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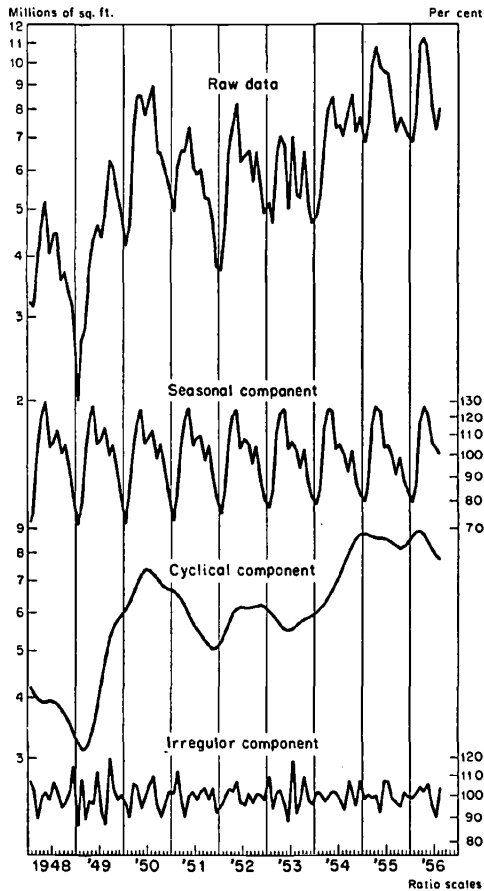Chapter Author: Julius Shiskin

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nomic series are discussed more fully later.

Chart I shows the original observations and the seasonal, cyclical, and irregular factors for a series on total residential building contracts. Chart II shows similar figures for the sales of a major chemical company. In both cases the period covered is 1948–56.

III. ILLUSTRATIVE SERIES—SOME ECONOMIC INDICATORS

Almost any economic series could be used to illustrate the technique of converting the original observations into more useful data, but we have selected some well-known economic indicators, partly because they are of interest for their own sake and partly because they make it easy to show how the final products facilitate economic analysis.

CHART I

THE RAW DATA AND THE SEASONAL, CYCLICAL, AND
IRREGULAR COMPONENTS, RESIDENTIAL
BUILDING CONTRACTS, 1948–56

CHART II

THE RAW DATA AND THE SEASONAL, CYCLICAL, AND
IRREGULAR COMPONENTS, SALES OF A MAJOR
CHEMICAL COMPANY, 1948–56
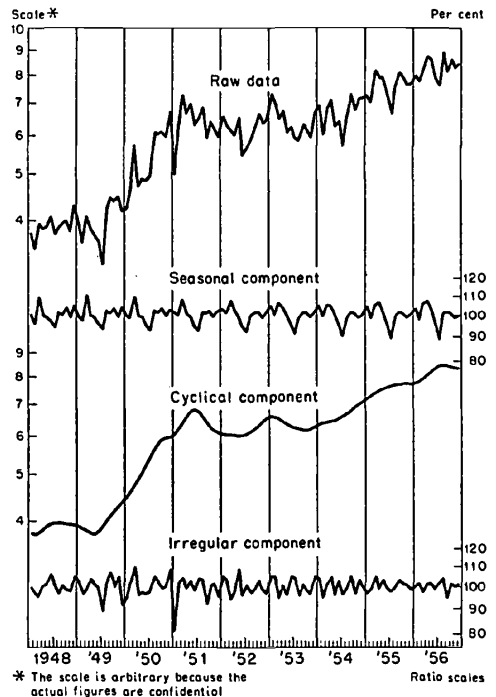
The Federal Reserve index of industrial production and the Bureau of Labor Statistics estimates of non-agricultural employment are shown in Chart III. These series, being of broad industrial scope, represent well the business-cycle movements in the economy. The period selected for this illustration is 1936–39, because the cyclical movements during this period were relatively clear. They were smaller than those of the 1929–35 period but larger than any since the end of World War II. The first curves

show the data as they usually come from the primary sources; the other curves show these raw data after adjustment for seasonal variations.[2] The two series show a rapid rise during 1936 and the early part of 1937. A sharp drop begins in mid-1937 and continues to June, 1938. A rise starts in July, 1938, and continues at a moderate pace during the remainder of 1938 and during 1939. This pattern is shown more clearly in the seasonally adjusted series (e.g., the December to January dips in employment are erased in the adjusted data), though it is also discernible in the series of original observations.

The series on non-agricultural employment and industrial production are relatively smooth; that is, the irregular and seasonal factors are relatively small. Thus the cyclical movements are discernible even in the original observations. Other series are also good economic indicators, though not in their raw form, because relatively large seasonal and irregular movements obscure the cyclical movements. The raw data and seasonally adjusted data for five such series are shown in Chart IV for 1936–39 and 1953–56. Two are series which usually lead at cyclical turning points in the economy as a whole—residential building contracts and liabilities of firms failing (on an inverted basis). Two usually turn at about the same time as general business—total unemployment (on an inverted basis) and freight carloadings; and one usually lags at cyclical turning points—retail sales. All these series are much more difficult to interpret in their original form than those for factory employment and industrial production. At this point, the problem of this paper may be put in this

[2] All seasonal adjustments in this paper are by the electronic computer method. The corresponding 1956 official seasonal factors are given, for comparative purposes, in Appendix B.

way: How can series like business failures and retail sales be made to show their cyclical movements as clearly as those for factory employment and industrial production?

The illustrative series are plotted in various forms to show how the usefulness of raw economic data can be enhanced by various statistical adjustments. The figures for 1936–39 are plotted in Part A in Chart IV and for 1953–56 in Part B.

CHART III

RAW AND SEASONALLY ADJUSTED DATA FOR TWO SMOOTH ECONOMIC SERIES, 1936–39
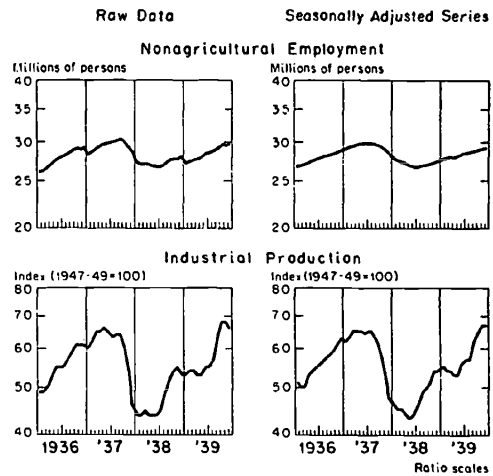
It is plain from the first panel of the charts that it is difficult to trace the path of the business cycle in the raw data. Declines during 1937–38 and during 1953–54 are discernible, but the patterns of the series and the timing relations among them are obscure.

IV. SAME-MONTH-YEAR-AGO COMPARISONS

The simple device of same-month-year-ago comparisons is frequently used to eliminate seasonal fluctuations. Same-month-year-ago comparisons involve dividing the figure for a given month by the figure for the same month of the pre-