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Volume Title: Business Cycles, Inflation, and Forecasting, 2nd ed.

Volume Author/Editor: Geoffrey H. Moore

Volume Publisher: UMI

Volume ISBN: 0-884-10285-8

Volume URL: <http://www.nber.org/books/moor83-1>

Publication Date: 1983

Chapter Title: Appendices

Chapter Author: Geoffrey H. Moore

Chapter URL: <http://www.nber.org/chapters/c0713>

Chapter pages in book: (p. 453 - 473)

Appendix A

Nov. 1927	Aug. 1929	1927: 4	1929: 3	1920	14	27	36	41
Mar. 1933	May 1937	1933: 1	1937: 2	1927 1929 1932 1937	13 43	21 50	40 64	34 93
June 1938	Feb. 1945	1938: 2	1945: 1	1938 1944	13	80	63	93
Oct. 1945	Nov. 1948	1945: 4	1948: 4	1946 1948	8	37	88	45
Oct. 1949	July 1953	1949: 4	1953: 2	1949 1953	11	45	48	56
May 1954	Aug. 1957	1954: 2	1957: 3	1954 1957	10	39	55	49
Apr. 1958	Apr. 1960	1958: 2	1960: 2	1958 1960	8	24	47	32
Feb. 1961	Dec. 1969	1961: 1	1969: 4	1961 1969	10	106	34	116
Nov. 1970	Nov. 1973	1970: 4	1973: 4	1970 1973	11	36	117	47
Mar. 1975	Jan. 1980	1975: 1	1980: 1	1975 1979	16	58	52	74
July 1980	July 1981	1980: 3	1981: 3	1980 1981	6	12	64	18
<i>Averages</i>								
5 cycles, 1834-1855					24 ^a	26 ^a	50 ^a	51 ^a
16 cycles, 1854-1919					22	27	48	48
6 cycles, 1919-1945					18	35	53	53
7 cycles, 1945-1981					10	45	60	55
34 cycles, 1834-1981					19	32	52	51

^a Based upon calendar year dates.

Note: For a basic statement of the method of determining business cycle peaks and troughs, see Arthur F. Burns and Wesley C. Mitchell, *Measuring Business Cycles* (New York: NBER, 1946) ch. 4. Some of the dates shown there (p. 78) have since been revised. For a description of how the method has been applied more recently, see Chapters 1 and 2 above and Victor Zarnowitz and Geoffrey H. Moore, "The 1973-1976 Recession and Recovery," *Explorations in Economic Research*, 4 (Fall 1977). For a related chronology covering the period 1790-1925, see Willard L. Thorp, *Business Annals* (New York: NBER, 1926).

Source: National Bureau of Economic Research.

Table A-2. Selected Measures of Duration, Depth, and Diffusion of Business Cycle Contractions
(from peak [first date] to trough [second date]).

	Jan. 1920	May 1923	Oct. 1926	Aug. 1929	May 1937	Feb. 1945	Nov. 1948
	July 1921	July 1924	Nov. 1927	Mar. 1933	June 1938	Oct. 1945	Oct. 1949
Duration (months)							
Business cycle (Table A-1)	18	14	13	43	13	8	11
GNP, current dollars	n.a.	6	12	42	9	6	12
GNP, constant dollars	n.a.	3	3	36	6	n.a.	6
Industrial production	14	14	8	36	12	27	15
Nonfarm employment	n.a.	n.a.	n.a.	43	11	22	13
Depth (percent) ^b							
GNP, current dollars	n.a.	-4.9	-3.0	-49.6	-16.2	-11.9	-3.4
GNP, constant dollars	n.a.	-4.1	-2.0	-32.6	-18.2	n.a.	-1.5
Industrial production	-32.4	-17.9	-7.0	-53.4	-32.4	-38.3	-10.1
Nonfarm employment	n.a.	n.a.	n.a.	-31.6	-10.8	-10.1	-5.2
Unemployment rate							
Maximum	11.9 ^c	5.5 ^c	4.4 ^c	24.9 ^c	20.0	4.3	7.9
Increase	+10.3	+2.6 ^c	+2.4 ^c	+21.7 ^c	+9.0	+3.4	+4.5
Diffusion (percent)							
Nonfarm industries, maximum percentage with declining employment, and date when maximum was reached ^d	97	94	71	100	97	n.a.	90
	Sept. 1920	Apr. 1924	Nov. 1927	June 1933	Dec. 1937		Feb. 1949

July 1953 Aug. 1957 Apr. 1960 Dec. 1969 Nov. 1973 Jan. 1980 July 1981
 May 1954 Apr. 1958 Feb. 1961 Nov. 1970 Mar. 1975 July 1980 Dec. 1982*

	July 1953	Aug. 1957	Apr. 1960	Dec. 1969	Nov. 1973	Jan. 1980	July 1980	July 1981
	May 1954	Apr. 1958	Feb. 1961	Nov. 1970	Mar. 1975	July 1980	Dec. 1982*	
Duration (months)								
Business cycle (Table A-1)	10	8	10	11	16	6	17	
GNP, current dollars	12	6	3	a	a	3	3	
GNP, constant dollars	12	6	9	6	15	3	6	
Industrial production	9	13	13	13	9	16	16	
Nonfarm employment	14	14	10	8	6	4	15	
Depth (percent) ^b								
GNP, current dollars	-1.9	-2.8	-0.6	a	a	-0.1	-0.3	
GNP, constant dollars	-3.2	-3.3	-1.2	-1.0	-4.9	-2.5	-2.6	
Industrial production	-9.4	-13.5	-8.6	-6.8	-15.3	-8.6	-12.3	
Nonfarm employment	-3.5	-4.3	-2.2	-1.5	-2.9	-1.4	-3.8	
Unemployment rate								
Maximum	6.1	7.5	7.1	6.1	9.0	7.8	10.8	
Increase	+3.6	+3.8	+2.1	+2.7	+4.4	+2.1	+3.6	
Diffusion (percent)								
Nonfarm industries, maximum								
percentage with declining								
employment, and date when								
maximum was reached ^d	87	88	80	80	88	77	79	
	Mar. 1954	Sept. 1957	Oct. 1960	May 1970	Jan. 1975	Apr. 1980	Aug. 1982	

n.a. = Not available. *Tentative.

^a No decline.

^b Percentage change from the peak month or quarter in the series to the trough month or quarter, over the intervals shown. For the unemployment rate the maximum figure is the highest for any month during the contraction, and the increases are from the lowest month to the highest, in percentage points.

^c The maximum figures are annual averages for 1921, 1924, 1928, and 1933 (monthly data not available). Increases, in percentage points, are for 1919-1921, 1923-1924, 1926-1928, and 1929-1933.

^d Since 1948 based on changes in employment over six month spans, centered on the fourth month of the span in 30 nonagricultural industries, 1948-1959; 172 industries, 1960-1971; 186 industries, 1972-1980. Prior to 1948 based on cyclical changes in employment in forty-one industries.

Sources: U.S. Department of Commerce, U.S. Department of Labor, Board of Governors of the Federal Reserve System, National Bureau of Economic Research. For a fuller version of this table, see Solomon Fabricant, "The Recession of 1969-1970," in *The Business Cycle Today*, V. Zarnowitz, ed. (New York: National Bureau of Economic Research, 1972), pp. 100-110.

Table A-3. Recession's Impact on Employment, Past and Future.

	Percentage Change in Number Employed, Recessions, 1948-1980 (1)	Relative Importance: Percentage of Total Employment Accounted for in				
		1959 (2)	1969 (3)	1979 (4)	1985 ^a (5)	1990 ^a (6)
Industries declining most in recessions						
Durable manufactures	-10.1	14	14	12	12	12
Construction	-4.5	5	5	6	6	6
Mining	-4.2	1	1	1	1	1
Nondurable manufactures	-4.0	11	10	8	8	7
Transportation, communication, public utilities	-3.7	6	5	5	5	5
Agriculture	-3.3	8	4	3	2	2
All of the above	-6.0	44	39	35	34	33
Industries declining least in recessions						
Wholesale and retail trade	-0.6	19	19	21	22	22
Personal and business services	+1.9	17	19	21	22	23
Finance, insurance, and real estate	+2.0	4	4	5	5	6
Government	+2.2	16	19	17	17	16
All of the above	+1.1	56	61	65	66	67
All industries: total employment	-2.4	100	100	100	100	100
Estimated decline in total employment, based upon						
1959 Industry Composition (col. 2)	-2.0					
1969 " " (col. 3)	-1.7					
1979 " " (col. 4)	-1.4					
1985 " " (col. 5)	-1.4					
1990 " " (col. 6)	-1.3					

Notes to Table A-3

Note: For an earlier version of this table see Chapter 10. The data used to compute recession changes (column 1) are from the establishment survey (jobs) except for agriculture, where the household survey (persons) is used. The data used for the distribution of employment (columns 2-6) are based on the jobs concept also, but differ from those used to measure recession changes largely because they include self-employed, unpaid family workers, and paid household employees. The total number of jobs represented in the distributions are: 1959, 70,512,000; 1969, 86,278,000; 1979, 104,120,000; 1985, 113,775,000; 1990, 121,971,000. See Valerie A. Personick, "The Outlook for Industry Output and Employment through 1990," *Monthly Labor Review* (August 1981).

^a Projected by the U. S. Bureau of Labor Statistics.

Source: Center for International Business Cycle Research, Rutgers University.

Table A-4. Growth Cycles in the United States, 1948-1978.

Peak (P)	Trough (T)	Duration, in Months, of		Interval, in Months, from Growth Cycle to Business Cycle	
		Downswing (P to T)	Upswing (T to P)	Peak	Trough
July 1948	October 1949	15	17	4	0
March 1951	July 1952	16	8	a	a
March 1953	August 1954	17	30	3	3 ^b
February 1957	April 1958	14	22	6	0
February 1960	February 1961	12	15	2	0
May 1962	October 1964	29	20	a	a
June 1966	October 1967	16	17	a	a
March 1969	November 1970	20	28	9	0
March 1973	March 1975	24	45	8	0
December 1978				13	
Average 1948-1978		18	22	6	0

^a No corresponding business cycle turn.

^b Growth cycle trough lags business cycle trough.

Source: National Bureau of Economic Research.

Table A-5. A Chronology of Peaks and Troughs in the Rate of Inflation.

Date of		Inflation Rate at		Change in Rate During		Duration of	
Peak (1)	Trough (2)	Peak (percent) (3)	Trough (percent) (4)	Downswung (percent) (5)	Upswing (percent) (6)	Downswung (months) (7)	Upswing (months) (8)
November 1946		23.2					
July 1949		-3.1		-26.3		32	
February 1951		12.8			15.9		19
March 1953		0.2		-12.6		25	
October 1953		1.7			1.5		7
October 1954		-1.2		-2.9		12	
August 1957		3.7			4.9		34
March 1959		0.2		-3.5		19	
October 1959		1.9			1.7		7
October 1966		4.0		-1.3		20	
February 1970		6.3		-1.9		7	
September 1974		12.4		-3.4		28	
June 1976		4.9		-7.5		21	
March 1980		15.2			10.3		45
Average: 1946-1980		9.0		-7.4		20	
			0.8		6.4		30

Note: The chronology is based on the rate of change in the seasonally adjusted consumer price index for all urban consumers. It is a six-month smoothed rate of change, computed by dividing the current month's index by the average for the preceding twelve months, adjusted to a compound annual rate, and dated in the current month. For some purposes it is useful to center the dates in the middle of the span covered by the rate, in which case the dates would be three months earlier than shown here.

Source: Center for International Business Cycle Research, Rutgers University.

Table A-6. Relationship between the Growth Cycle and the Inflation Cycle.

Growth Cycle		Inflation Rate (CPI) ^b		Lead (-) or Lag (+) in Months of Inflation Rate at Growth Cycle	
Peak (1)	Trough (2)	Peak (3)	Trough (4)	Peak (5)	Trough (6)
July 1948		November 1946		-20	
March 1951	October 1949	February 1951	July 1949	-1	-3
March 1953	July 1952	October 1953	March 1953	+7	+8
February 1957	August 1954	August 1957	October 1954	+6	+2
February 1960	April 1958	October 1959	March 1959	-4	+11
May 1962	February 1961		June 1961	a	+4
June 1966	October 1964	a	a	a	a
March 1969	October 1967	October 1966	May 1967	+4	-5
March 1973	November 1970	February 1970	June 1972	+11	+19
December 1978	March 1975	September 1974	June 1976	+18	+15
		March 1980		+15	
Average lead (-) or lag (+), in months				+4	+6

^a No corresponding inflation cycle turn.

^b Change over six-month span, smoothed, seasonally adjusted compound annual rate.
Source: Tables A-4 and A-5.

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Appendix B

MEASURING RECESSIONS AND RECOVERIES

The diagrams in Figures 6-5 and 16-5 illustrate a method of comparing a current recession, month-by-month as it develops, with the average pattern of previous recessions. The average serves as a guide to what it is reasonable to expect of different economic variables as a recession develops. One can tell at a glance whether the decline is larger or smaller than average, or what is unusual about the current situation. The diagrams may also be used to evaluate forecasts or to make simple projections based upon past experience.

A computer program for recession-recovery patterns is described in Gerhard Bry and Charlotte Boschan in Chapter 4 of *Cyclical Analysis of Time Series: Selected Procedures and Computer Programs*, Technical Paper 20 (New York: National Bureau of Economic Research, 1971).

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