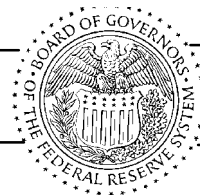


FEDERAL RESERVE statistical release



G.17 (419) 2019 Historical and Annual Revision

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Industrial Production and Capacity Utilization: The 2019 Annual Revision

The Federal Reserve has revised its index of industrial production (IP) and the related measures of capacity and capacity utilization.¹ On net, the revisions to the growth rates for total IP for recent years were small and positive, with the estimates for 2016 and 2017 a bit higher and the estimates for 2015 and 2018 slightly lower.² Total IP is still reported to have increased from the end of the recession in mid-2009 through late 2014 before declining in 2015 and rebounding in mid-2016. Subsequently, the index advanced around 7½ percent over 2017 and 2018.

Capacity for total industry expanded modestly in each year from 2015 to 2017 before advancing 1½ percent in 2018; it is expected to advance about 2 percent in 2019. Revisions for recent years were very small and showed slightly less expansion in most years relative to earlier reports.

In the fourth quarter of 2018, capacity utilization for total industry stood at 79.4 percent, about ¾ percentage point above its previous estimate and about ½ percentage point below its long-run (1972–2018) average. The utilization rate in 2017 is also higher than its previous estimate.

This revision incorporated newly available annual data on output and prices. The IP indexes for publishing reflect new data for 2017 and revised data for 2016 from the U.S. Census Bureau's Service Annual Survey, and the IP indexes for logging were updated with 2017 data from the U.S. Forest Service. In addition, the indexes for metallic and nonmetallic minerals were updated with revised annual data for 2017 from the U.S. Geological Survey (USGS). The nominal benchmark data used for manufacturing industries—the Census Bureau's Census of Manufactures—are not yet available for 2017. However, data on prices from the Bureau of Labor Statistics (BLS) were incorporated into most of the manufacturing indexes.

The monthly estimates of production have been updated to include late-arriving or revised quarterly or monthly indicator data. These data include direct measures of output as well as the benchmark revisions to production-worker hours from the BLS's Current Employment Statistics report.³ The monthly IP estimates also now reflect recalculations of seasonal factors.

The revised estimates of capacity and capacity utilization incorporated data from the Census Bureau's Quarterly Survey of Plant Capacity Utilization (QSPC) for the fourth quarter of 2018, along with new data on capacity from the USGS, the Energy Information Administration (EIA), and other organizations.

¹The revision affected rates of change for IP from 1972 forward. When necessary to maintain consistency with any revisions to the data for 1972 and subsequent years, the levels of production for the years before 1972 were multiplied by a constant. However, the rates of change in IP for the years before 1972 were not revised. Utilization rates and capacity growth rates were revised minimally between 1968 and 1971, but they were unchanged before then.

²Rates 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.

³Production-worker hours are used as output indicators for IP indexes for which no direct measures of production are available.

RESULTS OF THE REVISION

Industrial Production

Manufacturing output edged up in 2016 before advancing more than 2 percent in both 2017 and 2018. Compared with previous reports, the gain in 2018 is a little smaller, while the rates of change for 2017 and 2016 are larger. Despite the net upward revision, manufacturing IP in February 2019 was about 4½ percent below its pre-recession peak.

The revised contour for mining output is little different from before: Output dropped significantly in 2015 and 2016 but then jumped more than 10 percent in both 2017 and 2018. The output of utilities advanced moderately in 2016 through 2018; the gains in 2016 and 2018 are now reported to be slightly weaker than before, while the gain in 2017 is stronger.

Production by Industry Group

The output of durable manufacturing industries edged down in 2016 before rising about 2½ percent and 4 percent in 2017 and 2018, respectively. The output of nondurable goods increased about ¾ percent in 2016, jumped more than 2½ percent in 2017, and then moved up about ¾ percent again in 2018. For both durable and nondurable manufacturing, current estimates of growth rates are slightly higher for 2016 and 2017 and slightly lower in 2018 than previously reported. The revisions for the 2016–18 period were generally small and were widespread across industries.

The output index for industries in scope for manufacturing IP that are not part of manufacturing under the North American Industry Classification System (NAICS)—that is, logging and publishing—fell in every year from 2014 to 2018. Relative to earlier reports, the index now declines more steeply in 2015 and 2018 and less steeply in 2016 and 2017.

Production by Market Group

The index for consumer goods has increased in each of the past six years, with the revised index growing at roughly the same pace as the previously published index over this period. Likewise, the index for business equipment was little revised; it increased 4.0 percent or more in both 2017 and 2018 after falling in the previous two years. The indexes for construction supplies and business supplies have increased in each of the past three years, with somewhat stronger gains in 2016 and 2017 and weaker gains in 2018 than what was previously published. The revisions to the output of defense and space equipment are more notable; the index is now estimated to have fallen significantly more slowly in 2017 and to have risen less steeply in 2018. The index for materials has increased sharply in each of the past two years, with the gain in 2017 a bit faster than previously reported.

Capacity

Manufacturing capacity contracted slightly in 2015 but then increased modestly in subsequent years, with annual increases averaging about ¾ percent. These rates of changes are generally a little lower than previously reported values. The capacity indexes for durables and nondurables have increased in recent years, while capacity for “other manufacturing” (logging and publishing) has declined fairly steeply.

Capacity at mines declined nearly 3 percent in 2016 but then edged up in 2017 and jumped 7 percent in 2018; it is expected to advance 5 percent in 2019. Capacity was previously reported to have fallen in 2017, and the rates of change for 2016 and 2018 were also revised up. Capacity at utilities is reported to have increased about 1½ percent per year from 2016 to 2018; these rates of increase are modestly lower than reported earlier.

Capacity Utilization

Capacity utilization for total industry declined in 2016 but rose in 2017 and 2018.⁴ The increases in 2017 and 2018 resulted from sizable gains in the rates for mining and from smaller advances in the rates for both manufacturing and utilities. Compared with earlier estimates, capacity utilization for total industry is now reported to have been somewhat lower in 2015 but higher in 2017 and 2018.

Utilization at manufacturers fell in 2016 and increased in 2017 and 2018; for the fourth quarter of 2018, the utilization rate is estimated to have been around 1 ¼ percentage points below its long-run average. The rates for 2017 and 2018 are now reported to be higher than published earlier. By the fourth quarter of 2018, the utilization rate for durables was about the same as its long-run average. By contrast, the utilization rate for nondurable manufacturing remained below its long-run average at the end of 2018 and had been so for several years. The utilization rate for “other manufacturing” industries has been declining for many years; at the end of 2018, it stood far below its long-run average.

Capacity utilization rates for mining fell in 2016 before rising sharply in 2017 and advancing further in 2018. The gains in 2017 and 2018 were largely due to output increases for oil and gas extraction, drilling, and servicing that outstripped capacity growth. By the end of 2018, the utilization rate for mining stood 5 percentage points above its long-run average of 87.1 percent. Relative to the previously published rates, utilization at mines for 2018 is about 2 ½ percentage points lower; revisions to other recent years were smaller. The operating rate for utilities has been well below its long-run average for the past several years. Compared with the previous estimates, utilization rates for utilities are slightly lower in 2015 and 2016 and somewhat higher in 2017 and 2018.

TECHNICAL ASPECTS OF THE REVISION

The IP indexes represent the level of real output relative to a base year. At the monthly frequency, movements of the indexes are based on indicators that are derived using industry-specific data from a variety of government and private sources. The monthly production indexes, however, are anchored to annual benchmarks that are less timely but typically based on more comprehensive data. In most cases, the annual benchmark is nominal gross output reported by the Census Bureau deflated by a suitable price index.

Annual revisions to the IP and capacity measures involve (1) incorporating new or revised annual benchmark data on output, prices, and value-added proportions; (2) incorporating new monthly or quarterly data that were revised or that arrived too late to be included in the regular six-month reporting window for monthly IP; (3) updating seasonal adjustment factors; and (4) updating the methods and industry structure used to construct the indexes.

Annual Benchmark Data on Output, Prices, and Value-Added Proportions

Output

The annual benchmark output indexes for IP are measures of real gross output at the six-digit NAICS level. The Census Bureau provides annual figures for value added and for the cost of materials for manufacturing industries, which can be summed to obtain nominal gross output. The Census Bureau has not yet published the 2017 Census of Manufactures, so new nominal benchmark data are not available for manufacturing.

New annual data were incorporated for several non-manufacturing industries. The benchmark indexes for metallic and nonmetallic mineral mining were updated with revised 2017 data from the USGS, and the

⁴Unless otherwise noted, rates of capacity utilization are reported for the fourth quarter of the reference year.

benchmark indexes for logging and publishing were advanced through 2017 based on data from the U.S. Forest Service and the U.S. Census Bureau.

Prices

To obtain individual benchmarks of real gross output, the measures of nominal gross output are deflated by annual price deflators. In general, the benchmark industry price deflators consist of price indexes from the Bureau of Economic Analysis (BEA) through 2011 that are extended with the related producer price indexes (PPIs) from the BLS.⁵ However, for a few selected industries, the annual price deflators are constructed by the Federal Reserve.⁶

Value-Added Proportions (Weights for Aggregation)

The IP system is organized as a hierarchical structure where the individual production indexes are combined using a version of the Fisher-ideal index formula to construct broader measures of production. Individual IP measures are combined into more aggregate measures using weights based on the value added from the industry (calculated as gross output less cost of materials). Value-added weights are used to avoid double counting the contributions of upstream producers in the output of their downstream consumers (for example, to avoid double counting the contributions of steel used in automobile production). For IP indexes in manufacturing that are defined at the six-digit (or more aggregate) NAICS level, the value-added weights are derived from either the Economic Census or the Annual Survey of Manufactures. For IP indexes that cover only part of a six-digit NAICS industry, the aggregation weights are constructed by allocating value added (as defined by the Census Bureau) for a six-digit industry across the various components of IP that compose that industry. Data from the Economic Census and the ASM on shipments of different types of products within a six-digit NAICS industry are used to determine the share of an industry's value added that is assigned to each component IP index.

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. For electric utilities, the measures of value added incorporate data from the Energy Information Administration of the U.S. Department of Energy and from the Edison Electric Institute. For gas utilities, the value-added estimates incorporate data from the American Gas Association. The weights for aggregation for mining industries are derived from value-added data from the Economic Census. For the years between the quinquennial Economic Censuses, measures of value added for mining are estimated based on both output and price changes for the industry.

The weights for aggregation expressed as value added per unit were estimated with data on producer prices for the period after 2016.

Revised Quarterly and Monthly Data

This revision incorporated source data on production, shipments, inventories, and production-worker hours 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 of a lag to be included with monthly IP estimates but were available for inclusion in the annual revision. The revised IP indexes include information from the QSPC for 2018 and from other industry reports.

⁵Overall, at the industry level, the BEA and PPI measures are quite similar, as the BEA used weighted product-level PPIs to derive its industry-level shipments deflator.

⁶For selected industries, the Federal Reserve constructs price indexes from alternative sources. These industries include communications equipment (NAICS 3342), computer storage devices (NAICS 334112), semiconductors (NAICS 334413), and pharmaceuticals (NAICS 325412). Updated price indexes for computer storage devices are available on the Board's website at <https://www.federalreserve.gov/releases/g17>.

Revised Seasonal Factors

Seasonal factors for production-worker hours—which adjust for timing, holiday, and monthly seasonal patterns—were updated with data through January 2019. The updated factors for the physical product series, which include adjustments for holiday and workday patterns, used data through December 2018 where available.

Seasonal factors for unit motor vehicle assemblies have been updated, and projections through June 2020 are available on the Board’s website at <https://www.federalreserve.gov/releases/g17/mvsf.htm>. These factors are based on production data through January 2019 and were revised back to January 2014. The seasonal factors explicitly incorporate the holiday schedule for the industry specified in the latest collective bargaining agreements with domestic manufacturers.

Methodological Changes to Individual Production and Capacity Indexes

Consolidation of Production Indexes for Wool Fabrics and for Cotton and Synthetic Fabrics

This revision combines the indexes for wool fabrics (NAICS 31321pt.) and cotton and synthetic fabrics (NAICS 31321pt.) into a consolidated index for broadwoven fabric mills (NAICS 31321).⁷ The individual indexes for both wool fabrics and cotton and for synthetic fabrics used production-worker hours as an indicator of output for the period from 2003 to the present, and the consolidated index relies on production-worker hours. For the period prior to 2003, the monthly index relies on data from other sources (a combination of physical product data and electric power usage).

Change in Source Data for Four Production Indexes

With this revision, four indexes that previously were based on physical product data are now based on production-worker hours. The changes occurred because the issuing organizations discontinued the reports from which the physical product data were derived. The affected indexes include artificial and synthetic fibers and filaments (NAICS 32522); copper refining (NAICS 33141pt.); copper rolling, drawing, extruding, and alloying (NAICS 33142); and office furniture (NAICS 3372). For office furniture, the monthly production index is based on physical product data for the period from 1972 to 2012 and on production-worker hours thereafter. The other three indexes are based on physical product data from 1972 to 2017 and on production-worker hours thereafter.

New Annual Data for Military Aircraft Production Index

The monthly production index for military aircraft (NAICS 336411pt.) is based on production-worker hours for overall aircraft and is influenced by the value of expected and actual annual deliveries for different types of military aircraft for years when benchmark data are not yet available. Prior to this revision, the sources for the value of deliveries were manufacturers’ reports for certain aircraft models. The source data used in this revision also include information on deliveries and prices from Aviation Week that were not used previously.

Changes to Capacity Index for Artificial and Synthetic Fibers and Filaments

With this revision, the capacity index for artificial and synthetic fibers and filaments (NAICS 32522) for the period beginning in 2017 is based on data from the Census Bureau’s Quarterly Survey of Plant Capacity and Utilization. For the period prior to 2017, the capacity index remains based on data for capacity in pounds from the Fiber Economics Bureau.

⁷Industry codes followed by “pt.” indicate that the index covers only part of the entire NAICS code listed.

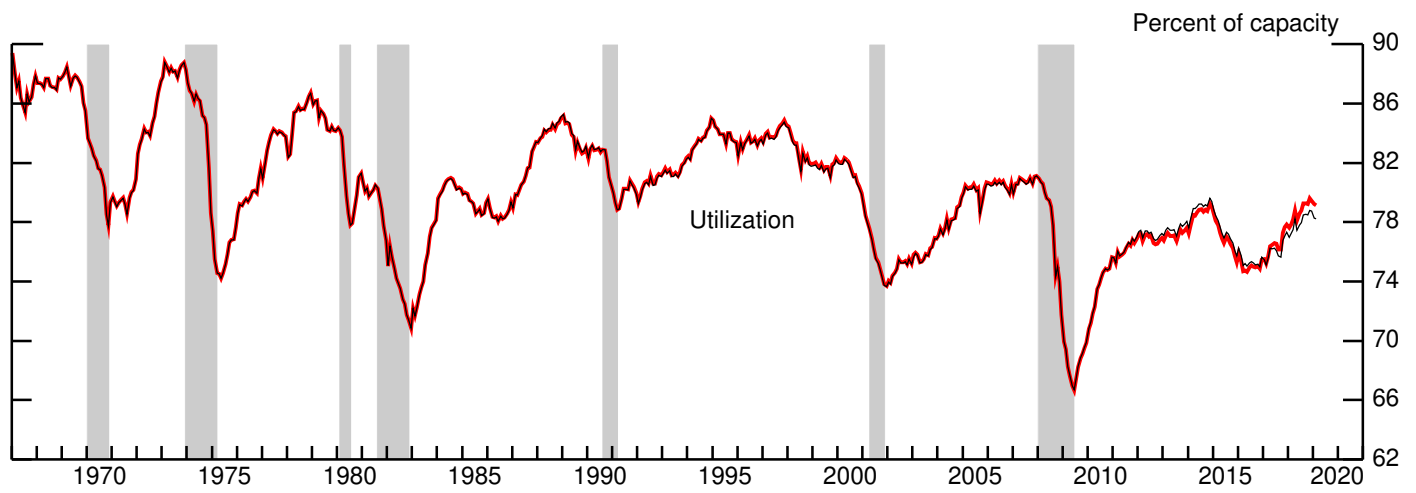
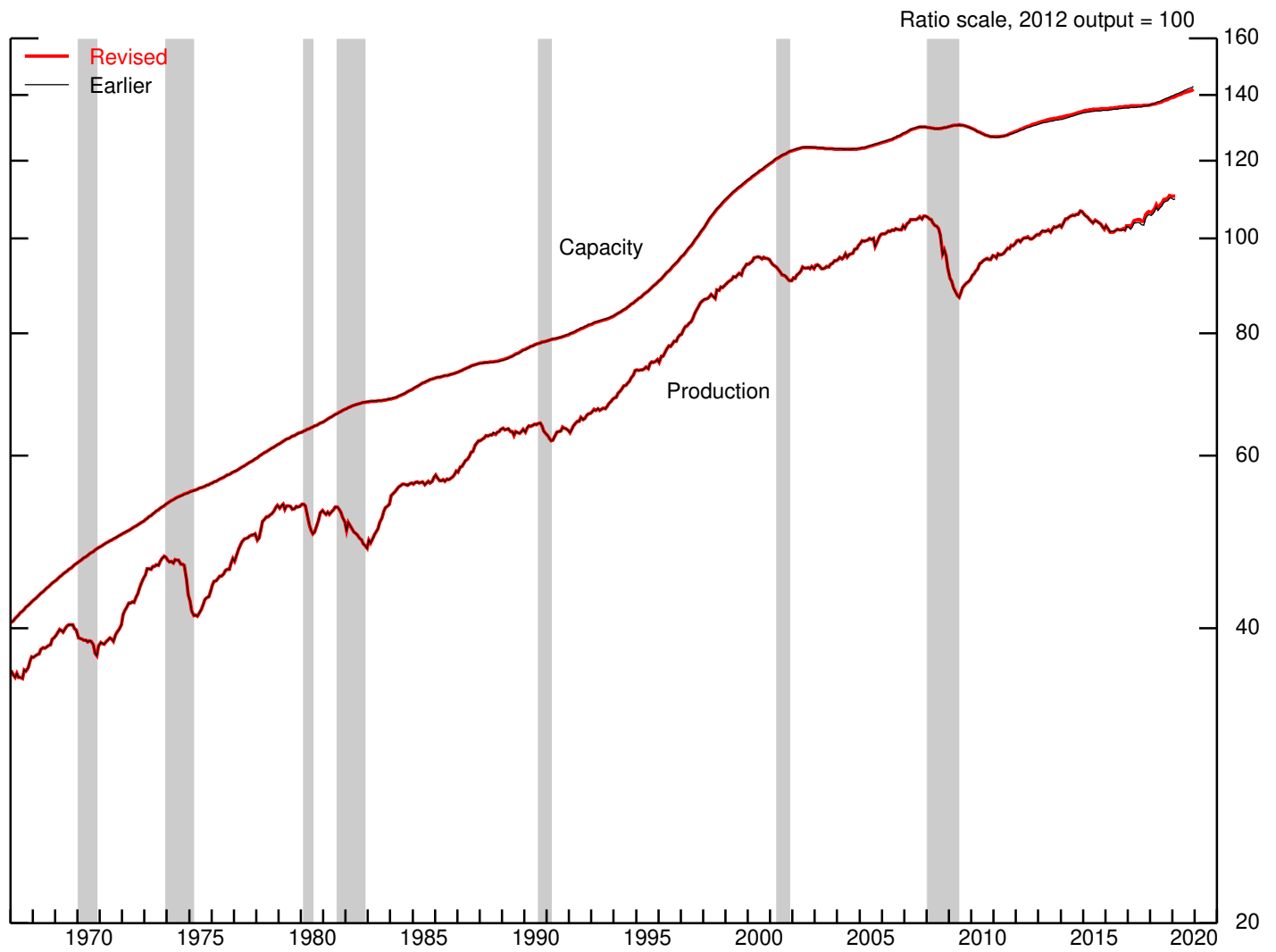
Updated Base Year for Gross Value of Output Measures

This revision updates the base year used in the published measures of gross value of final products and nonindustrial supplies. The measures are now reported in billions of 2012 dollars, which is consistent with the measures reported in the national income and product accounts published by the BEA.

Data Availability and Publication Changes

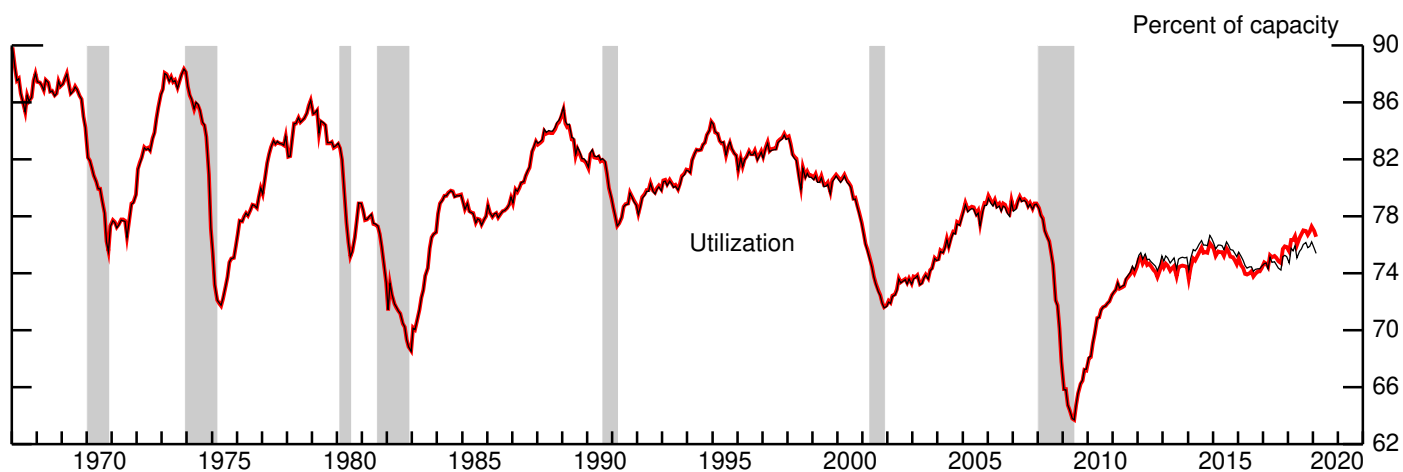
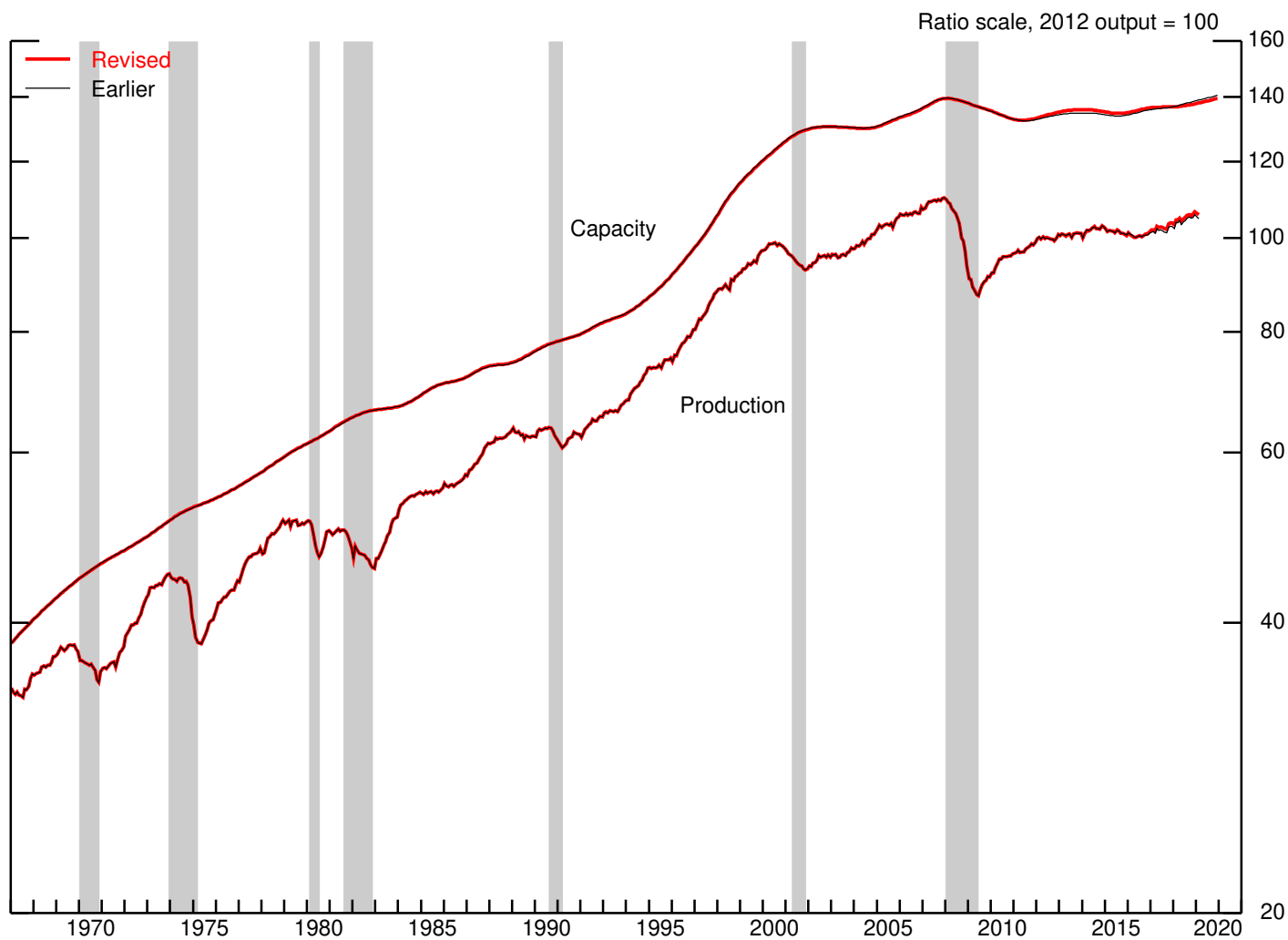
Files containing the revised data and the text and tables from this release are available on the Board's website at <https://www.federalreserve.gov/releases/g17>, as are updated data for the annual revision and for all of the regularly issued series on IP, capacity, and capacity utilization. Other changes are listed on the Board's website at https://www.federalreserve.gov/releases/g17/g17_revision_series.htm.

1. Total industrial production, capacity, and utilization



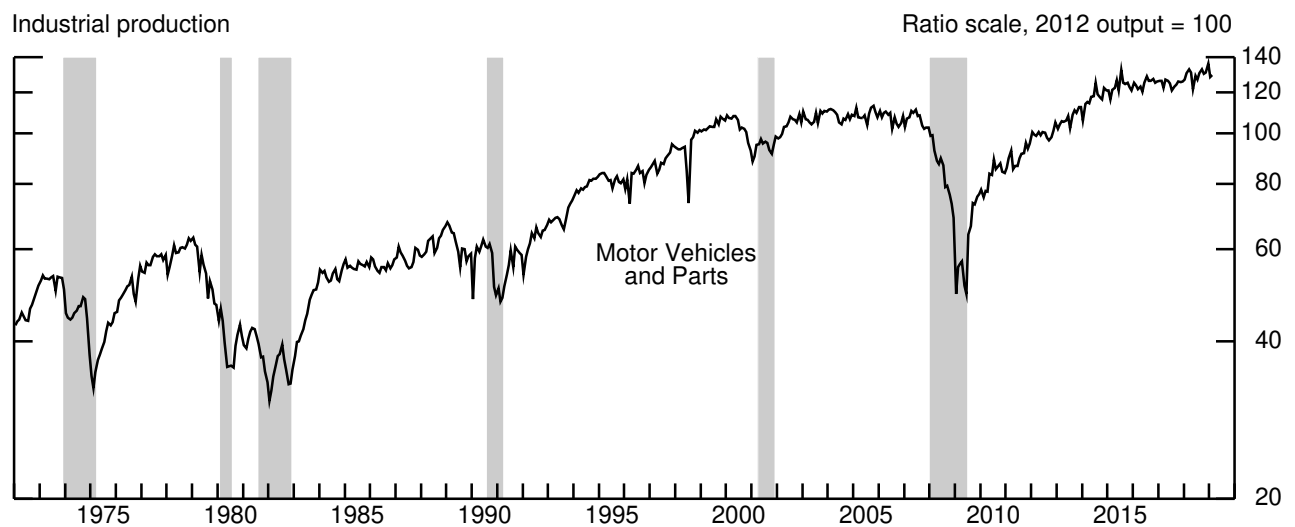
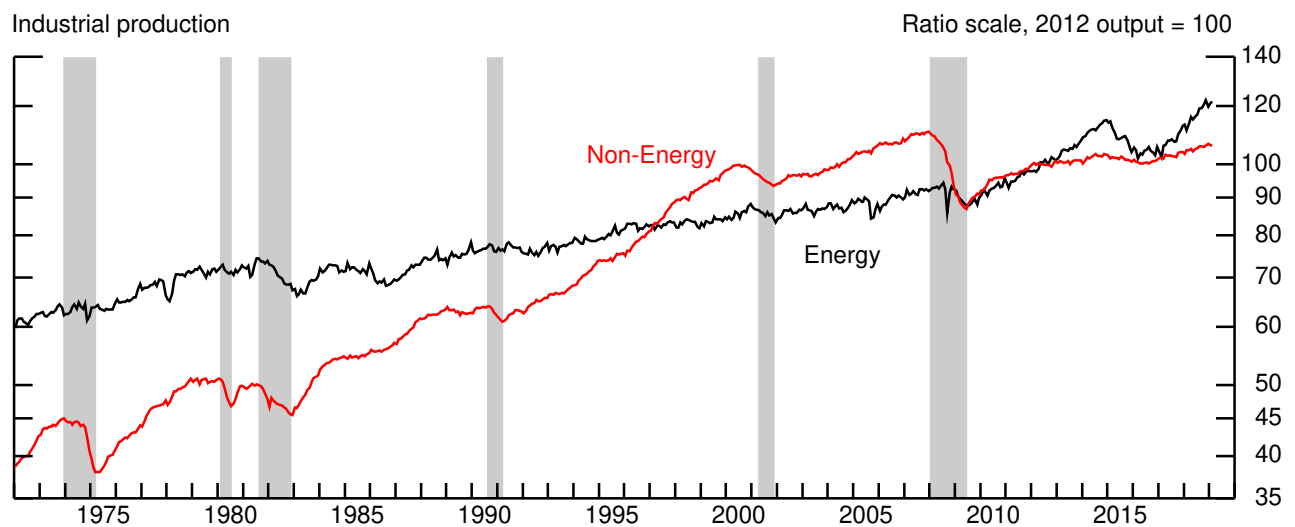
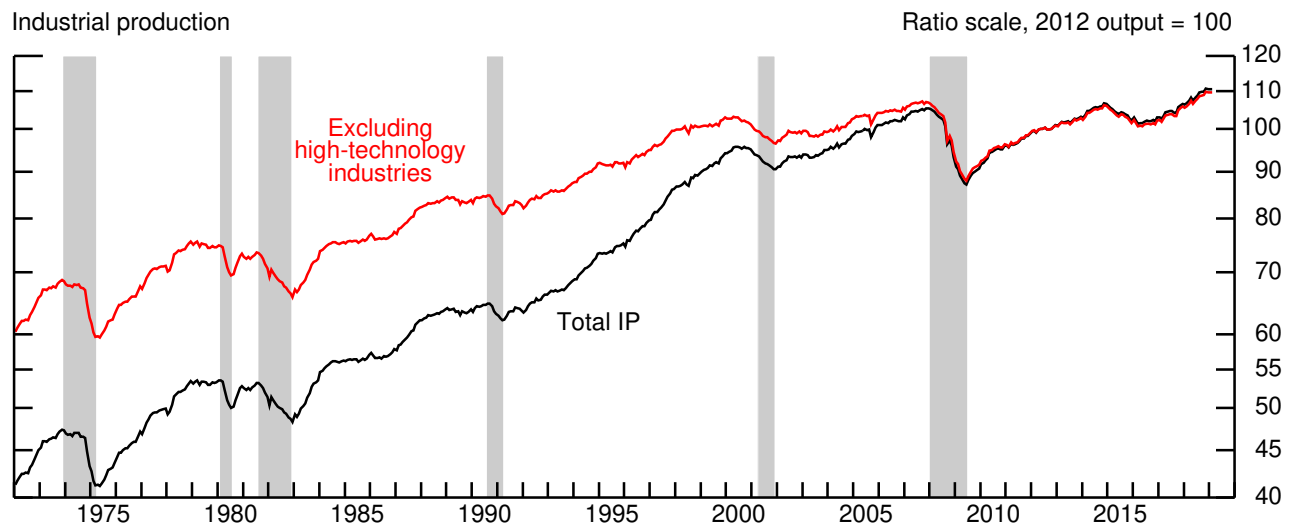
Note: The shaded areas represent periods of business recession as defined by the National Bureau of Economic Research (NBER).

2. Manufacturing industrial production, capacity, and utilization



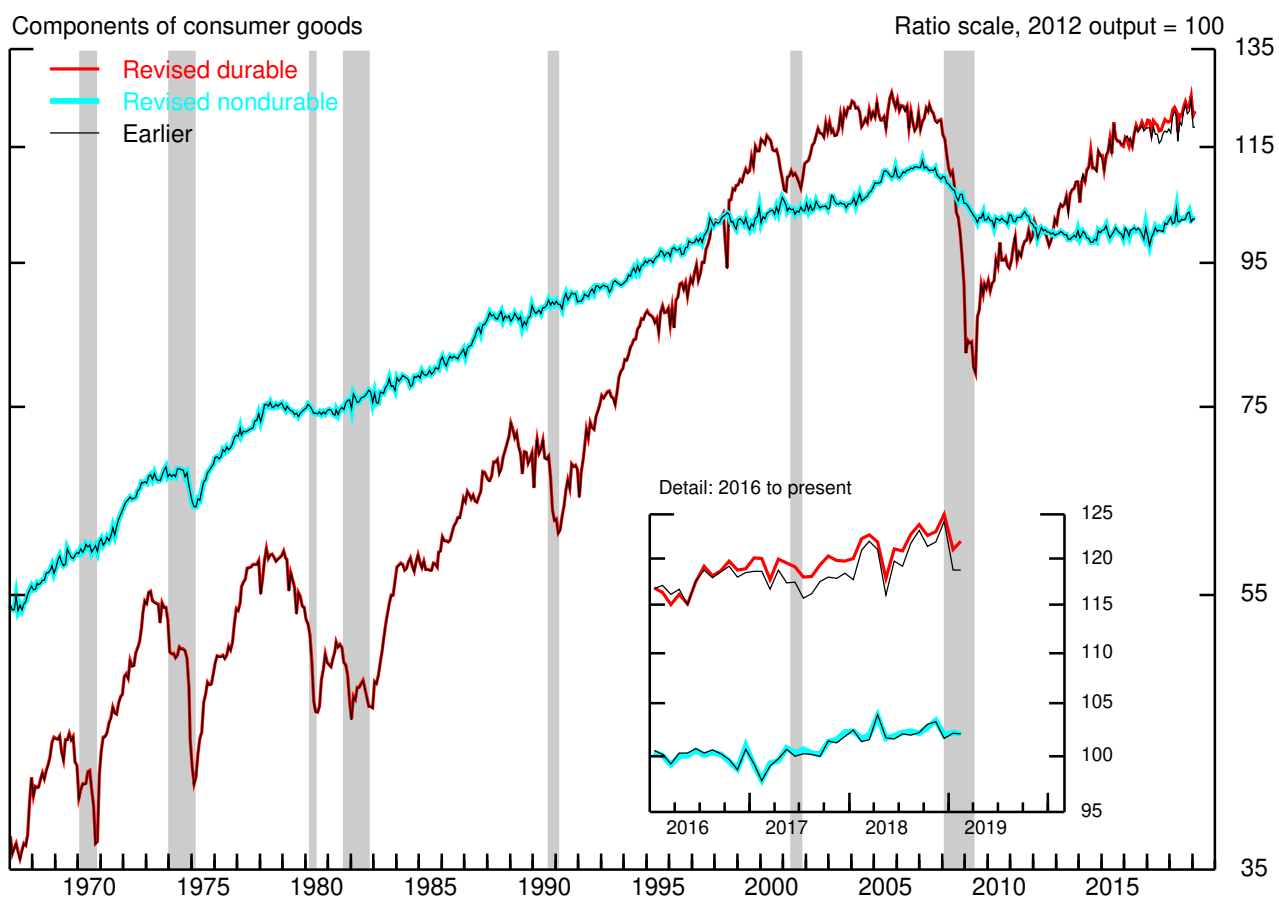
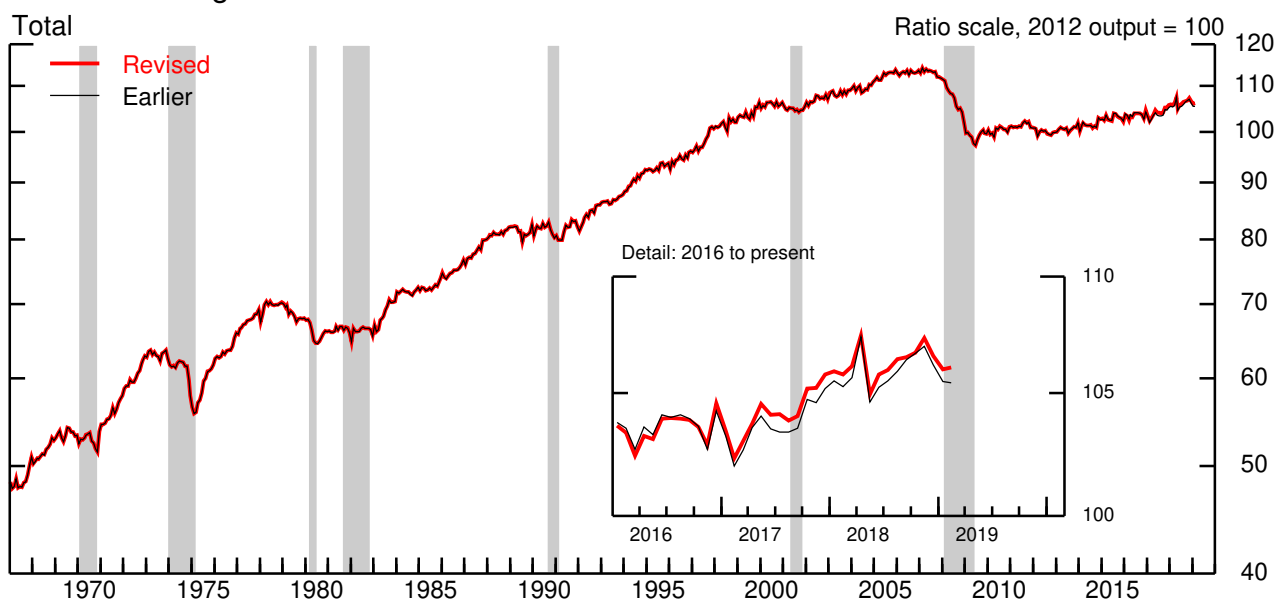
Notes: Manufacturing consists of those industries in the North American Industry Classification System, or NAICS, definition of manufacturing plus those industries--logging and newspaper, periodical, book, and directory publishing--that have traditionally been considered to be manufacturing and included in the industrial sector.
The shaded areas represent periods of business recession as defined by the NBER.

3. Industrial production of selected industries



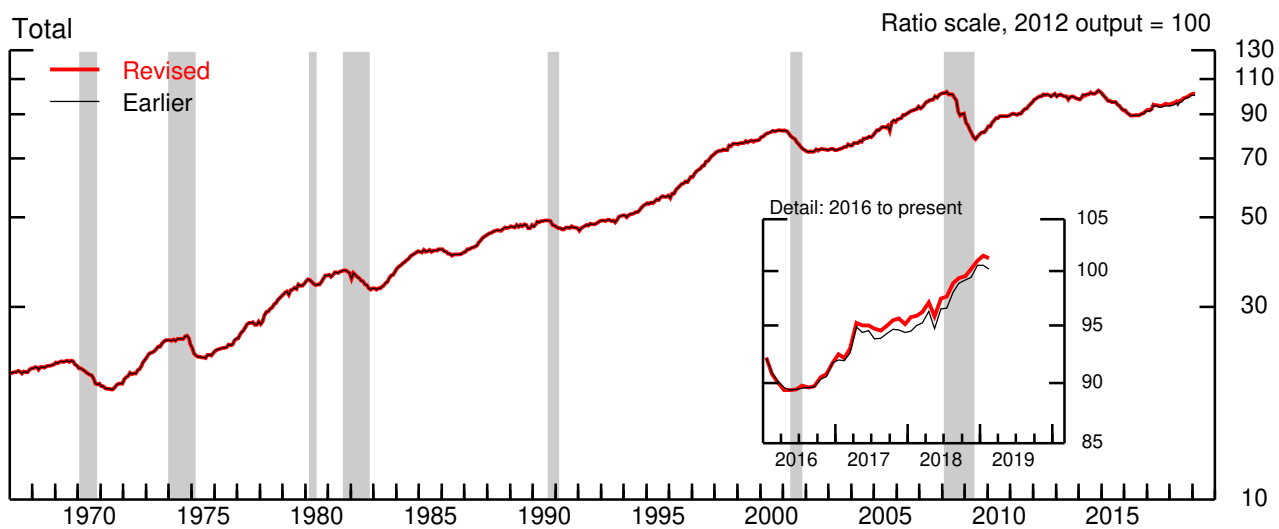
Notes: High-technology industries are defined as semiconductors and related electronic components (NAICS 3344), computers (NAICS 3341), and communications equipment (NAICS 3342).
The shaded areas represent periods of business recession as defined by the NBER.

4. Consumer goods

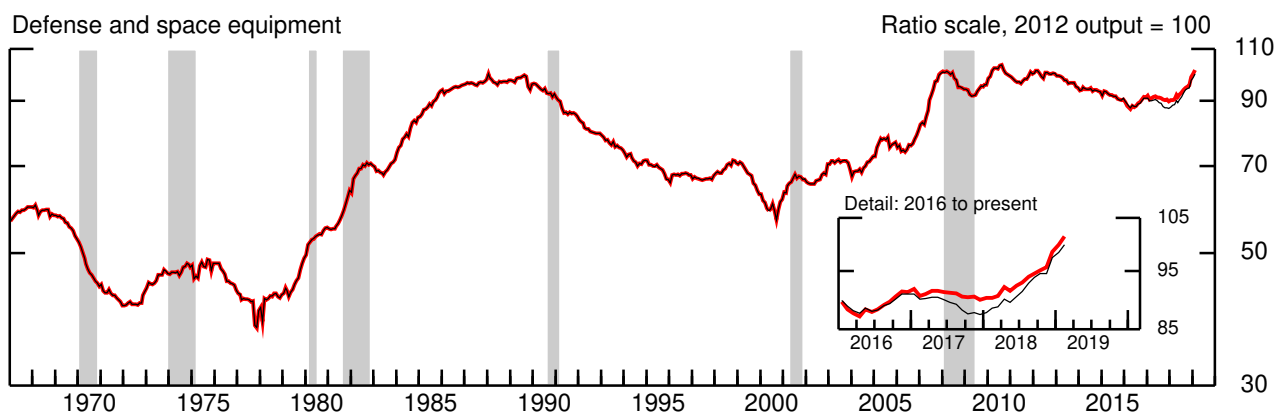
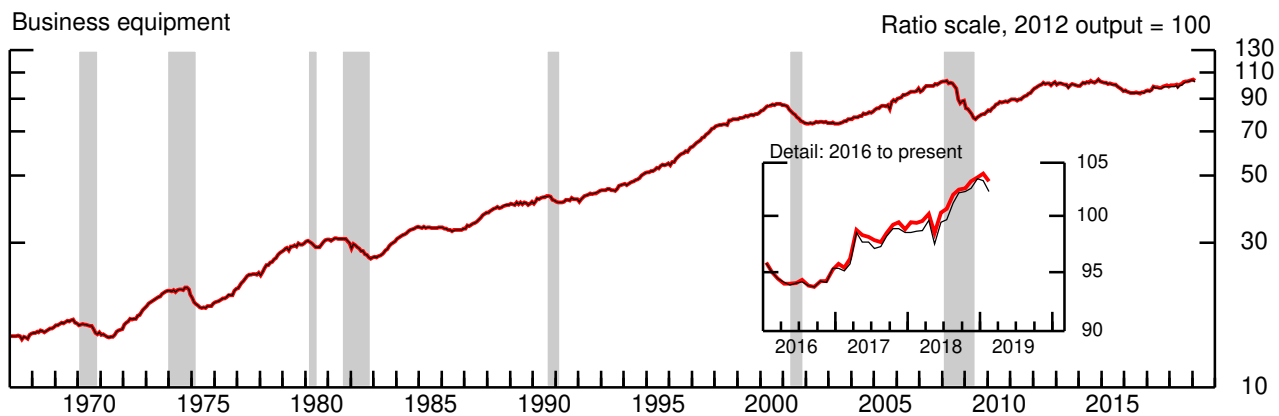


Note: The shaded areas represent periods of business recession as defined by the NBER.

5. Equipment

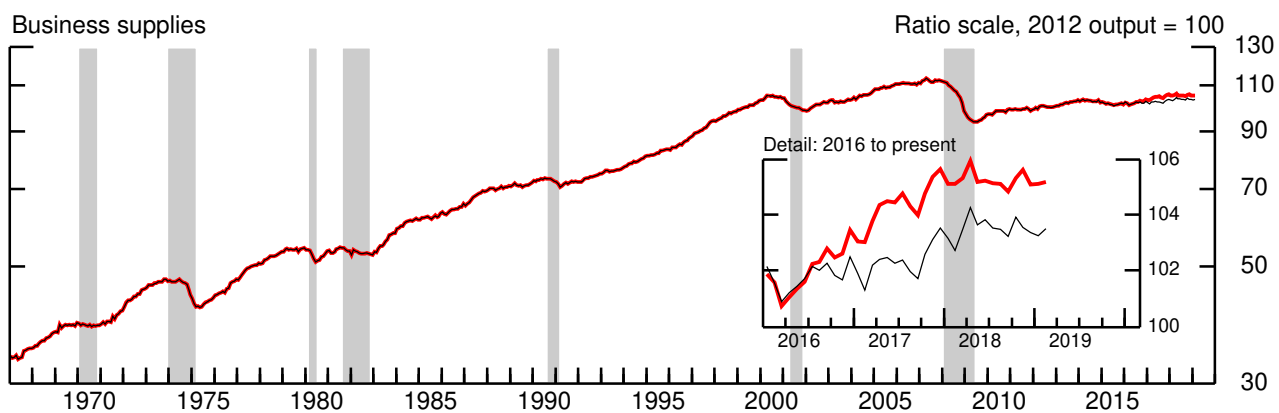
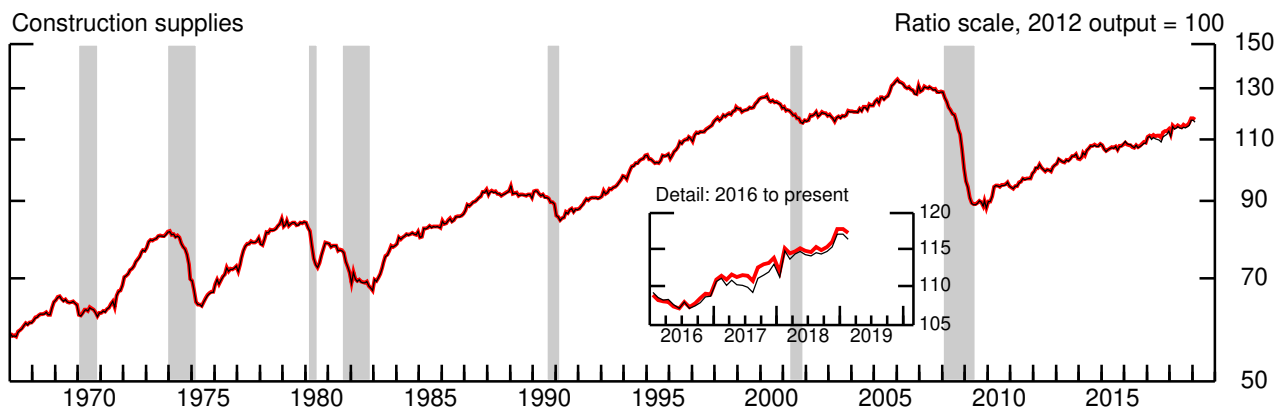
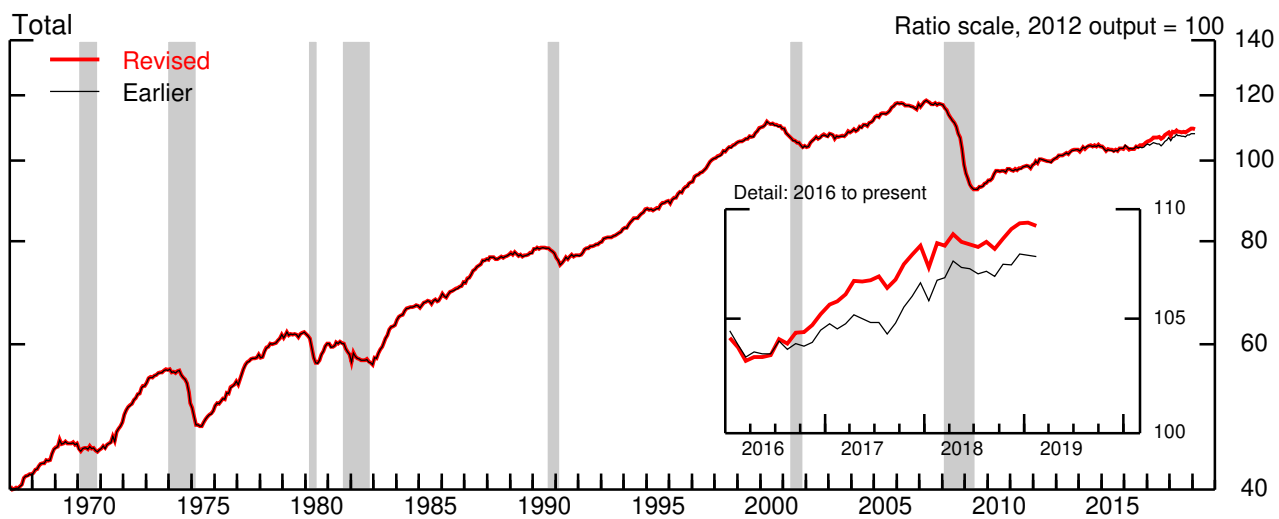


Note: Includes business equipment, defense and space equipment, oil and gas well drilling, and manufactured homes.



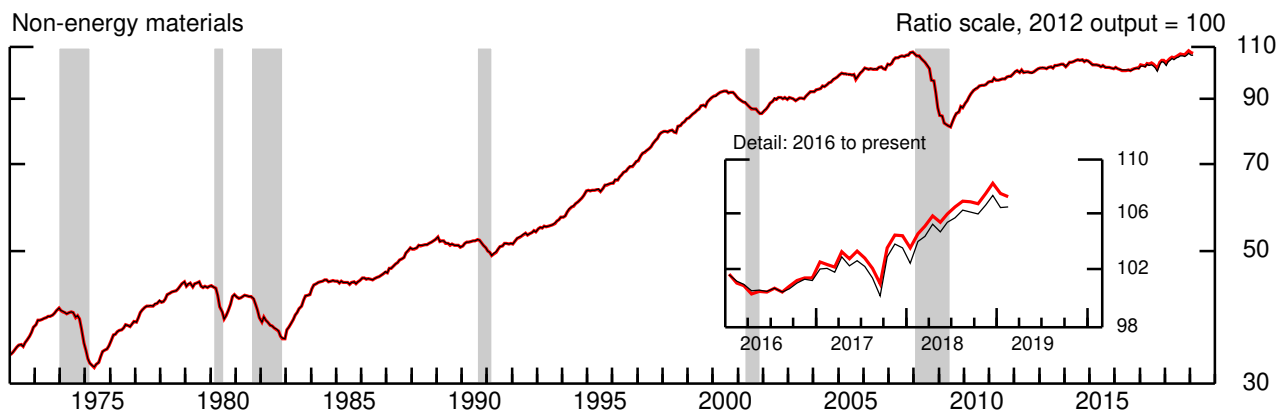
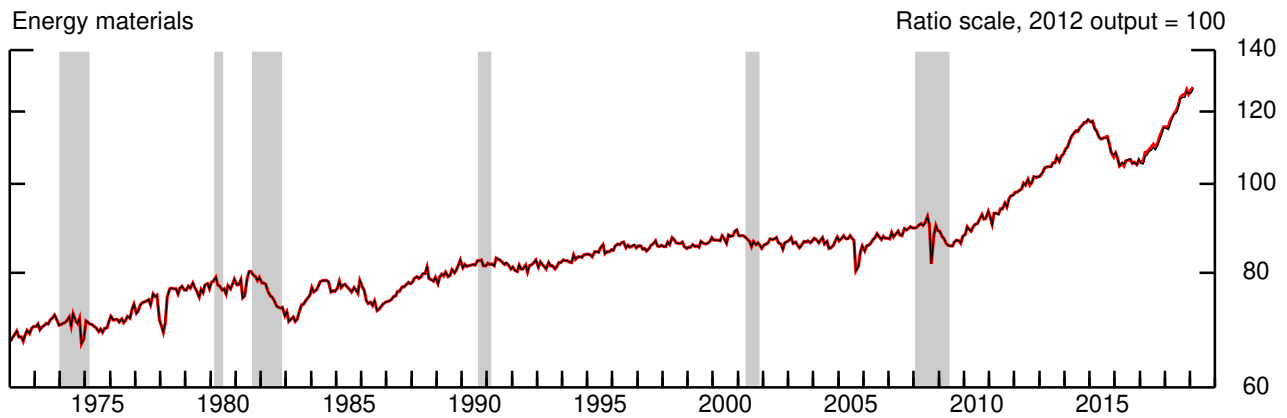
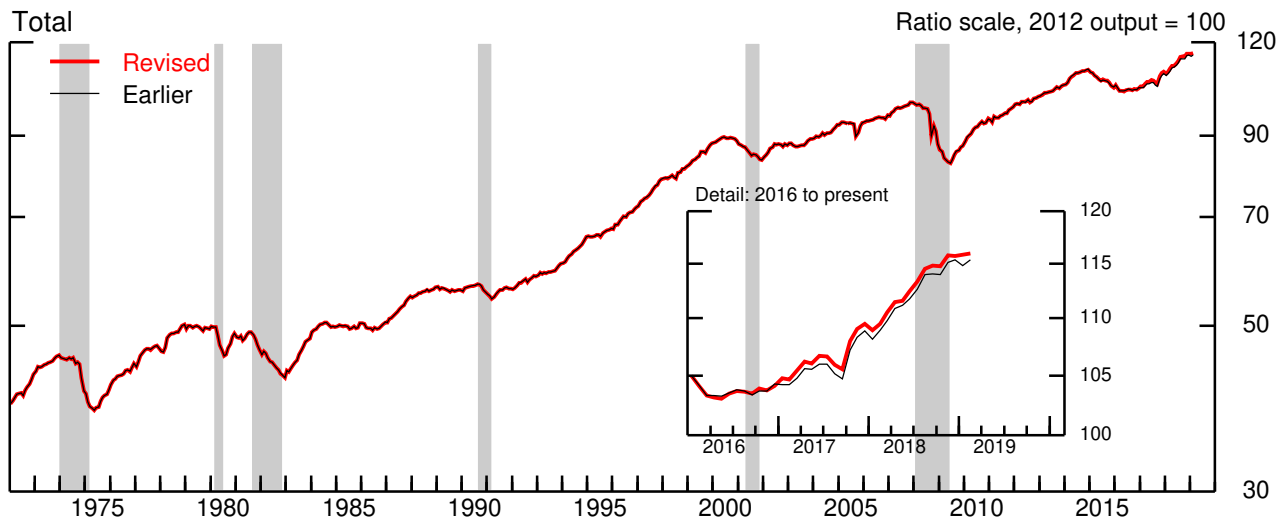
Note: The shaded areas represent periods of business recession as defined by the NBER.

6. Nonindustrial supplies



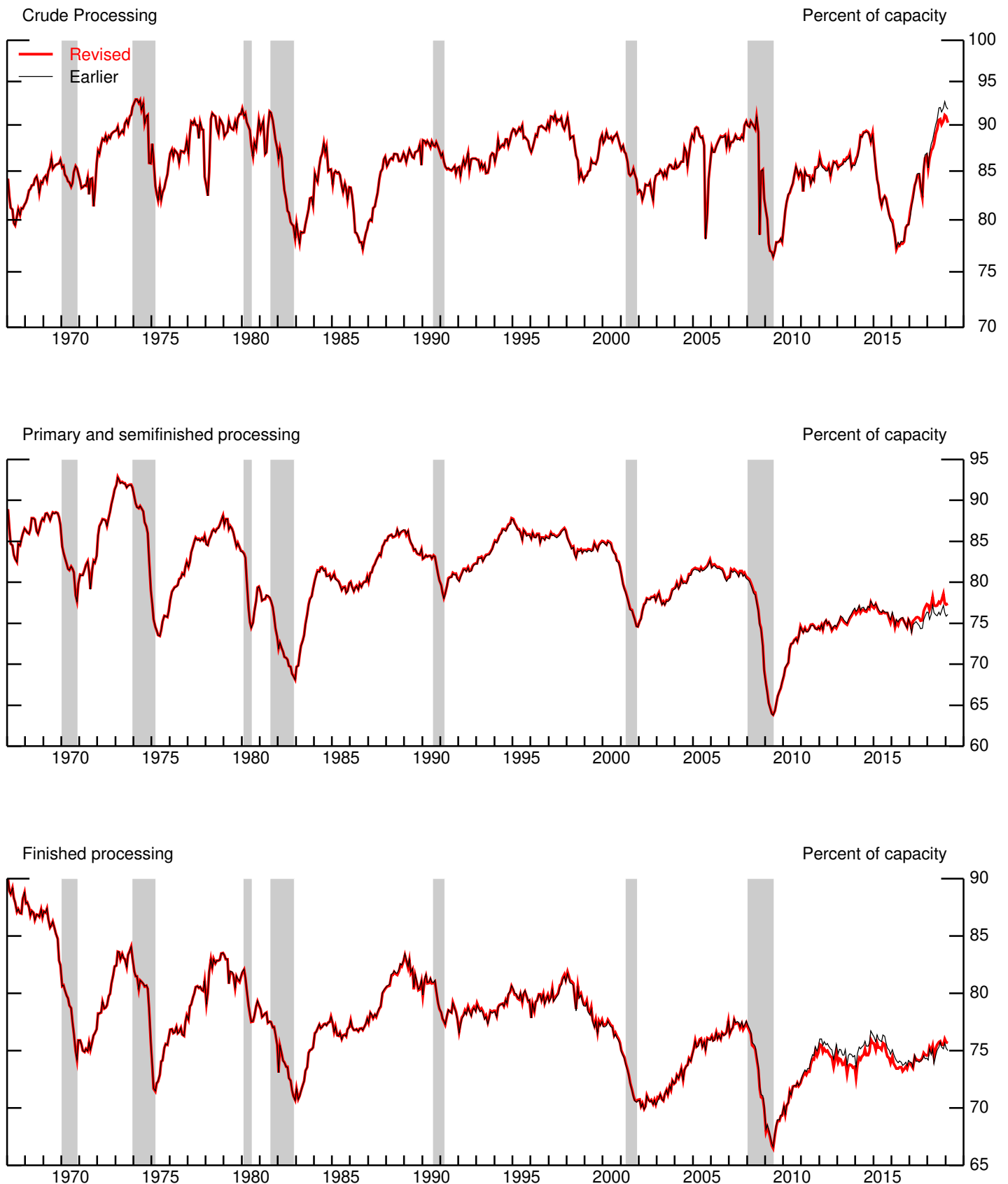
Note: The shaded areas represent periods of business recession as defined by the NBER.

7. Industrial materials



Note: The shaded areas represent periods of business recession as defined by the NBER.

8. Capacity utilization by stage of process



Note: The shaded areas represent periods of business recession as defined by the NBER.

Table 1A
INDUSTRIAL PRODUCTION: Total
Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual ¹
IP (percent change)																	
1989	.3	-.5	.2	.1	-.7	.0	-.9	.9	-.3	-.1	.3	.6	1.8	-1.4	-2.4	1.7	.9
1990	-.7	1.0	.5	-.2	.2	.3	-.1	.3	.1	-.8	-1.2	-.7	2.7	3.0	1.7	-6.1	1.0
1991	-.4	-.7	-.5	.2	1.0	.9	.1	.1	.9	-.2	-.1	-.4	-7.3	2.4	5.8	.9	-1.5
1992	-.6	.7	.8	.8	.3	.0	.9	-.5	.2	.7	.4	.1	-.4	7.3	3.1	4.3	2.9
1993	.4	.4	-.1	.4	-.3	.2	.3	-.1	.5	.8	.4	.5	3.6	.9	1.6	6.2	3.3
1994	.4	.0	1.0	.6	.5	.6	.2	.6	.4	.8	.6	1.1	5.1	7.4	5.2	8.6	5.3
1995	.2	-.2	.1	-.1	.3	.3	-.4	1.3	.4	-.1	.3	.4	4.2	1.3	3.7	3.5	4.6
1996	-.7	1.5	-.1	.9	.7	.8	-.1	.6	.7	-.1	.9	.6	2.7	8.9	5.3	5.7	4.5
1997	.1	1.2	.7	.0	.6	.5	.8	1.0	.9	.9	.9	.3	7.9	5.8	9.5	10.4	7.2
1998	.5	.1	.1	.4	.6	-.6	-.3	2.1	-.2	.8	-.1	.4	4.6	2.7	3.0	5.9	5.8
1999	.5	.5	.2	.3	.7	-.2	.6	.4	-.4	1.3	.5	.8	4.5	3.9	3.6	7.3	4.4
2000	.0	.3	.4	.7	.2	.1	-.2	-.3	.4	-.3	.0	-.3	4.1	4.9	-.4	-.8	3.9
2001	-.6	-.6	-.2	-.3	-.6	-.6	-.6	-.1	-.4	-.4	-.5	.0	-5.2	-5.0	-5.4	-4.1	-3.1
2002	.6	.0	.8	.4	.4	1.0	-.2	.0	.1	-.3	.5	-.5	3.0	6.4	2.4	-.1	.4
2003	.8	.1	-.2	-.7	.0	.2	.4	-.1	.6	.1	.8	-.1	2.5	-3.0	2.7	4.0	1.3
2004	.3	.6	-.5	.5	.8	-.8	.8	.1	.1	1.0	.2	.7	2.8	2.3	2.2	5.8	2.7
2005	.5	.7	-.2	.2	.1	.4	-.3	.3	-1.9	1.3	1.0	.6	5.9	2.0	-1.8	3.9	3.3
2006	.1	.0	.2	.4	-.1	.4	.0	.4	-.2	-.1	-.1	1.0	3.8	2.4	1.5	.9	2.3
2007	-.5	1.0	.2	.7	.0	.0	.0	.2	.4	-.4	.6	.0	3.6	5.0	1.1	1.2	2.5
2008	-.3	-.3	-.2	-.8	-.6	-.2	-.5	-1.5	-4.3	1.0	-1.3	-2.9	-1.5	-5.8	-12.5	-16.0	-3.5
2009	-2.4	-.6	-1.6	-.8	-1.0	-.4	1.1	1.1	.8	.3	.4	.3	-20.6	-10.9	6.1	6.4	-11.5
2010	1.2	.4	.7	.4	1.5	.1	.4	.3	.2	-.3	.0	1.0	8.1	8.1	5.3	1.3	5.5
2011	-.1	-.4	1.0	-.4	.2	.3	.5	.6	.0	.7	-.1	.6	2.3	1.6	4.8	4.0	3.1
2012	.6	.2	-.5	.8	.2	.0	.3	-.5	.0	.2	.5	.4	3.9	2.6	.0	2.1	3.0
2013	-.1	.6	.4	-.2	.1	.2	-.4	.7	.5	-.2	.3	.3	3.2	1.7	1.4	2.8	2.0
2014	-.4	.8	1.0	.0	.4	.4	.2	-.1	.3	.0	.8	-.1	3.1	5.5	2.4	2.7	3.1
2015	-.5	-.5	-.3	-.6	-.4	-.3	.6	-.2	-.4	-.4	-.7	-.6	-3.0	-5.3	-.1	-5.1	-1.0
2016	.8	-.7	-.8	.1	-.1	.4	.3	-.1	.0	.2	-.2	.9	-2.1	-2.3	1.8	1.3	-2.0
2017	.1	-.4	.7	.9	.1	.2	.0	-.5	.0	1.5	.5	.3	2.4	5.6	-.8	7.5	2.3
2018	-.3	.4	.6	.9	-.8	.8	.4	.8	.1	.1	.7	-.1	2.3	4.6	5.2	3.7	3.9
2019	-.1	.0															
IP (2012=100)																	
1989	64.0	63.7	63.9	63.9	63.5	63.5	62.9	63.5	63.3	63.3	63.5	63.8	63.9	63.6	63.2	63.5	63.6
1990	63.4	64.0	64.4	64.3	64.4	64.6	64.5	64.7	64.8	64.3	63.6	63.2	63.9	64.4	64.7	63.7	64.2
1991	62.9	62.4	62.1	62.2	62.9	63.4	63.5	63.6	64.1	64.0	63.9	63.7	62.5	62.8	63.7	63.9	63.2
1992	63.3	63.8	64.3	64.8	65.0	65.0	65.6	65.3	65.4	65.9	66.2	66.3	63.8	65.0	65.5	66.1	65.1
1993	66.6	66.9	66.8	67.0	66.8	66.9	67.1	67.0	67.3	67.9	68.1	68.5	66.7	66.9	67.1	68.2	67.2
1994	68.8	68.8	69.5	69.9	70.2	70.7	70.8	71.2	71.5	72.1	72.5	73.3	69.0	70.3	71.2	72.6	70.8
1995	73.4	73.3	73.4	73.4	73.6	73.9	73.6	74.5	74.8	74.7	74.9	75.2	73.4	73.6	74.3	74.9	74.0
1996	74.7	75.8	75.8	76.5	77.0	77.7	77.6	78.0	78.6	78.5	79.2	79.7	75.4	77.0	78.0	79.1	77.4
1997	79.8	80.8	81.3	81.4	81.8	82.2	82.9	83.7	84.5	85.2	85.9	86.2	80.7	81.8	83.7	85.8	83.0
1998	86.6	86.8	86.8	87.1	87.7	87.1	86.8	88.6	88.5	89.2	89.1	89.4	86.7	87.3	88.0	89.2	87.8
1999	89.9	90.3	90.5	90.7	91.4	91.2	91.8	92.2	91.8	93.0	93.4	94.2	90.2	91.1	91.9	93.5	91.7
2000	94.2	94.5	94.8	95.5	95.6	95.7	95.6	95.3	95.7	95.4	95.4	95.2	94.5	95.6	95.5	95.3	95.2
2001	94.5	93.9	93.7	93.4	92.9	92.3	91.8	91.7	91.3	90.9	90.5	90.5	94.1	92.9	91.6	90.6	92.3
2002	91.1	91.1	91.8	92.2	92.6	93.4	93.2	93.2	93.4	93.1	93.6	93.1	91.3	92.7	93.3	93.3	92.6
2003	93.8	94.0	93.7	93.1	93.1	93.2	93.7	93.5	94.1	94.2	94.9	94.9	93.8	93.1	93.8	94.7	93.8
2004	95.1	95.7	95.2	95.6	96.4	95.6	96.3	96.4	96.5	97.4	97.6	98.3	95.3	95.9	96.4	97.8	96.4
2005	98.8	99.5	99.3	99.5	99.6	100.0	99.7	99.9	98.1	99.3	100.3	100.9	99.2	99.7	99.2	100.2	99.6
2006	101.1	101.1	101.3	101.7	101.6	102.0	101.9	102.3	102.1	102.1	102.0	103.0	101.1	101.7	102.1	102.4	101.8
2007	102.5	103.5	103.8	104.5	104.5	104.6	104.5	104.8	105.2	104.7	105.3	105.3	103.3	104.5	104.8	105.1	104.4
2008	105.1	104.7	104.5	103.7	103.1	102.8	102.3	100.7	96.4	97.3	96.1	93.3	104.7	103.2	99.8	95.5	100.8
2009	91.0	90.5	89.0	88.3	87.4	87.1	88.0	89.0	89.7	90.0	90.3	90.6	90.2	87.6	88.9	90.3	89.2
2010	91.7	92.0	92.6	92.9	94.3	94.4	94.9	95.1	95.4	95.1	95.1	96.1	92.1	93.9	95.1	95.4	94.1
2011	95.9	95.5	96.5	96.1	96.3	96.6	97.1	97.7	97.6	98.3	98.2	98.8	96.0	96.4	97.5	98.5	97.1
2012	99.4	99.6	99.2	99.9	100.1	100.1	100.3	99.9	99.9	100.1	100.6	101.0	99.4	100.0	100.0	100.6	100.0
2013	100.8	101.4	101.8	101.6	101.7	102.0	101.5	102.2	102.7	102.5	102.8	103.2	101.3	101.8	102.1	102.8	102.0
2014	102.7	103.6	104.6	104.6	105.0	105.4	105.6	105.5	105.8	105.8	106.7	106.5	103.6	105.0	105.6	106.3	105.2
2015	106.0	105.4	105.1	104.5	104.1	103.7	104.3	104.2	103.8	103.4	102.7	102.1	105.5	104.1	104.1	102.7	104.1
2016	103.0	102.2	101.4	101.5	101.4	101.9	102.1	102.0	102.0	102.2	102.1	102.9	102.2	101.6	102.1	102.4	102.1
2017	103.0	102.6	103.3	104.3	104.4	104.6	104.5	104.0	104.1	105.6	106.2	106.5	103.0	104.4	104.2	106.1	104.4
2018	106.3	106.6	107.3	108.2	107.4	108.2	108.7	109.5	109.7	109.8	110.6	110.5	106.7	107.9	109.3	110.3	108.6
2019	110.4	110.5															

NOTE: Estimates from October 2018 through February 2019 are subject to further revision in the upcoming monthly releases.

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

Table 1B
CAPACITY AND UTILIZATION: Total
Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual
Capacity <i>(percent of 2012 output)</i>																	
1989	75.2	75.3	75.4	75.5	75.7	75.8	76.0	76.2	76.4	76.5	76.7	76.9	75.3	75.7	76.2	76.7	76.0
1990	77.1	77.2	77.4	77.6	77.7	77.9	78.0	78.1	78.2	78.3	78.5	78.5	77.2	77.7	78.1	78.4	77.9
1991	78.6	78.7	78.8	78.9	79.0	79.1	79.1	79.2	79.3	79.4	79.6	79.7	78.7	79.0	79.2	79.6	79.1
1992	79.8	80.0	80.2	80.3	80.5	80.7	80.8	81.0	81.2	81.3	81.5	81.6	80.0	80.5	81.0	81.5	80.8
1993	81.8	81.9	82.0	82.1	82.3	82.4	82.5	82.6	82.7	82.9	83.1	83.2	81.9	82.3	82.6	83.1	82.5
1994	83.4	83.6	83.8	84.0	84.3	84.5	84.8	85.1	85.4	85.6	85.9	86.2	83.6	84.3	85.1	85.9	84.7
1995	86.5	86.8	87.1	87.4	87.7	88.0	88.4	88.7	89.0	89.4	89.8	90.1	86.8	87.7	88.7	89.8	88.2
1996	90.5	90.9	91.3	91.8	92.2	92.6	93.0	93.5	93.9	94.4	94.8	95.3	90.9	92.2	93.5	94.8	92.9
1997	95.7	96.2	96.7	97.2	97.7	98.3	98.8	99.4	100.0	100.6	101.3	101.9	96.2	97.7	99.4	101.3	98.7
1998	102.6	103.3	103.9	104.6	105.3	105.9	106.5	107.1	107.6	108.2	108.7	109.2	103.3	105.2	107.1	108.7	106.1
1999	109.7	110.1	110.6	111.1	111.5	111.9	112.3	112.8	113.2	113.6	114.0	114.4	110.1	111.5	112.7	114.0	112.1
2000	114.8	115.2	115.6	116.0	116.3	116.7	117.1	117.5	117.9	118.3	118.6	119.0	115.2	116.3	117.5	118.6	116.9
2001	119.4	119.8	120.1	120.5	120.8	121.1	121.4	121.7	122.0	122.3	122.6	122.8	119.7	120.8	121.7	122.6	121.2
2002	123.0	123.2	123.4	123.5	123.6	123.7	123.8	123.8	123.8	123.8	123.8	123.8	123.2	123.6	123.8	123.8	123.6
2003	123.8	123.7	123.7	123.6	123.6	123.5	123.5	123.4	123.4	123.4	123.4	123.4	123.7	123.6	123.5	123.4	123.5
2004	123.3	123.3	123.3	123.3	123.3	123.2	123.2	123.2	123.3	123.3	123.3	123.4	123.3	123.3	123.2	123.3	123.3
2005	123.5	123.6	123.7	123.8	124.0	124.1	124.3	124.5	124.6	124.8	125.0	125.1	123.6	124.0	124.5	125.0	124.3
2006	125.3	125.5	125.6	125.8	126.0	126.2	126.4	126.7	126.9	127.2	127.5	127.8	125.5	126.0	126.7	127.5	126.4
2007	128.1	128.4	128.7	129.0	129.2	129.5	129.6	129.8	129.9	129.9	129.9	129.9	128.4	129.2	129.8	129.9	129.3
2008	129.8	129.7	129.6	129.5	129.5	129.4	129.4	129.5	129.6	129.7	129.8	130.0	129.7	129.5	129.5	129.8	129.6
2009	130.1	130.3	130.4	130.5	130.5	130.6	130.5	130.5	130.3	130.2	130.0	129.7	130.3	130.5	130.4	129.9	130.3
2010	129.5	129.2	128.9	128.6	128.3	128.0	127.8	127.5	127.4	127.2	127.1	127.0	129.2	128.3	127.6	127.1	128.0
2011	126.9	126.9	127.0	127.0	127.1	127.2	127.4	127.6	127.8	128.0	128.2	128.5	126.9	127.1	127.6	128.2	127.5
2012	128.7	129.0	129.2	129.5	129.7	129.9	130.1	130.4	130.6	130.8	131.0	131.2	129.0	129.7	130.4	131.0	130.0
2013	131.4	131.6	131.7	131.9	132.1	132.2	132.3	132.4	132.6	132.7	132.8	132.9	131.6	132.1	132.4	132.8	132.2
2014	133.0	133.1	133.3	133.4	133.5	133.7	133.9	134.1	134.3	134.4	134.6	134.8	133.1	133.5	134.1	134.6	133.8
2015	134.9	135.0	135.2	135.3	135.3	135.4	135.5	135.5	135.5	135.6	135.6	135.6	135.0	135.3	135.5	135.6	135.4
2016	135.7	135.7	135.8	135.8	135.9	136.0	136.0	136.1	136.2	136.3	136.3	136.4	135.7	135.9	136.1	136.3	136.0
2017	136.4	136.5	136.5	136.5	136.6	136.6	136.6	136.6	136.7	136.7	136.8	136.8	136.5	136.6	136.6	136.8	136.6
2018	136.9	137.0	137.2	137.3	137.5	137.7	137.9	138.1	138.4	138.6	138.9	139.1	137.0	137.5	138.2	138.9	137.9
2019	139.4	139.6															
Utilization <i>(percent)</i>																	
1989	85.1	84.6	84.7	84.6	83.9	83.7	82.8	83.4	82.9	82.6	82.7	83.0	84.8	84.1	83.0	82.8	83.7
1990	82.3	82.9	83.1	82.9	82.9	83.0	82.7	82.9	82.8	82.1	81.0	80.4	82.8	82.9	82.8	81.2	82.4
1991	80.0	79.3	78.8	78.9	79.6	80.2	80.2	80.2	80.8	80.6	80.4	79.9	79.4	79.6	80.4	80.3	79.9
1992	79.3	79.7	80.2	80.7	80.8	80.6	81.2	80.6	80.6	81.1	81.2	81.2	79.8	80.7	80.8	81.2	80.6
1993	81.4	81.6	81.4	81.6	81.2	81.2	81.3	81.1	81.4	81.9	82.0	82.3	81.5	81.3	81.3	82.1	81.5
1994	82.4	82.3	82.9	83.1	83.3	83.6	83.5	83.7	83.7	84.2	84.4	85.0	82.5	83.4	83.6	84.5	83.5
1995	84.9	84.4	84.3	83.9	83.9	83.9	83.3	84.0	84.0	83.6	83.4	83.4	84.5	83.9	83.8	83.5	83.9
1996	82.5	83.4	82.9	83.3	83.5	83.9	83.4	83.5	83.6	83.2	83.5	83.7	82.9	83.6	83.5	83.5	83.4
1997	83.4	84.0	84.1	83.7	83.7	83.7	83.9	84.2	84.5	84.7	84.9	84.6	83.8	83.7	84.2	84.7	84.1
1998	84.5	84.0	83.5	83.3	83.3	82.3	81.5	82.8	82.2	82.4	82.0	81.9	84.0	83.0	82.2	82.1	82.8
1999	81.9	82.0	81.8	81.7	81.9	81.5	81.7	81.7	81.1	81.9	82.0	82.3	81.9	81.7	81.5	82.1	81.8
2000	82.1	82.0	82.0	82.3	82.2	82.0	81.6	81.1	81.2	80.7	80.4	80.0	82.0	82.2	81.3	80.4	81.5
2001	79.2	78.4	78.0	77.6	76.9	76.2	75.6	75.3	74.8	74.3	73.8	73.7	78.6	76.9	75.2	74.0	76.2
2002	74.0	73.9	74.4	74.6	74.9	75.5	75.3	75.3	75.4	75.2	75.6	75.2	74.1	75.0	75.3	75.3	74.9
2003	75.8	75.9	75.8	75.3	75.3	75.5	75.8	75.8	76.2	76.3	76.9	76.9	75.9	75.4	75.9	76.7	76.0
2004	77.1	77.6	77.2	77.6	78.2	77.6	78.2	78.2	78.3	79.0	79.1	79.7	77.3	77.8	78.2	79.3	78.2
2005	80.0	80.5	80.3	80.3	80.3	80.5	80.2	80.3	78.7	79.6	80.3	80.7	80.2	80.4	79.7	80.2	80.1
2006	80.7	80.6	80.6	80.8	80.6	80.8	80.6	80.8	80.5	80.2	80.0	80.6	80.6	80.7	80.6	80.3	80.6
2007	80.0	80.6	80.6	81.0	80.9	80.8	80.6	80.7	81.0	80.6	81.1	81.1	80.4	80.9	80.8	80.9	80.8
2008	80.9	80.7	80.6	80.0	79.6	79.5	79.0	77.8	74.4	75.0	74.0	71.7	80.8	79.7	77.1	73.6	77.8
2009	70.0	69.4	68.3	67.7	67.0	66.7	67.4	68.2	68.8	69.1	69.5	69.9	69.2	67.1	68.2	69.5	68.5
2010	70.8	71.2	71.8	72.3	73.5	73.8	74.2	74.6	74.9	74.8	74.9	75.6	71.3	73.2	74.6	75.1	73.5
2011	75.6	75.3	76.0	75.7	75.8	75.9	76.2	76.6	76.4	76.8	76.6	76.9	75.6	75.8	76.4	76.8	76.1
2012	77.2	77.2	76.7	77.2	77.2	77.0	77.1	76.6	76.5	76.6	76.8	77.0	77.1	77.1	76.7	76.8	76.9
2013	76.7	77.1	77.3	77.1	77.0	77.1	76.7	77.2	77.5	77.3	77.4	77.6	77.0	77.1	77.1	77.5	77.2
2014	77.2	77.8	78.5	78.4	78.6	78.8	78.9	78.7	78.8	78.7	79.2	79.0	77.8	78.6	78.8	79.0	78.6
2015	78.6	78.1	77.8	77.3	76.9	76.6	77.0	76.9	76.6	76.3	75.7	75.3	78.1	76.9	76.8	75.8	76.9
2016	75.9	75.3	74.7	74.7	74.6	74.9	75.1	75.0	74.9	75.0	74.9	75.5	75.3	74.8	75.0	75.1	75.0
2017	75.5	75.2	75.7	76.4	76.5	76.6	76.5	76.2	76.1	77.3	77.6	77.9	75.5	76.5	76.3	77.6	76.5
2018	77.6	77.8	78.2	78.8	78.1	78.6	78.8	79.3	79.3	79.2	79.6	79.4	77.9	78.5	79.1	79.4	78.7
2019	79.2	79.1															

NOTE: Estimates from October 2018 through February 2019 are subject to further revision in the upcoming monthly releases.

Table 2

RATES OF CHANGE IN INDUSTRIAL PRODUCTION, MARKET AND INDUSTRY GROUP SUMMARY: 2014–18¹

Item		Revised change (percent)					Difference between revised and earlier changes (percentage points)				
		2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Total IP		3.4	-3.4	-.3	3.6	3.9	.0	-.1	.2	.6	-.2
MARKET GROUPS											
Final products and nonindustrial supplies		1.7	-2.3	.3	2.7	2.1	.0	-.1	.3	.7	-.3
Consumer goods		.9	.4	1.0	1.7	1.4	.0	-.1	.2	.4	-.3
Durable		4.3	2.4	3.1	.7	3.0	.2	-.2	.6	1.1	-.8
Automotive products		6.8	3.8	4.9	.6	3.5	.3	-.1	.7	1.2	-.9
Home electronics		-.1	4.9	.8	1.3	5.4	-.8	.5	-1.3	-3.7	-.4
Appliances, furniture, carpeting		3.8	3.1	.8	-.5	-1.7	.1	-.3	.5	1.6	-1.1
Miscellaneous goods		1.2	-.1	1.5	1.4	4.0	.1	-.2	.6	1.2	-.5
Nondurable		.0	-.1	.4	1.9	.9	.0	-.1	.1	.1	-.2
Non-energy		1.3	.7	-.7	1.6	-.3	.0	-.1	.2	.0	-.4
Foods and tobacco		.4	1.7	.3	2.5	-.3	.0	.0	.1	-.7	-.4
Clothing		-3.3	-6.1	-2.2	-10.5	-5.6	.1	-.1	.5	-.7	-.6
Chemical products		4.7	-.4	-1.6	2.1	1.1	-.1	-.1	.3	1.3	-.1
Paper products		-3.5	-.7	-3.4	-4.5	-6.0	-.1	-1.7	.5	-.2	-1.2
Energy		-4.2	-3.2	4.4	3.0	4.7	.0	.0	-.1	.5	.4
Business equipment		3.5	-6.2	-2.1	4.8	4.0	.0	.0	.1	.4	-.1
Transit		11.8	-2.8	-6.4	.2	3.9	.1	.1	-.3	-.5	-.2
Information processing		.2	-1.9	3.9	4.1	3.7	.1	-.2	.6	1.0	-.4
Industrial and other		1.0	-9.7	-2.3	7.6	4.3	-.1	-.1	.1	.6	.1
Defense and space equipment		-2.0	-3.4	.8	-.8	6.8	.0	-.3	.7	2.5	-2.2
Construction supplies		3.7	-.1	.8	4.1	2.7	.1	-.1	.3	.7	-.4
Business supplies		-.2	-1.1	1.4	2.3	.1	.1	-.1	.9	1.3	-.4
Materials		5.2	-4.6	-1.0	4.8	6.0	.0	.0	.1	.6	-.1
Non-energy		1.4	-2.8	.0	2.7	3.2	.0	-.1	.2	.5	.1
Durable		3.0	-4.0	-.7	2.7	3.9	.0	.0	.1	.5	.3
Consumer parts		5.1	-2.0	-.2	.7	3.8	.0	-.1	.0	.1	-.3
Equipment parts		4.2	-5.9	.2	1.8	5.9	-.1	.1	-.1	1.0	1.2
Other		1.6	-3.4	-1.4	4.0	2.7	.0	.0	.2	.5	-.1
Nondurable		-1.2	-.9	1.0	2.7	2.3	.0	-.1	.4	.5	-.1
Textile		-3.2	-7.6	1.2	-1.3	5.5	-.1	-.2	.7	1.8	1.1
Paper		-.8	-2.2	.4	-3.6	-.4	.1	-.1	.3	-.1	-.1
Chemical		-2.8	-.5	.6	4.9	4.4	.0	-.2	.4	.7	-.1
Energy		9.5	-7.2	-2.9	8.2	10.1	.0	.0	-.1	.9	-.5
INDUSTRY GROUPS											
Manufacturing²		1.4	-1.7	.3	2.5	2.2	.0	-.1	.3	.6	-.2
Manufacturing (NAICS)	31–33	1.6	-1.7	.3	2.7	2.5	.0	-.1	.2	.5	-.1
Durable manufacturing		2.8	-3.4	-.1	2.6	4.2	.0	-.1	.2	.7	-.1
Wood products	321	4.0	3.2	4.7	5.4	-.9	.1	-.1	.5	1.6	-.4
Nonmetallic mineral products	327	2.8	1.8	.0	5.3	1.4	.1	-.2	.4	.1	-.9
Primary metals	331	-1.1	-8.2	-4.1	4.4	6.4	-.1	.0	-.1	-.1	.7
Fabricated metal products	332	.1	-5.2	-1.6	3.0	4.8	.0	-.1	.2	-.1	-.5
Machinery	333	1.7	-12.5	-2.3	9.3	5.8	-.1	-.1	.0	.3	.0
Computer and electronic products	334	4.2	-1.1	5.1	3.5	4.6	.0	-.2	.6	.9	-.3
Electrical equip., appliances, and components	335	1.7	-.9	-.2	.0	3.6	.0	.1	-.1	-.5	.6
Motor vehicles and parts	3361–3	7.4	2.7	2.5	-.3	5.5	.3	-.1	.3	.9	.0
Aerospace and miscellaneous transportation equipment	3364–9	5.7	-5.1	-3.2	-.9	2.9	-.1	.1	-.1	1.6	-.6
Furniture and related products	337	4.6	3.8	-.4	-1.7	1.5	.0	-.1	.2	1.7	-.6
Miscellaneous	339	-1.2	-.6	-1.3	-1.2	2.1	.1	-.1	.4	2.2	.6
Nondurable manufacturing		.2	.3	.8	2.7	.8	.0	.0	.2	.3	-.2
Food, beverage, and tobacco products	311,2	.8	1.8	.8	3.1	.1	.0	.0	.1	-.4	-.2
Textile and product mills	313,4	1.5	-7.3	.9	.2	.7	-.1	-.2	.7	1.9	-.1
Apparel and leather	315,6	-3.0	-6.1	-1.9	-10.0	-5.7	.1	-.1	.5	-.6	-.7
Paper	322	.8	-2.4	1.1	-2.6	.0	.1	-.1	.2	-.3	.0
Printing and support	323	-4.0	1.7	1.7	-1.3	-3.2	.0	-.2	.5	.7	-1.3
Petroleum and coal products	324	-6.3	3.3	4.2	2.7	-1.1	.0	-.1	.4	.1	-.8
Chemicals	325	.7	-.9	-.2	4.3	3.0	.0	-.1	.4	1.0	.0
Plastics and rubber products	326	4.5	.8	1.3	2.8	.0	.0	.1	-.2	.8	.2
Other manufacturing (non-NAICS)	1133,5111	-5.0	-1.2	-1.5	-3.5	-10.5	.4	-1.3	3.6	3.5	-2.3
Mining	21	12.6	-10.1	-6.2	11.3	13.7	.1	.1	.0	.7	-.3
Utilities	2211,2	-.7	-4.2	2.2	3.1	2.7	-.1	.0	-.2	.9	-.3
Electric	2211	-.5	-3.1	2.2	2.0	.8	-.1	.0	.0	.9	-.7
Natural gas	2212	-3.0	-12.4	2.6	10.1	13.3	-.1	-.3	-1.0	.4	1.5

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

Table 3
RATES OF CHANGE IN INDUSTRIAL PRODUCTION, SPECIAL AGGREGATES AND SELECTED DETAIL: 2014–18¹

Item	Revised change (percent)					Difference between revised and earlier changes (percentage points)				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Total industry	3.4	-3.4	-.3	3.6	3.9	.0	-.1	.2	.6	-.2
Energy	7.2	-7.5	-1.6	7.0	8.6	.0	.0	-.1	.7	-.2
Consumer products	-4.2	-3.2	4.4	3.0	4.7	.0	.0	-.1	.5	.4
Commercial products	.1	.0	2.3	2.1	2.7	.0	.0	-.1	.3	.2
Oil and gas well drilling 213111	19.8	-45.5	-26.5	37.2	19.3	.2	.2	.2	.8	1.2
Converted fuel	.2	-2.7	.6	2.4	3.2	-.2	.0	-.1	1.4	-1.0
Primary energy	11.8	-8.3	-4.3	10.5	12.5	.1	.1	-.1	.7	-.3
Non-energy	1.8	-1.8	.1	2.5	2.2	.0	-.1	.3	.6	-.2
Selected high-technology industries	8.5	2.0	7.9	1.9	5.3	-.2	.1	-.6	-1.3	.1
Computers and peripheral equipment 3341	8.0	-3.8	12.2	12.2	1.1	-.1	.3	-1.0	-7.2	.1
Communications equipment 3342	-5.1	6.9	5.0	-5.1	6.8	-.5	.2	-2.1	-2.1	.3
Semiconductors and related electronic components 3344	14.5	1.5	8.0	2.4	6.0	-.1	.0	.2	.4	.1
Excluding selected high-technology industries	1.5	-1.9	-.2	2.6	2.1	.0	-.1	.4	.7	-.3
Motor vehicles and parts 3361–3	7.4	2.7	2.5	-.3	5.5	.3	-.1	.3	.9	.0
Motor vehicles 3361	5.2	4.6	1.8	-5.4	9.5	.5	.0	.3	-.2	.0
Motor vehicle parts 3363	9.1	1.2	3.7	2.6	4.4	.0	.0	.0	1.2	.6
Excluding motor vehicles and parts	1.0	-2.3	-.4	2.8	1.8	.0	-.1	.4	.7	-.3
Consumer goods	1.4	.7	-.4	1.7	.1	.0	-.1	.3	.3	-.5
Business equipment	3.5	-8.1	-2.4	5.8	3.0	-.1	-.1	.1	.8	.0
Construction supplies	3.7	-.1	.8	4.2	2.7	.1	-.1	.3	.7	-.4
Business supplies	-1.3	-1.6	.4	2.4	-1.2	.1	-.2	1.3	1.8	-.7
Materials	.3	-3.1	-.5	2.9	3.0	.0	-.1	.2	.5	.0
Measures excluding selected high-technology industries										
Total industry	3.3	-3.5	-.5	3.7	3.9	.0	-.1	.2	.7	-.3
Manufacturing ²	1.1	-1.8	.0	2.5	2.1	.0	-.1	.3	.7	-.2
Durable	2.4	-3.8	-.6	2.7	4.0	.0	-.1	.3	.9	-.2
Measures excluding motor vehicles and parts										
Total industry	3.2	-3.7	-.5	3.9	3.8	.0	-.1	.2	.6	-.3
Manufacturing ²	1.0	-2.0	.1	2.7	1.9	.0	-.1	.3	.6	-.2
Durable	2.1	-4.4	-.6	3.2	3.9	.0	-.1	.2	.7	-.2
Measures excluding selected high-technology industries and motor vehicles and parts										
Total industry	3.1	-3.9	-.7	3.9	3.8	.0	-.1	.2	.7	-.3
Manufacturing ²	.7	-2.2	-.2	2.8	1.8	.0	-.1	.4	.7	-.2
Stage-of-process components of non-energy materials, measures of the input to										
Finished processors	3.2	-4.2	.2	.3	4.1	.0	.0	.1	.5	.5
Primary and semifinished processors	.2	-1.8	-.1	4.2	2.7	.0	-.1	.3	.5	-.1
STAGE-OF-PROCESS GROUPS										
Crude	8.2	-6.3	-3.1	8.0	10.6	.1	.1	.1	.7	-.1
Primary and semifinished	1.3	-2.4	.8	2.5	2.1	.0	-.1	.3	.7	-.2
Finished	2.7	-3.0	-.5	3.0	2.6	.0	-.1	.2	.6	-.4

1. See footnote 1 to table 2.

2. See footnote 2 to table 2.

Table 4**ANNUAL RATES OF CHANGE FOR INDUSTRIAL PRODUCTION: 2014–18¹**

Item	Revised change (percent)					Difference between revised and earlier changes (percentage points)				
	2014	2015	2016	2017	2018	2014	2015	2016	2017	2018
Total IP	3.1	-1.0	-2.0	2.3	3.9	.0	.0	.0	.7	-.2
MARKET GROUPS										
Consumer goods	.8	1.4	.6	.5	2.1	.0	.0	.0	.5	-.3
Durable	4.9	3.9	2.2	1.5	2.2	.0	.0	.0	1.5	-.4
Nondurable	-.3	.7	.1	.3	2.1	.0	.0	-.1	.3	-.2
Business equipment	1.8	-2.0	-5.3	3.6	3.2	.0	.0	.0	.4	.2
Defense and space equipment	-3.4	-2.4	-2.8	2.1	2.4	.0	.0	.0	1.8	-.5
Construction supplies	3.2	.7	.9	3.5	2.8	.0	.0	.0	.9	-.6
Business supplies	1.0	-1.3	.6	2.3	.9	.0	.1	.1	1.8	-.4
Materials	5.0	-1.5	-3.0	2.7	5.9	.0	.0	-.1	.7	-.1
Non-energy	1.9	-1.8	-1.1	2.0	3.1	.0	.0	.0	.5	.1
Energy	8.5	-1.2	-6.0	4.0	10.1	.0	.1	-.2	.9	-.3
INDUSTRY GROUPS										
Manufacturing²	1.1	-.5	-.8	2.0	2.3	.0	.0	.0	.7	-.1
Manufacturing (NAICS)	1.2	-.4	-.7	2.0	2.7	.0	.0	.0	.6	.0
Durable manufacturing	2.9	-1.1	-2.1	2.2	3.4	.0	.0	.0	.7	.1
Nondurable manufacturing	-.6	.3	.8	1.9	1.9	.0	.0	.0	.4	-.1
Other manufacturing (non-NAICS)	-1.3	-3.7	-2.6	-.6	-9.9	.0	.0	.0	6.3	-2.8
Mining	10.8	-3.3	-9.9	7.4	12.4	.0	.1	-.2	.9	-.3
Utilities	1.3	-.7	-.4	-.8	4.4	.0	.0	.0	.5	-.4

1. The rates of change are calculated as the percent change in the annual averages of not seasonally adjusted industrial production indexes rather than as the percent change between the fourth quarter of one year and the fourth quarter of the next.

2. See footnote 2 to table 2.

Table 5**RATES OF CHANGE IN CAPACITY, BY INDUSTRY GROUPS: 2015–19¹**

Item	Revised change (percent)					Difference between revised and earlier changes (percentage points)				
	2015	2016	2017	2018	2019	2015	2016	2017	2018	2019
Total industry	.7	.5	.3	1.5	2.0	.0	-.1	-.3	-.5	-.3
Manufacturing²	-.4	1.2	.3	.7	1.3	-.1	-.1	-.4	-.7	-.1
Manufacturing (NAICS)	-.3	1.3	.5	.8	1.4	-.1	-.1	-.4	-.7	-.1
Durable manufacturing	.2	1.0	.6	1.0	1.7	-.1	.2	-.3	-.3	-.1
Nondurable manufacturing	-.9	1.7	.4	.6	1.3	-.1	-.4	-.5	-.7	.0
Other manufacturing (non-NAICS)	-3.7	-3.2	-4.2	-3.6	-2.8	-.3	-.6	-.6	-.7	-.2
Mining	.9	-2.8	.5	7.4	5.3	.0	.3	1.4	1.7	-1.8
Utilities	.4	1.4	1.4	1.7	2.6	.0	-.2	-.5	-.3	.5
Selected high-technology industries	2.0	10.6	3.9	3.0	7.3	-1.3	3.1	.7	-2.5	.5
Manufacturing ² ex. selected high-technology industries	-.5	.9	.2	.6	1.1	-.1	-.2	-.4	-.6	-.1
STAGE-OF-PROCESS GROUPS										
Crude	.4	-2.1	.5	5.3	4.1	.0	.2	1.0	1.3	-1.6
Primary and semifinished	-.3	1.7	-.1	.8	1.5	-.1	.0	-.8	-.6	.0
Finished	.0	.7	1.1	1.0	1.6	-.1	-.3	.0	-.2	.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. See footnote 2 to table 2.

Table 6

REVISED AND EARLIER CAPACITY UTILIZATION RATES, BY INDUSTRY GROUPS

Percent of capacity, seasonally adjusted

Item		Revised Rate					Difference between revised and earlier rates (percentage points)			
		1972-2018 Ave.	2015 Q4	2016 Q4	2017 Q4	2018 Q4	2015 Q4	2016 Q4	2017 Q4	2018 Q4
Total industry		79.8	75.8	75.1	77.6	79.4	-.4	-.1	.5	.7
Manufacturing¹		78.3	74.9	74.2	75.8	77.0	-.5	-.2	.6	1.0
Manufacturing (NAICS)	31–33	78.2	75.3	74.5	76.2	77.5	-.5	-.3	.4	.9
Durable manufacturing		76.8	74.1	73.3	74.7	77.1	-.6	-.6	.2	.4
Wood products	321	76.7	76.1	77.6	80.6	77.6	.8	.9	2.2	2.1
Nonmetallic mineral products	327	74.0	67.7	65.5	67.8	67.6	1.8	1.4	2.3	2.6
Primary metals	331	78.0	65.0	63.3	69.0	74.8	-2.6	-3.1	.2	1.7
Fabricated metal products	332	77.6	77.1	75.9	78.4	81.6	-.5	-.2	-.3	-.5
Machinery	333	77.6	67.7	67.2	74.6	80.0	-.9	-.8	-.7	-.5
Computer and electronic products	334	77.4	70.9	69.9	70.4	71.8	.2	-.5	-.2	.4
Electrical equip., appliances, and components	335	81.9	76.3	75.8	74.9	76.2	-1.0	-.9	-1.0	-.1
Motor vehicles and parts	3361–3	75.1	79.0	79.7	76.9	79.8	-.9	-.7	-.3	-.3
Aerospace and miscellaneous transportation equipment	3364–9	74.2	79.1	76.0	75.4	76.6	-1.3	-1.1	.1	-1.4
Furniture and related products	337	77.0	81.3	79.7	78.1	77.8	-.1	.7	2.4	1.6
Miscellaneous	339	76.6	79.8	80.6	79.4	79.4	-.5	.4	1.7	1.9
Nondurable manufacturing		80.0	76.6	76.0	77.7	77.9	-.4	.1	.7	1.1
Food, beverage, and tobacco products	311,2	80.4	77.1	76.0	77.0	75.7	-.5	.2	.3	.4
Textile and product mills	313,4	78.8	68.2	69.7	71.2	71.8	.2	.7	2.5	2.2
Apparel and leather	315,6	76.1	66.1	68.5	64.8	63.8	-.3	.1	-.1	.0
Paper	322	86.7	85.4	88.5	86.5	87.2	.1	.4	.3	.2
Printing and support	323	79.7	71.3	74.9	75.3	72.4	1.1	1.6	1.5	.0
Petroleum and coal products	324	85.0	81.2	76.0	80.9	80.4	-.4	-.1	1.4	2.2
Chemicals	325	76.7	72.8	72.6	75.3	77.9	-.8	-.2	.6	1.3
Plastics and rubber products	326	82.1	85.1	83.3	83.7	80.8	-.2	.3	1.5	2.1
Other manufacturing (non-NAICS)	1133,5111	79.8	64.1	65.3	65.7	61.0	-.2	2.5	5.2	3.8
Mining	21	87.1	81.4	78.5	87.0	92.1	.4	.1	-.6	-2.4
Utilities	2211,2	85.4	77.3	77.9	79.2	80.1	-.2	-.2	.9	1.0
Selected high-technology industries		77.3	74.7	72.9	71.5	73.1	1.9	-.6	-2.0	-.2
Computers and peripheral equipment	3341	77.8	75.1	78.3	73.8	72.9	8.6	-5.5	-21.4	-10.3
Communications equipment	3342	76.1	72.0	72.1	64.2	63.0	.5	-.2	-1.0	-3.1
Semiconductors and related electronic components	3344	78.7	75.7	71.9	74.1	78.1	.8	.2	1.6	3.7
Measures excluding selected high-technology industries										
Total industry		79.9	75.8	75.2	77.7	79.5	-.4	-.1	.6	.7
Manufacturing ¹		78.3	74.9	74.3	76.0	77.1	-.6	-.1	.7	1.0
STAGE-OF-PROCESS GROUPS										
Crude		86.1	80.7	79.4	86.0	90.5	.2	.0	-.3	-1.5
Primary and semifinished		80.4	75.6	74.9	76.9	78.0	-.2	.0	1.0	1.3
Finished		76.8	74.3	73.6	74.7	75.7	-.7	-.3	.3	.3

1. See footnote 2 to table 2.

Table 7A
INDUSTRIAL PRODUCTION: Manufacturing¹
Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual ²
IP (percent change)																	
1989	.8	-1.0	-.1	.3	-.9	.2	-1.1	.9	-.3	-.2	.2	.1	2.1	-2.7	-3.2	.5	.8
1990	-.2	1.4	.5	-.3	.2	.3	-.2	.3	.0	-.8	-1.1	-.7	4.2	3.0	1.1	-6.7	.8
1991	-.7	-.7	-.7	.3	.7	1.1	.3	.2	1.1	-.2	-.2	-.2	-8.8	1.8	7.3	1.7	-1.9
1992	-.6	.9	1.0	.5	.6	.3	.9	-.4	.0	.7	.4	-.1	.6	8.3	4.1	3.2	3.7
1993	1.0	.2	-.2	.6	-.1	-.2	.3	-.2	.7	.9	.4	.6	4.6	1.4	.8	7.0	3.6
1994	.2	.1	1.3	.8	.6	.3	.4	.8	.5	1.0	.8	1.1	4.9	9.5	6.1	10.3	5.9
1995	.2	-.3	.3	-.2	.2	.5	-.7	1.1	.9	-.1	.1	.4	4.4	.7	3.1	4.3	5.1
1996	-.8	1.6	-.2	1.1	.8	1.0	.3	.5	.8	-.2	.9	.9	1.9	10.0	7.7	6.0	4.9
1997	.1	1.4	1.0	-.2	.7	.7	.7	1.3	.9	.9	1.1	.4	9.4	7.0	10.5	11.4	8.4
1998	.8	.1	-.1	.5	.5	-.8	-.4	2.4	-.2	1.0	.2	.5	6.1	2.1	3.3	8.0	6.7
1999	.3	.8	-.1	.4	.9	-.3	.5	.6	-.4	1.5	.6	.7	5.1	4.5	3.2	8.7	5.1
2000	.1	.2	.6	.7	-.1	.2	.1	-.7	.4	-.3	-.3	-.6	4.5	4.8	-.4	-2.4	4.1
2001	-.6	-.6	-.2	-.3	-.6	-.7	-.5	-.5	-.2	-.6	-.3	.3	-6.0	-5.2	-5.8	-3.8	-3.7
2002	.6	.0	.8	.2	.5	1.1	-.3	.2	.1	-.4	.5	-.5	3.6	5.8	3.1	-.3	.5
2003	.7	-.1	.1	-.9	.1	.5	.2	-.4	.8	.1	1.0	-.2	2.1	-2.2	2.5	4.4	1.3
2004	.0	.8	-.2	.4	.8	-.7	.9	.5	.0	1.0	-.1	.7	2.6	3.3	4.0	5.5	3.1
2005	.7	.8	-.5	.4	.3	.1	-.3	.5	-1.0	1.5	.8	.2	6.6	2.3	-.7	6.4	4.1
2006	.8	-.3	.0	.5	-.4	.4	-.3	.7	.1	-.4	.0	1.4	3.8	.8	1.0	1.5	2.6
2007	-.5	.4	.9	.7	-.1	.3	.1	-.3	.5	-.3	.6	.1	4.0	5.9	1.1	1.2	2.8
2008	-.4	-.6	-.3	-1.1	-.5	-.7	-1.2	-1.2	-3.5	-.6	-2.4	-3.5	-2.6	-8.2	-14.0	-21.9	-4.8
2009	-3.0	-.1	-1.9	-.7	-1.1	-.3	1.5	1.1	.9	.2	1.0	-.2	-24.4	-10.6	8.1	7.1	-13.8
2010	1.1	.0	1.2	.8	1.4	-.1	.6	.1	.0	.1	.0	.5	6.9	10.4	4.2	1.2	5.8
2011	.2	.1	.6	-.6	.1	.1	.6	.4	.3	.5	-.3	.7	3.1	-.1	4.5	3.8	2.9
2012	.8	.3	-.5	.5	-.4	.2	-.1	-.2	-.1	-.4	.7	.8	5.2	.6	-1.1	1.2	2.6
2013	-.3	.5	-.1	-.4	.3	.2	-.9	.9	.1	.1	.0	.0	2.9	-.1	-.1	1.7	.9
2014	-1.1	1.0	.8	-.2	.3	.4	.4	-.5	.0	-.1	.8	-.3	-.8	4.3	1.6	.5	1.1
2015	-.4	-.7	.3	-.1	.0	-.4	.7	-.3	-.4	.0	-.3	-.3	-2.9	-1.2	.2	-2.8	-.5
2016	.7	-.6	-.2	-.4	.0	.3	.3	-.4	.4	.3	.1	.3	-.3	-2.4	1.2	2.5	-.8
2017	.6	-.1	-.3	1.1	-.2	.1	-.2	-.3	-.2	1.3	.3	-.1	3.0	3.4	-1.6	5.3	2.0
2018	-.4	1.1	.0	.4	-.8	.7	.4	.4	.0	-.2	.4	.6	1.6	2.0	3.6	1.5	2.3
2019	-.3	-.4															
IP (2012=100)																	
1989	63.6	63.0	62.9	63.1	62.5	62.6	61.9	62.5	62.3	62.2	62.3	62.4	63.2	62.7	62.2	62.3	62.6
1990	62.2	63.1	63.5	63.3	63.4	63.6	63.5	63.7	63.6	63.1	62.4	62.0	62.9	63.4	63.6	62.5	63.1
1991	61.5	61.1	60.7	60.9	61.3	61.9	62.1	62.3	63.0	62.8	62.7	62.6	61.1	61.4	62.5	62.7	61.9
1992	62.2	62.8	63.4	63.8	64.1	64.3	64.9	64.6	64.7	65.1	65.4	65.3	62.8	64.1	64.7	65.2	64.2
1993	65.9	66.1	65.9	66.3	66.2	66.1	66.3	66.2	66.6	67.2	67.4	67.8	66.0	66.2	66.3	67.5	66.5
1994	67.9	68.0	68.9	69.5	69.9	70.1	70.4	71.0	71.3	72.0	72.6	73.4	68.3	69.9	70.9	72.7	70.4
1995	73.5	73.3	73.5	73.3	73.5	73.8	73.4	74.2	74.8	74.8	74.8	75.1	73.4	73.6	74.1	74.9	74.0
1996	74.5	75.7	75.6	76.4	77.0	77.8	78.0	78.5	79.1	79.0	79.7	80.4	75.3	77.1	78.5	79.7	77.6
1997	80.5	81.6	82.4	82.3	82.9	83.5	84.0	85.1	85.8	86.6	87.5	87.9	81.5	82.9	85.0	87.3	84.2
1998	88.6	88.7	88.6	89.0	89.5	88.8	88.5	90.6	90.4	91.3	91.4	91.9	88.6	89.1	89.8	91.6	89.8
1999	92.2	93.0	92.9	93.3	94.1	93.8	94.2	94.8	94.4	95.8	96.4	97.1	92.7	93.7	94.5	96.5	94.3
2000	97.2	97.4	98.0	98.7	98.6	98.8	98.9	98.2	98.7	98.4	98.1	97.5	97.5	98.7	98.6	98.0	98.2
2001	97.0	96.3	96.1	95.8	95.2	94.6	94.2	93.7	93.5	93.0	92.7	93.0	96.5	95.2	93.8	92.9	94.6
2002	93.5	93.5	94.2	94.4	94.9	96.0	95.6	95.8	96.0	95.6	96.0	95.6	93.7	95.1	95.8	95.7	95.1
2003	96.2	96.2	96.3	95.5	95.6	96.0	96.3	95.9	96.6	96.8	97.7	97.5	96.2	95.7	96.3	97.3	96.4
2004	97.5	98.3	98.1	98.5	99.3	98.5	99.4	99.9	99.9	100.9	100.8	101.5	98.0	98.8	99.7	101.1	99.4
2005	102.3	103.1	102.6	103.0	103.4	103.5	103.1	103.6	102.6	104.1	104.9	105.1	102.7	103.3	103.1	104.7	103.4
2006	105.9	105.6	105.6	106.1	105.6	106.0	105.7	106.4	106.4	106.0	106.1	107.6	105.7	105.9	106.2	106.6	106.1
2007	107.0	107.5	108.4	109.1	109.0	109.4	109.5	109.2	109.7	109.3	110.0	110.1	107.6	109.2	109.5	109.8	109.0
2008	109.6	108.9	108.6	107.4	106.8	106.1	104.8	103.6	100.0	99.3	97.0	93.6	109.1	106.8	102.8	96.6	103.8
2009	90.8	90.6	89.0	88.3	87.4	87.1	88.4	89.4	90.2	90.4	91.2	91.1	90.1	87.6	89.3	90.9	89.5
2010	92.1	92.0	93.1	93.9	95.2	95.1	95.7	95.7	95.7	95.8	95.9	96.3	92.4	94.7	95.7	96.0	94.7
2011	96.5	96.6	97.1	96.6	96.7	96.8	97.4	97.8	98.1	98.7	98.4	99.1	96.7	96.7	97.8	98.7	97.5
2012	99.9	100.2	99.8	100.3	99.9	100.1	100.0	99.8	99.7	99.4	100.1	100.9	100.0	100.1	99.8	100.1	100.0
2013	100.6	101.0	100.9	100.5	100.8	101.1	100.1	101.0	101.2	101.2	101.2	101.2	100.8	100.8	100.8	101.2	100.9
2014	100.0	101.1	101.9	101.8	102.0	102.4	102.9	102.3	102.3	102.2	103.0	102.7	101.0	102.1	102.5	102.6	102.0
2015	102.2	101.5	101.9	101.7	101.7	101.3	102.0	101.7	101.2	101.2	100.9	100.6	101.9	101.6	101.6	100.9	101.5
2016	101.3	100.7	100.5	100.1	100.1	100.4	100.7	100.3	100.7	101.0	101.1	101.4	100.8	100.2	100.5	101.2	100.7
2017	102.0	102.0	101.7	102.8	102.6	102.8	102.6	102.3	102.1	103.5	103.8	103.7	101.9	102.7	102.3	103.7	102.7
2018	103.3	104.4	104.5	104.9	104.1	104.8	105.2	105.7	105.7	105.4	105.9	106.5	104.1	104.6	105.5	105.9	105.0
2019	106.1	105.7															

NOTE: Estimates from October 2018 through February 2019 are subject to further revision in the upcoming monthly releases.

1. See footnote 2 to table 2.

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

Table 7B
CAPACITY AND UTILIZATION: Manufacturing¹
Seasonally adjusted

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Q1	Q2	Q3	Q4	Annual
Capacity (percent of 2012 output)																	
1989	74.4	74.5	74.7	74.8	75.0	75.1	75.3	75.5	75.7	75.9	76.1	76.3	74.5	75.0	75.5	76.1	75.3
1990	76.5	76.7	76.9	77.0	77.2	77.4	77.5	77.7	77.8	77.9	78.1	78.2	76.7	77.2	77.7	78.1	77.4
1991	78.3	78.4	78.5	78.6	78.6	78.7	78.8	78.9	79.0	79.2	79.3	79.4	78.4	78.7	78.9	79.3	78.8
1992	79.6	79.8	80.0	80.2	80.4	80.6	80.8	81.0	81.2	81.4	81.5	81.7	79.8	80.4	81.0	81.5	80.7
1993	81.9	82.0	82.2	82.3	82.4	82.5	82.7	82.8	82.9	83.1	83.3	83.4	82.0	82.4	82.8	83.3	82.6
1994	83.6	83.9	84.1	84.3	84.6	84.9	85.1	85.4	85.7	86.1	86.4	86.7	83.9	84.6	85.4	86.4	85.1
1995	87.0	87.4	87.7	88.1	88.4	88.8	89.2	89.6	90.0	90.4	90.8	91.3	87.4	88.4	89.6	90.8	89.0
1996	91.8	92.2	92.7	93.2	93.7	94.2	94.8	95.3	95.8	96.3	96.8	97.4	92.2	93.7	95.3	96.8	94.5
1997	97.9	98.5	99.1	99.6	100.2	100.9	101.5	102.2	102.9	103.7	104.4	105.2	98.5	100.3	102.2	104.4	101.3
1998	106.0	106.8	107.5	108.3	109.1	109.8	110.5	111.2	111.9	112.5	113.1	113.7	106.8	109.1	111.2	113.1	110.0
1999	114.3	114.8	115.4	115.9	116.4	117.0	117.5	118.0	118.5	119.0	119.5	120.0	114.8	116.4	118.0	119.5	117.2
2000	120.5	121.0	121.5	122.0	122.4	122.9	123.4	123.9	124.4	124.9	125.3	125.8	121.0	122.4	123.9	125.3	123.2
2001	126.2	126.7	127.1	127.5	127.8	128.2	128.5	128.8	129.0	129.2	129.4	129.6	126.6	127.8	128.7	129.4	128.2
2002	129.8	129.9	130.1	130.2	130.2	130.3	130.3	130.4	130.4	130.4	130.4	130.4	129.9	130.2	130.4	130.4	130.2
2003	130.4	130.4	130.4	130.4	130.3	130.3	130.3	130.2	130.2	130.1	130.1	130.1	130.4	130.3	130.2	130.1	130.3
2004	130.0	130.0	129.9	129.9	129.8	129.8	129.8	129.9	129.9	130.0	130.1	130.3	130.0	129.9	129.9	130.1	130.0
2005	130.4	130.6	130.9	131.1	131.3	131.6	131.9	132.1	132.4	132.7	132.9	133.1	130.6	131.4	132.1	132.9	131.8
2006	133.4	133.6	133.8	134.0	134.2	134.4	134.6	134.8	135.1	135.4	135.7	136.0	133.6	134.2	134.9	135.7	134.6
2007	136.3	136.7	137.0	137.4	137.8	138.1	138.4	138.7	139.0	139.2	139.4	139.5	136.7	137.8	138.7	139.4	138.1
2008	139.5	139.6	139.5	139.4	139.3	139.2	139.0	138.8	138.6	138.4	138.2	138.0	139.5	139.3	138.8	138.2	139.0
2009	137.8	137.6	137.4	137.2	137.0	136.8	136.6	136.4	136.2	136.0	135.8	135.6	137.6	137.0	136.4	135.8	136.7
2010	135.3	135.1	134.9	134.7	134.4	134.2	133.9	133.7	133.5	133.2	133.1	132.9	135.1	134.4	133.7	133.1	134.1
2011	132.7	132.6	132.5	132.5	132.4	132.5	132.5	132.6	132.7	132.8	132.9	133.1	132.6	132.5	132.6	132.9	132.6
2012	133.2	133.4	133.6	133.7	133.9	134.1	134.2	134.4	134.6	134.7	134.9	135.0	133.4	133.9	134.4	134.9	134.1
2013	135.1	135.3	135.4	135.5	135.6	135.6	135.7	135.7	135.8	135.8	135.8	135.9	135.3	135.6	135.7	135.8	135.6
2014	135.9	135.9	135.8	135.8	135.8	135.7	135.7	135.6	135.5	135.4	135.3	135.2	135.9	135.8	135.6	135.3	135.6
2015	135.1	135.0	134.9	134.8	134.7	134.6	134.6	134.6	134.6	134.7	134.7	134.8	135.0	134.7	134.6	134.7	134.8
2016	134.9	135.1	135.2	135.3	135.5	135.6	135.8	135.9	136.1	136.2	136.3	136.4	135.1	135.5	135.9	136.3	135.7
2017	136.5	136.5	136.6	136.6	136.6	136.7	136.7	136.7	136.7	136.7	136.7	136.7	136.5	136.6	136.7	136.7	136.6
2018	136.8	136.8	136.9	136.9	137.0	137.1	137.2	137.3	137.4	137.5	137.6	137.7	136.8	137.0	137.3	137.6	137.2
2019	137.9	138.0															
Utilization (percent)																	
1989	85.5	84.5	84.3	84.3	83.4	83.4	82.2	82.7	82.3	81.9	81.9	81.8	84.8	83.7	82.4	81.9	83.2
1990	81.4	82.3	82.6	82.1	82.1	82.2	81.9	82.0	81.8	81.0	80.0	79.3	82.1	82.1	81.9	80.1	81.5
1991	78.6	77.9	77.3	77.5	77.9	78.7	78.8	78.9	79.7	79.4	79.1	78.8	77.9	78.0	79.1	79.1	78.6
1992	78.2	78.7	79.3	79.6	79.8	79.8	80.4	79.8	79.7	80.0	80.1	79.9	78.7	79.7	79.9	80.0	79.6
1993	80.5	80.6	80.2	80.5	80.4	80.1	80.2	79.9	80.3	80.8	81.0	81.3	80.4	80.3	80.1	81.0	80.5
1994	81.2	81.1	82.0	82.4	82.7	82.6	82.7	83.1	83.2	83.7	84.0	84.6	81.4	82.6	83.0	84.1	82.8
1995	84.5	83.9	83.8	83.3	83.1	83.2	82.3	82.8	83.2	82.7	82.4	82.3	84.1	83.2	82.8	82.5	83.1
1996	81.2	82.1	81.5	82.0	82.2	82.6	82.4	82.4	82.6	82.0	82.3	82.6	81.6	82.2	82.4	82.3	82.1
1997	82.2	82.9	83.2	82.6	82.7	82.7	82.8	83.2	83.4	83.5	83.8	83.5	82.8	82.7	83.1	83.6	83.0
1998	83.6	83.1	82.4	82.2	82.0	80.8	80.0	81.5	80.8	81.2	80.9	80.9	83.0	81.7	80.8	81.0	81.6
1999	80.7	81.0	80.5	80.5	80.8	80.2	80.2	80.4	79.7	80.6	80.7	80.9	80.7	80.5	80.1	80.7	80.5
2000	80.7	80.5	80.7	80.9	80.5	80.3	80.1	79.3	79.3	78.8	78.3	77.6	80.6	80.6	79.6	78.2	79.7
2001	76.8	76.1	75.7	75.2	74.5	73.8	73.3	72.8	72.5	71.9	71.6	71.7	76.2	74.5	72.9	71.8	73.8
2002	72.1	71.9	72.4	72.5	72.9	73.6	73.4	73.5	73.6	73.3	73.6	73.3	72.1	73.0	73.5	73.4	73.0
2003	73.8	73.7	73.8	73.2	73.3	73.7	73.9	73.6	74.2	74.3	75.1	75.0	73.8	73.4	73.9	74.8	74.0
2004	75.0	75.6	75.5	75.8	76.4	75.9	76.6	76.9	76.9	77.6	77.5	77.9	75.4	76.1	76.8	77.7	76.5
2005	78.4	79.0	78.4	78.6	78.7	78.6	78.2	78.4	77.5	78.5	78.9	78.9	78.6	78.6	78.0	78.8	78.5
2006	79.4	79.1	78.9	79.2	78.7	78.9	78.5	78.9	78.8	78.3	78.2	79.1	79.1	78.9	78.7	78.5	78.8
2007	78.5	78.6	79.1	79.4	79.1	79.2	79.1	78.7	78.9	78.6	78.9	78.9	78.7	79.3	78.9	78.8	78.9
2008	78.6	78.1	77.8	77.0	76.7	76.2	75.4	74.6	72.1	71.8	70.2	67.8	78.2	76.6	74.1	69.9	74.7
2009	65.9	65.9	64.7	64.4	63.8	63.7	64.7	65.6	66.2	66.5	67.2	67.2	65.5	64.0	65.5	66.9	65.5
2010	68.0	68.1	69.0	69.7	70.8	70.9	71.4	71.6	71.7	71.9	72.0	72.5	68.4	70.5	71.6	72.1	70.7
2011	72.7	72.8	73.3	72.9	73.0	73.1	73.5	73.8	74.0	74.3	74.0	74.5	72.9	73.0	73.8	74.3	73.5
2012	75.0	75.1	74.7	75.0	74.6	74.7	74.5	74.2	74.1	73.8	74.2	74.7	74.9	74.8	74.3	74.2	74.5
2013	74.4	74.7	74.5	74.2	74.4	74.5	73.8	74.4	74.5	74.5	74.5	74.5	74.5	74.4	74.2	74.5	74.4
2014	73.6	74.4	75.0	74.9	75.2	75.5	75.8	75.5	75.5	75.5	76.1	75.9	74.3	75.2	75.6	75.8	75.2
2015	75.7	75.2	75.5	75.5	75.5	75.2	75.8	75.5	75.2	75.1	74.9	74.6	75.5	75.4	75.5	74.9	75.3
2016	75.1	74.6	74.3	74.0	73.9	74.0	74.1	73.8	74.0	74.1	74.1	74.4	74.7	74.0	74.0	74.2	74.2
2017	74.8	74.7	74.5	75.3	75.1	75.2	75.1	74.8	74.7	75.7	75.9	75.8	74.6	75.2	74.9	75.8	75.1
2018	75.5	76.3	76.3	76.6	76.0	76.5	76.7	77.0	76.9	76.7	76.9	77.3	76.1	76.4	76.9	77.0	76.6
2019	77.0	76.6															

NOTE: Estimates from October 2018 through February 2019 are subject to further revision in the upcoming monthly releases.

1. See footnote 2 to table 2.

Table 8

ANNUAL PROPORTIONS IN INDUSTRIAL PRODUCTION, MARKET AND INDUSTRY GROUP SUMMARY

Item		2011	2012	2013	2014	2015	2016	2017	2018
Total IP		100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
MARKET GROUPS									
Final products and nonindustrial supplies		52.2	51.6	50.8	52.1	55.2	55.6	54.4	53.8
Consumer goods		26.2	25.2	24.8	25.4	27.8	28.7	27.9	27.6
Durable		5.1	5.1	5.3	5.6	6.3	6.6	6.4	6.3
Automotive products		2.4	2.4	2.5	2.8	3.3	3.5	3.3	3.3
Home electronics		.1	.2	.2	.1	.2	.1	.1	.1
Appliances, furniture, carpeting		.7	.7	.7	.8	.9	.9	.9	.8
Miscellaneous goods		1.8	1.8	1.8	1.9	2.0	2.1	2.0	2.0
Nondurable		21.1	20.2	19.5	19.8	21.5	22.1	21.5	21.3
Non-energy		15.9	15.2	14.9	15.3	16.9	17.3	16.5	16.2
Foods and tobacco		8.7	8.5	8.5	8.7	9.6	9.8	9.5	9.3
Clothing		.3	.2	.2	.2	.2	.2	.2	.2
Chemical products		5.1	4.8	4.5	4.8	5.4	5.6	5.3	5.3
Paper products		1.3	1.2	1.1	1.2	1.2	1.2	1.1	1.0
Energy		5.2	4.9	4.7	4.5	4.6	4.8	5.0	5.1
Business equipment		9.3	9.8	9.6	9.9	10.2	9.7	9.5	9.4
Transit		1.9	2.2	2.3	2.6	2.8	2.6	2.4	2.4
Information processing		2.1	2.3	2.2	2.1	2.2	2.2	2.2	2.1
Industrial and other		5.2	5.3	5.1	5.3	5.2	5.0	4.9	4.9
Defense and space equipment		2.3	2.3	2.2	2.2	2.3	2.2	2.1	2.1
Construction supplies		4.1	4.1	4.3	4.5	4.9	5.1	5.2	5.3
Business supplies		9.5	9.1	8.8	8.9	9.2	9.3	9.1	8.8
Materials		47.8	48.4	49.2	47.9	44.8	44.4	45.6	46.2
Non-energy		27.0	26.6	26.1	26.7	27.7	27.9	27.6	27.8
Durable		16.0	16.0	15.7	16.3	16.8	16.7	16.3	16.4
Consumer parts		2.5	2.7	2.8	2.9	3.1	3.1	3.0	3.0
Equipment parts		5.5	5.4	5.1	5.3	5.3	5.0	4.8	4.8
Other		7.9	7.8	7.9	8.1	8.4	8.5	8.5	8.7
Nondurable		11.0	10.6	10.4	10.4	10.9	11.3	11.3	11.3
Textile		.4	.4	.4	.4	.4	.4	.4	.4
Paper		2.0	2.0	1.9	1.9	2.0	2.0	1.9	1.8
Chemical		5.5	5.3	5.1	5.0	5.2	5.6	5.8	6.0
Energy		20.8	21.8	23.1	21.2	17.2	16.5	18.0	18.4
INDUSTRY GROUPS									
Manufacturing		72.8	72.0	70.6	72.1	76.2	77.0	75.6	75.0
Manufacturing (NAICS)	31–33	70.1	69.6	68.3	69.8	73.9	74.6	73.4	73.2
Durable manufacturing		36.1	36.4	36.1	37.5	39.1	38.7	37.7	37.7
Wood products	321	.9	1.0	1.1	1.2	1.3	1.4	1.4	1.4
Nonmetallic mineral products	327	1.6	1.6	1.7	1.9	2.1	2.2	2.2	2.2
Primary metals	331	2.8	2.5	2.6	2.6	2.5	2.6	2.7	2.9
Fabricated metal products	332	5.3	5.3	5.4	5.5	5.7	5.6	5.5	5.6
Machinery	333	5.5	5.8	5.5	5.8	5.6	5.2	5.3	5.4
Computer and electronic products	334	5.8	5.6	5.2	5.1	5.2	5.1	4.9	4.8
Electrical equip., appliances, and components	335	1.8	1.8	1.7	1.8	1.9	1.9	1.8	1.8
Motor vehicles and parts	3361–3	4.2	4.4	4.6	5.1	5.8	6.0	5.6	5.6
Aerospace and miscellaneous transportation equipment	3364–9	4.2	4.3	4.4	4.7	4.9	4.5	4.3	4.1
Furniture and related products	337	1.0	1.0	1.0	1.1	1.2	1.3	1.2	1.2
Miscellaneous	339	3.0	2.8	2.8	2.8	2.9	3.0	2.8	2.6
Nondurable manufacturing		34.1	33.2	32.1	32.3	34.7	35.9	35.7	35.5
Food, beverage, and tobacco products	311,2	10.6	10.2	10.3	10.5	11.5	11.9	11.6	11.3
Textile and product mills	313,4	.7	.6	.7	.7	.7	.7	.7	.6
Apparel and leather	315,6	.3	.3	.2	.2	.2	.2	.2	.2
Paper	322	2.5	2.5	2.5	2.5	2.6	2.6	2.5	2.4
Printing and support	323	1.5	1.4	1.4	1.4	1.5	1.5	1.4	1.3
Petroleum and coal products	324	3.9	3.7	3.2	2.8	2.8	2.9	3.4	3.4
Chemicals	325	11.7	11.4	10.8	11.1	12.0	12.4	12.4	12.7
Plastics and rubber products	326	2.9	3.0	3.0	3.1	3.5	3.6	3.6	3.5
Other manufacturing (non-NAICS)	1133,5111	2.6	2.4	2.3	2.3	2.4	2.3	2.2	1.9
Mining	21	17.3	18.6	19.9	17.8	13.1	12.1	14.0	14.6
Utilities	2211,2	9.9	9.4	9.5	10.1	10.7	10.9	10.4	10.4
Electric	2211	8.7	8.3	8.5	8.9	9.4	9.5	8.9	8.7
Natural gas	2212	1.2	1.0	1.1	1.2	1.2	1.4	1.5	1.6

NOTE: The IP proportion data are estimates of the industries' relative contributions to the overall change in IP between the reference year and the following year. For example, a 1 percent increase in durable goods manufacturing between 2018 and 2019 would account for a 0.377 percent increase in total IP.

Table 9

INDUSTRIAL PRODUCTION AND CAPACITY UTILIZATION: SUMMARY

Seasonally adjusted

Industrial production	2012=100						Percent change						
	2018 Sept. ^r	Oct. ^r	Nov. ^r	Dec. ^r	2019 Jan. ^r	Feb. ^r	2018 Sept. ^r	Oct. ^r	Nov. ^r	Dec. ^r	2019 Jan. ^r	Feb. ^r	Feb. '18 to Feb. '19
Total index	109.7	109.8	110.6	110.5	110.4	110.5	.1	.1	.7	-.1	-.1	.0	3.6
<i>Previous estimates</i>	109.1	109.2	109.8	109.9	109.5	109.7	.2	.1	.6	.1	-.4	.1	3.5
<u>Major market groups</u>													
Final Products	104.0	104.2	104.8	104.6	104.3	104.3	.2	.2	.6	-.2	-.2	.0	1.9
Consumer goods	106.5	106.7	107.3	106.6	106.0	106.1	.1	.2	.6	-.7	-.5	.1	.3
Business equipment	102.5	102.6	103.2	103.6	104.0	103.2	.5	.1	.6	.4	.3	-.7	3.9
Nonindustrial supplies	108.2	108.6	109.1	109.4	109.4	109.2	-.3	.4	.4	.2	.0	-.1	.7
Construction	114.8	115.3	116.0	117.8	117.7	117.2	-.4	.4	.6	1.5	.0	-.4	1.8
Materials	114.8	114.7	115.8	115.7	115.8	116.0	.2	.0	.9	.0	.1	.1	5.9
<u>Major industry groups</u>													
Manufacturing (see note below)	105.7	105.4	105.9	106.5	106.1	105.7	.0	-.2	.4	.6	-.3	-.4	1.2
<i>Previous estimates</i>	105.2	104.9	105.1	105.7	105.2	104.8	.3	-.3	.2	.6	-.5	-.4	1.0
Mining	128.5	128.7	129.8	131.7	132.8	132.5	1.0	.2	.9	1.4	.9	-.2	12.9
Utilities	105.6	108.3	111.2	103.7	104.4	108.2	-.4	2.6	2.7	-6.7	.6	3.6	7.6
Capacity utilization	Percent of capacity												Capacity growth
	Average 1972- 2018	1988- 89 high	1990- 91 low	1994- 95 high	2008- 09 low	2018 Feb.	2018 Sept. ^r	Oct. ^r	Nov. ^r	Dec. ^r	2019 Jan. ^r	Feb. ^r	Feb. '18 to Feb. '19
Total industry	79.8	85.1	78.8	85.0	66.7	77.8	79.3	79.2	79.6	79.4	79.2	79.1	1.9
<i>Previous estimates</i>	79.8	85.2	78.8	85.0	66.7	77.2	78.5	78.5	78.8	78.7	78.3	78.2	2.2
Manufacturing (see note below)	78.3	85.5	77.3	84.6	63.7	76.3	76.9	76.7	76.9	77.3	77.0	76.6	.9
<i>Previous estimates</i>	78.3	85.6	77.3	84.6	63.7	75.7	76.2	75.8	75.9	76.2	75.8	75.4	1.4
Mining	87.1	86.3	84.3	88.6	78.3	88.1	92.1	91.7	91.9	92.7	93.0	92.3	7.8
Utilities	85.4	93.2	84.7	93.2	78.2	75.8	78.7	80.6	82.6	76.9	77.3	79.9	2.0
<u>Stage-of-process groups</u>													
Crude	86.1	87.8	84.7	90.0	76.4	86.3	90.7	90.1	90.4	91.1	91.0	90.3	5.7
Primary and semifinished	80.4	86.4	78.1	87.8	63.9	76.6	77.4	77.8	78.6	77.4	77.3	77.4	1.1
Finished	76.8	83.3	77.3	80.6	66.5	75.3	75.8	75.5	75.5	76.0	75.8	75.7	1.1

^r Revised.

NOTE. The statistics in this release cover output, capacity, and capacity utilization in the U.S. industrial sector, which is defined by the Federal Reserve to comprise manufacturing, mining, and electric and gas utilities. Mining is defined as all industries in sector 21 of the North American Industry Classification System (NAICS); electric and gas utilities are those in NAICS sectors 2211 and 2212. Manufacturing comprises 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 and were included in the industrial sector under the Standard Industrial Classification (SIC) system. In December 2002, the Federal Reserve reclassified all of its industrial output data from the SIC system to NAICS.

The **Industrial Production and Capacity Utilization** statistical release, which is published around the middle of the month, reports measures of output, capacity, and capacity utilization in manufacturing, mining, and the electric and gas utilities industries. More detailed descriptions of industrial production and capacity utilization are available on the Board’s website at www.federalreserve.gov/releases/G17. In addition, files containing data shown in the release, more detailed series that were published in the G.17 prior to December 2000, and historical data are available from the Data Download Program on the Board’s website. Instructions for searching for and downloading specific series are provided as well.

INDUSTRIAL PRODUCTION

Coverage. The industrial production (IP) index measures the real output of the manufacturing, mining, and electric and gas utilities industries; the reference period for the index is 2012. Manufacturing consists of those industries included in the North American Industry Classification System, or NAICS, definition of manufacturing *plus* those industries—logging and newspaper, periodical, book, and directory publishing—that have traditionally been considered to be manufacturing and included in the industrial sector. For the period since 2012, the total IP index has been constructed from 299 individual series based on the 2012 NAICS codes. These individual series are classified in two ways: (1) market groups, and (2) industry groups. Market groups consist of products and materials. Total products are the aggregate of final products, such as consumer goods and equipment, and nonindustrial supplies (which are inputs to nonindustrial sectors). Materials are inputs in the manufacture of products. Major industry groups include three-digit NAICS industries and aggregates of these industries—for example, durable and nondurable manufacturing, mining, and utilities. A complete description of the market and industry structures, including details regarding series classification, relative importance weights, and data sources, is available on the Board’s website at www.federalreserve.gov/releases/G17/About.htm.

Source Data. On a monthly basis, the individual indexes of industrial production are constructed from two main types of source data: (1) output measured in physical units and (2) data on inputs to the production process, from which output is inferred. Data on physical products, such as tons of steel or barrels of oil, are typically obtained from private trade associations and from government agencies; data of this type are used to estimate monthly IP wherever possible and appropriate. Production indexes for a few industries are derived by dividing estimated nominal output (calculated using unit production and unit values or sales) by a corresponding Fisher price index; the most notable of these fall within the high-technology grouping and include semiconductors. When suitable data on physical product are not available, estimates of output are based on production-worker hours by industry. Data on hours worked by production workers are collected in the monthly establishment survey conducted by the Bureau of Labor Statistics. The factors used to convert inputs into estimates of production are based on historical relationships between the inputs and the comprehensive annual data used to benchmark the IP indexes; these factors also may be influenced by technological or cyclical developments. The annual data used in benchmarking the individual IP indexes are constructed from a variety of source data, such as the quinquennial *Censuses of Manufactures and Mineral Industries* and the *Annual Survey of Manufactures*, prepared by the Bureau of the Census; the *Minerals Yearbook*, prepared by the U.S. Geological Survey of the Department of the Interior; and publications of the Department of Energy.

Aggregation Methodology and Weights. The aggregation method for the IP index is a version of the Fisher-ideal index formula. (For a detailed discussion of the aggregation method, see the *Federal Reserve Bulletin* February 1997 and March 2001.) In the IP index, series that measure the output of an individual industry are combined using weights derived from their proportion in the total value-added output of all industries. The IP index, which extends back to 1919, is built as a chain-type index since 1972. The current formula for the growth in monthly IP (or any of the sub-aggregates) since 1972 is the geometric mean of the change in output (*I*), and, as can be seen below, is computed using the unit value added estimate for the current month (*p_m*) and the estimate for previous month:

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

The IP proportions (typically shown in the first column of the relevant tables in the monthly G.17 release) are estimates of the industries’ relative contributions to overall growth in the following year. For example, the relative importance weight of the motor vehicles and parts industry is about 6 percent. If output in this industry increased 10 percent in a month, then this gain would boost growth in total IP by 6/10 percentage point (0.06 x 10% = 0.6%). To assist users with calculations, the Federal Reserve’s website provides supplemental monthly statistics that represent the exact proportionate contribution of a monthly change in a component index to the monthly change in the total index (www.federalreserve.gov/releases/G17/ipdisk/ipweightssa.txt).

Timing. The first estimate of output for a month is published around the 15th of the following month. The estimate is preliminary (denoted by the superscript “p” in tables) and subject to revision in each of the subsequent five months as new source data become available. (Revised estimates are denoted by the superscript “r” in tables.) For the first estimate of output for a given month, about 75 percent of the source data (in value-added terms) are available; the fraction of available source data increases to 85 percent for estimates in the second month that the estimate is published, 94 percent in the third month, 95 percent in the fourth month, 96 percent in the fifth month, and 96 percent in the sixth month. Data availability by data type in 2018 is summarized in the table below:

Availability of Monthly IP Data in Publication Window
(Percent of value added in 2018; the numbers may not sum because of rounding.)

Type of data	Month of estimate					
	1st	2nd	3rd	4th	5th	6th
Physical product	34	44	54	54	56	56
Production-worker hours	40	40	40	40	40	40
IP data received	75	85	94	95	96	96
IP data estimated	25	15	6	5	4	4

The physical product group includes series based on either monthly or quarterly data. As can be seen in the first row of the table, in the first month, a physical product indicator is available for more than one-half of the series (in terms of value added) that ultimately are based on physical product data (34 percent out of a total of 56 percent). Of the 34 percent, about three-quarters (25 percent of total IP) include series that are derived from weekly physical product data and for which actual monthly data may lag up to several months. On average, quarterly product data are received for the fourth estimate of industrial production. Specifically, quarterly data are available for the third estimate of the last month of a quarter, the fourth estimate of the second month of a quarter, and the fifth estimate of the first month of a quarter.

Seasonal adjustment. Individual series are seasonally adjusted using Census X-13 ARIMA. For series based on production-worker hours, the current seasonal factors were estimated with data through January 2019; for other series, the factors were estimated with data through at least December 2018. Series are pre-adjusted for the effects of holidays or the business cycle when appropriate. For the data since 1972, all seasonally adjusted aggregate indexes are calculated by aggregating the seasonally adjusted indexes of the individual series. Additional documentation and X-13 specifications can be found on the Board’s website at www.federalreserve.gov/releases/G17/About.htm.

Reliability. The average revision to the *level* of the total IP index, without regard to sign, between the first and the fourth estimates was 0.28 percent during the 1987–2018 period. The average revision to the *percent change* in total IP, without regard to sign, from the first to the fourth estimates was 0.22 percentage point during the 1987–2018

period. In most cases (about 85 percent), the direction of the change in output indicated by the first estimate for a given month is the same as that shown by the fourth estimate.

Rounding. The published percent changes are calculated from unrounded indexes, and may not be the same as percent changes calculated from the rounded indexes shown in the release.

CAPACITY UTILIZATION

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

Coverage. Capacity indexes are constructed for 89 detailed industries (71 in manufacturing, 16 in mining, and 2 in utilities), which mostly correspond to industries at the three- and four-digit North American Industry Classification System, or NAICS level. Estimates of capacity and utilization are available for a variety of groups, including durable and nondurable manufacturing, total manufacturing, mining, utilities, and total industry. Manufacturing consists of those industries included in the NAICS definition of manufacturing *plus* those industries—logging and newspaper, periodical, book, and directory publishing—that have traditionally been considered to be manufacturing and included in the industrial sector. Also, special aggregates are available, such as high-technology industries and manufacturing excluding high-technology industries.

Source Data. The monthly rates of capacity utilization are designed to be consistent with both the monthly data on production and the periodically available data on capacity and utilization. Because there is no direct monthly information on overall industrial capacity or utilization rates, the Federal Reserve first estimates annual capacity indexes from the source data. Capacity data reported in physical units from government sources (primarily from the U.S. Geological Survey and the Department of Energy's Energy Information Administration) and trade sources are available for portions of several industries in manufacturing (for example, paper, industrial chemicals, petroleum refining, motor vehicles), as well as for electric utilities and mining; these industries represent about 27 percent of total industrial capacity. When physical product data are unavailable for manufacturing industries, capacity indexes are based on responses to the Bureau of the Census's *Quarterly Survey of Plant Capacity* (QSPC); these industries account for about 64 percent of total industry capacity. In the absence of utilization data for a few mining and petroleum series, capacity is based on trends through peaks in production (roughly 9 percent of total industry capacity). A detailed description of the methodology used to construct the capacity indexes is available on the Board's website (www.federalreserve.gov/releases/G17/Meth/MethCap.htm).

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

Consistency. A major aim is that the Federal Reserve utilization rates be consistent over time so that, for example, a rate of 85 percent means about the same degree of tightness that it meant in the past. A major task for the Federal Reserve in developing reasonable and consistent time series of capacity and utilization is dealing with inconsistencies between the movements of the industrial production index and the survey-based utilization rates. The McGraw-Hill/DRI Survey, now discontinued, was the primary source of manufacturing utilization rates for many years. This survey of large companies reported, on average, higher utilization rates than those reported by

establishments covered by the annual *Survey of Plant Capacity* (the primary source of factory operating rates through 2006, after which it was discontinued) for the fourteen years they overlapped. Adjustments have been made to keep the industry utilization rates currently reported by the Federal Reserve (now based on the QSPC) roughly in line with rates formerly reported by McGraw-Hill. As a consequence, the rates reported by the Federal Reserve tend to be higher than the rates reported in the Census utilization surveys.

Perspective. Over the 1972–2018 period, the average total industry utilization rate was 79.8 percent; for manufacturing, the average factory operating rate was 78.3 percent. Industrial plants usually operate at capacity utilization rates that are well below 100 percent: none of the broad aggregates has ever reached 100 percent. For total manufacturing, utilization rates have exceeded 90 percent only in wartime. The highs and lows in capacity utilization are specific to each series and do not all occur in the same month.

REFERENCES AND RELEASE DATES

References. The release for the annual revision that was published on March 27, 2019, is available on the Board's website (www.federalreserve.gov/releases/g17/revisions/Current/DefaultRev.htm). A summary of the annual revision that incorporated back to 1972 production and capacity indexes reclassified according to the North American Industry Classification System is available in an article in the *Federal Reserve Bulletin*, vol. 89 (April 2003), pp.151–176. A description of the aggregation methods for industrial production and capacity utilization is included in an article in the *Federal Reserve Bulletin*, vol. 83 (February 1997), pp. 67–92. The Federal Reserve methodology for constructing industry-level measures of capital is detailed in "Capital Stock Estimates for Manufacturing Industries: Methods and Data" by Mike Mohr and Charles Gilbert (1996), which can be obtained at www.federalreserve.gov/releases/g17/CapitalStockDocLatest.pdf.

Industrial Production—1986 Edition contains a more detailed description of the other methods used to compile the industrial production index, plus a history of its development, a glossary of terms, and a bibliography. The major revisions to the IP indexes and capacity utilization since 1990 have been described in the *Federal Reserve Bulletin* (April 1990, June 1990, June 1993, March 1994, January 1995, January 1996, February 1997, February 1998, January 1999, March 2000, March 2001, March 2002, April 2003, Winter 2004, Winter 2005, March 2006, May 2007, August 2008, August 2009) or in online staff studies (www.federalreserve.gov/releases/g17/articles/rev2010/industrial10.pdf, www.federalreserve.gov/releases/g17/articles/rev2012/industrial12.pdf, www.federalreserve.gov/releases/g17/articles/rev2013/industrial13.pdf).

Release Schedule

In 2019, the G.17 will be published at 9:15 a.m. on:

January 18, February 15, March 15, April 16, May 15, June 14, July 16, August 15, September 17, October 17, November 15, and December 17.

This release schedule is available on the Board's website at <http://www.federalreserve.gov/releases/g17>.