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Appendix A

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

^aNo decline.

^bPercentage 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.

^cThe 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.

^dSince 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, Average of Seven 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				4	0
March 1951	October 1949	15	17	a	a
March 1953	July 1952	16	8	3	3 ^b
February 1957	August 1954	17	30	6	0
February 1960	April 1958	14	22	2	0
May 1962	February 1961	12	15	a	a
June 1966	October 1964	29	20	a	a
March 1969	October 1967	16	17	9	0
March 1973	November 1970	20	28	8	0
December 1978	March 1975	24	45	13	0
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.

Peak (1)	Date of Trough (2)	Inflation Rate at		Change in Rate During		Duration of	
		Peak (percent) (3)	Trough (percent) (4)	Downswung (percent) (5)	Upswing (percent) (6)	Downswung (months) (7)	Upswing (months) (8)
November 1946		23.2					
February 1951	July 1949	12.8	-3.1	-26.3	15.9	32	19
October 1953	March 1953	1.7	0.2	-12.6	1.5	25	7
August 1957	October 1954	3.7	-1.2	-2.9	4.9	12	34
October 1959	March 1959	1.9	0.2	-3.5	1.7	19	7
October 1966	June 1961	4.0	0.6	-1.3	3.4	20	64
February 1970	May 1967	6.3	2.1	-1.9	4.2	7	33
September 1974	June 1972	12.4	2.9	-3.4	9.5	28	27
March 1980	June 1976	15.2	4.9	-7.5	10.3	21	45
Average: 1946-1980		9.0	0.8	-7.4	6.4	20	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	^a	June 1961	^a	+4
June 1966	October 1964	October 1966	^a	+4	^a
March 1969	October 1967	February 1970	May 1967	+11	-5
March 1973	November 1970	September 1974	June 1972	+18	+19
December 1978	March 1975	March 1980	June 1976	+15	+15
Average lead (-) or lag (+), in months				+4	+6

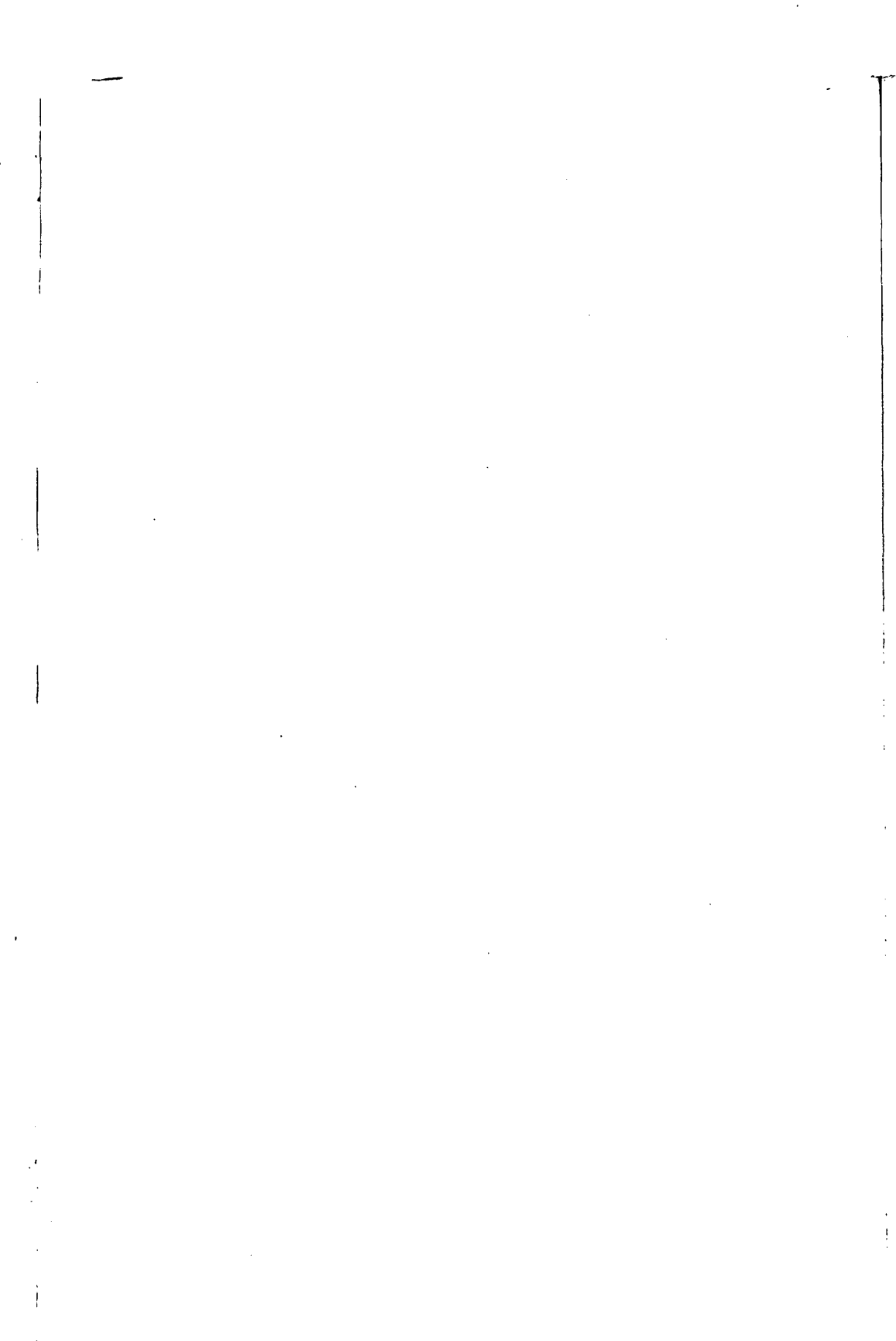
^aNo corresponding inflation cycle turn.^bChange over six-month span, smoothed, seasonally adjusted compound annual rate.
Source: Tables A-4 and A-5.

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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