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Appendix E
Median Lead (or Lag) of Seventy-two Selected Indicators Adjusted for Loss of Currency
When Smoothed by MCD Moving Averages

Classification and Series Title (1)	Median Lead(-) or Lag(+) at Peaks and Troughs, (Months) (2)	\bar{I}/\bar{C} (3)	MCD Span ^a (Months) (4)	\bar{I}/\bar{C} for MCD Span ^a (5)	Median Lead(-) or Lag(+) Adjusted for MCD Span ^b (Months) (6)
LEADING INDICATORS (36 SERIES)					
1. Employment and unemployment					
<i>Marginal employment adjustments</i>					
*1. Avg. workweek, prod. workers, mfg.	-5	2.23	3	.74	-4
*30. Nonagri. placements, BES	-3	1.23	2	.63	-3
2. Accession rate, mfg.	-4	3.20	4	.84	-3
5. Initial claims, unempl. insur. (inv.)	-6	2.02	2	.95	-6
3. Layoff rate, mfg. (inv.)	-7	2.41	3	.77	-6
3. Fixed capital investment					
<i>Formation of business enterprises</i>					
*38. Index of net business formation	-7	1.15	2	.66	-7
13. New business incorporations	-5	2.18	3	.78	-4
<i>New investment commitments</i>					
*6. New orders, dur. goods indus.	-4	2.20	3	.66	-3
94. Construction contracts, total, value	-6	4.12	5	.87	-4
*10. Contracts and orders, plant and equip.	-6	3.08	4	.84	-5
11. New capital appropriations, mfg., Q	-4	.61	3 [/]	.61	-3
24. New orders, mach. and equip. indus.	-6	2.51	3	.88	-5
9. Constr. contracts, comm. and indus., floor area	-2	9.41	10	.94	+2
7. Private nonfarm housing starts	-6	7.91	8	.99	-3
*29. New building permits, private housing units	-6	2.54	3	.80	-5
4. Inventories and inventory investment					
<i>Inventory investment and purchasing</i>					
21. Change in business inventories, all indus., Q	-2	1.00	6 [/]	.46	0
*31. Change in book value, mfg. and trade inventories	-8	4.70	5	.98	-6
37. Purchased materials, % reptg. higher inventories	-4	1.85	3	.76	-3
20. Change in bk. val., mfrs.' inventories of mat. and supplies	-6	4.97	6	.96	-4
26. Buying policy, mater., % reptg. commitments 60+ days	-4	2.41	3	.77	-3
32. Vendor performance, % reptg. slower deliveries	-8	1.45	2	.95	-8
25. Change in unfilled orders, dur. goods indus.	-12	3.51	4	.98	-11
5. Prices, costs, and profits					
<i>Sensitive commodity price indexes</i>					
*23. Industrial materials prices	-2	1.41	2	.99	-2
<i>Stock price indexes</i>					
*19. Stock prices, 500 common stocks	-4	1.02	2	.57	-4
<i>Profits and profit margins</i>					
*16. Corporate profits after taxes, Q	-2	.72	3 [/]	.72	-1
22. Ratio, profits to income orig., corp., all indus., Q	-7	.92	3 [/]	.92	-6

Appendix E (Continued)

Classification and Series Title (1)	Median Lead(-) or Lag(+) at Peaks and Troughs, (Months) (2)	\bar{I}/\bar{C} (3)	MCD Span ^a (Months) (4)	\bar{I}/\bar{C} for MCD Span ^a (5)	Median Lead(-) or Lag(+) Adjusted for MCD Span ^b (Months) (6)
LEADING INDICATORS (CONCLUDED)					
18. Profits per dollar of sales, corporate, mfg., Q	-7	.95	3'	.95	-6
*17. Ratio, price to unit labor cost, mfg.	-3	1.92	3	.81	-2
6. Money and credit					
<i>Flows of money and credit</i>					
98. Change in money supply and time deposits ^c	-15	8.78	9	.98	-11
85. Change in money supply ^c	-14	10.88	11	.99	-9
110. Total private borrowing, Q	-8	.93	3'	.93	-7
*113. Change in consumer instalment debt	-10	2.56	3	.92	-9
112. Change in bank loans to businesses	-4	3.87	5	.95	-2
33. Change in mortgage debt	-8	4.87	5	.88	-6
<i>Credit difficulties</i>					
14. Liabilities of bus. failures (inv.)	-7	10.72	11	.97	-2
39. Delinquency rate, instal. loans, 30+ days (inv.)	-3	2.55	3	.80	-2
ROUGHLY COINCIDENT INDICATORS (25 SERIES)					
1. Employment and unemployment					
<i>Job vacancies</i>					
301. Nonagri. job openings, number pending, BES	0	.78	1	.78	0
46. Help-wanted advertising	0	.81	1	.81	0
<i>Comprehensive employment series</i>					
501. Man-hours in nonfarm establishments, employees	-1	1.23	2	.57	-1
*41. Employees in nonagri. establishments	0	.55	1	.55	0
42. Total nonagri. employment	-2	1.50	2	.80	-2
<i>Comprehensive unemployment series</i>					
*43. Unemployment rate, total (inv.)	0	1.39	2	.72	0
45. Insured unemployment rate (inv.)	0	.67	1	.67	0
40. Unemployment rate, married males (inv.)	-4	1.71	2	.91	-4
2. Production, income, consumption, and trade					
<i>Comprehensive production series</i>					
49. GNP in current dollars, expenditure estimate, Q	0	.25	3'	.25	+1
*50. GNP in constant dollars, expenditure estimate, Q	-2	.35	3'	.35	-1
*47. Industrial production	0	.71	1	.71	0
<i>Comprehensive income series</i>					
*52. Personal income	-1	.58	1	.58	-1
53. Labor income in mining, mfg., and constr.	0	.82	1	.82	0
<i>Comprehensive consumption and trade series</i>					
*816. Mfg. and trade sales	0	1.22	2	.62	0
57. Final sales in current dollars, Q	+3	.25	3'	.25	+4
*54. Sales of retail stores	0	1.67	2	.98	0
3. Fixed capital investment					
<i>Backlog of investment commitments</i>					
96. Mfrs.' unfilled orders, dur. goods indus.	-3	.42	1	.42	-3
97. Backlog of cap. appropriations, mfg., Q	+3	.19	3'	.19	+4

Appendix E (Continued)

Classification and Number of Series (1)	Median Lead(-) or Lag(+) at Peaks and Troughs, (Months) (2)	\bar{I}/\bar{C} (3)	MCD Span ^a (Months) (4)	\bar{I}/\bar{C} for MCD Span ^a (5)	Median Lead(-) or Lag(+) Adjusted for MCD Span ^b (Months) (6)
ROUGHLY COINCIDENT INDICATORS (CONCLUDED)					
5. Prices, costs, and profits					
<i>Comprehensive wholesale price indexes</i>					
55. Wholesale prices exc. farm products and foods	+1	.71	1	.71	+1
58. Wholesale price index, mfd. goods	0	.91	1	.91	0
6. Money and credit					
<i>Money market interest rates</i>					
114. Treasury bill rate	-1	1.12	2	.73	-1
116. Corporate bond yields	0	2.48	4	.93	+1
115. Treasury bond yields	0	1.41	2	.98	0
117. Municipal bond yields	+2	1.90	3	.87	+3
<i>Bank reserves</i>					
93. Free reserves (inv.) ^d	-1	1.68	3	.68	0
LAGGING INDICATORS (11 SERIES)					
1. Employment and unemployment					
<i>Long-duration unemployment</i>					
*502. Unempl. rate, persons unempl. 15+ weeks (inv.)	+2	1.22	2	.62	+2
3. Fixed capital investment					
<i>Investment expenditures</i>					
*61. Bus. expend., new plant and equip., Q	+1	.26	3'	.26	+2
505. Mach. and equip. sales and bus. constr. expend.	+2	1.43	2	.68	+2
4. Inventories and inventory investment					
<i>Inventories</i>					
*71. Book value, mfg. and trade inventories	+2	.41	1	.41	+2
65. Book value of mfrs.' inventories, finished goods	+5	.65	1	.65	+5
5. Prices, costs, and profits					
<i>Unit labor costs</i>					
68. Labor cost per dollar of real corp. GNP, Q ^e	+7	.62	3'	.62	+8
*62. Labor cost per unit of output, mfg. ^e	+8	1.28	2	.72	+8
6. Money and credit					
<i>Outstanding debt</i>					
66. Consumer instalment debt	+4	.14	1	.14	+4
*72. Comm. and indus. loans outstanding	+2	.27	1	.27	+2
<i>Interest rates on business loans and mortgages</i>					
*67. Bank rates on short-term bus. loans, Q ^e	+5	.54	3'	.54	+6
118. Mortgage yields, residential ^e	+4	.65	1	.65	+4

Appendix E (Concluded)

Classification and Number of Series (1)	Median Lead(-) or Lag(+) at Peaks and Troughs, (Months) (2)	\bar{I}/\bar{C} (3)	MCD Span ^a (Months) (4)	\bar{I}/\bar{C} for MCD Span ^a (5)	Median Lead(-) or Lag(+) Adjusted for MCD Span ^b (Months) (6)
GROUP SUMMARIES (MEDIAN)					
<i>Leading Indicators</i>	-6	2.41	3	.88	-4
Marginal employment adjustments (5)	-5	2.23	3	.77	-4
Formation of business enterprises (2)	-6	1.66	2	.72	-6
New investment commitments (8)	-6	2.81	4	.86	-4
Inventory investment and purchasing (7)	-6	2.41	4	.95	-4
Sensitive commodity price indexes (1)	-2	1.41	2	.99	-2
Stock price indexes (1)	-4	1.02	2	.57	-4
Profits and profit margins (4)	-5	.94	3	.86	-4
Flows of money and credit (6)	-9	4.37	5	.94	-8
Credit difficulties (2)	-5	6.64	7	.88	-2
<i>Roughly Coincident Indicators</i>	0	.82	2	.71	0
Job vacancies (2)	0	.80	1	.80	0
Comprehensive employment series (3)	-1	1.23	2	.57	-1
Comprehensive unemployment series (3)	0	1.39	2	.72	0
Comprehensive production series (3)	0	.35	3	.35	0
Comprehensive income series (2)	0	.70	1	.70	0
Comprehensive consumption and trade series (3)	0	1.22	2	.62	0
Backlog of investment commitments (2)	0	.30	2	.30	0
Comprehensive wholesale price indexes (2)	0	.81	1	.81	0
Money market interest rates (4)	0	1.66	2	.90	0
Bank reserves (1)	-1	1.68	3	.68	0
<i>Lagging indicators</i>	+4	.62	2	.62	+4
Long-duration unemployment (1)	+2	1.22	2	.62	+2
Investment expenditures (2)	+2	.84	2	.47	+2
Inventories (2)	+4	.53	1	.53	+4
Unit labor costs (2)	+8	.95	2	.67	+8
Outstanding debt (2)	+3	.20	1	.20	+3
Interest rates on business loans and mortgages (2)	+4	.60	2	.60	+5

Note: For periods covered by column 2, which vary from series to series, see Table 6. Period covered by columns 3 to 5 is 1953-65 in most instances.

^a The MCD span is the shortest-period moving average for which the average month-to-month change in the trend-cycle component is greater than that of the irregular component ($\bar{I}/\bar{C} < 1.00$) and remains so. For MCD spans of 6 months or less, the \bar{I}/\bar{C} ratio in column 5 is computed from the moving average with MCD span. For MCD spans greater than 6 months, the span and the corresponding \bar{I}/\bar{C} ratio are computed by choosing the minimum level of MCD which will, when divided into the \bar{I}/\bar{C} ratio for a one-month span (column 3), reduce the ratio to less than 1.00. The latter method generally yields a close estimate for MCD spans of 6 months or less as well. See *Business Cycle Indicators*, Vol. I, p. 537.

^b Median lead or lag plus one-half the MCD span, less 0.5 if the MCD span is odd or less 1.0 if the MCD span is even. This is an estimate of what the median lead or lag would be for a moving average of MCD span, after adjustment for loss of currency due to centering of the moving average (at the center of the span if the span is odd, or one-half month later if the span is even).

^c Also analyzed invertedly, in which case the series is classed as lagging.

^d Also analyzed positively, in which case the series is classed as lagging.

^e Also analyzed invertedly, in which case the series is classed as leading.

^f Quarterly span expressed in months.