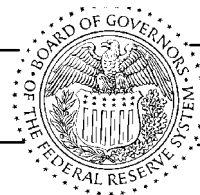


FEDERAL RESERVE statistical release



G.17 (419) 2018 Historical and Annual Revision

For release at 12:00 noon (EDT)
March 23, 2018

Industrial Production and Capacity Utilization: The 2018 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 total IP for recent years were negative: For the 2015–17 period, the current estimates show rates of change that are 0.4 to 0.7 percentage point lower in each year.² Total IP is still reported to have moved up about 22½ percent from the end of the recession in mid-2009 through late 2014. Subsequently, the index declined in 2015, edged down in 2016, and increased in 2017. The incorporation of detailed data for manufacturing from the U.S. Census Bureau’s 2016 Annual Survey of Manufactures (ASM) accounts for the majority of the differences between the current and the previously published estimates.

Revisions to capacity for total industry were mixed. Capacity growth was revised up about ½ percentage point for 2016, but revisions to other recent years were negative. Capacity for total industry is estimated to have expanded less than 1 percent in 2015, 2016, and 2017, but it is expected to increase about 2 percent in 2018.

In the fourth quarter of 2017, capacity utilization for total industry stood at 77.0 percent, about ½ percentage point below its previous estimate and about 3 percentage points below its long-run (1972–2017) average. The utilization rate for 2016 is also lower than the previous estimate.

This revision incorporated newly available annual data on output and prices. The IP indexes for manufacturing were updated with data from the 2016 ASM (which also includes revised data for 2015), while the IP indexes for publishing reflect new data for 2016 and revised data for 2015 from the Census Bureau’s Service Annual Survey. For logging, the IP indexes were updated with 2016 data from the U.S. Forest Service. In addition, the indexes for metallic and nonmetallic minerals were updated with revised annual data for 2016 from the U.S. Geological Survey (USGS). Data on prices from the Bureau of Labor Statistics (BLS) were also 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, including information from the BLS’s benchmark revisions to the Current Employment Statistics. 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 2017, along with new data on capacity from the USGS, the Energy Information Administration (EIA), and other organizations. The revised estimates also include new data on capital spending from the ASM for 2016 and revised data for 2015.

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 the 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 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.

RESULTS OF THE REVISION

Industrial Production

Manufacturing output is now estimated to have declined about 1½ percent in 2015, to have been little changed in 2016, and then to have advanced about 2 percent in 2017. These rates of change are lower than their previously reported values, especially for 2015, which was revised down 1.0 percentage point. The cumulative effect of these revisions leaves manufacturing IP in February 2018 about 5½ percent below its pre-recession peak.

The rates of change for mining have been revised up for 2014 and 2015 and revised down for 2016 and 2017. The contour for mining output shows an especially large gain in 2014 followed by sizable drops in 2015 and 2016; output increased strongly in 2017. The rates of change for utilities output are revised down only slightly for each year from 2013 to 2016, while the gain in the index for 2017 is now reported to be 0.8 percentage point lower than previously published.

Production by Industry Group

The output of durable goods manufacturers is now reported to have fallen in 2015, moved a little lower in 2016, and advanced in 2017; output was previously reported to have risen in 2016, and the rates of change for 2015 and 2017 were also revised down. Within durables, the revisions for the 2015–17 period were widespread across industries. Revisions to the rates of change for nondurables were smaller and more mixed. The revised estimates show the output of nondurables increasing about ½ percent in both 2015 and 2016 and rising 2.2 percent in 2017.

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 sharply in 2014, 2016, and 2017, and was relatively little changed in other recent years. The revisions to this index were mixed, moving the rate of change higher in 2013, 2015, and 2016 and lower in 2014 and 2017.

Production by Market Group

The index for consumer goods has increased in each of the past few years, though the gains in 2014, 2015, and 2017 are now smaller than reported earlier. The rates of change for business equipment were revised down significantly for 2015 and 2016, but the gains were revised up for 2017. The revisions for construction supplies and business supplies were smaller. In addition, the index for materials is now estimated to have fallen more rapidly in 2015 and 2016 and risen more slowly in 2017, with downward revisions for both the energy and non-energy components.

Capacity

Total industrial capacity expanded modestly in each year from 2015 to 2017, and it is expected to increase about 2 percent in 2018. The growth rate for 2016 is now noticeably higher than the value reported earlier, but the gains in other years are now reported to have been smaller. Manufacturing capacity contracted slightly in 2014 and 2015, but it increased between ½ and 1½ percent each year thereafter. For 2016 in particular, the gain in manufacturing capacity is larger than stated previously, reflecting a more-rapid increase in capacity for nondurables industries as well as a less-steep decline in capacity for logging and publishing (“other manufacturing” industries). Capacity at mines declined in 2016 and 2017, but it is expected to jump about 5 percent in 2018. As compared with previous reports, the growth of capacity at mines was significantly higher in 2016 and significantly lower in 2017. Capacity at utilities has grown in recent years; the gain for 2017 was

revised up more than 1 percent, but revisions to other years were negative.

Capacity Utilization

Capacity utilization for total industry declined in 2015 and 2016 but rose in 2017.³ The decrease in 2015 resulted from a large drop in the rate for mining and from smaller reductions in the rates for both manufacturing and utilities. Compared with earlier estimates, capacity utilization for total industry is now reported to have been somewhat higher for 2014, little changed in 2015, and lower for 2016 and 2017.

Utilization at manufacturers fell in 2016 and rose in 2017; the current readings for these years are each between about ½ and 1 percentage point lower than previously reported, as capacity revised down by less than output. For the fourth quarter of 2017, the utilization rate at manufacturers is estimated to have been more than 3 percentage points below its long-run average. Within manufacturing, there were sizable downward revisions to the utilization rates for both durables and nondurables for 2016 and 2017.

The utilization rate for durable manufacturing was above its long-run average in 2014, but it fell back in 2015. By the fourth quarter of 2017, the utilization rate for durables was more than 2 percentage points below its long-run average. Of the 11 major categories of durables, about half recorded operating rates below their long-run averages.

The utilization rate for nondurable manufacturing has been below its long-run average for several years. As of the fourth quarter of 2017, the operating rates for all nondurable manufacturing industry groups were around or below their industry-specific long-run averages.

Capacity utilization rates for mining declined sharply in 2015 and fell further in 2016, before rising sharply in 2017. The declines in 2015 and 2016 were largely due to decreased output in the oil and gas drilling and servicing sector. Relative to its previously published rates, utilization at mines for 2017 is about 2 percentage points higher; revisions to other recent years were smaller. In 2017, the utilization rate for mining was ½ percentage point above its long run average of 87.0 percent; it had last been above this average in 2014. The operating rates for utilities have been well below their long-run average for the past several years; the revisions to this index were positive except for 2017.

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 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 used to construct the indexes. The current revision also introduces a new structure for the published indexes for electricity generation.

³Unless otherwise noted, rates of capacity utilization are reported for the fourth quarter of the reference year.

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 the cost of materials for manufacturing industries, which can be summed to obtain nominal gross output. The benchmark indexes for this revision incorporated revised information for 2015 and new information for 2016 from the ASM.

New annual data were also incorporated into several other indexes. The benchmark indexes for metallic and nonmetallic mineral mining were updated with revised 2016 data from the USGS, and the benchmark indexes for logging and publishing were advanced through 2016 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 through 2016 with the related producer prices indexes (PPIs) from the BLS.⁴ However, for a few selected industries, the annual price deflators are constructed by the Federal Reserve.⁵

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. The weights that are used to combine individual IP measures into more aggregate measures are based on the value added from the industry, calculated as gross output less cost of materials. For IP indexes 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 ASM. For IP indexes that cover only part of a six-digit NAICS industry, the aggregation weights were 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 were used to determine the share of an industry's value added that was 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. Figures for value added for mining industries in the years between the quinquennial Economic Censuses 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.

⁴Overall, 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.

⁵For 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 data storage devices and for selected components of communications equipment will be available on the Board's website at www.federalreserve.gov/releases/g17.

Revised Quarterly and Monthly Data

This revision incorporated source data on production, shipments, and inventories 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 2017 and from other industry reports.

Revised Seasonal Factors

Seasonal factors for production-worker hours—which adjust for timing, holiday, and monthly seasonal patterns—were updated with data through January 2018. The updated factors for the physical product series, which include adjustments for holiday and workday patterns, used data through December 2017 where available.

Seasonal factors for unit motor vehicle assemblies have been updated, and projections through June 2019 are available on the Board’s website at www.federalreserve.gov/releases/g17/mvsf.htm. These factors are based on production data through January 2018 and were revised back to January 2006. The seasonal factors explicitly incorporate the holiday schedule for the vehicle assembly lines specified in the latest collective bargaining agreements with domestic manufacturers.

Methodological Changes to Individual Production and Capacity Indexes

New Structure for Electricity Generation

This revision introduces more detail to the published indexes for electricity generation. Previously, separate indexes were issued for hydroelectric power (NAICS 221111), for nuclear power (NAICS 221113), and for generation both from fossil fuels and from any other technology (NAICS 221112, 221114, 221115, 221116, 221117, and 221118). With this revision, the last index is broken into separate indexes to be published for fossil fuels and for the other technologies, which are primarily based on renewable energy sources. In addition, a new aggregate that combines hydroelectric power with the index for renewables and other technologies will be published.

New Benchmark Index for Drilling Oil and Gas Wells (NAICS 213111)

With this revision, data from the American Petroleum Institute (API) on footage drilled form the basis of a new annual benchmark for the index for drilling oil and gas wells (NAICS 213111) from 1991 forward; this new benchmark also relies on data from Baker Hughes on the number of onshore and offshore drilling rigs in operation. Previously, the index for this industry did not have an annual benchmark—the only source data for the IP index were the weighted onshore and offshore rig counts from Baker Hughes.

The monthly IP index continues to depend solely on the Baker Hughes weighted rig counts, as the final quarterly measures of footage drilled from the API are available too late for inclusion in IP. The IP indexes will incorporate the footage drilled data as part of the annual revision process.

The new annual benchmark for drilling oil and gas wells is constructed as the weighted sum of footage drilled by offshore and by onshore drilling rigs, where the weight for each type of rig reflects its relative value. Historically, offshore rigs have been substantially more valuable than onshore rigs (by a factor of four in the standard calculations for IP). The innovation in this revision is to update the weights to additionally reflect each type of rig’s value in terms of footage per rig; the new formula weights footage drilled by offshore rigs slightly more than five times more heavily than footage drilled by onshore rigs.

The construction of the new annual benchmark for drilling oil and gas wells uses detailed information on

overall footage drilled and on footage by offshore and by onshore rigs. The API publishes the reported offshore and onshore footage from survey respondents; however, for recent quarters these subtotals are incomplete as some drilling companies may not immediately report values to the API. The API makes adjustments for non-response and does publish quarterly estimates for overall (offshore plus onshore) footage drilled. As the API issues subsequent quarterly reports, it also issues revisions to earlier reports.

The first step in the construction of the new benchmark is to compute annual estimates for the total offshore and total onshore footage drilled. To do so, the raw quarterly subtotals based on survey reports are converted to an annual frequency. Then, a linear regression is run that uses the API's most recent estimate of overall footage drilled as the dependent variable and uses recent vintages of the separate offshore and onshore subtotals as independent variables. Estimates of total offshore and total onshore footage drilled are computed by applying the relevant regression coefficients to the underlying data; each of these estimates is extended back to 1972 by applying the appropriate historical rates of change in the Baker Hughes count for offshore and onshore rigs.

The estimated totals for offshore and onshore footage are divided by the number of rigs of each type to obtain the average footage per rig; this average is calculated for the 2000–09 period. Next, the weight for each type of rig (four for offshore, one for onshore) is divided by the relevant average footage value, and terms are simplified algebraically to obtain the adjusted weights. As noted above, the adjustments result in footage drilled by offshore rigs being weighted slightly more than five times more heavily than footage drilled by onshore rigs.

Incorporation of Quarterly Survey of Plant Capacity into Monthly Estimates for IP Indexes Based on Production Worker Hours

For the IP indexes based on production worker hours, this revision incorporates information from the QSPC into the adjustment factor that aligns the monthly data with the annual benchmark indicator. The standard adjustment factor is calculated in two steps—first, by creating a historical ratio of the annual benchmark indicator to the annual average of the monthly (or quarterly) raw data, and second, by projecting this ratio ahead for years when benchmark data are not yet available. The annual adjustment factor is converted to a monthly frequency for use in the monthly IP indexes. For the IP indexes based on production worker hours, the adjustment factors are effectively measures of productivity. This revision adapts the standard adjustment factor formula for indexes based on production worker hours by including data from the QSPC in the calculation.

For an IP index based on production worker hours, the new annual adjustment factor is constructed as the ratio of the benchmark indicator to the annual average of the production worker hours index, as was done in the past. Likewise, the annual adjustment factor is forecast past the end of the benchmark data as in previous annual revisions, based on a time series model and the QSPC utilization rates when available. Previously, however, the annual adjustment factor was interpolated to a monthly frequency using a procedure that attempted to make the resulting monthly series as smooth as possible. With this revision, the resulting monthly adjustment factors will take on some of the contour of the utilization rates from the QSPC if the annual averages of the QSPC rates are helpful in forecasting the annual adjustment factors.⁶

At this time, QSPC rates are only available through the fourth quarter of 2017. The annual adjustment factors are projected after that period using time-series models, and estimates are made of the QSPC rates implied by those projections. As the actual QSPC rates become available for 2018, the monthly adjustment factors will be modified to reflect the new information.

⁶A regression model of the log of the annual adjustment factor is estimated using the log of the ratio of the QSPC rates over production worker hours as an independent variable. The coefficient for the QSPC variable is constrained to be between 0.0 and 0.5 so that the production worker hours are always at least as important as the QSPC in estimating the IP index.

With this annual revision, industry-level data for capital expenditures, capital stocks, and capital input used in the estimation of industrial capacity have been converted to a 2012 NAICS basis. Estimates of industrial capacity are based on regression models that relate end-of-year capacity indexes to economic determinants of annual capacity growth. One determinant of capacity growth used in these regression models is capital input—defined as the flow of capital services from the capital stock—which is constructed using industry- and asset-level capital expenditures information. Previously, these variables had been constructed on the basis of earlier NAICS systems.

Introduction of Additional Detail for Communications Equipment Prices

In the future, the Federal Reserve will publish new detail for communications equipment prices. Previously, the Federal Reserve released quarterly and annual price indexes for four product classes that composed a subset of the primary products of the communications equipment industry (NAICS 3342). The forthcoming release will include 25 annual price indexes that cover the full range of output in the communications equipment industry: indexes for 19 primary products plus indexes for secondary products and for miscellaneous receipts for each of the three component 6-digit industries. The annual price indexes are constructed from Federal Reserve research using private data, published price indexes from government organizations, and independent research by outside economists. The forthcoming release will also include annual price indexes for each of the three 6-digit industries (NAICS 334210, NAICS 334220, and NAICS 334290) within communications equipment.

In addition, the forthcoming release will include annual estimates of nominal production corresponding to the 25 newly published price indexes. The nominal production estimates are derived from Census Bureau data combined with private information on product market size, as discussed in Byrne and Corrado (2015).⁷ The nominal estimates are used to weight the individual product price indexes to the six-digit industry level. The Federal Reserve uses these six-digit industry price indexes to deflate nominal output in the construction of the benchmark indicators of real output. A more detailed explanation of the communications equipment prices will be available on the Board's website at www.federalreserve.gov/releases/g17/g17_technical_qa.htm.

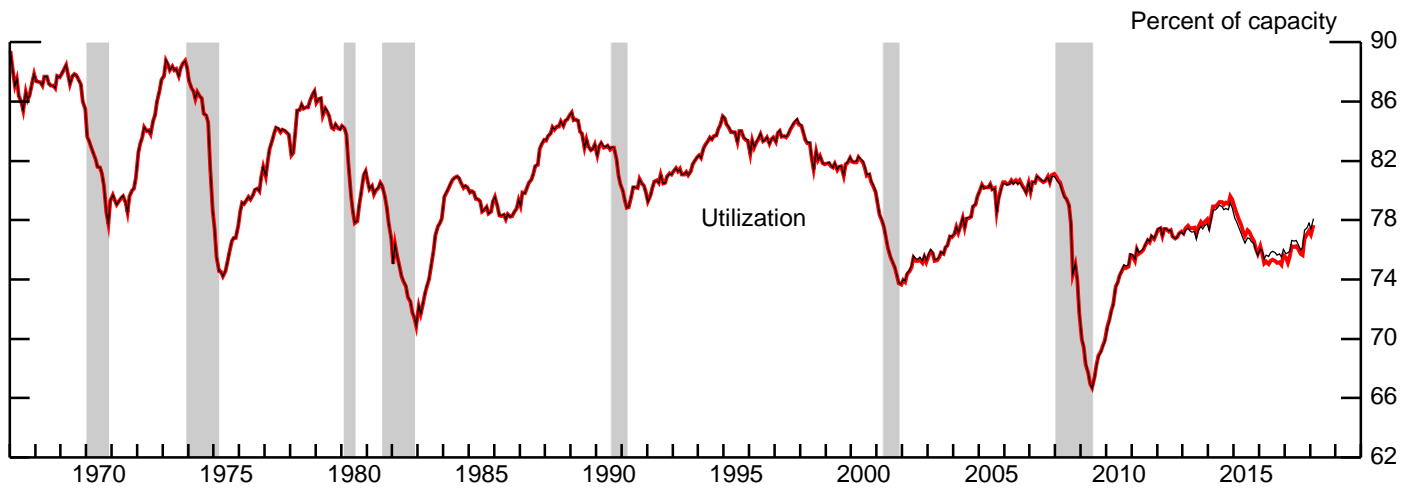
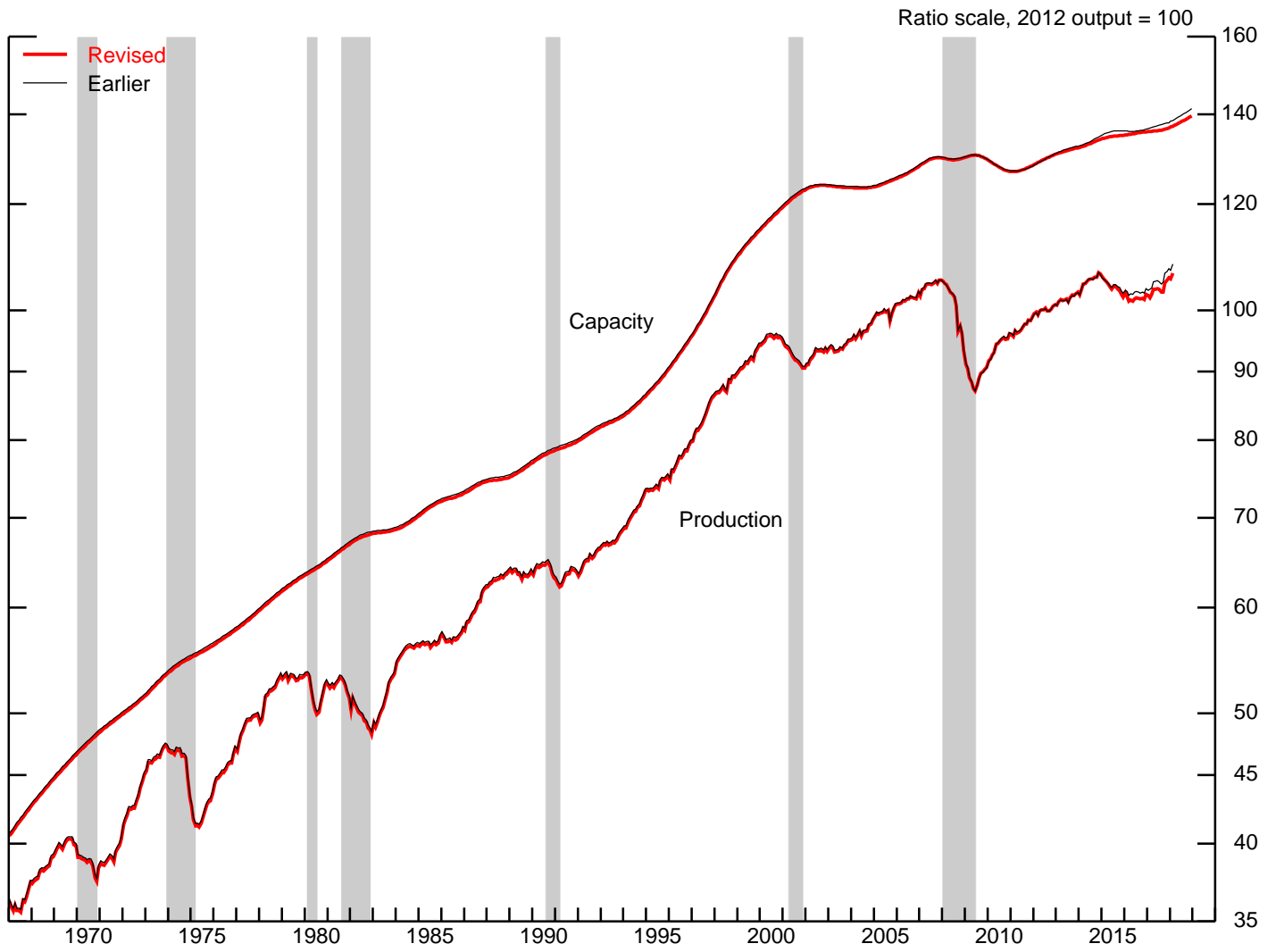
Data Availability and Publication Changes

Files containing the revised data and the text and tables from this release are available on the Board's website at 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 www.federalreserve.gov/releases/g17/g17_revision_series.htm.

A document with printed tables of the revised estimates of series shown in the G.17 release is available upon request to the Industrial Output Section, Mail Stop 82, Division of Research and Statistics, Board of Governors of the Federal Reserve System, Washington, DC 20551.

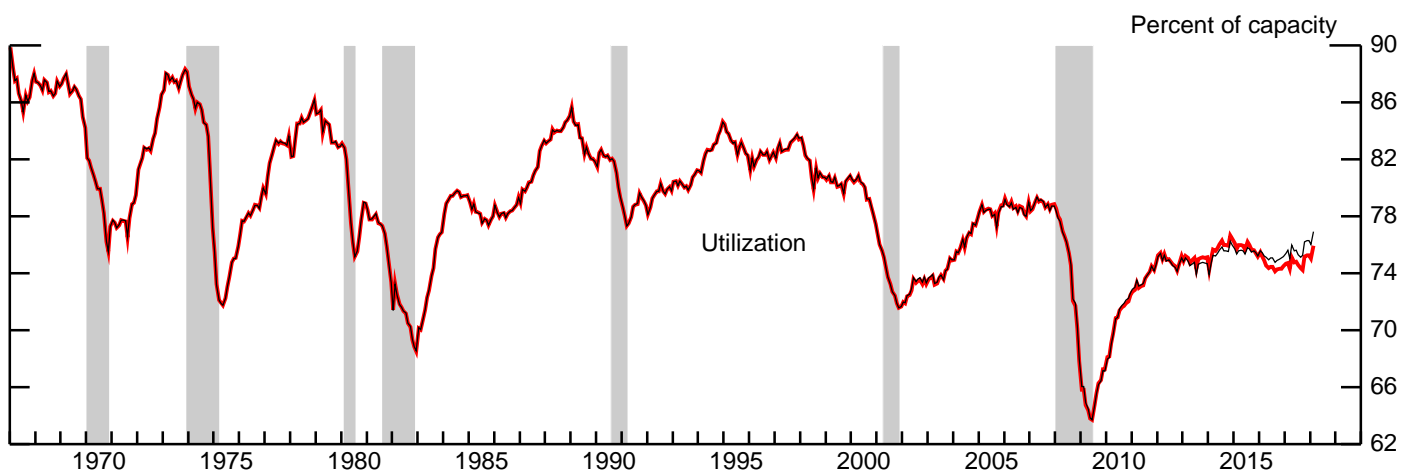
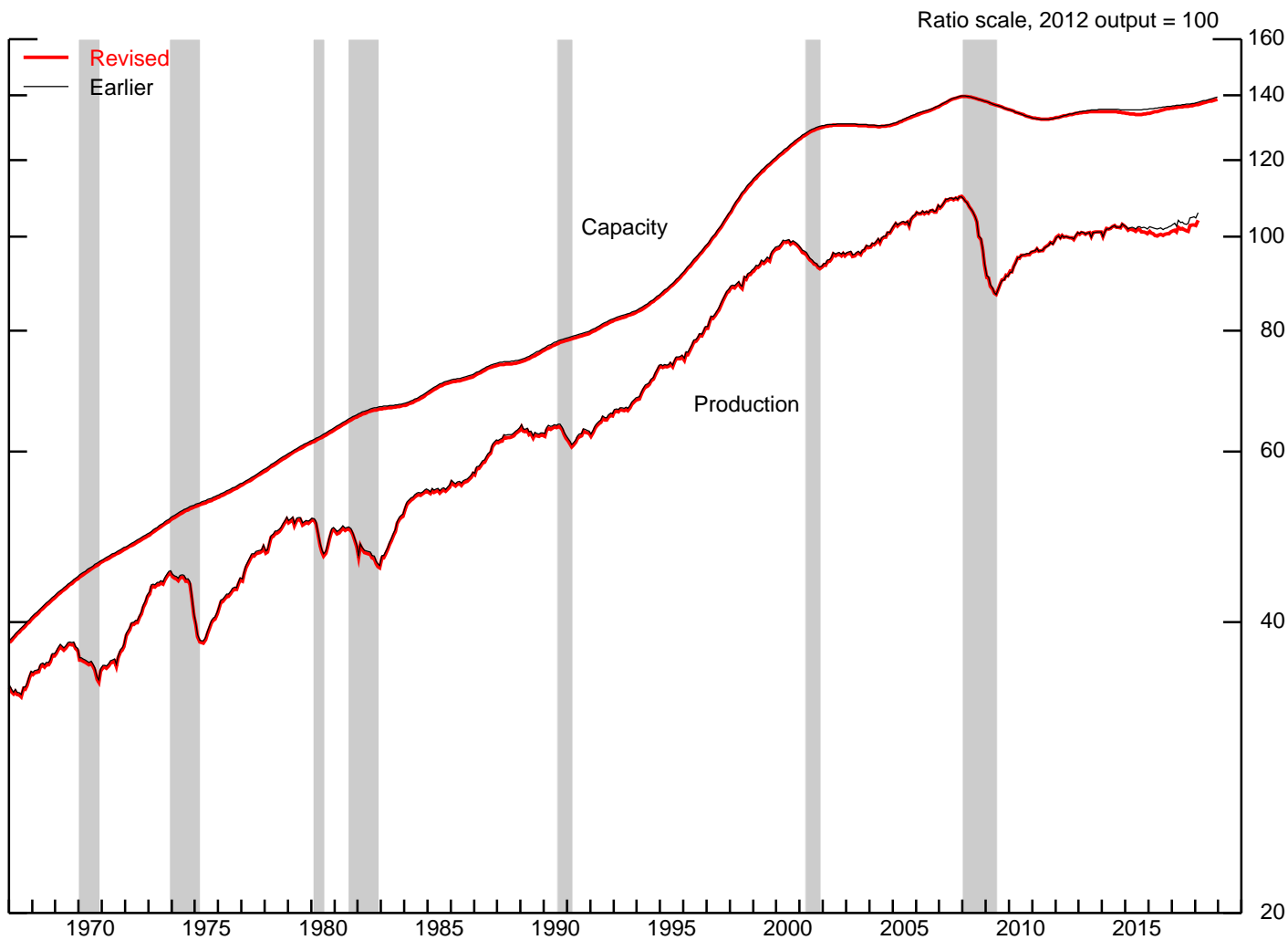
⁷David M. Byrne and Carol A. Corrado (2015), "Prices for Communications Equipment: Rewriting the Record," Finance and Economics Discussion Series 2015-069 (Washington: Board of Governors of the Federal Reserve System, February), <https://www.federalreserve.gov/econresdata/feds/2015/files/2015069pap.pdf>.

1. Total industrial production, capacity, and utilization



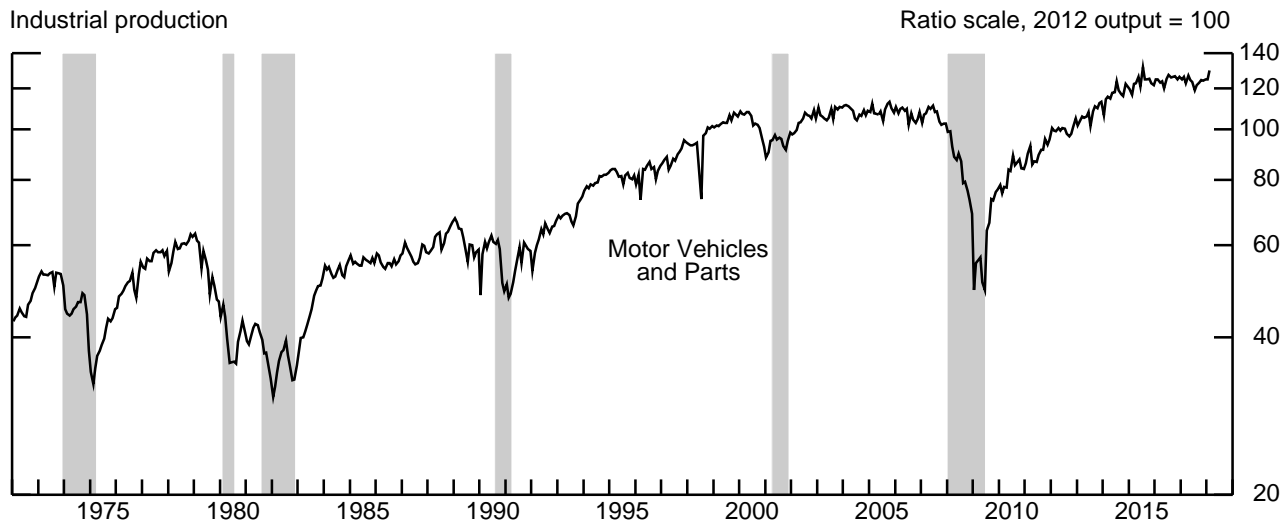
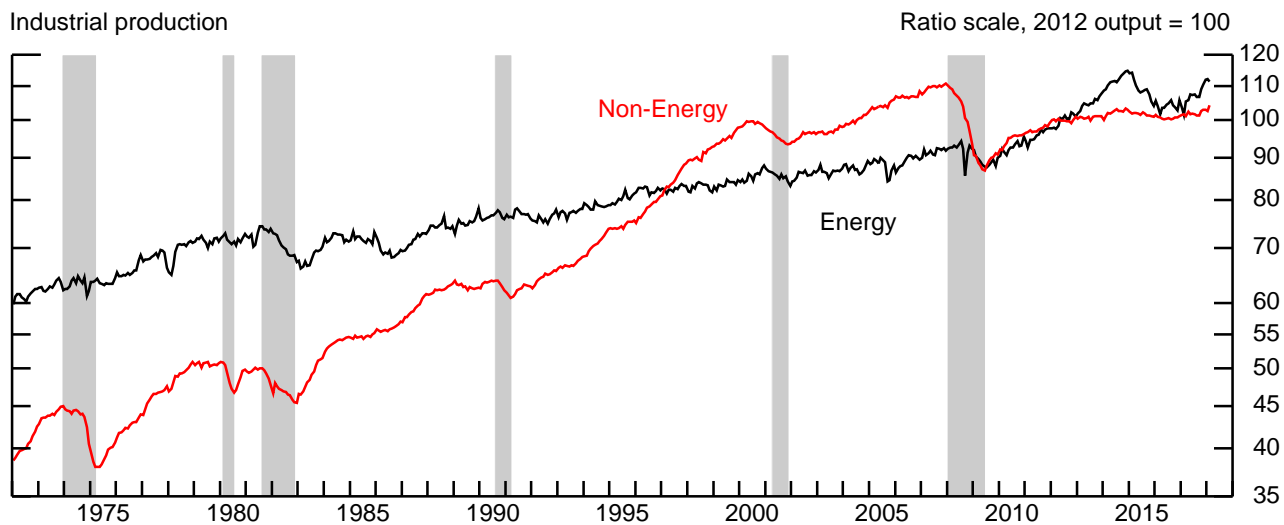
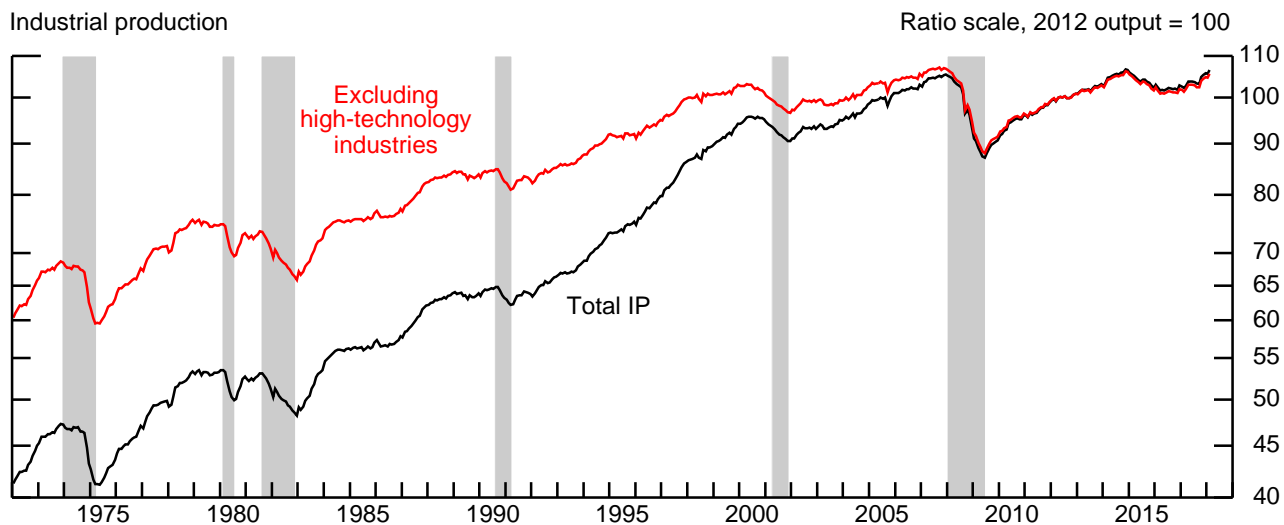
Note: The shaded areas represent periods of business recession as defined by the National Bureau of Economic Research (NBER).

2. Manufacturing industrial production, capacity, and utilization



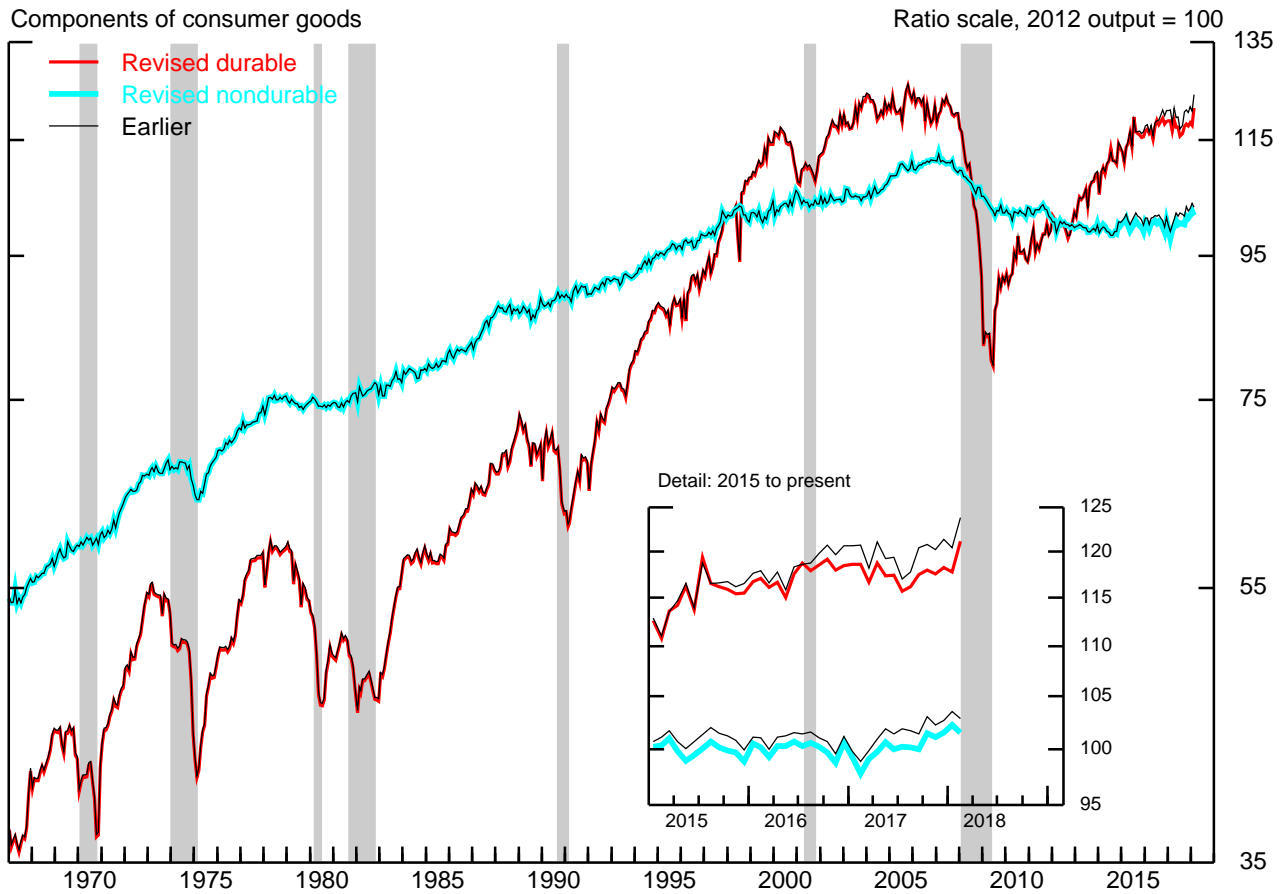
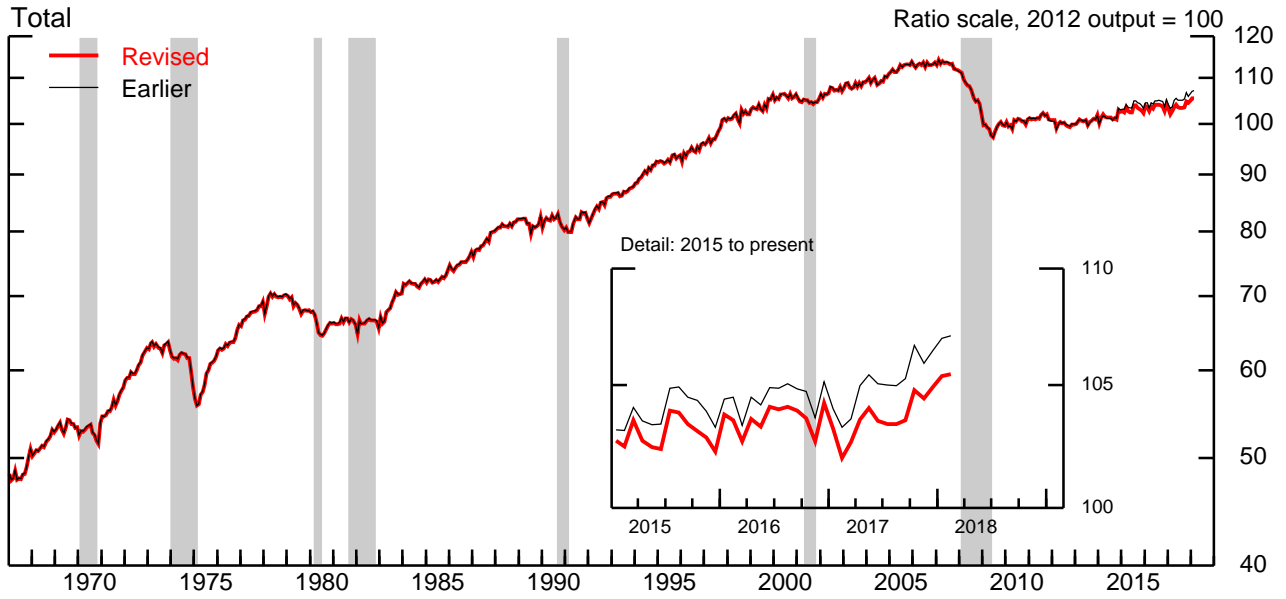
Notes: Manufacturing consists of those industries in the North American Industry Classification System, or NAICS, definition of manufacturing plus those industries--logging and newspaper, periodical, book, and directory publishing--that have traditionally been considered to be manufacturing and included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

3. Industrial production of selected industries



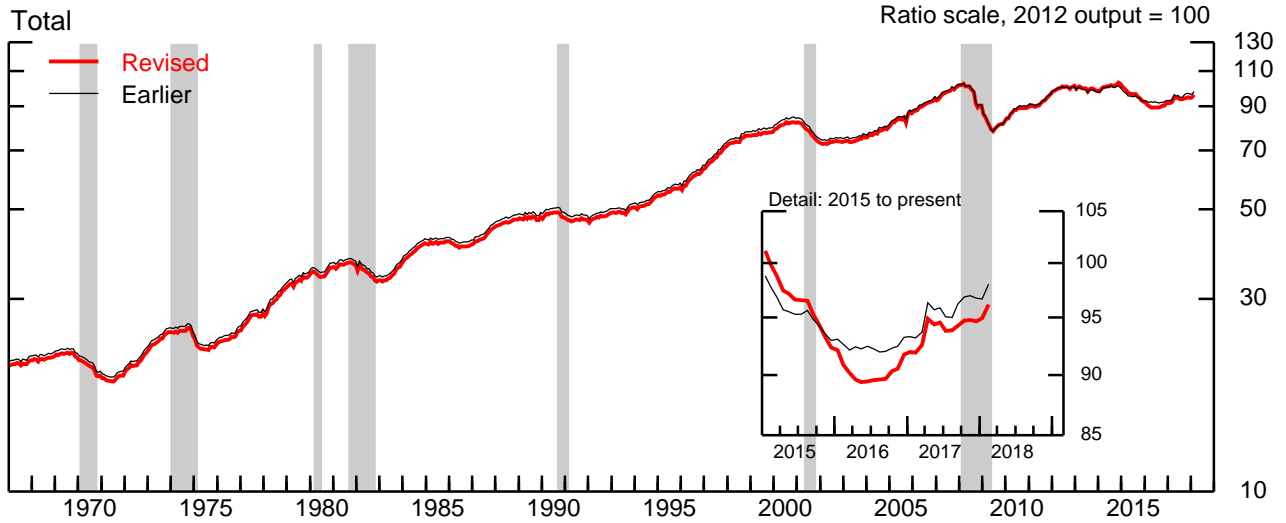
Notes: High-technology industries are defined as semiconductors and related electronic components (NAICS 3344), computers (NAICS 3341), and communications equipment (NAICS 3342). The shaded areas represent periods of business recession as defined by the NBER.

4. Consumer goods

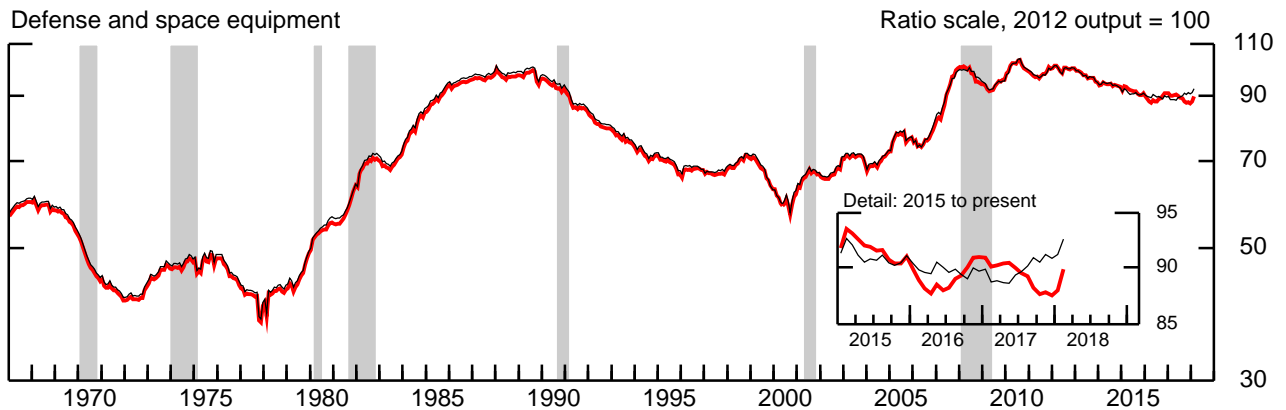
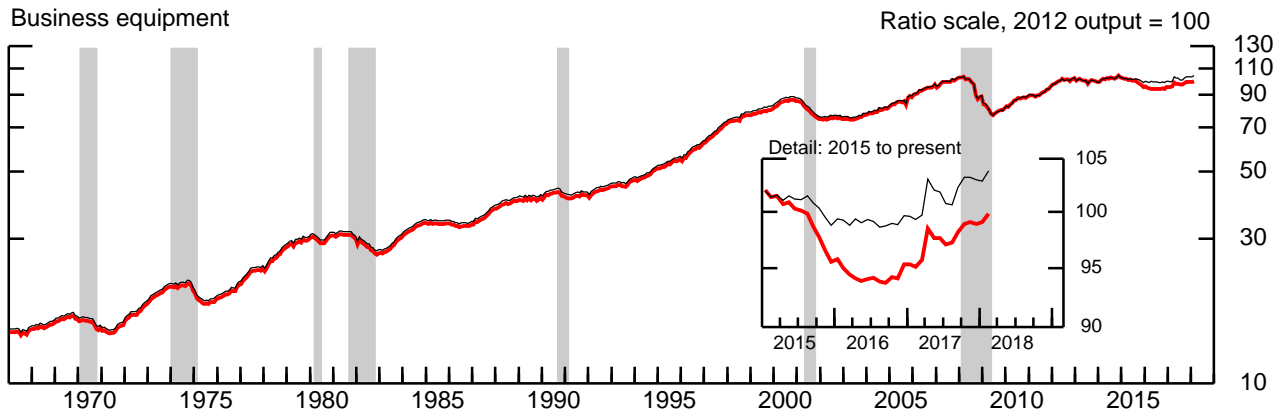


Note: The shaded areas represent periods of business recession as defined by the NBER.

5. Equipment

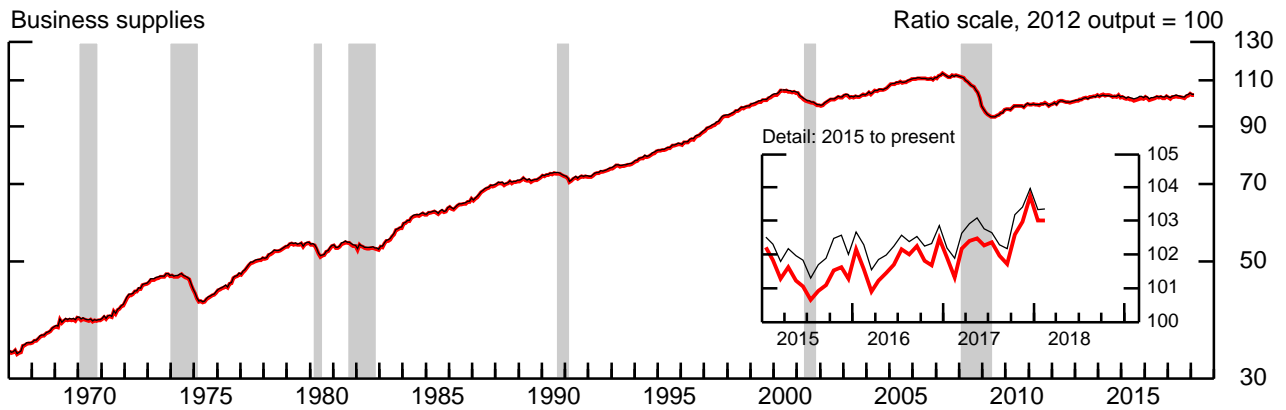
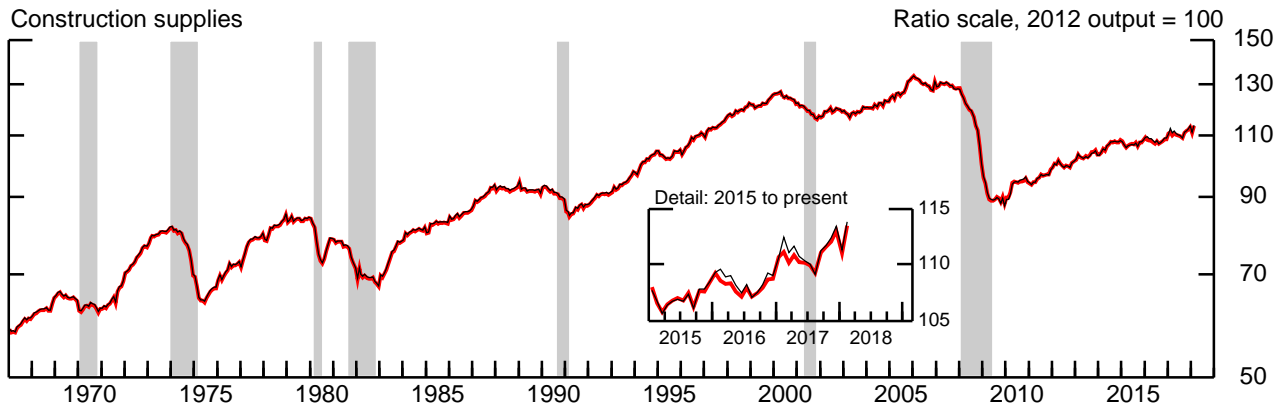
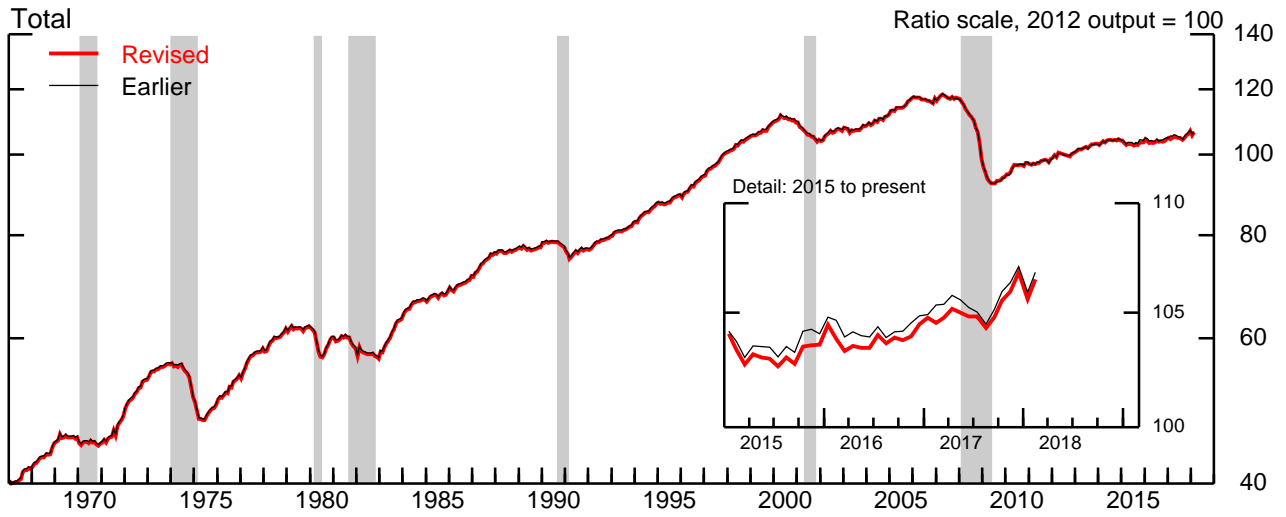


Note: Includes business equipment, defense and space equipment, oil and gas well drilling, and manufactured homes.



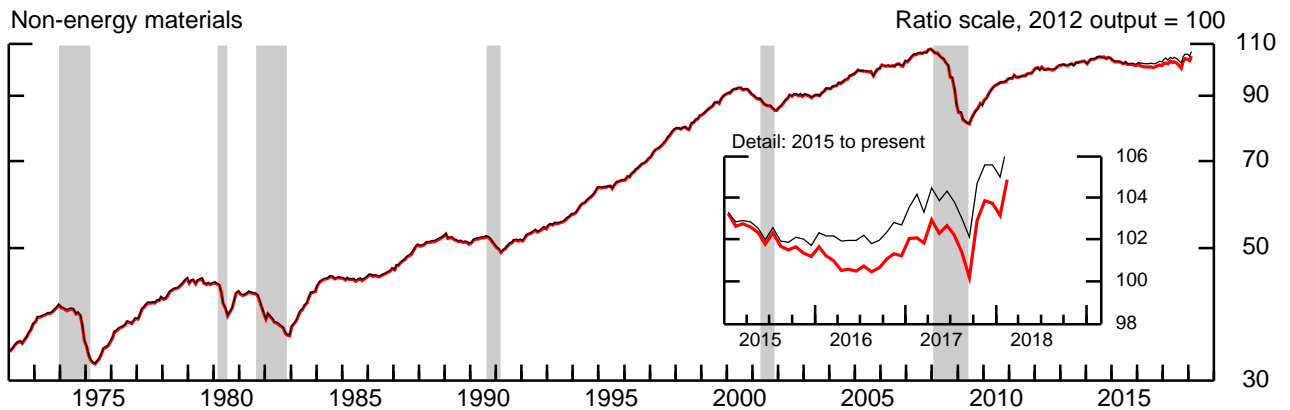
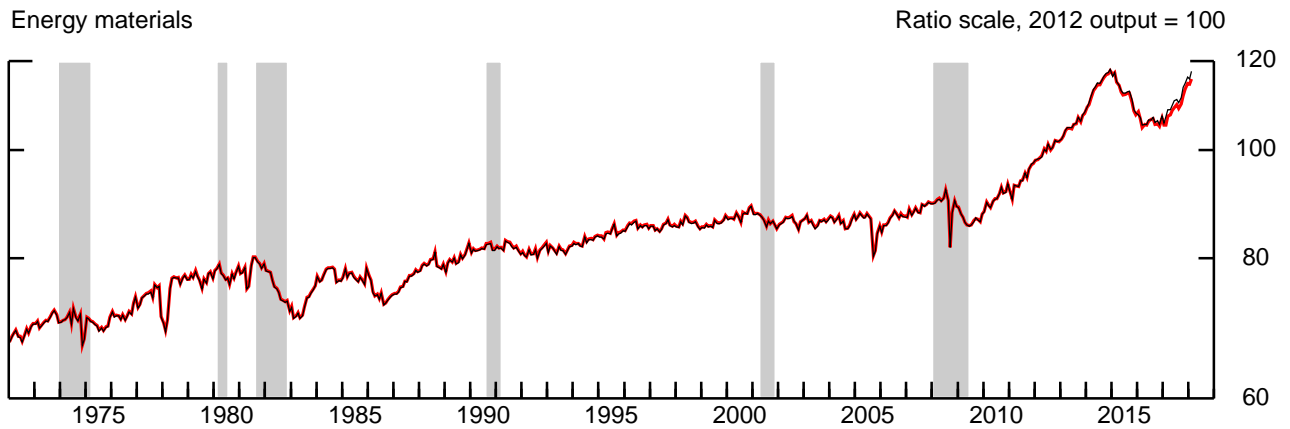
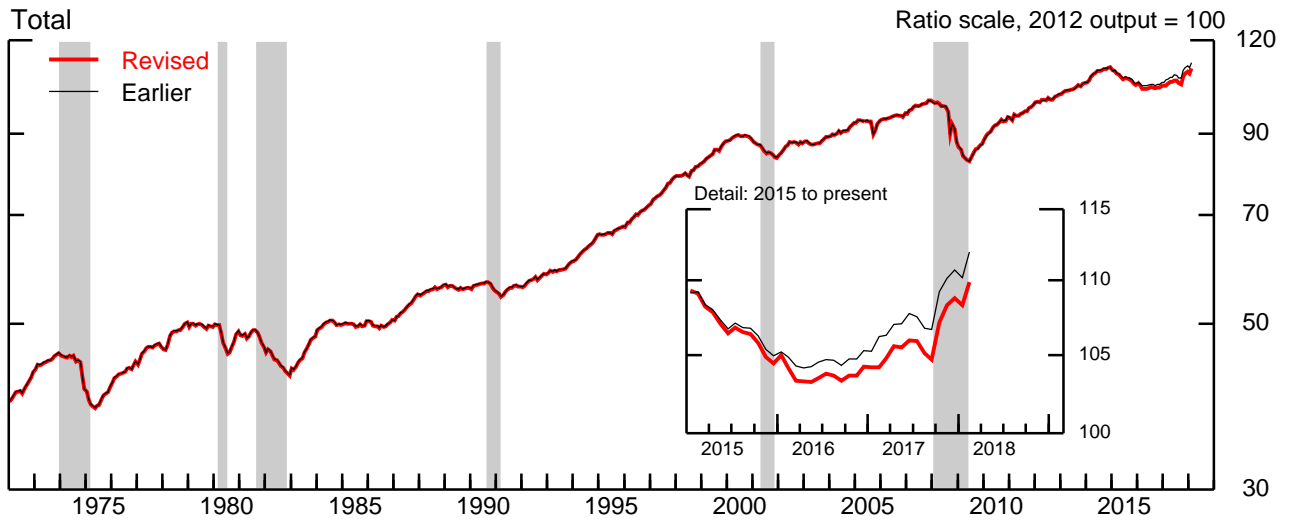
Note: The shaded areas represent periods of business recession as defined by the NBER.

6. Nonindustrial supplies



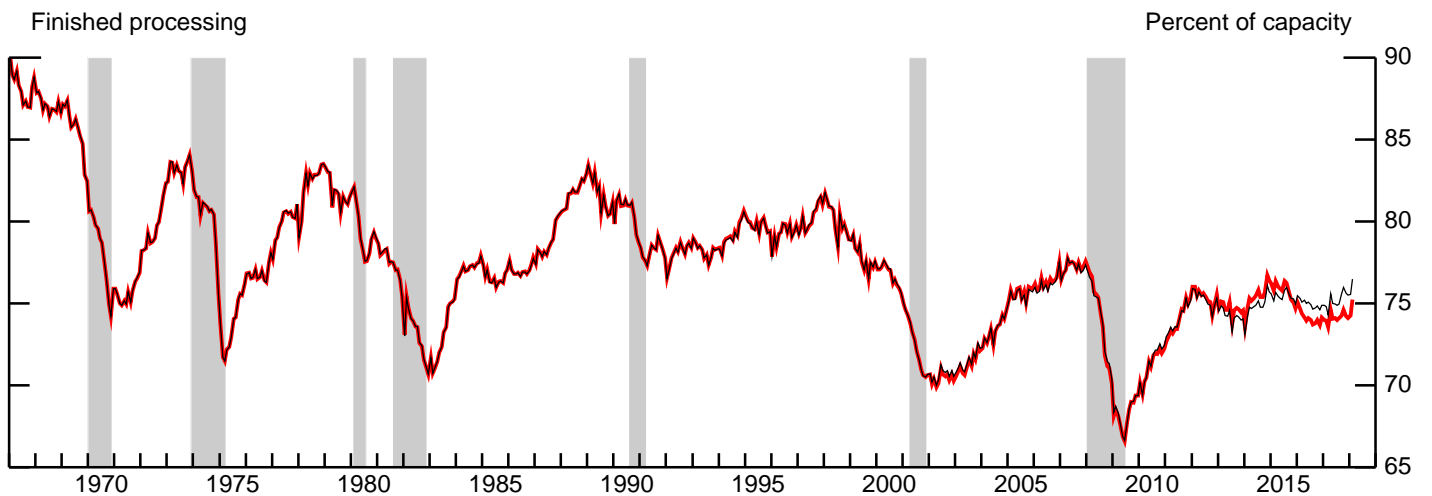
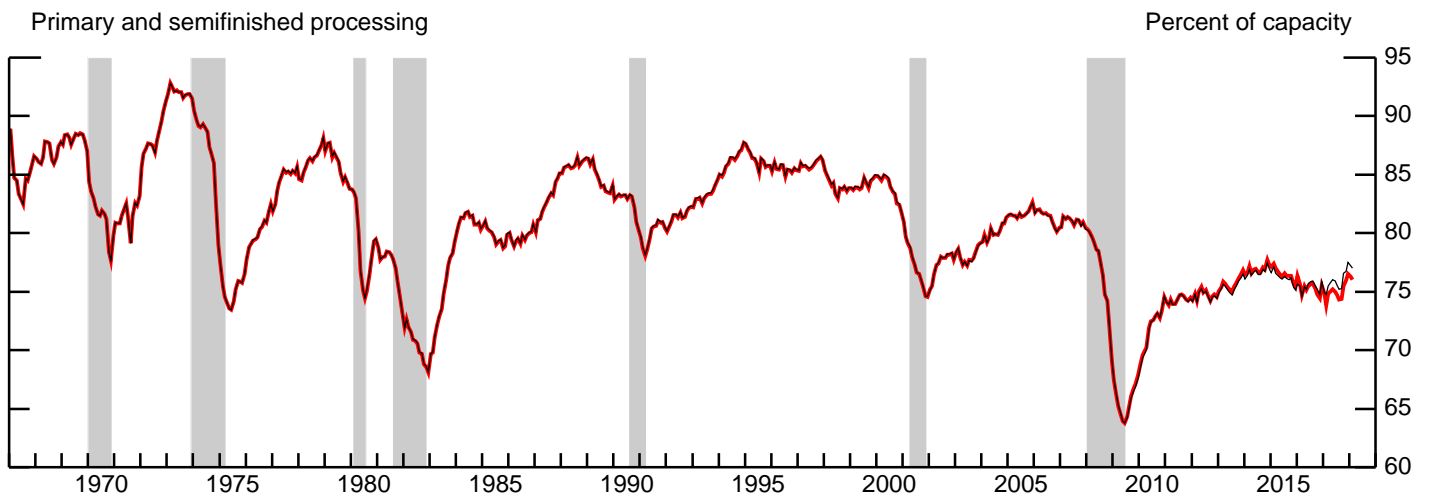
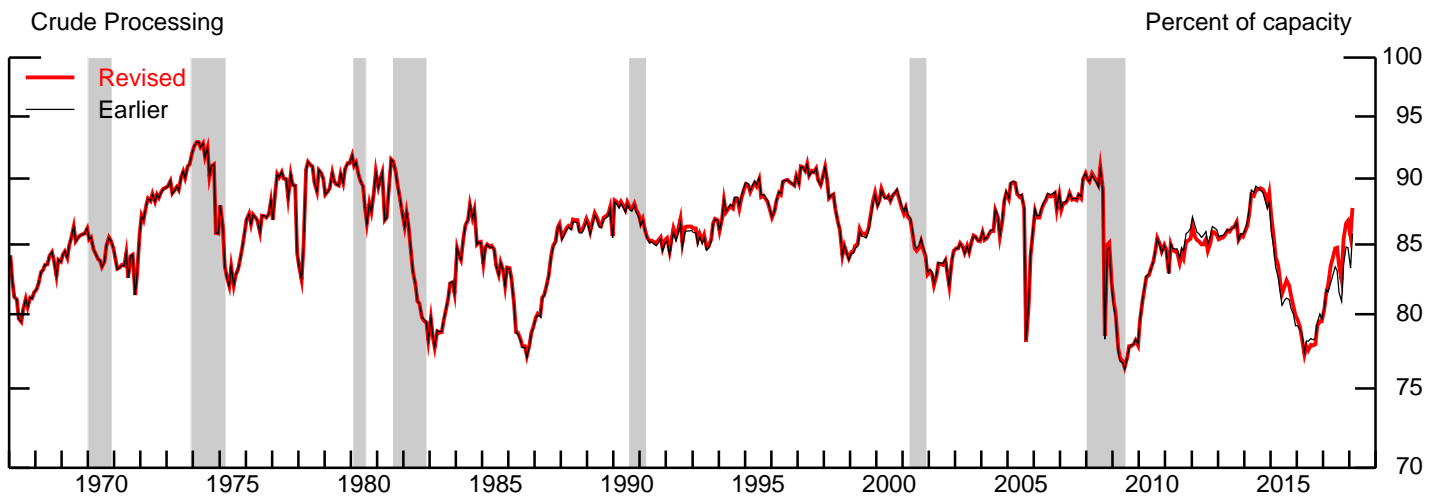
Note: The shaded areas represent periods of business recession as defined by the NBER.

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)																	
1988	.0	.4	.2	.6	-.1	.3	.0	.4	-.3	.5	.2	.5	3.7	3.5	1.5	2.9	5.2
1989	.3	-.4	.2	.1	-.7	.0	-.9	.9	-.4	-.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	-.6	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	5.7	1.0	-1.5
1992	-.6	.7	.8	.8	.3	.0	.9	-.5	.2	.8	.4	.1	-4	7.3	3.1	4.3	2.9
1993	.4	.4	-.1	.3	-.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	1.0	5.0	7.5	5.2	8.6	5.3
1995	.2	-.1	.1	-.1	.3	.3	-.4	1.3	.4	-.1	.2	.4	4.2	1.3	3.7	3.5	4.6
1996	-.7	1.6	-.1	.9	.7	.8	-.1	.6	.7	-.1	.9	.7	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	5.9	9.5	10.5	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	-.1	-.3	.4	-.3	.0	-.3	4.1	5.0	-.4	-.9	3.9
2001	-.6	-.6	-.3	-.3	-.6	-.6	-.6	-.1	-.4	-.4	-.5	.0	-5.1	-5.0	-5.4	-4.1	-3.1
2002	.6	.0	.8	.4	.4	1.0	-.2	.0	.1	-.3	.5	-.5	3.0	6.3	2.3	-.1	.4
2003	.6	.3	-.2	-.7	.0	.2	.4	-.2	.6	.1	.8	-.1	2.3	-2.7	2.6	4.0	1.3
2004	.3	.6	-.5	.4	.8	-.8	.8	.1	.1	.9	.2	.7	2.8	2.3	2.3	5.8	2.7
2005	.5	.7	-.1	.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	1.1	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	1.0	1.2	2.5
2008	-.3	-.3	-.2	-.8	-.6	-.2	-.5	-1.5	-4.3	1.0	-1.3	-2.9	-1.4	-5.8	-12.6	-16.0	-3.5
2009	-2.4	-.7	-1.6	-.8	-1.0	-.4	1.1	1.1	.8	.3	.4	.3	-20.7	-10.9	6.2	6.5	-11.5
2010	1.2	.4	.7	.4	1.4	.1	.4	.3	.2	-.3	.0	.9	8.1	8.0	5.3	1.3	5.5
2011	-.1	-.4	1.0	-.3	.2	.3	.5	.6	-.1	.7	-.1	.5	2.3	1.6	4.7	4.1	3.1
2012	.6	.3	-.5	.8	.2	.0	.3	-.4	.0	.2	.5	.3	4.0	2.6	.1	2.1	3.0
2013	.0	.5	.4	-.1	.1	.2	-.5	.7	.5	-.1	.3	.3	3.3	1.7	1.2	3.0	2.0
2014	-.5	.9	1.0	.1	.3	.3	.1	-.1	.3	.0	.8	-.1	3.0	5.7	2.1	2.7	3.1
2015	-.6	-.4	-.3	-.5	-.5	-.4	.5	-.1	-.4	-.4	-.6	-.5	-3.2	-5.0	-.3	-4.7	-1.0
2016	.7	-.7	-.8	.2	-.1	.3	.2	-.1	-.1	.1	-.2	.9	-1.9	-2.1	1.1	.7	-1.9
2017	-.2	-.4	.6	1.0	.0	.1	-.1	-.4	.0	1.6	.5	.4	1.0	5.0	-1.5	7.7	1.6
2018	-.2	.9															
IP (2012=100)																	
1988	62.1	62.4	62.5	62.9	62.8	63.0	63.0	63.3	63.1	63.4	63.5	63.8	62.4	62.9	63.1	63.6	63.0
1989	64.0	63.7	63.9	63.9	63.5	63.5	62.9	63.5	63.3	63.2	63.5	63.8	63.9	63.6	63.3	63.5	63.6
1990	63.4	64.1	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	62.5	62.1	62.3	62.9	63.4	63.5	63.6	64.1	64.0	63.9	63.7	62.5	62.9	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	78.5	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	82.8	83.7	84.5	85.2	85.9	86.2	80.6	81.8	83.7	85.8	83.0
1998	86.7	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	91.3	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	94.4	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	94.6	94.0	93.7	93.5	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	93.5	93.2	93.2	93.4	93.1	93.6	93.1	91.3	92.7	93.3	93.2	92.6
2003	93.6	93.9	93.7	93.1	93.1	93.3	93.7	93.5	94.1	94.2	94.9	94.9	93.8	93.1	93.7	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	102.3	101.8
2007	102.5	103.5	103.8	104.5	104.5	104.6	104.5	104.7	105.1	104.7	105.3	105.4	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	104.8	103.2	99.8	95.5	100.8
2009	91.0	90.4	89.0	88.3	87.4	87.1	88.0	89.0	89.7	90.0	90.4	90.6	90.2	87.6	88.9	90.3	89.2
2010	91.7	92.0	92.6	93.0	94.3	94.4	94.8	95.1	95.4	95.1	95.1	96.0	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	98.4	97.1
2012	99.4	99.6	99.2	99.9	100.1	100.0	100.3	99.9	99.9	100.1	100.6	100.9	99.4	100.0	100.0	100.6	100.0
2013	100.9	101.4	101.8	101.7	101.8	101.9	101.4	102.2	102.7	102.5	102.9	103.2	101.4	101.8	102.1	102.9	102.0
2014	102.7	103.6	104.6	104.7	105.1	105.4	105.6	105.5	105.8	105.8	106.7	106.5	103.6	105.1	105.6	106.3	105.2
2015	105.9	105.4	105.1	104.6	104.1	103.7	104.2	104.1	103.7	103.4	102.7	102.3	105.5	104.1	104.0	102.8	104.1
2016	103.0	102.3	101.5	101.7	101.6	101.9	102.1	102.1	101.9	102.1	101.8	102.8	102.3	101.8	102.0	102.2	102.1
2017	102.5	102.2	102.7	103.7	103.7	103.8	103.6	103.2	103.2	104.8	105.3	105.7	102.5	103.7	103.3	105.3	103.7
2018	105.5	106.5															

NOTE: Estimates from October 2017 through February 2018 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 (percent of 2012 output)																	
1988	74.5	74.6	74.6	74.7	74.7	74.7	74.7	74.8	74.8	74.9	74.9	75.0	74.6	74.7	74.8	74.9	74.7
1989	75.1	75.2	75.3	75.5	75.6	75.8	75.9	76.1	76.3	76.5	76.7	76.8	75.2	75.6	76.1	76.7	75.9
1990	77.0	77.2	77.4	77.5	77.7	77.8	78.0	78.1	78.2	78.3	78.4	78.5	77.2	77.7	78.1	78.4	77.8
1991	78.6	78.7	78.8	78.9	79.0	79.1	79.2	79.3	79.4	79.5	79.6	79.8	78.7	79.0	79.3	79.6	79.2
1992	79.9	80.1	80.2	80.4	80.6	80.8	80.9	81.1	81.3	81.5	81.6	81.7	80.1	80.6	81.1	81.6	80.8
1993	81.9	82.0	82.1	82.2	82.4	82.5	82.6	82.7	82.8	83.0	83.1	83.3	82.0	82.4	82.7	83.1	82.6
1994	83.5	83.7	83.9	84.1	84.3	84.6	84.8	85.1	85.4	85.7	85.9	86.2	83.7	84.3	85.1	85.9	84.8
1995	86.5	86.8	87.1	87.4	87.7	88.0	88.4	88.7	89.0	89.4	89.8	90.2	86.8	87.7	88.7	89.8	88.3
1996	90.6	91.0	91.4	91.8	92.2	92.7	93.1	93.6	94.0	94.4	94.9	95.4	91.0	92.2	93.6	94.9	92.9
1997	95.8	96.3	96.8	97.3	97.8	98.4	98.9	99.5	100.1	100.8	101.4	102.1	96.3	97.8	99.5	101.4	98.8
1998	102.7	103.4	104.1	104.8	105.4	106.1	106.7	107.2	107.8	108.3	108.9	109.4	103.4	105.4	107.2	108.9	106.2
1999	109.9	110.3	110.8	111.2	111.7	112.1	112.5	112.9	113.3	113.7	114.2	114.6	110.3	111.7	112.9	114.1	112.3
2000	114.9	115.3	115.7	116.1	116.5	116.9	117.3	117.7	118.0	118.4	118.8	119.2	115.3	116.5	117.7	118.8	117.1
2001	119.5	119.9	120.3	120.6	121.0	121.3	121.6	121.9	122.2	122.4	122.7	122.9	119.9	121.0	121.9	122.7	121.4
2002	123.1	123.3	123.5	123.6	123.7	123.8	123.9	123.9	123.9	123.9	123.9	123.9	123.3	123.7	123.9	123.9	123.7
2003	123.8	123.8	123.7	123.7	123.6	123.6	123.6	123.5	123.5	123.5	123.5	123.4	123.8	123.6	123.5	123.5	123.6
2004	123.4	123.4	123.4	123.4	123.4	123.4	123.4	123.4	123.4	123.4	123.5	123.5	123.4	123.4	123.4	123.5	123.4
2005	123.6	123.7	123.9	124.0	124.1	124.3	124.5	124.6	124.8	125.0	125.1	125.3	123.7	124.2	124.6	125.1	124.4
2006	125.5	125.7	125.8	126.0	126.2	126.4	126.6	126.9	127.1	127.4	127.7	128.0	125.7	126.2	126.9	127.7	126.6
2007	128.3	128.6	128.8	129.1	129.4	129.6	129.7	129.9	129.9	130.0	130.0	129.9	128.6	129.3	129.8	129.9	129.4
2008	129.8	129.8	129.7	129.6	129.5	129.5	129.5	129.5	129.6	129.7	129.8	130.0	129.8	129.5	129.5	129.8	129.7
2009	130.1	130.3	130.4	130.4	130.5	130.5	130.5	130.4	130.3	130.1	129.9	129.6	130.2	130.5	130.4	129.9	130.2
2010	129.4	129.1	128.8	128.5	128.2	128.0	127.7	127.5	127.3	127.2	127.1	127.0	129.1	128.3	127.5	127.1	128.0
2011	126.9	126.9	126.9	126.9	127.0	127.1	127.3	127.4	127.6	127.8	128.0	128.2	126.9	127.0	127.4	128.0	127.3
2012	128.4	128.7	128.9	129.1	129.3	129.5	129.7	129.9	130.1	130.3	130.5	130.7	128.7	129.3	129.9	130.5	129.6
2013	130.8	131.0	131.1	131.3	131.4	131.5	131.6	131.8	131.9	132.0	132.1	132.2	131.0	131.4	131.8	132.1	131.6
2014	132.3	132.4	132.6	132.7	132.9	133.0	133.2	133.4	133.6	133.8	134.0	134.1	132.4	132.9	133.4	134.0	133.2
2015	134.3	134.4	134.5	134.6	134.7	134.8	134.8	134.9	134.9	135.0	135.0	135.1	134.4	134.7	134.9	135.0	134.8
2016	135.1	135.2	135.2	135.3	135.4	135.5	135.5	135.6	135.7	135.8	135.8	135.9	135.2	135.4	135.6	135.8	135.5
2017	135.9	136.0	136.0	136.0	136.1	136.1	136.2	136.3	136.4	136.5	136.6	136.8	136.0	136.1	136.3	136.6	136.2
2018	137.0	137.2															
Utilization (percent)																	
1988	83.4	83.7	83.8	84.3	84.1	84.3	84.3	84.6	84.4	84.7	84.8	85.1	83.6	84.2	84.4	84.9	84.3
1989	85.2	84.7	84.8	84.7	84.0	83.8	82.9	83.5	83.0	82.7	82.8	83.1	84.9	84.2	83.1	82.9	83.8
1990	82.3	83.0	83.2	82.9	82.9	83.0	82.8	82.9	82.9	82.1	81.0	80.4	82.8	82.9	82.8	81.2	82.5
1991	80.0	79.3	78.8	78.9	79.6	80.2	80.2	80.2	80.8	80.5	80.3	79.9	79.4	79.6	80.4	80.2	79.9
1992	79.3	79.7	80.2	80.6	80.7	80.5	81.1	80.5	80.5	81.0	81.2	81.1	79.7	80.6	80.7	81.1	80.5
1993	81.3	81.5	81.3	81.5	81.1	81.1	81.2	81.0	81.3	81.8	82.0	82.2	81.4	81.2	81.2	82.0	81.4
1994	82.4	82.2	82.8	83.1	83.3	83.6	83.4	83.7	83.7	84.2	84.4	85.0	82.5	83.3	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	83.5	83.4	83.4	84.5	83.9	83.7	83.4	83.9
1996	82.5	83.4	82.9	83.3	83.5	83.8	83.3	83.4	83.6	83.1	83.4	83.6	82.9	83.5	83.4	83.4	83.3
1997	83.3	83.9	84.0	83.6	83.6	83.6	83.7	84.1	84.4	84.6	84.7	84.5	83.7	83.6	84.1	84.6	84.0
1998	84.3	83.9	83.4	83.2	83.2	82.2	81.4	82.6	82.1	82.3	81.9	81.8	83.9	82.8	82.0	82.0	82.7
1999	81.8	81.9	81.7	81.6	81.8	81.4	81.6	81.6	81.0	81.8	81.9	82.2	81.8	81.6	81.4	81.9	81.7
2000	81.9	81.9	81.9	82.2	82.1	81.9	81.5	81.0	81.1	80.6	80.3	79.9	81.9	82.1	81.2	80.2	81.4
2001	79.1	78.4	77.9	77.5	76.8	76.1	75.5	75.2	74.8	74.3	73.8	73.6	78.5	76.8	75.2	73.9	76.1
2002	74.0	73.8	74.3	74.6	74.8	75.5	75.3	75.2	75.3	75.1	75.5	75.2	74.1	74.9	75.3	75.3	74.9
2003	75.6	75.9	75.8	75.3	75.3	75.5	75.8	75.7	76.2	76.3	76.9	76.8	75.8	75.3	75.9	76.7	75.9
2004	77.1	77.5	77.2	77.5	78.1	77.5	78.1	78.2	78.2	78.9	79.1	79.6	77.3	77.7	78.2	79.2	78.1
2005	79.9	80.4	80.2	80.2	80.2	80.4	80.1	80.2	78.6	79.5	80.2	80.6	80.2	80.3	79.6	80.1	80.0
2006	80.5	80.4	80.5	80.7	80.5	80.7	80.5	80.7	80.3	80.1	79.9	80.5	80.5	80.6	80.5	80.2	80.4
2007	79.9	80.5	80.5	80.9	80.8	80.7	80.6	80.7	80.9	80.6	81.0	81.1	80.3	80.8	80.7	80.9	80.7
2008	80.9	80.7	80.6	80.0	79.6	79.4	79.0	77.8	74.3	75.0	74.0	71.7	80.7	79.7	77.0	73.6	77.8
2009	70.0	69.4	68.3	67.7	67.0	66.7	67.5	68.3	68.9	69.2	69.6	69.9	69.2	67.1	68.2	69.6	68.5
2010	70.9	71.3	71.9	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	73.6
2011	75.6	75.3	76.0	75.7	75.8	76.0	76.3	76.6	76.5	76.9	76.7	77.0	75.6	75.8	76.5	76.9	76.2
2012	77.4	77.4	76.9	77.4	77.4	77.2	77.3	76.9	76.8	76.8	77.1	77.2	77.2	77.3	77.0	77.1	77.2
2013	77.1	77.4	77.6	77.5	77.4	77.5	77.1	77.6	77.9	77.7	77.9	78.1	77.4	77.5	77.5	77.9	77.6
2014	77.6	78.2	78.9	78.9	79.1	79.2	79.2	79.1	79.2	79.1	79.6	79.4	78.3	79.1	79.2	79.4	79.0
2015	78.8	78.4	78.1	77.7	77.3	76.9	77.3	77.2	76.9	76.6	76.1	75.7	78.5	77.3	77.1	76.1	77.3
2016	76.3	75.7	75.1	75.2	75.0	75.3	75.4	75.3	75.1	75.2	75.0	75.7	75.7	75.2	75.2	75.3	75.3
2017	75.4	75.1	75.5	76.2	76.2	76.2	76.1	75.7	75.7	76.8	77.0	77.3	75.4	76.2	75.8	77.0	76.1
2018	77.0	77.7															

NOTE: Estimates from October 2017 through February 2018 are subject to further revision in the upcoming monthly releases.

Table 2

RATES OF CHANGE IN INDUSTRIAL PRODUCTION, MARKET AND INDUSTRY GROUP SUMMARY: 2013–17¹

Item	Revised change (percent)					Difference between revised and earlier changes (percentage points)				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Total IP	2.3	3.4	-3.3	-5	3.0	.1	.0	-7	-4	-6
MARKET GROUPS										
Final products and nonindustrial supplies	1.1	1.6	-2.2	-1	2.1	.3	.0	-1.0	-.3	-.4
Consumer goods	1.6	.9	.5	.8	1.2	.1	-.4	-.7	.1	-.6
Durable	8.0	4.1	2.6	2.5	-.5	-.5	.0	-.5	-.8	-.9
Automotive products	13.7	6.5	3.9	4.2	-.8	-1.3	.1	-1.0	-1.7	-.5
Home electronics	1.1	.8	4.4	2.1	5.4	-1.3	1.9	2.0	-2.5	.3
Appliances, furniture, carpeting	2.9	3.8	3.4	.3	-2.1	.1	.2	-.5	-.6	-1.4
Miscellaneous goods	3.1	1.1	.1	.8	.2	.4	-.3	.0	.7	-1.5
Nondurable	-.1	.0	.0	.2	1.7	.3	-.5	-.8	.4	-.5
Non-energy	-2.0	1.3	.8	-.8	1.4	.3	-.5	-1.2	.3	-.4
Foods and tobacco	1.0	.4	1.7	.2	3.1	.1	.0	-.6	.4	-.1
Clothing	-5.5	-3.3	-6.0	-2.7	-9.9	-.4	-.8	-.3	3.7	-1.4
Chemical products	-7.2	4.8	-.3	-1.9	-.3	.9	-1.8	-3.5	-.4	-.7
Paper products	-2.0	-3.4	.9	-3.9	-.8	.4	-.8	3.3	3.2	-3.4
Energy	6.0	-4.2	-3.2	4.4	2.5	.1	-.3	.7	.7	-.7
Business equipment	-1.4	3.5	-6.2	-2.2	4.7	.3	.0	-2.9	-1.8	.7
Transit	3.1	11.7	-2.9	-6.0	1.5	-.1	.5	-4.1	-2.6	1.2
Information processing	-2.8	.1	-1.6	3.3	3.2	-1.3	.4	-1.8	-.7	1.8
Industrial and other	-2.8	1.1	-9.6	-2.4	7.0	1.2	-.4	-2.8	-1.8	-.1
Defense and space equipment	-4.5	-2.0	-3.1	.0	-3.3	.0	.4	-.2	1.2	-4.7
Construction supplies	3.8	3.6	.0	.5	3.5	.3	-.2	-.1	-.2	.1
Business supplies	2.6	-.3	-1.0	.5	1.1	.3	-.3	-.6	.4	.1
Materials	3.6	5.1	-4.6	-1.1	4.1	.0	.0	-.3	-.6	-.8
Non-energy	2.2	1.4	-2.7	-.2	2.3	.1	.0	-.5	-.9	-.4
Durable	3.7	3.1	-3.9	-.8	2.3	.0	.1	-.6	-1.3	-.5
Consumer parts	4.4	5.2	-2.0	-.2	.8	-.2	.8	-2.0	-5.4	.3
Equipment parts	4.4	4.2	-5.9	.3	1.1	-.1	.0	-.8	1.1	-1.9
Other	3.0	1.6	-3.4	-1.6	3.5	.1	.0	.1	-1.2	-.1
Nondurable	.0	-1.2	-.7	.7	2.3	.3	-.2	-.4	-.2	-.1
Textile	5.7	-3.1	-7.3	.5	-2.9	-2.0	-.3	-4.6	-1.3	-.8
Paper	-.9	-.9	-2.1	.1	-3.5	.1	-.4	.7	1.6	-1.0
Chemical	-1.0	-2.8	-.3	.2	4.1	.8	-.4	-.3	-.8	.2
Energy	5.1	9.5	-7.2	-2.7	7.1	-.1	.0	-.1	-.1	-1.0
INDUSTRY GROUPS										
Manufacturing²	1.1	1.4	-1.6	-.1	1.9	.2	-.2	-1.0	-.3	-.4
Manufacturing (NAICS)	31–33	1.1	1.6	-1.6	.1	2.1	.2	-.2	-1.1	-.4
Durable manufacturing	2.6	2.8	-3.4	-.3	2.0	.1	.1	-1.3	-1.2	-.5
Wood products	321	4.3	3.9	3.3	4.2	3.5	.1	.1	-.5	.5
Nonmetallic mineral products	327	5.8	2.7	1.9	-.4	5.4	1.2	-.5	-.5	-.2
Primary metals	331	5.4	-1.0	-8.2	-4.0	4.6	.1	.3	-.2	-2.0
Fabricated metal products	332	3.5	.0	-5.2	-1.8	3.0	.0	-.1	-.5	-1.1
Machinery	333	-2.8	1.8	-12.4	-2.3	9.1	1.2	-.5	-3.4	-2.8
Computer and electronic products	334	2.0	4.2	-.9	4.5	2.7	-.7	-.2	-.3	.9
Electrical equip., appliances, and components	335	.5	1.7	-1.0	-.1	.9	.5	.9	-2.8	-.8
Motor vehicles and parts	3361–3	10.2	7.2	2.8	2.2	-1.2	-.8	.3	-1.1	-2.6
Aerospace and miscellaneous transportation equipment	3364–9	.8	5.8	-5.2	-3.1	-2.1	-.1	.9	-3.1	-1.1
Furniture and related products	337	-.9	4.6	3.9	-.7	-3.4	.0	.2	.1	1.2
Miscellaneous	339	2.0	-1.3	-.5	-1.8	-3.4	.1	.6	.4	-.9
Nondurable manufacturing	-.5	.2	.4	.6	2.2	.3	-.5	-.8	.4	-.1
Food, beverage, and tobacco products	311,2	1.2	.8	1.8	.7	3.5	.0	.0	-.6	-.4
Textile and product mills	313,4	4.6	1.7	-7.0	.2	-1.7	-2.3	.8	-5.1	-.7
Apparel and leather	315,6	-5.0	-3.0	-5.9	-2.5	-9.4	-.5	-.6	-.3	3.6
Paper	322	-1.5	.8	-2.3	1.0	-2.3	.0	-.3	-.9	1.1
Printing and support	323	2.3	-4.0	1.8	1.1	-2.1	.3	-1.2	-1.1	3.0
Petroleum and coal products	324	3.6	-6.3	3.4	3.8	2.6	.8	-.8	2.0	1.7
Chemicals	325	-3.8	.7	-.9	-.6	2.8	.7	-1.0	-2.2	-.8
Plastics and rubber products	326	-.1	4.6	.8	1.6	2.0	-.1	.2	.1	2.1
Other manufacturing (non-NAICS)	1133,5111	-.3	-5.4	.1	-5.1	-4.8	.2	-.6	2.4	2.2
Mining	21	5.7	12.5	-10.2	-6.2	10.5	.1	.6	.7	-1.1
Utilities	2211,2	4.3	-.7	-4.1	2.3	2.0	-.1	-.1	-.3	-.1
Electric	2211	3.5	-.4	-3.1	2.2	.9	-.1	-.1	-.4	-.1
Natural gas	2212	11.1	-2.9	-12.1	3.6	9.6	.0	.0	.0	-.9

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

2. 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: 2013–17¹

Item	Revised change (percent)					Difference between revised and earlier changes (percentage points)				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Total industry	2.3	3.4	-3.3	-5	3.0	.1	.0	-.7	-.4	-.6
Energy	5.0	7.1	-7.6	-1.5	6.2	.0	.4	.3	-.2	-.9
Consumer products	6.0	-4.2	-3.2	4.4	2.5	.1	-.3	.7	.7	-.7
Commercial products	3.9	.1	.0	2.4	1.8	.1	-.1	.3	.8	-.6
Oil and gas well drilling 213111	1.8	19.6	-45.6	-26.6	36.4	3.8	13.2	14.1	-3.7	-13.7
Converted fuel	.0	.5	-2.6	.7	.7	-.6	-.3	-1.2	-.9	-2.2
Primary energy	6.4	11.7	-8.4	-4.2	9.7	.0	-.1	.2	.2	-.3
Non-energy	1.1	1.7	-1.7	-.3	1.9	.2	-.2	-1.0	-.5	-.3
Selected high-technology industries	10.9	8.7	1.9	8.5	3.6	-.7	-.4	2.3	1.0	.2
Computers and peripheral equipment 3341	-2.0	8.0	-4.1	13.2	20.8	-.7	2.0	-2.0	-1.5	4.8
Communications equipment 3342	11.9	-4.7	6.7	7.1	-2.9	-4.0	.2	5.8	-6.5	2.3
Semiconductors and related electronic components 3344	14.3	14.5	1.6	7.9	2.3	.6	-1.4	2.0	4.7	-2.1
Excluding selected high-technology industries	.7	1.5	-1.8	-.6	1.9	.2	-.2	-1.1	-.5	-.4
Motor vehicles and parts 3361–3	10.2	7.2	2.8	2.2	-1.2	-.8	.3	-1.1	-2.6	-.4
Motor vehicles 3361	14.5	4.7	4.6	1.5	-5.2	-.2	-.5	-.2	-.6	-.8
Motor vehicle parts 3363	6.3	9.1	1.2	3.7	1.6	-.2	.6	-1.7	-3.8	1.1
Excluding motor vehicles and parts	.0	1.0	-2.2	-.8	2.2	.3	-.2	-1.1	-.3	-.4
Consumer goods	-1.2	1.4	.9	-.7	1.2	.3	-.5	-1.1	.2	-.6
Business equipment	-2.5	3.6	-8.1	-2.5	5.3	.6	.0	-3.7	-1.7	1.0
Construction supplies	3.8	3.6	.0	.5	3.5	.3	-.2	-.1	-.2	.1
Business supplies	1.2	-1.5	-1.4	-.9	.7	.4	-.3	-1.1	.0	.4
Materials	1.4	.3	-3.1	-.7	2.4	.1	.0	-.5	-.7	-.5
Measures excluding selected high-technology industries										
Total industry	2.1	3.2	-3.5	-.8	2.9	.2	.0	-.8	-.4	-.6
Manufacturing ²	.7	1.1	-1.7	-.3	1.8	.2	-.2	-1.1	-.4	-.4
Durable	2.0	2.4	-3.7	-.9	1.9	.1	.1	-1.5	-1.3	-.6
Measures excluding motor vehicles and parts										
Total industry	1.9	3.2	-3.7	-.7	3.2	.2	.0	-.6	-.3	-.6
Manufacturing ²	.5	.9	-1.9	-.3	2.2	.2	-.2	-1.0	-.2	-.4
Durable	1.6	2.1	-4.3	-.8	2.6	.2	.1	-1.3	-.9	-.5
Measures excluding selected high-technology industries and motor vehicles and parts										
Total industry	1.7	3.0	-3.8	-1.0	3.2	.2	.0	-.7	-.3	-.6
Manufacturing ²	.1	.6	-2.1	-.6	2.1	.3	-.2	-1.1	-.2	-.4
Stage-of-process components of non-energy materials, measures of the input to										
Finished processors	3.5	3.3	-4.2	.1	.0	-.1	.1	-1.0	-.8	-1.0
Primary and semifinished processors	1.4	.2	-1.7	-.4	3.6	.3	-.1	-.2	-.9	.0
STAGE-OF-PROCESS GROUPS										
Crude	4.7	8.1	-6.3	-3.2	7.2	.1	-.3	-.2	.0	-.8
Primary and semifinished	3.6	1.3	-2.3	.5	2.0	.1	-.1	-.1	-.1	-.6
Finished	-1.0	2.7	-2.9	-.7	2.3	.3	.3	-1.7	-.9	-.2

1. See footnote 1 to table 2.

2. See footnote 2 to table 2.

Table 4**ANNUAL RATES OF CHANGE FOR INDUSTRIAL PRODUCTION: 2013–17¹**

Item	Revised change (percent)					Difference between revised and earlier changes (percentage points)				
	2013	2014	2015	2016	2017	2013	2014	2015	2016	2017
Total IP	2.0	3.1	-1.0	-1.9	1.6	.1	.0	-.3	-.7	-.3
MARKET GROUPS										
Consumer goods	.7	.8	1.5	.6	.0	.0	.0	-.9	.0	-.4
Durable	5.5	4.9	4.0	2.2	.0	-.1	-.1	-.2	-.6	-.9
Nondurable	-.5	-.3	.8	.2	.0	.0	.0	-1.1	.2	-.2
Business equipment	-.1	1.8	-2.0	-5.3	3.3	.0	-.1	-1.1	-3.5	1.0
Defense and space equipment	-2.9	-3.3	-2.4	-2.8	.2	.0	-.1	.8	-1.4	.3
Construction supplies	3.1	3.2	.6	.9	2.5	.1	-.2	.1	-.4	.1
Business supplies	1.8	1.0	-1.4	.4	.5	.0	.0	-.7	.2	.1
Materials	3.4	5.0	-1.5	-3.0	2.0	-.1	-.1	-.1	-.6	-.6
Non-energy	1.9	1.9	-1.8	-1.1	1.4	.0	.0	-.3	-1.0	-.3
Energy	5.1	8.5	-1.3	-5.8	3.1	-.1	-.1	.0	.0	-.9
INDUSTRY GROUPS										
Manufacturing²	.9	1.1	-.5	-.8	1.2	.0	.0	-.6	-.8	-.1
Manufacturing (NAICS)	1.1	1.2	-.4	-.7	1.5	.0	.0	-.7	-1.0	.0
Durable manufacturing	2.1	2.9	-1.1	-2.1	1.6	.0	-.1	-.3	-1.9	-.1
Nondurable manufacturing	.0	-.6	.3	.8	1.4	.0	.0	-1.1	.1	.1
Other manufacturing (non-NAICS)	-5.0	-1.3	-3.6	-2.6	-6.5	.0	-.2	.3	4.1	-1.7
Mining	6.3	10.7	-3.4	-9.7	6.4	.4	.0	-.9	-.6	-.4
Utilities	2.2	1.3	-.7	-.4	-1.3	-.1	-.1	-.1	-.2	-.5

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: 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	1.4	.8	.6	.6	1.9	-.2	-.3	.4	-.5	-.3
Manufacturing²	-.3	-.3	1.3	.7	1.3	-.2	-.4	.6	.1	-.1
Manufacturing (NAICS)	-.1	-.2	1.4	.9	1.5	-.3	-.5	.6	.1	-.1
Durable manufacturing	.3	.3	.9	.9	1.4	.0	-.5	-.3	-.1	-.3
Nondurable manufacturing	-.6	-.8	2.1	.9	1.6	-.5	-.4	1.5	.3	.0
Other manufacturing (non-NAICS)	-3.5	-3.4	-2.7	-3.6	-2.9	-.7	1.0	1.4	.5	-.2
Mining	6.8	.9	-3.1	-1.0	4.8	-.4	.2	1.0	-3.7	-1.4
Utilities	.4	.4	1.6	1.8	2.3	-.1	-.6	-.6	1.1	-.2
Selected high-technology industries	2.3	3.3	7.4	3.2	4.4	-1.5	1.6	2.5	-2.1	.8
Manufacturing ² ex. selected high-technology industries	-.3	-.4	1.1	.7	1.2	-.2	-.5	.5	.2	-.1
STAGE-OF-PROCESS GROUPS										
Crude	5.3	.4	-2.4	-.5	3.6	-.5	-.2	.9	-3.2	-1.4
Primary and semifinished	-.2	-.2	1.7	.7	1.6	.0	.0	.6	.2	.0
Finished	.0	.1	1.0	1.1	1.5	-.3	-.8	.3	.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. 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)			
		1972-2017 Ave.	2014 Q4	2015 Q4	2016 Q4	2017 Q4	2014 Q4	2015 Q4	2016 Q4	2017 Q4
Total industry		79.8	79.4	76.1	75.3	77.0	.5	.1	-.5	-.5
Manufacturing¹		78.3	76.3	75.4	74.4	75.2	.4	.0	-.7	-1.1
Manufacturing (NAICS)	31–33	78.2	76.9	75.8	74.8	75.7	.5	.0	-.7	-1.0
Durable manufacturing		76.9	77.6	74.7	73.8	74.6	.4	-.2	-.9	-1.2
Wood products	321	76.5	72.8	75.3	76.7	78.2	1.3	1.1	-.2	-.9
Nonmetallic mineral products	327	73.8	65.1	65.9	64.1	65.7	1.1	.6	-.6	-1.1
Primary metals	331	78.3	73.3	67.6	66.4	68.9	-2.8	-2.0	-.1	-.5
Fabricated metal products	332	77.5	80.5	77.6	76.1	78.7	-.6	-.8	-2.2	-3.3
Machinery	333	77.5	78.0	68.6	68.0	75.3	1.6	-.4	-1.1	.1
Computer and electronic products	334	77.5	74.0	70.8	70.4	70.7	1.2	.4	.5	2.0
Electrical equip., appliances, and components	335	82.2	81.4	77.3	76.7	76.3	.2	-3.0	-4.0	-6.9
Motor vehicles and parts	3361–3	75.2	78.3	79.9	80.4	77.2	-.1	-.6	-2.5	-4.5
Aerospace and miscellaneous transportation equipment	3364–9	74.2	85.4	80.4	77.2	75.6	1.1	-.5	-1.3	-1.7
Furniture and related products	337	76.7	78.8	81.4	79.1	75.7	1.5	1.1	-.1	-2.4
Miscellaneous	339	76.6	78.2	80.3	80.2	77.7	.2	2.5	2.7	3.6
Nondurable manufacturing		80.1	76.1	77.1	75.9	76.8	.6	.3	-.6	-.9
Food, beverage, and tobacco products	311,2	80.6	77.6	77.6	75.8	76.7	.4	.2	-1.0	-2.0
Textile and product mills	313,4	78.8	72.8	68.0	69.0	68.7	.7	-3.2	-2.6	-1.7
Apparel and leather	315,6	76.3	67.3	66.5	68.3	64.9	-1.9	-2.2	.8	.0
Paper	322	86.7	85.3	85.3	88.0	86.3	.0	.4	.8	-.2
Printing and support	323	79.6	66.2	70.2	73.4	73.7	2.6	3.1	6.2	6.6
Petroleum and coal products	324	85.1	81.9	81.6	76.1	79.5	.0	-.5	-4.0	-2.4
Chemicals	325	76.8	71.9	73.5	72.8	74.3	.7	-.3	-1.3	-1.3
Plastics and rubber products	326	82.1	83.6	85.3	83.1	82.2	.9	2.8	2.2	.9
Other manufacturing (non-NAICS)	1133,5111	80.0	62.1	64.3	62.7	61.9	-1.7	-.8	-.2	-1.8
Mining	21	87.0	91.0	81.0	78.4	87.5	.5	.9	-.8	1.9
Utilities	2211,2	85.3	81.2	77.5	78.1	78.2	.4	.6	1.0	-.4
Selected high-technology industries		77.4	73.8	72.8	73.5	73.8	1.5	1.9	.9	2.5
Computers and peripheral equipment	3341	78.0	71.2	66.5	83.8	96.4	.2	-.2	7.3	4.0
Communications equipment	3342	76.4	69.8	71.5	72.4	65.3	-1.6	1.4	-3.6	-3.7
Semiconductors and related electronic components	3344	78.6	76.0	74.9	71.6	72.7	3.0	2.7	1.5	4.8
Measures excluding selected high-technology industries										
Total industry		80.0	79.5	76.2	75.3	77.1	.4	.1	-.5	-.6
Manufacturing ¹		78.4	76.4	75.5	74.4	75.3	.4	-.1	-.8	-1.2
STAGE-OF-PROCESS GROUPS										
Crude		86.0	88.6	80.5	79.4	86.2	.5	.7	-.3	1.9
Primary and semifinished		80.4	77.3	75.8	74.9	76.0	.2	.3	-.4	-.9
Finished		76.9	76.3	75.0	73.9	74.3	.6	-.2	-.8	-1.4

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)																	
1988	-2	.2	.2	.9	-2	.2	.0	.1	.4	.5	.3	.5	2.7	4.2	.7	4.5	5.3
1989	.8	-1.0	-1	.3	-9	.2	-1.1	.9	-3	-2	.2	.1	2.1	-2.7	-3.1	.4	.8
1990	-2	1.5	.5	-3	.2	.3	-2	.3	.0	-8	-1.1	-7	4.2	3.0	1.2	-6.7	.8
1991	-8	-7	-7	.4	.7	1.1	.3	.2	1.1	-2	-2	-2	-8.7	1.9	7.2	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	.6	.9	.4	.6	4.5	1.4	.8	7.0	3.6
1994	.2	.1	1.3	.9	.6	.3	.4	.8	.5	1.0	.8	1.1	4.9	9.5	6.1	10.3	5.9
1995	.2	-3	.2	-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	-1	.9	.9	2.0	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	7.1	10.4	11.5	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	8.6	5.1
2000	.1	.2	.6	.8	-1	.2	.1	-7	.4	-3	-3	-5	4.4	4.9	-4	-2.4	4.1
2001	-6	-6	-2	-3	-6	-7	-4	-5	-2	-6	-3	.3	-5.9	-5.2	-5.8	-3.8	-3.6
2002	.6	.0	.8	.2	.5	1.1	-3	.2	.1	-4	.4	-5	3.7	5.8	3.1	-.3	.5
2003	.5	.1	.1	-8	.1	.5	.2	-4	.8	.1	1.0	-2	1.8	-1.9	2.4	4.5	1.3
2004	.0	.7	-2	.4	.8	-7	.9	.5	.0	1.0	.0	.7	2.6	3.3	4.0	5.5	3.1
2005	.8	.8	-5	.3	.3	.1	-3	.5	-1.0	1.5	.8	.2	6.6	2.3	-7	6.4	4.1
2006	.8	-3	-1	.5	-4	.4	-3	.6	.1	-4	.0	1.5	3.8	.8	1.0	1.5	2.6
2007	-5	.4	.8	.7	-1	.3	.1	-3	.5	-3	.5	.2	4.1	5.9	1.0	1.2	2.8
2008	-4	-6	-3	-1.1	-6	-7	-1.2	-1.2	-3.4	-6	-2.4	-3.5	-2.5	-8.2	-14.1	-21.8	-4.8
2009	-3.1	-2	-1.8	-7	-1.0	-3	1.5	1.1	.9	.2	1.0	-2	-24.4	-10.6	8.1	7.2	-13.8
2010	1.1	-1	1.2	.8	1.4	-1	.6	.1	.0	.1	.0	.5	6.9	10.3	4.1	1.2	5.8
2011	.2	.1	.6	-6	.1	.1	.6	.4	.3	.6	-3	.7	3.2	-1	4.4	3.9	2.9
2012	.8	.4	-5	.6	-4	.2	-1	-2	-1	-4	.7	.8	5.3	.5	-1.2	1.2	2.6
2013	-.3	.5	-1	-4	.3	.2	-1.0	1.0	.1	.1	.0	.0	3.0	-2	-.3	1.9	.9
2014	-1.2	1.1	.8	-1	.2	.3	.3	-4	.0	-1	.8	-3	-6	4.2	1.3	.6	1.1
2015	-.5	-6	.3	-1	-1	-4	.6	-3	-4	.0	-2	-2	-2.9	-1.0	.1	-2.4	-.5
2016	.5	-4	-2	-3	-1	.3	.2	-3	.3	.2	.0	.3	.0	-2.5	.6	1.6	-8
2017	.3	.1	-5	1.1	-4	.1	-3	-2	-1	1.4	.2	.0	1.9	2.4	-2.1	5.5	1.2
2018	-2	1.3															
IP (2012=100)																	
1988	61.2	61.4	61.5	62.1	62.0	62.1	62.0	62.1	62.3	62.6	62.8	63.1	61.4	62.0	62.1	62.8	62.1
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	62.9	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	66.1	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	78.4	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	87.8	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	98.3	98.1	97.5	97.5	98.7	98.6	98.0	98.2
2001	97.0	96.4	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	95.9	95.6	96.0	95.5	93.7	95.1	95.8	95.7	95.1
2003	96.0	96.1	96.3	95.5	95.6	96.0	96.3	95.9	96.6	96.8	97.7	97.5	96.1	95.7	96.3	97.3	96.4
2004	97.5	98.2	98.1	98.5	99.3	98.5	99.4	99.9	99.9	100.9	100.8	101.5	97.9	98.8	99.7	101.1	99.4
2005	102.3	103.1	102.6	103.0	103.3	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	105.5	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	109.9	110.1	107.6	109.2	109.5	109.8	109.0
2008	109.7	109.0	108.6	107.4	106.8	106.1	104.8	103.5	100.0	99.3	97.0	93.6	109.1	106.8	102.8	96.6	103.8
2009	90.8	90.6	88.9	88.3	87.4	87.1	88.4	89.4	90.2	90.4	91.3	91.1	90.1	87.6	89.3	90.9	89.5
2010	92.1	92.1	93.2	93.9	95.2	95.1	95.6	95.7	95.7	95.8	95.8	96.3	92.4	94.7	95.7	96.0	94.7
2011	96.5	96.6	97.2	96.6	96.7	96.8	97.4	97.8	98.1	98.6	98.4	99.1	96.7	96.7	97.8	98.7	97.5
2012	99.9	100.3	99.8	100.3	99.9	100.1	99.9	99.8	99.7	99.3	100.1	100.9	100.0	100.1	99.8	100.1	100.0
2013	100.6	101.1	100.9	100.5	100.8	101.1	100.0	101.0	101.1	101.2	101.2	101.2	100.8	100.8	100.7	101.2	100.9
2014	100.0	101.1	102.0	101.8	102.1	102.4	102.8	102.3	102.3	102.1	103.0	102.7	101.0	102.1	102.4	102.6	102.0
2015	102.1	101.5	101.8	101.8	101.6	101.3	101.9	101.7	101.2	101.2	101.0	100.7	101.8	101.6	101.6	101.0	101.5
2016	101.3	100.9	100.7	100.3	100.2	100.5	100.6	100.3	100.6	100.8	100.8	101.1	101.0	100.3	100.5	100.9	100.7
2017	101.5	101.6	101.1	102.2	101.8	101.9	101.7	101.4	101.3	102.7	102.9	102.9	101.4	102.0	101.5	102.8	101.9
2018	102.7	104.1															

NOTE: Estimates from October 2017 through February 2018 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)																	
1988	73.7	73.8	73.8	73.8	73.9	73.9	73.9	73.9	74.0	74.0	74.1	74.2	73.8	73.9	73.9	74.1	73.9
1989	74.3	74.4	74.5	74.7	74.8	75.0	75.2	75.4	75.6	75.8	76.0	76.2	74.4	74.8	75.4	76.0	75.2
1990	76.4	76.6	76.8	77.0	77.1	77.3	77.5	77.6	77.7	77.9	78.0	78.1	76.6	77.1	77.6	78.0	77.3
1991	78.2	78.3	78.4	78.5	78.6	78.7	78.9	79.0	79.1	79.2	79.3	79.5	78.3	78.6	79.0	79.3	78.8
1992	79.7	79.8	80.0	80.2	80.4	80.6	80.9	81.1	81.3	81.4	81.6	81.8	79.8	80.4	81.1	81.6	80.7
1993	82.0	82.1	82.2	82.4	82.5	82.6	82.7	82.9	83.0	83.2	83.3	83.5	82.1	82.5	82.9	83.3	82.7
1994	83.7	83.9	84.1	84.4	84.6	84.9	85.2	85.4	85.7	86.0	86.4	86.7	83.9	84.6	85.4	86.4	85.1
1995	87.0	87.3	87.7	88.0	88.4	88.7	89.1	89.5	89.9	90.4	90.8	91.3	87.3	88.4	89.5	90.8	89.0
1996	91.8	92.2	92.7	93.3	93.8	94.3	94.8	95.3	95.8	96.4	96.9	97.5	92.3	93.8	95.3	96.9	94.6
1997	98.0	98.6	99.2	99.7	100.4	101.0	101.6	102.3	103.0	103.8	104.5	105.3	98.6	100.4	102.3	104.6	101.5
1998	106.1	106.9	107.7	108.5	109.2	110.0	110.7	111.4	112.0	112.7	113.3	113.9	106.9	109.2	111.4	113.3	110.2
1999	114.5	115.0	115.6	116.1	116.6	117.1	117.6	118.1	118.6	119.1	119.6	120.1	115.0	116.6	118.1	119.6	117.4
2000	120.6	121.1	121.6	122.1	122.6	123.1	123.6	124.1	124.5	125.0	125.5	125.9	121.1	122.6	124.1	125.5	123.3
2001	126.4	126.8	127.2	127.6	128.0	128.3	128.6	128.9	129.1	129.4	129.6	129.7	126.8	128.0	128.9	129.6	128.3
2002	129.9	130.0	130.2	130.3	130.3	130.4	130.4	130.5	130.5	130.5	130.5	130.5	130.0	130.3	130.4	130.5	130.3
2003	130.5	130.5	130.5	130.4	130.4	130.4	130.3	130.3	130.3	130.2	130.2	130.2	130.5	130.4	130.3	130.2	130.3
2004	130.1	130.1	130.0	130.0	130.0	130.0	130.0	130.0	130.1	130.2	130.3	130.5	130.1	130.0	130.1	130.3	130.1
2005	130.7	130.9	131.1	131.3	131.6	131.9	132.1	132.4	132.7	132.9	133.2	133.4	130.9	131.6	132.4	133.2	132.0
2006	133.6	133.8	134.0	134.3	134.5	134.7	134.9	135.1	135.4	135.7	135.9	136.2	133.8	134.5	135.1	135.9	134.8
2007	136.6	136.9	137.2	137.6	137.9	138.3	138.6	138.9	139.1	139.3	139.5	139.6	136.9	137.9	138.9	139.5	138.3
2008	139.7	139.7	139.6	139.5	139.4	139.2	139.1	138.9	138.7	138.5	138.3	138.1	139.6	139.4	138.9	138.3	139.0
2009	137.8	137.6	137.4	137.2	137.0	136.7	136.5	136.3	136.1	135.9	135.7	135.5	137.6	137.0	136.3	135.7	136.6
2010	135.3	135.0	134.8	134.6	134.4	134.1	133.9	133.7	133.5	133.3	133.1	132.9	135.0	134.4	133.7	133.1	134.0
2011	132.7	132.6	132.5	132.4	132.3	132.3	132.3	132.3	132.4	132.4	132.5	132.6	132.6	132.3	132.3	132.5	132.5
2012	132.8	132.9	133.0	133.2	133.3	133.4	133.6	133.7	133.8	134.0	134.1	134.2	132.9	133.3	133.7	134.1	133.5
2013	134.3	134.4	134.5	134.5	134.6	134.6	134.7	134.7	134.7	134.7	134.7	134.7	134.4	134.6	134.7	134.7	134.6
2014	134.8	134.8	134.8	134.7	134.7	134.7	134.7	134.6	134.5	134.5	134.4	134.3	134.8	134.7	134.6	134.4	134.6
2015	134.2	134.1	134.0	133.9	133.9	133.8	133.8	133.8	133.8	133.9	133.9	134.0	134.1	133.9	133.8	133.9	133.9
2016	134.2	134.3	134.4	134.6	134.8	135.0	135.1	135.3	135.4	135.6	135.7	135.8	134.3	134.8	135.3	135.7	135.0
2017	135.9	136.0	136.0	136.1	136.2	136.2	136.3	136.4	136.5	136.6	136.7	136.8	136.0	136.2	136.4	136.7	136.3
2018	136.9	137.0															
Utilization (percent)																	
1988	83.1	83.2	83.4	84.1	83.9	84.0	84.0	84.0	84.3	84.6	84.8	85.1	83.2	84.0	84.1	84.8	84.0
1989	85.6	84.7	84.4	84.5	83.5	83.5	82.4	82.9	82.4	82.1	82.0	81.9	84.9	83.8	82.5	82.0	83.3
1990	81.5	82.5	82.7	82.2	82.2	82.2	81.9	82.0	81.8	81.0	80.0	79.3	82.2	82.2	81.9	80.1	81.6
1991	78.6	78.0	77.3	77.5	77.9	78.7	78.8	78.9	79.6	79.3	79.0	78.8	78.0	78.0	79.1	79.1	78.5
1992	78.1	78.6	79.3	79.5	79.7	79.8	80.3	79.7	79.6	79.9	80.1	79.8	78.7	79.7	79.9	79.9	79.5
1993	80.4	80.5	80.1	80.5	80.3	80.0	80.1	79.8	80.2	80.8	80.9	81.2	80.3	80.2	80.0	81.0	80.4
1994	81.2	81.1	81.9	82.4	82.7	82.6	82.7	83.0	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	82.1	82.5	82.3	82.3	82.5	82.0	82.2	82.5	81.6	82.2	82.4	82.2	82.1
1997	82.1	82.8	83.1	82.5	82.6	82.7	82.7	83.1	83.3	83.4	83.7	83.4	82.7	82.6	83.0	83.5	83.0
1998	83.5	83.0	82.3	82.0	81.9	80.7	79.9	81.3	80.7	81.0	80.7	80.7	82.9	81.6	80.6	80.8	81.5
1999	80.6	80.8	80.4	80.4	80.7	80.1	80.1	80.3	79.6	80.4	80.6	80.8	80.6	80.4	80.0	80.6	80.4
2000	80.6	80.4	80.6	80.8	80.4	80.2	80.0	79.2	79.2	78.7	78.2	77.5	80.5	80.5	79.5	78.1	79.6
2001	76.7	76.0	75.6	75.1	74.4	73.7	73.2	72.7	72.4	71.9	71.6	71.7	76.1	74.4	72.8	71.7	73.8
2002	72.0	71.9	72.4	72.5	72.8	73.6	73.3	73.5	73.5	73.3	73.6	73.2	72.1	73.0	73.4	73.4	73.0
2003	73.6	73.7	73.8	73.2	73.3	73.7	73.9	73.6	74.2	74.3	75.0	74.9	73.7	73.4	73.9	74.7	73.9
2004	74.9	75.5	75.4	75.7	76.4	75.8	76.5	76.8	76.8	77.5	77.4	77.8	75.3	76.0	76.7	77.5	76.4
2005	78.3	78.8	78.3	78.4	78.5	78.5	78.0	78.2	77.3	78.3	78.8	78.8	78.5	78.5	77.9	78.6	78.4
2006	79.3	78.9	78.7	79.0	78.6	78.7	78.4	78.7	78.6	78.2	78.0	79.0	79.0	78.8	78.6	78.4	78.7
2007	78.4	78.5	79.0	79.3	79.0	79.1	79.0	78.6	78.8	78.5	78.8	78.9	78.6	79.2	78.8	78.7	78.8
2008	78.5	78.0	77.8	77.0	76.6	76.2	75.4	74.6	72.1	71.7	70.1	67.8	78.1	76.6	74.0	69.9	74.6
2009	65.8	65.8	64.7	64.4	63.8	63.7	64.8	65.6	66.3	66.5	67.3	67.2	65.5	64.0	65.5	67.0	65.5
2010	68.1	68.2	69.1	69.8	70.9	70.9	71.4	71.6	71.7	71.9	72.0	72.5	68.5	70.5	71.6	72.1	70.7
2011	72.7	72.8	73.3	73.0	73.1	73.2	73.6	73.9	74.1	74.5	74.2	74.7	73.0	73.1	73.9	74.5	73.6
2012	75.3	75.5	75.0	75.3	74.9	75.0	74.8	74.6	74.5	74.2	74.6	75.2	75.2	75.1	74.6	74.7	74.9
2013	74.9	75.2	75.1	74.7	74.9	75.1	74.3	75.0	75.1	75.1	75.1	75.1	75.0	74.9	74.8	75.1	75.0
2014	74.2	75.0	75.7	75.6	75.8	76.0	76.3	76.0	76.0	76.0	76.6	76.4	75.0	75.8	76.1	76.3	75.8
2015	76.1	75.7	76.0	76.0	75.9	75.7	76.2	76.0	75.6	75.6	75.4	75.2	75.9	75.9	75.9	75.4	75.8
2016	75.5	75.2	74.9	74.5	74.4	74.5	74.5	74.1	74.3	74.3	74.3	74.5	75.2	74.4	74.3	74.4	74.6
2017	74.7	74.7	74.3	75.1	74.8	74.8	74.6	74.4	74.2	75.2	75.3	75.2	74.6	74.9	74.4	75.2	74.8
2018	75.0	75.9															

NOTE: Estimates from October 2017 through February 2018 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		2010	2011	2012	2013	2014	2015	2016	2017
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		53.2	52.2	51.6	50.8	52.1	55.2	55.5	54.4
Consumer goods		26.8	26.2	25.3	24.8	25.4	27.8	28.7	28.0
Durable		5.4	5.1	5.1	5.3	5.6	6.3	6.6	6.3
Automotive products		2.6	2.4	2.4	2.5	2.8	3.3	3.5	3.3
Home electronics		.2	.2	.2	.2	.2	.2	.2	.1
Appliances, furniture, carpeting		.8	.7	.7	.7	.8	.9	.9	.9
Miscellaneous goods		1.8	1.8	1.8	1.8	1.9	2.0	2.1	2.0
Nondurable		21.4	21.1	20.2	19.5	19.8	21.5	22.0	21.7
Non-energy		16.4	15.9	15.2	14.9	15.3	16.9	17.3	16.7
Foods and tobacco		9.1	8.7	8.5	8.5	8.7	9.6	9.9	9.7
Clothing		.3	.3	.2	.2	.2	.2	.2	.2
Chemical products		5.1	5.1	4.8	4.5	4.8	5.4	5.6	5.3
Paper products		1.4	1.3	1.2	1.1	1.2	1.2	1.2	1.1
Energy		5.0	5.2	4.9	4.7	4.5	4.5	4.7	5.0
Business equipment		9.3	9.2	9.8	9.6	9.9	10.2	9.7	9.5
Transit		2.1	1.9	2.2	2.3	2.6	2.8	2.6	2.5
Information processing		2.3	2.1	2.2	2.2	2.1	2.2	2.2	2.1
Industrial and other		4.9	5.2	5.3	5.1	5.3	5.2	5.0	4.9
Defense and space equipment		2.5	2.3	2.3	2.2	2.2	2.3	2.2	2.1
Construction supplies		4.2	4.1	4.2	4.3	4.5	4.9	5.1	5.1
Business supplies		9.8	9.5	9.1	8.8	8.9	9.2	9.3	9.0
Materials		46.8	47.8	48.4	49.2	47.9	44.8	44.5	45.6
Non-energy		26.9	27.0	26.6	26.1	26.7	27.7	27.9	27.6
Durable		15.6	16.0	16.0	15.7	16.3	16.8	16.7	16.3
Consumer parts		2.5	2.5	2.7	2.8	2.9	3.1	3.1	3.0
Equipment parts		5.3	5.5	5.4	5.1	5.3	5.3	5.0	4.8
Other		7.8	7.9	7.8	7.9	8.1	8.4	8.5	8.5
Nondurable		11.2	11.0	10.6	10.4	10.4	10.9	11.3	11.3
Textile		.5	.4	.4	.4	.4	.4	.4	.4
Paper		2.1	2.0	2.0	1.9	1.9	2.0	2.0	1.9
Chemical		5.4	5.5	5.3	5.1	5.0	5.2	5.6	5.8
Energy		20.0	20.8	21.8	23.1	21.2	17.2	16.6	18.0
INDUSTRY GROUPS									
Manufacturing		73.7	72.8	72.0	70.6	72.1	76.3	77.0	75.5
Manufacturing (NAICS)	31–33	70.8	70.1	69.6	68.3	69.8	73.9	74.7	73.4
Durable manufacturing		36.3	36.1	36.4	36.1	37.5	39.1	38.8	37.6
Wood products	321	.9	.9	1.0	1.1	1.2	1.3	1.4	1.4
Nonmetallic mineral products	327	1.6	1.6	1.6	1.7	1.9	2.1	2.2	2.2
Primary metals	331	2.7	2.8	2.5	2.6	2.6	2.5	2.6	2.6
Fabricated metal products	332	5.1	5.3	5.3	5.4	5.5	5.7	5.6	5.5
Machinery	333	5.1	5.5	5.8	5.5	5.8	5.6	5.2	5.3
Computer and electronic products	334	6.0	5.8	5.6	5.2	5.1	5.2	5.1	4.9
Electrical equip., appliances, and components	335	1.8	1.8	1.8	1.7	1.8	1.9	1.9	1.8
Motor vehicles and parts	3361–3	4.4	4.2	4.4	4.6	5.1	5.8	6.0	5.6
Aerospace and miscellaneous transportation equipment	3364–9	4.4	4.2	4.3	4.4	4.7	4.9	4.6	4.3
Furniture and related products	337	1.0	1.0	1.0	1.0	1.1	1.2	1.3	1.2
Miscellaneous	339	3.2	3.0	2.8	2.8	2.8	3.0	3.0	2.7
Nondurable manufacturing		34.5	34.1	33.2	32.1	32.3	34.7	35.9	35.9
Food, beverage, and tobacco products	311,2	11.1	10.6	10.2	10.3	10.5	11.5	11.9	11.7
Textile and product mills	313,4	.7	.7	.6	.7	.7	.7	.7	.6
Apparel and leather	315,6	.3	.3	.3	.2	.2	.2	.2	.2
Paper	322	2.6	2.5	2.5	2.5	2.5	2.6	2.6	2.5
Printing and support	323	1.6	1.5	1.4	1.4	1.4	1.5	1.5	1.4
Petroleum and coal products	324	3.5	3.9	3.7	3.2	2.8	2.8	2.9	3.4
Chemicals	325	11.7	11.7	11.4	10.8	11.1	12.0	12.4	12.4
Plastics and rubber products	326	2.9	2.9	3.0	3.0	3.1	3.5	3.6	3.6
Other manufacturing (non-NAICS)	1133,5111	2.9	2.6	2.4	2.3	2.3	2.4	2.3	2.1
Mining	21	15.9	17.3	18.6	19.9	17.8	13.1	12.2	14.1
Utilities	2211,2	10.4	9.9	9.4	9.5	10.1	10.7	10.8	10.4
Electric	2211	9.2	8.7	8.3	8.5	8.9	9.4	9.5	9.0
Natural gas	2212	1.2	1.2	1.0	1.1	1.2	1.2	1.3	1.4

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 2015 and 2016 would account for a 0.391 percent increase in total IP.

Table 9

INDUSTRIAL PRODUCTION AND CAPACITY UTILIZATION: SUMMARY

Seasonally adjusted

Industrial production	2012=100						Percent change						Feb. '17 to Feb. '18
	2017 Sept. ^r	Oct. ^r	Nov. ^r	Dec. ^r	2018 Jan. ^r	Feb. ^r	2017 Sept. ^r	Oct. ^r	Nov. ^r	Dec. ^r	2018 Jan. ^r	Feb. ^r	
Total index	103.2	104.8	105.3	105.7	105.5	106.5	.0	1.6	.5	.4	-.2	.9	4.3
<i>Previous estimates</i>	104.9	106.6	106.9	107.4	107.1	108.2	.3	1.6	.3	.5	-.3	1.1	4.4
Major market groups													
Final Products	100.3	101.3	101.1	101.4	101.8	102.2	.2	1.0	-.2	.3	.4	.4	3.8
Consumer goods	103.5	104.8	104.5	104.9	105.4	105.5	.1	1.2	-.3	.4	.4	.1	3.4
Business equipment	98.2	98.9	99.1	98.9	99.1	99.8	1.0	.7	.2	-.2	.2	.7	4.9
Nonindustrial supplies	104.8	105.5	106.0	106.8	105.6	106.5	.4	.7	.4	.8	-1.1	.8	1.9
Construction	111.0	111.5	112.0	113.0	110.9	113.5	1.7	.4	.4	.9	-1.8	2.3	2.2
Materials	104.7	107.2	108.3	108.8	108.3	109.9	-.4	2.3	1.1	.4	-.4	1.4	5.4
Major industry groups													
Manufacturing (see note below)	101.3	102.7	102.9	102.9	102.7	104.1	-.1	1.4	.2	.0	-.2	1.3	2.4
<i>Previous estimates</i>	103.2	104.6	104.8	104.8	104.6	105.9	.2	1.3	.2	.1	-.2	1.2	2.5
Mining	110.1	111.6	113.8	114.7	113.2	117.2	1.3	1.4	1.9	.8	-1.3	3.5	10.1
Utilities	99.8	102.9	103.3	106.1	107.2	102.0	-.8	3.2	.4	2.7	1.1	-4.9	10.6
Capacity utilization													Capacity growth
	Percent of capacity												
	Average 1972-2017	1988-89 high	1990-91 low	1994-95 high	2008-09 low	2017 Feb.	2017 Sept. ^r	Oct. ^r	Nov. ^r	Dec. ^r	2018 Jan. ^r	Feb. ^r	Feb. '17 to Feb. '18
Total industry	79.8	85.2	78.8	85.0	66.7	75.1	75.7	76.8	77.0	77.3	77.0	77.7	.9
<i>Previous estimates</i>	79.8	85.2	78.8	85.0	66.7	75.8	76.1	77.3	77.5	77.8	77.4	78.1	1.3
Manufacturing (see note below)	78.3	85.6	77.3	84.6	63.7	74.7	74.2	75.2	75.3	75.2	75.0	75.9	.8
<i>Previous estimates</i>	78.3	85.6	77.3	84.6	63.7	75.6	75.3	76.2	76.3	76.3	76.0	76.9	.8
Mining	87.0	86.3	84.3	88.6	78.2	82.0	85.3	86.4	87.9	88.3	86.9	89.7	.6
Utilities	85.3	92.9	84.4	92.9	78.3	70.2	75.2	77.4	77.6	79.6	80.3	76.2	1.9
Stage-of-process groups													
Crude	86.0	87.8	84.7	90.0	76.4	81.5	82.5	85.4	86.6	86.8	85.6	87.7	.6
Primary and semifinished	80.4	86.5	78.1	87.7	63.8	73.9	74.4	75.5	76.0	76.5	76.3	76.0	.8
Finished	76.9	83.4	77.3	80.7	66.6	74.0	74.3	74.6	74.2	74.1	74.3	75.2	1.2

^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 1997, the total IP index has been constructed from 300 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 ($0.06 \times 10\% = 0.6\%$). 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 74 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, 95 percent in the third month, 96 percent in the fourth month, 97 percent in the fifth month, and 97 percent in the sixth month. Data availability by data type in early 2017 is summarized in the table below:

Availability of Monthly IP Data in Publication Window
(Percent of value added in 2017; the numbers may not sum because of rounding.)

Type of data	Month of estimate					
	1st	2nd	3rd	4th	5th	6th
Physical product	32	44	54	55	56	56
Production-worker hours	41	41	41	41	41	41
IP data received	74	85	95	96	97	97
IP data estimated	26	15	5	4	3	3

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 (32 percent out of a total of 56 percent). Of the 27 percent, about four-fifths (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 2018; for other series, the factors were estimated with data through at least December 2017. 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 0.27 percent during the 1987–2017 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 1987–2017

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 1972–2017 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 23, 2018, 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 2018, the G.17 will be published at 9:15 a.m. on:

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

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