Book Review

Assar Linbeck (ed.), *Nobel Lectures: Economic Sciences 1969–1980*, World Scientific (1992), ix + 442 pp. (price $36.00).

Karl-Göran Mäler (ed.), *Nobel Lectures: Economic Sciences 1981–1990*, World Scientific (1992), ix + 332 pp. (price $36.00).

These two beautifully edited volumes contain the Nobel Lectures on Economic Sciences, presentation speeches and biographies of laureates from 1969 to 1990. The first Nobel Prize in Economic Sciences was given to Ragnar Frisch and Jan Tinbergen for their pioneering work in Econometrics. They have developed and applied dynamic models for the analysis of economics processes. The last Prize reported in these volumes, to Harry Markowitz, Merton Miller and William Sharpe in 1990, was awarded for their studies of markets for financial assets.

During the first decade, the Nobel Prize in Economic Sciences covered a broad field, including pure theory, methodology, as well as empirical analysis of short and long term economic developments. The 1970 Prize was given to Paul Samuelson for the scientific work through which he has developed static and dynamic economic theory and actively contributed to raising the level of analysis in economic science. Simon Kuznets received the 1971 Prize for his analysis of long term economic development. John Hicks and Kenneth Arrow received the 1972 Prize for their pioneering contributions to general economic equilibrium theory and welfare theory. The 1973 Prize was awarded to Wassily Leontief for input-output analysis. Gunnar Myrdal and Friedrich von Hayek (1974) received the Prize for their early work on macroeconomic theory as well as for their analysis of the interaction between economic, political and social phenomena. Leonid Kantorovich and Tjalling Koopmans received the Prize (1975) for their work on the optimal allocation of resources. In 1976, the Prize was awarded to Milton Friedman for his analysis of the monetary history of the United States, as well as for clarifying the complexities of stabilization policy. Theory-oriented Prizes in specific areas of economic research have been awarded to Bertil Ohlin and James Meade (1977) for their analysis of international trade and capital movements, and to Herbert Simon (1978) for his research on the decision-making process within economic organizations. The 1979 Prize was awarded to Theodore Schultz and Arthur Lewis for their research on issues concerning long-term development of less developed countries. Lawrence Klein (1980) was awarded the Prize for contributions to econometric model building.

During the decade of 1980s (second volume) one finds that the Nobel Prize in Economic Sciences has been awarded twice for basic theoretical work, twice for methodological contributions, three times for studies in macroeconomics, twice for contributions in microeconomics, and once for studies in the economics of the

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public sector. The 1981 Prize was awarded to James Tobin for his work on mathematical models of investment decisions. In the following year George Stigler received the Prize for his contributions to our understanding of markets. In 1983, Gerard Debreu was awarded the Prize for basic research. His studies of the existence of competitive equilibria used advanced mathematics in order to show under what conditions the basic microeconomic model is logically consistent. One of the basic tools for economic analysis is the Standard National Accounts and Richard Stone was awarded the Prize in 1984 for his important work in developing such accounts. Franco Modigliani received the 1985 Prize for his pioneering analyses of saving and of financial markets. While most of the laureates were awarded their Prizes for research concerning allocation of resources through markets, the Prize in 1986 was awarded to James Buchanan for his studies of allocation of resources through the public sector. He was followed in 1987 by Robert Solow who was awarded the Prize for his contributions to the theory of economic growth. In 1988 Maurice Allais was awarded the Prize for his theoretical contributions to our understanding of the role of markets for efficient allocation of resources. In 1989 this was followed by a Prize to Trygve Haavelmo for his clarification of probability theory foundations of econometrics and his analyses of simultaneous economic structures.

Mathematical programming appears in many parts of economics, especially in mathematical economics and econometrics. Therefore it is not surprising that many of the Nobel Prizes in Economics were awarded for work that involves mathematical programming. For example, Kantorovich received the Prize for developing the theory of linear programming and applying it to the problem of optimum allocation of resources. On the other hand, economics provides us difficult optimization problems and striking applications. For example, nonlinear concave variable costs appear whenever the number of units of a product increases, the unit cost strictly decreases (economies of scale). These are basic global optimization problems.

Both books are elegant, well conceived and well edited. Even the price, by today's standards, is very reasonable. Readers will find these books useful and interesting. More interaction between optimization researchers and mathematical economists will benefit both groups.

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