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Lexicographic Wants in LDC Agriculture

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Abstract: In relation to the economic analysis of decision making on small farms in less developed countries (LDCs), two issues are examined—the irreducibility of wants and the social context of the decision maker. The purpose is to show that, by ignoring these issues, the agricultural economics discipline could, in many instances, be overlooking significant relationships in the appraisal of rural development policy. Irreducibility of wants means, in the jargon of economic theory, that overall indifference across product space in individual preference arrangements is lacking. The implication of irreducibility is that wants must be ordered lexicographically. When wants are ordered in such a manner, the social context of the decision maker becomes paramount. An investigation of the methods of other disciplines shows that the lexicographic system of ordering is in strong accord with the approaches that sociologists, human psychologists, and economic anthropologists take to analyzing small farm decision making in LDCs. Indeed, by being unconstrained by the continuous preference function system of neoclassical economics, those disciplines appear to have the potential of examining much more fertile ground in showing what actually promotes rural development.

Introduction

Georgescu-Roegen (1954) suggested that some basic flaws existed in the precepts of mainstream neoclassical economics. The response of economic theoreticians to that challenge was almost nil. The mainstream seems to have proceeded from strength to strength, ignored the criticism, and continued to base its central philosophical position and construct theories and models on what Georgescu-Roegen would regard as dubious theoretical foundations. The issue seems not to have percolated down to the agricultural economics profession, which, mindful of its own comparative advantage in applied work, has been working steadily onwards using the neoclassical model handed down by the theoreticians.²

The purpose of the present paper is to highlight two critical aspects of the thesis proposed by Georgescu-Roegen and to show their relevance to the modelling work of agricultural economists in less developed countries (LDCs).³ The two areas for consideration are the irreducibility of wants and, stemming from it, the need to study decision makers within a social context. By examining these issues, the basic problem of agricultural economics modelling in LDCs is revealed to be the omission of key variables as a result of following, in blinkered fashion, the dictates of economic theory.

At certain points, the modelling work of other disciplines, particularly sociology, anthropology, and psychology, is introduced as a useful vehicle for clarification of issues. Throughout, the tenet used to judge the various modelling approaches is their value in illuminating aspects of the real world of vital importance to rural development policy.

The Irreducibility of Wants

Menger (1950) noted that needs require a complex of goods for fulfilment and that most goods contribute to more than a single need. As Lancaster (1971) showed, this by itself does not invalidate the approach of neoclassical microeconomics as long as one now conceptualizes the basic unit of analysis not as a good but as that portion of the good that helps satisfy a particular want.

The important additional consideration, shown by Georgescu-Roegen, is the irreducibility of expressed needs (wants). The theory is that a hierarchy of wants exists that are fulfilled by individuals in a lexicographic manner. Not until the most basic wants (e.g., thirst, hunger, and shelter) are satisfied will less basic wants (e.g., social esteem) appear. Such a discrete ordering of wants is in complete contrast to the mainstream neoclassical model, which converts all wants to a single continuously distributed want called utility. Choice in this latter model is across a continuous indifference surface where utility measures the degree to which overall wants (needs) are met.

The correspondence between a model describing choice in terms of a hierarchy of wants and many actually observed choices is easy to show (see Lutz and Lux, 1979). This does not necessarily invalidate models based on an assumption of choices across continuous indifference surfaces, because the significant choices may be between alternatives that meet a certain want, disregarding all others, or the continuous want model might be considered a reasonable approximation of the real world even in situations where choice involves differently ranked lexicographic wants. The arguments in the remainder of this paper show that this case is unlikely to be the situation for most farmers in LDCs

and that this case is an heroic assumption that in the past has often misled researchers rather than aided them towards a useful abstraction of the real world.

Models of Individual Farmer Decision Making in LDCs

Constrained Utility Maximization

The model that epitomizes the agricultural economics approach to analyzing individual farmer decision making under uncertainty in LDCs is one based on constrained utility maximization (Anderson, Dillon, and Hardaker, 1977; and Savage, 1954). Studies using this approach assumed that farmers act as individuals in organizing agricultural activities or (less frequently) agricultural activities together with household activities in order to maximize expected utility subject to constraints such as their available productive resources, their attitudes towards risk, and their knowledge of agricultural techniques. Dillon and Scandizzo (1978) classify the approach to modelling decision making under uncertainty into five types: economic anthropology, econometrics, farm risk programming, sectoral risk programming, and expected utility and safety first theory. They provide key references in each of these areas and then develop a model based on the last. Except for economic anthropology, these methods are examples of constrained utility maximization.

One positive aspect of this type of modelling is that it is based on a recognition that knowledge of events at the individual decision maker level is relevant to agricultural development issues. This is in contrast to most market-level partial equilibrium analyses. In comparison to the discrete lexicographic objective function, the constrained utility maximizing models employ continuous objective functions incorporating expected income (or wealth) and variability (often variance) in income (or wealth). This aspect places these models in the same category as the neoclassical economics models. In addition, the emphasis on financial gains and losses has tended to mean that important social activities and relationships included in some of the alternative models discussed below have been omitted from the agricultural economists' models.

The constrained utility maximizing model purports to show the production activities that should be implemented to optimize an individual farmer's (elicited) objective function. Implicit aggregation is then made across the population of farmers to suggest, for example, that policies should be instituted to encourage adoption of a particular innovation shown to be profitable in the constrained utility maximizing model. First, this model does not include a hierarchical nature of wants, and second, perhaps as a consequence, it misses any social interaction that might exist between farmers and that (in an economic model) might be represented as external effects. If the first issue is significant, then the model may give an incorrect solution even at the farm level both in a positive and a normative sense. If only the second issue is significant, then farm-level solutions may be meaningful, but the aggregation process is meaningless, so that policy statements based directly on the results are of limited value.

For instance, the model may suggest that relatively wealthy farmers, whose elicited utility functions portray only slight risk aversion, should be first to adopt a new innovation. However, actual wealthy farmers may feel themselves under social pressures, not represented in a model that optimizes across the single want (utility), that prevent them from adopting the innovation. For them, a higher level want is dominant—that of prestige. Thus, the wealthy are not the first to adopt the innovation because of the risks to such prestige should the innovation prove unsuccessful. An interesting aspect of this example is that the outcome of risky choices across higher order wants may jeopardize basic survival wants.

The second issue is that of modelling farm decision makers as individuals outside their social context. This is described in a wider modelling context by Coleman (1984) and is elucidated further in discussion of economic anthropology below. In LDCs, the form of social interaction between individuals is often significant to economic analysis and prevents simple aggregation from individual farm models to sector-level results.

A Humanistic Psychology Approach⁴

The humanistic psychology approach is based on the notion of human growth proceeding sequentially through a series of needs (Lutz and Lux, 1979). Maslow's (1970) five-level hierarchy of human needs parallels closely the hierarchy of wants in Georgescu-Roegen's analysis. These five

levels from lowest to highest are physiological, safety and security, belongingness, esteem, and self-actualization. The theory is that a higher level need will not motivate the individual until a basic need is satisfied. Also, once basic needs are satisfied, individuals will direct their attention towards higher level needs.

The literal content of the theory can be criticized by pointing to individuals in any society who are in a situation of poverty but who still take part in activities that are directed towards fulfilling higher level self-actualization needs. However, such an example still fits within a lexicographic arrangement of needs and does not negate the importance of obtaining knowledge of the needs profile of a target population in a particular LDC.

Another factor of some importance is the observation that, when individuals have been constrained at the lower needs levels for some time, their values may become fixed in a manner that prevents their growth to higher needs levels. People who have been living close to subsistence levels for some time may thus find that altering their values and growing out of material poverty are difficult. An example is given in the next section of a poor Mexican farmer who, when confronted with new-found wealth, immediately spends it in what, to an outsider, looks like wasteful extravagance. Then he returns to a situation of eking out an existence.

Overall, observations from humanistic psychology support the lexicographic wants model, and the humanistic psychology approach provides a richer descriptive explanation of needs motivating wants.

Economic Anthropology

The methods of economic anthropology have developed rapidly during the last 15 years. Sanday (1976) and Barlett (1980) provide a review of the anthropologists' approaches to analyzing farm-level decision making in LDCs. They regard the set of resources available to farmers in LDCs to be much broader than those represented in the constrained utility maximizing model. Not only would land, labour, and soils be included, but also resources such as information about agricultural techniques or credit and political power.

Selby and Hendrix (1976) describe the development of an anthropological linear programming model to represent the decision making process of a poor Indian farmer in Mexico. The key difference between this model and the constrained utility maximizing model is in the objective function. Instead of optimizing a function involving income and its variability, the anthropological model optimizes across a function involving: personal betterment as a function of current wealth, income, status of kinship relations, village conditions, level of education, number of working sons, and health; lifestyle as a function of leisure time, food and dress, village conditions, diversions, and household amenities; security as a function of number of sons and level of wealth; respect, which depends on amount of community service, status of kinship relations, and level of education; and leisure, measured by number of days of leisure per year.

Selby and Hendrix provide four model solutions for this farmer, with solutions differing from each other because of different initial levels of wealth. When the level of wealth rises, the attributes of the objective function representing survival needs become less important in determining behaviour and are replaced by lifestyle, respect, and leisure variables. The appraisal of these solutions by Parton (forthcoming) shows that a constrained utility maximizing model would only provide similar solutions to them in situations where the level of wealth was not changing substantially. In the conceptual framework of humanistic psychology, these would be situations in which decisions relate to a single need level and where the need level is not changing.

Another significant difference between the constrained utility maximizing approach and the economic anthropology approach is that the former treats decision makers as individuals removed from their social contexts. The anthropologists (e.g., Berry, 1980) consider that constraints imposed on others by an individual's decisions are extremely significant variables that are well worth studying. Moreover, the context for studying these relationships should take cognizance of the form and quality of the social relationships between individuals. Rogers (1983) provides many examples in an agricultural extension context where apparently worthwhile innovations were not adopted because such interrelationships were ignored.

Summary and Conclusions

Two issues relevant to modelling agricultural decision making in LDCs were examined in this paper. These are the irreducibility of wants and the social context of the decision maker. These are areas relatively neglected by agricultural economists. The significance of this lack of attention remains to be tested, and such testing would require the collection of information additional to that generally used in economic analysis. In the light of this difficulty, approaches of other disciplines within the humanities were examined. Other disciplines generally do consider the irreducibility of wants and the social context of the decision maker in their analyses. As a consequence, they may be moving towards a modelling approach that has more value than that of agricultural economists in illuminating aspects of the real world relevant to rural development policy.

In contrast to that, an evaluation of the agricultural economics literature on farmer decision making in LDCs reveals that, except for farming systems research, the literature is firmly based on a pseudo-scientific approach that, at face value, has tended to constrain what is examined. Hence, a lexicographic ordering of wants is hardly ever considered. Freeing the rhetoric in a manner proposed by McCloskey (1983) may lead to much more relevant information being used. The "best" agricultural economics modellers already allow their models the so-called "nonscientific" aspects (see, for instance, the treatment of sociological variables by Dillon and Scandizzo, 1978). For them, the model is only part of the analysis—a tool for logical thinking about one or two particular aspects of the problem. The drawback is that few "best" modellers exist. Most researchers are constrained by the discipline of mainstream microeconomics, and for them the model is the analysis. They may, consequently, be looking under the wrong stones in their empirical work, or at least not considering the investigation of potentially fertile areas under some stones.

A minor improvement would be to convince the "best" modellers to describe more clearly what they do and thereby remove the "scientific" veil from their analyses. For example, what is the process by which a particular conclusion is reached despite contradictory hard empirical evidence? This is rarely described because it is considered unprofessional.

A major change would involve transposing some of the freer rhetoric of other social science disciplines into agricultural economics. A major advantage of these other disciplines is that they are relatively unconstrained in the way they involve themselves in actual issues in LDCs.

Notes

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²Johnson (1976) provides a fuller explanation.

³The author believes this work is of wider significance, but agricultural decision making in LDCs is his area of interest.

⁴With the usual caveat, the author would like to thank Vic Wright for useful suggestions on this section of the paper.

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