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## Book Review

### Subjective equilibrium theory of the farm household

*Subjective Equilibrium Theory of the Farm Household*. C. Nakajima. Elsevier, Amsterdam, 1986, xii + 302 pp., US \$57.50/Dfl. 155.00, ISBN 0-444-42646-9.

Translated by Ryohei Kada, this work is a revised version of Nakajima's book of the same title published in Japanese in 1983. It presents his normative theory of the farm household, a topic on which over the years since 1949 he has published 11 major articles, all except one being in Japanese. The book is thus a most welcome addition to the English-language literature.

Nakajima's purpose is to provide a theoretical model of the farm household's decision-making behaviour, the farm household being defined as an economic entity which is a complex of the farm firm, the laborer household and the consumer household. Decision making is based on the behavioural assumption of utility maximization. The basic approach is that of the theory of subjective value and equilibrium as developed by Hicks in *Value and Capital*, complemented by an extension of Marshall's concepts of producer and consumer surplus to include also concepts of laborer, self-employed producer and prosumer surplus, the latter being the surplus accruing to a totally self-sufficient farm household.

The presentation is largely via the differential calculus supplemented by the extensive use of diagrams in the usual well-labelled fine-line Japanese style. Indeed, the author – in one of many idiosyncratic but entertaining asides – justifiably describes himself as a “diagrammatical economist”.

The book is divided into 12 chapters. The farm household is defined in Chapter 1, along with a two-way classification of farms in terms of proportion of labor hired and degree of self-provisioning. Here Nakajima also notes topics not covered in this presentation, viz. savings and investment behaviour, yield fluctuations and questions of location à la Von Thunen. Other limitations, not acknowledged, are the exclusion of price risk and the ignoring of intrahousehold decision processes.

The utility function of the farm household is presented in Chapter 2. Initially a utility function with family labor and money income as arguments is assumed. Chapter 3 deals with the subjective equilibrium of a farm household where the farm firm is fully commercial and uses only family labor. In this chapter one seeks for the contrast of subjective equilibrium vis-à-vis objective equilibrium (or some such concept) which is not given. However, some indication is provided in Chapter 9 where the author briefly discusses Chayanov's founding work on the theory of the subjective equilibrium of the peasant farm household in contrast to that of capitalist (i.e. profit-oriented) farms.

The stability conditions for subjective equilibrium of the farm household (a complex of the farm firm and the labor household) and the effects of parameter changes on it are considered in Chapter 4. Parameter changes examined are changes in asset income, product price, land area, number of dependents and size of the labor force. All the effects thus derived are intuitively appealing but what is disappointing is that where intuition fails, the differential calculus does no better. For example, the effect of product price change on family labor use and farm output (pp. 47–49) remains indeterminate.

Chapter 5 discusses the subjective equilibrium of a farm household which is totally self reliant and self sufficient in production and consumption.

Chapter 6 extends the subjective equilibrium theory of the farm household by introducing markets for factors of production. The markets considered are for land use, fertilizer and daily-wage labor. This chapter provides the gist of Nakajima's farm-household modelling where the farm household's decision-making while facing a competitive labor market is derived in two stages. The first stage is concerned with the amount of output to be produced and the total amount of labor to be used based on profit maximization. At the second stage, the farm-household's decision is made as to how such family labor is to be used based on the criterion of utility maximization. However, the complexity of labor markets – particularly in developing countries – makes the analysis look too simple.

Chapter 7 deals with the subjective equilibrium of the farm household consuming a portion of its output. The farm household considered on this chapter is a complex of the farm firm, the laborer household and the consumer household. Chapter 8 compares the subjective equilibrium of the farm firm, laborer household and consumer household with the subjective equilibrium of the farm household.

Chapter 9 demonstrates that Nakajima has improved the clarity of Chayanov's and Otsuki's models of the farm household, both of whom he recognises as precursors of his own work. One of the advantages of Nakajima's representation is that the economic surplus obtained by the relevant economic entity (the farm firm, the laborer household, the consumer household or the farm household) can be shown by an area in his diagrams. This chapter also discusses product supply under the various farm-household models developed in earlier chapters. Table 9.2 (p. 197) presents the effects of a rise in product price on amount of production, amount of home consumption and amount of supply. Out of twelve relevant cases the theory can decide only five; the remaining seven cases are left for empirical wisdom.

The subjective equilibrium of the farm firm (not, as implied by the chapter title, the farm household) under tenancy arrangements of fixed and share rent is considered in Chapter 10. An overall conclusion drawn by the author is that share tenancy is less efficient than leasehold tenancy from the standpoint of resource allocation. Chapter 11 examines the subjective equilibrium of the farm

household under fixed-rent and share-rent arrangements. The overall conclusion reached in this chapter is similar to that of Chapter 10.

In Chapter 12 Nakajima considers some applications of his subjective equilibrium theory of the farm household. The major topics considered are choice of technology and seasonality in production. Then the book comes to an abrupt end. One misses some kind of summarizing synthesis.

Overall, Nakajima's theory of the farm household as espoused in this book might be described as bearing much the same relation to real-world farm households as the theory of perfect competition does to real-world markets. It is logical, insightful and limited. The real farm households of the world lie outside the coverage of this book which has little to offer empirical agricultural economists grappling with the complexities of farm households in a risky environment. Except for some conceptual insights, they are likely to gain more stimulus from the paths to empirical analysis opened by such contributors as Becker (1965) – whose work receives mention in but a single footnote (p. 144) – and Barnum and Squire (1979) – whose work receives no mention. None of these comments, however, undermine Nakajima's meticulous effort to contribute to theoretical agricultural economics.

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## References

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