BOOK REVIEWS

Thomas J. Sargent, Macroeconomic Theory (Academic Press, New York, 1979) pp. xiii + 404, $24.50.

Macroeconomic Theory, a book which grew out of Thomas Sargent's lecture notes for first-year graduate students at the University of Minnesota, is an effective, if highly selective, analysis of current macroeconomic issues. It is an important book, not only because it gives the first systematic textbook treatment of 'rational expectations' macroeconomics by one of its major developers, but also because it provides a thorough review and evaluation of the now standard 'neoclassical synthesis' — the core of standard macroeconomic theory. The book would be appropriate for a number of alternative uses: as a basic textbook for first-year graduate students already acquainted with *IS-LM* type reasoning, as a supplement to a more advanced course in macroeconomic time series analysis, or as a reference on techniques for researchers studying macroeconomic problems using rational expectations or dynamic optimization methods.

According to the preface, Sargent's aim in the book is to avoid 'a unified treatment of a single, widely received macroeconomic theory since the economics profession has not yet attached itself to any one such theory'. Fortunately, however, the book is not as eclectic or varied as such an aim might imply. To be sure, there is a balanced treatment of both the classical and the Keynesian versions of the neoclassical synthesis, but the unmistakable tenor of the book — especially in the latter two-thirds — clearly reveals an attachment to a particular macroeconomic theory: one in which economic agents are assumed to solve explicit dynamic optimization problems with rational expectations, and interact in a competitive system with perfectly flexible prices and instantaneous market clearing. This theory — Sargent calls it the 'new classical macroeconomics' — is developed in bits and pieces throughout the book and pulled together into a comprehensive model in the final chapter. In a frequently rousing style, Sargent defends and contrasts this new classical macroeconomics with the 'Keynesian-activist' view. In the process, he presents and applies a wide array of mathematical and statistical techniques, including optimal control, stochastic difference equations, recursive projections, and signal extraction. His impressive application of these methods to substantive economic problems is easy to admire and tempting to imitate, even if one is not entirely sympathetic with the view Sargent espouses. The methods themselves — including the causality tests and other model-free methods of Sims — have a much wider range of application in macroeconomics than to the new classical model on which Sargent focuses.

The book is divided into two distinct parts, a division which reflects a recent shift in the methodology of macroeconomics. Part I, the shorter of the two, and taking up the first third of the book, is titled 'Non-stochastic Macroeconomics'. It concentrates on the basic neoclassical-synthesis model without uncertainty. Part II then considers models with uncertainty and techniques of stochastic analysis, as suggested by its title 'An Introduction to Stochastic Macroeconomics'. Some motivation for this heavy emphasis on stochastics is probably in order, for although it parallels much of the recent research literature of macroeconomics, it is unusual for a textbook treatment, even at the graduate level. The emphasis should not be viewed as esoteric or as a portrayal of an interest in new techniques for their own sake. Many of the theoretical explanations put forth during the last decade to explain empirical macroeconomic regularities stress the role of information restrictions on economic agents. A natural way to model these information restrictions and the attempts of agents to deal with them is through the techniques of probability and statistics. The Lucas supply function is one important example of

this; the labor contract model of Azariadis is another. For this reason alone, stochastic analysis has become an integral part of macroeconomic analysis. An equally important reason to stress the stochastic treatment is the direct econometric motivation behind much theoretical work in macroeconomics. In developing models in stochastic terms, one is forced to begin thinking about shocks to the equations and the variables at the start, and to describe how economic agents will react to these shocks and attempt to forecast them. The result is usually an econometric model complete with a specification of the disturbance terms, ready to confront the data. If one started with a non-stochastic treatment, error assumptions and general econometric considerations would necessarily be appended at a later stage, and not integrated into the behavioral equations of the models. The finding — illustrated at several places in this book — that constraints on the error process and the structural equations are generally related to each other, indicates the value of starting from a stochastic model.

The non-stochastic model which is the focus of discussion in Part 1 of the book consists of three assets (money, government bonds, and equities) and three sectors (households, firms, and government). In the 'classical' version of the model wages and prices are perfectly flexible while in the 'Keynesian' version wages are fixed (or predetermined) and prices are flexible. Except for the novel emphasis on Tobin's q as an argument of the investment function (in place of the difference between the real rate of interest and the marginal efficiency of capital), this much is standard textbook fare. But the analysis goes beyond the usual textbook treatment by taking account of balance sheet and budget constraints and tracing the flow of funds and the accumulation of stocks throughout the economy. By keeping explicit track of these flows, Sargent is able to use this framework to investigate a number of important macroeconomic controversies (some old, some more recent). For example, the liquidity preference versus loanable funds controversy is examined briefly yet clearly, with the impression given that there should have been no controversy at all. The government budget constraint controversy, as raised by Christ and others is considered in a section whose title 'In Defense of Keynesian Analyses that "Ignore" the Government Budget Constraint', accurately portrays its conclusions. And Clower's critique is examined, though too briefly, in the section 'Keynesian Economics and Walras' Law'.

Another departure from the usual textbook treatment comes in the development of a version of Tobin's dynamic aggregative model as an alternative to the neo-classical-synthesis model's reliance on a flow investment function. In Tobin's model there is no cost of adjustment (as if there is a perfect market in existing capital) so that the marginal productivity of capital is instantaneously equated with the real rate of interest. This equality is the algebraic replacement for the flow investment function in which investment moves as the real rate of interest departs from the marginal productivity of capital. As Sargent argues, this replacement is a good way to highlight the importance of the flow investment equation in the neoclassical-synthesis model. Although there is no flow investment function in Tobin's model, the flow of investment is, of course, well defined over time from the rate of change in the capital stock. While all the action appears to come from savings behavior (the supply side), one can tell a behind-the-scenes story of investment demand which is consistent with evolution of the capital stock. The empirical difference between the flow investment equation and the Tobin model is therefore a matter of timing and dynamics. Sargent's interpretation seems to make too much of this timing difference.

In continuous time (where most emphasis is placed in this part of the book) the timing difference can appear to be quite dramatic, for the capital stock is fixed in the first instant. Hence, fiscal policy does not matter in the first instant in Tobin's model, although monetary policy does matter, and this leads Sargent to accuse Tobin's model of having strong monetarist implications. According to Sargent (p. 127): 'As a comparison of the Keynesian model with Tobin's dynamic aggregative model reveals, whether or not it is assumed that there exists a market in stocks of capital at each moment has drastic theoretical implications, particularly about the potency of fiscal policy as a device for inducing short-run movements in output and employment'. The implicit definition of short-run in this statement is *at a point in continuous time*. The results concern the magnitude of the *instantaneous* impact of a shift in fiscal policy. True, the instantaneous effect is zero in the Tobin model, but subsequent to this 'short run' the model can generate a positive impact of fiscal policy on output. The lag patterns of the fiscal multiplier is not unusual   negligible weights in the first insta;   rising (perhaps significantly) in subsequent periods before tapering off again. (Sargent only briefly discusses the possibility of this

follow-up effect, focusing the analysis on the instantaneous impacts.) With a flow investment equation derived from a formal cost of adjustment framework, a similar dynamic multiplier representing the effect of fiscal policy would not be surprising; that is, a small effect at the start and larger effects later. The empirical difference between the two approaches therefore seems rather minor. In both models fiscal policy matters if one looks beyond the first instant, and the dynamic fiscal policy multiplier would be virtually impossible to distinguish empirically. Sargent's contrast between the theoretical mechanisms driving investment in the two models is a useful textbook innovation, but the empirical differences do not appear to be as great as his interpretation would suggest.

As mentioned above, Part II is where the bulk of the new classical macroeconomics and its associated techniques of analysis are developed. The technique chapters are quite extensive and generally well done. The chapter on stochastic difference equations and spectral methods is especially useful in its explicit applications to macroeconomic time series problems. The discussion of the choice of a definition of business cycles, and in particular the problems associated with definitions which are based on peaks in the spectral density is enlightening. The presentation of the spectral techniques themselves is a bit rough, however. especially to students who have not yet had a good econometrics training, and will probably have to be supplemented by other introductory references to the subject.

The techniques of statistical projection theory are used in the derivation of some of the stochastic models. With some loss of generality it may be preferable from an expository viewpoint to use the more familiar results on conditional means for the multivariate normal distribution. The signal extraction problem and the Lucas supply function can be developed a bit more intuitively by using well-known results from normal distribution theory than by relying solely on the more general projection methods.

State preference methods are used for most of the discussions of risk-bearing topics in the text, including the Modigliani–Miller theorem, the Tobin model of money demand as behavior toward risk, and the Azariadis model of contracts. Presenting these topics using state preference methods requires, of course, that the student be familiar with state preference theory, and a brief introduction to the subject is provided in the text. Moreover, several graduate programs now offer courses which cover the economics of uncertainty, so that state preference techniques will be familiar to many students. It is an advantage to see the relationship between these various problems in risk-taking, which Sargent's use of the state preference methods makes clear. In the case of money demand, he also gives the more conventional mean-variance approach after assuming a normal distribution. This is a useful supplement to the more abstract derivation.

The components of the new classical macroeconomics are developed in the chapters of the Lucas supply function, on the derivation of factor demand functions, and on the calculation of rational expectations equilibria. These elements are combined in a single model in the chapter 'Aspects of the New Classical Macroeconomics'. An aspect of the new classical macroeconomic model which has generated both enthusiasm and criticism is the ineffectiveness of monetary policy in influencing the behavior of output and employment. This ineffectiveness property is established in a simplified version of the model, focussing on the Lucas supply function, in the chapter 'Optimal Monetary Policy', which is essentially a review of Sargent's early work on the subject with Neil Wallace.

Sargent's presentation of the new classical macroeconomics concentrates entirely on the class of rational expectations models with perfectly flexible prices and wages. The rational expectations approach does not, of course, require the assumption of perfect price or wage flexibility, and a number of macroeconomic rational expectations models have been developed using price or wage contracts. Some of these contract-based rational expectations models have been motivated by doubts about the policy ineffectiveness results in flexible price models, but others have been motivated by the aim of making rational expectations models more accurate and more conformable to the model-builder's conception of economic reality. In any case, it is now well-known that the policy ineffectiveness results derived by Sargent do not generally hold in rational expectations models which drop the perfect price-flexibility assumption, and that several empirical regularities such as the persistence of inflation and unemployment emerge naturally in these 'other' rational expectations models. The contract-based rational expectations models have also been useful in explaining empirical regularities in international finance, such as the over-shooting of exchange rates.

These well-known points are raised again in this review because Sargent's representation of the new classical macroeconomic model, with its perfectly flexible prices and wages, now appears to be a special, or even narrow, class of rational expectations research. It would be a mistake to equate rational expectations macroeconomics (which emphasizes the efficient use of information, the optimizing behavior of economic agents and the Lucas critique of econometric policy evaluation) with the new classical macroeconomic model presented in this book. But it would also be a mistake to conclude that Sargent's innovative approach to research on theoretical model development and empirical analysis, so evident in this book, needs to be confined to this special class of rational expectations models. The development of contract-based rational expectations models already owes much to his approach to macroeconomic research.

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Michael F. Koehn, Bankruptcy Risk in Financial Depository Intermediaries (D.C. Heath and Company, Lexington, Massachusetts, 1979) pp. xi + 156, $19.95.

In this monograph, the author describes a study of the effects of solvency regulations on depository intermediaries. Perhaps as well as anyone, I realize that it is easier to criticize models of financial intermediation than it is to produce a satisfactory alternative. But given the absence of a generally accepted model of the intermediation process, one should take considerable care in making statements about the effects of existing solvency regulations on depository intermediaries. Mr. Koehn has not exercised sufficient care in this study.

The model of an intermediary used in this study is the standard one period mean-standard deviation portfolio model. Mr. Koehn justifies this choice instead of an approach that considers the firm's market value because 'the vast majority of commercial banks and S&Ls are small and closely held,... these same institutions are not generally traded on an organized stock exchange, and...in the case of mutual organizations, management and ownership is clearly separate' (p. 35). Since the institutions of most concern to the regulators are large and have common stock that is publicly traded, these three reasons for not considering market values are not very satisfying. Even for small, non-public firms, owners and managers face opportunity costs that are market determined and have market opportunities that are external to the firm that will influence their decisions within the firm (e.g., 'homemade' leverage vs. leverage by the firm). Recent work by Black (*Journal of Financial Economics*, 1975), Kareken and Wallace (*Journal of Business*, 1978), Dothan and Williams (*Journal of Banking and Finance*, 1980), and others show some of the important insights regarding the regulation of financial institutions that can be gained from models in which there are complete markets for securities.

In addition to the usual limitations of a partial equilibrium model, the absence of a dynamic framework in this study precludes the consideration of certain issues. In this regard, it is difficult to see any justification for the author's attempt to consider the effect of reserve requirements on risk-taking when he uses a model in which there can be no demand for cash reserves.

A final criticism of Koehn's approach to the problem of solvency regulation in the U.S. is that he does not consider deposit insurance and its effects on risk-taking. Many students of U.S. financial institutions, including those mentioned earlier, consider deposit insurance to be a major aspect of the solvency regulation problem, and its omission in this study is a serious flaw.

Even considering Koehn's study on its own grounds, it is highly unsatisfactory. A theoretical analysis of solvency constraints and of the maximum allowable probability of bankruptcy in the mean-standard deviation context takes up over thirty pages of the book. Some of the shortcomings of this analysis can be illustrated by considering three of the conclusions that Koehn reached using it:

(1) 'Portfolio restrictions increase the probability of bankruptcy' (p. 7). — This result is obtained at two places in the book, first when the author considers the effect of asset restrictions