APPENDIX C

Sources of Data

This appendix lists sources of data, so far as they are not already given in the text. Explanatory notes are occasionally added. Their main purpose is to help the interested reader identify the particular series we have used.

Chapter 3

Chart 3

(1) INDEX OF INDUSTRIAL PRODUCTION

(2) TON-MILES OF FREIGHT HAULED

(3) DEPARTMENT STORE SALES
   Federal Reserve Bulletin, Aug. 1936, p. 631; Feb. 1938, p. 160; Jan. 1941, p. 65; April 1942, p. 372. (For revised data, see ibid., June 1944.)

Chapter 4

Chart 7

Some of the titles on the chart are abbreviated here.

(1) MILK USED IN FACTORY PRODUCTION
   Through 1941, furnished by Bureau of Foreign and Domestic Commerce. For 1942, Survey of Current Business, March 1945, p. 5-25. (Slightly revised figures, starting in 1920, may be obtained from the Bureau of Foreign and Domestic Commerce.)

(2) TRANSIT RIDES, NEW YORK CITY
   Bus rides, which constituted 3 per cent of total transit rides in 1927, are excluded before 1927. Traffic of Hudson and Manhattan Railroad Company is excluded throughout. In general, the data come from the Annual Report of the Transit Commission (prior to 1920, Public Service Commission, First District), State of New York. Figures on subway and streetcar rides in 1941-42, and bus rides in 1927-42, furnished by Transit Commission.
SOURCES OF DATA

(5) RAILWAY PASSENGER-MILES, COMMUTATION
Interstate Commerce Commission, Revenue Traffic Statistics of Class I Steam Railways.

(4) WHOLESALE PRICE OF SULPHURIC ACID

(5) WHOLESALE PRICE OF SHOES
Through Sept. 1931, Bulletin of the Bureau of Labor Statistics, various issues. For 1931-12, furnished by Bureau of Labor Statistics. The figures of the first segment run higher than the figures of the second. Hence the figures of the second segment, starting Oct. 1931, were raised by 1.026, which is the average ratio of the old to the new series during Jan.-Sept. 1931.

(6) WHEAT FREIGHT RATES, CHICAGO TO NEW YORK
Average daily rate during month. Basic data through 1954, furnished by Chicago Board of Trade. Since 1955, Chicago Board of Trade, Annual Report.

Chart 8 and Tables 18-19

All series are adjusted for seasonal variations, except (4)-(5), (33)-(34), (38)-(40). The following series have been adjusted by the National Bureau: (3), (6), (10), (20)-(22), (26)-(30), (35)-(37), also component (b) of (23)-(25).

(1) TOTAL INCOME PAYMENTS
For 1932-38, furnished by Bureau of Foreign and Domestic Commerce. For 1939, Survey of Current Business, March 1945, p. 27. For revised data in 1939, see ibid., April 1944.

(2) TOTAL CIVIL NONAGRICULTURAL EMPLOYMENT

(3) BANK DEBITS OUTSIDE N.Y. CITY

(4) INDEX OF WHOLESALE PRICES

(5) INDEX OF COST OF LIVING

(6) RETAIL SALES
Sales by department stores, chain and independent grocery stores, automobile dealers, restaurants, service stations, and other retail outlets. Estimates furnished by V. Lewis Bassie, War Production Board.

(7) DEPARTMENT STORE SALES
See this appendix, note on series (3) of Chart 3.

(8) CHAIN STORE SALES
Survey of Current Business, 1936 Supplement, p. 25; 1940 Supplement, p. 27.

(9) FREIGHT CAR LOADINGS

(10) ELECTRIC POWER PRODUCTION

(11) TOTAL INDUSTRIAL PRODUCTION (F.R. BOARD)
See this appendix, note on series (1) of Chart 3.
(12) **Total Industrial Production (S.S.Co.)**

(13) **Production of Durable Manufactures**
Board of Governors of the Federal Reserve System. *New Federal Reserve Index of Industrial Production* (published apparently at the end of 1941), pp. 30, 45, 82. (For revised data, starting 1939, see *Federal Reserve Bulletin*, Oct. 1943.)

(14) **Production of Nondurable Manufactures**
Same as (13).

(15) **Production of Minerals**
Same as (13).

(16) **Production of Producers’ Durable Goods**

(17) **Production of Consumers’ Durable Goods**
Same as (16).

(18) **Production of Producers’ Nondurable Goods**
Same as (16).

(19) **Production of Consumers’ Nondurable Goods**
Same as (16).

(20) **Payrolls in Manufacturing**

(21) **Payrolls, Durable Manufactures**
Same as (20).

(22) **Payrolls, Nondurable Manufactures**
Same as (20).

(23) **Man-hours Worked in Manufacturing**
Derived by multiplying seasonally adjusted figures of two series: (a) index of factory employment (*Survey of Current Business*, Dec. 1938, p. 15; Oct. 1939, p. 17; March 1941, p. 18) and (b) average hours worked per week (Bureau of Labor Statistics, “Hours and Earnings in the United States, 1932-40”, *Bulletin 697*, pp. 48-9, 156).

(24) **Man-hours Worked, Durable Manufactures**
Same as (23).

(25) **Man-hours Worked, Nondurable Manufactures**
Same as (23).

(26) **Average Hourly Earnings in Manufacturing**
Same as (23), series (b).

(27) **Total Imports**

(28) **Total Exports**
Re-exports of foreign merchandise included. Same as (27).
(29) **Total Construction Contracts**

(30) **Private Construction Contracts**

(31) **Orders for Manufactured Goods**

(32) **Inventories Held by Manufacturers**
Index of value of inventories. Same as (31).

(33) **Industrial Common Stock Prices**

(34) **Corporate Bond Prices**
Same as (40), but inverted.

(35) **Number of Business Failures**

(36) **New Corporate Capital Issues**

(37) **Loans of Reporting Member Banks**

(38) **Net Demand Deposits of Member Banks**

(39) **Commercial Paper Rates**

(40) **Yield of Corporate Bonds**

**Chart 9**

All series have been adjusted for seasonal variations by the National Bureau, except (1), (2), and (4), which are left in their original form; and (13)–(14), which were adjusted by the compilers. Series (11) is adjusted through 1916 only.

(1) **Index of Wholesale Prices**

(2) **Index of Wages**
Snyder's index of composite wages. Furnished by Federal Reserve Bank of New York.
APPENDIX C

(3) COMMERCIAL PAPER RATES

(4) INDEX OF COMMON STOCK PRICES

(5) BANK CLEARINGS OUTSIDE N.Y. CITY

(6) FACTORY PAYROLLS, N.Y. STATE

(7) CONSTRUCTION CONTRACTS, 27 STATES
Furnished by F. W. Dodge Corporation.

(8) TOTAL IMPORTS
See this appendix, note on series (27) of Chart 8.

(9) TOTAL EXPORTS
See this appendix, note on series (28) of Chart 8.

(10) LIABILITIES OF BUSINESS FAILURES
Bradstreet’s.

(11) CORPORATE CAPITAL ISSUES

(12) NET OPERATING INCOME, U.S. STEEL CORP.

(13) PRODUCTION, BASIC INDUSTRIES

(14) R.R. REVENUE FREIGHT TON-MILES
Estimates furnished by Babson Statistical Organization, Inc.

(15) FACTORY EMPLOYMENT, N.Y. STATE
Same as (6).

(16) IRON PRODUCTION

(17) COTTON CONSUMPTION

(18) PORTLAND CEMENT PRODUCTION

(19) OAK FLOORING PRODUCTION

(20) PASSENGER CAR PRODUCTION
Ibid., June 1927, p. 22.
SOURCES OF DATA

(21) TRUCK PRODUCTION
Same as (20).

(22) BONDS TRADED, N.Y. STOCK EXCHANGE
In dollars. par value of bonds sold. New York Stock Exchange Bulletin, Aug. 1934, p. 10A.

(23) SHARES TRADED, N.Y. STOCK EXCHANGE
Number sold. Same as (22).

Table 21

All series are adjusted for seasonal variations, except (19)–(23), (25)–(28), (31)–(33), (37)–(38), and (42). No seasonal adjustment of (12)–(13) after 1930, (24) before 1921, (27) after 1929, (39) after May 1931. Except for (1)–(5), (9)–(10), and the Babson segment of (15), all seasonal adjustments are by the National Bureau.

All series have been analyzed on a monthly basis, except the following which are quarterly: (11)–(13), (45) and (46) through 1897, and (44) and (46) through 1894.

(1) AYRES' INDEX OF BUSINESS ACTIVITY

(2) PERSONS' INDEX OF PRODUCTION AND TRADE

(3) AXE-HOUGHTON INDEX OF TRADE AND INDUSTRIAL ACTIVITY
Based on pig iron production, imports, bank clearings outside N.Y. City, and revenue per mile of selected railroads. (Not adjusted for trend.) Furnished by E. W. Axe and Company, Inc., N.Y. City.

(4) A.T.&T. INDEX OF BUSINESS ACTIVITY
Adjusted for secular trend. Through trough in 1900, Harvard Business Review, Jan. 1923, p. 159. From trough in 1900 to July 1932, Index of Industrial Activity in the United States (a confidential report of the American Telephone and Telegraph Company, Oct. 20, 1932). Since Aug. 1932, the company's Summary of Business Conditions in the United States. (The series has been revised according to later confidential releases of the Chief Statistician's Division.)

(5) PITTSBURGH INDEX OF BUSINESS

(6) BANK CLEARINGS, TOTAL

(7) BANK CLEARINGS OUTSIDE N.Y. CITY
Same as (6).

(8) BANK CLEARINGS OUTSIDE N.Y. CITY, DEFLATED
The series on clearings (before deflation) is not the same as (7). Continued after 1918 with bank debits in 100 centers outside N.Y. City, adjusted to the level of 'outside' bank clearings in Jan. 1919. Deflated by Snyder's index of the general price level. See Ch. 6, note 7.
APPENDIX C

(9) Snyder's Clearings Index of Business
Adjusted for secular trend and changes in the general level of prices; smoothed by a 3-month moving average. Based on bank clearings outside N.Y. City through 1918, on bank debits in 140 centers outside N.Y. City since 1919. Furnished by Federal Reserve Bank of New York.

(10) Snyder's Index of Deposits Activity

(11) Orders for Locomotives

(12) Orders for Freight Cars
Number of cars. Through trough in 1924, same as (11). Later data from Iron Trade Review.

(13) Orders for Passenger Cars
Number of railroad cars. Same as (11).

(14) Plans Filed for New Buildings, Manhattan

(15) Railroad Freight Ton-Miles

(16) Pig Iron Production
See Ch. 6, note 7.

(17) Total Imports
General imports. Derived from publications of Bureau of Foreign and Domestic Commerce (or its predecessors): through June 1914, Monthly Summary of Commerce and Finance, Dec. 1910, pp. 1120-6, and later issues; since July 1914, Monthly Summary of Foreign Commerce.

(18) Total Exports
Re-exports of foreign merchandise included. Same as (17).

(19) Snyder's Index of General Prices

(20) Wholesale Prices: Total

(21) Metals and Metal Products, Wholesale Prices

(22) Building Materials, Wholesale Prices
Same as (21).
SOURCES OF DATA

(23) FUEL AND LIGHTING, WHOLESALE PRICES
Same as (21).

(24) CHEMICALS AND DRUGS, WHOLESALE PRICES
Same as (21).

(25) TEXTILES, WHOLESALE PRICES
Same as (21).

(26) HOUSEFURNISHING GOODS, WHOLESALE PRICES
Same as (21).

(27) HIDES AND LEATHER PRODUCTS, WHOLESALE PRICES
Same as (21).

(28) STEEL BILLETs, WHOLESALE PRICES, PHILADELPHIA
Through trough in 1912, price of 'No. 1 anthracite foundry' pig iron; later, 'basic' pig iron. American Iron and Steel Institute, Annual Report.

(29) SLAB ZINC, WHOLESALE PRICE, N.Y. CITY

(30) COPPER, WHOLESALE PRICE, N.Y. CITY

(31) COPPER, WHOLESALE PRICE, N.Y. CITY

(32) PIG TIN, WHOLESALE PRICE, N.Y. CITY

(33) BANK CLEARINGS, N.Y. CITY

(34) SHAREs TRADED, N.Y. STOCK EXCHANGE
See Ch. 6, note 7.

(35) BONDS TRADED, N.Y. STOCK EXCHANGE

(36) INDEX OF 'ALL' COMMON STOCK PRICES

(37) INDEX OF RAILROAD STOCK PRICES
See Ch. 6, note 7.

(38) CALL MONEY RATES, N.Y. STOCK EXCHANGE
See Ch. 6, note 7.
APPENDIX C

(40) 90-DAY MONEY RATES, STOCK EXCHANGE LOANS, N.Y. CITY

(41) COMMERCIAL PAPER RATES, N.Y. CITY

(42) RAILROAD BOND YIELDS
See Ch. 6, note 7.

(43) NUMBER OF FAILURES
Dun’s Review, successive issues. Includes manufacturing and mining concerns, builders, employers of labor in mechanic arts; also trading concerns, agents and brokers; but not professional men, banks (after 1892), or railroads. See Dun’s Review, Dec. 30, 1893, pp. 2–3, and Feb. 1936, p. 21.

(44) NUMBER OF FAILURES
Bradstreet’s, successive issues. Apparently differs from (45) in including banks, and excluding stock brokers and real estate dealers.

(45) LIABILITIES OF FAILURES
Same as (43).

(46) LIABILITIES OF FAILURES
Same as (44).

Chapter 5

Chart 11

Every series except that for petroleum is plotted from the beginning of its statistical record by months. The output of petroleum from the Appalachian field is available by months from 1868 on. All series are adjusted for seasonal variations.

(1) COKE PRODUCTION
See text, Table 4.

(2) BITUMINOUS COAL PRODUCTION
See text, Table 13.

(3) CALVES SLAUGHTERED

(4) COTTON STOCKS AT MILLS
Derived from Bureau of the Census bulletins on Cotton Production and Distribution.

(5) PETROLEUM OUTPUT, APPALACHIAN FIELD

(6) STRUCTURAL STEEL ORDERS

Chart 12

The series are adjusted for seasonal variations.

(1) SLAB ZINC, WHOLESALE PRICE
Iron Age, Jan. 5, 1939, p. 209.

(2) SHARES TRADED, N.Y. STOCK EXCHANGE
See Ch. 6, note 7.
SOURCES OF DATA

Charts 16, 17, 20, 21

All series are adjusted for seasonal variations except (3), (4) and (10). The seasonal correction of (6) stops in May 1931.

(1) BITUMINOUS COAL PRODUCTION
See text, Table 13.

(2) PIG IRON PRODUCTION
See Ch. 6, note 7.

(3) PRICE OF PIG IRON

(4) RAILROAD BOND YIELDS
See Ch. 6, note 7.

(5) SHARES TRADED
See Ch. 6, note 7.

(6) CALL MONEY RATES
See Ch. 6, note 7.

(7) TOTAL EXPORTS
See this appendix, note on series (18) of Table 21.

(8) SUGAR MELTING

(9) POSTAL RECEIPTS
Receipts at 50 selected (largest) cities. Through 1919, furnished by Post Office Department. Since 1920, Survey of Current Business.

(10) SLAB ZINC STOCKS AT REFINERIES
Data refer to end of month. Furnished by American Zinc Institute.

Chapter 8

Chart 45

Series S consists of monthly readings from a simple sine curve, ranging from a trough of 800 to a peak of 1200, with a period of 44 months. Its equation is \( y = 1000 + 200 \sin x \), where \( x \) is the number of months multiplied by \( 8\frac{1}{11} \).

Series C also ranges from a trough of 800 to a peak of 1200, and has a period of 44 months. It is made from a segment of a tangent function, \( y = 1000 + 38 (\tan x) - 1 \). The selected segment falls between \( x = 45' \) and \( x = 80' 56' \) inclusive. By taking a monthly reading every \( 3\frac{1}{16} \), the second half of the cyclical rise (starting with the mid-expansion month and ending with the peak month) was obtained. By using the deviations of these figures from 1000, in reverse order and changing signs, the first half of the rise (from the trough month through the mid-expansion month) was obtained. The contraction is the same as the expansion, with the order of the figures reversed.

Series T has 'triangular' cycles, with a period of 44 months. It starts from a trough of 800, rises by a monthly increment of 18.18 to a peak of 1200, and then falls away at the rate of 18.18 per month to a trough of 800.

The basic random series was obtained as follows. First, we took the two digit random numbers given in Table XXXIII of Statistical Tables, by R. A. Fisher and F. Yates. This is a series of random numbers from a rectangular frequency distribution, with a range from 0 to 99 inclusive. In order to obtain a random series with a normal distribution, the numbers from 1 to 99 (series were
skipped) were assumed to represent percentiles of a normal distribution, and the corresponding values of the normal deviate were taken from Table IX in the above source. For example, the normal deviate corresponding to the 1st percentile is \(-2.3263\) (which means that one per cent of the observations in a normal population, with mean of zero and variance of unity, have deviates algebraically less than \(-2.3263\)). After transforming the numbers 1 to 99 to normal deviates, the latter were multiplied by 50; so that the range of the basic random series is 252 (from \(-116\) to \(+116\)), or somewhat more than one-half the range of the cyclical series.

Series S, C and T are aligned: their troughs come in the same month, as do their peaks. The basic random series is fixed in time for all series. Series S' is the sum of the sine function and the basic random series. Series S'' is the sum of the sine function and twice the basic random series. And so on for the other series, as explained in the text.

Each series covers six full cycles, counting from troughs, with a few additional values placed before the first and after the last trough. The number of monthly values used in a series is 282. Smoothing by Macaulay's formula involves a loss of 21 items at each end. Hence the smoothed data cover only four cycles from trough to trough, and five cycles from peak to peak.

Series S', S'', C' and C'' are adaptations of artificial series originally worked out by Geoffrey H. Moore and W. Allen Wallis, to whom we owe thanks.

Chapter 10
Chart 59

The index of orders is based upon quarterly figures for locomotives, freight cars, passenger cars, and rails. These series come from John E. Partington, \(\text{Railroad Purchasing and the Business Cycle}\), pp. 219-20, through the trough in 1924; continued with data from the \(\text{Railway Age}\) for locomotives and passenger cars, and from the \(\text{Iron Trade Review}\) for freight cars. The index was obtained by averaging the reference-cycle patterns of the four series for each business cycle (except that rail orders are not used after the trough in 1924). This operation combines two steps: the construction of a rough index of orders and a reference-cycle analysis of the index. The implicit index number is an unweighted arithmetic mean of relatives, the average standing of each series during a reference cycle being the base.

The data on freight ton-miles are compiled from various sources. See this appendix, note on series (15) of Table 21.

Chapter 12
Chart 77

The index of American crop production includes 12 basic crops and comes from the Bureau of Agricultural Economics, \(\text{Agricultural Situation, Jan. 1935, Oct. 1937}\); figures for recent years were furnished by the Bureau of Agricultural Economics. For the British index from 1866 to 1931, see Leo Drescher, \(\text{Die Entwicklung der Agrarproduktion Großbritanniens und Irlands seit Beginn des 19. Jahrhunderts, Weltwirtschaftliches Archiv, Vol. 41, March 1935, pp. 293-4}\). To cover recent years, we extended this index by methods similar to Drescher's.

For the source of the American pig iron series, see Ch. 6, note 7. The British iron series comes from \(\text{The Iron and Coal Trades Review}\).