



Metal Industry Indicators

Composite Indexes of Leading and Coincident Indicators of Selected Metal Industries for July and August—Summary Report

September 16, 2016

The **primary metals leading index** increased to 158.4 in August from a revised 156.7 in July, and its 6-month smoothed growth rate increased to 5.9% in August from a revised 3.9% in July (table 2). The 6-month smoothed growth rate is a compound annual rate that measures the near-term trend. Usually, a growth rate above +1.0% signals an increase in metals activity, and a growth rate below -1.0% indicates a downturn in activity. The primary metals leading index growth rate posted growth rates above +1.0% in May, June, July, and August which would normally signal strength. In contrast, however, the primary metals coincident index growth rates have been below -1.0% all of 2016. Of the four indicators that were available to calculate the August leading index, two indicators provided zero contribution, while the Purchasing Managers' Index provided a negative [-0.6] contribution canceling out the positive [0.5] contribution made by the S&P stock price index (table 3). Metals are key inputs in durable goods manufacturing and construction, the primary metals leading index provides early signs of change in activity for the overall U.S. economy (chart 8). The August leading index should be considered preliminary because only four of its eight indicators were available, and the leading index will be subject to revision when the other components are added next month.

The **steel leading index** increased to 111.9 in July from a revised 111.0 in June, and its 6-month smoothed growth rate increased to 3.7% in July from a revised 2.2% in June (table 4). The steel leading index growth rate posted growth rates above +1.0% in May, June and July which would normally signal strength. In contrast, however, the steel coincident index growth rates have been below -1.0% since March. The largest contribution to the steel leading index in July was negative: the growth rate of the price of steel scrap [-1.3] (table 5).

The **copper leading index** decreased to 126.0 in July from a revised 126.8 in June, and its 6-month smoothed growth rate decreased to -1.0% in July from a revised -0.2% in June (table 6). The copper leading index growth rate, after turning positive in April for the first time in 2016, turned negative again in May, June and July. The largest contribution to the copper leading index in July was negative: average weekly hours, nonferrous metals [-0.8](table 7).

The **leading index of metal prices** decreased to 106.1 in July from a revised 106.6 in June, and its 6-month smoothed growth rate decreased to 2.1% in July from a revised 3.4% in June (table 1). This is the eighth consecutive month with a positive 6-month smoothed growth rate, and the sixth consecutive month with a growth rate greater than +1.0%. The leading index of metal prices signal changes in the growth rate of nonferrous metal prices an average of 8 months in advance.

The percent changes from June to July for the **metal industry coincident indexes**, which measure current economic activity, are shown below. July is the latest month for which these indexes are available.

Primary Metals	-0.1%
Steel	-0.6%
Copper	0.1%

Tables 1, 3, 5, and 7 identify the indicators and, for the industry indexes, show the contributions of each indicator to its respective index.

The *Metal Industry Indicators* report is produced at the U.S. Geological Survey. For more information about these indexes and the *Metal Industry Indicators* monthly report, contact Jeff Busse (703-648-4914), (email, jbusse@usgs.gov). Data provided by Annie Hwang.

The *Metal Industry Indicators* summary report with indexes for July and August is scheduled for release on the World Wide Web at 10:00 a.m. EDT, Friday, October 21, 2016.

Table 1.
Leading Index of Metal Prices and Growth Rates of the Nonferrous Metals Price Index, Inventories of Nonferrous Metal Products, and Selected Metal Prices

	Six-Month Smoothed Growth Rates						
	Leading Index of Metal Prices (1967=100)	Leading Index of Metal Prices Growth Rates	MII Nonferrous Metals Price Index	U.S. Nonferrous Metal Products Inventories (1982\$)	Primary Aluminum	Primary Copper	Steel Scrap
2015							
July	103.9	-1.6	-29.0r	9.6	-26.9	-30.1	-32.7
August	104.0	-0.9	-29.1r	11.2	-28.1	-29.9	-42.1
September	104.3	0.0	-26.4r	9.5	-23.7	-26.5	-43.5
October	104.6	0.7	-22.7r	6.7	-31.4	-22.1	-62.1
November	103.0	-1.8	-31.7	8.1	-28.4	-33.7	-64.1
December	104.6	1.2	-22.9	10.8	-17.8	-27.1	-58.1
2016							
January	104.3	0.8	-24.3	14.4	-12.9	-28.4	-43.3
February	104.8	1.6	-16.0	8.7	-0.2	-21.5	-35.9
March	105.9	3.3	-12.8r	3.1r	-13.0	-13.9	-21.3
April	106.6r	4.2r	-1.3r	-4.2r	10.7	-4.3	29.6
May	106.4r	3.2r	-9.5r	-5.8	-1.9	-13.0	63.9
June	106.6r	3.4r	0.9r	-4.3r	10.3	-4.6	28.9
July	106.1r	2.1r	4.4r	-8.1r	8.0	-0.9	19.1
August	NA	NA	1.4	NA	5.9	-9.1	25.9

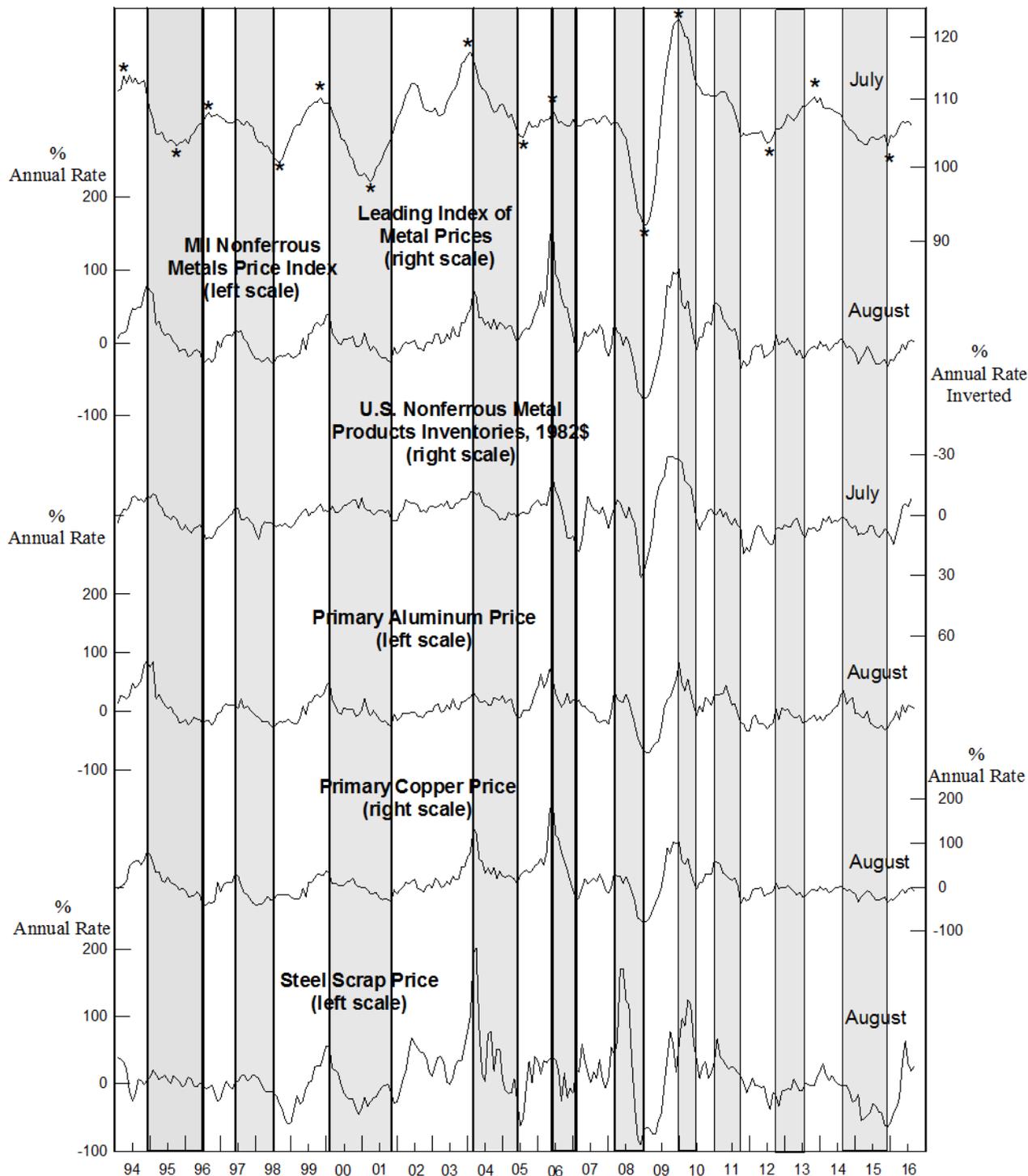
NA: Not available **r:** Revised

Sources: U.S. Geological Survey (USGS), American Metal Market (AMM), the London Metal Exchange (LME), U.S. Census Bureau, the Organisation for Economic Cooperation and Development (OECD), and Federal Reserve Board.

Note: The components of the Leading Index of Metal Prices are the spread between the U.S. 10-year Treasury Note and the federal funds rate, and the 6-month smoothed growth rates of the deflated value of new orders for nonferrous metal products, the Organisation for Economic Cooperation and Development (OECD) Total Leading Index, and the reciprocal of the trade-weighted average exchange value of the U.S. dollar against other major currencies. The Metal Industry Indicators (MII) Nonferrous Metals Price Index measures changes in end-of-the-month prices for primary aluminum, copper, lead, and zinc traded on the London Metal Exchange (LME). The steel scrap price used is the price of No. 1 heavy melting. Inventories consist of the deflated value of finished goods, work in progress, and raw materials for U.S.-produced nonferrous metal products (NAICS 3313, 3314, & 335929). Six-month smoothed growth rates are based on the ratio of the current month's index or price to its average over the preceding 12 months, expressed at a compound annual rate.

**CHART 1.
LEADING INDEX OF METAL PRICES AND GROWTH RATES
OF NONFERROUS METALS PRICE INDEX, INVENTORIES OF
NONFERROUS METAL PRODUCTS, AND SELECTED PRICES**

1967 = 100



Shaded areas are downturns in the nonferrous metals price index growth rate. Asterisks (*) are peaks and troughs in the economic activity reflected by the leading index of metal prices. Scale for nonferrous metal products inventories is inverted.

**Table 2.
Primary Metals Industry Indexes and Growth Rates**

	Leading Index		Coincident Index	
	(1977 = 100)	Growth Rate	(1977 = 100)	Growth Rate
2015				
August	154.6r	-3.2r	110.1	-1.7
September	152.0r	-5.8r	109.0	-3.3
October	152.8r	-4.2r	108.9	-3.0
November	153.3r	-3.2r	109.3	-1.9
December	151.7r	-4.6r	108.6	-2.7
2016				
January	151.9r	-3.8r	109.0	-1.5
February	152.2r	-2.9r	108.3	-2.2
March	153.1r	-1.4r	108.4	-1.7
April	154.3r	0.1r	108.2	-1.9
May	155.3r	1.6r	108.3	-1.6
June	155.4r	2.0r	108.1r	-1.6r
July	156.7r	3.9r	108.1	-1.4r
August	158.4	5.9	NA	NA

NA: Not available **r:** Revised

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

**Table 3.
Contribution of Each Primary Metals Index Component to the Percent Change in the Index
from the Previous Month**

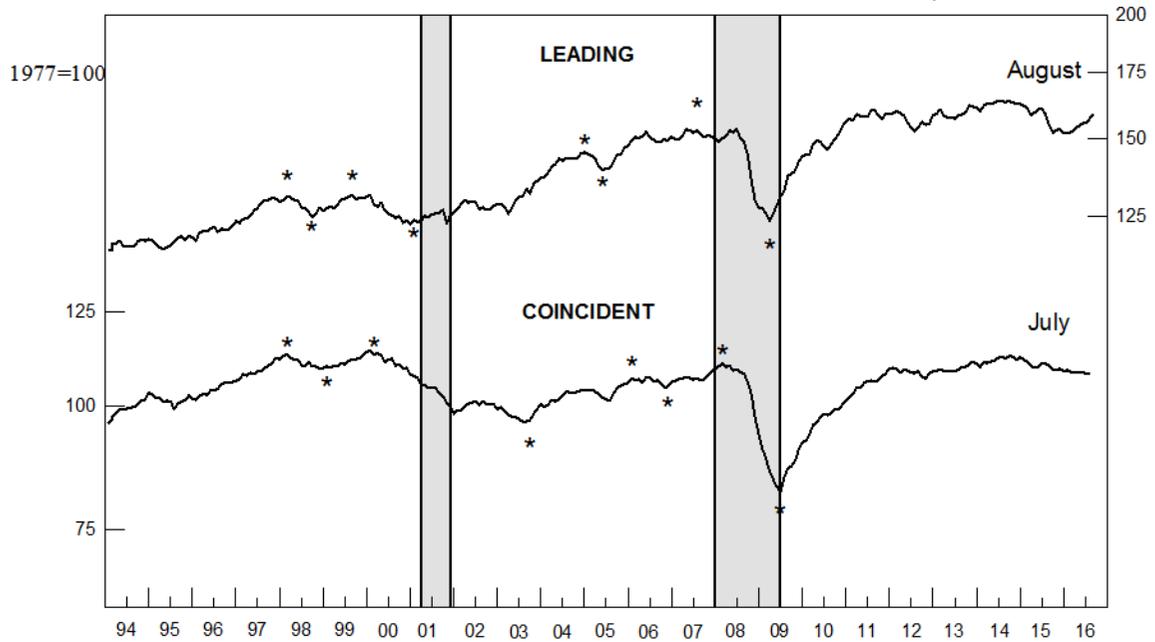
Leading Index			July	August
1. Average weekly hours, primary metals (NAICS 331)			0.3r	0.0
2. Weighted S&P stock price index, machinery, construction and farm and industrial (December 30, 1994=100)			0.2r	0.5
3. Ratio of price to unit labor cost (NAICS 331)			0.0r	NA
4. USGS metals price index growth rate			0.2r	0.0
5. New orders, primary metal products, (NAICS 331 & 335929) 1982\$			-0.1	NA
6. Index of new private housing units authorized by permit			0.0	NA
7. Growth rate of U.S. M2 money supply, 2009\$			0.1	NA
8. PMI			-0.1	-0.6
Trend adjustment			0.0	0.0
Percent change (except for rounding differences)			0.8r	0.0
Coincident Index			June	July
1. Industrial production index, primary metals (NAICS 331)			-0.1	-0.2
2. Total employee hours, primary metals (NAICS 331)			-0.4r	0.3
3. Value of shipments, primary metals products, (NAICS 331 & 335929) 1982\$			0.2r	-0.3
Trend adjustment			0.1	0.1
Percent change (except for rounding differences)			-0.1r	-0.1

Sources: Leading: 1, Bureau of Labor Statistics; 2, Standard & Poor's and U.S. Geological Survey; 3, U.S. Geological Survey; 4, Journal of Commerce and U.S. Geological Survey; 5, U.S. Census Bureau and U.S. Geological Survey; 6, U.S. Census Bureau and U.S. Geological Survey; 7, Federal Reserve Board, The Conference Board, and U.S. Geological Survey; and 8, Institute for Supply Management. Coincident: 1, Federal Reserve Board; 2, Bureau of Labor Statistics and U.S. Geological Survey; and 3, U.S. Census Bureau and U.S. Geological Survey. All series are seasonally adjusted, except 2, 3, and 4 of the leading index.

NA: Not available **r:** Revised

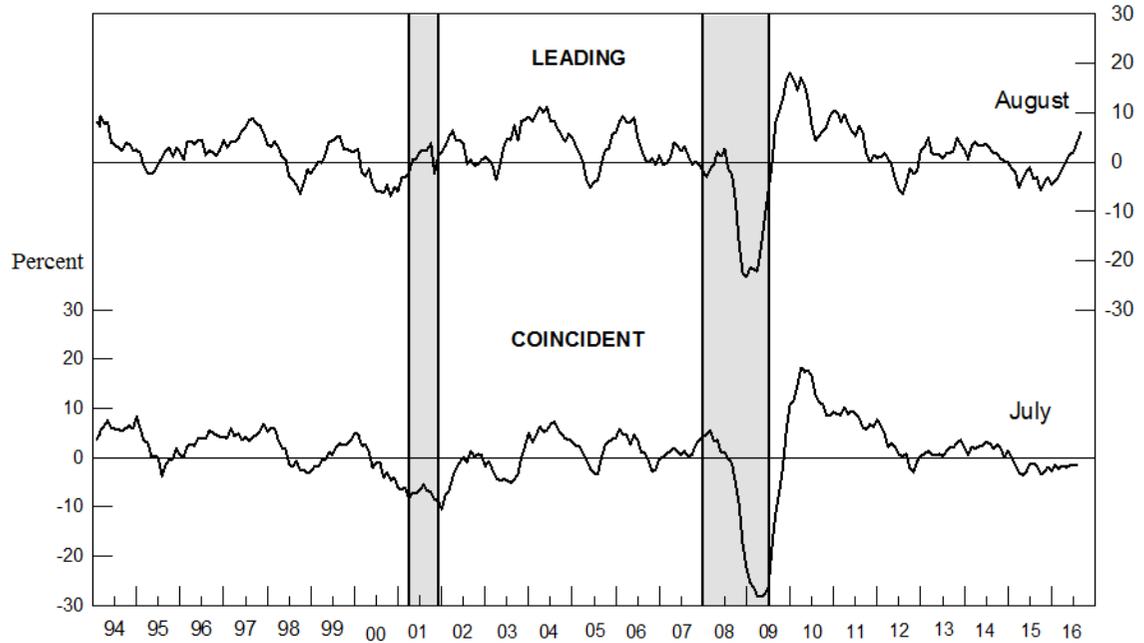
Note: A component's contribution, shown in Tables 3, 5, 7, and 9, measures its effect, in percentage points, on the percent change in the index. Each month, the sum of the contributions plus the trend adjustment equals (except for rounding differences) the index's percent change from the previous month.

CHART 2.
PRIMARY METALS: LEADING AND COINCIDENT INDEXES, 1994-2016 1977=100



Shaded areas are business cycle recessions. Asterisks (*) signify peaks (the end of an expansion) and troughs (the end of a downturn) in the economic activity reflected by the indexes.

CHART 3.
PRIMARY METALS: LEADING AND COINCIDENT GROWTH RATES, 1994-2016 Percent



Shaded areas are business cycle recessions.

The growth rates are expressed as compound annual rates based on the ratio of the current month's index to its average level during the preceding 12 months.

**Table 4.
Steel Industry Indexes and Growth Rates**

	<u>Leading Index</u>		<u>Coincident Index</u>	
	<u>(1977 = 100)</u>	<u>Growth Rate</u>	<u>(1977 = 100)</u>	<u>Growth Rate</u>
2015				
August	110.3r	-1.8r	116.3r	-2.1r
September	108.7r	-4.2r	115.1r	-3.6r
October	109.2r	-2.8r	115.3r	-2.9r
November	109.6r	-1.8r	114.5r	-3.6r
December	108.7r	-3.0r	114.3r	-3.4r
2016				
January	109.4r	-1.4r	115.1r	-1.5r
February	109.4r	-1.2r	115.6r	-0.4r
March	108.9r	-1.9r	114.9r	-1.2r
April	110.3r	0.7r	114.0r	-2.2r
May	111.1r	2.3r	113.7r	-2.5
June	111.0r	2.2r	114.0r	-1.7r
July	111.9	3.7	113.4	-2.4

r: Revised

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

**Table 5.
Contribution of Each Steel Index Component to the Percent Change
in the Index from the Previous Month**

Leading Index	June	July
1. Average weekly hours, iron and steel mills (NAICS 3311 & 3312)	-0.2	0.4
2. New orders, iron and steel mills (NAICS 3311 & 3312), 1982\$	-0.2r	0.1
3. Shipments of household appliances, 1982\$	0.0	-0.2
4. S&P stock price index, steel companies	0.2	0.4
5. Retail sales of U.S. passenger cars and light trucks (units)	0.0r	0.0
6. Growth rate of the price of steel scrap (#1 heavy melting, \$/ton)	-0.1	-1.3
7. Index of new private housing units authorized by permit	0.1	0.0
8. Growth rate of U.S. M2 money supply, 2009\$	0.0	0.1
9. PMI	0.2	-0.1
Trend adjustment	0.0	0.0
Percent change (except for rounding differences)	0.1	-0.4
Coincident Index		
1. Industrial production index, iron and steel products (NAICS 3311 & 3312)	0.1	-0.5
2. Value of shipments, iron and steel mills (NAICS 3311 & 3312), 1982\$	0.3r	0.1
3. Total employee hours, iron and steel mills (NAICS 3311 & 3312)	-0.3r	-0.2
Trend adjustment	0.1	0.1
Percent change (except for rounding differences)	0.3r	-0.6

Sources: Leading: 1, Bureau of Labor Statistics; 2, U.S. Census Bureau and U.S. Geological Survey; 3, U.S. Census Bureau and U.S. Geological Survey; 4, Standard & Poor's; 5, U.S. Bureau of Economic Analysis and American Automobile Manufacturers Association; 6, Journal of Commerce and U.S. Geological Survey; 7, U.S. Census Bureau and U.S. Geological Survey; 8, Federal Reserve Board, The Conference Board, and U.S. Geological Survey; and 9, Institute for Supply Management. Coincident: 1, Federal Reserve Board; 2, U.S. Census Bureau and U.S. Geological Survey; and 3, Bureau of Labor Statistics and U.S. Geological Survey. All series are seasonally adjusted, except 4 and 6 of the leading index.

r: Revised

CHART 4.
STEEL: LEADING AND COINCIDENT INDEXES, 1994-2016

1977=100

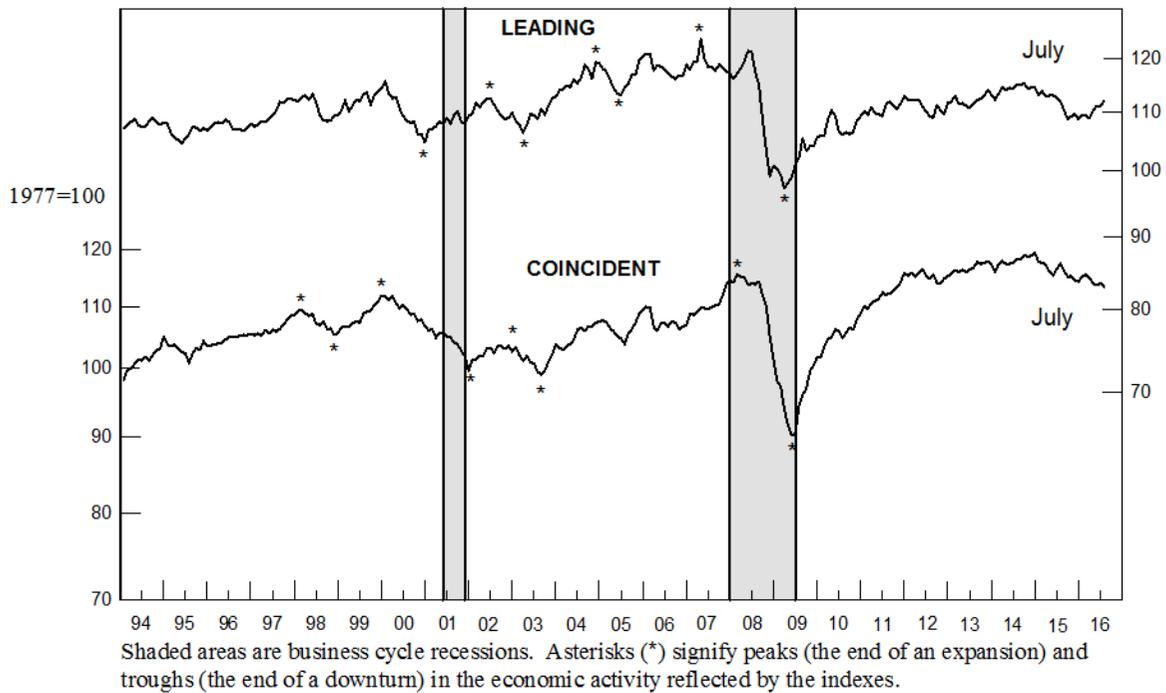
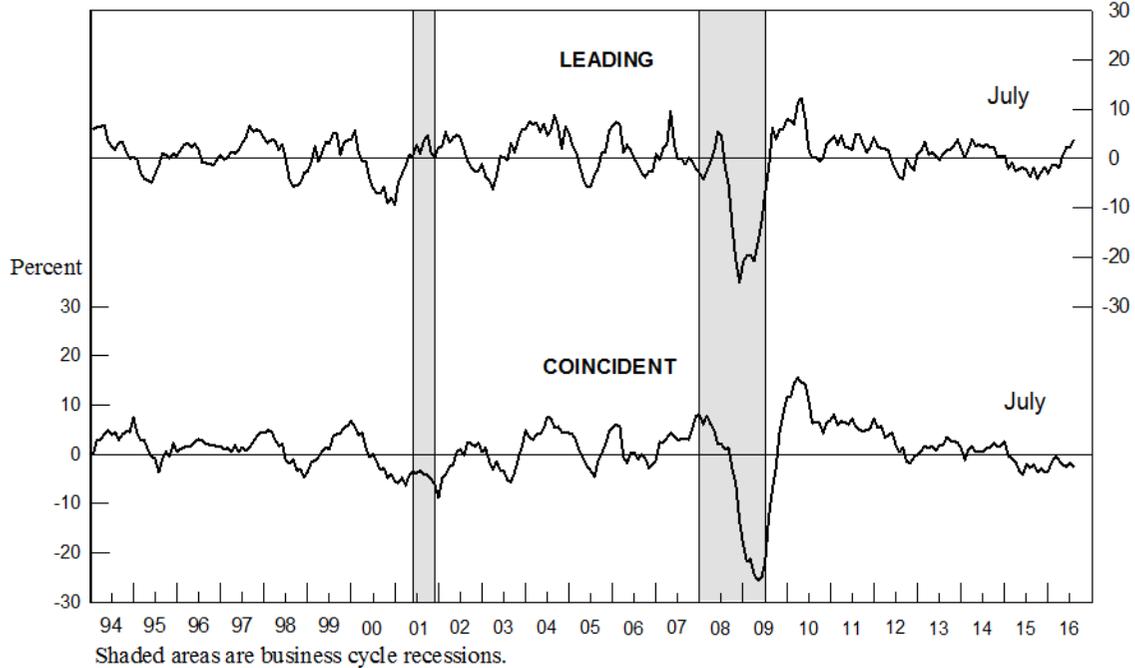


CHART 5.
STEEL: LEADING AND COINCIDENT GROWTH RATES, 1994-2016

Percent



The growth rates are expressed as compound annual rates based on the ratio of the current month's index to its average level during the preceding 12 months.

**Table 6.
Copper Industry Indexes and Growth Rates**

	Leading Index		Coincident Index	
	(1977 = 100)	Growth Rate	(1977 = 100)	Growth Rate
2015				
August	127.9r	0.1	110.5	0.6
September	125.5r	-3.5	108.0	-3.4
October	126.3r	-2.1	109.5	-0.8
November	126.5r	-1.7	110.4	0.4
December	127.6r	0.1r	111.6	1.7
2016				
January	126.2r	-1.8	111.9	2.1
February	126.1r	-2.0	111.6	1.3
March	126.6r	-1.0r	111.0	0.4
April	127.6r	0.7r	112.6	3.2
May	127.0r	-0.2	112.5	2.8
June	126.8r	-0.2r	111.5	1.0
July	126.0	-1.0	111.6	1.0

r: Revised

Note: Growth rates are expressed as compound annual rates based on the ratio of the current month's index to the average index during the preceding 12 months.

**Table 7.
Contribution of Each Copper Index Component to the Percent Change
in the Index from the Previous Month**

	June	July
Leading Index		
1. Average weekly hours, nonferrous metals (except aluminum) (NAICS 3314)	-0.5	-0.8
2. New orders, nonferrous metal products, (NAICS 3313, 3314, & 335929) 1982\$	0.3r	-0.2
3. S&P stock price index, building products companies	0.0	0.5
4. LME spot price of primary copper	0.1	0.0
5. Index of new private housing units authorized by permit	0.1	0.0
6. Spread between the U.S. 10-year Treasury Note and the federal funds rate	-0.1	-0.1
Trend adjustment	0.0	0.0
Percent change (except for rounding differences)	-0.2	-0.6
Coincident Index		
1. Industrial production index, primary smelting and refining of copper (NAICS 331411)	-0.1	0.0
2. Total employee hours, nonferrous metals (except aluminum) (NAICS 3314)	-0.9	0.0
3. Copper refiners' shipments (short tons)	0.0	0.0
Trend adjustment	0.1	0.1
Percent change (except for rounding differences)	-0.9	0.1

Sources: Leading: 1, Bureau of Labor Statistics; 2, U.S. Census Bureau and U.S. Geological Survey; 3, Standard & Poor's; 4, London Metal Exchange; 5, U.S. Census Bureau and U.S. Geological Survey; and 6, Federal Reserve Board and U.S. Geological Survey. Coincident: 1, Federal Reserve Board; 2, Bureau of Labor Statistics; and 3, American Bureau of Metal Statistics, Inc. and U.S. Geological Survey. All series are seasonally adjusted, except 3, 4, and 6 of the leading index.

r: Revised

CHART 6.
COPPER: LEADING AND COINCIDENT INDEXES, 1994-2016

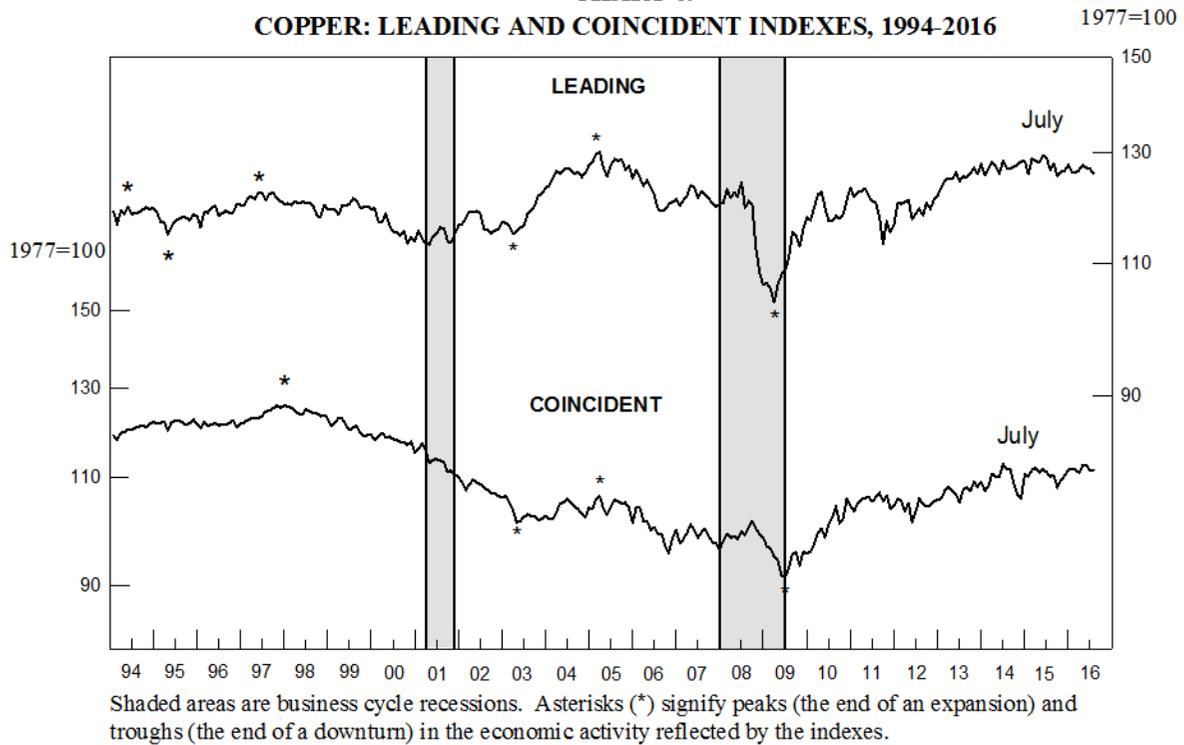


CHART 7.
COPPER: LEADING AND COINCIDENT GROWTH RATES, 1994-2016

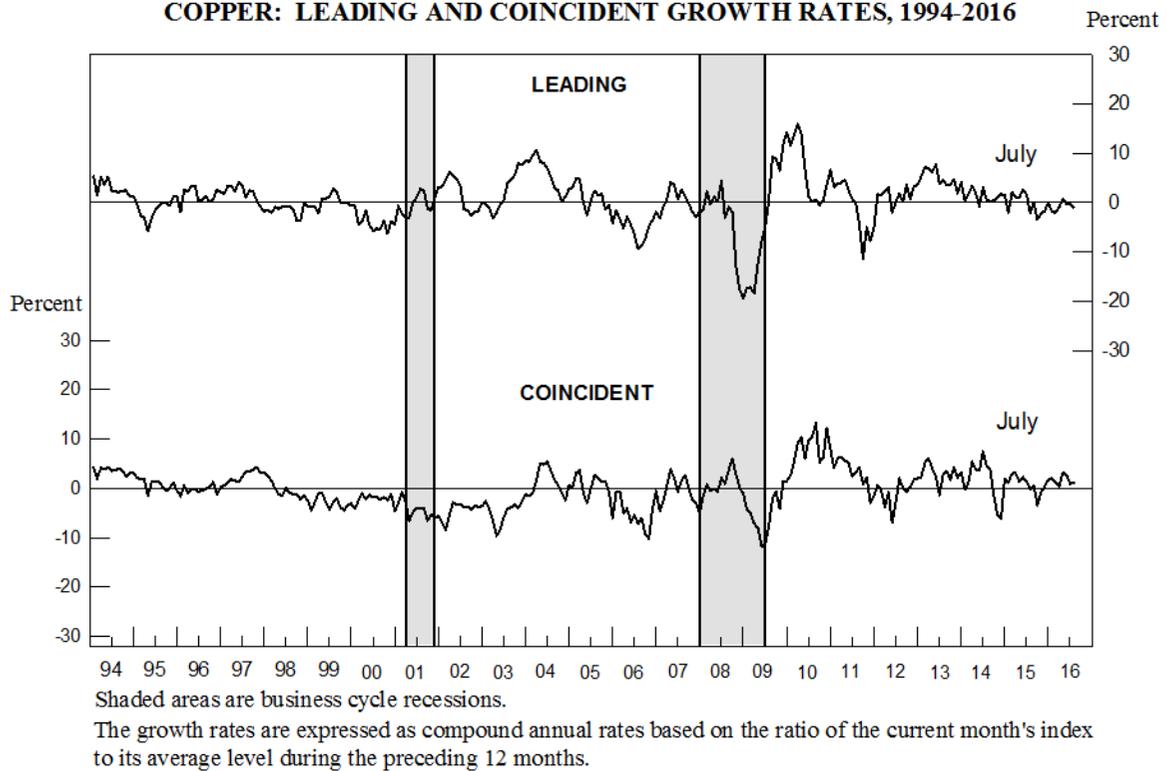
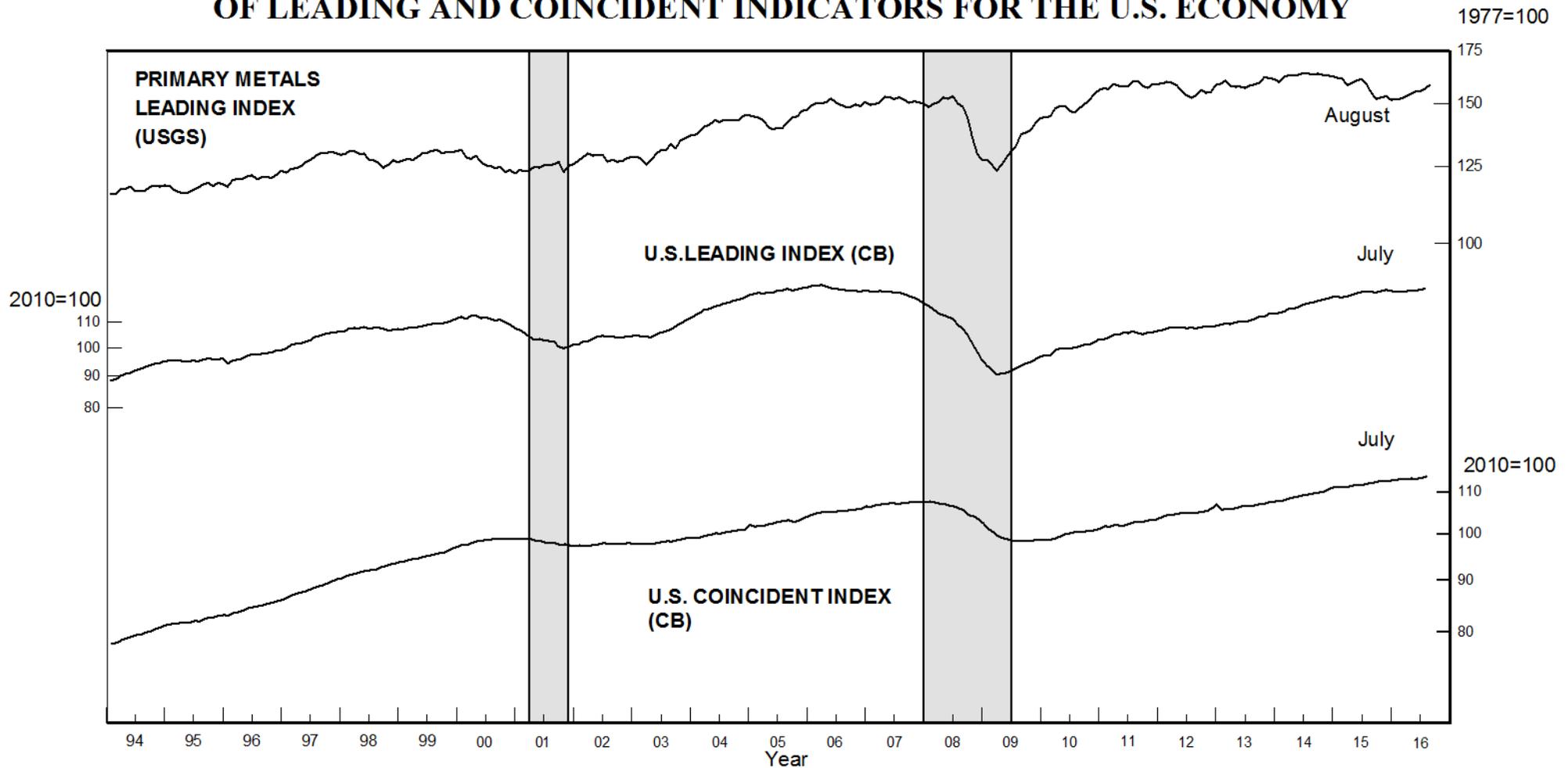


Chart 8.

**PRIMARY METALS LEADING INDEX AND COMPOSITE INDEXES
OF LEADING AND COINCIDENT INDICATORS FOR THE U.S. ECONOMY**



Shaded areas are business cycle recessions.

Sources: U.S. Geological Survey (USGS) and The Conference Board (CB).

September 2016