
1987 Revision

Industrial Production

1977 = 100

January 1985–December 1986

Industrial Output Section

Division of Research and Statistics

Board of Governors of the Federal Reserve System
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Table 2B

INDUSTRIAL PRODUCTION: INDUSTRY GROUPINGS

Not seasonally adjusted, 1977 = 100

1985

Major Industry Groupings	SIC Code	1977	1985	1985											
		Pro- por- tion	Ann. Avg.	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MINING AND UTILITIES															
MINING		15.78	109.8	114.2	117.0	110.1	105.9	104.6	108.8	107.7	111.0	111.3	106.8	107.5	112.3
MINING		9.83	108.9	110.2	111.6	110.6	108.2	108.0	109.5	104.1	108.9	108.8	108.9	108.8	109.4
UTILITIES		5.96	111.1	120.9	125.9	109.3	102.1	98.8	107.6	113.6	114.5	115.3	103.3	105.3	117.1
MANUFACTURING															
NONDURABLE		84.22	126.4	120.1	124.0	125.5	125.0	125.9	129.3	124.2	129.0	131.8	129.7	127.6	123.5
NONDURABLE		35.11	124.6	115.9	120.7	121.5	121.5	123.0	127.7	124.0	130.4	133.1	129.9	126.1	121.3
DURABLE		49.10	127.6	123.2	126.4	128.4	127.5	128.0	130.5	124.4	129.0	130.8	129.5	128.7	125.1
MINING															
Metal mining	10	5.0	76.1	66.1	75.0	84.9	82.9	86.4	86.4	62.1	74.8	74.0	76.3	75.5	68.8
Coal	11,12	1.60	127.0	111.1	125.8	138.6	130.1	127.6	137.3	112.8	135.5	131.9	130.5	123.5	119.1
Oil & gas extraction	13	7.07	105.9	113.2	110.8	105.7	103.8	103.6	103.4	103.4	103.7	104.0	104.1	105.8	109.1
Stone & earth minerals	14	0.66	122.2	109.4	112.4	114.8	120.9	124.0	124.9	122.0	125.9	130.6	131.6	130.5	119.0
NONDURABLE MANUFACTURES															
Foods	20	7.96	130.5	120.6	122.5	123.6	125.1	127.9	134.4	133.3	139.2	141.6	137.2	131.9	128.6
Tobacco products	21	0.62	100.3	98.4	109.7	106.8	95.2	88.7	112.1	86.8	104.0	103.6	113.9	107.2	77.2
Textile mill products	22	2.29	102.2	89.8	98.8	100.2	100.1	103.0	106.1	93.8	108.1	110.2	112.3	108.9	94.7
Apparel products	23	2.79	100.4	96.7	99.3	99.5	97.3	98.2	100.6	96.5	103.5	105.5	103.8	102.6	101.7
Paper & products	26	3.15	127.6	127.1	131.2	132.5	127.7	125.6	129.3	121.0	126.7	129.3	131.0	127.1	122.7
Printing & publishing	27	4.54	151.4	133.8	139.8	141.6	143.8	147.2	154.1	156.9	167.6	167.5	160.2	154.3	149.5
Chemicals & products	28	8.05	126.4	118.9	123.4	124.7	125.0	126.8	130.2	127.8	128.5	134.8	128.7	126.0	122.4
Petroleum products	29	2.40	86.9	78.9	80.0	79.6	83.8	87.1	90.9	91.8	92.6	88.8	89.3	90.4	90.2
Rubber & plastics prod.	30	2.80	146.1	137.5	151.2	148.9	147.3	144.7	147.2	136.4	148.7	154.2	152.0	146.4	139.0
Leather & products	31	0.53	68.4	66.5	69.5	70.1	68.4	70.6	69.7	60.0	72.2	71.2	71.8	68.8	62.0
DURABLE MANUFACTURES															
Lumber & products	24	2.30	114.3	101.7	105.4	110.6	113.0	114.3	121.4	113.2	123.0	124.4	124.3	114.0	105.9
Furniture & fixtures	25	1.27	138.0	128.6	144.3	136.3	134.5	133.0	137.4	133.3	143.3	145.9	141.8	141.1	136.4
Clay, glass, stone prod.	32	2.72	114.5	103.3	105.2	108.4	114.8	116.1	119.2	116.4	120.7	120.4	120.7	116.8	111.7
Primary metals	33	5.33	80.4	78.3	82.7	88.1	86.3	82.9	84.6	73.2	77.9	78.8	79.7	77.9	74.4
Iron & steel	331,21	3.49	70.4	66.5	70.4	79.7	77.2	73.5	75.7	64.9	68.3	68.3	69.1	67.2	63.8
Fabricated metal prod.	34	6.46	107.1	101.9	106.5	107.5	107.7	107.0	108.1	104.7	108.7	109.7	109.1	108.0	106.8
Nonelectrical machinery	35	9.54	146.2	139.3	144.3	144.6	144.4	146.4	147.9	149.1	152.9	152.3	144.3	146.4	142.8
Electrical machinery	36	7.15	168.3	171.5	171.8	173.4	167.5	168.2	170.5	160.4	165.8	167.4	169.1	168.9	165.7
Transportation equip.	37	9.13	122.8	118.6	120.1	123.9	122.5	124.0	126.8	113.8	117.9	125.3	128.6	128.7	122.8
Motor vehicles & pts.	371	5.26	111.9	110.8	113.5	117.2	115.1	116.4	119.7	99.3	103.5	112.7	117.8	114.8	102.3
Aerospace & misc.	372-6,9	3.87	137.5	129.2	129.1	133.1	132.5	134.4	136.4	133.5	137.3	142.4	143.2	147.7	150.7
Instruments	38	2.66	139.3	135.3	135.2	136.9	135.2	138.1	142.8	141.8	143.6	143.8	139.6	139.5	139.4
Miscellaneous mfrs.	39	1.46	96.1	90.4	95.1	94.4	94.1	94.5	98.6	96.3	103.0	103.0	99.1	93.0	91.7
UTILITIES															
Electric		4.17	119.7	125.6	132.1	114.1	109.1	108.0	120.6	126.3	127.7	127.0	110.4	112.1	123.3

Table 2B

INDUSTRIAL PRODUCTION: INDUSTRY GROUPINGS

1986

Not seasonally adjusted, 1977 = 100

Major Industry Groupings	SIC Code	1977	1986	1986											
		Pro- por- tion	Ann. Avg.	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
MINING AND UTILITIES		15.78	103.5	114.1	112.6	105.4	101.5	97.8	101.3	101.9	103.7	100.5	98.8	101.3	102.5
MINING		9.83	100.4	110.5	109.3	105.3	100.5	98.8	97.6	94.0	98.0	95.9	97.3	99.5	97.8
UTILITIES		5.96	108.5	120.2	118.1	105.4	103.0	96.2	107.5	115.0	113.1	108.0	101.1	104.3	110.2
MANUFACTURING		84.22	129.1	124.9	127.5	126.7	128.0	128.0	131.5	127.2	132.3	133.7	133.2	129.7	126.7
NONDURABLE		35.11	130.1	122.5	125.7	124.9	126.9	128.3	133.9	130.4	137.0	136.9	136.1	131.1	127.4
DURABLE		49.10	128.4	126.6	128.9	127.9	128.7	127.7	129.8	124.9	128.8	131.4	131.1	128.7	126.3
MINING															
Metal mining	10	.50	74.2	72.6	80.9	80.8	82.6	81.1	74.7	70.9	72.3	71.9	69.5	66.7	65.9
Coal	11,12	1.60	127.7	127.8	136.4	138.7	127.9	124.9	130.0	110.9	137.0	128.2	125.9	129.4	115.0
Oil & gas extraction	13	7.07	93.9	109.2	104.6	98.8	93.3	91.8	89.0	89.2	88.1	87.5	89.4	92.2	94.2
Stone & earth minerals	14	.66	123.1	110.6	116.3	113.1	124.9	124.5	128.0	122.4	129.3	126.2	134.1	129.2	118.9
NONDURABLE MANUFACTURES															
Foods	20	7.96	134.4	126.4	127.2	127.4	129.6	131.8	138.7	137.2	143.9	142.0	140.7	135.5	132.6
Tobacco products	21	.62	97.1	94.9	102.9	95.5	99.7	95.5	109.4	86.6	103.4	94.1	110.2	100.9	72.5
Textile mill products	22	2.29	109.2	99.9	108.7	107.1	109.5	111.3	113.6	99.0	117.0	115.4	116.6	111.9	100.6
Apparel products	23	2.79	103.1	100.7	100.1	101.8	100.9	101.6	104.7	100.2	106.7	106.3	106.1	103.8	104.1
Paper & products	26	3.15	136.5	133.8	136.8	136.7	137.6	133.3	140.3	129.6	139.4	138.0	142.4	137.9	131.7
Printing & publishing	27	4.54	160.9	144.4	146.5	147.6	152.4	154.6	164.7	169.7	178.3	176.2	173.4	164.0	159.5
Chemicals & products	28	8.05	132.0	125.2	129.1	127.3	130.5	131.3	136.2	134.7	135.0	138.7	135.4	130.6	129.6
Petroleum products	29	2.40	92.6	88.9	85.3	83.3	88.7	96.2	96.6	95.8	98.5	97.0	92.8	94.6	94.1
Rubber & plastics prod.	30	2.80	151.4	141.2	155.4	151.4	146.5	149.2	154.0	145.0	154.7	158.0	159.4	153.3	148.2
Leather & products	31	.53	61.4	63.9	66.8	64.6	62.1	61.0	59.0	53.8	63.3	60.5	62.6	62.6	56.5
DURABLE MANUFACTURES															
Lumber & products	24	2.30	124.1	113.5	117.3	120.3	125.0	124.0	128.4	120.4	130.4	131.2	131.5	127.1	120.2
Furniture & fixtures	25	1.27	143.8	136.7	147.6	141.3	140.6	138.4	144.3	137.0	149.1	149.8	149.8	145.0	146.7
Clay, glass, stone prod.	32	2.72	118.2	110.4	111.9	115.2	120.2	119.6	122.5	118.6	122.6	123.0	121.8	118.9	114.1
Primary metals	33	5.33	75.1	79.1	81.6	81.1	83.1	80.5	76.0	67.8	69.3	70.8	71.7	72.4	67.9
Iron & steel	331	3.49	63.4	68.7	70.4	69.3	72.0	68.4	64.5	58.9	57.3	57.4	58.5	59.7	55.5
Fabricated metal prod.	34	6.46	108.0	105.0	108.6	107.9	108.1	106.5	108.9	104.9	108.1	110.7	110.5	108.2	108.8
Nonelectrical machinery	35	9.54	145.0	142.6	145.0	143.4	139.7	140.6	146.8	148.7	152.2	151.2	147.2	142.7	139.8
Electrical machinery	36	7.15	165.7	163.1	162.4	162.3	164.4	163.0	162.0	161.4	166.2	169.1	172.9	171.2	170.0
Transportation equip.	37	9.13	127.5	130.1	131.7	128.6	133.3	129.4	132.1	116.0	119.5	128.6	129.8	128.1	124.3
Motor vehicles & pts.	371	5.26	111.5	115.7	120.6	114.6	118.5	115.0	120.6	95.4	99.2	112.5	114.1	109.4	101.9
Aerospace & misc.	372-6,9	3.87	149.2	149.7	146.7	147.7	148.7	148.9	147.7	143.9	146.9	150.4	151.3	153.3	154.7
Instruments	38	2.66	139.8	137.5	138.6	139.7	138.5	137.4	140.6	140.4	142.8	143.2	140.2	138.7	139.4
Miscellaneous mfrs.	39	1.46	100.1	94.2	100.7	98.1	97.0	99.7	100.9	98.6	104.3	106.3	104.0	99.3	97.8
UTILITIES															
Electric		4.17	122.4	126.9	127.4	114.4	116.4	109.2	126.0	136.1	133.4	125.4	114.8	116.9	121.7

Table 6B

INDUSTRIAL PRODUCTION: GROSS VALUE OF PRODUCTS

Billions of 1982 dollars at annual rates, seasonally adjusted, quarterly

SERIES	Billions of 1982 Dollars at Annual Rates											
	1982	1986	1984		1985				1986			
	Dollars	Ann. Avg.	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Products, total	1376.8	1681.6	1606.4	1622.7	1629.1	1642.8	1647.2	1667.0	1682.3	1679.0	1675.0	1691.6
Final products	1084.5	1296.9	1248.4	1262.3	1270.3	1276.9	1279.3	1293.7	1302.7	1295.8	1289.9	1300.3
Consumer goods	703.7	844.1	798.6	807.8	811.8	813.4	818.1	831.0	841.6	844.8	842.6	849.0
Durable consumer goods	133.3	200.1	190.5	190.6	192.5	193.6	198.3	196.4	197.3	198.7	202.2	202.3
Automotive products	65.9	109.4	101.4	101.0	106.3	106.4	111.5	108.8	108.3	109.6	111.3	108.5
Home goods	67.4	90.7	89.1	89.6	86.3	87.2	86.8	87.6	89.0	89.1	90.9	93.8
Nondurable consumer goods	570.4	644.0	608.1	617.3	619.3	619.8	619.8	634.6	644.3	646.0	640.3	646.7
Equipment, total	380.8	452.8	449.8	454.4	458.5	463.5	461.2	462.6	461.1	451.1	447.3	451.2
Business & defense equipment	345.4	434.5	414.4	419.6	426.2	432.4	430.0	434.0	436.7	434.4	432.0	434.7
Business equipment	278.0	341.3	334.7	337.6	342.1	346.5	342.5	343.7	345.3	342.3	338.6	338.8
Defense and space equipment	67.4	93.2	79.7	82.1	84.1	85.9	87.5	90.2	91.4	92.1	93.4	95.9
Intermediate products	292.2	384.7	358.0	360.4	358.8	365.9	367.8	373.3	379.6	383.2	385.2	391.3
Construction supplies	108.3	154.0	140.1	140.5	141.8	144.8	147.3	148.6	152.9	153.0	154.9	155.4
Business supplies	183.9	230.7	217.9	220.0	217.0	221.0	220.5	224.7	226.7	230.1	230.3	235.9
Commercial energy products	63.4	75.6	71.9	73.0	69.7	72.5	71.9	74.4	73.9	76.3	74.8	77.7

Table 6A

INDUSTRIAL PRODUCTION: GROSS VALUE OF PRODUCTS

Billions of 1982 dollars at annual rates, seasonally adjusted, monthly

1986

SERIES	Billions of 1982 Dollars at Annual Rates														
	1982	1986	1986												
	Dollars	Ann. Avg.	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
Products, total	1376.8	1681.6	1696.0	1687.7	1663.2	1681.7	1683.1	1672.2	1671.4	1677.8	1675.9	1687.3	1686.7	1700.7	
Final products	1084.5	1296.9	1315.7	1309.0	1283.3	1302.4	1297.8	1287.4	1284.8	1292.9	1291.8	1296.9	1296.6	1307.3	
Consumer goods	703.7	844.1	848.4	845.2	831.3	846.7	847.2	840.4	840.7	847.8	839.2	843.5	846.5	857.1	
Durable consumer goods	133.3	200.1	199.7	200.4	191.9	199.5	197.9	198.9	201.4	200.7	204.6	201.2	200.9	204.9	
Automotive products	65.9	109.4	109.4	111.2	104.3	110.6	108.9	109.4	111.1	109.8	113.1	109.0	107.5	109.1	
Home goods	67.4	90.7	90.4	89.2	87.6	88.9	89.0	89.5	90.3	90.9	91.5	92.1	93.4	95.8	
Nondurable consumer goods	570.4	644.0	648.6	644.8	639.4	647.2	649.3	641.6	639.3	647.1	634.6	642.3	646.6	652.2	
Equipment, total	380.8	452.8	467.3	463.8	452.1	455.7	450.5	446.9	444.1	445.1	452.6	453.4	450.0	450.2	
Business & defense equipment	345.4	434.5	439.9	439.3	430.8	437.4	434.0	431.7	429.2	429.8	437.1	437.2	433.4	433.4	
Business equipment	278.0	341.3	348.4	348.1	339.4	345.5	341.9	339.6	336.7	336.6	342.5	341.7	337.5	337.1	
Defense and space equipment	67.4	93.2	91.5	91.3	91.4	92.0	92.1	92.2	92.4	93.2	94.5	95.6	95.8	96.3	
Intermediate products	292.2	384.7	380.3	378.7	379.8	379.2	385.3	384.9	386.6	384.8	384.1	390.3	390.2	393.4	
Construction supplies	108.3	154.0	153.1	152.6	153.0	152.4	153.5	153.2	154.5	155.2	155.2	154.5	155.0	156.6	
Business supplies	183.9	230.7	227.2	226.0	226.8	226.8	231.8	231.7	232.1	229.7	229.0	235.8	235.1		
Commercial energy products	63.4	75.6	73.3	73.3	74.9	73.7	78.8	76.2	75.2	74.6	74.7	78.1			

Explanatory Note

Coverage. The index is a measure of industrial production expressed as a percentage of output in a reference period (currently 1977). The changes in the physical output of the nation's factories, mines, and electric and gas utilities are represented by 252 individual series in the index, covering 27 pertinent two-digit codes of the *Standard Industrial Classification* (SIC). For each individual series, index series relatives are calculated first and are then aggregated in the following two ways: (1) market groupings, such as consumer goods, equipment, intermediate products, and materials, from which the seasonally adjusted total index is derived (tables 1A and 1B), and (2) industry groupings, such as SIC two-digit industries, and major aggregates of these groupings, such as durable and nondurable manufacturing, mining, and utilities (tables 2A and 2B).

Market groupings. For purposes of analysis the individual industrial output series are grouped into materials, intermediate products, and final products; together, the latter two form the products category. Materials are industrial output requiring further processing within industry; intermediate products are expected to become inputs in nonindustrial sectors such as construction, farming, and services; and final products are assumed to enter final use as items of private consumption, government use, or capital formation. In the index, final products are subdivided into consumer goods and equipment.

Timing. A first estimate of output for a month is published about the 15th of the following month. This estimate may be revised in each of the next three months as new data become available. After the fourth month, indexes are not revised further until the time of an annual revision or a benchmark revision. The last three benchmark revisions were published in 1971, 1976, and 1985. Such revisions are derived mainly from the quinquennial *Census of Manufactures*, the quinquennial *Census of Mineral Industries*, and the *Annual Survey of Manufactures*, all prepared by the Bureau of the Census, and the *Minerals Yearbook* of the Bureau of Mines.

Source data. The indexes of industrial production are constructed from monthly data of two types: (1) directly measured output in physical units; and (2) estimates of output derived from data on input, expressed in physical units, adjusted by conversion factors that relate these inputs to physical output. The data on directly measured physical product (pounds, yards, barrels, and the like) are obtained from reports of the Bureau of the Census, the Bureau of Mines, other government agencies, and trade associations. When suitable monthly data on physical product are unavailable, estimates of physical output based on input data (kilowatt hours, production-worker hours) are used. The hours worked by production workers are collected in the monthly establishment survey of the Bureau of Labor Statistics, while data on the kilowatt hours used in industry are collected from electric utilities by the Federal Reserve Banks. The estimates of input conversion are based mainly on historical relationships that were derived from censuses and annual surveys and, when appropriate, on more recent cyclical, technological and statistical developments. Users of the index should bear in mind that, especially for the first and second estimates of a given month's indexes, the available source data are limited and are subject to change in the months following their initial receipt as well as in benchmark revisions.

Seasonal adjustment. Individual series are seasonally adjusted by the X-11 Method II of the Bureau of the Census with the intervention analysis technique applied to the series. The seasonal factors currently being used are based on data through 1985. The individual series and the major aggregate series are seasonally adjusted independently, and the factors for the aggregate series in the summary table and in tables 1 and 2 are reviewed monthly. The seasonally adjusted total index is aggregated from the seasonally adjusted market groupings of the index and may not precisely equal an aggrega-

tion of the seasonally adjusted industry groupings. A simple aggregation of the seasonally adjusted individual series within groupings may not precisely equal the seasonally adjusted groupings, primarily because aggregates are adjusted independently.

Weights. The total index and the various groupings of the component series are currently aggregated on the basis of 1977 value-added weights, which are shown in the first column of the index tables under the heading proportions. Value-added weights for 1972 are used for the 1972-77 period, while 1967 weights are used for the 1967-72 period. The weight years for earlier periods after World War II are 1963, 1958, 1954, and 1947. The indexes for the various periods are linked to provide the continuous final results expressed in relation to the 1977 comparison year taken as 100. The gross-value-weighted product series are expressed in terms of 1982 dollars.

Formula. The symbolic expression for the total index (I) is

$$I_t = \sum \left(\frac{q_{77} p_{77}}{\sum q_{77} p_{77}} \right) \cdot \left(\frac{q_t}{q_{77}} \right) \cdot 100 = \frac{\sum q_t p_{77}}{\sum q_{77} p_{77}} \cdot 100,$$

where q is quantity, p is Census value added per unit of output, t represents the t th period, and 77 denotes base-year values.

Reliability. The median of the revisions in total industrial production, without regard to sign, between the first and fourth estimates is 0.3 percent: that is, in about half of the cases the absolute value of the revision from the first to the fourth estimate was less than 0.3 percent. (This calculation used data for the period from January 1972 to January 1985.) Over the same period, positive changes in the first estimate were confirmed in the fourth estimate (available three months later) about 94 percent of the time. Negative changes in the first estimate were confirmed in the fourth estimate about 85 percent of the time. Thus the likelihood is high that the first estimate for a month will indicate the direction of change in the total index in a reliable manner. However, the magnitude of change as first estimated typically is revised during the next three months; these revisions are based on revised and more complete data sources. The estimates for the higher aggregates generally are considered more reliable than the estimates for their individual components. Revisions to the components often offset each other and thereby reduce the size of revisions to the aggregates.

Rounding. Changes shown for index components may not aggregate to changes for totals because of independent rounding. Percentage changes are calculated from indexes expressed in more digits following the decimal point than shown in their rounded form in the present release. Therefore, percentage changes calculated from the rounded indexes may not entirely coincide with the percentage changes calculated from unrounded indexes.

Literature. *Industrial Production—1986 Edition* contains a more detailed description of the index and the procedures used in compiling it, plus a history of its development, a glossary of terms, and a bibliography. The new edition was published in December 1986. To obtain copies of *Industrial Production—1986 Edition*, write to the Publication Services, Board of Governors of the Federal Reserve System, Washington, D.C. 20551. The price of this volume of about 440 pages is \$9.00 per copy. Selected data on industrial production are also published monthly in the Financial and Business Statistics section of the *Federal Reserve Bulletin*.

Release date. The industrial production index is released in mid-month. For the specific date, phone 202-452-3206 about the 11th of the month.

