Volume Title: Price-Quantity Interactions in Business Cycles

Volume Author/Editor: Frederick C. Mills

Volume Publisher: NBER

Volume ISBN: 0-87014-114-7

Volume URL: http://www.nber.org/books/mill46-1

Publication Date: 1946

Chapter Title: Appendices to "Price-Quantity Interactions in Business Cycles"

Chapter Author: Frederick C. Mills

Chapter URL: http://www.nber.org/chapters/c5531

Chapter pages in book: (p. 118 - 136)

APPENDIX TABLE 1

Commodities Used in the Study of Monetary Outlays and Price-Quantity Behavior in Business Cycles, and Specifications of Price and Quantity Series

The 64 paired price and quantity series entering into this study are described below. Characteristics of the sample are further indicated in Appendix Table 2, where group classifications are given. This note summarizes the specifications of the various series and calls attention to various limitations attaching to the sample and to the derived measures discussed in the text.

A considerable variety of commodities is covered, but the sample does not include in due proportion representatives of all the commodities produced and consumed in the United States. The make-up of the sample is suggested by the following tabulations.

	NO. OF COMMODITIES
Raw *materials*	32
Manufactured goods	32
Total	64
American farm products	33
Other than American farm products	31
Total	64
Crop products, domestic	12
Animal products, domestic	21
Imported agricultural products	4 [a]
Forest products	2 [a]
Metal products	15
Nonmetallic minerals and their products	10
Total	64

	NO. OF COMMODITIES
Producer goods (incl. 29 intended for human consumption)	48
Consumer goods	22
Total	70 [b]
Goods intended for use in capital equipment and as building materials	21
Producer fuels	6 [a]
Goods intended for human consumption (incl. 24 foods)	49
Total	76 [b]
Durable goods	19
Nondurable goods	44
Producer fuels	6 [a]
Total	69 [b]

[a] Groups including less than 10 commodities are omitted from the group summaries and discussions in the text.

[b] Totals for these three classifications exceed 64 because certain commodities are included in more than one group: e.g., passenger automobiles are classified as both a producer and a consumer good.

Variations in the time coverage of the series are pronounced. For two commodities we have observations going back to 1858, covering 20 reference cycles. For three commodities the coverage is restricted to the three reference cycles that have run their course since 1924.

The other 59 commodities fall between these extremes. The observations are continuous from the dates of the first records through the 1938 trough, except for lumber, anthracite coal, and steel rails. The time coverage of each pair of series is indicated in this Appendix. A summary, by reference cycles, appears below. Here the unit of observation is the 'commodity-cycle'—a record for one commodity (more exactly, one pair of measures for a commodity) in one business cycle. There are 520 of these observations, divided in the manner indicated in the accompanying text. The

REFERENCE CYCLE	NO. OF COMMODITIES	REFERENCE CYCLE	NO. OF COMMODITIES	REFERENCE CYCLE	NO. OF COMMODITIES
1933-1938	62	1908-1912	26	1885-1888	8
1927-1933	63	1904-1908	22	1879-1885	7
1924-1927	62	1900-1904	21	1870-1879	4
1921-1924	60	1897-1900	19	1867-1870	2
1919-1921	58	1894-1897	16	1861-1867	2
1914-1919	36	1891-1894	15	1858-1861	2
1912-1914	27	1888-1891	8	Total	520

coverage approaches or exceeds 60 for each of the five cycles recorded since 1919. Of the 520 observations, 305 are for these five latest cycles. For earlier cycles there is a rather sharp falling off, with records for only two commodities for each of the three cycles between 1858 and 1870. This means that if the more recent cycles have had distinctive characteristics, different from those of earlier cycles, the aggregates will be disproportionately affected by the observations on recent cycles.

The series included differ materially in the markets represented by the price quotations and in the transactions represented by the quantity series. All prices are at wholesale, but there is latitude for considerable difference. Asphalt is quoted at refineries; cattle in Chicago markets; anthracite coal in New York Harbor; petroleum at wells in Pennsylvania; steel rails at mills in Pennsylvania. Differences in price behavior that may be commented upon in the text reflect these market differences as well as the obvious commodity differences. There are even wider differences among the series of physical quantities used. These fall into 8 general categories.

Production	28
Consumption of materials in productive processes	10
Consumption of animal food products ready for use	3
Shipments and receipts	14
Exports (raw cotton)	1
Imports	4
New orders	3
Factory sales (passenger automobiles)	1
Total	64

This heterogeneity places limitations on any generalizations based on aggregates. The cyclical behavior of quantity series for two commodities may differ because of industrial differences, differences in degree of fabrication or coverage, or because one series is for output at the mill while another is for exports.[1]

Finally, we note problems concerning the pairing of individual price and quantity series. The ideal, for present purposes, would be price quotations and quantity records relating to precisely the same transactions, and with no time lag between the quoting of the price, the delivery of the goods, and the transfer of the funds in payment. In some cases these requirements are approximated fairly closely. For raw milk New York prices are used, and the quantity series defines fluid milk receipts in the same market. Time lags between price quotation, delivery of milk, and transfer of funds are well within the interval represented by a stage in a given reference cycle —the shortest time unit for which measures have been computed in this study. But for many of our commodity series the data fall far short of the requirements of the ideal situation. For men's shoes we pair the price of a particular type with production records for all varieties. In one petroleum combination we use the price of crude petroleum at Pennsylvania wells with total production of crude domestic petroleum. The Chicago price of potatoes is paired with total United States shipments. In a few cases, in default of better combinations, the output of a commodity closely related to that for which price is quoted is used as the quantity series (e.g., steel ingot production is paired with the price of steel scrap; deliveries of raw silk are paired with the price of silk yarn). For many of the metal series, and some others, a substantial proportion of total sales is made at contract prices holding for a season; quoted prices are for only a portion of total deliveries.

Other imperfections of pairing will be obvious to the reader who consults the details of this Appendix. Some are more serious than others. There are geographical differences in absolute prices, but for most commodities the movements of relative prices (which are here used) are similar in different parts of the country. Again, price changes for one representative of a family of commodities (e.g., one type of men's shoes) usually parallel changes in the prices of other

[1] The one export series we used—for raw cotton—is not strictly comparable with domestic production or consumption series, but it has sufficient importance for the domestic economy to warrant inclusion.

members. But the discrepancy between contract and quoted prices may impart a real bias to the record we have used, and it is a bias impossible to evaluate without access to private account books. Similarly, the pairing of price and quantity series relating to slightly different processed forms leaves the way open for inaccuracies. For these various reasons we must regard some of our patterns of related price-quantity changes in business cycles as rough approximations, open to substantial improvement in later studies.

Our estimates of monetary outlays on the part of buyers are subject to a margin of error in certain cases, also, because of possible timing differences between the quoting of prices and the delivery of goods, and between delivery and payment. Such errors are lessened by the use of stages of reference cycles, not months, as the time unit. The shortest interstage interval, as averaged for the period of this study, covers over three months (the average interval between reference cycle stages V and VI). For most commodity transactions the lag of payments behind deliveries is well within this margin. The assumption that physical deliveries and monetary payments are synchronous, within the time units here employed, is probably not seriously in error. Greater errors may result from the assumption that quoted prices and records of production (or consumption, or delivery), as compiled by federal and other agencies, relate to synchronous events. Here, again, we must trust to the averaging process involved in the use of reference cycle stages as time units to eliminate some of the timing discrepancies due to this assumption.

The commodities employed in this study, with the periods covered by the price and quantity series paired in each case, and the specifications of the series, are given below. The parenthetical figure after each commodity indicates the number of reference cycles covered. All prices are for transactions at wholesale. The abbreviations are:

BAE: United States Bureau of Agricultural Economics
BLS: United States Bureau of Labor Statistics
Census: United States Bureau of the Census
Commerce: United States Bureau of Foreign and Domestic Commerce
Mines: United States Bureau of Mines
NBER: National Bureau of Economic Research
† Seasonally corrected.

Asphalt, 1919-38 (5)
Price: Dollars per short ton, bulk, at refineries
Source: BLS
†Quantity: Production, short tons. Production data are for asphalt derived from domestic and foreign petroleum, the larger proportion from foreign petroleum, mainly Mexican. Native asphalt is excluded.
Source: Mines

Automobiles, passenger, 1914-38 (6)
Price: Index on 1926 base. For 1913-26 the index is a weighted average of 6 makes of passenger cars (Buick, Cadillac, Chevrolet, Dodge, Ford, and Packard). For 1926-38, 3 types of chassis (4-door, 2-door, and coupe) are used instead of 1.
Source: BLS
†Quantity: Factory sales, number
Source: 1914-21, National Automobile Chamber of Commerce; 1921-38, Census

Beef, 1919-38 (5)
†Price: Cents per lb., New York, fresh
Source: BLS
†Quantity: Consumption of beef and veal, lbs.
Source: BAE

Bread, 1914-38 (6)
Price: Cents per lb., New York, white
Source: BLS
†Quantity: Production of wheat flour. See Flour (combination 1)

Butter (combination 1), 1919-38 (5)
†Price: See Butter (combination 2)
†Quantity: Production in factories, lbs.
Source: BAE

Butter (combination 2), 1912-38 (7)
†Price: Cents per lb., Chicago, creamery extra
Source: BLS
†Quantity: Receipts at 5 markets, lbs.
Source: BAE

Cattle (combination 1), 1858-1938 (20)
†Price: Dollars per 100 lbs., Chicago
Source: 1858-99, Chicago Board of Trade; 1900-38, BAE
†Quantity: Receipts, number, Chicago
Source: Chicago Board of Trade
Value series for cattle is derived from price per pound and number of animals. The assumption is implicit that animals marketed did not change in average weight in the course of any given business cycle.

Cattle (combination 2), 1908-38 (8)
†Price: See Cattle (combination 1)
†Quantity: Slaughtered under federal inspection, number
Source: BAE
See under Cattle (combination 1) note concerning value

Cement, 1914-38 (6)
Price: Dollars per bbl., cars, Chicago
Source: *Engineering News-Record*
†Quantity: Production, bbls.
Source: 1914-21, Portland Cement Association; 1921-38, Mines

Coal, anthracite, 1891-97, 1908-12, 1914-21, 1927-38 (7 cycles excl. periods affected by strikes)
†Price: Dollars per long ton; 1891-1924, New York Harbor; 1924-38, composite price at 8 cities; chestnut, seasonally corrected 1901-38
Source: BLS
†Quantity: 1891-1919, shipments, long tons; 1919-38, production, short tons; Pennsylvania
Source: 1891-1919, Bureau of Anthracite Coal Statistics; 1919-38, Mines

Coal, bituminous, 1908-38 (8)
†Price: Dollars per short ton; 1908-24, mine run; 1924-38, f.o.b. mines, composite price; seasonally corrected for 1908-29
Source: 1908-24, Mines; 1924-38, BLS
†Quantity: Production, short tons
Source: Mines

Coffee, 1891-1938 (13)
Price: Cents per lb., New York, Rio, #7
Source: BLS
†Quantity: Imports, lbs.
Source: Commerce

Coke, beehive, 1897-1938 (11)
Price: Dollars per short ton, Connellsville furnace
Source: BLS
†Quantity: Production, short tons
Source: Mines

Copper, 1919-38 (5)
Price: Cents per lb., New York, electrolytic
Source: *Engineering and Mining Journal*
†Quantity: Refined production, North and South America, short tons
Source: 1919-24, Copper Export Association; 1924-38, American Bureau of Metal Statistics

Corn, 1919-38 (5)
†Price: Dollars per bu., Chicago, contract grades or better
Source: Chicago Board of Trade
†Quantity: Grindings, bu., grinding of corn by wet process in manufacture of cornstarch, glucose, etc.
Source: Corn Industries Research Foundation

Cotton, raw (combination 1), 1914-38 (6)
†Price: See Cotton, raw (combination 2)
†Quantity: Consumption, running bales
Source: Census

Cotton, raw (combination 2), 1870-1938 (17)
†Price: Cents per lb., New York, middling upland
Source: 1870-89, *Cotton Facts*, Shepperson; 1890-1938, BLS
†Quantity: Exports, lbs.
Source: Commerce

Cotton, yarn, 1914-38 (6)
Price: Cents per lb., mill, carded, northern, cones 10/1
Source: BLS

Cotton, yarn (*cont.*)
†Quantity: See Cotton, raw (combination 1)

Cottonseed oil, crude, 1919-38 (5)
Price: Cents per lb., f.o.b. southeastern mills
Source: BAE
†Quantity: Production, lbs.
Source: Census

Cottonseed oil, refined, 1919-38 (5)
Price: Cents per lb., New York, prime, summer, yellow
Source: 1919-33, BAE; 1933-38, BLS
†Quantity: Production, lbs.
Source: Census

Eggs, 1912-38 (7)
†Price: Cents per doz., New York, firsts
Source: BLS
†Quantity: Receipts, cases of 30 doz.; 1910-19, 7 markets; 1919-38, 5 markets
Source: BAE

Flour (combination 1), 1914-38 (6)
Price: See Flour (combination 2)
†Quantity: Production of wheat flour, bbls.
Source: 1914-24, A. L. Russell; 1924-38, Food Research Institute

Flour (combination 2), 1891-1938 (13)
Price: Dollars per bbl.; 1891-1914, New York, spring patents; 1914-38, Minneapolis, standard patents
Source: BLS
†Quantity: Shipments, bbls., Minneapolis. This represents about 10 percent of United States production.
Source: Minneapolis Chamber of Commerce

Gasoline, 1919-38 (5)
†Price: Cents per gal., Pennsylvania refineries
Source: BLS
†Quantity: Refinery production, bbls.
Source: Mines

Glass, plate, 1924-38 (3)
Price: Cents per sq. ft., New York
Source: BLS

Glass, plate (*cont.*)
†Quantity: Production, sq. ft.
Source: Plate Glass Manufacturers of America

Hides, 1921-38 (4)
†Price: Cents per lb., Chicago, packers, heavy, native steers
Source: BLS
†Quantity: Total movement into sight, number
Source: Tanners' Council of America
Value series for hides is derived from price per pound and number of skins. The assumption is implicit that skins marketed did not change in average weight in the course of any given business cycle.

Hogs (combination 1), 1858-1938 (20)
†Price: Dollars per 100 lbs., Chicago, heavy
Source: Chicago Board of Trade
†Quantity: Receipts, number, Chicago
Source: Chicago Board of Trade
See under Cattle (combination 1) note concerning value

Hogs (combination 2), 1879-1938 (16)
†Price: See Hogs (combination 1)
†Quantity: 1879-1906, commercial slaughter estimated by the Bureau of Agricultural Economics on the basis of total eastern and western slaughter as reported by *The Price Current Yearbook* and monthly slaughter computed on basis of western slaughter and receipts at markets; 1907-38, slaughtered under federal inspection; number
Source: BAE
See under Cattle (combination 1) note concerning value

Iron ore, 1919-38 (5)
Price: Dollars per long ton, delivered to lower lake ports, Mesabi Non-Bessemer
Source: *Steel*
†Quantity: Consumption by furnaces (incl. Canada) of Lake Superior ore, long tons
Source: Lake Superior Iron Ore Association

Lard, 1919-38 (5)
†Price: Cents per lb., New York, prime contract
Source: BLS
†Quantity: Production from federally inspected slaughter, lbs.
Source: BAE

Lead, ore, 1897-1938 (11)
Price: Cents per lb., New York
Source: *Engineering and Mining Journal*
†Quantity: Shipments, short tons, Joplin District
Source: 1895-1903, *Engineering and Mining Journal*; 1903-38, New York Metal Exchange

Leather, 1921-38 (4)
Price: Cents per lb., Boston, sole oak, scoured backs
Source: BLS
†Quantity: Production of cattle hide leathers and kip leathers, equivalent hides
Source: Tanners' Council of America
See under Hides note concerning value

Linseed oil, 1919-38 (5)
Price: Cents per gal., raw, New York
Source: BLS
†Quantity: Production, lbs., quarterly data
Source: Census

Lubricants, 1919-38 (5)
Price: Cents per gal., refineries, Pennsylvania
Source: BLS
†Quantity: Production, bbls.
Source: Mines

Lumber, Douglas fir, 1919-33 (4)
Price: Dollars per M bd. ft., Portland mills
Source: BLS
†Quantity: Production, bd. ft.
Source: West Coast Lumbermen's Association

Meat, 1919-38 (5)
Price: Index on 1926 base; includes beef, veal, lamb, mutton, pork, lard
Source: NBER
†Quantity: Consumption, lbs.; includes production of beef, veal, lamb, mutton, pork, lard, computed from federal inspected slaughter, plus imports, minus exports and the change in cold storage holdings
Source: BAE

Milk, condensed, 1919-38 (5)
Price: Dollars per case, 48 fourteen oz. cans, New York
Source: BLS
†Quantity: Production of sweetened condensed milk, case goods, lbs.
Source: BAE

Milk, evaporated, 1919-38 (5)
Price: Dollars per case, 48 fourteen and one-half oz. cans, New York
Source: BLS
†Quantity: Production, case goods, lbs.
Source: BAE

Milk, raw, 1894-1938 (12)
†Price: Dollars per 100 lbs., New York, fresh, seasonally corrected 1891-1924
Source: BLS
†Quantity: Receipts of fluid milk, New York market, cans of 40 qts.
Source: BAE

Paper, 1919-38 (5)
Price: Index on 1926 base; includes boxboard, book paper, newsprint, tissue, and wrapping paper
Source: NBER
†Quantity: Production of all grades of paper, short tons
Source: Federal Trade Commission

Petroleum (combination 1), 1891-1938 (13)
Price: Dollars per bbl., crude at wells, Pennsylvania
Source: BLS
†Quantity: Production of Appalachian field, bbls. The Appalachian field represented 50 percent of production in 1900, 4 percent in 1934, because of the rapid development of mid-continental and California fields.
Source: Mines

Petroleum (combination 2), 1914-38 (5)
Price: See Petroleum (combination 1)
†Quantity: Production of crude domestic petroleum, bbls.
Source: Mines

Pig iron (combination 1), 1904-38 (5)
Price: Dollars per long ton, composite consisting of four quotations: Bessemer, Pittsburgh, 1891-1938; Foundry #1, Philadelphia, 1891-1914; Basic, 1914-38; Foundry #2, northern, Pittsburgh, 1891-1938; Gray Forge, southern, Cincinnati, 1891-1914; Foundry #2, southern, Cincinnati, 1914-21; Foundry #2, southern, Birmingham, 1921-38
Source: NBER
†Quantity: Production at merchant furnaces, long tons
Source: *Iron Age*

Pig iron (combination 2), 1879-1938 (16)
Price: Dollars per long ton; 1879-1912, #1 Anthracite foundry; 1913-38, Eastern Pennsylvania
Source: American Iron and Steel Institute
†Quantity: Production, long tons
Source: *Iron Age*

Pork, 1919-38 (5)
†Price: Index on 1926 base of pork products (fresh and cured) and lard
Source: NBER
†Quantity: Consumption of pork products, incl. lard, lbs.
Source: BAE

Potatoes, 1919-38 (5)
†Price: Dollars per 100 lbs., Chicago
Source: BLS

Potatoes (*cont.*)
†Quantity: Shipments, bu., carlots
Source: BAE

Rubber, 1891-1938 (13)
Price: Cents per lb., New York; 1891-1914, Para, island; 1914-38, Plantation
Source: BLS
†Quantity: Imports, lbs.
Source: Commerce

Sheep (combination 1), 1879-1938 (16)
†Price: Dollars per 100 lbs., Chicago
Source: 1879-1904, Chicago Board of Trade; 1905-40, BAE
†Quantity: Receipts of sheep and lambs, number, Chicago
Source: Chicago Board of Trade
See under Cattle (combination 1) note concerning value

Sheep (combination 2), 1908-38 (8)
†Price: See Sheep (combination 1)
†Quantity: Slaughter of sheep and lambs under federal inspection, number
Source: BAE
See under Cattle (combination 1) note concerning value

Shoes, 1924-38 (3)
Price: Dollars per pair, factory, men's, black vici kid, Goodyear welt
Source: BLS
†Quantity: Production of men's shoes, pairs
Source: Census

Silk, raw, 1891-1938 (13)
†Price: Dollars per lb., New York, Japanese; 1891-1919, filatures; 1919-38, white 78 percent, 13/15 denier, double extra crack
Source: BLS
†Quantity: Imports, lbs.
Source: Commerce

Silk, yarn, 1921-38 (4)
Price: Dollars per lb., New York, spun, domestic, gray, 60/2
Source: BLS
†Quantity: Deliveries of raw silk to mills, bales

Silk, yarn (*cont.*)
Source: 1921-29, Textile Economics Bureau, Inc.; 1929-38, Commodity Exchange, Inc.

Steel billets, 1900-38 (10)
Price: Dollars per long ton, Pittsburgh, Bessemer
Source: BLS
†Quantity: Production of steel ingots, long tons
Source: *Iron Age*

Steel plates, 1924-38 (3)
Price: Cents per lb., Pittsburgh, tank
Source: *Iron Age*
Quantity: New orders, short tons, fabricated
Source: Census

Steel rails, 1870-1924 (14)
Price: Dollars per long ton, mills, Pennsylvania; 1870-1919, Bessemer; 1919-24, open hearth; heavy standard
Source: *Iron Age*
†Quantity: Orders by railroads, long tons, quarterly data
Source: *Railroad Purchasing and the Business Cycle*, Partington

Steel scrap, 1900-38 (10)
†Price: Dollars per long ton, Chicago, heavy melting, #1
Source: *Iron Age*
†Quantity: See under Steel billets, ingot production

Steel sheets, 1919-38 (5)
Price: Cents per lb., Pittsburgh, box, annealed, #27
Source: BLS
†Quantity: Production, short tons; 1933-38, quarterly data
Source: 1919-33, National Association of Flat Rolled Steel Manufacturers; 1933-38, American Iron and Steel Institute

Steel, structural, 1914-38 (6)
Price: Dollars per 100 lbs., mill, Pittsburgh, shapes, beams, etc., 3" and larger
Source: BLS

Steel, structural *(cont.)*
†Quantity: New orders, short tons, fabricated
Source: American Iron and Steel Institute

Sugar, 1891-1938 (13)
†Price: Cents per lb., granulated, New York, seasonally corrected 1891-1911
Source: BLS
†Quantity: Meltings, long tons; 1891-1921, at 4 ports; 1921-38, at 8 ports
Source: *Weekly Statistical Sugar Trade Journal*

Tin, 1885-1938 (15)
Price: Cents per lb., New York, Straits tin
Source: 1885-99, *Mineral Industry*; 1900-38, *Metal Statistics*
Quantity: Imports, long tons
Source: Commerce

Wool, raw, 1919-38 (5)
Price: Cents per lb., Boston, Ohio, fine clothing
Source: BLS

Wool, raw *(cont.)*
†Quantity: Consumption, lbs., scoured basis
Source: Census

Worsted yarn, 1919-38 (5)
Price: Dollars per lb., mill, 2/40 half blood
Source: BLS
†Quantity: Consumption of apparel class wool, lbs., scoured basis
Source: Census

Zinc, raw, 1897-1938 (11)
†Price: Cents per lb., New York, slab
Source: *Iron Age*
†Quantity: Shipments of zinc ore, Joplin District, short tons
Source: 1897-1903, *Engineering and Mining Journal*; 1904-21, New York Metal Exchange; 1921-38, *Joplin Globe*

Zinc, sheet, 1897-1938 (11)
Price: Dollars per 100 lbs., LaSalle, Ill.
Source: BLS
†Quantity: See Zinc, raw

APPENDIX TABLE 2

Composition of Commodity Groups

In interpreting the various descriptive measures of commodity groups given in the text, the reader should understand that these groups vary considerably in degree of representativeness. We estimate that the over-all sample includes, directly or by imputation, about one-third, by value, of the agricultural products, raw minerals, and manufactured goods produced in the United States in 1937. Corresponding percentages for the separate groups cover a wide range. These differences are indicated in the summary that follows, in which certain characteristics of the several commodity groups are briefly noted. The numbers in parentheses indicate the number of price and quantity combinations used for commodities that appear more than once.

Raw materials. This sample is the most representative in our list. The commodities included are coffee, corn, crude cottonseed oil, potatoes, cattle (2), hogs (2), sheep (2), eggs, raw milk, hides, raw cotton (2), raw silk, raw wool, anthracite and bituminous coal, petroleum (2), iron ore, pig iron (2), steel scrap, copper, lead, tin, zinc, lumber (fir), linseed oil, rubber. They amount in value to about three-quarters of all raw materials produced in 1937. The chief gaps are in fruits and vegetables, grains (among which corn alone is included), and lumber (fir alone being included).

Manufactured goods. This sample comprehends, directly or by imputation, about one-fifth, by value, of manufactured goods produced in 1937. The commodities included are bread, butter (2), refined cottonseed oil, flour (2), beef, lard, pork products, meat index (including beef, pork, lamb, mutton, veal, lard), condensed and evaporated milk, sugar, cotton yarn, silk yarn, worsted yarn, leather, men's shoes, coke, gasoline, lubricants, steel billets, steel plates, steel rails, steel sheet, structural steel, zinc sheet, passenger automobiles, asphalt, cement, plate glass, paper index (including boxboard, book, newsprint, tissue, wrapping). The chief gaps are in manufactured foods, cloths and clothing, forest products, printing and publishing, chemicals and allied products, stone, clay and glass products, rubber products, finished iron and steel products, nonferrous metals and their products, machinery, transportation equipment. The sample is broad enough to give results that are suggestive, but no more.

Products of American farms. This sample, covering some 50 percent, by value, of agricultural commodities produced in 1937, includes bread, corn, cottonseed oil (2), flour (2), potatoes, sugar, cattle (2), hogs (2), sheep (2), butter (2), eggs, milk (3), beef, pork products, lard, meat index, hides, leather, men's shoes, cotton (3), wool (2), linseed oil. The chief gaps are in grains, cheese, tobacco, poultry, fruits and vegetables, cereals, cloths and clothing.

Crop products. The commodities included are bread, corn, cottonseed oil (2), potatoes, flour (2), sugar, cotton (3), linseed oil.

Animal products. The commodities included are butter (2), cattle (2), hogs (2), sheep (2), eggs, milk (3), hides, leather, men's shoes, beef, lard, pork products, meat index, wool (2).

Goods other than products of American farms. In this group we include about one-quarter, by value, of nonfarm commodities produced in 1937. The commodities represented are coffee, silk (2), anthracite and bituminous coal, coke, petroleum (2), gasoline, lubricants, iron ore, pig iron (2), steel scrap, steel billets, steel plates, steel rails, steel sheet, structural steel, copper, lead, tin, zinc (2), passenger automobiles, asphalt, cement, plate glass, lumber (fir), paper index, rubber. The chief gaps are in forest products, printing and publishing, chemicals and allied products, rubber products, stone, clay and glass products, highly fabricated iron and steel products, nonferrous metals and their products, machinery, transportation equipment.

Metals. The commodities included are iron ore, pig iron (2), steel scrap, steel billets, steel plates, steel rails, steel sheets, structural steel, copper, lead, tin, zinc (2), passenger automobiles.

Nonmetallic minerals. The commodities included are anthracite and bituminous coal, coke, gasoline, lubricants, petroleum (2), asphalt, cement, plate glass.

Producer goods, all. This sample, covering about one-fifth, by value, of such commodities produced in 1937, includes corn, cottonseed oil (2), flour (2), cattle (2), hogs (2), sheep (2), hides, leather, cotton (3), wool (2), silk (2), bituminous coal, coke, petroleum (2), gasoline, lubricants, iron ore, pig iron (2), steel scrap, steel billets, steel plates, steel rails, steel sheet, structural steel, copper, lead, tin, zinc (2), passenger automobiles, asphalt, cement, linseed oil, lumber (fir), plate glass, paper index, rubber. The chief gaps are in forest products, chemicals and allied products, rubber products, stone, clay and glass products, highly fabricated iron and steel manufac-

tures, nonferrous metals and their products, machinery, transportation equipment.

Producer goods for human consumption. The commodities represented are corn, cottonseed oil (2), flour (2), cattle (2), hogs (2), sheep (2), hides, leather, cotton (3), silk (2), wool (2), petroleum (2), iron ore, pig iron (2), copper, lumber (fir), paper index, rubber.

Consumer goods. This sample, covering about half, by value, of consumer goods produced in 1937, includes bread, coffee, flour (2), potatoes, sugar, butter (2), eggs, milk (3), beef, lard, pork products, meat index, men's shoes, anthracite coal, coke (consumers' portion), gasoline, lubricants, passenger automobiles. The chief gaps are in manufactured foods, tobacco, drugs and household medicines, toilet preparations, books and newspapers, toys, games and sport supplies, illuminating and lighting materials and fixtures, cloths and clothing, house furnishings and equipment, heating and cooking apparatus, electrical home appliances, china and glassware, radio, phonograph and musical instruments, clocks and watches, tires, and rubber products.

Goods intended for use in capital equipment or as building materials. This sample is relatively small, including about one-tenth, by value, of commodities of this type produced in 1937. The commodities represented are iron ore, pig iron (2), steel scrap, steel billets, steel plates, steel rails, steel sheet, structural steel, copper, lead, tin, zinc (2), passenger automobiles, asphalt, cement, plate glass, linseed oil, lumber (fir), rubber. The chief gaps are in agricultural and industrial machinery, tools, textile machinery, nonferrous metals and their products, heavy electrical equipment, paint materials, plumbing and heating materials, lumber, trucks and transportation equipment, stone, clay and glass products.

Human consumption goods (i.e., goods, at various stages of fabrication, intended for ultimate human consumption). This sample, covering more than a third, by value, of commodities of this type produced in 1937, includes bread, coffee, corn, cottonseed oil (2), flour (2), potatoes, sugar, cattle (2), hogs (2), sheep (2), butter (2), eggs, milk (3), beef, lard, pork products, meat index, hides, leather, men's shoes, cotton (3), wool (2), silk (2), anthracite coal, coke (consumers' portion), petroleum (2), gasoline, lubricants, iron ore, pig iron (2), copper, passenger automobiles, lumber (fir), paper index, rubber. The chief gaps are in grains, poultry, fruits and vegetables (ex-

cept potatoes), beverages, cereal products, wood pulp, books and magazines, cloths and clothing, gas and electricity, furniture and furnishings, household electrical appliances, tires and tubes.

Foods. This group, covering about 40 percent, by value, of foods produced in 1937, includes bread, coffee, corn, refined cottonseed oil, flour (2), potatoes, sugar, cattle (2), hogs (2), sheep (2), butter (2), eggs, milk (3), beef, lard, pork products, meat index. The chief gaps are in fish, cheese, ice cream, poultry, sausage meats, fruits and vegetables, cereals, chocolate and cocoa, beverages.

Durable goods. The sample covers about one-tenth, by value, of durable goods produced in 1937; it includes iron ore, pig iron (2), steel scrap, steel billets, steel plates, steel rails, steel sheet, structural steel, copper, lead, tin, zinc (2), passenger automobiles, asphalt, cement, plate glass, lumber (fir). The chief gaps are in forest products, stone, clay and glass products, highly fabricated iron and steel products, nonferrous metals and their products, machinery, transportation equipment.

Nondurable goods. This sample, covering about two-fifths, by value, of nondurables produced in 1937, includes bread, coffee, corn, cottonseed oil (2), flour (2), potatoes, sugar, cattle (2), hogs (2), sheep (2), butter (2), eggs, milk (3), beef, lard, pork products, meat index, hides, leather, men's shoes, cotton (3), wool (2), silk (2), anthracite coal, coke, petroleum (2), gasoline, lubricants, linseed oil, paper index, rubber. The chief gaps are in manufactured foods, cloths and clothing, printing and publishing, chemicals and allied products, rubber products, tobacco.

Appendix Table 3

Average Movements of Aggregate Values, Average Unit Prices, and Physical Volumes, in Business Cycles All Commodities and Sixteen Major Commodity Groups

	Reference cycle stages								
	I	II	III	IV	V	VI	VII	VIII	IX
All commodities									
Value	85	97	105	118	125	116	99	85	85
Price	94	99	104	110	112	110	99	91	90
Quantity	90	98	101	108	112	107	99	94	94
Raw materials									
Value	85	97	104	118	127	118	99	86	86
Price	92	99	104	112	115	112	99	90	89
Quantity	91	98	101	107	111	107	100	95	95
Manufactured goods									
Value	86	97	106	117	124	113	98	85	84
Price	96	100	104	107	110	108	100	92	91
Quantity	90	98	102	110	114	106	98	92	93
American farm products									
Value	94	103	105	115	119	112	97	89	91
Price	96	102	106	111	113	110	98	90	90
Quantity	98	101	99	103	105	102	99	99	100
Other than American farm products									
Value	77	91	104	121	132	121	100	81	79
Price	92	97	102	108	112	109	101	92	90
Quantity	82	95	104	114	120	112	100	88	87
Crop products, domestic									
Value	95	104	104	116	121	113	95	88	91
Price	96	102	106	112	114	112	94	87	89
Quantity	100	101	99	104	106	102	101	101	102
Animal products, domestic									
Value	93	102	105	114	117	111	99	90	90
Price	96	101	107	110	112	110	100	92	91
Quantity	97	101	99	103	105	101	98	98	99
Metals									
Value	70	89	106	127	140	124	99	77	72
Price	91	95	100	108	113	110	102	94	92
Quantity	76	94	107	120	126	115	98	82	79
Nonmetallic minerals									
Value	78	88	99	115	126	121	106	86	84
Price	91	96	101	106	109	108	101	93	90
Quantity	85	92	99	108	116	113	105	92	93

APPENDIX TABLE 3 (*concl.*)

	REFERENCE CYCLE STAGES								
	I	II	III	IV	V	VI	VII	VIII	IX
Producer goods, all									
Value	81	96	105	121	130	118	98	83	81
Price	93	99	104	110	114	110	99	91	89
Quantity	87	97	102	111	116	109	100	92	91
Producer goods for human consumption									
Value	87	99	106	120	127	117	97	86	85
Price	94	101	106	113	115	111	98	89	88
Quantity	92	99	101	107	111	106	100	96	96
Consumer goods									
Value	93	98	103	112	116	111	100	90	92
Price	97	100	104	107	109	108	100	92	91
Quantity	97	99	100	104	107	103	100	97	100
Capital equipment									
Value	75	92	106	125	138	123	98	79	75
Price	94	97	102	108	112	110	100	93	91
Quantity	79	95	105	117	125	114	99	84	82
Human consumption goods									
Value	89	99	105	116	123	115	99	87	87
Price	95	100	105	110	113	110	99	90	89
Quantity	94	99	100	106	109	105	100	96	97
Foods									
Value	96	101	104	112	113	109	100	93	96
Price	97	100	105	110	111	110	100	92	92
Quantity	100	101	99	102	102	100	100	102	104
Durable goods									
Value	73	90	106	125	137	123	99	78	74
Price	93	97	101	108	112	109	101	94	92
Quantity	78	94	106	119	125	114	99	83	81
Nondurable goods									
Value	91	100	104	115	120	113	98	89	90
Price	95	101	106	110	113	110	99	90	89
Quantity	96	100	99	104	107	103	99	99	100

Appendix Table 4

Changes in Proportion of Commodities Marked by Increases in Buyers' Outlays between Successive Stages of Business Cycles, by Commodity Groups

Percentage of commodities in group showing increases in outlays, with division into price-dominated and quantity-dominated classes

The figures in the two columns of price and quantity dominance define the percentages of the total number of commodities in each group showing increases in buyers' outlays due predominantly to price increases and to quantity increases. The sum of the two percentages, for a given commodity group, is the total percentage of commodities in that group showing outlay increases in the stated interstage period. The difference between this total and 100 is the percentage of commodities showing outlay decreases, or no change in outlay.

INTERSTAGE PERIOD VII-VIII

	TOTAL	PRICES DOMINANT	QUANTITIES DOMINANT
Crop products, domestic	33	0	33
Consumer goods	32	0	32
Foods	29	0	29
Am. farm products	24	0	24
Nondurable goods	23	0	23
Consumption goods	20	0	20
Animal products, domestic	19*	0	19
Manufactured goods	19	0	19
All commodities	*17*	*0*	*17*
Raw materials	16*	0	16
Producer goods for human consumption	14	0	14
Capital equipment	10	0	10
Non-Am. farm products	10*	0	10
Nonmetallic minerals	10*	0	10
Producer goods, all	10*	0	10
Durable goods	5*	0	5
Metals	0*	0	0

INTERSTAGE PERIOD VIII-IX

	TOTAL	PRICES DOMINANT	QUANTITIES DOMINANT
Crop products, domestic	92	29	63
Foods	63	13	50
Am. farm products	61	17	44
Consumer goods	59	9	50
Nondurable goods	56	12	44
Consumption goods	51	11	40
Producer goods for human consumption	48	12	36
Manufactured goods	47	9	38
All commodities	*45*	*9*	*36*
Animal products, domestic	43	10	33
Raw materials	43	9	34
Producer goods, all	37	8	29
Nonmetallic minerals	30	5	25
Non-Am. farm products	29	2	27
Capital equipment	24	2	22
Durable goods	21	3	18
Metals	13	0	13

INTERSTAGE PERIOD I-II

	TOTAL	PRICES DOMINANT	QUANTITIES DOMINANT
Durable goods	100	16	84
Metals	100	13	87
Capital equipment	95	19	76
Non-Am. farm products	94	26	68
Producer goods, all	94	38	56
Nonmetallic minerals	90	30	60
Producer goods for human consumption	89	48	41
Raw materials	88	41	47
All commodities	*84*	*34*	*50*
Animal products, domestic	81	38	43
Manufactured goods	81	28	53
Consumption goods	80	41	39
Nondurable goods	77	43	34
Am. farm products	75	42	33
Crop products, domestic	67	50	17
Foods	67	42	25
Consumer goods	64	32	32

INTERSTAGE PERIOD II-III

	TOTAL	PRICES DOMINANT	QUANTITIES DOMINANT
Durable goods	95	19	76
Metals	93	17	76
Nonmetallic minerals	90	50	40
Non-Am. farm products	87	27	60
Capital equipment	86	17	69
Producer goods, all	69	30	39
Raw materials	66	31	35
All commodities	*64*	*27*	*37*
Manufactured goods	62	23	39
Consumption goods	58	29	29
Producer goods for human consumption	58	31	27
Consumer goods	55	23	32
Foods	50	29	21
Nondurable goods	50	30	20
Animal products, domestic	43	38	5
Am. farm products	42	27	15
Crop products, domestic	41	8	33

APPENDIX TABLE 4 (*concl.*)

INTERSTAGE PERIOD III-IV

	TOTAL	PRICES DOMINANT	QUANTITIES DOMINANT
Durable goods	100	39	61
Metals	100	40	60
Nonmetallic minerals	100	45	55
Non-Am. farm products	97	40	57
Capital equipment	95	36	59
Manufactured goods	94	31	63
Producer goods, all	92	39	53
All commodities	*89*	*37*	*52*
Producer goods for human consumption	89	41	48
Foods	88	40	48
Consumption goods	88	38	50
Consumer goods	86	34	52
Raw materials	85	44	41
Crop products, domestic	84	46	38
Nondurable goods	84	37	47
Am. farm products	82	35	47
Animal products, domestic	80	28	52

INTERSTAGE PERIOD IV-V

	TOTAL	PRICES DOMINANT	QUANTITIES DOMINANT
Capital equipment	90	19	71
Nonmetallic minerals	90	20	70
Durable goods	89	21	68
Non-Am. farm products	88	26	62
Producer goods for human consumption	88	43	45
Metals	87	20	67
Producer goods, all	86	34	52
Raw materials	86	36	50
All commodities	*80*	*32*	*48*
Consumption goods	77	36	41
Nondurable goods	76	37	39
Crop products, domestic	75	42	33
Manufactured goods	75	28	47
Am. farm products	74	38	36
Animal products, domestic	74	36	38
Foods	69	44	25
Consumer goods	63	27	36

INTERSTAGE PERIOD V-VI

	TOTAL	PRICES DOMINANT	QUANTITIES DOMINANT
Foods	46	25	21
Consumer goods	45	27	18
Animal products, domestic	43	19	24
Nonmetallic minerals	40	20	20
Am. farm products	33	18	15
Nondurable goods	30	16	14
Consumption goods	26	14	12
Manufactured goods	26	13	13
All commodities	*23*	*12*	*11*
Raw materials	21	12	9
Crop products, domestic	16	16	0
Non-Am. farm products	12	6	6
Producer goods, all	12	4	8
Producer goods for human consumption	11	4	7
Capital equipment	5*	0	5
Durable goods	5*	0	5
Metals	0*	0	0

INTERSTAGE PERIOD VI-VII

	TOTAL	PRICES DOMINANT	QUANTITIES DOMINANT
Nonmetallic minerals	30	10	20
Consumer goods	25*	8	17
Foods	23*	3	20
Animal products, domestic	19*	0	19
Am. farm products	17*	1	16
Manufactured goods	17*	1	16
Nondurable goods	17*	4	13
All commodities	*16**	*3*	*13*
Durable goods	16	0	16
Consumption goods	16*	4	12
Non-Am. farm products	16	5	11
Raw materials	16*	5	11
Capital equipment	14	0	14
Crop products, domestic	12*	2	10
Producer goods, all	10*	0	10
Metals	7	0	7
Producer goods for human consumption	7*	0	7

* Percentage of positive value changes at its minimum for the cycle.