

DAVID CASS

DISTINGUISHED FELLOW

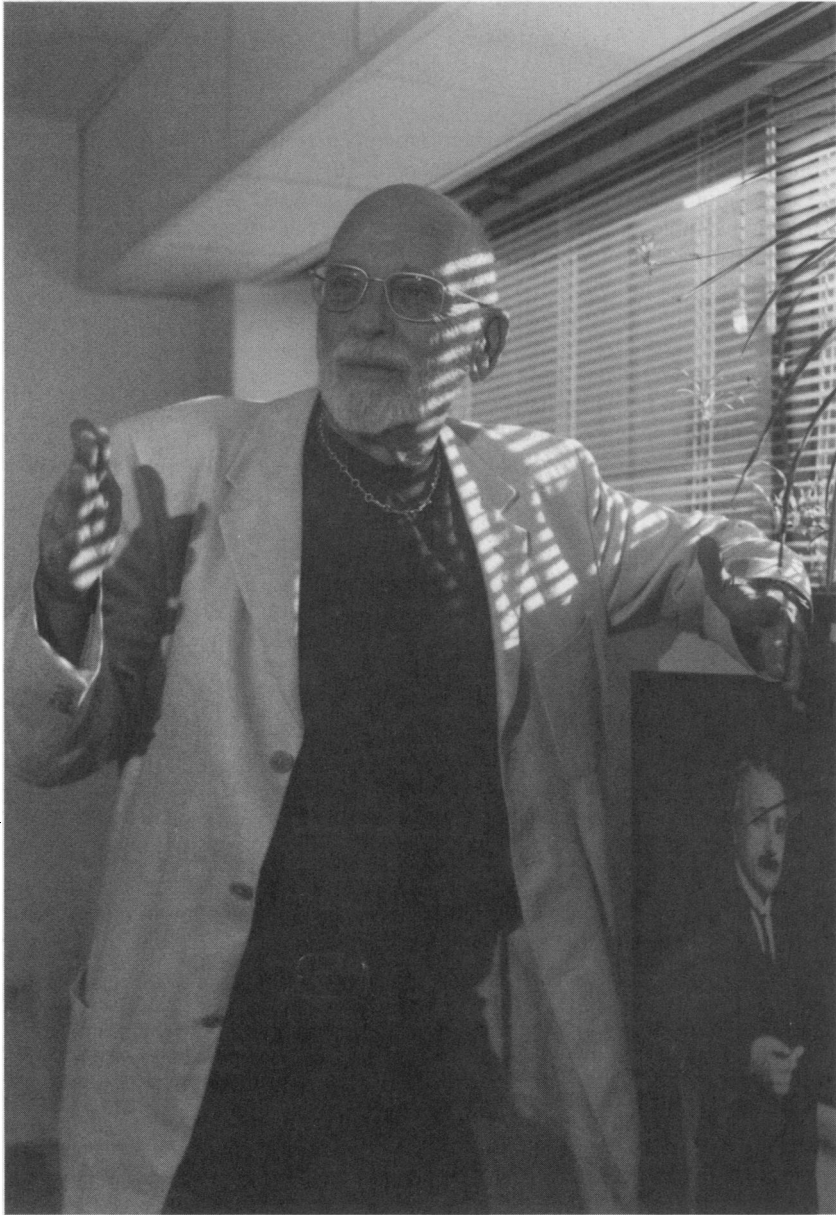
1999

David Cass has devoted his career to the investigation and, in many cases, the solution of problems and puzzles of economic theory. These researches have led to innovations in economic theory that have spawned extensive literatures. A striking example is the vast literature on the role of sunspots, or extrinsic uncertainty, in economic dynamics. Another is the application of the neoclassical model of capital accumulation to problems of economic growth. Still another is the implication of incomplete markets for intertemporal equilibrium. Cass has not hesitated to devote major stretches of time to the solution of problems which might be characterized as puzzles of pure economic theory. For example, he spent a year seeking a necessary and sufficient condition for efficiency in the neoclassical model, a condition difficult to prove, but simple and surprising. Of course, it is a fundamental result for the theory of capital accumulation. David is fond of discussing problems with colleagues and students, beyond the usual limits. This has led to many collaborations and joint papers. He has often pursued ideas that others might find eccentric, at least initially, such as the role of sunspots in competitive equilibria.

The best way to see the extent of David's accomplishments is to describe some of the theorems he has proved. With Stiglitz he showed that a necessary and sufficient condition on utility functions to make it possible for an investor to achieve an optimal portfolio by buying only two mutual funds is that the utility function be either quadratic or imply constant relative risk aversion. Also with Stiglitz he proved that the demand for money could not be derived from portfolio analysis in the general case. His year devoted to the search for a necessary and sufficient condition for efficiency in the neoclassical growth model led to the remarkable condition that the sum of the inverses of the present prices of capital over the infinite future should be finite.

David Cass has made many contributions to the study of economies with markets that open repeatedly over time. With Okuna and Zilcha he showed that the presence of money did not avoid the possibility of nonoptimal equilibria in consumption load models. With Balasko and Shell he proved the existence of equilibrium in overlapping-generations models. In a very original departure he and Shell developed the notion of sunspots, that is, extrinsic uncertainty, and examined its implications for general equilibrium. They showed that sunspots lead to multiple equilibria and the loss of Pareto optimality when markets are incomplete. In a similar vein Cass demonstrated that incomplete financial markets lead to a continuum of perfect-foresight equilibria and a loss of Pareto optimality.

Returning to growth theory, in the multisector neoclassical model he and Shell proved one of the first turnpike theorems for discounted utility. With Mitra he found conditions that support economic growth despite vanishing natural resources. In still another area with Chichilnisky and Wu he uncovered sufficient conditions on the structure of risks faced by market participants so that a relatively small number of markets is adequate for an efficient allocation of risks. Today David remains an active and productive researcher. We expect more corrections and extensions of economic theory as he attacks further problems and puzzles. We thank him for the numerous and important contributions he has already made.



David C