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**SEASONAL VARIATIONS  
IN INDUSTRY AND  
TRADE**

**SIMON KUZNETS**

**NEW YORK  
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## FOREWORD

In the course of the nineteenth century, analysis of statistical records led to the discovery that the bewildering variety of changes in economic activities belong to at least four distinct species. Cournot pointed out that secular movements, long recognized in astronomy, have their analogues in economics. Juglar gave precision and content to the conception of cyclical fluctuations that earlier writers had suggested. Jevons developed, though he did not originate, the notion of seasonal variations, seeking to demonstrate their regularity and to measure their amplitudes. Meanwhile the idea that 'disturbing circumstances' of great variety are continually interfering with the 'normal' course of events had become a commonplace in economic theory.

As the multiplication of statistical data and the improvement of statistical technique encouraged economists to attempt bolder quantitative work, they found these concepts useful tools. Most of the time series with which they dealt could be treated as synthetic products of the four recognized types of concurrent changes. While secular trends are creeping up or down, cyclical waves wash above or below the secular levels of the day; seasonal variations diversify the secular-cyclical patterns, and random factors add their unpredictable complications to the secular-cyclical-seasonal complex.

Like most conceptual tools, the four classes of economic changes tended to become independent entities in men's minds, each calling for scientific study. Cyclical fluctuations attracted most attention. Indeed, most of the attempts to measure secular trends and seasonal variations have been made by men who wished merely to eliminate these movements in order to get a clearer view of 'cycles'. Only sporadically have investigators treated secular or seasonal changes as problems possessing interest in their own right. The literature upon these topics is scanty in comparison with the voluminous publications upon business cycles. To random perturbations scarcely any attention has been given except as the most troublesome of all side-issues in cyclical studies.



The time is ripe for more systematic and more thorough work. To promote that understanding of economic fluctuations which the world so sorely needs, the intensive study of business cycles must be supplemented by equally intensive work upon secular trends and seasonal variations. That much seems clear. It is not sure that systematic study of random perturbations will yield valuable results; but the prospects are good enough to justify experiments. Efforts should be made also to determine whether other types of change, in addition to the four familiar types, must be recognized. Only by learning all we can about the several components of economic changes shall we learn all we can about the total situation. But concentration upon one type of change should always include consideration of the way in which the type under scrutiny is related to the others.

For several years the National Bureau of Economic Research has been working upon business cycles. One of its research associates has been studying secular movements. An extension of this program to seasonal variations was a natural development, since the cyclical work required measurements of the seasonal components in some hundreds of statistical series.

Dr. Kuznets was peculiarly fitted by his earlier investigations to direct the seasonal studies. His first book, *Cyclical Fluctuations, Retail and Wholesale Trade*, published in 1926, and the leading part which he had taken in the National Bureau's business-cycle program gave him intimate familiarity with the cyclical component in economic changes. His second book, *Secular Movements in Production and Prices*, published in 1930, made him familiar with another component. With seasonal variations themselves he had an intimate acquaintance gained in the process of eliminating them from some hundreds of time series.

In preparing the present report Dr. Kuznets has supplemented the seasonal by-products of the cyclical work by making many additional measurements. The result is a systematic account, unrivalled in scope and vividness, of the rôle played by seasonal variations in production and prices. The way in which these changes dovetail into one another, the way in which they affect and are affected by changes in industrial equipment and in stocks of commodities; the alterations to

which seasonal variations are subject from year to year and over longer periods, and the relations of seasonal to cyclical and secular movements are all set forth. I am sure that economists and statisticians will find the work enlightening; I think that business men will find it of practical value.

WESLEY C. MITCHELL

National Bureau of Economic Research  
January 21, 1933

## ACKNOWLEDGMENTS

This book is the product of more than one man's work and application. Its basic data could not have been assembled and analyzed without the resources of the National Bureau of Economic Research. And the task of organization and interpretation was greatly facilitated by the participation of many individuals to whom I wish to express appreciation.

The manuscript was read by the Directors and research staff of the National Bureau. Especially valuable comments were made by Professor Edwin F. Gay, Colonel Malcolm C. Rorty and Professor Harry Jerome. Of the Research Associates, Dr. A. G. Silverman, and particularly Mr. Arthur F. Burns, have made far-reaching suggestions, most of which have been adopted.

Throughout the progress of the study, I have been greatly helped by Mr. Denis Volkenau and Mr. H. Irving Forman. Mr. Volkenau has had a large share in the task of computation and has also contributed various criticisms. Mr. Forman, besides assisting also in the computations, is responsible for the charts. Miss Cicely Applebaum made numerous suggestions towards the revision of the manuscript and has prepared the index. The editing of the manuscript has been carried through by Miss Martha Anderson.

Of those outside the National Bureau, I am indebted most to Miss Arynness Joy of the Research Division of the Federal Reserve Board. Miss Joy not only read the manuscript and gave valuable advice, but also made available the results of the Federal Reserve Board's extensive studies of seasonal variations. Mr. A. W. Zelomek of the Fairchild Publications has been helpful in connection with Chapter IV, and Dr. E. H. Hempel of General Motors Export, in connection with Chapter V.

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SIMON KUZNETS

New York  
January 22, 1933

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## APPENDIX I

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