
The two volumes of selected essays appeared in the series ‘Economists of the Twentieth Century.’ Despite the fact that in 1976 five bound volumes of Frisch’s publications appeared, because of his impact on econometrics and equantitative economics, it is entirely appropriate and fully justified to have a collection of his work included in a series on influential economists of the twentieth century. Volume I contains an introduction to the life and work of Ragnar Frisch who, together with Jan Tinbergen, is the originator of econometrics. Volume I is devoted to Frisch’s contributions to three areas: utility measure-
ment and the theory of index numbers, statistical techniques and econometric methods, and statics and dynamics. Volume II is subdivided into four parts covering decision models and preference functions, programming techniques, other theoretical contributions, and a section looking ahead and looking back. The volumes illustrate quite well how broad Frisch's research interests and achievements were.

It was not uncommon in the beginning years of the Econometric Society that researchers worked on a broad range of topics. But Frisch's oeuvre, just as that of Tinbergen, is exceptionally broad and rich in terms of contributions to methods for measurement estimation, to empirical studies of industries and the economy, to planning, programming, and economic theory. With one exception, all essays have been published in journals or a contributions to books. However, without the publication of these two volumes some of these essays might not have been so easily accessible as they appeared in the late 1920s and early 1930s in journals not generally available.

The introductory chapter on Ragnar Frisch and his scientific achievements written by the editor of both volumes is very informative and interesting. Bjerkholt succeeds in portraying Frisch during the various episodes of his life. The introduction reads extremely well. It is full of biographical details and anecdotes. The portrait of Frisch as conveyed by Bjerkholt is that of a hard-working, perfectionist, innovative and very broadly oriented econometrician with much social concern and strong beliefs in the making of society through macroeconomic planning. He was strongly opposed to Norway's membership of the EEC. Frisch was more an initiator of new approaches rather than a consolidator writing the final important work in a field. He had a passion for numerical calculations as the collection of selected articles nicely illustrates. He proposed new terminology such as econometrics, microeconomics and macroeconomics. He played an active role in promoting the modern economic view on appropriate macroeconomic policy measures.

Bjerkholt distinguishes two main periods in the scientific career of Frisch which stretched over a time-span of more than fifty years: the pre and post-World War II periods. In the pre-World War II period, Frisch played a prominent role in the international community of econometricians. From 1933 on, he was an editor of Econometrica for some 22 years. He published papers in theoretical statistics, theoretical economics, especially monetary theory, production theory and value theory, and econometrics. He was very much interested in the measurement of marginal utility and consumer demand analysis.

The first chapter of volume I is a reprint of Frisch's (1926) article 'On a Problem in Pure Economics' which is concerned with theoretical quantification using an axiomatic system and statistical measurement of marginal utility. Chapters 2–4 are concerned with index numbers, in particular the true cost-of-living index, whereas chapter 5 is a reprint of an article on estimation of a complete set of demand functions.

Part II of Volume I includes major contributions by Frisch to time series and econometric methods. Chapter 6 entitled 'Correlation and Scatter' analyses multiple regression models using matrix methods. Chapter 7 summarizes some of Frisch's contributions to the decomposition of economic time series into cyclical and other components. The next two chapters of part II are concerned with introducing confluence analysis, a general method for econometric analysis in the presence of errors-in-variables and multicollinearity, and with discussing pitfalls in the analysis of simultaneous equation models. Chapter 10 discusses regression analysis in the presence of trending variables. Chapter II deals with an econometric analysis of the chocolate industry. Finally, chapter 12 is a discussion of
Tinbergen's macroeconomic model of the US economy constructed in 1938 for the League of Nations.

Part III deals with macro and microdynamics. It is concerned with carefully defining static and dynamic equilibria, with the relation between capital production and the rate of consumption and with an analysis of the causes of cycles and the role of stochastic disturbances (in chapter 15, 'Propagation and Impulse,' the work for which Frisch was awarded the Nobel Prize). Contributions by Frisch to the analysis of oligopolistic markets, input-output analysis, to solving mixed difference and differential equations, and to the notions of equilibrium and disequilibrium are also included in this part.

Volume II is largely devoted (with two exceptions) to Frisch's work after World War II when he became preoccupied with economic planning, first in Norway and later in India, the United Arab Republic, and the Soviet Union. Part I of Volume II collects contributions about several macroeconomic planning models developed by Frisch. In these contributions Frisch often elaborates on his modelling approach, in particular on his belief in the need to use a preference function to assess the consequences of policy decisions. Of special interest are his attempts to estimate preference functions by sophisticated interviewing of policy decision makers. In his early work, Frisch had already developed the interview technique to measure marginal utility.

Part II of Volume II is a collection of articles on programming techniques. It is especially worthwhile to mention the 'multiplex' method developed by Frisch as an alternative to the simplex method in linear programming and the 'nonplex' method which handles non-linear programming problems with non-convex feasibility regions. Some of Frisch's theoretical contributions in the field of taxation problems, forecasting multilateral balance of payments, trade, welfare economics, expenditure functions, growth theory and utility theory are included in part III.

Frisch's Nobel Prize lecture is included in part IV together with his inaugural lecture at the University of Norway in 1932 on 'New Orientations of Economic Theory: Economics as an Experimental Science' and an essay on 'The Responsibility of the Econometrician' originally published in *Econometrica* in 1946.

In conclusion, Bjerkholt has succeeded in writing a short but very informative biography of Ragnar Frisch and in making a selection which is illustrative for his extensive scientific work. It would have been useful had he included a complete biography in these volume. Moreover, the title 'Foundations of Modern Econometrics' is not entirely apt. In my view, Haavelmo's 'Probability Approach' rather than Frisch's confluence analysis laid the foundation of modern econometrics. The selection of contributions is balanced in the sense that it includes theoretical and empirical contributions and essays on Frisch's views on econometrics and economic modelling. The volumes contain a lot of material useful to those who want to learn about econometrics and study its history.

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