Chapter Title: Measuring Recessions

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CHAPTER 5

Measuring Recessions

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Introduction and Summary

THE purpose of this report is to provide a set of measurements of past business cycle recessions with which any current recession can be compared. The contractions in business activity that the American economy has experienced from time to time have, of course, varied widely in severity. Yet even severe depressions have often begun gradually. How soon can a severe decline be detected? How do the relative declines in the various available measures of economic activity compare with one another as a contraction develops? How can one determine whether a contraction that is currently under way is already or is going to be smaller or larger than those that have occurred in the past? How can one judge when it is about to end? The measurements presented here suggest possible ways of providing answers to questions such as these. Although

TABLE 5.1

The Duration of Business Cycle Expansions and Contractions
in the United States, 1854–1957

Business Cycle			Duration of	
			Expansion	Contraction
Trough	Peak	Trough	(months)	
Dec. 1854	June 1857	Dec. 1858	30	18
Dec. 1858	Oct. 1860	June 1861	22	8
June 1861	Apr. 1865	Dec. 1867	46	32
Dec. 1867	June 1869	Dec. 1870	18	18
Dec. 1870	Oct. 1873	Mar. 1879	34	65
Mar. 1879	Mar. 1882	May 1885	36	38
May 1885	Mar. 1887	Apr. 1888	22	13
Apr. 1888	July 1890	May 1891	27	10
May 1891	Jan. 1893	June 1894	20	17
June 1894	Dec. 1895	June 1897	18	18
June 1897	June 1899	Dec. 1900	24	18
Dec. 1900	Sep. 1902	Aug. 1904	21	23
Aug. 1904	May 1907	June 1908	33	13
June 1908	Jan. 1910	Jan. 1912	19	24
Jan. 1912	Jan. 1913	Dec. 1914	12	23
Dec. 1914	Aug. 1918	Mar. 1919*	44	7
Mar. 1919*	Jan. 1920	July 1921*	10	18
July 1921*	May 1923	July 1924	22	14
July 1924	Oct. 1926	Nov. 1927*	27	13
Nov. 1927*	Aug. 1929*	Mar. 1933	21	43
Mar. 1933	May 1937	June 1938*	50	13
June 1938*	Feb. 1945	Oct. 1945	80	8
Oct. 1945	Nov. 1948	Oct. 1949	37	11
Oct. 1949	July 1953	Aug. 1954	45	13
Aug. 1954	July 1957		35	
Average, 24 cycles, 1854–1954			29.9	19.9

SOURCE: For an explanation of the method used to determine the business cycle peak
and trough dates and some tests of their validity, see Arthur F. Burns and Wesley C.
Mitchell, *Measuring Business Cycles* (New York, NBER, 1946), Chapter 4. A few of these
dates (designated by an asterisk) have been revised since the Burns-Mitchell report,
and the list has been carried forward to date.

* Revised.

the body of the report deals with measurements for recessions that have
already run their full course, we shall, at the end, show how the method
has worked out from month to month during the recession that began
in 1957.

First, let us glance at the historical record of twenty-four business
contractions given in Tables 5.1 and 5.2. The peak dates are the months
when expansion of aggregate economic activity culminated and con-
traction began, as judged from a variety of statistical records; the trough
dates specify when contraction culminated and expansion began. The
measures of duration show that five of the eight contractions since 1920

TABLE 5.2

Measures of the Duration and Amplitude of Business Cycle Contractions in the United States, 1920–54

Business Cycle		Mos. from Peak to Trough	Unemployment Rate, Annual (per cent)			Unemployment Rate, Monthly (per cent)			Nonagricultural Employment	Industrial Production	Gross National Product	Personal Income	Bank Debits Outside NYC	Retail Sales
Peak	Trough		At Peak[a]	At Trough[a]	Change in Rate[a]	At Peak[b]	At Trough[b]	Change in Rate[b]	(percentage change from peak to trough[b])					
1. CONTRACTIONS IN CHRONOLOGICAL ORDER														
Jan. 1920	July 1921	18	4.0	11.9	+7.9	—	—	—	—	−29.0	—	—	−22.5	−4.2
May 1923	July 1924	14	3.2	5.5	+2.3	—	—	—	—	−16.3	−2.3[c]	+0.1[e]	−3.1	−1.7
Oct. 1926	Nov. 1927	13	1.9	4.1	+2.2	—	—	—	—	−5.7	+0.3[c]	+0.8[c]	+8.7	0
Aug. 1929	Mar. 1933	43	3.2	23.6	+20.4	0.58	24.96	+24.4	−30.7	−50.1	−49.6[c]	−49.8	−61.9	−43.3
May 1937	June 1938	13	14.3	19.0	+4.7	11.53	19.77	+8.2	−10.0	−31.5	−11.9[e]	−11.2	−16.5	−14.1
Feb. 1945	Oct. 1945	8	1.2	3.9	+2.7	1.10	3.42	+2.3	−7.9	−29.4	−10.9[e]	−4.1	−1.0	+8.7
Nov. 1948	Oct. 1949	11	3.4	5.5	+2.1	3.96	6.99	+3.0	−4.1	−7.7	−3.2[c]	−3.7	−5.3	−0.3
July 1953	Aug. 1954	13	2.5	5.0	+2.5	2.63	5.93	+3.3	−3.4	−9.5	−2.0[c]	−0.2	+0.2	−0.8
July 1957						4.23								
2. CONTRACTIONS IN ORDER OF SEVERITY (EXCL. FEBRUARY–OCTOBER 1945)														
Oct. 1926	Nov. 1927	13	1.9	4.1	+2.2	2.63	5.93	+3.3	−3.4	−5.7	+0.3	+0.8	+8.7	0
July 1953	Aug. 1954	13	2.5	5.0	+2.5	3.96	6.99	+3.0	−4.1	−9.5	−2.0	−0.2	+0.2	−0.8
Nov. 1948	Oct. 1949	11	3.4	5.5	+2.1	—	—	—	—	−7.7	−3.2	−3.7	−5.3	−0.3
May 1923	July 1924	14	3.2	5.5	+2.3	—	—	—	—	−16.3	−2.3	−3.1	−1.7
Jan. 1920	July 1921	18	4.0	11.9	+7.9	—	—	—	—	−29.0	—	—	−22.5	−4.2
May 1937	June 1938	13	14.3	19.0	+4.7	11.53	19.77	+8.2	−10.0	−31.5	−11.9	−11.2	−16.5	−14.1
Aug. 1929	Mar. 1933	43	3.2	23.6	+20.4	0.58	24.96	+24.4	−30.7	−50.1	−49.6	−49.8	−61.9	−43.3

have lasted roughly a year (11 to 14 months). One was somewhat shorter (8 months), one somewhat longer (18 months), and one very much longer (43 months). Before 1920, contractions frequently lasted more than a year—indeed, ten out of sixteen between 1857 and 1919 lasted eighteen months or more. The reasons for the apparent reduction in the typical length of contraction are not fully known, and we do not know whether it can be counted on as a permanent shift.[1] The intervening intervals of expansion have typically been substantially longer than the contractions, many of them lasting two or three years. This has been just as true since 1920 as it was before.

The durations of the expansions and the contractions are not sufficiently uniform or regular to give one more than a very rough notion about how long an expansion or contraction might be expected to last when it has just begun. After a year or so has elapsed, however, it may be of some help to know how frequently or infrequently phases of given lengths occur. Thus at the end of 1956 one could say this about the expansion that had begun in August 1954:

"If the current expansion were to continue through all of 1957, it will have lasted forty months. In the National Bureau's business cycle chronology covering the past 100 years there are only five expansions (out of twenty-four) that lasted as long as forty months: June 1861–April 1865, forty-six months; December 1914–August 1918, forty-four; March 1933–May 1937, fifty; June 1938–February 1945, eighty; and October 1949–July 1953, forty-five. Four of these expansions encompassed major wars, and one was the recovery from the Great Depression. Clearly, if the present expansion extends through 1957 without a setback it will establish a new precedent."[2] This bit of information in itself, of course, was not enough to forecast a recession, but it could usefully be considered together with other more direct and more important evidence. It now appears that the expansion came to an end in July 1957, that is, after thirty-five months (see below).

Table 5.2 shows the size of the declines between the business cycle peak and trough dates since 1920, as registered by several widely used measures of business activity. Clearly, a contraction that appears more severe than another by one measure may appear less severe by another measure. The 1953–54 contraction was somewhat greater than 1948–49 when measured in terms of the percentage decline in industrial production or the increase in the unemployment rate, but somewhat less than 1948–49 when measured by the percentage decline in gross national product or

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[1] For some observations suggesting that the durations of business contractions (and expansions) may be subject to long swings associated with the construction cycle and related developments, see the report by Moses Abramovitz in *Thirty-eighth Annual Report of the National Bureau of Economic Research* (May 1958).

[2] *Thirty-seventh Annual Report of the National Bureau of Economic Research*, May 1957, p. 53.

in nonagricultural employment.[3] Nevertheless, one can construct at least a rough ranking of the contractions according to severity.

At the top of the list of recent contractions, obviously, is the contraction that began in 1929—the longest and deepest. The only other that comes close to it in the National Bureau's hundred-year chronology is the contraction of 1873 to 1879. Next most severe among those since 1920 are the contractions of 1920–21 and 1937–38. Both were very sharp and fairly short, but that of 1937–38 began when unemployment was still at a very high level, much higher than in 1920. The contraction of 1923–24 was of moderate amplitude, not unlike that of 1948–49. The most recent contraction, 1953–54, was in most respects of slightly lesser magnitude than the contraction of 1948–49, yet greater than that of 1926–27, and certainly more widely recognized. There remains the brief contraction after World War II, February–October 1945, which marked the transition from a wartime to a peacetime economy, and which is the most difficult of all to characterize because different measures yield such different results. However, in terms of its impact upon the well-being of the population it must surely be classed among the more modest of those in our list.[4]

In order to have a definite scale we shall use the following ranking of contractions according to severity, excluding the 1945 episode because of its special character. The ranking is based partly on the information in Table 5.2 (see second section of table) and partly on other information bearing on the depth of these contractions (see note 3 below).

Contraction		Rank
Oct. 1926	Nov. 1927	1 (mildest)
July 1953	Aug. 1954	2
Nov. 1948	Oct. 1949	3
May 1923	July 1924	4
Jan. 1920	July 1921	5
May 1937	June 1938	6
Aug. 1929	Mar. 1933	7 (most severe)

[3] Note that the table measures the percentage declines between business cycle peak and trough dates. Somewhat different results would be obtained if the declines were measured from the specific peak in each indicator to its trough. The latter method has some advantages for the purpose of measuring the amplitude of business cycles, and some disadvantages. In practice we have used both methods.

[4] Another period that might be considered a cyclical contraction is 1951–52. Many sectors of the economy suffered setbacks at this time, after the rapid upsurge in 1950 when the Korean War began. Nevertheless, although the rate of growth of aggregate economic activity slackened perceptibly there was no appreciable over-all decline in output, income, or employment, and no rise in unemployment, since the defense industries kept expanding rapidly. Therefore we do not consider it to be a business cycle contraction. For an analytic description of this period see Bert G. Hickman, *The Korean War and United States Economic Activity, 1950–1952*, (Occasional Paper 49, New York, NBER, 1955). For the definition of business cycles followed in our work, and a discussion of its historical application, see Burns and Mitchell, *Measuring Business Cycles*, Chapters 1 and 4.

We can then construct, for each of these contractions, measures that show by how much business activity declined from the peak as the contraction continued, and compare such measures with the above ranking. Such measures should tell us at about what stage—that is, how many months after the contraction began—the relative severity of each recession became evident, and how it manifested itself in different aspects of economic activity, such as production, employment, incomes, prices. Similar measures constructed during the course of a current contraction can then be used to appraise its severity and its scope compared with earlier contractions.

One of the prerequisites for such an analysis is that the current contraction is known or is believed to have begun, so that the date from which it starts, i.e. the peak of the business cycle, can be fixed. Of course, such a date may be selected tentatively, when a contraction is only suspected. If the assumption turns out to be an error, the error need not long persist. Experience suggests that the date of the peak can be determined with reasonable accuracy fairly soon after it occurs.[5]

Study of materials developed along these lines and presented later in the report suggests the following tentative conclusions:

1. When a business recession begins, most broad indicators of aggregate economic activity (production, employment, income, trade) show relatively slight declines, and during the first six months of the recession the magnitude of the declines bears little relation to the ultimate severity or depth of the recession.

2. About six months after a recession begins, the percentage declines from the peak month to the current month in most economic aggregates are smaller in mild recessions than in severe recessions, and this ranking is maintained in succeeding months with little change.

3. When such comparisons are made for types of economic data that typically begin declining before a recession starts (for example, new orders, construction contracts, the average workweek, stock prices) the distinction between mild and severe recessions begins to appear as early as three or four months after the recession begins, and is also substantially maintained in succeeding months.

4. Although frequently both mild and sharp business contractions have ended within about a year, the recovery to the previous peak level has been accomplished much more quickly after mild contractions. Hence the period of depressed activity has been much longer when the contraction proceeded at a rapid rate.

5. While the above conclusions suggest that a rough ordering of recessions according to severity can be made within four to six months

[5] For a description of some methods of accomplishing this, see other chapters in this volume, especially Chapters 2 and 7.

after the onset, they do not imply that either the ultimate depth or the duration of recessions can be reliably forecast by this means. Many factors not taken into account by the method, such as governmental measures taken to combat depression, have an important bearing on the severity and duration of business contractions. The method appears useful primarily in providing a yardstick against which a current decline in various aspects of economic activity can be gauged, and thereby facilitating a more accurate and enlightened appraisal of what has already taken place. This in itself might facilitate the development of appropriate countercyclical programs.

6. Measures of the strength of various countercyclical factors (for example, unemployment compensation payments, increased governmental expenditures, easier credit terms, lower taxes) at similar stages of recession might be developed on the same plan as described here, although it is not attempted in this study. Such measures might be of assistance in judging the prospects for further business contraction or for a resumption of economic expansion.

7. Several months before a recession comes to an end and an upturn in aggregate activity occurs, a progressive narrowing of the scope of contraction ordinarily becomes visible. Fewer activities continue to decline, more begin to rise. It appears first in series of the "leading" type. The more extensive and more sustained this reduction in the scope of the contraction is, the more likely that it marks the real end of recession rather than an abortive recovery. Information of this sort may help to identify an upturn in aggregate activity at about the time it occurs or shortly thereafter.

8. When the methods developed in this investigation are applied to the business contraction that began in July 1957, we find that:

    a. After eight months of contraction, i.e. through March 1958, most indicators have declined more than in the corresponding periods of the four milder contractions since 1920 (1923–24, 1926–27, 1948–49, 1953–54) and less than in the three more severe contractions (1920–21, 1929–30, 1937–38).

    b. The intermediate position of the 1957–58 contraction first became apparent in data for the leading indicators for November 1957, i.e. four months after the peak of July 1957. It was confirmed by most indicators of aggregate economic activity when data for February 1958 became available.

    c. In contractions of the severity indicated for the 1957–58 contraction, it would be in line with previous experience if the level of economic activity generally remained below the previous peak level (July 1957) for a period ranging from a year and a half to two and a half years.

    d. One of the outstanding features of the first eight months of the 1957–58 contraction has been the relatively modest decline in personal income. The rise in consumers' prices has been less unusual, since increases occurred during the first eight months of four of the seven business contractions since 1920.

    9. The tentative findings reported above need to be tested further.[6] The method could usefully be tested on declines that did not reach business cycle proportions. Comparisons based on a different method of dating downturns—e.g. dating the downturn from the peak in the specific series being compared—should be made, and other ways of measuring the severity of recessions should be explored. The empirical results should be examined in the light of the hypotheses that have been advanced to account for variations in the severity of business cycle contractions. Work along these lines will be facilitated now because electronic computer programs are available to handle the computations.

Changes in Aggregate Economic Activity During the First Year of Recession

    Table 5.3 shows how a comparison of developments during the first year of mild and severe business contractions works out for one widely used economic indicator, the Federal Reserve index of industrial production. Percentage changes are computed from the peak standing (a three-month average that includes the business cycle peak month, the month preceding and the month following) to one month after the peak, two months after the peak, and so on up to twelve months after the peak. The table covers the seven business cycle contractions since 1920 (excepting the contraction that followed World War II). Note that the peak dates are not necessarily those at which the production index reached its peak, but rather when business activity at large did so. Usually the peak in the

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    [6] Two important contributions have already been made. Julius Shiskin has constructed and analyzed an extensive set of measures of the scope, magnitude, and rate of change in the separate industry components of various economic aggregates such as employment, production, and new orders. He has compared the current contraction with those beginning in 1953, 1948, 1937, and 1929 on a plan similar to that used here, and also on a plan that uses the "specific cycle peak" dates in each aggregate as the point from which to start the comparison. This work has been carried on at the Bureau of the Census for the Council of Economic Advisers (see Chapter 18).

    Pao Lun Cheng, Michigan State University, in a paper on "Statistical Indicators and Cyclical Amplitudes," presented at the annual meeting of the Midwest Economics Association, Des Moines, Iowa, on April 19, 1958, explores the relations between the severity of business cycle contractions and the rates of change in indicators prior to and during the contractions. Part of this work is along lines very similar to those followed here, and yields similar conclusions. In addition, however, Dr. Cheng tests a number of interesting hypotheses that go well beyond our own work. See also "Rates of Change and Cyclical Magnitude," by Pao Lun Cheng and Leonard H. Lempert, in *Proceedings of the Business and Economic Statistics Section, American Statistical Association*, December 1958, pp. 142–149.

TABLE 5.3

Percentage Changes in Industrial Production During
Seven Business Cycle Contractions

	Business Cycle Peak						
Months after Peak	Oct. 1926	July 1953	Nov. 1948	May 1923	Jan. 1920	May 1937	Aug. 1929
	STANDING AT PEAK (1947–49: 100)[a]						
	52.7	136.3	103.7	49.0	42.7	64.7	60.7
	PERCENTAGE CHANGE FROM PEAK						
1	−1.3	−0.2	−1.6	0	+3.1	−1.0	−1.1
2	−1.3	−2.4	−2.6	−2.0	+0.8	+0.5	−2.7
3	−1.3	−3.2	−4.5	−2.0	−3.9	−1.0	−7.7
4	−1.3	−5.4	−6.4	−4.1	−1.6	−4.1	−11.0
5	+0.6	−7.6	−7.4	−6.1	−1.6	−11.9	−11.0
6	−1.3	−8.3	−8.4	−6.1	−3.9	−19.6	−11.0
7	−1.3	−8.3	−8.4	−8.2	−3.9	−27.3	−12.6
8	−1.3	−9.8	−9.3	−6.1	−6.2	−28.9	−12.6
9	−3.2	−9.8	−7.4	−4.1	−8.6	−30.4	−15.9
10	−3.2	−8.3	−6.4	−6.1	−18.0	−30.4	−17.6
11	−5.1	−9.0	−9.3	−8.2	−22.7	−32.0	−20.9
12	−5.1	−9.8	−7.4	−12.2	−27.3	−33.5	−24.2
	RANK OF PERCENTAGE CHANGE[b]						
1	6	3	7	2	1	4	5
2	3	5	6	4	1	2	7
3	2	4	6	3	5	1	7
4	1	5	6	3	2	4	7
5	1	5	4	3	2	7	6
6	1	4	5	3	2	7	6
7	1	4	5	3	2	7	6
8	1	5	4	2	3	7	6
9	1	5	3	2	4	7	6
10	1	4	3	2	6	7	5
11	1	3	4	2	6	7	5
12	1	3	2	4	6	7	5

SOURCE: Board of Governors of the Federal Reserve System. Index is adjusted for seasonal variations. The seven business cycle contractions are arrayed from left to right according to their over-all severity (see text).

[a] Three-month average, centered on the peak month.

[b] A rank of 1 is given to the smallest decline (or largest rise) among the seven contractions, a rank of 7 to the largest decline, etc.

production index has not differed by more than a month or two from the business cycle peak.[7] Use of the business cycle peak enables us to examine a wide variety of series on a comparable basis (see below).

[7] At one of the peaks the difference was five months; at one, two months; at three, one month; and at two there was no difference. In the current recession the difference is somewhat greater than usual. The peak in the production index, according to revised figures published in March 1958, was reached in December 1956 or February 1957 (146 in both months), seven or five months before the business cycle peak in July 1957. Before revision, the index showed December 1956 one point higher than February. The revised index declines to 144 in April and May, rises to 145 in June, July, and August, and then declines.

Table 5.3 makes it clear that changes in the volume of industrial output in the first month or two of a business recession are typically slight. Declines of less than 3 per cent are the rule. Moreover, the relative severity of the decline manifests itself only irregularly during the first six months or so after the contraction begins. The mild recessions of 1948 and 1953 began with a relatively sharp decline in industrial production, although after five months the declines were not as great as in the major contractions of 1929 and 1937. It is important to realize that in the first few months of what turns out to be a mild recession the decline in output may be as sharp or sharper than in a severe contraction. Furthermore, a severe contraction like that of 1920–21 can start out with only a moderate decline in production. The ultimate severity of the 1929 contraction in comparison with the 1921 or the 1937 contraction was not evident in terms of the magnitude of the decline in industrial output even after twelve months had elapsed. Nevertheless, these measurements do permit at least a rough classification of contractions according to severity after about six months, and the validity of the classification improves as the span increases. It can be made more dependable by reference to other data, as we shall see.

In reading Table 5.3 and similar tables it is important to recall that all economic series are subject to erratic movements due to such factors as strikes, international incidents, unusual weather, flu epidemics, and the like. These have less influence on broad aggregates, such as the index of production, than on data for narrow sectors, as a rule. Nevertheless, each monthly figure should be scrutinized in relation to the evidence provided by adjacent months, as well as other information. A graphic record, following a plan suggested by J. Shiskin (Chart 5.1), will help. Sometimes, too, absolute levels should be considered, as well as the change from the peak level. That is why, for example, the unemployment rate is shown in Chart 5.1 as an absolute rate, rather than simply in terms of the change in the rate.

Another factor that should be taken into account is the possible error in our dates for the business cycle peaks. For example, recently we revised the 1929 date, shifting it from June to August. July is a close competitor with August in this choice, but both appear definitely superior to June in terms of the data now available. The peak in January 1920 may be too early by a month or two. A similar difficulty exists in the choice between July and August 1957 (see text below). The use of a three-month average centered on the peak month tends to reduce the effect of such uncertainties on our measures of changes. But their more important effect is on the number of months a decline has been under way by a given date. If the peak is dated two months early, the fifth month after the erroneous peak is actually only the third month after the true peak. The relative effects

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CHART 5.1

Relative Changes after Business Cycle Peaks, Selected Series

----- Aug. 1929-Aug. 1930   ----- Nov. 1948-Nov. 1949
·········· May 1937-May 1938   ·········· July 1953-July 1954
——— July 1957-   ——— July 1957-

Nonagricultural employment

Unemployment rate (see notes)

Data for 1929 and 1937
not comparable
with current data

Gross national product (Q)

Peak   Months after peak   Peak   Months after peak
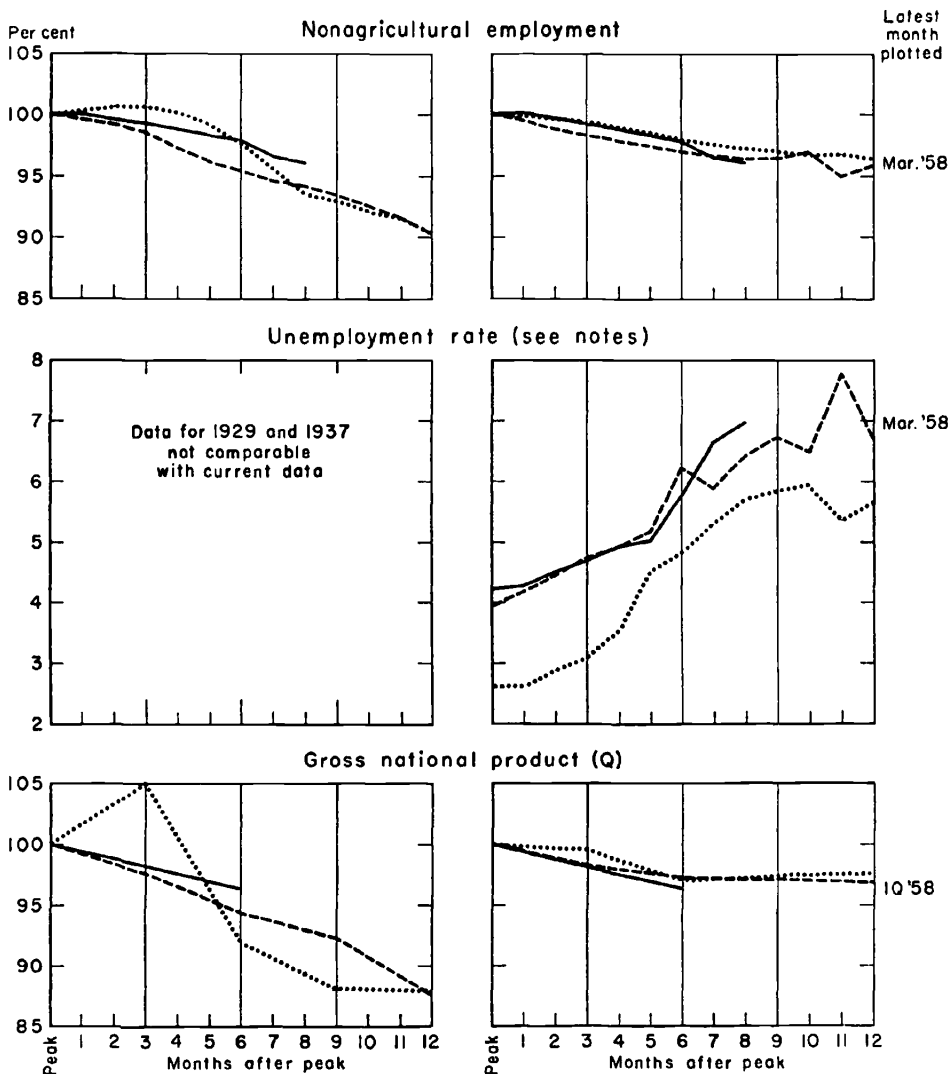
All series except the unemployment rate are converted to indexes, using the three-month average centered on the business cycle peak months or quarters as the base (=100). The peak months (quarters) are: August (III) 1929, May (II) 1937, November (IV) 1948, July (II) 1953, and July (III) 1957.

All series except industrial stock prices and wholesale prices are adjusted for seasonal variations.

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CHART 5.I (continued)

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------ Aug. 1929-Aug 1930          ------ Nov. 1948-Nov.1949
·········· May 1937-May 1938       ·········· July 1953-July 1954
——— July 1957-                     ——— July 1957
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Industrial production

Per cent

Latest month plotted

Mar.'58

Personal income

Mar. '58

Retail sales

Mar. '58

Peak   Months after peak   Peak   Months after peak

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CHART 5.1 (continued)

- - - - - Aug. 1929 - Aug. 1930   - - - - - Nov. 1948 - Nov. 1949
.... May 1937 - May 1938   .... July 1953 - July 1954
———— July 1957 -   ———— July 1957 -

Per cent — **Wholesale price index ex. farm products and foods** — Latest month plotted

Apr. '58

Average workweek, mfg.

Mar. '58

New orders, durable goods

Months after peak

Peak

Mar. '58

132
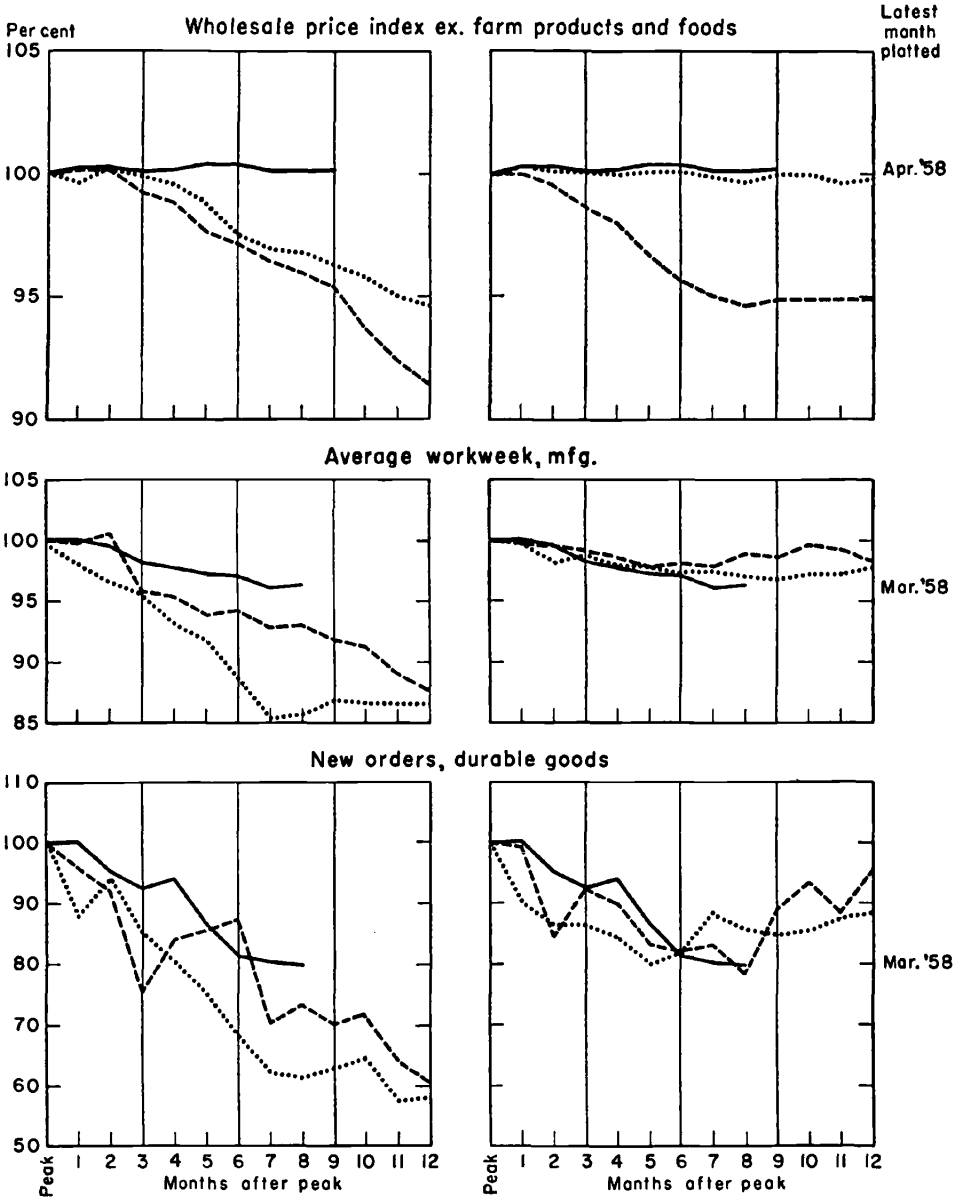
CHART 5.I (concluded)

Aug. 1929-Aug. 1930   Nov. 1948-Nov. 1949

May 1937-May 1938   July 1953-July 1954

July 1957-   July 1957-

Residential construction contracts, fl. sp.
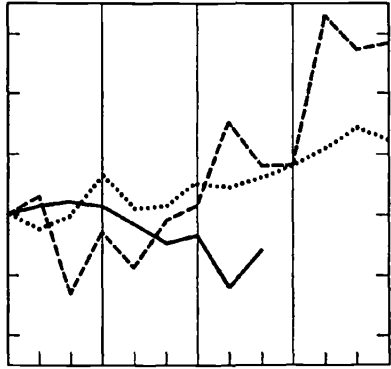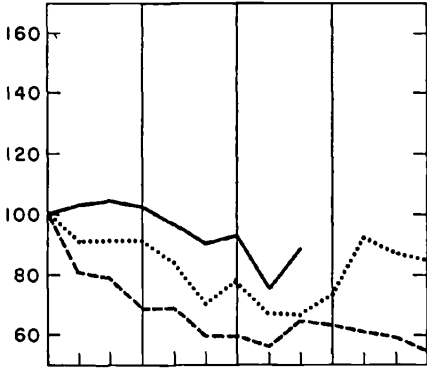
Commercial and industrial construction contracts, fl. sp.

Industrial stock prices

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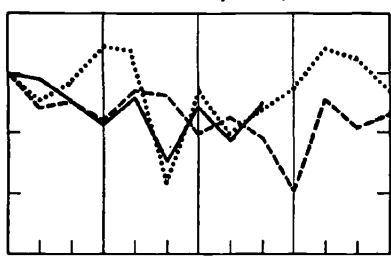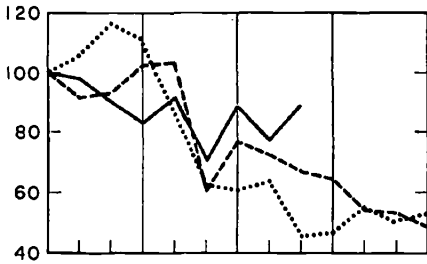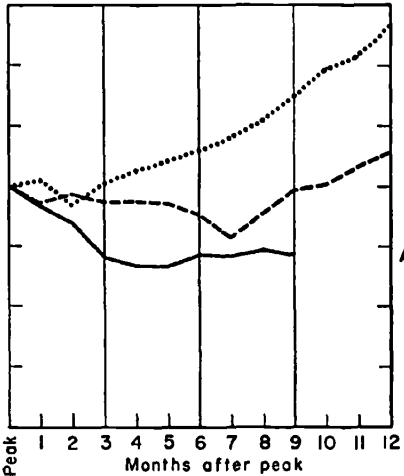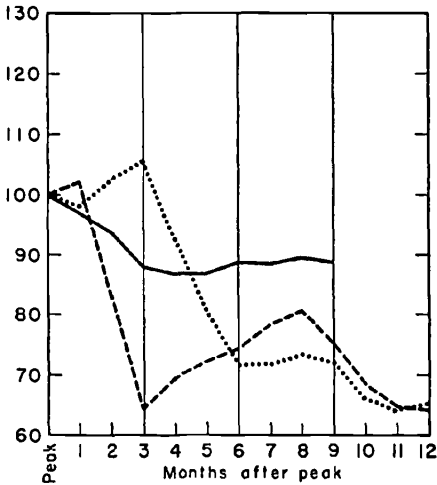
of such errors, however, tend to diminish as the interval from the peak lengthens (see note 14, below).

Tables similar to Table 5.3 have been compiled for a number of other important aggregative measures of economic activity, and are reproduced in Appendix C. Here we shall consider only the rankings of the percentage changes (Table 5.4). Since these series figure significantly in our determination of business cycle turning dates, usually their peaks and that of the business cycle closely coincide. At any given turn, however, some may continue to rise for a few months, as the table indicates. On the other hand, some may have begun to decline before the designated peak month, so that in these cases the ranking is based on only that part of the decline that took place after the business cycle peak.

On the whole, Table 5.4 confirms the showing of Table 5.3. The initial changes in measures of the general level of economic activity may be quite misleading if regarded as an indication of the severity or mildness of the impending decline. It is not until some six months after the peak that the ultimate severity of the contraction, in relative terms, is reflected even moderately well in most of these series.[8]

It appears that some series are less reliable at a given interval after the peak than others (Table 5.5). Railroad freight carloadings, retail sales, and the wholesale price index (excluding farm products and foods) show relatively low correlations. In the case of carloadings, the long-run decline in the relative share of the railroads in freight traffic due to the competition of other carriers has tended to increase the severity of the recent declines. For example, in 1920–21 the decline in carloadings was only a third as large as the decline in industrial production during the first eight months; in 1929–30 during the same period the drop in carloadings was two-thirds as great as in industrial production; in 1953–54 the decline in carloadings was one and a half times that in production; in 1957–58, carloadings fell 18 per cent during the first eight months, which again is about one and a half times the drop in industrial production.

The failure of retail sales to correlate well with the severity of business contractions may be due to lack of comparability of the data for earlier cycles. The figures for 1929–30 and earlier recessions are limited to department stores, whereas the later figures cover all types of retail store.

[8] The .05 significance level for a Spearman rank correlation coefficient based on seven observations, as most of the coefficients in Table 5.4 are, is .71 (Sidney Siegel, *Nonparametric Statistics for the Behavioral Sciences*, New York, 1956, p. 284). In appraising the coefficients in Tables 5.4 through 5.7, however, one should keep in mind that the coefficients for a given series for different monthly spans are not statistically independent, that the coefficients for different series for the same span are not independent, and that the .05 significance level for coefficients based on the average ranks of groups of series is certainly less than .71, though not as much less as it would be if the series were independent. The coefficients are presented simply to provide a convenient summary statistic on the degree of relationship between the changes in the indicators and the severity of the contractions.

TABLE 5.4

Ranking of Percentage Changes in Selected Indicators of Aggregate Economic Activity During Seven Business Cycle Contractions

RANK OF 3-MONTH CHANGE

Indicator	Oct. 1926 (1)	July 1953 (2)	Nov. 1948 (3)	May 1923 (4)	Jan. 1920 (5)	May 1937 (6)	Aug. 1929 (7)	Rank Correlation with Severity of Contraction
1. Nonagricultural employment, BLS	—	2	4	3*	—	1*	3	0
2. Gross national product (Q)	2*	4	5	3	—	1	6	.26
3. Industrial production	2	4	6	3	5	3	7	.29
4. Freight carloadings	1*	4	5	2	6	3	7	.61
5. Bank debits outside NYC	3*	4	7	6	2*	5	1*	−.32
6. Personal income	5	3	4	2*	—	1*	6	−.09
7. Retail sales	4	7	6	2*	1*	3*	5	−.36
8. Corporate profits after taxes (Q)	2	1	4	7	3	5	6	.68
9. Wholesale price index, excl. farm & food	6	2*	5	7	1*	3	4	−.29
Average rank, 6 indicators[a]	2.8	3.0	5.0	4.2	3.3	2.3	4.8	
Rank of average rank	2	3	7	5	4	1	6	.18

RANK OF 9-MONTH CHANGE

Indicator	Oct. 1926 (1)	July 1953 (2)	Nov. 1948 (3)	May 1923 (4)	Jan. 1920 (5)	May 1937 (6)	Aug. 1929 (7)	Rank Correlation with Severity of Contraction
1. Nonagricultural employment, BLS	2*	1	2	1*	—	4	3	.80
2. Gross national product (Q)	—	3	4	2	—	6	5	.60
3. Industrial production	1	5	3	2	4	7	6	.71
4. Freight carloadings	1*	5	6	2*	1	7	4	.07
5. Bank debits outside NYC	2*	3	5	1*	—	6	6	.79
6. Personal income	2.5	3	4	1*	—	5	5	.60
7. Retail sales	4	4	3	2	2.5	6	6	.50
8. Corporate profits after taxes (Q)	7	1	6	4	7	3	5	.61
9. Wholesale price index, excl. farm & food	2.0	2.7	3.5	1.6	5.0	6.0	5.5	−.32
Average rank, 6 indicators[a]	2.0	2.7	3.5	1.6	5.0	6.0	5.5	
Rank of average rank	2	3	4	1	5	7	6	.72

RANK OF 6-MONTH CHANGE

Indicator	Oct. 1926 (1)	July 1953 (2)	Nov. 1948 (3)	May 1923 (4)	Jan. 1920 (5)	May 1937 (6)	Aug. 1929 (7)	Rank Correlation with Severity of Contraction
1. Nonagricultural employment, BLS	1*	1	3	—	—	2	4	.80
2. Gross national product (Q)	1	4	5	3	—	6	5	.71
3. Industrial production	2	4	4	4	2	7	6	.64
4. Freight carloadings	1*	6	5	1	3	7	5	.36
5. Bank debits outside NYC	2	3	4	3	2*	6	7	.68
6. Personal income	1	6	2	3	1*	5	5	.66
7. Retail sales	1	2*	5	5	1*	7	6	.14
8. Corporate profits after taxes (Q)	6	2*	5	7	1*	3	4	.89
9. Wholesale price index, excl. farm & food	1.2	3.2	3.7	2.8	2.7	5.5	5.7	−.29
Average rank, 6 indicators[a]	1.2	3.2	3.7	2.8	2.7	5.5	5.7	
Rank of average rank	1	4	5	3	2	6	7	.68

RANK OF 12-MONTH CHANGE

Indicator	Oct. 1926 (1)	July 1953 (2)	Nov. 1948 (3)	May 1923 (4)	Jan. 1920 (5)	May 1937 (6)	Aug. 1929 (7)	Rank Correlation with Severity of Contraction
1. Nonagricultural employment, BLS	—	1	2	1*	—	3	3	.80
2. Gross national product (Q)	2*	3	4	1*	6	5	6	.66
3. Industrial production	1	3	2	4	2	7	5	.86
4. Freight carloadings	1*	4	6	3	5	7	5	.50
5. Bank debits outside NYC	1*	2	4	3	2*	6	7	.96
6. Personal income	1	2	4	3	—	5	6	.94
7. Retail sales	2	3	3	4	1*	6	6	.61
8. Corporate profits after taxes (Q)	4	1	2	5	7	3	6	.82
9. Wholesale price index, excl. farm & food	1.4	2.0	3.2	3.0	6.0	5.5	5.3	.54
Average rank, 6 indicators[a]	1.4	2.0	3.2	3.0	6.0	5.5	5.3	
Rank of average rank	1	2	4	3	7	6	5	.82

SOURCE: Appendix C. The seven business contractions are arrayed from left to right according to their over-all severity (see text). Changes in a given indicator during each of the seven contractions are ranked according to magnitude. The smallest decline (or largest rise) is assigned a rank of 1, the next smallest a rank of 2, etc. All series except the wholesale price index are adjusted for seasonal variations.
* Increase.
[a] Nonagricultural employment, gross national product, industrial production, bank debits, personal income, corporate profits.

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TABLE 5.5

Rank Correlation Coefficients: Severity of Business Cycle Contractions and Percentage Changes in Selected Indicators

Indicator	No. of Contractions Covered[a]	Months after Peak											
		1	2	3	4	5	6	7	8	9	10	11	12
Indicators of Aggregate Economic Activity													
Nonagricultural employment, BLS	4	.40	0	0	.40	.40	.80	1.00	.80	.80	.60	.80	.80
Gross national product (Q)	6	—	—	.26	—	—	.71	—	—	.60	—	—	.66
Industrial production	7	-.25	.04	.29	.43	.61	.64	.64	.64	.71	.75	.79	.86
Freight carloadings	7	.54	-.68	-.61	-.07	.29	.36	.07	.18	.07	.07	.21	.50
Bank debits outside NYC	7	.93	-.29	-.32	.54	.57	.68	.75	.75	.79	.75	.96	.96
Personal income	4,6[b]	-.60	0	-.09	1.00	1.00	.66	1.00	.80	.60	1.00	1.00	.94
Retail sales	7	-.29	-.39	-.36	-.43	0	.14	.29	.29	.50	.50	.46	.61
Corporate profits after taxes (Q)	7	—	—	.68	—	—	.89	—	—	.61	—	—	.82
Wholesale price index, excl. farm & food	7	-.04	-.32	-.29	-.29	-.29	-.29	-.29	-.43	-.32	.21	.43	.54
Leading Indicators													
Average workweek, mfg.	6	-.26	-.37	.43	.89	.89	.77	.89	.77	.77	.77	.77	.71
Layoff rate, mfg., *inverted*	7	-.04	-.07	.07	.04	.14	.14	.32	.29	.32	.43	.71	.71
Accession rate, mfg.	7	0	.46	.64	.46	.43	.39	.36	.21	.14	.25	.25	.25
New orders, durable goods	7	.21	-.14	.64	.71	.14	.21	.75	.68	.61	.61	.71	.75
Residential construction contracts	7	.79	.39	.82	.79	.64	.57	.57	.54	.54	.57	.64	.64
Comm. & indus. const. contracts	7	-.04	.07	-.11	.21	.79	.82	.71	.82	.46	.79	.82	.86
New incorporations, number	7	.14	-.14	.61	.68	.75	.71	.82	.86	.68	.64	.71	.71
Business failures, liabilities, *inverted*	7	.39	.07	.54	.14	-.32	.14	.61	.25	.50	.61	.57	.50
Basic commodity price index	7	.07	.21	.14	.39	.57	.46	.46	.39	.68	.64	.64	.68
Industrial stock price index	7	0	.39	.39	.93	.96	.93	.89	.89	.89	.93	.96	.96

a See Tables 5.4 and 5.7.

b Entries for 3, 6, 9, and 12 months after peak include the two con- tractions for which quarterly data are available (1923–24 and 1926–27) as well as the four covered by monthly data.

TABLE 5.6

Ranking of Seven Business Cycle Contractions According
to Severity in Successive Months after Peaks,
Two Groups of Indicators

	Rank of Average Rank, Contraction Beginning							Rank Correlation with Severity of Contraction
Months after Peak	Oct. 1926 (1)	July 1953 (2)	Nov. 1948 (3)	May 1923 (4)	Jan. 1920 (5)	May 1937 (6)	Aug. 1929 (7)	
	SIX INDICATORS OF AGGREGATE ECONOMIC ACTIVITY[a]							
3	2	3	7	5	4	1	6	.18
6	1	4	5	3	2	6	7	.68
9	2	3	4	1	5.5	7	5.5	.72
12	1	2	4	3	7	6	5	.82
	TEN LEADING INDICATORS[b]							
1	1	3.5	6	3.5	5	7	2	.32
2	1	2	7	3	6	5	4	.50
3	1	2	5	3.5	3.5	6	7	.88
4	1	2	3	4	6	5	7	.96
5	1	2	3	4	5	7	6	.96
6	1	3	4	2	5	7	6	.86
7	1	3	4	2	5	7	6	.86
8	1	2.5	4	2.5	6	7	5	.83
9	1	2.5	4	2.5	7	6	5	.79
10	2.5	2.5	1	4	7	6	5	.74
11	1	3	2	4	7	6	5	.82
12	3	1	2	4	7	5.5	5.5	.77

SOURCE: Tables 5.4 and 5.7 and Appendix C. The seven business contractions are arrayed from left to right according to their over-all severity (see text). A rank of 1 indicates a small decline, a rank of 7 a large decline.

[a] Nonagricultural employment, gross national product, industrial production, bank debits, personal income, corporate profits (see text).

[b] See Table 5.7.

However, department store experience was probably more nearly representative of total retail sales in the twenties than it is today. In the case of the wholesale price index it appears that initial declines have been sharper in some of the mild business contractions than in the more severe. Until ten months after the business cycle peak the correlation is inverse, though small.

Some of the erratic factors that may affect results based on a single indicator can be ironed out by averaging several indicators. The six indicators that show the most consistently high correlations in Table 5.5 (nonagricultural employment, gross national product, industrial production, bank debits outside New York City, personal income, and corporate profits) taken together provide the rankings shown in Table 5.6. The average ranks are computed only for three, six, nine, and twelve

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months after the peak because two of the series are available only quarterly.

Changes in "Leading Indicators" During the First Year of Recession

The series used in Table 5.4 are precisely those in terms of which the ultimate severity of a business recession is likely to be judged.[9] In attempting an early estimate of relative severity, however, other types of series may be more helpful. In the National Bureau's studies of business cycles numerous series have been uncovered that typically turn down some months before the peak in general business. Because of their sensitivity, they may provide an early indication of the severity of contractions. Table 5.7 contains the rankings of the percentage changes for a group of them, based on the figures provided in Appendix C.

We find that even as early as the third month after the peak the declines in many of the leading series begin to differentiate the more severe from the less severe recessions. Hence something can be gained by watching the early movers. Again, some appear less reliable for the purpose than others. The layoff and accession rates, business failure liabilities, and new orders for durable goods show relatively low or erratic correlation coefficients (Table 5.5). Because of the erratic month-to-month changes that many of these series exhibit, it is especially desirable to study all the evidence rather than rely on data for a single month or a single series. The average ranks for all ten leading indicators provide one means for doing this (Table 5.6), though of course the individual series and their relations to one another and to other series should be studied as well. As a group, the leaders provide a more reliable indication of severity than the aggregates during the first six or possibly nine months of recession.[10]

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[9] The number of unemployed or the unemployment rate should of course be considered in any such appraisal. They are omitted from Table 5.4 because the available monthly data for contractions before World War II are not comparable in magnitude with current data. The unemployment rate is included in Table 5.8, where only the directions of change are utilized.

[10] This implies that the leaders indicate the *subsequent* ranking of the aggregates. The following set of rank correlation coefficients, based on the ranks of the average ranks in Table 5.6, supports that inference, as well as the observation that the ranks of the leaders stabilize at an earlier date:

	Months after Peak		
	Three	*Six*	*Nine*
Leaders in specified month vs.			
Aggregates 3 mos. later	.88	.95	.99
Aggregates 6 mos. later	.70	.86	—
Leaders 3 mos. later	.85	.88	.76
Aggregates in specified month vs.			
Aggregates 3 mos. later	.29	.59	.83
Aggregates 6 mos. later	—.14	.39	—

TABLE 5.7

Ranking of Percentage Changes in Ten Leading Indicators During Seven Business Cycle Contractions

RANK OF 3-MONTH CHANGE

Indicator	Oct. 1926 (1)	July 1953 (2)	Nov. 1948 (3)	May 1923 (4)	Jan. 1920 (5)	May 1937 (6)	Aug. 1929 (7)	Rank Correlation with Severity of Contraction
1. Average workweek, mfg.	4	3	1	2	—	6	5	.43
2. Layoff rate, mfg., *inverted*	3	5	6	2	1*	7	4	.07
3. Accession rate, mfg.	2	3	1	7	5	4	6	.64
4. New orders, durable goods	1*	5	4	3	2*	6	7	.64
5. Residential construction contracts	2	1*	5	4	3	6	7	.82
6. Comm. & indus. const. contracts	4	2*	5	6	7	1*	3*	−.11
7. New incorporations, number	2	1*	6	3	5	7	4	.61
8. Business failures, liabilities, *inverted*	4	3	2	1*	7	5	6	.54
9. Basic commodity price index	2	2*	7	6	1*	5	4	.14
10. Industrial stock price index	3	2*	4	6	5	1*	7	.39
Average rank, 10 indicators	2.7	2.8	4.1	4.0	4.0	4.8	5.3	
Rank of average rank	1	2	5	3.5	3.5	6	7	.88

RANK OF 6-MONTH CHANGE

Indicator	Oct. 1926 (1)	July 1953 (2)	Nov. 1948 (3)	May 1923 (4)	Jan. 1920 (5)	May 1937 (6)	Aug. 1929 (7)	Rank Correlation with Severity of Contraction
1. Average workweek, mfg.	1	4	2	3	—	6	5	.77
2. Layoff rate, mfg., *inverted*	2	6	5	3	1	7	4	.14
3. Accession rate, mfg.	2	4	3	7	1*	6	5	.39
4. New orders, durable goods	2	6	5	1	3	7	4	.21
5. Residential construction contracts	4	2*	3*	1*	7	5	6	.57
6. Comm. & indus. const. contracts	1*	2	4	3	7	6	5	.82
7. New incorporations, number	1*	4	3	2	7	5	5	.71
8. Business failures, liabilities, *inverted*	6	1*	2*	4	4	5	3	.14
9. Basic commodity price index	3	1*	7	2	5	6	5	.46
10. Industrial stock price index	2*	1*	7	4	4	7	6	.93
Average rank, 10 indicators	2.4	3.1	3.7	3.0	4.7	6.1	4.8	
Rank of average rank	1	3	4	2	5	7	6	.86

RANK OF 9-MONTH CHANGE

Indicator	Oct. 1926 (1)	July 1953 (2)	Nov. 1948 (3)	May 1923 (4)	Jan. 1920 (5)	May 1937 (6)	Aug. 1929 (7)	Rank Correlation with Severity of Contraction
1. Average workweek, mfg.	2	3	1	4	—	6	5	.77
2. Layoff rate, mfg., *inverted*	1	6	4	2	5	7	3	.32
3. Accession rate, mfg.	3	3	2	7	6	5	5	.14
4. New orders, durable goods	2	4	3	1*	6	6	4	.61
5. Residential construction contracts	4	3*	2*	1*	7	5	4	.54
6. Comm. & indus. const. contracts	3	2	5	1*	7	6	4	.46
7. New incorporations, number	3	1*	2*	5	6	7	4	.68
8. Business failures, liabilities, *inverted*	4	1*	2	1*	6	6	5	.50
9. Basic commodity price index	2	1*	5	3	6	7	4	.68
10. Industrial stock price index	2*	1*	4	3*	5	6	6	.89
Average rank, 10 indicators	2.6	2.8	3.0	2.8	6.2	5.8	4.7	
Rank of average rank	1	2.5	4	2.5	7	6	5	.79

RANK OF 12-MONTH CHANGE

Indicator	Oct. 1926 (1)	July 1953 (2)	Nov. 1948 (3)	May 1923 (4)	Jan. 1920 (5)	May 1937 (6)	Aug. 1929 (7)	Rank Correlation with Severity of Contraction
1. Average workweek, mfg.	3	2	1	4	6	6	5	.71
2. Layoff rate, mfg., *inverted*	1	2	5	3	6	7	4	.71
3. Accession rate, mfg.	4	3	1	6	7	2	5	.25
4. New orders, durable goods	2	3	1	4	7	6	5	.75
5. Residential construction contracts	4	2*	1*	3*	7	5	6	.64
6. Comm. & indus. const. contracts	2	1	3	4	7	5	6	.86
7. New incorporations, number	3*	1*	2*	5	7	4	6	.71
8. Business failures, liabilities, *inverted*	4	3*	2*	1*	7	6	5	.50
9. Basic commodity price index	1*	3*	5	4	7	6	4	.68
10. Industrial stock price index	2*	1*	3*	4	5	6	7	.96
Average rank, 10 indicators	2.6	2.0	2.4	3.7	6.7	5.3	5.5	
Rank of average rank	3	1	2	4	7	5	6	.77

SOURCE: Appendix C. The seven business contractions are arrayed from left to right according to their over-all severity (see text). Changes in a given indicator during each of the seven contractions are ranked according to magnitude. The smallest decline (or largest rise) is assigned a rank of 1, the next smallest a rank of 2, etc. The layoff rate and business failures are treated invertedly, i.e. the smallest increase (or largest decline) gets a rank of 1, etc. All series except basic commodity prices and industrial stock prices are adjusted for seasonal variation.
* Increase (in layoff rate and business failures, decrease).

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Changes in the Scope of Business Cycle Contractions

The measures provided in Appendix C can help, also, to show how widespread the economic contraction is and whether it is spreading further. Table 5.8 shows how this may be done, using ten indicators of aggregate economic activity and ten leading indicators. The left-hand section of the table shows, for successive months after the business cycle peak, what proportion of the series were above their level at the cycle peak (that is, a three-month average centered on the peak date). Very few of the aggregates (section A) reached such a favorable position during the first twelve months of the several recessions, although in the milder recessions one or two of the aggregates could be counted in this group in nearly every month. In 1953–54 eighteen months elapsed before half the aggregates regained the levels they had attained at the business cycle peak, and in 1948–49 it took seventeen months to reach a similar position. In the more severe contractions none of the aggregates got back to the peak level in that length of time. Among leading indicators (section B), five of the ten were above the July 1953 peak levels within ten months, or three months before the business upturn in August 1954. In the 1948–49 contraction five of the ten leaders had exceeded the peak level after thirteen months, or two months after the business upturn began. In 1920, 1937, and 1929 none had regained the peak level even after a full year of contraction. In Chart 5.3 the solid curves depict these developments during the first twenty-four months of each contraction.

Even though an indicator has not risen sufficiently to exceed the level attained when business activity was at its zenith, it may nevertheless have begun to rise. It is vital to watch for these initial upward movements. The right-hand section of Table 5.8 (and the dash curves in Chart 5.3) shows what proportion of the indicators began to register recovery in that sense as the contractions proceeded. It compares the current monthly figure with the figure three months earlier.[11] We find that in the 1953–54 and 1948–49 episodes substantial proportions of the ten aggregates were rising by the tenth month after the business recessions began (i.e. several months before the end of the contractions). But in 1937–38 and 1929–30 none of the aggregates were rising at this stage, even though in 1937–38 the end of the contraction came in the thirteenth month (June 1938). The recoveries in the leading indicators took place earlier and were more widespread. Even in 1937–38, half of the leaders had registered increases from the three-month-ago level by the tenth month, March 1938, thus heralding the end of that recession.

[11] The choice of this interval involved a reconciliation of two conflicting considerations. A shorter interval would reflect a cyclical upturn more promptly, but would also reflect erratic movements more frequently. A longer interval would have the opposite advantage and disadvantage. The interval could well be different for different series. (Criteria for selecting an appropriate interval are developed in Chapters 17 and 20).

TABLE 5.8

Measures of the Changing Scope of Business Cycle Contractions

A. TEN INDICATORS OF AGGREGATE ECONOMIC ACTIVITY

Months after Peak	Percentage Exceeding Level Reached at Business Cycle Peak[a] of								Percentage Exceeding Level Reached in Third Preceding Month[b]							
	July 1957[c]	Oct. 1926[d]	July 1953	Nov. 1948	May 1923[d]	Jan. 1920[e]	May 1937	Aug. 1929	July 1957[c]	Oct. 1926[d]	July 1953	Nov. 1948	May 1923[d]	Jan. 1920[e]	May 1937	Aug. 1929
1	65	44	20	20	50	42	40	20	80	56	50	40	75	100[f]	60	55
2	20	31	10	0	25	83	75	20	30	31	30	0	44	100[f]	55	20
3	20	44	10	0	25	50	50	10	20	31	0	0	25	25	50	5
4	10	31	0	10	12	50	40	0	0	38	10	20	12	58	25	0
5	10	56	10	0	25	67	10	0	20	56	5	20	38	42	0	10
6	10	25	10	0	12	50	0	0	30	31	5	10	38	75	0	0
7	10	25	0	0	25	67	0	0	0	19	10	0	56	50	0	0
8	10	25	0	0	38	50	0	0	0	12	40	10	81	25	0	10
9		44	0	10*	50	25	0	0		25	45	0	100	17	0	10
10		50	0	0*	25	17	0	0		50	65	10	75	8	0	0
11		38	10	0	12	8	0	0		56	65	50	25	0	0	0
12		31	0	0	12	17	0	0		56	50*	35*	0	17	0	5
13		44*	10*	20	0*	17	0*	0		38*	50	40	6	0	20*	5
14		44	15	20	19	8	0	0		44	60	70	6*	8	65	0
15		44	20	30	12	8	0	0		44	100	80	38	0	90	0
16		44	40	40	25	0	0	0		69	100	100	69	25	100	0
17		38	40	50	25	0*	0	0		75	100	100	88	25	90	5
18		38	50	60	50	0	0	0		69	100	100	100	25*	90	35
19		44	50	60	50	0	0	0		88	100	90	94	42	90	40
20		56	60	70	44	0	0	0		69	80	100	100	50	80	10
21		50	60	80	50	0	0	0		62	100	100	81	83	45	5
22		56	70	80	50	0	0	0		62	90	100	88	75	55	0
23		75	80	80	50	0	0	0		88.	95	90	56	83	60	0
24		69	80	80	50	0	0	0		88	100	75	38	42	70	0

* Business cycle trough was reached in this month.

a Three-month average, centered on the peak month.

b The third month after the peak is compared with the peak month, the fourth month after the peak is compared with the first month after the peak, etc. The results are entered in the terminal month of each comparison.

c Data for corporate profits for IV 1957 and I 1958 and for GNP for I 1958 are not yet available (March 1958). It is assumed that both series have declined since the peak quarter (III 1957).

d Based on 8 out of 10 series; nonagricultural employment and unemployment rate not available.

e Based on 6 out of 10 series; nonagricultural employment, unemployment rate, GNP, and personal income not available.

f Based on 5 series; corporate profits after taxes start in the first quarter of 1920.

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TABLE 5.8 (concluded)

B. TEN LEADING INDICATORS

Months after Peak	Percentage Exceeding Level Reached at Business Cycle Peak^a of								Percentage Exceeding Level Reached in Third Preceding Month^b							
	July 1957	Oct. 1926	July 1953	Nov. 1948	May 1923	Jan. 1920^g	May 1937	Aug. 1929	July 1957	Oct. 1926	July 1953	Nov. 1948	May 1923	Jan. 1920^g	May 1937	Aug. 1929
1	40	30	30	20	30	44	10	20	60	30	10	10	25	38^h	20	50
2	20	20	10	10	15	22	20	20	30	20	30	20	10	25^h	20	20
3	20	10	40	0	10	33	20	10	10	30	20	0	30	44	30	0
4	0	20	30	0	20	11	10	10	0	30	40	30	25	11	10	10
5	10	50	40	0	20	11	0	0	10	80	30	25	40	22	0	0
6	0	30	30	20	10	11	0	0	30	50	35	40	50	11	0	40
7	0	20	40	10	30	0	0	0	45	70	55	45	80	11	0	20
8	0	20	40	20	40	0	0	0	38	25	60	50	70	11	20	40
9		10	40	20	50	0	0	0		35	70	80	70	0	30	30
10		20	50	40	20	0	0	0		40	60	90	0	0	50	20
11		30	50	40*	10	0	0	0		40	90	95*	0	11	40	20
12		30	50	40	20	0	0	0		75	80	70	0	22	50	10
13		50*	40*	50	20	0	0*	0		80*	80*	65	10	56	40*	30
14		50	40	50	30*	0	20	0		70	75	90	30*	67	90	20
15		50	60	60	20	0	20	0		90	70	80	50	78	90	30
16		60	40	80	20	0	10	0		60	90	80	70	44	90	10
17		40	60	80	30	0*	20	0		40	90	80	90	33*	80	20
18		60	60	80	40		20	0		60	95	90	90	78	90	60
19		60	60	90	50	11	20	0		60	70	100	100	89	75	75
20		60	70	80	50	11	20	0		90	60	80	80	78	55	70
21		70	65	90	50	22	20	0		55	55	80	70	78	50	70
22		60	65	100	50	22	10	0		50	60	80	50	44	75	35
23		40	70	90	50	11	10	0		50	65	70	20	44	10	20
24		65	75	100	50	11	10	0		50	75	20	40	67	30	10

^g Based on 9 out of 10 series; average workweek not available.
^h Based on 8 series; new orders of durable goods start January 1920.
The seven business contractions before 1957 are arrayed from left to right in order of their severity. Series that are unchanged from peak level, or from third preceding month, are counted one-half in determining the per cent exceeding peak level or third preceding month. The series included are listed in Table 5.10; in addition, the unemployment rate is included with the ten indicators of aggregate economic activity. A rise in the unemployment rate, layoff rate, or business failures is counted as a decline, and vice versa.

A sustained narrowing of the scope of the contraction is a signal that it is about to end. For example, the 1937–38, 1948–49, and 1953–54 contractions ended about a year after they began. The evidences of sustained recovery became apparent at an earlier date in the milder 1948–49 and 1953–54 episodes than in the sharp 1937–38 contraction. In each case, however, the narrowing of the scope of the contraction occurred earlier in the leaders than in the aggregates. At times, as in 1923–24, a narrowing of the scope of contraction may be followed by a further widening before recovery finally gets under way.[12]

The measures provided in Table 5.8, especially those showing the proportion of indicators that have exceeded their levels at the peak, suggest that if a period of depressed activity is defined as the interval from the peak to the date when activity regains the peak level, this period may be more closely related to the severity or magnitude of the decline from peak to trough than the duration of the decline itself is. Of course, different indicators of aggregate economic activity regain their previous peak levels at different dates. If we take as one criterion the date when half of our ten indicators of aggregate activity regained their level of the preceding business cycle peak, and as an alternative estimate the date when the industrial production index did so, we obtain the results shown in Table 5.9.

Not only are the periods of depressed activity substantially longer, as would be expected, than the contraction durations; they are also more closely related to the severity of the contractions. It took approximately a year and a half for the economy to recover, in the sense defined above, from the four mild or moderate contractions of 1926, 1953, 1948, and 1923; two and a half to three years to recover from the sharp contractions of 1920 and 1937; and at least seven years to recover from the 1929 contraction.

Another way to look at these results is as follows. Except in the Great Depression, about a year or year and a half elapsed before the economy generated an upturn in business activity, whether the contraction was severe or moderate. But after the upturn the recovery to the previous peak was attained in a much shorter time after the moderate contractions than after the severe ones. These recoveries were accomplished in seven, five, six, and four months after the upturn in the 1926, 1953, 1948, and 1923 contractions, respectively (col. 6 minus col. 3, Table 5.9). Recovery took roughly three times as long, seventeen and eighteen months, after the upturns in the 1920 and 1937 contractions, and nearly four years in the Great Depression. Although recoveries from severe contractions have usually taken place at a more rapid rate than from moderate contractions

[12] For an analysis of the timing of changes in the scope of business cycle expansions and contractions and the relation of scope to severity, see the references cited in note 5 and also Chapter 8.

TABLE 5.9

Durations of Business Contractions and Periods of
Depressed Activity

| Business Cycle Peak Date (1) | Business Cycle Trough Date (2) | Duration of Contraction, Months from (1) to (2) (3) | Date when Peak Level Was Regained[a] | | Period of Depressed Activity | | Percentage Decline in Industrial Production from Business Cycle Peak to Trough (8) |
			Estimate A (4)	Estimate B (5)	Estimate A [months from (1) to (4)] (6)	Estimate B [months from (1) to (5)] (7)	
Oct. 1926	Nov. 1927	13	June 1928[b]	June 1928[c]	20	20	−5.7
July 1953	Aug. 1954	13	Jan. 1955	May 1955	18	22	−9.5
Nov. 1948	Oct. 1949	11	Apr. 1950	Apr. 1950	17	17	−7.7
May 1923	July 1924	14	Nov. 1924[d]	July 1925	18	26	−16.3
Jan. 1920	July 1921	18	Dec. 1922	Oct. 1922	35	33	−29.0
May 1937	June 1938	13	Dec. 1939	Oct. 1939	31	29	−31.5
Aug. 1929	Mar. 1933	43	e	Nov. 1936	e	87	−50.1

[a] Estimate A is the date when at least half of the following indicators of aggregate economic activity had regained their respective levels at the business cycle peak date: nonagricultural employment, unemployment rate, gross national product, industrial production, freight carloadings, bank debits, personal income, retail sales, corporate profits, wholesale price index. Not all indicators were available for every date. Estimate B is the date when the industrial production index regained the level it had reached at the business cycle peak (three-month average centered on the peak).

[b] Half the indicators were above their peak levels temporarily in March and August 1927, or five and ten months after the peak, respectively, but before the trough was reached.

[c] The production index attained the peak level temporarily in March 1927, five months after the peak but before the trough was reached.

[d] Half the indicators were above their peak levels temporarily in February 1924, nine months after the peak but before the trough was reached.

[e] Industrial production was the only one of the ten indicators that exceeded its level as of the August 1929 peak before the next business cycle peak of May 1937.

(that is, the percentage rate of growth per month is higher), the difference has not been sufficient to compensate fully for the greater depth of the severe contractions. Hence the recoveries take longer.[13]

All this suggests that our measures of the percentage declines in various indicators in the early stages of contraction may indicate, though only in a very rough way, the duration of "depression" as well as the severity of contraction. No great precision can be expected, however. The course of a contraction and the subsequent recovery is not fore-ordained. Both can be and have been influenced by deliberate actions

[13] This implies a greater degree of uniformity in rates of cyclical expansion than in rates of contraction. For some observations on this point see my introduction to Daniel Creamer's *Personal Income during Business Cycles* (Princeton for NBER, 1956), pp. xxiii–xxviii, and the *Thirty-seventh Annual Report of the National Bureau of Economic Research*, May 1957, p. 52.

taken to shorten the contraction and hasten recovery, as well as ay events and policies that originate elsewhere. Historical patterns and relationships ought not to be transplanted mechanically. They can and should be used to help us formulate realistic appraisals of existing situations.

Other Applications

So far, attention has been on the use of the measures provided in this report to indicate the severity of recessions and to judge the prospects of recovery. Another use may be mentioned briefly. By applying the measures to a wide variety of economic data one can determine some of the distinctive characteristics of each recession—what sectors or aspects of economic activity are strong and what are weak. For example, in both the 1953–54 and 1948–49 recessions residential building displayed great strength; in 1937–38 and 1929–30, notable weakness. These differences are sharply etched in the percentage changes in the volume of contracts (Appendix C). Six months after recession began, residential contract volume (seasonally adjusted) had dropped 40 per cent in 1929 and 21 per cent in 1937, but had risen 3 per cent in 1948–49 and 10 per cent in 1953–54. Consumer instalment credit advanced vigorously in 1948–49 (it was 28 per cent higher a year after the recession began), rose moderately in 1953–54 (4 per cent higher), but declined appreciably in 1929–30 (9 per cent lower), and 1937–38 (6 per cent lower). Such differentiation of the strong and weak sectors in the economy during a recession is essential to appropriate diagnosis and prescription of policies to encourage revival.

For this purpose, too, the type of measure presented here may well be extended to other data of strategic interest from a policy standpoint. Data on comparative changes in personal and corporate income tax payments, in unemployment benefits, in federal and in state and local expenditures, in public works contracts, in interest rates, in the money supply, and in Federal Reserve operations would enable one to appraise the strength and timing of either deliberate or "built-in" stabilization policies. The simple technique illustrated in this report can thus be adapted to provide an up-to-date, objective set of facts on which to judge not only the severity, scope, and unique character of a developing recession, but also the prospects for an early recovery and the vigor with which steps are being taken to bring recovery about.

In order to facilitate the application of this analysis an electronic computer program has been prepared for the IBM 704 which computes the percentage changes from peak month to the first, second, third, and up to the twenty-fourth month after peak, for any given series and for any given list of peak dates. The program also makes a similar set of computations of percentage changes from trough months, so that it can

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be used to compare cyclical revivals as well as recessions. In addition, the total percentage change from peak to trough and trough to peak is computed, to provide a measure of the full amplitude of cyclical swings. [This program was used to provide the data in Appendix C.]

1957–58 Recession

How does the current contraction in business activity compare with earlier contractions when measured by the methods described above? As already noted, such a comparison requires that the date of the peak from which the contraction began be established, at least on a tentative basis. Accordingly, July 1957 was selected as the monthly business cycle peak date, and the third quarter of 1957 as the quarterly peak date. This determination was made in October 1957, when data through September were available for the more important economic series.

The selection of a peak date was difficult because a moderate decline in output and employment in manufacturing had been under way since late in 1956, while activity in most other sectors continued to advance. Indeed, some important factors, such as total personal income, had scarcely begun to decline by September 1957. Because of the continued rise in prices and wages, physical volume series on output, income, and trade reached peaks earlier than the corresponding value series. In general, during the first half of 1957 the physical volume of labor input (man-hours) and output of the economy at large remained nearly constant or at best gently rising, while greater increases occurred in the pecuniary volume of output, trade, and income. Although declines in activity became widespread between August and September and have been extended since, it is difficult to say whether July or August should be considered the zenith. Subsequent revisions of the data may shift the weight of evidence to August, or, less likely, to an earlier month. It must be observed, too, that at the time the peak date was selected, the contraction had not yet become sufficiently pronounced, or lasted long enough, to qualify as a business cycle contraction in the National Bureau's chronology. The judgment that it was likely to become so has, of course, since been validated by events.

Once the peak date was determined, we could construct tables, as in Appendix C, that show the extent of the decline after the July 1957 peak for many economic series, and compare this decline with what occurred during similar intervals of time in previous business contractions. The first comparisons were with the two relatively moderate postwar contractions, 1948–49 and 1953–54, and the two severe prewar contractions that began in 1929 and 1937. Later, with the aid of the computational program developed for the IBM 704 electronic computer, we extended

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the comparisons to earlier cycles and made the computations in several variant forms.

These tables contain the record of what these comparisons have shown about the current recession as it developed, and how it stood at the time this report went to press [April 1958]. Drawing upon that record, Table 5.10 compares the percentage changes for the first seven months of the current recession, i.e. July 1957 to February 1958, with those for the corresponding periods of the preceding recessions. The summary columns at the right show how many of the indicators experienced a smaller decline in this recession than in the earlier ones, and how many a larger decline. Both the indicators of aggregate activity and the leading indicators are decisive in recording a substantially smaller decline in 1957–58 than in the severe contractions of 1937–38 and 1929–30. In comparison with the severe contraction of 1920–21, the leading indicators also show a substantially smaller decline, while most of the aggregates show a larger decline currently. Historically, the leaders have been a more reliable guide at this stage (seven months after the peak), and hence are entitled to greater weight. Thus, our evidence points to a less severe contraction on this occasion than those experienced in 1920–21, 1929–30, or 1937–38.

On the other hand, nearly all the leading series, and a majority of the aggregate indicators, registered larger declines in the seven months since July 1957 than in the corresponding periods of each of the four milder business contractions, namely, 1926–27, 1953–54, 1948–49, and 1923–24. The 1957–58 contraction appears, therefore, to be of intermediate proportions, not the mildest on record nor yet the most severe (see Chart 5.2). The rankings shown in the bottom section of Table 5.10 confirm this indication.[14]

This evaluation of the severity of the 1957–58 contraction began emerging from the leading series when data became available for the fourth month after the July peak, i.e. for November 1957 (Tables 5.11 and 5.12). As we have seen in the preceding pages, a historical ranking of the recessions based on changes in the leading series during the first four months accords fairly well with their ultimate ranking according to severity. Hence when it became apparent (in late December) from data covering the four-month span July–November 1957 that declines in most of the leading series were larger than in the milder recessions in our list,

[14] If August 1957 were selected as the business cycle peak instead of July, the current contraction would appear somewhat more severe relative to the earlier contractions, because the six-month decline from August to February in many of the indicators of aggregate activity would be nearly the same as the seven-month decline from July to February (since the three-month averages centered on July and August would be nearly alike), but the decline would be compared with six-month declines in the earlier contractions instead of with seven-month declines. The average ranks for the aggregate indicators in Table 5.10 would be only slightly altered, however, and those for the leading series scarcely changed at all. Thus the shift would not affect the conclusions given above.

TABLE 5.10

Percentage Changes During First Seven Months of Eight Business Cycle Contractions, Two Groups of Indicators

A. TEN INDICATORS OF AGGREGATE ECONOMIC ACTIVITY

Business Cycle Contraction, First Seven Months	Nonagricultural Employment	Unemployment Rate[a]	Gross National Product (1st 2 quarters)	Industrial Production	Freight Car-loadings	Bank Debits Outside NYC	Personal Income	Retail Sales	Corporate Profits after Taxes (1st 2 quarters)	Wholesale Price Index	Number Showing That 1957–58 Decline Is Smaller	Larger
Percentage Change												
July 1957–Feb. 1958	−3.4	(+2.4)	−3.4	−10.3	−17.8	−4.7	−1.3	−4.9	n.a.	+0.1	—	—
Oct. 1926–May 1927	n.a.	n.a.	+1.1	−1.3	−4.1	+3.9	n.a.	−2.7	−14.7	−6.0	1	5
July 1953–Feb. 1954	−2.3	(+2.7)	−2.7	−8.3	−11.6	−0.8	−1.0	−2.5	−26.4	−0.1	2	7
Nov. 1948–June 1949	−3.3	(+1.9)	−2.6	−8.4	−15.4	−5.9	−3.1	−0.7	−16.9	−5.0	3	6
May 1923–Dec. 1923	n.a.	n.a.	−1.0	−8.2	−2.9	−4.1	n.a.	−1.0	−39.9	−7.4	1	5
Jan. 1920–Aug. 1920	n.a.	n.a.	n.a.	−3.9	+1.6	+0.7	n.a.	+6.5	−34.1	+14.2	0	5
May 1937–Dec. 1937	−4.4	n.a.	−7.8	−27.3	−24.6	−8.1	−8.1	−9.2	−52.2	−3.0	8	0
Aug. 1929–Mar. 1930	−5.4	n.a.	−5.5	−12.6	−11.1	−16.5	−8.1	−3.5	−41.9	−3.6	6	2

Business Cycle Contraction, First Seven Months	Nonagricultural Employment	Unemployment Rate[a]	Gross National Product (1st 2 quarters)	Industrial Production	Freight Car-loadings	Bank Debits Outside NYC	Personal Income	Retail Sales	Corporate Profits after Taxes (1st 2 quarters)	Wholesale Price Index	Average Rank, Five Indicators[b]	Rank of Average Rank
Ranking of Percentage Change												
July 1957–Feb. 1958	3	2	5	6	7	5	2	7	—	2	4.2	6
Oct. 1926–May 1927	—	—	1	1	3	1	—	5	—	7	1.0	1
July 1953–Feb. 1954	1	3	4	4	5	3	1	4	—	3	2.6	3
Nov. 1948–June 1949	2	1	3	5	6	6	3	2	—	6	3.8	5
May 1923–Dec. 1923	—	—	2	3	2	4	—	3	—	8	3.0	4
Jan. 1920–Aug. 1920	—	—	—	2	1	2	—	1	—	1	2.0	2
May 1937–Dec. 1937	4	—	7	8	8	7	4	8	—	4	6.0	7
Aug. 1929–Mar. 1930	5	—	6	7	4	8	5	6	—	5	6.2	8
Rank Correlation Coefficient[c]	1.00	—	.71	.64	.07	.75	1.00	.29	.89	−.29	—	.75

TABLE 5.10 (concluded)

B. TEN LEADING INDICATORS

Percentage Change

Business Cycle Contraction, First Seven Months	Average Work-week	Layoff Rate[a]	Gross Accession Rate[a]	New Orders, Durable Goods	Residential Construction Contracts	Comm. & Indus. Construction Contracts	New In-corpora-tions	Business Failures, Lia-bilities	Basic Commodity Prices	Industrial Stock Prices	Number Showing That 1957–58 Decline Is Smaller	Larger
July 1957–Feb. 1958	−3.9	(+1.2)	(−0.6)	−19.7	−23.3	−21.9	−6.5	+14.7	−4.6	−11.6	—	—
Oct. 1926–May 1927	−0.5	(+0.1)	(−0.5)	+5.7	−20.3	−1.6	−0.5	+13.1	−2.5	+8.2	0	10
July 1953–Feb. 1954	−2.5	(+1.1)	(−1.2)	−11.5	+9.7	−20.8	+4.5	+16.1	−0.04	+8.3	2	8
Nov. 1948–June 1949	−2.2	(+0.8)	(−0.4)	−16.6	+31.2	−14.8	−1.6	+13.5	−25.4	−8.6	1	9
May 1923–Dec. 1923	−3.2	(+0.1)	(−6.3)	+27.5	+11.9	−5.2	−4.7	−5.3	−1.2	−2.2	1	9
Jan. 1920–Aug. 1920	n.a.	(+0.3)	(+0.5)	−22.2	−46.6	−63.6	−16.1	+283.3	−10.6	−17.0	7	2
May 1937–Dec. 1937	−14.6	(+4.1)	(−1.3)	−37.7	−33.4	−36.2	−11.2	+99.2	−24.9	−28.2	10	0
Aug. 1929–Mar. 1930	−7.1	(+0.5)	(−2.3)	−29.8	−44.0	−27.2	−10.0	+36.0	−11.3	−21.5	9	1

Ranking of Percentage Change

Business Cycle Contraction, First Seven Months	Average Work-week	Layoff Rate[a]	Gross Accession Rate[a]	New Orders, Durable Goods	Residential Construction Contracts	Comm. & Indus. Construction Contracts	New In-corpora-tions	Business Failures, Lia-bilities	Basic Commodity Prices	Industrial Stock Prices	Average Rank, Ten Indicators	Rank of Average Rank
July 1957–Feb. 1958	5	7	4	5	5	5	5	4	4	5	4.9	5
Oct. 1926–May 1927	1	1	3	2	4	1	2	2	3	2	2.1	1
July 1953–Feb. 1954	3	6	5	3	3	4	1	5	1	1	3.2	3
Nov. 1948–June 1949	2	5	2	4	1	3	3	3	8	4	3.5	4
May 1923–Dec. 1923	4	2	8	1	2	2	4	1	2	3	2.9	2
Jan. 1920–Aug. 1920	n.a.	3	1	6	8	8	8	8	5	6	5.9	6
May 1937–Dec. 1937	7	8	6	8	6	7	7	7	7	8	7.1	8
Aug. 1929–Mar. 1930	6	4	7	7	7	6	6	6	6	7	6.2	7
Rank Correlation Coefficient[c]	.89	.32	.36	.75	.57	.71	.82	.61	.46	.89	—	.86

[a] Change in rate, not percentage change in rate. Unemployment rate and layoff rate are ranked invertedly, with smallest increase given a rank of 1.

[b] Nonagricultural employment, gross national product, industrial production, bank debits, personal income; corporate profits omitted because data for first quarter of 1958 not available.

[c] See Tables 5.5 and 5.6. Coefficients are based on contractions prior to 1957–58.

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CHART 5.2

Comparative Changes During First Eight Months of Business Cycle Contractions, Selected Indicators

I. Nonagricultural Employment

0
-2
-4
-6
-8

1953-54
1948-49
1957-58
1929-30
1937-38

2. Industrial Production

0
-5
-10
-15
-20
-25
-30

1926-27
1923-24
1920-21
1948-49
1953-54
1957-58
1929-30
1937-38

3. Gross National Product
(1st 2 quarters)

+2
0
-2
-4
-6
-8

1926-27
1923-24
1948-49
1953-54
1957-58
1929-30
1937-38

4. Personal Income

0
-2
-4
-6
-8
-10

1953-54
1957-58
1948-49
1929-30
1937-38

5. Retail Sales

+10
+5
0
-5
-10

1920-21
1923-24
1948-49
1926-27
1953-54
1957-58
1929-30
1937-38

6. New Orders Durable Goods

+40
+30
+20
+10
0
-10
-20
-30
-40

1923-24
1926-27
1953-54
1957-58
1948-49
1929-30
1920-21
1937-38

7. Residential Building Contracts

+40
+20
0
-20
-40
-60

1923-24
1948-49
1953-54
1926-27
1957-58
1937-38
1929-30
1920-21

8. Average Workweek Manufacturing

0
-2
-4
-6
-8
-10
-12
-14
-16

1948-49
1926-27
1953-54
1957-58
1923-24
1929-30
1937-38

9. Industrial Stock Prices

+10
0
-10
-20
-30

1953-54
1926-27
1923-24
1948-49
1957-58
1920-21
1929-30
1937-38

Percentage changes are computed from the three-month average of each indicator centered on the business cycle peak. The eight-month intervals are: Jan. 1920–Sept. 1920, May 1923–Jan. 1924, Oct. 1926–June 1927, Aug. 1929–Apr. 1930, May 1937–Jan. 1938, Nov. 1948–July 1949, July 1953–Mar. 1954, July 1957–Mar. 1958.

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TABLE 5.11

Summary Comparison of 1957–58 Contraction with Earlier Business Cycle Contractions,
for Successive Months after Peaks, Two Groups of Indicators

Number Registering Smaller or Larger Declines in 1957–58 Contraction Than in Same Interval in Earlier Contractions

Earlier Contraction, Starting in	1 Mo. after Peak (August 1957)		2 Mos. after Peak (September 1957)		3 Mos. after Peak (October 1957)		4 Mos. after Peak (November 1957)		5 Mos. after Peak (December 1957)		6 Mos. after Peak (January 1958)		7 Mos. after Peak (February 1958)	
	Smaller	Larger	Smaller	Larger	Smaller	Larger	Smaller	Larger	Smaller	Larger	Smaller	Larger	Smaller	Larger
A. Ten Indicators of Aggregate Economic Activity														
Oct. 1926	4	1	3	2	2	5	1	4	1	4	3	4	1	5
July 1953	6	2	3	5	4	5	4	4	5	3	5	4	2	7
Nov. 1948	7	1	2	6	7	2	6	2	6	2	6	3	3	6
May 1923	2.5	2.5	1	4	2	5	2	3	2	3	1	6	1	5
Jan. 1920	3	2	5	0	2	3	0	5	0	5	0	5	0	5
May 1937	5	2	6	1	1	7	2	5	5	2	8	0	8	0
Aug. 1929	6	1	2	5	6	2	5	2	6	1	7	1	6	2
B. Ten Leading Indicators														
Oct. 1926	5	5	5	5	4	6	2	8	1	9	3	7	0	10
July 1953	5	7	4	6	3	7	2	8	5	5	1	9	2	8
Nov. 1948	8	6	2	8	5	5	4	6	4	6	3	7	1	9
May 1923	6	5	3	7	4	6	6	5	6	5	1	9	1	9
Jan. 1920	5	5	4	5	5	4	5	3	4	4	6	3	7	2
May 1937	8	0	4	6	7	3	6	8	10	0	10	0	10	0
Aug. 1929	7	2	5	5	7	3	7	7	9	1	7	3	9	1

SOURCE: Table 5.10 and Appendix C.

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TABLE 5.12

Ranking of 1957–58 Contraction in Relation to Seven Earlier
Business Cycle Contractions, for Successive Months
after Peaks, Two Groups of Indicators

Months after Peak	Rank of Average Rank, Contraction Beginning								Rank Correlation with Severity[a]
	July 1957 (1)	Oct. 1926 (2)	July 1953 (3)	Nov. 1948 (4)	May 1923 (5)	Jan. 1920 (6)	May 1937 (7)	Aug. 1929 (8)	
	SIX INDICATORS OF AGGREGATE ECONOMIC ACTIVITY[b]								
3	6	2	4	8	3	5	1	7	.18
6	4.5	1	4.5	6	3	2	7	8	.68
	TEN LEADING INDICATORS[c]								
1	1	2	3	7	4.5	6	8	4.5	.32
2	1	2	3	8	5	7	6	4	.50
3	3.5	1.5	1.5	6	3.5	5	7	8	.88
4	5	1	2	3	4	7	6	8	.96
5	4	1	2	3	5	6	8	7	.96
6	5	1	3	4	2	6	8	7	.86
7	5	1	3	4	2	6	8	7	.86

SOURCE: Tables 5.6 and 5.10, and Appendix C. The seven business contractions before 1957–58 are arrayed from left to right according to their over-all severity (see text). A rank of 1 indicates a small decline, a rank of 8 a large decline.

[a] See Table 5.6. Correlation coefficients are based on contractions prior to 1957–58.

[b] Nonagricultural employment, gross national product, industrial production, bank debits, personal income, corporate profits. Not all series are available for all cycles—see Table 5.10.

[c] See Table 5.7.

but smaller than in the most severe recessions, this bit of evidence helped to support other indications pointing to a recession of this general character. Data for five-, six-, seven-, and eight-month spans have provided further support.

On the other hand, the historical analysis of the indicators of aggregate economic activity suggested that a ranking of the recessions even moderately consistent with their ultimate severity would not emerge until at least six months had elapsed. Thus a comparison of the declines in these aggregates in the current recession with their declines in earlier recessions was not likely to yield consistent results during the first six months. This was indeed the case. Changes in the aggregates over a six-month span showed that the current decline was substantially smaller than in the severe contractions of 1929 and 1937, and slightly smaller than in the mild contractions of 1926 and 1953. But most of them also showed *larger* declines than in the contractions of 1923 and 1920, which rank fourth and fifth respectively in our list according to severity. This inconsistency is not likely to be erased until data for the aggregative

indicators for the first nine months (i.e. through April 1958) are available. If the leading series turn out to be a reliable guide in this respect, the aggregates should then show larger declines than in the 1926–27, 1953–54, 1948–49, and 1923–24 contractions but smaller declines than in the 1920–21, 1937–38, and 1929–30 contractions.

The business contraction that began in mid-1957 rapidly engulfed most of our indicators, as its predecessors had done also. Table 5.8 shows that by October, the third month after the peak, eight of the ten aggregates and eight of the ten leading series had moved down from their levels at the peak. The wide scope of the decline was maintained in succeeding months. More recently, a slight narrowing of the scope of the contraction has appeared, especially in the leading series, when the measurement is made in terms of changes over a three-month span (see Chart 5.3).[15] The improvement has not yet carried as far as the similar improvement had at the end of the first six months of the 1953–54 contraction. At that time (January 1954) four of the ten leading series had already moved above their level at the peak, whereas none had achieved this position by January 1958. Moreover, as is evident from the chart, reversals in these measures are not infrequent. Nevertheless, if the modest improvement that has occurred is sustained and extended, it may signal the beginning of the end of the 1957–58 contraction.

It is well, however, to recall that in business contractions of the dimension that the 1957–58 contraction has so far exhibited, the interval from the business cycle peak to the date when economic activity in general regained the peak level has been at least a year and a half. If the contraction turns out to be more severe than any of the four mild or moderate contractions since 1920, as is presently suggested by the leading indicators, this interval may be exceeded. On the other hand, these measures do not suggest that the period of less than peak activity will extend to the two and a half years that characterized the severe contractions of 1920–21 and 1937–38. In any event, a great deal depends on the governmental and private actions undertaken to bring about an early and rapid recovery.

Some of the distinctive characteristics of the 1957–58 contraction, as it has developed so far, may be observed in Table 5.10. One of the outstanding facts is the relatively small decline in personal income. The decline of 1.3 per cent, July 1957 to February 1958, is only one-sixth as large as the 8.1 per cent declines during the first seven months of the

[15] Julius Shiskin pointed out (in February 1958) a similar development in several diffusion indexes compiled at the Bureau of the Census for the Council of Economic Advisers, and it has appeared in some other diffusion indexes compiled at the National Bureau of Economic Research. These indexes show, for example, that there has been a slight increase in the number of manufacturing industries reporting an advance in the workweek since autumn 1957, and a slight increase in the number reporting a rise in new orders.

CHART 5.3
Measures of the Scope of Business Cycle Contractions

——— Per cent exceeding level reached at business cycle peak
– – – – Per cent exceeding level reached in third preceding month

Ten Indicators of Aggregate Economic Activity

Ten Leading Indicators

Peak   Months after Peak
mo. 3 6 9 12 15 18 21 24

1929-33
P Aug. 29
T Mar. 33

1937-38
P May 37
T June 38

1920-21
P Jan. 20
T July 21

1923-24
P May 23
T July 24

1948-49
P Nov. 48
T Oct. 49

1953-54
P July 53
T Aug. 54

1926-27
P Oct. 26
T Nov. 27

1957-58
P July 57

Per cent expanding

1957-58 scale

JASOND|JFMAMJJ|ASOND|JFMAMJJ
1957   1958   1959
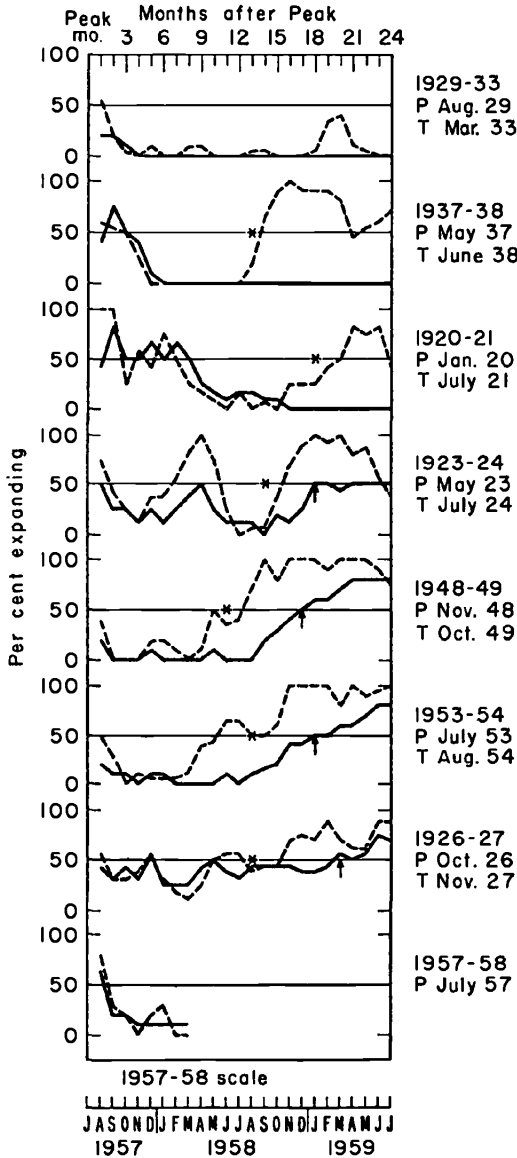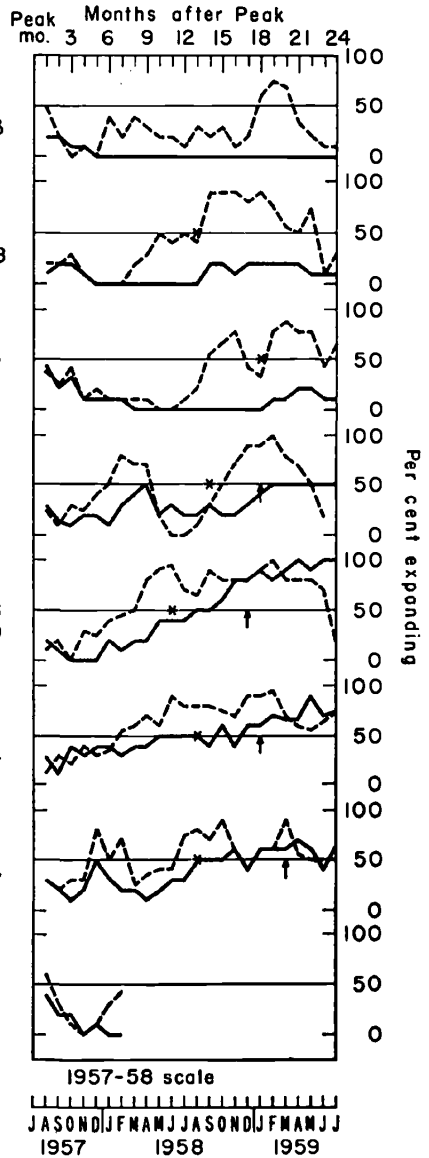
Asterisks represent business cycle troughs.
Arrows represent dates when half of ten indicators of aggregate economic activity exceeded level reached at business cycle peak. For 1920–21 the date is December 1922, 35 months after the January 1920 peak; for 1937–38 it is December 1939, 31 months after the May 1937 peak (see Table 5.8).

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1937 and 1929 contractions. Yet the current decline in employment is more than half as large as in 1937 and 1929, and the current decline in gross national product is also a substantial fraction of the corresponding declines in 1937 and 1929. The greater stability of personal income is partly attributable to the larger role of unemployment compensation and other transfer payments, partly to the growth of employment in government, distributive trades, and other service industries where rates of pay and the volume of employment are typically more stable.[16] In terms of disposable personal income (that is, income after federal income taxes), the contrast between the current recession and those of the thirties would be even greater.

Another unusual and perhaps not unrelated feature of the 1957–58 recession is the fact that the wholesale price index after eight months of recession is still above its level when the recession began. Except for 1920, this is the only recession in which this index, which covers all commodities except farm products and foods, has not declined, although in 1953–54 the decline during the first eight months was minute. In the case of the consumers' price index, the rise during the current recession is less exceptional, as the following figures indicate:

| | PERCENTAGE CHANGE DURING | | | | | |
| | First Eight Months | | | First Twelve Months | | |
Business Cycle Contraction, Beginning	Basic Commodity Price Index	Wholesale Price Index, excl. Farm & Food	Con-sumers' Price Index	Basic Commodity Price Index	Wholesale Price Index, excl. Farm & Food	Con-sumers' Price Index
July 1957	−4.6	+0.1	+2.6			
Oct. 1926	−2.8	−6.0	+0.6	+4.5	−5.9	−1.4
July 1953	+2.0	−0.3	+0.4	+4.2	−0.2	+0.3
Nov. 1948	−24.3	−5.3	−2.1	−22.1	−5.1	−1.9
May 1923	−2.1	−4.7	+1.2	−8.1	−7.0	+0.4
Jan. 1920	−15.2	+9.7	+3.8	−39.2	−18.6	−1.2
May 1937	−23.9	−3.2	−0.9	−32.4	−5.3	−1.7
Aug. 1929	−12.4	−4.0	−0.7	−17.4	−8.6	−4.4

On the other hand, the price index of basic commodities (cotton, wool,

[16] Cf. Creamer, *Personal Income during Business Cycles.* Another factor is the secular decline in the proportion of total income derived from farming, which has in the past declined more sharply than total nonfarm income during business recessions. Indeed, in the current recession farm income has been increasing rather than declining. The increasing number of wage contracts that tie rates of pay to the cost of living, which has risen in the first eight months of this recession, may have imparted some stability to incomes currently, although this hinges on the question whether the resulting increases in wage rates may not have brought about some reduction in hours or in employment.

copper, steel scrap, etc.) has declined during the first eight months of the current recession as it has in every other recession except 1953–54.

In the more severe recessions, all three price indexes declined further in the first twelve months than they had in the first eight. But in the milder recessions an interesting gradation appears. The basic commodity price index showed a smaller decline or an actual increase after twelve months in the 1926–27, 1953–54, and 1948–49 recessions. The decline in the wholesale price index remained about the same. The consumers' price index showed further weakness, so that the declines after twelve months were somewhat greater than after eight (or the increases were less), even in the mild recessions. Thus our figures reflect some of the lagging relations among prices, as well as the influence of mild or deep recessions upon the entire price structure.

Other facets of the 1957–58 contraction are well worth study and reflection when set against the corresponding pattern of events in previous contractions. The "forward look" that these previous contractions provide is illuminating. We have been able to touch on only a few of the many strategic economic variables and relationships that can usefully be analyzed during the course of a business contraction, a fact that underlines the tentative and preliminary character of the experiments reported above.

Addendum

During the summer of 1958, following publication of *Measuring Recessions*, it became apparent that April 1958 would probably mark the end of the business cycle contraction that began after July 1957. The contraction, therefore, lasted nine months. Only three contractions among the twenty-four since 1854 have been so brief, although many have lasted not much more than a year (see Chart 3.10, Chapter 3). The 1957–58 contraction adds one more observation to the evidence that business contractions in the United States have become somewhat shorter than they used to be, before World War I.

The tentative indications mentioned in the paper of a diminution in the scope of the 1957–58 contraction blossomed very rapidly. As the following table shows (Table 5.13), the shift from a general contraction to a general expansion came about more rapidly than in 1954, though not more rapidly than in 1938 or 1923. By August 1958, thirteen months after the peak, three of the ten aggregate indicators were above their levels when the recession began (personal income, bank debits, wholesale prices), and five of the ten leading indicators had reached this position (stock prices, residential building contracts, commercial and industrial building contracts, new incorporations, and the hiring rate).

The method of comparing the severity of the 1957–58 contraction

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TABLE 5.13 (Revised Table 5.8)

Measures of the Changing Scope of Business Cycle Contractions

A. TEN INDICATORS OF AGGREGATE ECONOMIC ACTIVITY

Months after Peak	Percentage Exceeding Level Reached at Business Cycle Peaks[a]								Percentage Exceeding Level Reached in Third Preceding Month[b]							
	July 1957	Oct. 1926[c]	July 1953	Nov. 1948	May 1923[c]	Jan. 1920[d]	May 1937	Aug. 1929	July 1957	Oct. 1926[c]	July 1953	Nov. 1948	May 1923[c]	Jan. 1920[d]	May 1937	Aug. 1929
1	85	44	20	20	38	50	40	20	90	50	50	30	75	100[e]	60	55
2	20	31	10	0	12	83	75	20	40	44	30	0	31	100[e]	55	20
3	10	31	20	0	25	50	50	10	10	31	10	0	25	25	50	5
4	10	31	0	0	12	33	40	0	0	38	10	0	12	42	25	0
5	10	44	10	10	25	50	10	0	20	56	5	30	38	42	0	10
6	10	25	10	0	12	50	0	0	30	31	5	30	25	75	0	0
7	10	25	0	0	25	67	0	0	0	19	5	10	44	50	0	0
8	10	25	0	0	38	50	0	0	10	12	10	20	69	25	0	0
9	0*	44	0	10*	50	25	0	0	10*	25	30	30	100	0	0	10
10	10	50	10	0*	25	17	0	0	50	50	35	70	75	8	0	0
11	10	38	10	0	12	8	0	0	90	56	55	45*	25	0	0	0
12	10	31	0	0	12	17	0	0	100	56	55	50	0	17	0	0
13	30	44*	10*	0	12	17	0*	0	90	38*	50*	70	6	0	20*	5
14	40	44	15	20	0*	8	0	0	80	44	55	100	6*	8	45	5
15	40	44	20	20	19	8	0	0	100	44	70	80	38	0	90	0
16	60	44	40	40	12	0	0	0	90	69	100	100	69	25	100	0
17	60	38	40	50	25	0	0	0	100	75	100	100	88	25	90	5
18	60	38	50	60	50	0*	0	0	100	69	100	100	100	25*	90	35
19	65	44	50	60	38	0	0	0	90	75	100	90	94	42	90	30
20	67[f]	56	60	70	50	0	0	0	89[f]	69	80	100	100	67	80	10
21	67[f]	50	60	80	50	0	0	0	100[f]	62	100	100	94	83	55	5
22	67[f]	56	70	80	50	0	0	0	100[f]	62	90	100	100	75	60	0
23	62[g]	75	80	80	50	0	0	0	100[g]	88	95	90	56	67	60	0
24	75[g]	69	80	80	50	0	0	0	88[g]	88	100	75	25	42	70	0

* Business cycle trough was reached in this month.

[a] Three-month average, centered on the peak month.

[b] The third month after peak is compared with the peak month, the fourth month after peak is compared with the first month after peak, etc. The results are entered in the terminal month of each comparison.

[c] Based on 8 out of 10 series; nonagricultural employment and unemployment rate not available.

[d] Based on 6 out of 10 series; nonagricultural employment, unemployment rate, GNP, and personal income not available.

[e] Based on 5 series; corporate profits after taxes start I Q 1920.

[f] Based on 9 out of 10 series; corporate profits after taxes not available.

[g] Based on 8 out of 10 series; corporate profits after taxes and gross national product not available.

TABLE 5.13 (concluded)

B. TEN LEADING INDICATORS

Months after Peak	Percentage Exceeding Level Reached at Business Cycle Peak^a of								Percentage Exceeding Level Reached in Third Preceding Month^b							
	July 1957	Oct. 1926	July 1953	Nov. 1948	May 1923	Jan. 1920^h	May 1937	Aug. 1929	July 1957	Oct. 1926	July 1953	Nov. 1948	May 1923	Jan. 1920^h	May 1937	Aug. 1929
1	25	30	30	10	30	44	10	20	60	30	10	10	25	38^t	20	50
2	10	20	10	10	15	22	20	20	20	20	30	10	10	25^t	20	20
3	10	10	30	0	10	33	20	10	10	30	20	0	30	44	30	0
4	0	20	30	0	20	11	10	10	0	30	40	30	25	11	10	10
5	10	50	30	0	20	11	0	0	10	80	30	35	40	22	0	0
6	0	30	40	20	10	11	0	0	30	50	45	40	50	11	0	40
7	0	20	30	10	30	11	0	0	50	70	55	45	80	11	0	20
8	0	20	40	20	40	0	0	0	60	25	60	40	70	11	20	40
9	0*	10	40	20	50	0	0	0	50*	35	70	80	70	11	30	30
10	20	20	50	40	20	0	0	0	80	40	70	80	20	0	50	20
11	30	30	50	40*	10	0	0	0	80	40	80	90	0	0	40	20
12	30	30	50	40	20	0	0*	0	100	75	80*	95*	0	11	50	10
13	50	50*	40*	50	20*	0	*	0	90	80*	80	70	10*	22	40*	30
14	40	50	40	50	30*	0	20	0	100	70	80	65	30*	56	90	20
15	40	50	60	60	20	0	20	0	90	90	75	90	50	67	90	30
16	50	60	40	80	20	0	10	0	70	60	70	80	70	78	90	10
17	50	40	60	80	30	0*	20	0	50	40	90	90	90	44	80	20
18	55	60	60	90	40	*	20	0	70	60	90	90	90	33*	90	60
19	65	60	70	80	50	11	20	0	70	60	80	100	100	78	75	75
20	80	60	65	90	50	11	20	0	90	90	80	80	80	89	75	70
21	80	70	65	100	50	22	20	0	100	55	60	80	70	78	55	70
22	90	60	90	100	50	22	10	0	90	50	55	80	50	78	50	35
23	70	40	70	100	50	11	10	0	70	50	65	70	20	44	75	20
24	80	65	75	90	50	11	10	0	50	50	75	20	40	67	10	10

h Based on 9 out of 10 series; average workweek not available.
t Based on 8 series; new orders of durable goods start January 1920.

The seven business contractions before 1957 are arrayed from left to right in order of their severity. Series that are unchanged from peak level, or from third preceding month, are counted one-half in determining the per cent exceeding peak level or third preceding month. The series included are listed in Table 5.10; in addition, the unemployment rate is included with the ten indicators of aggregate economic activity. A rise in the unemployment rate, layoff rate, or business failures is counted as a decline and vice versa. From 1957 on, quarterly series are interpolated monthly and treated as monthly series.

TABLE 5.14

Measures of the Amplitude of the 1957–58 Business Cycle Contraction

Indicator	Standing[a] at Business Cycle		% Change from Peak to Trough
	Peak, July 1957	Trough, April 1958	
Nonagricultural employment, BLS (mill. persons)	52.4	50.1	−4.4
Unemployment rate, Census (per cent)	4.2	7.2	+3.0[b]
Gross national product (Q) (bill. $, ann. rate)	445.6	430.4	−3.4
FRB industrial production index (1947–49: 100)	145	127	−12.2
Freight carloadings (thous. cars per week)	698.3	551.3	−21.1
Bank debits outside NYC (bill. $ per mo.)	125.7	118.3	−5.9
Personal income (bill. $, ann. rate)	351.5	349.9	−0.5
Retail sales (bill. $ per mo.)	16.949	16.377	−3.4
Wholesale prices excl. farm & food (1947–49: 100)	125.6	125.5	−0.1
Corporate profits after tax (Q) (bill. $, ann. rate)	22.1	15.7	−29.0

[a] Three-month average of seasonally adjusted data, centered on business cycle peak or trough months. For quarterly series the peak is III 1957 and trough is II 1958.
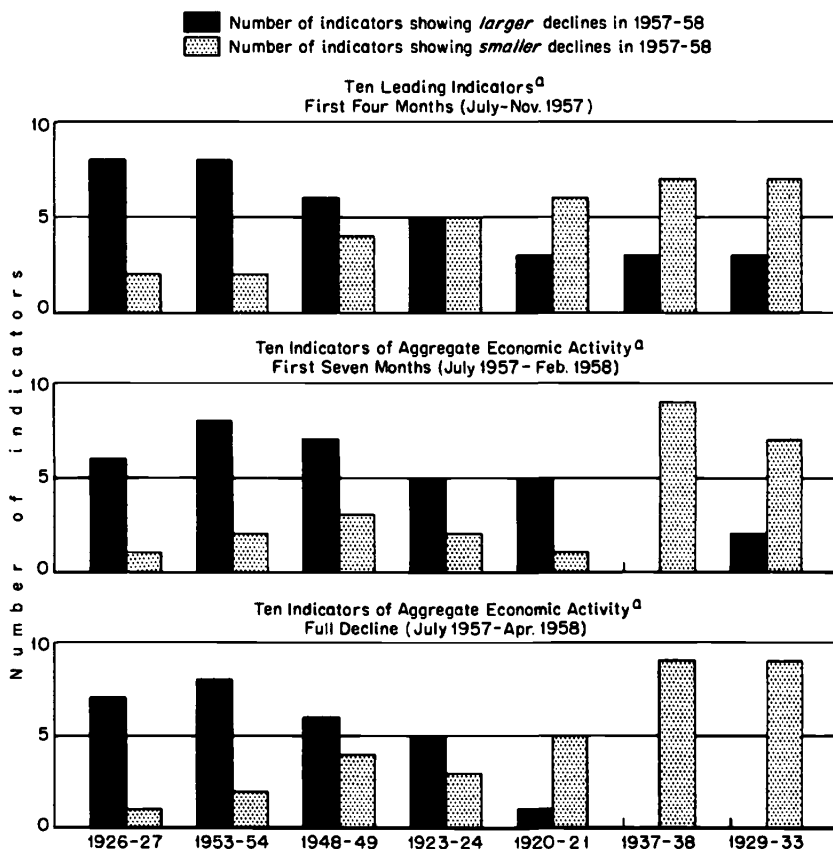[b] Change in the rate.

with earlier contractions month by month worked out as shown in Chart 5.4. The bottom panel shows how the full declines in the ten aggregate indicators from July 1957 to April 1958 compare with their full declines in earlier contractions, which cover a longer span in each case. On this basis the recent contraction was somewhat more severe, by most indicators, than the contractions of 1926–27, 1953–54, 1948–49, and 1923–24. It was, of course, much less severe than those of 1920–21, 1937–38, and 1929–33. This was approximately the picture obtained from the leading series when data for November 1957, the fourth month of recession, became available late in December (top panel), and in each succeeding month thereafter. It was confirmed by the aggregate indicators when data for February 1958, the seventh month of recession, became available late in March (middle panel). The changes in the ten aggregate indicators during the full span of the contraction, July 1957–April 1958, comparable with those for earlier contractions in Table 5.2, are given in Table 5.14.

In terms of the longer perspective provided by Chart 3.10, Chapter 3 (lower panel), the severity of the 1957–58 contraction seems to have been close to the average (median) of the preceding twenty-four contractions. Measured in terms of indexes of general business activity, about half the business contractions over the past century have been less

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CHART 5.4

Severity of 1957–58 Contraction Compared with Earlier Business Contractions

■ Number of indicators showing *larger* declines in 1957-58
▨ Number of indicators showing *smaller* declines in 1957-58

The earlier business contractions listed in order of severity (mildest first) are: Oct. 1926–Nov. 1927, July 1953–Aug. 1954, Nov. 1948–Oct. 1949, May 1923–July 1924, Jan. 1920–July 1921, May 1937–June 1938, Aug. 1929–Mar. 1933.

ᵃ The number of indicators available for each comparison is sometimes less than ten. For list, see Table 5.10.

severe than the most recent one, and half have been more severe. This result is confirmed also by estimates of the percentage unemployed in each contraction since 1900 (Table 5.15).

It should be observed that this experiment in measuring the severity of a recession while it was in progress did not pinpoint the magnitude of the decline. At best, it defined a broad range within which it might fall. Moreover, it was only partly successful in indicating the duration of

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TABLE 5.15

Unemployment Rate at Business Cycle Peaks and Troughs, 1900–58

Business Cycle		Unemployment Rate (%)		
Peak	Trough	At Peak Year	At Trough Year	Change, Peak to Trough
	1900	n.a.	5.0	n.a.
1903	1904	2.6	4.8	+2.2
1907	1908	1.8	8.5	+6.7
1910	1911	5.9	6.2	+0.3
1913	1914	4.4	8.0	+3.6
1918	1919	1.4	2.3	+0.9
1920	1921	4.0	11.9	+7.9
1923	1924	3.2	5.5	+2.3
1926	1927	1.9	4.1	+2.2
1929	1932	3.2	23.6	+20.4
1937	1938	14.3	19.0	+4.7
1944	1946	1.2	4.1	+2.9
1948	1949	3.8	5.9	+2.1
1953	1954	2.9	5.6	+2.7
1957	1958	4.3	6.8	+2.5
Median				
At 13 peaks, 1903–53		3.2		
At 14 troughs, 1900–54			5.8	
Change, peak to trough, 1903–54				+2.7

SOURCE: 1900–39: Stanley Lebergott, "Annual Estimates of Unemployment in the United States, 1900–1954," in *The Measurement and Behavior of Unemployment* (NBER, Special Conference Series 8, 1957), pp. 215–216.

1940–58: *Monthly Report on the Labor Force*, Department of Commerce, Bureau of the Census.

the period of "depressed activity," i.e. the interval from the business cycle peak to the time when activity regains its pre-recession level. Since this interval has in the past varied with the severity of the contraction, the indicated intermediate severity of the 1957–58 contraction implied an intermediate period of "depressed activity," ranging from a year and a half to two years. According to one of the two methods used to measure this period (Estimate B, Table 5.9), the actual interval was a bit more than a year and a half: the Federal Reserve index of industrial production regained the level it had reached before the recession began (July 1957: 145) by March 1959, an interval of twenty months. According to the other method (Estimate A), based on the date when at least five out of ten indicators of aggregate economic activity regained their pre-recession levels, the interval was sixteen months. By November 1958, personal income, retail sales, bank debits, gross national product, and the wholesale price index were above their July 1957 levels, while industrial production, carloadings, nonfarm employment, unemployment rate (inverted), and corporate profits were not.