IV

EXPLANATION OF CYCLICAL MEASURES

Explanation of Cyclical Measures

The statistical measures presented in Tables 2 and 3 are based on the National Bureau's business cycle analysis, which was designed as a method of describing and summarizing the cyclical behavior of economic time series and their relationship to cyclical movements in aggregate economic activity. The average or summary measures presented here are a selection of those derived from the analysis. The basic analysis was developed by Arthur F. Burns and Wesley C. Mitchell (*Measuring Business Cycles, NBER, 1946*). A description and interpretation of all the measures available from the programmed analysis will be provided in a forthcoming NBER Technical Paper by Gerhard Bry and Charlotte Boschan, on "Electronic Computer Programs for Business Cycle Analysis."

The analysis produces measures of cyclical movements and intercycle trend elements. Series are adjusted, if necessary, for seasonal variation before being subjected to cyclical analysis. For computation purposes, seasonally adjusted data are raised or lowered to the level of the latest segment where breaks in comparability occur. The effects of random movements on amplitude and timing measures are minimized by using three-month averages at peaks and troughs. Intracycle trend factors are not separated from cyclical elements in the National Bureau's analysis.

Each time series is analyzed in terms of two separate chronologies. *Specific cycle analysis* is concerned with what happens during cycles defined by the peaks and troughs of the particular activity being studied. The principles guiding the selection of turning points for each series are discussed in the two sources referred to above. *Reference cycle analysis* describes the behavior of a particular activity during expansions, contractions, and full cycles in general business activity. The National Bureau's reference cycle chronology, shown in Table 1, serves as a framework for this part of the analysis.

Selected measures derived from the specific and reference cycle analyses are shown in Tables 2 and 3, respectively. A brief description of the meaning and derivation of each type of measure shown is given below.

TABLE 2: SPECIFIC CYCLE ANALYSIS

Column 1: Number of specific cycles covered by averages shown in columns 3–12. Each cycle includes an expansion and the succeeding contraction. In addition to this delineation of cycles on a trough-peak-trough basis, the computer analysis also provides measures based on a peak-trough-peak (PTP) plan.

Column 2: Period covered by cycles enumerated in column 1. Years shown are those in which the first and last trough in monthly or quarterly data occurred. If a series begins with a contraction or ends with an expansion, these phases are excluded from the averages in columns 3–12.

Column 3: Average duration, in months, of specific cycle expansions included in full cycles (trough-peak-trough) analyzed. A similar measure based on a peak-trough-peak analysis may differ substantially from the one shown, if an expansion of atypical duration has occurred at the end of a series and has thus been excluded from the average. Average duration of specific cycles may differ from that of business cycles during the same period if

the series experiences extra cycles, skips certain business cycles, or is irregularly related to business cycles.

Column 4: Average duration, in months, of specific cycle contractions included in full cycles analyzed. Analogous to column 3 on expansions.

Column 5: Average duration, in months, of full cycles, on trough-peak-trough basis. In principle, this is column 3 plus column 4, but may differ because of rounding.

Column 6: Average amplitude of specific cycle expansions, in cycle relatives. This is a measure of the magnitude of cyclical swings from troughs to peaks of the particular activity being studied. In order to permit comparison among different series, amplitudes are measured in terms of "cycle relatives," which are ratios to the average for a cycle, rather than in original units. This average or "cycle base," is the average of the monthly figures for a cycle in original units. The initial and terminal trough months are both included in the average. In order to avoid double weighting of troughs, a weight of one-half is assigned to each trough month, and a weight of one to each intervening month. Three-month averages of the cycle relatives, centered on the peaks and troughs, are then computed. The "rise" for each cycle is computed by subtracting the three-month average cycle relative of the initial trough from that of the peak. A simple average of these amplitudes is then taken for all cycles covered. In some cases it is not feasible to use a three-month average at the trough or peak; e.g., if the series begins or ends at a turn, if the rise or fall is three months or less, or if the standing for a month adjacent to the turn is as low as the nearest trough or as high as the nearest peak. In these cases, one- or two-month standings are used.

Column 7: Average amplitude of specific cycle contractions, in cycle relatives. Analogous to the average amplitude of the "rise" (see column 6 above). The "fall" for each cycle is computed by subtracting the three-month average cycle relative of the peak from that of the terminal trough, the result being a negative number.

Column 8: Average amplitude of full specific cycles, in cycle relatives. This is an average over all cycles covered of the total movement of rise and fall. For each specific cycle, the negative amplitude of the fall is subtracted from the positive amplitude of the rise. This is equivalent to adding the decline during contraction to the rise during expansion.

Column 9: Average amplitude per month of specific cycle expansions. For each specific cycle, the rate of expansion is computed by dividing the amplitude of the rise (in cycle relatives) by the corresponding duration of the rise (in months). The summary measure shown here is an unweighted average of these rates for the cycles covered. The machine analysis also provides a weighted average of these rates, with the durations of the component expansions serving as weights.

Column 10: Average amplitude per month of specific cycle contractions. This is an unweighted average of rates of contraction, in cycle relatives. Analogous to average amplitude per month for "rise" (see column 9 above).

Column 11: Average amplitude per month of full specific cycles. This is a measure of the average rate of change, in cycle relatives. For each specific cycle the total amplitude, as defined in column 8 above, is divided by the duration of the cycle, in months. The figure shown here is an unweighted average of these rates. (See also columns 9 and 10 above.)

Column 12: Average percentage rate of growth per month between specific cycle bases. This is a measure of secular trend. For each specific cycle the average monthly standing, in original units, is compared with that of the preceding cycle. The change between cycles is expressed as a percentage of the average of the two compared cycles. (Use of this kind of base avoids a percentage-base bias.) This percentage change is divided by the number of months between the midpoints of the two cycles, to yield a monthly rate of

change. The figure shown here is an average of these monthly rates of change, with the rate for each pair of cycles weighted by the number of months between cycle midpoints. This is equivalent to summing the changes between cycles and dividing by the total number of months between the midpoints of the first and last cycles.

TABLE 3: REFERENCE CYCLE ANALYSIS

Columns 1 and 2: Number of complete expansions and contractions in general business activity which occurred during the period covered by the series. Averages shown in columns 4–13 are based on these reference cycle phases. The averages shown in columns 14–22 pertain to full reference cycles on a trough-peak-trough basis, and therefore may omit a reference phase included in columns 1–13. The turning points of general business or "reference" cycles are those defined by the National Bureau's reference cycle chronology (Table 1).

Column 3: Period covered by the reference phases indicated in columns 1 and 2, and included in the averages in columns 4–13. Years shown are those in which the first and last of the reference turns covered by the series occurred.

Column 4: Number of specific cycle peaks which were related to reference peaks, and for which timing relationships could thus be measured. Specific cycle turns may be directly or inversely related to business cycle turns. That is, specific peaks may be related to reference peaks or to reference troughs. For all the series shown in Table 3, the relationship is a direct one—specific peaks correspond to reference peaks. The number of timing comparisons made is generally smaller than the number of specific peaks, since it is not always possible to match each specific turn with a reference turn. The pairing of like turns for timing comparisons is done according to the criteria described in Burns and Mitchell, *Measuring Business Cycles,* pp. 118–123.

Column 5: The median number of months by which the specific cycle peaks lead (−) or lag behind (+) the corresponding reference peaks. The median is computed from the timing comparisons indicated in column 4.

Column 6: Number of specific cycle troughs which were related to reference troughs, and for which timing relationships could thus be measured. Analogous to column 4 on peaks.

Column 7: The median number of months by which the specific cycle troughs lead (−) or lag behind (+) the corresponding reference troughs. The median is computed from the timing comparisons indicated in column 6.

Column 8: Index of expansion conformity without adjustment for timing differences. This is a measure of the extent to which expansions in the specific activity are related positively or inversely to expansions in general business activity. The index is computed on the basis of average changes per month in the specific series during reference expansions. The number of increases (procyclical movements) is determined, the number of decreases (countercyclical movements) is subtracted, and the difference is expressed as a percentage of the total number of positive, negative, or zero changes. The index thus ranges from + 100, indicating perfect positive conformity, to − 100, indicating perfect inverse conformity, with a level of zero indicating no conformity.

Column 9: Index of contraction conformity without adjustment for timing differences. This is analogous to the expansion conformity index described in column 8 above. Here the number of increases during business cycle contractions (countercyclical movements) is deducted from the decreases (procyclical movements).

Column 10: Index of full cycle conformity without adjustment for timing differences.

As in columns 8 and 9, this index measures the degree to which the specific series responds to business cycle expansions and contractions. However, the full cycle index is based on *differences* between average monthly changes during business contractions and during preceding or subsequent expansions. In series with strong trends the response to a general business contraction may be a deceleration in rate of growth, rather than an actual decline. Conformity for a trough-peak-trough cycle is measured by the average monthly change during each contraction minus the average monthly change during the preceding expansion; and for a peak-trough-peak cycle, by change in contraction minus change in the succeeding expansion. As in columns 8 and 9, the number of countercyclical movements (plus signs) is subtracted from the number of procyclical movements (minus signs), and the difference is expressed as a percentage of all entries. The index shown in column 10 is a weighted average (weighted by number of cycles covered) of the TPT and PTP full cycle conformity indexes.

Columns 11, 12, and 13: Indexes of conformity to business cycles, adjusted for timing differences. If the turning points of a series consistently lead or lag behind those of the general business cycle, the conformity indexes as computed in columns 8, 9, and 10 may indicate little conformity, even though there is a strong relationship between the specific cycles and the general business cycles. The indexes in columns 11, 12, and 13 are therefore designed to measure the degree of conformity of a series when its typical leads or lags relative to the business cycle are taken into account. To do this, reference peaks and troughs are shifted forward or backward by the median lead or lag (in months), as indicated in columns 5 and 7. The computation of the indexes is then identical to that in columns 8, 9, and 10. If this shifting of peaks and troughs results in phases of negative or zero duration, the indexes are not computed.

Columns 14 through 22: Average standings, in reference cycle relatives, at nine stages of the business cycle. These measures, which summarize for all cycles covered the intraphase (between turning points) behavior of a time series, are referred to as "cycle patterns." They are based on a division of each business cycle into nine stages. Stages I, V, and IX are three-month averages centered on the initial trough, peak, and terminal trough, respectively. Stages II, III, and IV are averages for thirds of expansions. Stages VI, VII, and VIII are averages for thirds of contractions. The reference cycle relatives, from which the stage standings are derived, are percentages of the average, or cycle base, for the entire reference cycle. The reference cycle relatives and reference cycle base are analogous to specific cycle relatives and base described in explanation to Table 2, column 6. The average standing for each stage is an unweighted average over all cycles of the standings for that stage.

TABLE 1

STANDARD REFERENCE DATES FOR BUSINESS CYCLES
UNITED STATES

Monthly			Quarterly			Annual	
Trough		Peak	Trough		Peak	Trough	Peak
						1834	1836
						1838	1839
						1843	1845
						1846	1847
						1848	1853
December	1854—June	1857	IV	1854—II	1857	1855	1856
December	1858—October	1860	IV	1858—III	1860	1858	1860
June	1861—April	1865	III	1861—I	1865	1861	1864
December	1867—June	1869	I	1868—II	1869	1867	1869
December	1870—October	1873	IV	1870—III	1873	1870	1873
March	1879—March	1882	I	1879—I	1882	1878	1882
May	1885—March	1887	II	1885—II	1887	1885	1887
April	1888—July	1890	I	1888—III	1890	1888	1890
May	1891—January	1893	II	1891—I	1893	1891	1892
June	1894—December	1895	II	1894—IV	1895	1894	1895
June	1897—June	1899	II	1897—III	1899	1896	1899
December	1900—September	1902	IV	1900—IV	1902	1900	1903
August	1904—May	1907	III	1904—II	1907	1904	1907
June	1908—January	1910	II	1908—I	1910	1908	1910
January	1912—January	1913	IV	1911—I	1913	1911	1913
December	1914—August	1918	IV	1914—III	1918	1914	1918
March	1919—January	1920	I	1919—I	1920	1919	1920
July	1921—May	1923	III	1921—II	1923	1921	1923
July	1924—October	1926	III	1924—III	1926	1924	1926
November	1927—August	1929	IV	1927—III	1929	1927	1929
March	1933—May	1937	I	1933—II	1937	1932	1937
June	1938—February	1945	II	1938—I	1945	1938	1944
October	1945—November	1948	IV	1945—IV	1948	1946	1948
October	1949—July	1953	IV	1949—II	1953	1949	1953
August	1954—July	1957	III	1954—III	1957	1954	1957
April	1958—May	1960	II	1958—II	1960	1958	1960
February	1961		I	1961		1961	

TABLE 2

SPECIFIC CYCLE ANALYSIS

Series No.	Series Title	Specific Cycles Covered by Averages: Number (1)	Specific Cycles Covered by Averages: Period (2)	Average Duration of Specific Cycles in Months: Expansions (3)	Average Duration of Specific Cycles in Months: Contractions (4)	Average Duration of Specific Cycles in Months: Full Cycle (5)
Contracts, Dodge, Value						
A2	Total construction	15	1911–59	22.6	15.7	38.3
A3	Total private construction	11	1919–60	25.2	19.7	44.9
A4	Public construction	8	1919–59	43.0	18.4	61.4
A5	Total bldg. excl. pub. works and util.	12	1919–61	23.8	18.5	42.3
A7	Total residential bldgs.	11	1918–60	26.5	18.9	45.5
A12	Total nonresidential bldgs.	10	1919–57	30.8	15.9	46.7
A14	Total commercial and industrial bldg.	11	1919–58	26.7	16.2	42.9
A16	Commercial bldgs.	10	1919–58	27.4	19.9	47.3
A18	Industrial bldgs.	11	1918–61	25.5	20.7	46.3
A20	Total public & institutional bldgs.	8	1919–59	37.9	23.1	61.0
A28	Public utilities	9	1919–54	29.4	16.4	45.9
A29	Pub. works & util. under priv. ownership	7	1935–61	34.0	12.0	46.0
A30	Pub. works and util. under pub. ownership	5	1933–59	45.6	18.4	64.0
Contracts, EN-R						
A36	Federal construction, value	8	1915–57	37.0	26.4	63.4
Building Permits						
B1	Long's index of value, total building	8	1891–1914	20.0	15.8	35.8
B19	Value of, in 20 cities (Babson's); 120 cities (Bradstreet's)	12	1908–57	29.0	20.8	49.8
Housing Starts, Blank-BLS-Census						
B14	No. of new priv. nonfarm units started, total	5	1944–60	19.2	19.8	39.0

TABLE 2 (continued)

Series No.	Average Amplitude of Specific Cycles in Cycle Relatives: Total Rise (6)	Total Fall (7)	Total Rise and Fall (8)	Per Month Rise (9)	Per Month Fall (10)	Per Month Rise and Fall (11)	Per Cent Rate of Growth Per Month Between Cycle Bases (weighted average) (12)
Contracts, Dodge, Value							
A2	71.6	−50.5	122.1	3.90	−3.67	3.48	+.603
A3	78.1	−57.4	135.5	3.54	−3.27	3.41	+.466
A4	118.3	−91.1	209.4	5.69	−5.69	4.80	+.505
A5	78.9	−54.8	133.6	3.93	−3.88	3.57	+.450
A7	97.8	−69.2	167.0	5.13	−4.21	4.22	+.571
A12	100.1	−76.5	176.6	5.86	−6.20	4.73	+.370
A14	111.4	−97.7	209.2	4.65	−9.24	5.40	+.270
A16	101.0	−83.3	184.3	4.53	−4.93	4.46	+.326
A18	131.0	−121.8	252.7	6.07	−7.13	5.64	+.175
A20	100.4	−68.1	168.5	3.71	−4.02	3.56	+.487
A28	166.2	−142.8	309.0	8.18	−10.23	8.16	+.361
A29	138.3	−114.7	253.0	5.11	−11.70	6.17	+.781
A30	130.8	−94.0	224.8	5.87	−4.88	4.99	+.678
Contracts, EN-R							
A36	296.4	−282.4	578.8	19.48	−11.92	9.43	+.485
Building Permits							
B1	45.6	−40.3	85.9	3.05	−3.01	2.60	+.301
B19	84.8	−69.4	154.1	3.58	−4.56	3.40	+.297
Housing Starts, Blank-BLS-Census							
B14	54.3	−33.8	88.1	2.54	−1.96	2.17	+.234

(continued)

TABLE 2 (continued)

Series No.	Title	Specific Cycles Covered by Averages: Number (1)	Specific Cycles Covered by Averages: Period (2)	Average Duration of Specific Cycles in Months: Expansions (3)	Average Duration of Specific Cycles in Months: Contractions (4)	Average Duration of Specific Cycles in Months: Full Cycle (5)
Commerce: Value of New Construction Put in Place, Current Dollars						
C21	Total new construction	7	1940–60	25.1	10.0	35.1
C23	Private construction	4	1943–60	43.0	9.3	52.3
C25	Private nonfarm res. bldgs.	6	1943–61	20.7	15.0	35.7
C33	Private nonfarm nonres. bldgs.	5	1943–63	35.2	12.8	48.0
C35	Private industrial bldgs.	5	1943–63	24.2	23.6	47.8
C37	Commercial bldgs.	4	1943–57	28.8	13.8	42.5
C45	Nonfarm bldg., construction	4	1944–60	30.0	17.5	47.5
C47	Com. industr. and pub. util. constr.	5	1943–62	32.0	12.8	44.8
C49	Public construction	3	1940–60	58.0	20.3	78.3
New Construction, Including Oil and Gas Well Drilling						
C66	Total priv., OBE (Q)	3	1949–60	31.0	14.0	45.0
Construction Materials						
D4	Index of output of constr. materials, BDSA	3	1949–61	23.3	21.7	45.0
D5	Fed. Res. index of prod. of constr. materials	4	1949–61	20.3	14.5	34.8
D8	New orders of rails, Partington-Railway Age (Q)	18	1874–1922	16.7	15.8	32.5
D9	New orders of oak flooring	14	1913–61	22.0	18.4	40.4
D13	New orders of fabr. structural steel	18	1910–62	18.8	15.4	34.2
D14	Fed. Res. index of lumber production	13	1919–60	20.1	18.6	38.7
D15	Fed. Res. index of production of clay, glass, and stone products	8	1921–60	39.3	20.5	59.8

TABLE 2 (concluded)

Series No.	Average Amplitude of Specific Cycles in Cycle Relatives: Total Rise (6)	Total Fall (7)	Total Rise and Fall (8)	Per Month Rise (9)	Per Month Fall (10)	Per Month Rise and Fall (11)	Per Cent Rate of Growth Per Month Between Cycle Bases (weighted average) (12)
Commerce: Value of New Construction Put in Place, Current Dollars							
C21	42.1	−19.3	61.4	1.40	−1.07	1.38	+.752
C23	68.5	−12.4	80.9	1.58	−1.44	1.45	+.775
C25	52.0	−22.4	74.4	2.20	−1.98	2.05	+1.338
C33	80.3	−19.8	100.0	2.38	−1.64	2.20	+.973
C35	78.3	−47.0	125.3	3.10	−1.87	2.37	+.536
C37	126.8	−51.8	178.6	4.29	−4.13	4.22	+1.455
C45	58.1	−9.5	67.6	1.81	−.87	1.46	+.765
C47	52.8	−13.0	65.8	1.43	−.99	1.30	+.707
C49	123.8	−76.6	200.4	3.18	−2.42	2.77	+.530
New Construction, Including Oil and Gas Well Drilling							
C66	28.1	−9.4	37.5	1.21	−.82	.99	+.383
Construction Materials							
D4	27.3	−22.3	49.6	1.60	−1.05	1.21	+.138
D5	19.0	−9.5	28.5	1.10	−.85	.82	+.221
D8	204.2	−200.2	404.4	12.99	−19.19	13.42	+.327
D9	86.3	−75.1	161.4	6.96	−4.46	4.79	+.375
D13	71.0	−66.0	137.0	4.59	−5.73	4.45	+.108
D14	28.8	−30.4	59.2	2.42	−2.07	1.73	−.022
D15	44.2	−24.2	68.3	1.13	−1.25	1.12	+.328

TABLE 3

REFERENCE CYCLE ANALYSIS

Series No.	Business Cycle Phases Covered by Averages: Number of Expansions (1)	Business Cycle Phases Covered by Averages: Number of Contractions (2)	Period (3)	Timing at Business Cycle Turns: Peak: Number of Timing Comparisons (4)	Timing at Business Cycle Turns: Peak: Median Lead (−) or Lag (+), in Months (5)	Timing at Business Cycle Turns: Trough: Number of Timing Comparisons (6)	Timing at Business Cycle Turns: Trough: Median Lead (−) or Lag (+), in Months (7)
Contracts, Dodge							
A2	12	13	1910–1961	10	−8	11	−4
A3	10	10	1919–1961	7	−14	8	−4
A4	10	10	1919–1961	4	−8	5	−2
A5	10	10	1919–1961	8	−11½	9	−5
A7	10	11	1918–1961	9	−13	9	−6
A12	10	10	1919–1961	6	−5½	7	−4
A14	10	10	1919–1961	8	−2½	9	−4
A16	10	10	1919–1961	7	−4	8	−1
A18	10	11	1918–1961	9	−3	10	−1½
A20	10	10	1919–1961	3	−1	4	−2½
A28	8	8	1919–1954	7	+2	8	−3½
A29	6	6	1933–1961	3	+1	2	+4
A30	6	6	1933–1961	2	−21	2	0
Contracts, EN-R							
A36	11	12	1913–1961	7	−8	8	+4
Building Permits							
B1	7	7	1891–1914	7	−4	8	−8
B19	13	13	1907–1960	10	−6½	10	−4
Housing Starts, Blank-BLS-Census							
B14	4	5	1945–1961	4	−15	4	−5

TABLE 3 (continued)

Series No.	Indexes of Conformity to Business Cycles: Without Adjustment for Timing Differences: Expansions (8)	Without Adjustment for Timing Differences: Contractions (9)	Without Adjustment for Timing Differences: Full Cycle (10)	With Adjustment for Timing Differences: Expansions (11)	With Adjustment for Timing Differences: Contractions (12)	With Adjustment for Timing Differences: Full Cycle (13)
Contracts, Dodge						
A2	+67	−8	+33	+67	0	+83
A3	+60	+20	+37	+78	+11	+76
A4	+60	−60	−37	+40	−60	+37
A5	+80	0	+16	+78	0	+89
A7	+60	−45	+30	+60	−9	+70
A12	+100	+20	+58	+78	−20	+67
A14	+80	+60	+68	+100	+80	+89
A16	+60	0	+79	+80	0	+47
A18	+80	+64	+80	+80	+64	+70
A20	+50	−60	−26	+60	−80	−37
A28	+75	+25	+60	+71	+75	+86
A29	+33	−33	−27	+33	0	−9
A30	+33	−67	−64	+67	−33	+45
Contracts, EN-R						
A36	+45	0	+45	[a]	[a]	[a]
Building Permits						
B1	+71	+14	+100	+100	+71	+100
B19	+54	+23	+36	+54	+54	+52
Housing Starts, Blank-BLS-Census						
B14	0	−20	−50	+50	+100	+75

(continued)

TABLE 3 (continued)

Series No.	Average Standing, in Reference Cycle Relatives, at Stage								
	I (14)	II (15)	III (16)	IV (17)	V (18)	VI (19)	VII (20)	VIII (21)	IX (22)
Contracts, Dodge									
A2	74.1	92.0	109.6	112.3	112.8	108.8	98.8	96.3	102.6
A3	79.8	99.6	111.6	110.8	116.8	108.0	99.5	103.4	112.6
A4	72.4	87.1	105.9	105.0	102.1	110.8	101.5	101.9	102.8
A5	75.0	94.7	113.8	112.9	113.2	108.4	95.8	97.2	103.0
A7	78.8	103.1	116.5	112.3	104.4	93.9	92.0	98.8	108.2
A12	74.7	87.8	110.7	114.4	120.4	120.4	99.2	95.8	99.1
A14	72.5	89.2	115.2	119.2	125.6	123.2	92.0	85.4	91.9
A16	81.5	97.7	107.4	112.0	116.5	107.9	102.0	104.9	112.9
A18	62.6	82.5	122.0	125.6	135.7	130.5	84.0	71.1	72.1
A20	80.0	89.6	99.4	104.0	108.0	111.7	110.2	113.4	115.3
A28	77.8	69.7	104.0	107.9	131.2	158.6	109.7	80.4	85.1
A29	71.5	87.5	94.1	96.3	125.6	159.6	126.1	133.9	144.7
A30	70.8	90.6	99.4	102.9	96.3	106.6	101.4	108.5	117.1
Contracts, EN-R									
A36	67.8	81.1	100.6	120.7	117.1	102.5	90.2	95.1	90.2
Building Permits									
B1	90.5	101.1	108.7	105.5	105.1	103.3	86.6	92.5	97.3
B19	83.8	100.0	108.7	112.1	110.5	97.0	99.8	95.5	105.3
Housing Starts, Blank-BLS-Census									
B14	86.7	107.1	100.9	99.3	91.0	90.6	91.1	96.4	104.0

(continued)

TABLE 3 (continued)

Series No.	Business Cycle Phases Covered by Averages: Number of Expansions (1)	Business Cycle Phases Covered by Averages: Number of Contractions (2)	Period (3)	Timing at Business Cycle Turns: Peak: Number of Timing Comparisons (4)	Timing at Business Cycle Turns: Peak: Median Lead (−) or Lag (+), in Months (5)	Timing at Business Cycle Turns: Trough: Number of Timing Comparisons (6)	Timing at Business Cycle Turns: Trough: Median Lead (−) or Lag (+), in Months (7)
Commerce: Value of New Construction Put in Place							
C21	4	5	1945–1961	4	−3	3	−6
C23	4	5	1945–1961	3	−3	3	−6
C25	4	5	1945–1961	4	−8½	4	−3½
C33	4	5	1945–1961	2	−2	2	+4½
C35	4	5	1945–1961	4	−11½	4	+6½
C37	4	5	1945–1961	2	−9½	2	−4
C45	4	5	1945–1961	3	−12	3	−6
C47	4	5	1945–1961	4	+1	4	+5
C49	4	5	1945–1961	2	−18	2	−7
New Construction, Including Oil and Gas Well Drilling							
C66	4	5	1945–1961	5[b]	−3[b]	5[b]	0[b]
Construction Materials							
D4	3	4	1948–1961	3	−11	3	−1
D5	3	4	1948–1961	4	−½	4	−½
D8	15	14	1870–1926	10	−5	10	−1
D9	12	12	1912–1961	11	−8	11	−5
D13	12	13	1910–1961	12	−2½	13	−4
D14	10	10	1919–1961	10	−4½	11	−2
D15	10	10	1919–1961	8	−5	8	−2½

(continued)

TABLE 3 (continued)

Series No.	Indexes of Conformity to Business Cycles: Without Adjustment for Timing Differences: Expansions (8)	Without Adjustment for Timing Differences: Contractions (9)	Without Adjustment for Timing Differences: Full Cycle (10)	With Adjustment for Timing Differences: Expansions (11)	With Adjustment for Timing Differences: Contractions (12)	With Adjustment for Timing Differences: Full Cycle (13)
Commerce: Value of New Construction Put in Place						
C21	+100	−60	+75	+100	−20	+100
C23	+100	+20	+50	+100	+20	+100
C25	+100	−20	+50	+100	+20	+100
C33	+100	−20	+50	+100	−20	+75
C35	+100	+20	+50	+50	+20	+50
C37	+100	−60	+25	+50	−60	+50
C45	+100	−60	+50	+100	−20	+100
C47	+100	+20	+50	+100	−20	+75
C49	+100	−60	−25	+100	−20	+25
New Construction, Including Oil and Gas Well Drilling						
C66	+100	−20	+75	+100	+50	+71
Construction Materials						
D4	+100	+50	+100	+100	+50	+67
D5	+100	+100	+100	+100	+100	+100
D8	+33	+21	+21	+13	0	+21
D9	0	−42	−30	+45	+50	+73
D13	+50	+38	+42	+83	+54	+67
D14	+100	+100	+100	+60	+80	+89
D15	+100	+100	+100	+100	+40	+100

TABLE 3 (concluded)

Series No.	Average Standing, in Reference Cycle Relatives, at Stage								
	I (14)	II (15)	III (16)	IV (17)	V (18)	VI (19)	VII (20)	VIII (21)	IX (22)
Commerce: Value of New Construction Put in Place									
C21	72.0	85.5	98.0	108.1	109.8	109.4	109.4	111.1	113.2
C23	71.3	87.7	98.9	108.3	108.4	106.8	105.5	107.0	108.8
C25	70.0	89.4	99.8	108.9	105.5	102.9	100.9	104.7	108.7
C33	68.1	85.3	98.7	106.3	112.0	111.9	111.8	110.6	110.1
C35	68.5	81.1	104.5	110.9	112.0	109.7	105.1	98.2	93.1
C37	64.4	88.9	95.2	103.3	111.5	112.8	115.4	115.8	118.1
C45	70.4	87.1	98.5	108.0	108.4	107.3	106.8	109.5	112.3
C47	71.0	83.3	98.4	108.6	113.6	113.3	112.6	109.0	106.6
C49	74.8	78.4	95.0	106.9	114.3	118.5	123.0	126.0	128.8
New Construction, Including Oil and Gas Well Drilling									
C66	72.4	89.4	99.0	106.9	107.5	105.5	104.1	105.7	108.0
Construction Materials									
D4	89.1	99.6	103.3	100.1	101.8	100.4	96.0	94.4	95.3
D5	84.8	95.0	102.1	103.1	105.4	103.7	99.8	96.8	96.6
D8	65.5	102.4	117.2	107.2	105.0	64.7	80.7	86.4	78.5
D9	91.2	101.8	112.5	110.0	99.0	88.3	85.2	98.1	115.1
D13	79.5	100.4	115.8	114.3	113.4	100.3	83.1	77.5	81.0
D14	87.7	99.7	106.0	110.3	111.5	105.4	93.4	87.7	85.6
D15	79.3	89.4	102.8	109.7	113.8	110.7	103.2	95.9	98.2

[a] Shifting of peaks and troughs by different time periods leads to negative durations and meaningless amplitudes. No averages are computed.

[b] Median timing was calculated from timing comparisons over the period 1926–61.

Index of Series by Type of Construction or Construction Material

(Entries refer to series numbers. See list of series, in Part I, for page references to data and series descriptions.)