Volume Title: Dating Postwar Business Cycles: Methods and Their Application to Western Germany, 1950–67

Volume Author/Editor: Ilse Mintz

Volume Publisher: NBER

Volume URL: http://www.nber.org/books/mint69-1

Publication Date: 1969

Chapter Title: Comparisons Among Individual Business Cycle Turns And Among Individual Indicators

Chapter Author: Ilse Mintz

Chapter URL: http://www.nber.org/chapters/c2159

Chapter pages in book: (p. 28 - 43)

Comparison among individual business cycle turns and among individual indicators

Having studied the average relationships one may want to learn about the variations among cycle turns and among indicators. Tables 3 and 4 tell the story.

Perhaps the most important feature brought out in these tables is the regularity with which all the indicators turn near all business cycle turns. Out of 164 comparisons there are only 7 instances in the deviation cycles and 6 in step cycles when an indicator fails to turn in the neighborhood of a business cycle turn. Even these few cases occurred almost exclusively at the two terminal turns (Table 4, column 7). The close correspondence between indicator cycles and business cycles is further reflected in the timing of the turns. About 50 per cent of all indicators turn within three months from the corresponding business turns and the average distance of all indicators from business turns is only four to five months (Table 4, column 10).

Comparison among the eight business cycle turns shows a distinct difference between upturns and downturns. Dispersion of indicator turns around upturns is smaller than around downturns. The average deviation of indicator upturns at the four business upturns is 3.7 months, that of indicator downturns at the four business downturns is 5.8 months (based on Table 3, last lines).[29]

The differences in timing among the twenty-one indicators are also of interest. Judging by the number of leads and lags and by median leads and lags at business cycle turns, we find that thirteen indicators tend to coincide roughly with business cycles. Two indicators, stock market prices and imports of semimanufactures, show a distinct tendency to lead. On the other hand, four series tend to lag: wages, personal income, disposable income and commodity prices. The irregular behaviour of the two remaining series defies generalization. Not surprisingly, these are the series depicting month-to-month changes, in inventories, and in lending respectively.

Finally, it is interesting to compare the timing of the German indicators to their counterparts in the United States. In evaluating this comparison one must keep in mind that (1) most German indicators are defined differently

[29] Please note that the somewhat larger average deviations of step cycles as compared to deviation cycles merely reflect our choice of deviation cycles for business cycle turns.

than the corresponding U.S. ones; (2) the time period covered differs between the two set of measures with U.S. timing measures pertaining to varying periods; (3) the cycle concepts and the methods used to set specific and reference turns differ between the German and the U.S. cycles.

In view of all this, the similarity both of the ordering and of the magnitude of median leads and lags is certainly striking (Table 5). It indicates the close relations between the two cycle concepts and dating methods.

The only series with distinctly different timing in the two economies are prices and incomes, especially wage incomes. The turns in these indicators tend to coincide with U.S. business cycle turns and to lag at German ones, whether upturns or downturns.

In part, at least, the income lag may be due to the hoarding of labor connected with the tightness of the German labor market. (This is reflected also in the small lags of the employment indicator.) Labor union policies may be another contributing factor.[30] Regarding prices, it may be noted that formerly wholesale prices lagged in the U.S. as well, particularly at upturns, and consumer prices continue to do so. A priori, one expects prices to lag and the recent coincidence in the U.S. seems to call for an explanation rather than the lag in Germany.

[30] I am indebted to Dr. W.H. Strigel, Director, IFO-Institut fuer Wirtschaftsforschung, for clarifying this point.

TABLE 3

Leads (-) and Lags (+), in Months, of Turns in Twenty-One German Indicators at German Business Cycle Turns; Deviation Cycles (DC) and Step Cycles (SC), 1950-67 (by business cycle turns)[a]

Indicators	(4)1951 Downturn	(1)1954 Upturn	(1)1956 Downturn	(3)1959 Upturn	(1)1961 Downturn	(2)1963 Upturn	(12)1965 Downturn	(6)1967 Upturn
1. No. employed, mfg.								
DC	n.a.	0	+ 3	0	+ 2	+ 9	+ 1	N
SC	n.a.	0	+ 3	+ 2	+ 2	+13	- 9	N
2. Man-hours, mfg.								
DC	0	- 8	+ 5	0	+ 2	- 2	0	- 1
SC	0	- 8	+ 5	0	- 10	+18	- 9	- 1
3. No. unemployed (inverted)								
DC	n.a.	+ 7	+ 3	- 11	+ 1	+10	+ 2	+2
SC	n.a.	- 3	+14	- 1	+12	- 1	+ 5	- 1
4. Job vacancies								
DC	n.a.	- 1	+ 3	- 3	- 1	0	0	- 2
SC	n.a.	- 1	- 5	- 3	- 1	- 19	+ 2	- 2

(continued)

TABLE 3 (continued)

Indicators	(4)1951 Downturn	(1)1954 Upturn	(1)1956 Downturn	(3)1959 Upturn	(1)1961 Downturn	(2)1963 Upturn	(12)1965 Downturn	(6)1967 Upturn
5. GNP, current DM								
DC	+10	0	+ 4	0	0	0	0	+2
SC	+10	0	+ 4	0	0	0	+ 5	+2
6. GNP, 1954 DM								
DC	- 5	0	+ 4	- 10	0	0	+ 5	+2
SC	- 3	0	- 8	0	0	- 18	+ 5	+2
7. Invest., equipment, 1954 DM								
DC	- 5	- 2	- 5	0	0	+ 3	- 10	0
SC	- 4	- 2	- 5	0	0	+ 3	+ 3	- 1
8. Investment, constr., 1954 DM								
DC	N	0	- 8	- 13	0	0	- 13	+2
SC	N	0	- 8	- 13	0	0	N	+2
9. Inventory changes, 1954 DM								
DC	+10	- 8	- 5	0	+ 4	+ 6	- 4	- 4
SC	N	+ 7	- 5	0	+ 4	+ 6	- 4	- 4

(continued)

TABLE 3 (continued)

	(4)1951 Downturn	(1)1954 Upturn	(1)1956 Downturn	(3)1959 Upturn	(1)1961 Downturn	(2)1963 Upturn	(12)1965 Downturn	(6)1967 Upturn
10. Employee income								
DC	+10	0	+13	+ 2	+13	+ 9	- 7	N
SC	+10	+ 7	+ 1	+ 2	+13	+ 9	- 7	N
11. Disposable income								
DC	+13	+ 4	0	+14	+13	0	- 7	+2
SC	+10	+ 4	+ 1	+14	- 2	0	+ 8	+ 2
12. Property and entrepreneurs' income								
DC	+10	- 8	- 2	0	- 11	0	- 13	+2
SC	+19	- 8	N	0	- 11	0	+11	+2
13. Industrial prod., total								
DC	0	0	- 1	+ 1	0	- 1	- 8	0
SC	- 8	+ 2	- 1	+ 1	0	- 1	+ 6	- 3
14. Industrial prod., invest. goods								
DC	- 2	- 5	- 2	+ 1	0	0	- 11	0
SC	- 4	+ 7	- 6	+ 1	0	0	+ 6	0

(continued)

TABLE 3 (continued)

Indicators	(4)1951 Downturn	(1)1954 Upturn	(1)1956 Downturn	(3)1959 Upturn	(1)1961 Downturn	(2)1963 Upturn	(12)1965 Downturn	(6)1967 Upturn
15. Wages and salaries, mfg.								
DC	+ 2	+ 4	+ 7	+ 5	+16	+10	+ 3	N
SC	+ 2	+ 4	+ 1	+ 5	- 1	+10	+ 8	- 2
16. Sales, domestic, mfg.								
DC	n.a.	0	- 1	0	+ 2	0	0	- 1
SC	n.a.	0	- 1	0	- 1	0	0	- 1
17. Producers' prices, indus. prods.								
DC	+ 7	+ 8	+11	+ 4	+15	+17	+ 4	N
SC	+ 8	- 2	+11	+ 4	0	+17	+ 4	+4
18. Stock prices, industry								
DC	+ 9	- 7	- 5	- 10	- 5	- 4	- 15	- 5
SC	+ 9	- 7	- 9	- 10	- 5	- 4	- 21	+1

(continued)

TABLE 3 (continued)

Indicators	(4)1951 Downturn	(1)1954 Upturn	(1)1956 Downturn	(3)1959 Upturn	(1)1961 Downturn	(2)1963 Upturn	(12)1965 Downturn	(6)1967 Upturn
19. Short-term lending changes								
DC	N	N	- 4	-11	- 4	+ 7	+ 3	- 3
SC	+ 5	- 18	+17	-11	+ 6	+ 7	+ 3	- 3
20. Imports, raw materials, indus.								
DC	+ 5	+ 1	+16	- 1	0	0	+ 5	- 1
SC	+ 5	+ 1	+16	- 10	0	0	- 12	- 1
21. Imports, semimfgs., indus.								
DC	- 5	- 6	- 7	- 1	- 10	- 1	- 11	- 3
SC	- 5	0	- 9	- 1	- 10	+13	- 11	- 3

(continued)

TABLE 3 (continued)

All Indicators	(4)1951	(1)1954	(1)1956	(3)1959	(1)1961	(2)1963	(12)1965	(6)1967
Mean Lead (-) or Lag (+)								
DC	+3.9	- 1.0	+1.4	- 1.0	+1.8	+3.0	- 3.6	- 0.5
SC	+3.3	- 0.8	+0.8	- 1.0	- 0.2	+2.5	- 0.3	- 0.4
Aver. deviation from bus. cycle turns								
DC	6.2	3.4	5.2	4.1	4.7	3.8	5.8	1.9
SC	7.1	3.9	6.5	3.7	3.7	6.6	6.9	1.9

NOTE: Series numbers 5 through 12 are quarterly, other series are monthly. Step cycles are cycles in growth rates, deviation cycles are cycles in percentage deviations from trends.

n.a. = data not available.

N = no matching turn.

[a]The numbers in parentheses refer to months, i.e., 1 is January, 4 is April, etc.

TABLE 4

Summary of Relations of Turns in Twenty-One Indicators to German Business Cycle Turns; Deviation Cycles (DC) and Step Cycles (SC), 1950-67

Indicator	Number of:							Average Months		
	Leads		Exact	Lags		Unrelated Turns in		Lead (-) or Lag (+)		Dev. from
	Long	Short	Coinci-dences	Short	Long	Indi-cator	Business Cycle	Median	Mean	Ref. Turn
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1. No. employed, mfg.										
DC	0	0	2	3	1	0	1	+1.5	+2.5	2.5
SC	1	0	1	3	1	0	1	+2.0	+1.8	4.8
2. Man-hours, mfg.										
DC	1	2	3	1	1	0	0	0.0	- 0.5	2.2
SC	3	1	2	0	2	2	0	- 0.5	- 0.6	6.4
3. No. unemployed (inverted)										
DC	1	0	0	4	2	0	0	+2.0	+2.0	5.1
SC	0	4	0	0	3	2	0	- 1.0	+3.6	5.3
4. Job vacancies										
DC	0	4	2	1	0	0	0	- 1.0	- 0.6	1.4
SC	2	4	0	1	0	2	0	- 2.0	- 4.1	4.7

(continued)

TABLE 4 (continued)

Indicator	Number of: Leads Long (1)	Leads Short (2)	Exact Coinci-dences (3)	Lags Short (4)	Lags Long (5)	Unrelated Turns in Indi-cator (6)	Unrelated Turns in Business Cycle (7)	Average Months Lead (-) or Lag (+) Median (8)	Average Months Lead (-) or Lag (+) Mean (9)	Dev. from Ref. Turn (10)
5. GNP, current DM										
DC	0	0	5	1	2	0	0	0.0	+2.0	2.0
SC	0	0	4	1	3	2	0	+1.0	+2.6	2.6
6. GNP, 1954 DM										
DC	2	0	3	1	2	2	0	0.0	- 0.5	3.2
SC	3	0	3	1	1	0	0	0.0	- 3.4	5.1
7. Invest., in equipment, 1954 DM										
DC	3	1	3	1	0	0	0	- 1.0	- 2.4	3.1
SC	2	2	2	2	0	0	0	- 0.5	- 0.7	2.2
8. Invest., constr., 1954 DM										
DC	3	0	3	1	0	2	1	0.0	- 4.6	5.1
SC	2	0	3	1	0	5	2	0.0	- 3.2	3.8
9. Inventory changes, 1954 DM										
DC	4	0	1	0	3	2	0	- 2.0	- 0.1	5.1
SC	3	0	1	0	3	2	1	0.0	+0.6	4.3

(continued)

TABLE 4 (continued)

Indicator	Number of: Leads Long	Leads Short	Exact Coinci-dences	Lags Short	Lags Long	Unrelated Turns in Indicator	Unrelated Turns in Business Cycle	Average Months Lead (-) or Lag (+) Median	Average Months Lead (-) or Lag (+) Mean	Dev. from Ref. Turn
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
10. Employee income										
DC	1	0	1	1	4	0	1	+9.0	+5.7	7.7
SC	1	0	0	2	4	0	1	+7.0	+5.0	7.0
11. Disposable income										
DC	1	0	2	1	4	2	0	+3.0	+4.9	6.6
SC	0	1	1	2	4	2	0	+3.0	+4.6	5.4
12. Property and entrepreneurs' income										
DC	3	1	2	1	1	0	0	- 1.0	- 2.7	5.7
SC	2	0	2	1	2	1	1	0.0	+1.9	7.3
13. Industrial prod., total										
DC	1	2	4	1	0	0	0	0.0	- 1.1	1.4
SC	1	3	1	2	1	0	0	- 0.5	- 0.5	2.7
14. Industrial prod., invest. goods										
DC	2	2	3	1	0	0	0	- 1.0	- 2.4	2.6
SC	2	0	3	1	2	0	0	0.0	+0.5	3.0

(continued)

TABLE 4 (continued)

Indicator	Number of: Leads Long	Leads Short	Exact Coinci-dences	Lags Short	Lags Long	Unrelated Turns in Indi-cator	Unrelated Turns in Business Cycle	Average Months Lead (-) or Lag (+) Median	Average Months Lead (-) or Lag (+) Mean	Dev. from Ref. Turn
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
15. Wages and salaries, mfg.										
DC	0	0	0	2	5	0	1	+5.0	+6.7	6.7
SC	0	2	0	2	4	2	0	+3.0	+3.4	4.1
16. Sales, domestic mfg.										
DC	0	2	4	1	0	2	0	0.0	0.0	0.6
SC	0	3	4	0	0	2	0	0.0	-0.4	0.4
17. Producers' prices, indus. products										
DC	0	0	0	0	7	1	1	+8.0	+9.4	9.4
SC	0	1	1	0	6	0	0	+4.0	+5.7	6.2
18. Stock prices, industry										
DC	7	0	0	0	1	1	0	-5.0	-5.2	7.5
SC	6	0	0	1	1	0	0	-6.0	-5.7	8.2
19. Short-term lending changes										
DC	3	1	0	1	1	3	2	-3.5	-2.0	5.3
SC	2	1	0	1	4	4	0	+4.0	+0.7	8.7

(continued)

TABLE 4 (concluded)

Indicator	Number of: Leads Long	Leads Short	Exact Coinci-dences	Lags Short	Lags Long	Unrelated Turns in Indicator	Unrelated Turns in Business Cycle	Average Months Lead (-) or Lag (+) Median	Average Months Lead (-) or Lag (+) Mean	Dev. from Ref. Turn
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
20. Imports, raw materials, indus.										
DC	0	2	2	1	3	0	0	+0.5	+3.1	3.6
SC	2	1	2	1	2	0	0	0.0	- 0.1	5.6
21. Imports, semimfgs., indus.										
DC	5	3	0	0	0	0	0	- 5.5	- 5.5	5.5
SC	4	2	1	0	1	0	0	- 4.0	- 3.2	6.5
All indicators										
DC	37	20	40	23	37	15	7	0.0	+0.3	4.4
SC	36	25	31	22	44	26	6	0.0	+0.4	5.0

NOTE: Long leads and lags are four months and more. Short leads and lags are one to three months.

TABLE 5

Comparison of Timing of German and U.S. Indicators at Business Cycle Turns

German Indicator (1950-67)	Comparable U.S. Indicator	Median Lead (-) or Lag (+) (months)		
		German		
		DC	SC	U.S.
18. Stock prices, industry	19. Stock prices, 500 common stocks (1870-1967)	- 5	- 6	- 4
21. Imports of semimfgs. indus.	Imports of semimfgs. (1905-1967)	- 5	- 4	0
19. Short-term lending changes	112. Change in bank loans to business (1937-1967)	- 3	+4	- 4
9. Inventory changes, 1954 DM	21. Change in business inventories, current $ (1921-1967)	- 2	0	- 2
12. Property and entrepreneurs' income	16. Corporate profits after taxes (1938-1967)	- 1	0	- 2
4. Job vacancies	301. Nonagricultural job openings (1947-1965)	- 1	- 2	0
14. Indus. prod., investment goods	Index of production of equipment, including defense (1947-1963)	- 1	0	0

(continued)

TABLE 5 (continued)

German Indicator (1950-67)	Comparable U.S. Indicator	Median Lead (-) or Lag (+) (months)		
		German		
		DC	SC	U.S.
7. Investment, equip., 1954 DM	61. Business expenditures, new plant and equipment, current $ (1947-1967)	- 1	0	+1
8. Investment, constr., 1954 DM	Gross private domestic invesment, new constr., total, current $ (1921-1966)	0	0	- 3
6. GNP, 1954 DM	50. GNP, constant $ (1921-1967)	0	0	- 2
20. Imports, raw materials, indus.	Imports of crude materials (1905-1938)	0	0	- 2
2. Man-hours, mfg.	501. Man-hours, nonfarm (1941-1966)	0	0	- 1
5. GNP, current DM	49. GNP, current $ (1921-1965)	0	+1	0
13. Indus. prod., total	47. Indus. prod. (1919-1967)	0	0	0
16. Sales, domestic, mfg.	816. Mfg. and trade sales (1938-1967)	0	0	0
1. No. employed, mfg.	Prod. worker employment, mfg., total, BLS (1913-1964)	+1	+2	0

(continued)

TABLE 5 (concluded)

German Indicator (1950-67)	Comparable U.S. Indicator	Median Lead (-) or Lag (+) (months)		
		German		
		DC	SC	U.S.
3. No. unemployed (inverted)	Total unemployment, NICB, Bureau of the Census (inverted) (1929-1965)	+2	- 1	0
11. Disposable income	Disposable personal income (1921-1967)	+3	+3	- 1
15. Wages and salaries, mfg.	53. Wages and salaries in mining, mfg., and constr. (1929-1966)	+5	+3	0
17. Producers' prices, industrial products	55. Wholesale prices, industrial commodities (1890-1967)	+8	+4	+1
10. Employee income	Compensation of employees (1946-1967)	+9	+7	+1

SOURCE: German timing from Table 4, col. 8. U.S. timing of numbered series, from Geoffrey H. Moore and Julius Shiskin, *Indicators of Business Expansions and Contractions,* Occasional Paper 103, New York, NBER, 1967, Appendix E, col. 2. U.S. timing of unnumbered series, from NBER files.

DC = Deviation cycles.
SC = Step cycles.