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Duration and Amplitude of Specific Cycles in Construction Classified by Phase of Long Swings

If the movements identified here as long upswings differ significantly from those identified as long downswings, the specific-cycle movements of which these long-swing phases are composed ought to vary in one or more ways according to whether they occur in the rising or falling phase of a long swing. It might be found, for example, that specific-cycle expansions were longer during long upswings than during long downswings and that the opposite was true of specific-cycle contractions. Or it might be found that specific-cycle expansions were larger in amplitude if they occurred during long upswings than if they occurred during long downswings and that the reverse was true of specific-cycle contractions. Conceivably, also, specific-cycle movements would differ in their rates of rise and fall (as measured by amplitude per annum) according to the long-swing phase in which they occurred. Or specific cycles might differ in two, or in all three, of these characteristics.

To check these expectations, the specific cycles of each of the thirty-eight series have been classified according to whether they occurred during a long upswing or a long downswing as these are marked off in the chronologies of Table 4. The data in Table 11 show the average durations, average amplitudes, and average amplitudes per annum for specific-cycle expansions and contractions of each series so classified. The outcome is distinctly in consonance with our expectations. Our comments are restricted to the series representing aggregate construction and readers are invited to verify that these comments are, in their broad lines, applicable as well to the various series representing the major branches of construction.

TABLE 11

AVERAGE DURATION AND AMPLITUDE OF SPECIFIC CYCLES DURING LONG UPSWINGS AND LONG DOWNSWINGS IN CONSTRUCTION, 1858-1959

Series	Period	A. SPECIFIC CYCLES DURING LONG UPSWINGS					
		Duration		Total Amplitude		Amplitude Per Annum	
		Expansion	Contraction	Expansion	Contraction	Expansion	Contraction
		(years)		(per cent)			
A. Aggregate Construction							
1. Gross new construction in current prices, Kuznets	1873-1959	3.9 (3.8)	1.3	50.2 (49.4)	-6.7	15.0 (15.2)	-5.9
2. Gross new construction in 1929 prices, Kuznets[a]	1892-1959	4.1	1.4	43.9	-5.4	10.3	-3.9
3. Index of the value of construction in current prices, NBER	1871-1918	2.5	1.3	36.3	-11.3	15.4	-9.0
4. Index of the value of construction in constant prices, NBER	1871-1918	2.0	1.4	29.1	-9.3	14.8	-7.7
5. Index of the physical volume of construction, NBER	1861-1918	2.5	1.4	36.6	-15.0	13.9	-12.2
6. Total construction in current prices, Commerce-Labor	1915-1959	6.6 (7.0)	1.0	73.6 (75.5)	-6.0	12.5 (12.5)	-6.0
7. New construction in current prices, Commerce-Labor	1915-1959	8.5 (9.7)	1.0	112.6 (127.7)	-14.3	13.6 (13.7)	-14.3
8. New construction,1947-49 prices, Commerce-Labor	1920-1959	5.8	1.0	63.3	-2.0	10.9	-2.0
B. Total Urban Building							
9. Riggleman's value of permits per capita in current prices	1862-1933	2.9	1.3	52.5	-16.0	20.8	13.7
10. Riggleman's index adjusted for trend	1864-1933	2.9	1.8	51.6	-10.6	27.8	-6.1
11. Riggleman-Isard index of value of permits	1862-1933	3.1	1.4	56.5	-14.5	19.4	-11.2
12. Long's index of the value of all permits[a]	1871-1933	2.2	1.5	45.7	-22.8	23.8	-18.0
13. Long's index of the number of all permits	1858-1934	3.1	1.3	55.5	-20.3	23.8	-18.6
14. Long's index of the value of all permits, as adjusted by Colean and Newcomb[a]	1871-1933	3.1	1.9	56.7	-27.4	21.6	-17.2
15. Colean-Newcomb index of the value of new building in current prices[a]	1862-1944	5.5	1.6	65.2	-13.2	10.6	-10.6
16. Colean-Newcomb index of the value of new building in constant prices[a]	1863-1933	4.6	1.3	46.1	-10.0	10.3	-7.6

(continued)

TABLE 11 (continued)

Series	Period	A. SPECIFIC CYCLES DURING LONG UPSWINGS					
		Duration		Total Amplitude		Amplitude Per Annum	
		Expansion	Contraction	Expansion	Contraction	Expansion	Contraction
		(years)		(per cent)			
C. Nonfarm Residential Building							
17. Long's index of the value of residential permits	1871-1934	3.2	1.5	94.0	-27.7	42.9	-24.0
18. Long's index of the number of residential permits	1858-1934	2.6	1.3	66.8	-27.7	32.2	-22.0
19. Expenditures for new dwelling units in current prices, Blank	1889-1959	3.2	1.3	80.9	-13.8	31.3	-10.9
20. Expenditures for new dwelling units in 1929 prices, Blank	1892-1959	3.8	1.5	88.2	-29.9	29.7	-21.8
21. Number of dwelling units started, Blank	1892-1959	3.8	1.2	84.9	-31.2	29.0	-27.7
21a. Production of housekeeping dwelling units, Gottlieb	1864-1933	2.5	1.4	50.1	-16.5	23.5	-13.7
D. Private Nonresidential Building							
22. Long's index of the value of nonresidential permits[a]	1869-1933	2.6	1.4	67.9	-33.9	27.1	-26.2
23. Long's index of the number of nonresidential permits[a]	1861-1933	3.7	1.8 (1.8)	63.1	-17.6 (-15.8)	24.1	-14.3 (-14.6)
24. New private nonresidential construction in current prices, Commerce-Labor	1915-1957	2.9 (3.0)	1.0 (1.0)	70.1 (72.8)	-17.5 (-18.8)	25.2 (25.5)	-17.5 (-18.8)
25. New private nonresidential construction in 1947-49 prices, Commerce-Labor	1918-1957	3.0	1.0	59.4	-19.3	19.8	-19.3
E. Farm Construction							
26. New farm construction in 1947-49 prices, Commerce-Labor	1919-1958	2.6	1.0	47.7	-9.4	16.6	-9.4
F. Transportation and Other Public Utilities Construction							
27. Rail consumption[b]	1862-1933	3.0	1.0	63.6	-23.4	24.2	-23.4
28. Increase in wire mileage, Western Union Telegraph Co.[b,c]	1874-1931	1.9	1.1	68.2	-23.0	54.5	-22.6
29. Increase in wire mileage, all telephone systems[a,c]	1886-1957	3.8	1.4	4,156	-883	1,015	-473
30. Gross capital expenditures in 1929 prices, all regulated industries, Ulmer[b]	1871-1943	3.5	1.3	62.3	-13.9	18.8	-12.6

TABLE 11 (continued)

Series	Period	A. SPECIFIC CYCLES DURING LONG UPSWINGS					
		Duration		Total Amplitude		Amplitude Per Annum	
		Expansion	Contraction	Expansion	Contraction	Expansion	Contraction
		(years)		(per cent)			
F. Transportation and Other Public Utilities Construction (cont.)							
31. Gross capital expenditures in current prices, all regulated industries, Ulmer[b]	1871-1943	2.9	1.4	61.0	-17.9	22.1	-14.9
		(3.0)	(1.3)	(60.6)	(-16.2)	(21.2)	(-14.9)
32. New private public utilities construction in 1947-49 prices, Commerce-Labor	1921-1957	3.1	1.2	42.9	-8.8	12.0	-7.9
33. New private public utilities construction in current prices, Commerce-Labor	1915-1957	3.2	1.2	49.9	-12.8	15.3	-11.4
			(1.0)		(-12.0)		(-12.0)
G. Shipbuilding							
34. Tonnage of merchant vessels built in the U.S.	1859-1943	3.2	1.8	137.3	-44.2	40.2	-36.8
		(3.0)	(2.0)	(71.1)	(-31.2)	(23.8)	(-21.3)
H. Public Construction							
35. Long's index of the value of public building permits[b]	1870-1933	2.2	1.3	77.2	-44.9	40.3	-40.0
36. New public construction in current prices, Commerce-Labor	1920-1959	4.8	1.0	77.6	-8.4	22.1	-8.4
37. New public construction in 1947-49 prices, Commerce-Labor	1920-1959	4.1	1.0	64.5	-11.6	20.9	-11.6

(continued)

TABLE 11 (continued)

Series	Period	A. SPECIFIC CYCLES DURING LONG UPSWINGS					
		Duration		Total Amplitude		Amplitude Per Annum	
		Expansion	Contraction	Expansion	Contraction	Expansion	Contraction
		(years)		(per cent)			
ALTERNATIVE MEASURES EXCLUDING EXTREMELY LONG UPSWINGS							
12. Long's index of the value of all permits	1871-77, 1916-33	7.0	0	144.8	0	20.7	0
14. Long's index of the value of all permits, as adjusted by Colean and Newcomb	1871-77, 1916-33	7.0	0	139.8	0	20.0	0
15. Colean-Newcomb index of the value of new building in current prices	1862-78, 1927-44	8.5	0	133.3	0	15.6	0
16. Colean-Newcomb index of the value of new building in constant prices	1863-77, 1912-33	4.3	1.0	60.8	-0.8	15.4	-0.8
22. Long's index of the value of nonresidential permits	1869-77, 1912-33	3.0	1.0	84.7	-21.8	33.2	-21.8
23. Long's index of the number of nonresidential permits	1861-1900, 1924-33	2.6	2.3	61.4	-21.2	33.2	-19.1
29. Increase in wire mileage, all telephone systems[c]	1917-57	4.5	1.7	8062	-1665	1824	-842

(continued)

TABLE 11 (continued)

Series	Period	B. SPECIFIC CYCLES DURING LONG DOWNSWINGS					
		Duration		Total Amplitude		Amplitude Per Annum	
		Expansion	Contraction	Expansion	Contraction	Expansion	Contraction
		(years)		(per cent)			
A. Aggregate Construction							
1. Gross new construction in current prices, Kuznets	1873–1959	1.0	2.6 (2.7)	3.4	-41.4 (-33.9)	3.4	-17.3 (-13.0)
2. Gross new construction in 1929 prices, Kuznets	1892–1959	1.0	2.4 (2.5)	9.4	-36.9 (-32.1)	9.4	-16.1 (-13.1)
3. Index of the value of construction in current prices, NBER	1871–1918	1.0	2.7 (2.8)	8.9	-44.4 (-45.3)	8.9	-14.2 (-13.0)
4. Index of the value of construction in constant prices, NBER	1871–1918	1.0	2.1 (2.2)	5.6	-39.6 (-34.8)	5.6	-15.8 (-12.8)
5. Index of the physical volume of construction, NBER	1861–1918	1.3	2.3 (2.4)	17.3	-37.7 (-35.2)	14.9	-17.9 (-16.5)
6. Total construction in current prices, Commerce-Labor	1915–1959	0	4.0 (6.0)	0	-71.4 (-84.9)	0	-21.6 (-14.2)
7. New construction in current prices, Commerce-Labor	1915–1959	0	4.5 (7.0)	0	-108.8 (-101.8)	0	-36.2 (-14.5)
8. New construction in 1947-49 prices, Commerce-Labor	1920–1959	0	4.0 (6.0)	0	-92.3 (-97.5)	0	-29.9 (-16.2)
B. Total Urban Building							
9. Riggleman's value of permits per capita in current prices	1862–1933	1.2	2.7 (2.8)	15.0	-51.4 (-47.9)	12.8	-20.0 (-17.7)
10. Riggleman's index adjusted for trend	1864–1933	1.2	2.7 (2.8)	11.1	-50.3 (-45.0)	10.5	-21.0 (-17.9)
11. Riggleman-Isard index of value of permits	1862–1933	1.0	2.9 (3.0)	16.3	-59.2 (-56.2)	16.3	-20.9 (-18.1)
12. Long's index of the value of all permits	1871–1933	1.0	3.0 (3.2)	11.8	-84.6 (-81.2)	11.8	-27.9 (-22.6)

(continued)

TABLE 11 (continued)

Series	Period	B. SPECIFIC CYCLES DURING LONG DOWNSWINGS					
		Duration		Total Amplitude		Amplitude Per Annum	
		Expansion	Contraction	Expansion	Contraction	Expansion	Contraction
		(years)		(per cent)			
B. Total Urban Building (cont.)							
13. Long's index of the number of all permits	1858-1934	1.0	2.8 (2.9)	12.4	-51.5 (-49.6)	12.4	-19.4 (-17.8)
14. Long's index of the value of all permits as adjusted by Colean and Newcomb	1871-1933	1.0	2.8 (3.0)	14.2	-80.5 (-79.2)	14.2	-27.9 (-24.2)
15. Colean-Newcomb index of the value of new building in current prices	1862-1944	0	5.3 (7.0)	0	-111.4 (-109.6)	0	-29.7 (-15.8)
16. Colean-Newcomb index of the value of new building in constant prices	1863-1933	2.0	4.8 (5.0)	10.3	-58.0 (-70.6)	5.1	-11.7 (-14.0)
C. Nonfarm Residential Building							
17. Long's index of the value of residential permits	1871-1934	1.2	1.9 (1.9)	25.8	-52.3 (-45.8)	23.2	-28.4 (-25.4)
18. Long's index of the number of residential permits	1858-1934	1.3	3.0 (3.1)	13.5	-61.1 (-56.5)	11.6	-22.8 (-19.7)
19. Expenditures for new dwelling units in current prices, Blank	1889-1959	1.3 (1.2)	2.2 (2.2)	13.0 (12.4)	-54.8 (-43.7)	10.2 (10.5)	-23.1 (-19.4)
20. Expenditures for new dwelling units in 1929 prices, Blank	1892-1959	1.6	2.7 (2.6)	14.1	-62.4 (-42.6)	8.9	-21.5 (-15.0)
21. Number of dwelling units started, Blank	1892-1959	1.3	2.4 (2.4)	11.2	-53.5 (-36.8)	10.0	-23.0 (-16.8)
21a. Production of housekeeping dwelling units, Gottlieb	1864-1933	1.0 (1.0)	3.4 (3.2)	13.6 (15.1)	-49.6 (-49.4)	13.6 (15.1)	-14.6 (-18.5)
D. Private Nonresidential Building							
22. Long's index of the value of nonresidential permits	1869-1933	1.6 (1.5)	1.8 (1.7)	19.7 (26.5)	-66.9 (-70.2)	21.2 (21.2)	-45.0 (-50.5)

(continued)

TABLE 11 (continued)

Series	Period	B. SPECIFIC CYCLES DURING LONG DOWNSWINGS					
		Duration		Total Amplitude		Amplitude Per Annum	
		Expansion	Contraction	Expansion	Contraction	Expansion	Contraction
		(years)		(per cent)			
D. Private Nonresidential Building (cont.)							
23. Long's index of the number of nonresidential permits	1861–1933	1.8	3.0	17.1	-57.2	12.0	-21.7
24. New private nonresidential construction in current prices, Commerce-Labor	1915–1957	0	3.0 (4.0)	0	-131.0 (-121.0)	0	-50.4 (-30.3)
25. New private nonresidential construction in 1947–49 prices, Commerce-Labor	1918–1957	0	3.0 (4.0)	0	-124.0 (-108.5)	0	-48.4 (-27.1)
E. Farm Construction							
26. New farm construction in 1947–49 prices, Commerce-Labor	1919–1958	0	4.2 (4.3)	0	-70.2 (-74.7)	0	-19.7 (-21.6)
F. Transportation and Other Public Utilities Construction							
27. Rail consumption[b]	1862–1933	1.7	2.0 (2.0)	24.8	-54.8 (-56.0)	14.1	-28.9 (-29.7)
28. Increase in wire mileage, Western Union Telegraph Co.[b,c]	1874–1931	1.2	1.9 (1.9)	12.5	-63.4 (-43.7)	9.6	-31.2 (-21.3)
29. Increase in wire mileage, all telephone systems[c]	1886–1957	0	2.7 (4.0)	0	-5601 (8008)	0	-2133 (-2002)
30. Gross capital expenditures in 1929 prices, all regulated industries, Ulmer[b]	1871–1943	1.5 (1.0)	2.9 (3.2)	19.3 (0.3)	-79.8 (-87.3)	9.8 (0.3)	-25.5 (-24.4)

(continued)

TABLE 11 (concluded)

Series	Period	B. SPECIFIC CYCLES DURING LONG DOWNSWINGS					
		Duration		Total Amplitude		Amplitude Per Annum	
		Expansion	Contraction	Expansion	Contraction	Expansion	Contraction
		(years)		(per cent)			
F. Transportation and Other Public Utilities Construction (cont.)							
31. Gross capital expenditures in current prices, all regulated industries, Ulmer[b]	1871-1943	1.0	3.1 (3.3)	2.1	-82.3 (-86.8)	2.1	-23.6 (-23.0)
32. New private public utilities construction in 1947-49 prices, Commerce-Labor	1921-1957	0	2.5 (3.0)	0	-81.0 (-113.4)	0	-31.0 (-37.8)
33. New private public utilities construction in current prices, Commerce-Labor	1915-1957	0	3.0 (4.0)	0	-82.2 (-123.4)	0	-25.6 (-30.8)
G. Shipbuilding							
34. Tonnage of merchant vessels built in the U.S.	1859-1943	1.6	2.9	49.5	-89.1	31.2	-38.1
H. Public Construction							
35. Long's index of the value of public building permits[b]	1870-1933	1.0 (1.0)	1.9 (2.0)	31.9 (30.8)	-67.3 (-65.4)	31.9 (30.8)	-40.4 (-36.0)
36. New public construction in current prices, Commerce-Labor	1920-1959	0	3.5 (3.0)	0	-108.0 (-53.6)	0	-29.2 (-17.9)
37. New public construction in 1947-49 prices, Commerce-Labor	1920-1959	0	3.0 (2.0)	0	-110.6 (-51.2)	0	-34.0 (-25.2)

Note: Figures in parentheses exclude wartime movements.

[a] See note a, Table 6.

[b] The measures for long swings reflect an extra cycle, as identified in Table 4, note e.

[c] Amplitudes were computed in absolute units, not in percentages.

Duration and Amplitude of Specific Cycles

The average durations of specific-cycle expansions during long upswings were, in the various series, between two and five times their durations during long downswings. Similarly, the average durations of specific-cycle contractions during long downswings were between two and four times their durations during long upswings. Further, although specific-cycle contractions over-all are generally much shorter than specific-cycle expansions (cf. Table 6), the opposite was true during long downswings.[1] In some series, as has already been said, no specific-cycle expansions interrupted the course of the long downswings (these are denoted by zeros in the table); but where they did, the expansions were distinctly shorter on the average than were the contractions.

Exactly the same sort of remarks may be made about specific-cycle amplitudes. Expansions, on the average, were many times larger during long upswings than during long downswings. Contractions were very much larger during downswings than during upswings. Although, as Table 7 shows, the average amplitudes of specific-cycle contractions over-all were distinctly smaller than those of expansions, the opposite was true during long downswings.

Finally, it was generally true not only that specific-cycle expansions during long upswings were larger than they were during long downswings, but their rate of rise was greater. Similarly, the rate of decline of specific-cycle contractions was generally greater during long downswings than during long upswings. And, further, specific-cycle expansions proceeded more rapidly than did contractions during long upswings, while the reverse was true during long downswings. These last assertions, however, were not invariably true. Readers will find a few, though only a few, exceptions to the rule.

If we had marked off the chronologies of long-swing peaks and troughs in a haphazard or arbitrary fashion, we might not have found clear differences between the character of specific cycles classified by the phase of long swings in which they fell. The presence of clear differences, therefore, testifies that these chronologies do mark off periods which were, on the whole, significantly different from one another; and

[1]Readers should note that this table provides figures in parentheses which exclude specific cycles occurring during wartime movements. These usually differ very little from those including such movements. Exclusion appears to sharpen the contrasts between specific cycles during long upswings and downswings as often as it softens them.

that is the chief immediate importance of Table 11.

The findings, moreover, lend particularly strong support to the inference that the upswings and downswings that have been marked off represent periods which were distinctly different. Such an inference might have been drawn if specific cycles differed, when classified by long-swing phase, in any one characteristic. Such an inference might have been drawn, though less confidently, if the differences discovered were small rather than large. However, specific cycles classified by phase of long swing differed in all three characteristics tested, and the average differences were large. Finally, since specific-cycle contractions during long downswings were uniformly longer and larger than expansions, it indicates that if the figures are taken at face value, the downswing phases of long swings were actual declines, not merely retardations in growth.

All these findings, however, are subject to the qualification that they were true on the average. We do not know from Table 11 that they were true in each individual long swing. To test this question, we compared the average durations of specific-cycle expansions and of specific-cycle contractions during each long upswing identified in the series with the average durations of comparable specific-cycle phases during the succeeding long downswing. The same was also done for the durations of specific-cycle expansions, and of contractions, during each long downswing compared with those during the succeeding long upswing. And similar comparisons were made for the average amplitudes of specific-cycle expansions and contractions, and finally for the amplitudes per annum of specific-cycle expansions and contractions. For each comparison, we noted whether the sign of the difference between specific-cycle behavior during a given long upswing (or downswing) and that during the succeeding long downswing (or upswing) conformed to our expectations, whether the sign of the difference was contrary to our expectations, or whether there was no difference. As already shown, if these long-swing chronologies do in fact mark off periods of upswing and downsing which are significantly different, one or more of the characteristics of specific-cycle expansions should turn out to be larger during the periods identified as upswings than in those called downswings; and the opposite should be true for specific-cycle contractions. Table 12 sets forth the outcome of these comparisons. In order to summarize the data, the comparisons were grouped by suc-

TABLE 12

SPECIFIC CYCLE CHARACTERISTICS CLASSIFIED BY PHASE OF LONG SWINGS;
DEVIATIONS FROM EXPECTATIONS IN SELECTED LONG SWINGS AND IN ALL LONG SWINGS, 1858-1959

	SPECIFIC CYCLE EXPANSIONS						SPECIFIC CYCLE CONTRACTIONS					
		Duration			Deviations from Expected Amplitude			Duration			Deviations from Expected Amplitude	
	Number of Comparisons	Deviations	Ties	Dev. + Ties	Total	Per Annum	Number of Comparisons	Deviations	Ties	Dev. + Ties	Total	Per Annum
						1860-1880						
A. Aggregate construction	0						1	0	0	0	0	1
B. Total urban building	1	0	0	0	0	0	3	0	0	0	0	3
C. Nonfarm residential	2	0	0	0	0	0	2	0	0	0	0	0
D. Private nonresidential	1	1	0	1	0	0	1	0	1	1	0	0
E. Farm construction[a]												
F. Transportation and utilities constr.	1	0	0	0	0	0	1	0	0	0	0	0
G. Shipbuilding	1	0	0	0	0	1	1	0	0	0	0	1
H. Public construction[a]												
All comparisons	6	1	0	1	0	1	9	0	1	1	0	5
						1870-1890						
A. Aggregate construction	2	0	0	0	0	0	4	0	0	0	0	0
B. Total urban building	1	0	0	0	0	0	3	0	0	0	0	0
C. Nonfarm residential	3	0	0	0	0	0	3	0	0	0	0	1
D. Private nonresidential	1	0	0	0	0	1	1	0	0	0	0	0
E. Farm construction[a]												
F. Transportation and utilities constr.	1	0	0	0	0	0	4	2	0	2	2	2
G. Shipbuilding	1	0	0	0	0	1	0					
H. Public construction	1	0	0	0	0	0	1	0	0	0	0	1
All comparisons	10	0	0	0	0	2	16	2	0	2	2	4

(continued)

TABLE 12 (continued)

	SPECIFIC CYCLE EXPANSIONS						SPECIFIC CYCLE CONTRACTIONS					
		Duration			Deviations from Expected Amplitude			Duration			Deviations from Expected Amplitude	
	Number of Comparisons	Deviations	Ties	Dev. + Ties	Total	Per Annum	Number of Comparisons	Deviations	Ties	Dev. + Ties	Total	Per Annum
						1880–1900						
A. Aggregate construction	4	0	0	0	0	1	4	1	2	3	0	0
B. Total urban building	4	0	0	0	0	3	4	0	0	0	0	0
C. Nonfarm residential	3	0	0	0	0	2	3	1	0	1	0	0
D. Private nonresidential	1	0	0	0	0	0	1	0	0	0	0	0
E. Farm construction[a]												
F. Transportation and utilities constr.	2	0	0	0	0	0	4	1	1	2	2	1
G. Shipbuilding	1	0	0	0	0	0	0					
H. Public construction	1	0	0	0	0	0	1	1	0	1	1	0
All comparisons	16	0	0	0	0	6	17	4	3	7	3	1
						1890–1910						
A. Aggregate construction	5	0	0	0	0	2	5	2	3	5	0	0
B. Total urban building	6	0	0	0	0	1	7	4	0	4	0	0
C. Nonfarm residential	6	0	0	0	0	1	5	2	0	2	0	0
D. Private nonresidential	1	0	0	0	0	1	1	1	0	1	0	0
E. Farm construction[a]												
F. Transportation and utilities constr.	2	0	0	0	0	0	4	0	0	0	0	1
G. Shipbuilding	1	0	0	0	0	0	1	1	0	1	0	0
H. Public construction	1	0	0	0	0	0	1	1	0	1	0	0
All comparisons	22	0	0	0	0	5	24	11	3	14	0	1

(continued)

TABLE 12 (continued)

	SPECIFIC CYCLE EXPANSIONS						SPECIFIC CYCLE CONTRACTIONS					
		Duration			Deviations from Expected Amplitude			Duration			Deviations from Expected Amplitude	
	Number of Comparisons	Deviations	Ties	Dev. + Ties	Total	Per Annum	Number of Comparisons	Deviations	Ties	Dev. + Ties	Total	Per Annum
						1900-1920						
A. Aggregate construction	3	0	0	0	0	1	5	0	1	1	0	0
B. Total urban building	3	1	0	1	0	0	7	1	2	3	0	0
C. Nonfarm residential	6	1	0	1	0	0	5	0	0	0	0	0
D. Private nonresidential	1	0	0	0	0	0	1	0	0	0	0	0
E. Farm construction[a]												
F. Transportation and utilities constr.	4	0	0	0	0	1	5	0	0	0	0	2
G. Shipbuilding	1	0	0	0	0	1	1	1	0	1	0	0
H. Public construction	1	0	0	0	0	0	1	0	0	0	0	0
All comparisons	19	2	0	2	0	3	25	2	3	5	0	2
						1910-1930						
A. Aggregate construction	1	0	0	0	0	0	1	0	0	0	0	0
B. Total urban building	3	1	0	1	0	0	3	0	0	0	0	0
C. Nonfarm residential	6	0	1	1	0	0	6	0	0	0	3	5
D. Private nonresidential	2	0	0	0	0	0	2	0	0	0	0	0
E. Farm construction	0						1	0	0	0	0	0
F. Transportation and utilities constr.	4	1	1	2	1	0	5	0	0	0	0	1
G. Shipbuilding	1	0	0	0	0	0	0					
H. Public construction	1	0	0	0	0	1	1	0	0	0	0	0
All comparisons	18	2	2	4	1	1	19	0	0	0	3	6

(continued)

TABLE 12 (concluded)

	SPECIFIC CYCLE EXPANSIONS						SPECIFIC CYCLE CONTRACTIONS					
		Duration			Deviations from Expected Amplitude			Duration			Deviations from Expected Amplitude	
	Number of Comparisons	Deviations	Ties	Dev. + Ties	Total	Per Annum	Number of Comparisons	Deviations	Ties	Dev. + Ties	Total	Per Annum
						ALL SWINGS						
A. Aggregate construction	15	0	0	0	0	4	33	3	6	9	0	1
B. Total urban building	20	2	0	2	0	4	30	5	2	7	0	3
C. Nonfarm residential	27	1	1	2	0	3	33	3	0	3	3	11
D. Private nonresidential	8	1	0	1	0	2	17	1	1	2	0	2
E. Farm construction	0						6	0	0	0	0	2
F. Transportation and utilities constr.	15	1	1	2	1	1	43	4	1	5	4	12
G. Shipbuilding	8	0	0	0	0	3	4	2	0	2	0	2
H. Public construction	5	0	0	0	0	1	13	2	0	2	1	1
All comparisons	98	5	2	7	1	18	179	20	10	30	8	34

[a]No data available.

cessive overlapping periods of about twenty years, each period representing in a rough way the span of years between one concentration of long-swing troughs and the next, or between one concentration of long-swing peaks and the next. The long swings of individual series did not, of course, reach their turning points at the boundaries of these spans of years. The table gives the result for all individual long swings, beginning with these that started their upswings in the early 1860's and ended their next downswings in the late 1870's or early 1880's and concluding with the group of long swings whose declining phase began around 1910 and whose rising phase ended in the middle or late 1920's. It was thought unnecessary to show the results for individual long swings in later years, since they were so pronounced. The last section of the table, however, is a grand summary for all comparisons afforded by any of the series throughout the entire periods they covered.

Table 12 shows that when specific cycles are classified by the long-swing phase in which they occurred, their movements are characteristically different, in ways that accord with expectations, in each individual long swing as well as in the average of all swings. There were, indeed, instances in which observed movements did not square with our expectations, but these were few. Our expectations were almost invariably satisfied for specific-cycle expansions. Both the durations and amplitudes of expansions of aggregate construction series met our expectations without exception. Among ninety-eight comparisons of total amplitude involving all thirty-eight series, there was only one deviant case; and of the same number of comparisons of duration only five ran contrary to expectations, while another two were ties. Deviant cases were more frequent in comparisons of amplitudes per annum, but even with respect to this characteristic, only 18 per cent of the comparisons failed to satisfy our expectations. A wide majority of all comparisons met our expectations in each individual long swing even with regard to amplitude per annum, and the same was true of almost every group of series in each long swing with regard to total amplitude and duration.

The behavior of specific-cycle contractions satisfied our expectations only slightly less well. The total amplitudes of specific-cycle contractions in aggregate construction were again in accord with expectations, without exception. For the specific-cycle amplitudes of all series in all long swings, there were only eight deviant cases in 179 comparisons. Comparisons involving durations and amplitudes per annum met

expectations by a wide majority of all comparisons. This was also true of total amplitudes and of amplitudes per annum in each individual period, and it was true of durations in each period but one—1890 to 1910. In a general way, the same statements hold for each individual group of series in each individual long swing. There were, however, some exceptions. Notable concentrations of deviations occurred in comparisons of durations of specific-cycle contractions in the groups of series representing aggregate construction during 1880-1900 and in aggregate construction and total urban building during 1890-1910, and in comparisons of amplitudes per annum for residential building during 1910-30.[2]

The general showing of the table is clear. It strongly supports the view that these chronologies do succeed in distinguishing periods that were significantly different from one another in the duration, pace of movement, and, still more, the total amplitude of specific-cycle expansions and contractions. This does not mean necessarily that upsurges were followed by declines in the absolute level of aggregate construction activity. Specific-cycle expansions and contractions occurring during long upswings might differ significantly from those occurring during long downswings even if the latter represented no more than retardations in growth. It may be that, on some occasions, they did represent no more than that. The striking differences in specific-cycle movements classified by long-swing phases do, however, support the presumption that such phases differed markedly. And if one or more "declining" phases in aggregate activity were only retardations, it seems likely that the decline in the rate of growth must have been very pronounced.

[2]The number of comparisons for expansions differs from that for contractions in each period specially identified as well as in the totals for all periods. The reason is that we have excluded from our count those cases in which long downswings were not interrupted by a specific-cycle expansion and, therefore, where there was no opportunity to compare expansions during a downswing with those during the preceding or following long upswing. In the same way, we excluded from our count cases in which long upswings were not interrupted by specific-cycle contractions. Since such uninterrupted movements were more frequent during long downswings than during long upswings, the number of comparisons for expansions is smaller than the number for contractions. Had we included such occurrences in our count, on the ground that they do constitute one kind of observation of specific-cycle behavior which squares with our expectations, the total number of "comparisons" of expansions would have been raised by 118, that for contractions by thirty-seven. The total for either phase would then have been 216.