For nondurable materials, the output gains in 2006 and 2007 are now higher than stated earlier, largely because the declines in textile materials in those years are now not as steep as previously reported and the increases in chemical materials in the same years were revised up. The index for energy materials edged up in 2008 after having increased moderately in the previous two years, and it is little changed by the revision.

#### Production by Industry Group

Manufacturing production expanded each year from 2004 through 2007 and then slumped in 2008 (figure 3 and table A.3). The output of manufacturing advanced less in 2007, and contracted more in 2008, than reported earlier. With this revision, the month of

the peak in manufacturing production moved from July 2007 to December 2007.

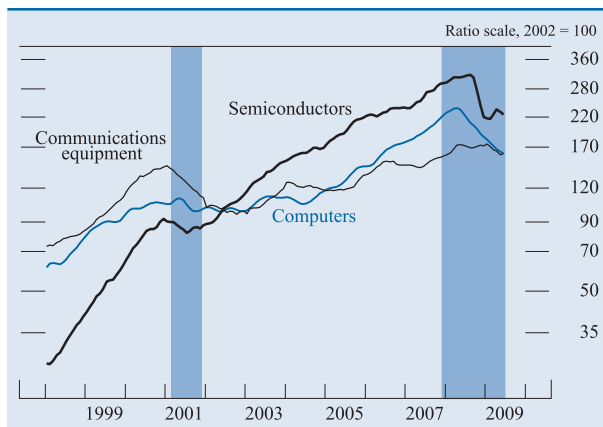
For durable goods industries as a whole, output rose in each year from 2004 through 2007 and fell sharply in 2008. Revisions to the index for durable goods industries for the past few years were small on net. Among durable goods industries, most major categories followed contours similar to that of the durable goods aggregate, with net increases from 2004 through 2007 followed by sharp drops in 2008. Notable exceptions were wood products, nonmetallic mineral products, motor vehicles and parts, and furniture and related products; the indexes for these categories started trending down before 2008.

The revisions to the changes in the output of most major categories of durable goods before 2007 were slight; exceptions include computer and electronic products, in which the gain in output in 2006 is now stated to have been significantly lower, and aerospace and miscellaneous transportation equipment, in which the gain in output in 2006 is now stated to have been somewhat higher. For 2007, the output indexes were revised down noticeably for wood products, nonmetallic mineral products, computer and electronic products, and furniture and related products but were revised up for miscellaneous manufacturing. For 2008, relative to previous estimates, higher output indexes are reported for electrical equipment, appliances, and components and for furniture and related products, but the production indexes for wood products, primary metals, machinery, computer and electronic products, and motor vehicles and parts were revised down moderately.

Production in nondurable manufacturing industries followed a contour similar to that of durable manufacturing, with advances in every year from 2004 through 2007 followed by a decline in 2008. Neither the overall advance in the earlier years nor the decline last year was as great as the swings in durable manufacturing. The output index for the nondurable goods sector in most recent years was little revised, on net, compared with previous estimates. The current revision reports noticeably higher rates of change in 2007 in textile and product mills, apparel and leather, and petroleum and coal products but a noticeably lower rate of change in chemicals. For 2008, output is now reported to have fallen markedly faster for textile and product mills, apparel and leather, printing and support activities, chemicals, and plastics and rubber products compared with previous estimates.

The revised output index for other manufacturing (logging and publishing) fell each year from 2005

#### 4. Industrial production: Selected high-technology industries, January 1998–June 2009



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

through 2008, with a particularly sharp drop in 2008. Output in these industries is now estimated to have decreased substantially less in 2006 than reported earlier, but revisions to the rates for other years were smaller.

The index for mining rose moderately in the past two years after a jump in 2006; the increase in 2006 was revised up relative to previous estimates, but the index is otherwise similar to what was previously reported. For utilities, the revised output estimates are also, in general, very similar to those reported earlier.

The estimates for selected high-technology industries—computers and peripheral equipment, communications equipment, and semiconductors and related electronic components—were revised significantly over the 2004–08 period (figure 4 and table A.4). On net, output in the high-tech sector is still reported to have posted gains in recent years, with robust increases from 2004 through 2007 followed by a contraction in 2008. However, the increases in 2006 and 2007 are now shown to have been slower, and the decrease in 2008 is now shown to have been steeper, than reported earlier.

Among the major high-tech components, production of computers and peripheral equipment rose solidly in each of the years from 2004 through 2007 and then fell in 2008; the rates of change were revised up in each of the past few years except 2005. The output of communications equipment expanded in each of the past few years, but the rates of increase in most years are markedly lower than estimated previously. Most notably, the increase of 20.6 percent that was reported earlier for 2007 has been revised down to 6.6 percent based on shipments data from the CIR for telecommunications. Production of semiconductors and related components rose solidly from 2004

through 2007 but contracted significantly in 2008. The expansion in production from 2004 through 2007 was considerably less than stated earlier, and the slight decline previously estimated for 2008 has been revised down to a significant decrease.

#### Capacity

Total industrial capacity is estimated to have risen at an average annual rate of 1.4 percent in 2005 through 2008 (table A.6). The average annual rate is the same as previous estimates, but the rates of change in 2006 and 2007 are slightly higher, and the rate of change in 2008 is somewhat lower, than stated previously. In 2009, total industrial capacity is now expected to decline nearly 1 percentage point; this decline is larger than estimated previously.

The contour of manufacturing capacity and the revisions to that contour are similar to those for total industry. Manufacturing capacity is now shown to have expanded at an average annual rate of about 1.6 percent from 2005 through 2008, about 0.1 percentage point less than estimated earlier. In 2009, manufacturing capacity is now expected to contract 1.2 percent.

Within manufacturing, the capacity of durable goods manufacturers expanded moderately in each year from 2005 through 2008 and is expected to contract somewhat in 2009. The increase in 2008 was tempered considerably by the recent revision. The capacity of nondurable goods manufacturers followed a similar contour to that of durable goods manufacturers, but the increases from 2005 through 2008 were smaller, and the decline in 2009 steeper. Nondurable goods manufacturing capacity is expected to decrease more in 2009 than in previous estimates; rates of change in capacity for most major nondurable industry groups were marked down. Capacity for the logging and publishing industries rose, on net, from 2005 through 2008 but is expected to fall in 2009; the rates of change are higher as a result of the revision.

Aggregate capacity for the selected high-technology industries advanced substantially in each year from 2005 through 2008 and is expected to expand appreciably in 2009. Relative to previous reports, capacity in these industries rose less quickly in 2005, 2006, and especially 2008, but it increased somewhat more rapidly in 2007. It is expected to rise faster in 2009 than previously estimated. Excluding high-technology industries, manufacturing capacity expanded slightly from 2005 through 2008 but is expected to decline in 2009. The current estimates are similar to previous reports except for 2009, during

which the contraction in capacity is now anticipated to be greater than stated previously.

Capacity at mines is estimated to have fallen in 2005 and to have expanded from 2006 through 2008; it is expected to recede somewhat in 2009. The gains in 2006 and 2008 are now reported to have been larger than previously published, but the increase in 2007 has been revised down, and capacity at mines is now expected to contract rather than expand in 2009. Capacity at electric and gas utilities has risen each year since 2004. The current estimates show larger gains in 2005 and 2006 than reported earlier; revisions to other recent years were negligible.

By stage of processing, capacity in the crude stage is now reported to have risen more in 2006 and 2008 than previously shown but is now expected to fall in 2009. The rates of change for capacity in the primary and semifinished stages were revised down for 2008 and 2009; revisions to earlier years were slight. Relative to previous estimates, increases to the index for finished goods processors were revised up in 2007 and 2008, but capacity is expected to fall more in 2009 than stated previously.

### *Capacity Utilization*

From 2005 through 2007, the capacity utilization rate for total industry stood a little below its long-run average of 80.9 percent, but in 2008 it fell to 74.2 percent, a level 6.7 percentage points below its long-run average (table A.7). The utilization rate for total industry was revised down about ½ percentage point in 2007 and 0.7 percentage point in 2008; revisions for earlier years were smaller.

Similarly, manufacturing capacity utilization, on balance, spent most of 2005 through 2007 at a little below its long-run average of 79.6 percent. The utilization rate in manufacturing tumbled during 2008, reaching 70.9 percent in the fourth quarter of 2008, 8¾ percentage points below its long-run average. Relative to earlier reports, the factory operating rate was revised down in 2007 and 2008 but was little changed in earlier years. Within durable goods, utilization rates for many industries were near their long-run averages from 2005 through 2007 and then dropped well below average in 2008; among the exceptions were motor vehicles and parts, nonmetallic mineral products, and wood products, in which the utilization rate was significantly below average in 2006 and 2007 and then fell even further in 2008. In the fourth quarter of 2008, three durable goods industries (nonmetallic mineral products, primary metals, and furniture and related products) had utilization rates between 10 and 20 percentage points below

their long-run averages, and two durable goods industries (wood products and motor vehicles and parts) had utilization rates more than 20 percentage points below their long-run averages.

Among durable goods industries, nonmetallic mineral products had the largest downward revisions to utilization over the 2005–08 period; other industries with large downward revisions to their capacity utilization rates were wood products and motor vehicles and parts. The durable goods industries that reported the largest net upward revisions since 2005 were machinery, aerospace and miscellaneous transportation equipment, and furniture and related products.

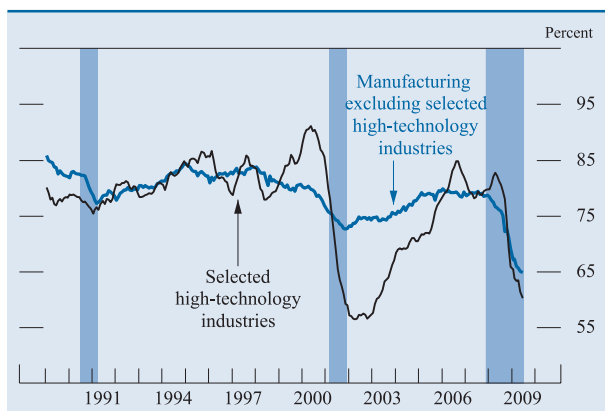
Utilization rates for many nondurable goods industries were somewhat below their long-run averages in 2005 through 2007 and then fell further in 2008, but the declines in 2008 were not as great, on average, as the declines in the utilization rates for durable goods industries. In the fourth quarter of 2008, four nondurable goods industries (textile and product mills, paper, printing and support activities, and plastics and rubber products) had utilization rates between 10 and 20 percentage points below their long-run averages. The nondurable goods industries with the largest downward revisions to utilization rates over the 2005–08 period were food, beverage, and tobacco products; petroleum and coal products; and plastics and rubber products. Apparel and leather had the most noticeable upward revisions to its utilization rate over this period; other nondurable goods industries with large upward revisions were textile and product mills and printing and support activities.

Capacity utilization in the other manufacturing category (logging and publishing) was revised down in 2005 and revised up from 2006 through 2008. It stood more than 10 percentage points below its long-run average in the fourth quarter of 2008.

Capacity utilization in mining was generally above its long-run average from 2006 through 2008 and, in the fourth quarter of 2008, stood at 89.6 percent, about 2 percentage points higher than its long-run average. Relative to earlier estimates, the utilization rate for mining was a little lower in 2006 and 2008 but was little changed in 2005 and 2007. At electric and gas utilities, capacity utilization rates were revised down for 2005 through 2008, and capacity utilization in the fourth quarter of 2008 is now estimated to have been more than 3 percentage points below its long-run average.

The operating rates for the selected high-technology industries were above their long-run averages in the fourth quarters of 2006 and 2007 but fell to more than 8 percentage points below their long-run

5. Capacity utilization: Selected high-technology industries, and manufacturing excluding selected high-technology industries, January 1989–June 2009



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

averages in 2008 (figures 5 and 6 and table A.7). Relative to earlier estimates, capacity utilization is now reported to have been higher in 2005, 2006, and 2008 but lower in 2007. The operating rate for the computers and peripheral equipment industry is now shown to have been higher than previously reported in each of the past few years, particularly 2008, but, in the fourth quarter of 2008, stood about 4 percentage points below its long-run average. The utilization rate for communications equipment was more than 8 percentage points below its long-run average in 2005 and rose to more than 6 percentage points above its long-run average in 2006 before dropping in 2007 and 2008; at the end of 2008, the rate was 1.7 percentage points below its long-run average. Capacity utilization for communications equipment is now higher than previously reported in 2005 and 2006 but lower in 2007 and 2008. Capacity utilization in the semiconductor and related electronic components industry is now lower than earlier estimates in every year after 2005. The operating rate in this industry was above or near its long-run average from 2005 through 2007 but stood more than 16 percentage points below its long-run average in the fourth quarter of 2008.

**TECHNICAL ASPECTS OF THE REVISION**

Comprehensive benchmark data for manufacturing production in 2007 were not available for this revision. After incorporating the limited information that was available, the benchmark production indexes for manufacturing—defined for each six-digit NAICS industry as nominal gross output divided by a price index—were little changed before 2007. The principal changes resulted from small revisions to price

6. Capacity utilization: Selected high-technology industries, January 1996–June 2009



indexes from the Bureau of Economic Analysis and from improved estimates of price indexes for communications equipment output constructed by the Federal Reserve (discussed later in the article). In addition, the benchmark production indexes for other manufacturing (logging and publishing) were advanced through 2007 and updated for 2006 based on data from the Forest Service and the Census Bureau.

The IP indexes in recent years incorporated information from selected CIRs for 2007 from the Census Bureau, the revised benchmark input-output accounts for 2002 from the BEA, the Quarterly Survey of Plant Capacity from the Census Bureau for 2007 and 2008, and other annual industry reports. The indexes also



incorporated revised monthly and quarterly source data on production, shipments, inventories, and production-worker hours.

As mentioned earlier, the benchmark production indexes for most industries incorporate updated price indexes from the industry output program of the BEA. However, the price indexes for pharmaceuticals (NAICS 325412), for semiconductors (NAICS 334413), and for most components of communications equipment (NAICS 3342) are constructed by the Federal Reserve from alternative sources. This article provides annual and quarterly price indexes for the relevant components of communications equipment, along with quarterly semiconductor price indexes (tables A.9, A.10, and A.11).

### *Changes to the Methodology for Adjusting for Temporary Help Supply Employees*

The compilation of the initial IP estimate for a given month relies heavily on the hours worked by production workers in the manufacturing sector when the availability of the other IP source data is limited. The hours data are adjusted to account for the labor input of temporary help supply (THS) employees who work in the manufacturing sector; this adjustment is necessary because these workers are on the payrolls of companies that are classified in the service sector of the economy by the Bureau of Labor Statistics. These adjusted detailed hours series are used in making (1) estimates for those IP series based on labor input for the period for which benchmark output indexes are not yet available and (2) preliminary estimates of those IP series based on physical product data for which the current source data are not yet available.

The procedure for implementing this adjustment is as follows. An estimate is made of the component of THS employment that is allocated to manufacturing. This estimate begins with a baseline figure projected from the Current Population Survey but varies based on the cyclical movements of the manufacturing sector and the rest of the economy—THS employment has a cyclical pattern similar to that of manufacturing.<sup>6</sup>

The THS employment in manufacturing is then allocated among the NAICS three-digit industries based on each industry's use of THS workers as reported in the Census Bureau's Annual Survey of

Plant Capacity (ASPC) and on each industry's cyclical patterns. With this revision, the allocation of THS employment among industries within manufacturing was updated based on data from the ASPC for 2002 through 2005.<sup>7</sup>

In addition, this revision updates the method for estimating each industry's monthly baseline share of temporary help employment use in manufacturing. Previously, this share was held constant for each industry at the level estimated according to the method just described. With this revision, the share is allowed to evolve based on the industry's share of total manufacturing employment. THS employment is multiplied by assumptions on hours worked and on the productivity of a THS worker relative to a permanent worker to estimate the effective hours contributed by THS workers for each three-digit manufacturing industry. The THS hours are added to the reported production-worker hours for each industry to produce an adjusted production-worker hour series. The percentage adjustment for each three-digit industry's hours is then applied to the hours series for each of its component industries.

### *Estimating the Effect of Hurricanes on Production*

Industrial production in the United States was severely affected by hurricanes in both 2005 (Hurricanes Katrina and Rita) and 2008 (Hurricanes Gustav and Ike). Industries with a large presence in the Gulf Coast region include oil and natural gas extraction, petroleum refining, petrochemical manufacturing, and plastic resin manufacturing. These industries were mostly shut down during the storms, and storm damage sometimes delayed their return to operation. In addition, some other industries in the afflicted areas also shut down factories. The data on which the IP indexes are based for many of these industries are not available on a timely basis; initial estimates for them were made from other sources. The estimation of crude oil extraction and petroleum refining output was relatively straightforward with the availability of weekly data from the Department of Energy. Timely output data on natural gas extraction were less available, but reports by the Minerals Management Service of the U.S. Department of the Interior on shut-in capacity provided a good first estimate until data on output became available from the DOE. Weekly data

6. See Marcello Estevão and Saul Lach (1999), "Measuring Temporary Labor Outsourcing in U.S. Manufacturing," Finance and Economics Discussion Series 1999-57 (Washington: Board of Governors of the Federal Reserve System, October), [www.federalreserve.gov/pubs/feds/1999/index.html](http://www.federalreserve.gov/pubs/feds/1999/index.html).

7. For several years, the ASPC collected information about the share of production workers that consisted of temporary workers; this information is not collected in the Quarterly Survey of Plant Capacity, which replaced the ASPC in 2007.

on railcar loadings of chemicals from the Association of American Railroads and information on shut-in capacity of petrochemical plants from Chemical Market Associates, Inc., and PetroChem Wire were used to inform the IP estimates for petrochemical manufacturing; reports from the National Petrochemical and Refiners Association on quarterly petrochemical output became available later and improved the estimates. Anecdotal information from contacts in the plastic resin industry on output was used until monthly data on production from the American Chemistry Council became available. The effect of the storms on other industries was estimated based on data on the regional distribution of industrial activity from the County Business Patterns report of the Census Bureau.

### *Estimation of Capacity in the Light Motor Vehicle Industry*

Capacity for light duty motor vehicles (NAICS 33611) is expected to contract significantly in 2009. The estimate for motor vehicle assembly capacity for a year is constructed from estimates of the peak historical assembly-line speed over the previous 10 years and the number of hours that can be worked at each plant in the United States. Annual line speed data and the number of shifts at individual plants are reported in *Ward's Automotive Yearbooks*. An annual capacity count for a plant is calculated by multiplying the peak line speed by the hours per year that the plant could run. New plants are added to capacity when they start production, and plants are removed from capacity when they are permanently shuttered. An adjustment is made to reflect manufacturers' plans to open or close assembly plants only when the dates have been confirmed and specific plants have been named. Plant-level data are aggregated using price weights for the different models of light vehicles, and if a plant produces multiple models on one assembly line, capacity is split among models based on estimated production levels for the models at the plant.

### *Changes to Individual Production Series*

With this revision, the monthly production indicators for some series have changed.

#### **Carpet and Rug Mills**

The index for carpet and rug mills (NAICS 31411) is based on quarterly data on unit shipments from the Carpet and Rug Institute with a model-based inven-

tory adjustment.<sup>8</sup> Formerly, it was based on monthly data from the same source. A cubic spline is used to interpolate monthly values from the quarterly figures, a method similar to that used for the other series for which only quarterly physical product data are available.<sup>9</sup>

#### **High-Technology Goods**

##### *Communications equipment*

Price indexes for two product classes of communications equipment were revised to incorporate additional detail. The price index for enterprise and home voice equipment (part of NAICS 33421) was updated. A price index for telephones and answering machines, one of the two product categories in this industry, was previously calculated using average selling prices for two types of phones (corded and cordless) but is now a matched-model index constructed using detailed data, beginning in 1997, from the Consumer Electronics Association on transmission frequency, number of lines, and presence of other features such as caller identification, speakerphone, and integrated answering machine. The price index for wireless system equipment (part of NAICS 33422), which covers mobile phone infrastructure, was improved by folding in additional detail on base-station radio transmission capacity using data from the Dell'Oro Group, a market research firm. The resulting mobile infrastructure price index fell 4 percentage points faster per year, on average, from 2000 to 2008.

Updated price indexes for the six product groups in communications equipment, introduced in the 2008 revision, are included in this article (table A.9).

##### *Computers*

With this revision, a change to the method for estimating the domestic shipments share of domestic absorption in electronic computer manufacturing (NAICS 334111) was introduced. The six product-based indexes for computer manufacturing are derived from quarterly data on nominal domestic absorption from IDC, an industry research group. For each product, an estimate of the domestic shipments share of domestic

8. Factory production is calculated as shipments plus the change in factory inventories. When only shipments are available, a model-based inventory adjustment is applied. See Charles Gilbert and Kimberly Bayard (2005), "Industrial Production and Capacity Utilization: The 2004 Annual Revision," *Federal Reserve Bulletin*, vol. 91 (winter), pp. 9–25, [www.federalreserve.gov/pubs/bulletin/2005/05index.htm](http://www.federalreserve.gov/pubs/bulletin/2005/05index.htm).

9. See Richard D. Raddock (1993), "Industrial Production, Capacity, and Capacity Utilization since 1987," *Federal Reserve Bulletin*, vol. 79 (June), pp. 590–605.

absorption—derived from the Census Bureau’s CIR for computers and peripheral equipment—is used to convert the IDC domestic absorption data to a domestic shipments concept.<sup>10</sup>

The domestic shipments share for each of the six indexes was constructed by dividing the relevant annual measure of domestic product shipments from the CIR by the corresponding measure of annual domestic absorption from IDC. Each of these shares is converted to a quarterly frequency and projected forward for more-recent quarters when the CIR data are not yet available. Prior to the current revision, projections of the individual domestic shipments shares were based on monthly data on foreign trade in computers from the Census Bureau. Specifically, domestic absorption for the industry (NAICS 334111) was adjusted by net exports to obtain domestic shipments; the change in the ratio of domestic shipments to domestic absorption was applied to the shipments share for each of the six product indexes. With the current revision, the foreign trade data are no longer used. Instead, the CIR-based individual domestic shipments shares are extended out with a model-based trend for quarters when the annual CIR data are not yet available. Examination of all relevant data sources suggests that the shares derived from model-based trends lead to more-accurate measures of domestic production than the shares derived from trade data.

### *Semiconductors*

Beginning with the 2008 revision, detailed price data on MOS (metal-oxide semiconductor) memory products (part of NAICS 334413) from iSuppli, an industry research group, have been used to construct quarterly indicator quality-adjusted price indexes for three categories—DRAM (dynamic random access memory), flash memory, and other memory. These prices are included in this article (table A.11).

### *Civilian Aircraft*

With this revision, a change to the methods used for the calculation of the index of industrial production for civilian aircraft (part of NAICS 336411) was introduced. Production in the civilian aircraft industry

is estimated by combining data on aircraft deliveries with an assumption about the time required to build a plane and the intensity of activity during that period. Previously, the production index for aircraft was based on a 10-month build period, during which 43 percent of production was assumed to have occurred in the three months immediately before the delivery and 57 percent was assumed to have occurred in the seven preceding months. Based on discussions with contacts in the aircraft industry, the new indexes assume a shorter build period. Specifically, they now assume that commercial aircraft take either two or three months to build. The new assumptions were applied to the entire history of aircraft models that are still in production; the data for models that are no longer in production were left unrevised.

## *Changes to Individual Capacity Series*

### *Electricity Generation*

The capacity index for electric power generation, transmission, and distribution (NAICS 2211) is now based on generation capability data from the DOE; previously it was based on electricity generation capacity data from the North American Electric Reliability Corporation (NERC). The change was made because the DOE data are compiled using a more consistent definition over time. However, because the DOE data are published with a lag, the capacity projection for the most recent year or two is estimated by extending the DOE generation capability series by the rate of change shown for the NERC electricity generation capacity data.

### *Nonferrous Metals (except Aluminum)*

The capacity index for nonferrous metal (except aluminum) production and processing (NAICS 3314) is now based on copper smelting, copper refining, and zinc smelting data from the U.S. Geological Survey. Formerly the capacity index was based on the USGS data on just copper smelting and copper refining.

### *Natural Gas Extraction*

The DOE no longer publishes physical capacity estimates for natural gas extraction (part of NAICS 211111). Capacity estimates for recent years are based on trend-through-peak estimates of capacity using the IP index and output projections from the Short-Term Energy Outlook (STEO) and Annual Energy Outlook (AEO) reports of the DOE.

10. Prior to 2006, the CIR for computers and peripheral equipment was released annually. Beginning in 2006, the Census Bureau began to issue quarterly reports along with annual summaries. For the construction of the domestic shipments share for 2006 onward, the Federal Reserve used only the annual summaries, not the quarterly reports. However, the Federal Reserve carefully follows the quarterly CIR releases and expects to use them more fully in a few years, when a longer history will be available.

### Trend-through-Peak Estimates

As with recent years for natural gas extraction, the trend-through-peak method of estimating capacity is also used for those industries in mining and utilities for which no physical capacity sources are available—seven individual series accounting for about 5 percent of capacity. With this revision, the trend-through-peak method used to estimate capacity indexes for oil extraction (part of NAICS 211111), natural gas liquid extraction (NAICS 211112), and natural gas sales and transmission (NAICS 2212) is based on production indexes that are extended using output projections from the STEO and AEO reports.

The basic method in estimating trend-through-peak capacities for these industries is to construct baseline estimates of capacity by connecting peaks in production, with these peaks representing 100 percent utilization. In practice, the procedure involves a fair degree of judgment and deviates from a strict trend-through-peak approach in a variety of ways. First and most important, if a peak in production was reached several years ago and production has not subsequently approached that previous maximum, published capacity levels generally will, after a time, trend downward. That is, they will tend to follow recent IP. Second, the capacity levels corresponding to peaks in production for different series have yielded a variety of peak utilization rates historically.

### Weights for Aggregation

The aggregation method for the IP index is a version of the Fisher ideal index formula.<sup>11</sup> In the IP index, series that measure the output of an individual industry are combined using weights derived from their proportion in the total value-added output of all industries.<sup>12</sup> The weights for manufacturing industries are derived from value-added measures from the Census of Manufactures and the Annual Survey of

11. A Fisher ideal index estimates the change in aggregate output between two periods as the geometric average of two aggregate output indexes—one that weights the component output indexes based on prices from the earlier period and one that uses prices from the later period. An aggregate IP index is the cumulative product of Fisher indexes computed for each period, with concurrent prices (derived as unit value added) applied to the component output indexes for every period.

12. For detailed discussions of the aggregation method, see Carol Corrado, Charles Gilbert, and Richard Raddock (1997), “Industrial Production and Capacity Utilization: Historical Revision and Recent Developments,” *Federal Reserve Bulletin*, vol. 83 (February), pp. 67–92, [www.federalreserve.gov/pubs/bulletin/1997/97bulletin.htm#feb](http://www.federalreserve.gov/pubs/bulletin/1997/97bulletin.htm#feb); and Carol Corrado (2001), “Industrial Production and Capacity Utilization: The 2000 Annual Revision,” *Federal Reserve Bulletin*, vol. 86 (March), pp. 132–48, [www.federalreserve.gov/pubs/bulletin/2001/01index.htm](http://www.federalreserve.gov/pubs/bulletin/2001/01index.htm).

Manufactures. 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 with the latest data on producer prices for the period after 2006. Table A.8 shows the annual value-added proportions in the IP index from 2001 through 2008.

The outputs of most industries are inputs to multiple markets. Although data that directly split the output of an industry by its purchaser are sometimes available, most industry output measures do not provide that detail. With the 2002 annual revision, weights that allocate individual IP indexes into multiple market groups were derived from the Standard Make and Use Tables (at the detailed level) from the 1997 benchmark input-output accounts of the BEA.<sup>13</sup> With this revision, the weights for 2002 were updated using estimates from the same tables from the 2002 input-output accounts; years subsequent to 2002 were assumed to have weights identical to those for 2002. The weights for the period up through 1997 are still computed from the 1997 accounts, and the weights between 1997 and 2002 are linear combinations of the 1997 and 2002 weights.

### Revised Monthly Data

This revision incorporates product data that became available or were revised after the regular six-month reporting window for monthly IP was closed. These data were released with too great a lag to be included with monthly IP estimates but were available for inclusion in the annual revision.

### Revised Seasonal Factors

Seasonal factors for all series were reestimated using data that extend into 2008 or 2009. Factors for production-worker hours—which adjust for timing, holiday, and monthly seasonal patterns—were updated with data through February 2009. The updated factors for the physical product series, which include adjustments for holiday and workday patterns, used data through 2008. Seasonal factors for unit motor vehicle assemblies have been updated, and projections through September 2009 are on the Federal Reserve Board’s website at [www.federalreserve.gov/releases/g17/mvsf.htm](http://www.federalreserve.gov/releases/g17/mvsf.htm). □

13. See Carol Corrado (2003), “Industrial Production and Capacity Utilization: The 2002 Historical and Annual Revision,” *Federal Reserve Bulletin*, vol. 89 (April), pp. 151–76, [www.federalreserve.gov/pubs/bulletin/2003/03index.htm](http://www.federalreserve.gov/pubs/bulletin/2003/03index.htm).



A.1. Revised data for industrial production for total industry, 1979–2009

Seasonally adjusted data except as noted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Quarter				Annual avg. <sup>1</sup>
													1	2	3	4	
Industrial production (percent change)																	
1979	-.7	.6	.3	-1.1	.8	.0	-.2	-.7	.1	.6	-.1	.1	1.7	-.6	-1.4	1.5	3.0
1980	.4	.1	-.3	-2.0	-2.5	-1.2	-.7	.4	1.6	1.3	1.7	.6	1.7	-15.8	-6.3	16.4	-2.5
1981	-.6	-.5	.5	-.6	.7	.5	.7	.0	-.6	-.7	-1.1	-1.1	.9	1.0	4.3	-8.5	1.3
1982	-1.9	2.0	-.7	-.9	-.7	-.4	-.4	-.9	-.4	-.8	-.3	-.7	-7.7	-5.1	-6.0	-7.1	-5.2
1983	1.9	-.6	.8	1.2	.7	.5	1.5	1.1	1.5	.8	.3	.5	4.9	9.2	14.4	10.8	2.8
1984	2.0	.5	.5	.6	.5	.4	.3	.0	-.1	-.1	.4	.1	12.4	6.3	2.8	.4	8.9
1985	-.3	.5	.1	-.2	.1	.1	-.6	.4	.5	-.4	.3	1.0	1.0	.4	-.7	2.4	1.2
1986	.5	-.7	-.6	.1	.1	-.3	.6	-.1	.2	.5	.5	.9	2.3	-2.4	1.6	4.7	1.0
1987	-.3	1.3	.1	.6	.7	.5	.6	.7	.3	1.5	.5	.5	5.5	7.0	7.3	10.2	5.2
1988	.0	.4	.2	.5	-.1	.2	.2	.5	-.3	.5	.2	.4	3.6	3.6	2.1	2.9	5.2
1989	.2	-.4	.3	.0	-.7	.0	-.9	.9	-.3	-.1	.3	.6	1.6	-1.7	-2.4	1.8	.9
1990	-.5	.9	.5	-.1	.2	.3	-.1	.2	.2	-.7	-1.2	-.7	3.1	2.8	1.2	-6.1	1.0
1991	-.5	-.6	-.5	.2	1.0	1.0	.0	.1	.9	-.2	-.1	-.4	-7.4	2.6	5.5	.9	-1.6
1992	-.6	.8	.8	.7	.4	.0	.8	-.5	.2	.7	.4	.0	-.5	7.2	2.9	4.0	2.8
1993	.5	.3	.0	.3	-.4	.2	.4	.0	.4	.7	.4	.5	3.6	.9	2.1	6.0	3.3
1994	.4	.0	1.1	.5	.6	.7	.2	.5	.2	.9	.6	1.1	5.2	7.5	5.1	8.1	5.3
1995	.3	.0	.2	.0	.2	.3	-.4	1.4	.4	-.2	.3	.4	5.1	1.2	3.9	3.4	4.8
1996	-.7	1.7	-.2	.8	.6	.9	-.1	.6	.6	.0	.8	.6	2.9	8.1	5.4	5.6	4.4
1997	.1	1.2	.8	.0	.7	.5	.5	1.4	.9	.7	.9	.4	7.9	6.4	9.6	10.4	7.3
1998	.5	.0	.1	.4	.7	-.6	-.4	2.1	-.3	.7	-.1	.3	4.4	3.2	2.9	5.1	5.9
1999	.5	.4	.2	.2	.7	-.2	.6	.5	-.3	1.4	.6	.8	4.4	3.7	4.1	8.1	4.3
2000	.0	.4	.4	.6	.2	.1	-.2	-.2	.5	-.4	.0	-.4	4.8	4.9	-.3	-1.2	4.2
2001	-.7	-.6	-.3	-.3	-.7	-.6	-.4	-.4	-.3	-.6	-.5	.0	-5.7	-5.3	-5.7	-5.0	-3.4
2002	.5	.0	.8	.3	.5	.9	-.3	.1	.1	-.3	.4	-.5	2.5	5.9	2.1	-.4	-.1
2003	.7	.3	-.1	-.8	.0	.1	.4	-.1	.6	.1	.9	-.1	2.9	-3.0	2.6	4.1	1.3
2004	.3	.5	-.6	.5	.7	-.9	.7	.2	.0	.9	.2	.7	2.8	1.8	1.9	5.7	2.5
2005	.4	.6	-.1	.0	.3	.4	-.1	.2	-1.7	1.1	1.1	.6	5.7	1.7	-.7	4.0	3.3
2006	.0	.0	.2	.4	-.1	.4	.2	.2	-.3	-.1	-.2	.8	3.6	2.2	2.0	-.6	2.3
2007	-.5	.8	-.2	.4	-.1	.0	.3	.1	.4	-.5	.6	.3	1.8	2.4	2.1	.8	1.5
2008	-.1	-.3	-.4	-.6	-.3	-.2	-.1	-1.1	-4.0	1.3	-1.3	-2.3	.2	-.6	-9.0	-13.0	-2.2
2009	-2.2	-.8	-1.7	-.7	-1.2	-.4	...	...	...	...	...	...	-19.1	-11.6	...	...	...
Industrial production (2002=100)																	
1979	57.6	57.9	58.1	57.5	57.9	57.9	57.8	57.4	57.5	57.8	57.8	57.8	57.9	57.8	57.6	57.8	57.7
1980	58.0	58.1	57.9	56.8	55.3	54.6	54.3	54.5	55.3	56.1	57.0	57.3	58.0	55.6	54.7	56.8	56.3
1981	57.0	56.7	57.1	56.7	57.1	57.4	57.8	57.8	57.4	57.0	56.4	55.8	56.9	57.1	57.7	56.4	57.0
1982	54.7	55.8	55.4	54.9	54.5	54.3	54.1	53.6	53.4	53.0	52.8	52.4	55.3	54.6	53.7	52.7	54.1
1983	53.4	53.1	53.6	54.2	54.6	54.9	55.7	56.4	57.2	57.7	57.9	58.1	53.4	54.6	56.4	57.9	55.6
1984	59.3	59.6	59.9	60.3	60.6	60.8	60.9	61.0	60.9	60.8	61.1	61.1	59.6	60.5	60.9	61.0	60.5
1985	60.9	61.2	61.3	61.2	61.2	61.3	60.9	61.1	61.4	61.1	61.3	62.0	61.2	61.1	61.1	61.5	61.3
1986	62.3	61.8	61.4	61.5	61.6	61.4	61.7	61.6	61.8	62.0	62.3	62.9	61.8	61.5	61.7	62.4	61.9
1987	62.7	63.5	63.6	64.0	64.4	64.7	65.1	65.6	65.8	66.8	67.1	67.4	63.3	64.4	65.5	67.1	65.1
1988	67.5	67.7	67.9	68.3	68.2	68.4	68.5	68.8	68.6	69.0	69.1	69.4	67.7	68.3	68.6	69.1	68.4
1989	69.6	69.3	69.4	69.4	68.9	69.0	68.3	69.0	68.8	68.7	68.9	69.4	69.4	69.1	68.7	69.0	69.1
1990	69.0	69.6	70.0	69.9	70.0	70.2	70.1	70.2	70.4	69.9	69.0	68.6	69.5	70.0	70.2	69.2	69.7
1991	68.2	67.8	67.5	67.6	68.3	68.9	68.9	69.0	69.6	69.5	69.4	69.1	67.8	68.3	69.2	69.3	68.7
1992	68.7	69.2	69.8	70.3	70.6	70.6	71.2	70.8	71.0	71.5	71.8	71.8	69.3	70.5	71.0	71.7	70.6
1993	72.2	72.4	72.4	72.6	72.3	72.5	72.8	72.8	73.1	73.6	73.9	74.3	72.3	72.5	72.9	73.9	72.9
1994	74.6	74.6	75.4	75.8	76.2	76.7	76.9	77.3	77.4	78.1	78.6	79.4	74.9	76.2	77.2	78.7	76.8
1995	79.7	79.7	79.8	79.7	79.9	80.1	79.9	80.9	81.3	81.1	81.3	81.7	79.7	79.9	80.7	81.4	80.4
1996	81.1	82.4	82.3	83.0	83.5	84.2	84.2	84.7	85.1	85.2	85.9	86.4	82.0	83.6	84.7	85.8	84.0
1997	86.5	87.6	88.3	88.3	88.9	89.3	89.8	91.0	91.9	92.5	93.3	93.7	87.5	88.8	90.9	93.2	90.1
1998	94.1	94.2	94.2	94.6	95.3	94.8	94.4	96.3	96.1	96.7	96.6	97.0	94.2	94.9	95.6	96.8	95.4
1999	97.5	97.9	98.1	98.3	99.0	98.8	99.5	100.0	99.7	101.0	101.6	102.4	97.8	98.7	99.7	101.7	99.5
2000	102.4	102.9	103.3	103.9	104.1	104.3	104.0	103.8	104.3	103.9	103.9	103.5	102.9	104.1	104.0	103.7	103.7
2001	102.7	102.1	101.8	101.5	100.8	100.1	99.7	99.3	99.0	98.4	97.9	97.9	102.2	100.8	99.3	98.1	100.1
2002	98.4	98.4	99.2	99.5	100.0	100.9	100.6	100.6	100.7	100.4	100.9	100.4	98.7	100.1	100.6	100.6	100.0
2003	101.1	101.4	101.3	100.5	100.5	100.6	101.0	100.9	101.5	101.6	102.5	102.4	101.3	100.5	101.2	102.2	101.3
2004	102.7	103.3	102.7	103.1	103.9	103.0	103.7	103.9	103.9	104.8	105.1	105.8	102.9	103.3	103.8	105.3	103.8
2005	106.3	107.0	106.9	106.8	107.1	107.5	107.5	107.7	105.8	107.0	108.2	108.9	106.7	107.2	107.0	108.0	107.2
2006	108.9	108.9	109.1	109.5	109.4	109.9	110.1	110.3	110.0	109.8	109.6	110.5	109.0	109.6	110.1	110.0	109.7
2007	109.9	110.8	110.6	111.1	111.1	111.2	111.5	111.6	112.0	111.4	112.1	112.4	110.5	111.1	111.7	112.0	111.3
2008	112.3	112.0	111.6	111.0	110.7	110.4	110.4	109.2	104.8	106.2	104.8	102.4	112.0	110.7	108.1	104.4	108.8
2009	100.1	99.4	97.7	96.9	95.8	95.4	...	...	...	...	...	...	99.0	96.0	...	...	...

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 2009 through June 2009 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 July 15, 2009.

A.2. Revised data for capacity and capacity utilization for total industry, 1979–2009

Seasonally adjusted data

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Quarter				Annual avg.
													1	2	3	4	
Capacity (percent of 2002 output)																	
1979	67.1	67.3	67.4	67.6	67.8	67.9	68.1	68.2	68.4	68.5	68.6	68.8	67.3	67.8	68.2	68.6	68.0
1980	68.9	69.1	69.2	69.3	69.5	69.6	69.8	69.9	70.1	70.2	70.4	70.5	69.1	69.5	69.9	70.4	69.7
1981	70.7	70.9	71.0	71.2	71.4	71.5	71.7	71.9	72.1	72.2	72.4	72.6	70.9	71.4	71.9	72.4	71.6
1982	72.7	72.9	73.0	73.2	73.3	73.4	73.5	73.6	73.7	73.8	73.9	73.9	72.9	73.3	73.6	73.9	73.4
1983	74.0	74.0	74.0	74.1	74.1	74.1	74.1	74.2	74.2	74.2	74.3	74.4	74.0	74.1	74.2	74.3	74.1
1984	74.5	74.5	74.7	74.8	74.9	75.1	75.2	75.4	75.6	75.7	75.9	76.1	74.6	74.9	75.4	75.9	75.2
1985	76.3	76.5	76.7	76.9	77.1	77.2	77.4	77.6	77.7	77.8	78.0	78.1	76.5	77.1	77.6	78.0	77.3
1986	78.2	78.3	78.4	78.5	78.5	78.6	78.7	78.8	78.9	79.0	79.1	79.2	78.3	78.5	78.8	79.1	78.7
1987	79.3	79.5	79.6	79.8	79.9	80.1	80.2	80.4	80.5	80.6	80.7	80.8	79.5	79.9	80.4	80.7	80.1
1988	80.9	81.0	81.1	81.1	81.2	81.2	81.2	81.3	81.4	81.4	81.5	81.6	81.0	81.2	81.3	81.5	81.2
1989	81.7	81.8	82.0	82.1	82.3	82.4	82.6	82.8	82.9	83.1	83.3	83.5	81.8	82.3	82.8	83.3	82.5
1990	83.7	83.8	84.0	84.2	84.3	84.5	84.6	84.8	84.9	85.1	85.2	85.3	83.8	84.3	84.8	85.2	84.5
1991	85.5	85.6	85.7	85.8	85.9	86.0	86.1	86.2	86.3	86.5	86.6	86.7	85.6	85.9	86.2	86.6	86.1
1992	86.8	87.0	87.1	87.3	87.5	87.7	87.9	88.0	88.2	88.4	88.5	88.7	87.0	87.5	88.0	88.5	87.8
1993	88.8	89.0	89.1	89.2	89.3	89.4	89.5	89.6	89.7	89.9	90.1	90.2	89.0	89.3	89.6	90.1	89.5
1994	90.4	90.6	90.9	91.1	91.4	91.7	92.0	92.3	92.6	92.9	93.2	93.5	90.6	91.4	92.3	93.2	91.9
1995	93.9	94.2	94.5	94.8	95.1	95.5	95.8	96.2	96.5	96.9	97.3	97.7	94.2	95.1	96.2	97.3	95.7
1996	98.1	98.6	99.0	99.5	99.9	100.4	100.9	101.4	101.8	102.3	102.8	103.3	98.6	99.9	101.4	102.8	100.7
1997	103.8	104.3	104.9	105.4	106.0	106.6	107.2	107.8	108.5	109.1	109.8	110.5	104.3	106.0	107.8	109.8	107.0
1998	111.2	112.0	112.7	113.4	114.1	114.7	115.4	116.0	116.6	117.1	117.7	118.2	112.0	114.1	116.0	117.7	114.9
1999	118.8	119.3	119.8	120.3	120.7	121.2	121.7	122.1	122.6	123.1	123.5	124.0	119.3	120.7	122.1	123.5	121.4
2000	124.5	124.9	125.4	125.8	126.2	126.7	127.1	127.5	127.9	128.3	128.7	129.2	124.9	126.2	127.5	128.7	126.9
2001	129.6	129.9	130.3	130.7	131.1	131.4	131.8	132.1	132.4	132.7	133.0	133.3	129.9	131.1	132.1	133.0	131.5
2002	133.5	133.7	133.9	134.0	134.1	134.2	134.2	134.2	134.2	134.2	134.1	134.1	133.7	134.1	134.2	134.1	134.0
2003	134.0	133.9	133.8	133.8	133.7	133.6	133.6	133.6	133.5	133.5	133.5	133.5	133.9	133.7	133.6	133.5	133.7
2004	133.5	133.5	133.4	133.4	133.4	133.4	133.3	133.3	133.3	133.3	133.3	133.3	133.5	133.4	133.3	133.3	133.4
2005	133.3	133.4	133.4	133.5	133.6	133.7	133.8	134.0	134.1	134.3	134.4	134.6	133.4	133.6	134.0	134.4	133.8
2006	134.7	134.9	135.0	135.2	135.4	135.5	135.7	135.9	136.1	136.3	136.5	136.7	134.9	135.4	135.9	136.5	135.7
2007	136.9	137.1	137.3	137.6	137.8	138.0	138.3	138.5	138.7	139.0	139.2	139.4	137.1	137.8	138.5	139.2	138.1
2008	139.6	139.8	139.9	140.1	140.2	140.4	140.5	140.6	140.7	140.7	140.7	140.7	139.8	140.2	140.6	140.7	140.3
2009	140.7	140.7	140.6	140.5	140.4	140.2	...	...	...	...	...	...	140.7	140.4	...	...	...
Capacity utilization (percent)																	
1979	85.8	86.1	86.1	85.0	85.5	85.3	84.9	84.1	84.1	84.4	84.1	84.0	86.0	85.3	84.4	84.2	85.0
1980	84.2	84.1	83.7	81.9	79.7	78.5	77.8	77.9	79.0	79.8	81.0	81.3	84.0	80.0	78.2	80.7	80.7
1981	80.7	80.1	80.3	79.7	80.0	80.2	80.6	80.4	79.7	79.0	77.9	76.9	80.3	80.0	80.2	77.9	79.6
1982	75.2	76.5	75.8	75.0	74.4	73.9	73.6	72.8	72.5	71.8	71.5	70.9	75.9	74.4	72.9	71.4	73.7
1983	72.2	71.8	72.3	73.2	73.7	74.1	75.2	76.0	77.1	77.7	77.9	78.2	72.1	73.6	76.1	77.9	74.9
1984	79.7	80.0	80.2	80.6	80.8	81.0	81.0	80.9	80.6	80.3	80.4	80.3	80.0	80.8	80.8	80.3	80.5
1985	79.9	80.0	79.9	79.6	79.5	79.3	78.7	78.8	79.0	78.5	78.7	79.4	79.9	79.5	78.8	78.9	79.3
1986	79.6	79.0	78.4	78.3	78.4	78.1	78.4	78.2	78.3	78.6	78.8	79.4	79.0	78.3	78.3	78.9	78.6
1987	79.0	79.9	79.9	80.2	80.6	80.8	81.2	81.6	81.7	82.8	83.1	83.4	79.6	80.5	81.5	83.1	81.2
1988	83.4	83.6	83.8	84.2	84.1	84.2	84.3	84.7	84.3	84.7	84.8	85.0	83.6	84.2	84.4	84.8	84.3
1989	85.1	84.6	84.7	84.6	83.8	83.7	82.8	83.3	83.0	82.7	82.8	83.1	84.8	84.0	83.0	82.9	83.7
1990	82.5	83.1	83.3	83.0	83.0	83.1	82.8	82.9	82.9	82.2	81.0	80.3	83.0	83.1	82.9	81.2	82.5
1991	79.9	79.2	78.7	78.8	79.5	80.1	80.0	80.0	80.6	80.4	80.2	79.8	79.3	79.5	80.2	80.1	79.8
1992	79.1	79.6	80.1	80.5	80.6	80.5	81.0	80.4	80.5	80.9	81.1	80.9	79.6	80.6	80.6	81.0	80.4
1993	81.2	81.4	81.3	81.4	81.0	81.1	81.3	81.2	81.4	81.9	82.1	82.3	81.3	81.2	81.3	82.1	81.5
1994	82.5	82.3	83.0	83.2	83.4	83.7	83.6	83.7	83.6	84.1	84.3	84.9	82.6	83.4	83.6	84.4	83.5
1995	84.9	84.6	84.4	84.1	84.0	83.9	83.3	84.2	84.2	83.7	83.6	83.6	84.6	84.0	83.9	83.6	84.0
1996	82.6	83.6	83.1	83.4	83.5	83.9	83.4	83.5	83.6	83.2	83.5	83.7	83.1	83.6	83.5	83.5	83.4
1997	83.3	83.9	84.2	83.8	83.9	83.8	83.8	84.4	84.7	84.7	85.0	84.7	83.8	83.8	84.3	84.8	84.2
1998	84.6	84.1	83.6	83.5	83.6	82.6	81.8	83.1	82.4	82.6	82.1	82.0	84.1	83.2	82.4	82.2	83.0
1999	82.1	82.1	81.9	81.7	82.0	81.5	81.8	81.9	81.3	82.1	82.2	82.6	82.0	81.8	81.6	82.3	81.9
2000	82.3	82.4	82.4	82.6	82.5	82.3	81.8	81.4	81.5	80.9	80.7	80.1	82.4	82.5	81.6	80.6	81.7
2001	79.3	78.6	78.1	77.7	76.9	76.2	75.7	75.2	74.7	74.1	73.6	73.5	78.7	76.9	75.2	73.7	76.1
2002	73.7	73.6	74.1	74.2	74.5	75.2	74.9	75.0	75.0	74.9	75.2	74.9	73.8	74.7	75.0	75.0	74.6
2003	75.5	75.8	75.7	75.1	75.2	75.3	75.6	75.6	76.0	76.1	76.8	76.7	75.6	75.2	75.7	76.5	75.8
2004	77.0	77.4	76.9	77.3	77.9	77.2	77.7	77.9	77.9	78.7	78.8	79.4	77.1	77.5	77.9	79.0	77.9
2005	79.7	80.2	80.1	80.0	80.2	80.4	80.3	80.4	78.9	79.7	80.5	80.9	80.0	80.2	79.9	80.4	80.1
2006	80.9	80.8	80.8	81.0	80.8	81.1	81.1	81.2	80.8	80.6	80.3	80.9	80.8	81.0	81.1	80.6	80.9
2007	80.3	80.8	80.6	80.7	80.7	80.6	80.7	80.6	80.7	80.2	80.5	80.6	80.6	80.6	80.7	80.4	80.6
2008	80.5	80.2	79.8	79.2	78.9	78.7	78.6	77.6	74.5	75.4	74.4	72.7	80.1	78.9	76.9	74.2	77.6
2009	71.1	70.6	69.5	69.0	68.2	68.0	...	...	...	...	...	...	70.4	68.4	...	...	...

NOTE: See the general note to table A.1.

... Not available as of July 15, 2009.

A.3. Rates of change in industrial production, by market and industry groups, 2004–08<sup>1</sup>

Item	NAICS code <sup>2</sup>	Revised rate of change (percent)					Difference between rates of change: revised minus previous (percentage points)				
		2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
<b>Total industry</b> .....	...	<b>3.0</b>	<b>2.6</b>	<b>1.8</b>	<b>1.8</b>	<b>-6.7</b>	<b>-1</b>	<b>.0</b>	<b>.1</b>	<b>-3</b>	<b>-6</b>
MARKET GROUPS											
Final products and nonindustrial supplies .....	...	2.5	4.4	1.1	.8	-5.8	-1	.0	.0	-5	-4
Consumer goods .....	...	1.5	2.5	.1	.2	-4.2	-1	.1	-1	-1.0	-2
Durable .....	...	-5	1.2	-3.2	1.1	-17.2	.2	-2	.7	.2	.3
Automotive products .....	...	-3.2	-1.5	-5.2	3.2	-22.4	-4	.5	.2	-4	.0
Home electronics .....	...	7.4	7.8	8.8	15.3	1.6	4.9	-3.2	-2.7	1.2	3.4
Appliances, furniture, carpeting .....	...	1.6	1.5	-5.6	-5.1	-20.4	.0	-1	.5	.9	.2
Miscellaneous goods .....	...	2.5	4.4	-7	-1.0	-10.9	.6	-1.2	2.0	.5	-2
Nondurable .....	...	2.3	2.9	1.2	-1	-4	-3	.2	-4	-1.3	-2
Non-energy .....	...	1.9	3.4	1.6	-9	-1.8	-3	.3	-5	-1.8	-2
Foods and tobacco .....	...	2.3	4.0	.0	1.1	-1.2	.0	.1	-3	-4	.4
Clothing .....	...	-13.9	-5.8	-4.8	-5	-6.7	-4.1	-3.7	-5.1	1.4	.8
Chemical products .....	...	3.5	4.2	5.8	-4.2	-2.2	-4	1.2	-1.9	-4.2	-1.5
Paper products .....	...	.9	-4	.1	-1.8	-4.1	-1.3	.5	2.6	-2.9	-2
Energy .....	...	4.0	1.7	-1	1.9	3.6	.0	.0	.1	.0	.2
Business equipment .....	...	5.3	9.2	7.4	2.3	-8.4	.1	-1.1	-3	-6	.1
Transit .....	...	6.2	15.0	9.2	-1.4	-29.0	-1.0	-9	.1	2.0	-1.4
Information processing .....	...	7.0	12.1	10.8	6.6	2.0	.7	-2.6	-1.9	-2.3	2.0
Industrial and other .....	...	4.0	5.6	4.8	1.1	-7.4	.0	-4	.4	-6	-7
Defense and space equipment .....	...	1.7	8.0	-1.9	5.7	-5	-1.4	1.1	.7	.5	.7
Construction supplies .....	...	2.0	7.3	-3.3	-1.0	-11.6	.3	-2	.2	.6	-4
Business supplies .....	...	2.9	3.0	.4	1.3	-6.9	-3	.3	.7	.2	-8
Materials .....	...	3.7	.4	2.7	3.2	-7.9	.0	.1	.2	-1	-9
Non-energy .....	...	5.4	2.6	1.4	3.5	-12.0	.0	.1	.1	.0	-1.4
Durable .....	...	5.8	5.9	.4	4.7	-12.0	-3	.5	-7	-7	-1.9
Consumer parts .....	...	.0	.6	-5.7	-2.2	-20.3	.0	.1	.1	-2	-5
Equipment parts .....	...	10.3	12.7	6.9	10.3	-6.5	-8	1.4	-2.4	-2.1	-3.9
Other .....	...	5.0	3.0	-1.8	3.2	-12.9	.0	.1	.1	.1	-9
Nondurable .....	...	4.8	-2.6	3.1	1.8	-12.0	.5	-4	1.5	1.3	-5
Textile .....	...	-8	.5	-11.5	-6.9	-13.7	.1	.0	.7	2.5	.7
Paper .....	...	3.8	-1.0	1.8	-1.4	-10.8	.0	.2	.2	-1	.1
Chemical .....	...	9.6	-7.3	6.9	4.3	-15.8	1.0	-1.5	2.1	2.3	-1.1
Energy .....	...	-5	-4.1	5.5	2.5	.2	.0	.0	.3	-2	.2
INDUSTRY GROUPS											
Manufacturing <sup>3</sup> .....	...	3.6	3.8	1.2	1.9	-8.7	-1	.1	.1	-4	-8
Manufacturing (NAICS) .....	31-33	3.7	4.0	1.3	2.0	-8.7	-1	.0	-1	-4	-8
Durable manufacturing .....	...	3.8	7.0	1.2	3.2	-11.1	-2	.0	-3	-6	-8
Wood products .....	321	1.4	11.8	-13.0	-7.5	-20.7	.0	.1	.3	-7	-5
Nonmetallic mineral products .....	327	4.4	5.5	-3.6	-1.2	-10.3	.0	.1	-1	-2.0	.1
Primary metal .....	331	8.3	-7	-4.2	4.3	-26.8	.2	.4	.0	.2	-2.7
Fabricated metal products .....	332	1.8	6.1	3.3	3.3	-7.0	.0	-1	.1	-1	.3
Machinery .....	333	5.2	8.3	2.8	-1.0	-10.6	.0	.0	.3	-3	-1.2
Computer and electronic products .....	334	9.7	15.3	9.3	11.0	-2.6	-5	.1	-2.9	-2.9	-3.0
Electrical equipment, appliances, and components .....	335	2.4	1.7	-4	3.3	-2.9	.1	-1	.1	-4	1.8
Motor vehicles and parts .....	3361-3	-1.8	.1	-6.2	-1.9	-23.3	-4	.5	-3	.4	-5
Aerospace and miscellaneous transportation equipment .....	3364-9	2.9	10.9	5.6	11.1	-12.7	-5	-6	1.1	.1	-2
Furniture and related products .....	337	3.4	1.6	-1.7	-2.6	-17.8	.0	.0	-1	-9	.6
Miscellaneous .....	339	1.8	6.4	3.5	2.9	-2.3	.1	-2	.8	1.3	-3
Nondurable manufacturing .....	...	3.5	.7	1.4	.8	-6.3	.0	.0	.1	-2	-8
Food, beverage, and tobacco products .....	311,2	1.3	4.2	.2	1.9	-1.6	.0	.1	-2	-3	.0
Textile and product mills .....	313,4	.5	-3	-11.4	-7.3	-13.8	.0	-1	.3	.8	-1.2
Apparel and leather .....	315,6	-8.9	-1.4	-4	-8	-8.2	.1	-1	.4	1.3	-7
Paper .....	322	2.9	-5	.5	-2.1	-10.9	.0	.2	.2	.1	.1
Printing and support .....	323	2.5	.6	2.4	-1.5	-9.6	.1	.1	.4	-2	-1.3
Petroleum and coal products .....	324	10.5	-3.7	2.3	.3	.5	.0	.0	.0	.7	.0
Chemical .....	325	6.6	-1.2	5.1	.7	-9.8	.1	.0	.1	-7	-1.3
Plastics and rubber products .....	326	.9	2.5	-3.0	4.5	-11.9	.0	-1	.7	.1	-1.3
Other manufacturing (non-NAICS) .....	1133, 5111	1.4	-3	-1.2	-1.8	-8.8	-7	.2	3.3	-5	.0
Mining .....	21	-9	-4.9	8.7	.3	.8	.0	.0	.5	.1	.2
Utilities .....	2211,2	1.8	2.0	-6	3.1	.3	.0	.0	.1	.1	.1
Electric .....	2211	2.4	3.5	-1.1	3.5	-8	.1	.1	.1	.2	.3
Natural gas .....	2212	-1.2	-4.8	1.4	1.6	5.9	-1	-2	-1	-4	-2

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

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.

A.4. Rates of change in industrial production, special aggregates and selected detail, 2004–08<sup>1</sup>

Item	NAICS code <sup>2</sup>	Revised rate of change (percent)					Difference between rates of change: revised minus previous (percentage points)				
		2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
<b>Total industry</b> .....	...	<b>3.0</b>	<b>2.6</b>	<b>1.8</b>	<b>1.8</b>	<b>-6.7</b>	<b>-1</b>	<b>.0</b>	<b>.1</b>	<b>-.3</b>	<b>-6</b>
Energy .....	...	1.3	-1.8	3.9	2.1	1.3	.0	.0	.2	-.1	.2
Consumer products .....	...	4.0	1.7	-1	1.9	3.6	.0	.0	.1	.0	.2
Commercial products .....	...	4.5	.4	1.2	1.9	.5	.0	.0	.0	-.1	.5
Oil and gas well drilling .....	213111	8.4	11.9	14.9	-7	6.9	.0	.0	.1	.1	.0
Converted fuel .....	...	2.3	-2.6	2.6	5.7	-4.4	.0	.0	.0	.4	-.3
Primary materials .....	...	-1.7	-4.7	6.8	1.2	2.0	.0	.0	.4	-.4	.5
Non-energy .....	...	3.4	4.0	1.2	1.7	-9.4	-.1	.0	.1	-.4	-.7
Selected high-technology industries .....	...	8.6	22.6	13.1	18.2	-6.9	-.7	.2	-4.2	-4.1	-6.4
Computers and peripheral equipment .....	3341	3.5	25.3	22.1	24.2	-11.9	1.8	-3.6	4.2	7.4	2.2
Communications equipment .....	3342	2.6	8.9	12.4	6.6	10.4	1.9	-4.8	-8.2	-14.0	1.7
Semiconductors and related electronic components .....	334412-9	13.8	28.4	9.8	22.3	-15.0	-3.5	4.3	-5.7	-3.7	-14.7
Excluding selected high-technology industries .....	...	3.0	2.7	.4	.7	-9.5	-.1	.1	.3	-.1	-.4
Motor vehicles and parts .....	3361-3	-1.8	.1	-6.2	-1.9	-23.3	-.4	.5	-.3	.4	-.5
Motor vehicles .....	3361	-3.4	-1.4	-7.6	-1.9	-30.3	-.7	.9	-.6	.8	-.8
Motor vehicle parts .....	3363	-1.0	-.6	-4.3	.3	-14.8	-.2	.0	.0	-.3	-.3
Excluding motor vehicles and parts .....	...	3.5	3.0	.9	.9	-8.5	.0	.0	.4	-.1	-.4
Consumer goods .....	...	2.1	3.2	.8	-1.1	-4.2	-.2	.1	-.2	-1.4	-.1
Business equipment .....	...	5.1	6.6	6.2	2.3	-8.8	-.1	-.7	.4	-.5	.0
Construction supplies .....	...	1.9	7.4	-3.4	-1.0	-11.8	.2	-.2	.3	.9	-.3
Business supplies .....	...	1.9	2.7	-.6	.4	-9.8	-.3	.3	1.1	.5	-.9
Materials .....	...	5.3	.5	1.4	2.4	-11.2	.3	-.1	.7	.6	-.5
<i>Measures excluding selected high-technology industries</i> .....	...	...	...	...	...	...	...	...	...	...	...
Total industry .....	...	2.7	1.6	1.2	1.1	-6.7	-.1	.0	.3	-.1	-.3
Manufacturing <sup>3</sup> .....	...	3.2	2.5	.4	.9	-8.9	-.1	.1	.3	-.2	-.4
Durable .....	...	3.1	4.8	-.4	1.4	-11.7	-.1	.1	.1	-.2	.0
<i>Measures excluding motor vehicles and parts</i> .....	...	...	...	...	...	...	...	...	...	...	...
Total industry .....	...	3.4	2.8	2.3	2.0	-5.9	-.1	.0	.1	-.4	-.6
Manufacturing <sup>3</sup> .....	...	4.1	4.0	1.8	2.1	-7.8	-.1	.0	.1	-.5	-.8
Durable .....	...	4.9	8.1	2.5	4.0	-9.3	-.1	.0	-.4	-.8	-.8
<i>Measures excluding selected high-technology industries and motor vehicles and parts</i> .....	...	...	...	...	...	...	...	...	...	...	...
Total industry .....	...	3.1	1.7	1.7	1.2	-5.8	.0	.0	.3	-.2	-.3
Manufacturing <sup>3</sup> .....	...	3.7	2.7	1.0	1.1	-7.8	.0	.0	.3	-.2	-.4
<i>Measures of non-energy materials inputs</i> .....	...	...	...	...	...	...	...	...	...	...	...
Finished processors .....	...	5.6	6.2	1.7	4.0	-11.1	-.4	.7	-1.1	-1.2	-2.2
Primary and semifinished processors .....	...	5.3	-.2	1.3	3.2	-12.5	.4	-.3	1.0	.9	-.8
<i>Stage-of-process groups</i> .....	...	...	...	...	...	...	...	...	...	...	...
Crude .....	...	2.6	-6.5	7.6	1.2	-4.6	.0	.0	.3	-.5	-.4
Primary and semifinished .....	...	3.5	3.5	-.8	2.5	-8.0	-.2	.2	.2	-.1	-1.0
Finished .....	...	2.5	5.2	3.3	1.1	-5.8	.1	-.2	-.1	-.6	-.1

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. North American Industry Classification System.

3. See table A.3, note 3.

... Not applicable.



A.5. Rates of change for annual industrial production indexes, 2004–08<sup>1</sup>

Item	Revised rate of change (percent)					Difference between rates of change: revised minus previous (percentage points)				
	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
<b>Total industry</b> .....	<b>2.5</b>	<b>3.3</b>	<b>2.3</b>	<b>1.5</b>	<b>-2.2</b>	<b>.0</b>	<b>.0</b>	<b>.1</b>	<b>-2</b>	<b>-5</b>
<b>MARKET GROUPS</b>										
Consumer goods .....	1.2	2.7	.4	1.0	-2.7	-.1	-.1	.1	-.7	-.5
Durable .....	1.4	.5	-1.0	.4	-9.9	.3	.0	.3	.7	-.2
Nondurable .....	1.2	3.4	.9	1.1	-.5	-.2	-.1	.1	-1.2	-.5
Business equipment .....	5.3	7.0	9.4	2.7	-1.1	.1	-.3	-1.0	-.7	.1
Defense and space equipment .....	-1.8	10.6	-2.1	3.7	2.5	-1.0	.0	1.2	.0	1.0
Construction supplies .....	2.3	4.5	2.3	-1.9	-6.3	.1	.0	.0	.6	-.1
Business supplies .....	2.1	3.3	1.2	1.3	-2.9	-.1	-.1	.6	.7	-.7
Materials .....	3.1	2.4	2.4	2.0	-1.9	.1	.1	.1	.1	-.5
Non-energy .....	4.5	4.0	2.7	2.1	-3.7	.2	.1	.2	.0	-.8
Energy .....	-.4	-1.2	1.7	1.8	1.8	.0	.0	.0	.2	.2
<b>INDUSTRY GROUPS</b>										
Manufacturing <sup>2</sup> .....	3.0	4.0	2.5	1.4	-3.2	.0	-.1	.1	-.3	-.6
Manufacturing (NAICS) .....	3.1	4.2	2.7	1.5	-3.1	.0	.0	-.1	-.3	-.6
Durable manufacturing .....	4.1	5.5	4.4	2.1	-3.3	.1	.0	-.2	-.6	-.7
Nondurable manufacturing .....	1.9	2.8	.8	1.0	-2.9	.0	.0	.0	.0	-.5
Other manufacturing (non-NAICS) .....	.8	-.3	-1.0	-1.3	-5.7	.0	-1.0	3.3	.1	.1
Mining .....	-.6	-1.3	3.3	.6	2.1	.0	.0	.2	.5	.3
Utilities .....	1.4	2.1	-.6	3.4	.3	.0	.0	.0	.1	-.2

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.

2. See table A.3, note 3.

A.6. Rates of change in capacity, by industry groups, 2005–09<sup>1</sup>

Item	Revised rate of change (percent)					Difference between rates of change: revised minus previous (percentage points)				
	2005	2006	2007	2008	2009	2005	2006	2007	2008	2009
<b>Total industry</b> .....	<b>.8</b>	<b>1.5</b>	<b>2.0</b>	<b>1.1</b>	<b>-.9</b>	<b>.0</b>	<b>.2</b>	<b>.2</b>	<b>-.4</b>	<b>-.6</b>
Manufacturing <sup>2</sup> .....	1.3	1.4	2.2	1.3	-1.2	-.1	.1	.3	-.5	-.6
Manufacturing (NAICS) .....	1.4	1.4	2.3	1.3	-1.2	-.1	.1	.3	-.5	-.6
Durable manufacturing .....	2.4	2.0	3.7	2.0	-.6	-.2	-.4	.4	-1.0	-.2
Nondurable manufacturing .....	.5	.8	1.0	.8	-1.7	.1	.5	.2	.1	-1.0
Other manufacturing (non-NAICS) .....	-.2	1.1	.6	.9	-.9	.0	.0	.0	.7	.1
Mining .....	-1.1	2.3	1.4	1.1	-.7	.0	1.0	-.4	.4	-1.5
Utilities .....	1.5	1.3	1.3	2.3	1.8	.8	.5	.0	.1	.1
Selected high-technology industries .....	11.9	5.7	22.9	6.3	8.4	-1.2	-4.7	1.5	-11.2	1.2
Manufacturing except selected high-technology industries <sup>2</sup> .....	.6	1.1	1.0	1.0	-1.6	.0	.3	.3	.2	-.7
<i>Stage-of-process groups</i>										
Crude .....	-.9	1.5	1.4	1.2	-1.2	-.1	.6	.0	.7	-1.4
Primary and semifinished .....	1.0	1.3	2.0	.8	-1.0	.2	.1	-.1	-1.1	-.5
Finished .....	1.9	1.8	2.4	2.2	-.6	-.3	.1	.7	.4	-.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. See table A.3, note 3.

## A.7. Capacity utilization rates, by industry groups, 2005–08

Item	NAICS code <sup>1</sup>	Revised rate (percent of capacity, seasonally adjusted)					Difference between rates of change: revised minus previous (percentage points)			
		2008 avg.	2005:Q4	2006:Q4	2007:Q4	2008:Q4	2005:Q4	2006:Q4	2007:Q4	2008:Q4
<b>Total industry</b> .....	...	<b>80.9</b>	<b>80.4</b>	<b>80.6</b>	<b>80.4</b>	<b>74.2</b>	<b>.0</b>	<b>−1</b>	<b>−5</b>	<b>−7</b>
Manufacturing <sup>2</sup> .....	...	79.6	79.2	79.0	78.7	70.9	.0	.0	−6	−8
Manufacturing (NAICS) .....	31-33	79.4	78.9	78.8	78.6	70.9	.0	−1	−6	−9
Durable manufacturing .....	...	77.8	77.9	77.3	77.0	67.1	.0	.0	−8	−7
Wood products .....	321	79.2	89.2	75.2	68.6	54.8	−7	−7	−1.5	−1.5
Nonmetallic mineral products .....	327	77.7	78.1	72.6	70.5	63.0	−5.3	−6.3	−7.5	−5.9
Primary metal .....	331	80.5	83.3	80.4	84.1	61.4	−6	−4	.3	−1.5
Fabricated metal products .....	332	77.5	77.6	79.5	80.5	74.1	−4	−4	−8	−7
Machinery .....	333	78.6	79.8	81.8	79.8	70.3	1.3	2.4	2.6	1.5
Computer and electronic products .....	334	78.3	75.3	78.4	75.4	69.4	.6	.4	−2.5	−6
Electrical equip., appliances, and components .....	335	83.2	83.1	82.2	82.8	78.4	−1	.2	−6	.7
Motor vehicles and parts .....	3361-3	76.7	76.4	70.3	70.2	53.6	−1.9	−2.0	−2.1	−2.2
Aerospace and miscellaneous transportation equipment .....	3364-9	73.2	73.2	77.3	84.2	72.0	3.2	4.5	3.9	2.9
Furniture and related products .....	337	78.4	79.8	79.0	77.6	65.1	.8	1.5	1.0	2.1
Miscellaneous .....	339	76.5	77.0	76.3	74.4	69.4	.2	−2	−4	−2.4
Nondurable manufacturing .....	...	81.5	80.1	80.6	80.5	74.8	.1	−2	−5	−1.2
Food, beverage, and tobacco products .....	311,2	81.5	80.3	79.4	79.7	77.1	−5	−9	−1.4	−1.9
Textile and product mills .....	313,4	81.6	78.5	73.1	71.3	64.7	−1.2	.6	2.5	2.6
Apparel and leather .....	315,6	79.5	75.2	76.8	77.7	72.2	5.7	4.9	4.7	2.4
Paper .....	322	87.6	84.4	84.2	82.6	74.4	.4	−1	.0	.5
Printing and support .....	323	83.4	78.3	79.7	78.4	72.7	.6	1.1	1.9	3.5
Petroleum and coal products .....	324	86.1	88.4	88.8	87.1	85.7	1.1	−1	−1.7	−3.7
Chemical .....	325	78.2	75.7	79.0	78.5	70.0	.2	−1	−5	−1.3
Plastics and rubber products .....	326	83.6	85.2	81.9	84.1	72.7	−7	−4	−5	−1.5
Other manufacturing (non-NAICS) .....	1133, 5111	84.2	84.1	82.2	80.2	72.5	−1.2	1.5	1.1	.5
Mining .....	21	87.6	85.4	90.8	89.8	89.6	−1	−5	−1	−2
Utilities .....	2211,2	86.8	85.3	83.7	85.2	83.6	−4	−7	−7	−6
Selected high-technology industries .....	...	78.2	77.4	82.8	79.6	69.8	2.2	2.9	−9	1.5
Computers and peripheral equipment .....	3341	78.1	74.3	79.5	81.6	74.1	.0	2.0	3.0	13.7
Communications equipment .....	3342	76.2	67.5	82.3	77.3	74.3	5.7	8.9	−3.6	−5.3
Semiconductors and related electronic components .....	334412-9	80.6	84.6	84.9	80.0	64.5	.4	−3	−1.3	−9
<i>Measures excluding selected high-technology industries</i>										
Total industry .....	...	81.0	80.5	80.5	80.5	74.4	−2	−3	−5	−8
Manufacturing <sup>2</sup> .....	...	79.7	79.3	78.8	78.7	71.0	−2	−2	−5	−1.0
<i>Stage-of-process groups</i>										
Crude .....	...	86.6	83.1	88.7	88.3	83.8	−2	−4	−8	−1.7
Primary and semifinished .....	...	82.0	82.6	80.7	80.7	73.4	−7	−7	−6	−6
Finished .....	...	77.7	76.6	77.6	77.2	71.0	.7	.6	−4	−7

1. North American Industry Classification System.

2. See table A.3, note 3.

... Not applicable.

A.8. Annual proportion in industrial production, by market groups and industry groups, 2000–08

Item	NAICS code <sup>1</sup>	2000	2001	2002	2003	2004	2005	2006	2007	2008
<b>Total industry</b> .....	...	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>
MARKET GROUPS										
Final products and nonindustrial supplies .....	...	57.5	59.0	58.9	58.2	57.0	56.9	56.8	56.2	57.0
Consumer goods .....	...	28.4	30.0	31.0	31.0	30.2	29.8	29.3	29.2	29.5
Durable .....	...	7.9	8.1	8.9	8.7	8.0	7.4	7.1	6.8	6.3
Automotive products .....	...	3.7	4.0	4.7	4.6	4.0	3.6	3.3	3.2	2.9
Home electronics .....	...	.4	.4	.4	.4	.4	.4	.4	.3	.3
Appliances, furniture, carpeting .....	...	1.4	1.4	1.4	1.3	1.3	1.3	1.2	1.1	1.0
Miscellaneous goods .....	...	2.4	2.3	2.4	2.3	2.3	2.2	2.2	2.1	2.1
Nondurable .....	...	20.5	21.8	22.1	22.2	22.2	22.4	22.2	22.4	23.2
Non-energy .....	...	16.8	18.0	18.2	18.0	17.3	16.7	16.4	16.2	17.1
Foods and tobacco .....	...	9.2	9.8	9.6	9.6	9.3	8.9	8.7	8.8	9.4
Clothing .....	...	1.2	1.1	.8	.7	.6	.5	.4	.4	.4
Chemical products .....	...	4.0	4.6	5.2	5.2	5.1	5.0	5.1	4.8	5.1
Paper products .....	...	2.0	2.1	2.1	2.0	1.9	1.8	1.7	1.7	1.7
Energy .....	...	3.7	3.8	3.9	4.2	4.9	5.7	5.8	6.2	6.1
Business equipment .....	...	11.6	11.2	10.2	9.6	9.4	9.3	9.6	9.3	9.5
Transit .....	...	1.9	2.0	1.8	1.6	1.6	1.6	1.8	1.6	1.5
Information processing .....	...	4.1	3.9	3.2	3.0	3.0	2.8	2.9	2.8	2.9
Industrial and other .....	...	5.5	5.3	5.2	5.0	4.9	4.8	5.0	4.9	5.0
Defense and space equipment .....	...	1.4	1.6	1.6	1.6	1.5	1.6	1.5	1.5	1.7
Construction supplies .....	...	4.6	4.8	4.9	4.9	4.8	4.9	5.0	4.9	4.9
Business supplies .....	...	11.0	11.0	10.8	10.8	10.6	10.6	10.5	10.5	10.7
Materials .....	...	42.5	41.0	41.1	41.8	43.0	43.1	43.2	43.8	43.0
Non-energy .....	...	31.9	30.3	30.1	29.6	29.7	29.3	29.3	29.2	29.0
Durable .....	...	20.6	19.2	18.7	18.3	18.2	17.8	17.7	17.2	16.8
Consumer parts .....	...	4.1	3.8	4.0	3.8	3.6	3.3	3.2	2.9	2.7
Equipment parts .....	...	8.0	7.2	6.5	6.4	6.3	6.2	6.0	5.8	5.9
Other .....	...	8.4	8.2	8.1	8.1	8.3	8.3	8.5	8.4	8.2
Nondurable .....	...	11.3	11.1	11.4	11.3	11.4	11.5	11.6	12.0	12.2
Textile .....	...	.9	.8	.8	.7	.7	.7	.6	.5	.5
Paper .....	...	2.9	2.8	2.8	2.5	2.4	2.3	2.3	2.3	2.3
Chemical .....	...	4.3	4.1	4.4	4.5	5.1	5.3	5.5	5.9	5.9
Energy .....	...	10.6	10.7	11.0	12.2	13.3	13.8	13.8	14.6	14.0
INDUSTRY GROUPS										
Manufacturing <sup>2</sup> .....	...	84.0	83.5	83.2	81.7	80.5	79.5	79.3	78.6	79.0
Manufacturing (NAICS) .....	31-33	79.2	78.6	78.5	77.2	76.2	75.5	75.4	74.8	75.3
Durable manufacturing .....	...	45.3	44.0	43.2	42.0	40.7	39.7	39.6	38.4	38.1
Wood products .....	321	1.4	1.4	1.5	1.6	1.6	1.5	1.4	1.2	1.0
Nonmetallic mineral products .....	327	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.2	2.2
Primary metal .....	331	2.5	2.3	2.3	2.3	2.7	2.6	2.8	2.7	2.5
Fabricated metal products .....	332	6.0	5.8	5.7	5.5	5.3	5.3	5.5	5.6	5.9
Machinery .....	334	5.9	5.5	5.3	5.0	4.9	4.9	5.0	4.9	4.9
Computer and electronic products .....	334	10.5	9.3	8.1	7.9	7.8	7.4	7.2	6.7	6.9
Electrical equipment, appliances, and components .....	335	2.5	2.4	2.2	2.0	1.9	1.9	1.9	1.9	2.0
Motor vehicles and parts .....	3361-3	6.6	6.5	7.4	7.2	6.4	5.9	5.5	5.1	4.5
Aerospace and miscellaneous transportation equipment .....	3364-9	3.2	3.7	3.5	3.3	3.1	3.2	3.2	3.4	3.5
Furniture and related products .....	337	1.7	1.7	1.8	1.7	1.6	1.6	1.5	1.4	1.3
Miscellaneous .....	339	2.9	3.1	3.3	3.3	3.1	3.1	3.1	3.1	3.3
Nondurable manufacturing .....	...	33.9	34.6	35.3	35.2	35.5	35.8	35.7	36.5	37.2
Food, beverage, and tobacco products .....	311,2	10.6	11.3	11.3	11.4	10.9	10.6	10.4	10.7	11.5
Textile and product mills .....	313,4	1.4	1.3	1.4	1.3	1.2	1.2	1.1	.9	.9
Apparel and leather .....	315,6	1.3	1.2	1.0	.9	.7	.6	.6	.6	.6
Paper .....	322	3.1	3.1	3.1	2.9	2.7	2.6	2.6	2.5	2.6
Printing and support .....	323	2.6	2.6	2.4	2.2	2.1	2.0	1.9	1.9	1.8
Petroleum and coal products .....	324	1.8	1.7	1.8	2.1	3.2	4.2	4.5	5.0	4.7
Chemical .....	325	9.3	9.7	10.7	10.8	11.2	11.3	11.4	11.7	12.1
Plastics and rubber products .....	326	3.7	3.7	3.8	3.6	3.4	3.3	3.2	3.1	3.1
Other manufacturing (non-NAICS) .....	325	4.8	4.8	4.7	4.5	4.3	4.1	4.0	3.8	3.7
Mining .....	21	7.1	7.1	7.2	8.5	9.8	10.7	11.0	11.7	10.6
Utilities .....	2211	8.9	9.4	9.6	9.8	9.7	9.8	9.7	9.7	10.4
Electric .....	2212	7.6	8.0	8.2	8.2	8.0	8.0	8.1	8.0	8.7
Natural gas .....	2211	1.4	1.4	1.4	1.6	1.7	1.8	1.6	1.7	1.8

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 2008 and 2009 would account for a .381 percent increase in total IP.

1. North American Industry Classification System.
  2. See table A.3, note 3.
- ... Not applicable.

## A.9. Annual production and price indexes for selected communications equipment, 1998–2008

Year	Index, 2002=100											
	Data networking		Enterprise and home voice		Transmission and related <sup>1</sup>		Wireless system		Satellites and earth station		Other	
	Production	Prices	Production	Prices	Production	Prices	Production	Prices	Production	Prices	Production	Prices
1998.....	n.a	234.4	n.a	170.6	118.2	189.3	n.a	164.8	78.0	160.9	83.6	108.4
1999.....	n.a	194.4	n.a	154.3	155.7	169.6	n.a	143.7	70.0	143.2	86.4	106.3
2000.....	n.a	174.1	n.a	145.3	228.7	149.3	n.a	129.0	94.6	129.9	111.5	100.4
2001.....	123.3	133.2	n.a	123.1	202.6	116.5	n.a	114.6	82.9	131.1	95.9	100.9
2002.....	100.0	100.0	100.0	108.8	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
2003.....	112.9	76.6	86.6	100.0	81.0	90.5	123.9	83.7	117.2	90.3	97.3	98.6
2004.....	124.2	59.9	74.0	91.0	77.3	83.2	161.8	73.2	175.0	72.4	89.5	99.4
2005.....	160.5	54.3	67.1	82.4	62.2	77.4	159.3	71.7	188.6	75.6	70.6	100.4
2006.....	254.1	51.4	64.0	79.8	69.8	66.5	148.3	67.7	260.2	69.2	66.8	99.8
2007.....	276.1	50.2	69.3	77.5	91.1	61.1	115.5	62.9	286.2	66.1	66.5	99.8
2008.....	282.6	n.a	61.9	n.a	91.8	n.a	146.2	n.a	365.5	n.a	73.2	n.a

NOTE: The complete set of annual prices necessary to compute the annual price indexes for 2008 are not available. The estimates for the quarterly price indexes for 2008 (shown in table A.10) are based on only incomplete data.

1. Category consists of transmission, local loop, and legacy central office equipment.

n.a. Not available.

## A.10. Quarterly production and price indexes for selected communications equipment, 1998:Q1–2008:Q4

Year and quarter	Index, 2002=100							
	Data networking		Enterprise and home voice		Transmission and related <sup>1</sup>		Wireless system	
	Production	Prices	Production	Prices <sup>2</sup>	Production	Prices	Production	Prices
1998:Q1.....	n.a	n.a	n.a	n.a	96.9	118.6	n.a	n.a
Q2.....	n.a	n.a	n.a	n.a	115.2	118.7	n.a	n.a
Q3.....	n.a	n.a	n.a	n.a	124.8	117.1	n.a	n.a
Q4.....	n.a	n.a	n.a	n.a	135.2	117.6	n.a	n.a
1999:Q1.....	n.a	n.a	n.a	n.a	123.9	120.2	n.a	n.a
Q2.....	n.a	n.a	n.a	n.a	143.5	127.2	n.a	n.a
Q3.....	n.a	n.a	n.a	n.a	166.8	129.2	n.a	n.a
Q4.....	n.a	n.a	n.a	n.a	187.8	128.0	n.a	n.a
2000:Q1.....	n.a	n.a	n.a	n.a	213.0	134.0	n.a	121.9
Q2.....	n.a	n.a	n.a	n.a	235.9	138.0	n.a	122.6
Q3.....	n.a	n.a	n.a	n.a	228.2	140.0	n.a	123.7
Q4.....	n.a	n.a	n.a	n.a	237.4	135.6	n.a	124.7
2001:Q1.....	150.9	148.0	n.a	n.a	250.0	115.2	n.a	124.4
Q2.....	126.2	137.1	n.a	n.a	210.6	112.7	n.a	122.4
Q3.....	109.6	127.4	n.a	n.a	206.2	109.5	n.a	114.7
Q4.....	107.3	126.9	n.a	n.a	144.7	106.0	n.a	110.7
2002:Q1.....	105.0	110.7	116.9	n.a	131.8	102.3	98.0	109.2
Q2.....	99.3	107.3	102.2	n.a	105.2	102.2	99.7	106.3
Q3.....	98.3	91.6	91.4	n.a	88.1	98.0	99.3	93.9
Q4.....	97.5	90.6	90.0	n.a	75.6	97.6	103.0	90.9
2003:Q1.....	97.7	87.9	91.5	104.3	80.9	94.7	103.3	87.4
Q2.....	109.8	80.8	87.0	100.7	81.9	91.1	106.4	83.8
Q3.....	119.4	70.7	92.2	97.9	79.1	89.2	131.8	69.2
Q4.....	124.4	63.0	75.9	97.2	82.0	91.6	153.6	65.7
2004:Q1.....	139.8	60.5	79.1	97.2	82.2	92.1	163.9	65.8
Q2.....	118.9	59.6	77.5	95.4	80.7	89.6	160.4	68.6
Q3.....	122.8	58.2	70.7	90.9	72.4	88.1	161.2	68.5
Q4.....	115.6	56.4	68.7	89.4	73.9	88.5	161.9	74.1
2005:Q1.....	128.7	54.0	65.5	86.4	69.0	85.2	158.6	77.1
Q2.....	146.9	53.5	65.8	86.4	64.7	79.3	163.1	74.8
Q3.....	162.6	52.9	69.2	82.6	58.7	79.2	160.3	70.2
Q4.....	203.1	51.9	67.9	81.5	56.6	76.4	155.4	66.3
2006:Q1.....	220.4	51.9	64.3	81.5	61.2	75.8	159.2	64.4
Q2.....	245.4	50.6	64.8	80.5	69.1	74.2	160.5	65.2
Q3.....	269.5	49.5	61.7	79.8	74.2	75.2	154.5	68.3
Q4.....	280.3	48.7	65.4	79.2	74.5	73.4	119.5	71.1
2007:Q1.....	276.9	49.0	69.1	79.1	84.6	71.1	113.0	71.0
Q2.....	271.9	50.0	69.7	77.5	89.9	69.0	103.9	68.4
Q3.....	276.6	49.2	71.3	76.8	93.0	67.2	115.2	58.0
Q4.....	279.0	47.9	66.9	75.8	96.9	65.6	129.6	48.2
2008:Q1.....	287.5	49.3	65.3	76.7	96.1	65.2	139.6	48.7
Q2.....	295.5	48.1	62.7	76.0	96.7	62.5	158.6	48.3
Q3.....	279.6	48.6	64.3	73.6	87.9	60.0	144.5	47.7
Q4.....	268.1	47.5	55.2	73.1	86.7	57.0	142.3	46.9

NOTE: Quarterly production and price indexes are not available for two categories of communication equipment shown in table A.9: "satellites and earth station" and "other."

1. Category consists of transmission, local loop, and legacy central office equipment.

2. Index, 2003=100.

n.a. Not available.



A.11. Quarterly price indexes for selected semiconductors, 1998:Q1–2008:Q4

Year and quarter	Index, 2002=100		
	Dynamic random access memory	Flash memory	Other memory <sup>1</sup>
	Prices	Prices	Prices
1998:Q1	956.2	367.2	514.6
Q2	689.7	340.0	478.0
Q3	530.0	286.0	439.5
Q4	572.6	280.3	421.9
1999:Q1	640.0	234.5	439.6
Q2	520.3	229.9	471.3
Q3	493.0	285.7	469.9
Q4	663.0	321.3	465.7
2000:Q1	516.1	314.1	396.6
Q2	482.6	327.9	410.7
Q3	513.8	317.5	409.3
Q4	319.6	300.5	385.9
2001:Q1	206.1	232.8	275.1
Q2	125.6	202.9	231.3
Q3	72.6	164.6	188.3
Q4	59.8	136.4	155.5
2002:Q1	125.2	109.7	114.9
Q2	101.2	103.7	103.8
Q3	85.4	96.3	94.7
Q4	88.8	90.5	86.9
2003:Q1	63.9	84.2	91.7
Q2	56.8	74.1	85.2
Q3	67.5	69.3	79.4
Q4	64.1	66.5	77.3
2004:Q1	62.1	61.5	74.7
Q2	65.9	58.4	69.0
Q3	62.2	45.4	73.8
Q4	53.4	35.9	68.8
2005:Q1	43.5	31.8	63.0
Q2	32.9	29.0	61.3
Q3	32.3	26.2	58.7
Q4	29.1	24.3	59.5
2006:Q1	28.7	19.6	66.4
Q2	28.9	16.9	63.7
Q3	30.5	14.6	61.6
Q4	33.5	14.0	59.1
2007:Q1	25.6	10.8	60.2
Q2	15.2	10.8	59.1
Q3	13.6	12.5	50.2
Q4	9.1	10.3	42.1
2008:Q1	6.9	7.3	52.1
Q2	7.9	6.6	50.9
Q3	6.6	4.8	50.8
Q4	4.6	4.0	46.1

1. Other memory comprises all types of memory except flash memory and dynamic random access memory; static random access memory is its largest component.