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## DISCUSSION: AGRICULTURAL ECONOMICS: A CRITICAL REVIEW OF THE STATE OF THE SCIENCE\*

Robert W. Rudd

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Jim Martin has addressed the topic assigned in systematic fashion. He has provided a frame of reference, defined his terms, avoided argumentation over the question of whether or not agricultural economics is a science, and proceeded to develop a historical review of the progress of the field during the last half century. This is a well organized, concise article. Because of its scope, as Martin has defined it, most of his remarks define the nature of the science and provide a useful panoramic view of its history and development since the 1920s. As a consequence, his comments on the current status and prospects of our profession, or "science" if you prefer, are somewhat circumscribed.

As I interpret Martin's conclusions as to the current status and future of the profession, four points stand out.

1. The problems of agriculture which call for economic analysis have grown more complex, more interdependent, and more international with time, but agricultural economists are still using the analytical tools of the 1950s and 1960s, which are becoming ever less adapted.
2. Though the profession has performed passably well, or better, in the microeconomic areas of analysis, it has made little progress from the plateau of the late sixties in capability for conducting timely empirical general equilibrium analyses of modern agriculture.
3. Martin finds particular shortcomings in macroeconomic analyses of marketing and distribution problems in agriculture. He feels that unless agricultural economists provide more results in these areas, they may lose much of their traditional eminence in the policy area and become no more than skilled technicians.

4. Finally, Martin appears to feel that since the 1960s the development of the profession has become static, with little innovation by way of new techniques to address more complex problems at greater levels of aggregation.

I want to return at the end of my remarks to comment in particular on this last point.

In an overall sense, Martin's is a first person paper. It expresses his individual views, and this feature led me to comment on some of the views of others as a background for discussion. I reviewed the comments of a collection of people in our profession—people who had occasion to reflect particularly on the state and future of the discipline. I refer to the last half dozen or so Presidents of the American Agricultural Economics Association and a sprinkling of senior scholars who chose to evaluate the profession's progress either in presidential addresses or invited papers. These observations are from the mid-sixties forward in time. The resulting summary of views, admittedly somewhat fragmentary and eclectic, may serve to round out the picture of recent years and to identify both some recurring themes and divergences in views of the state of the science.

We might appropriately begin with the comments of one of the senior scholars of our profession, Maurice Kelso, who gave careful thought to the question addressed here and provided a provocative assessment of the state of the profession in the mid-sixties [7]. Kelso's appraisal of the state of agricultural economics was flavored heavily with a concern for the extent to which agricultural economics as a discipline can (1) discover what values people hold and how they will behave and (2) contribute thereby to the prescription of policies which will attain people's goals. In the process of his

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assessment, Kelso wrestled with the question of whether agricultural economics is a science or an art or some combination of the two. Much of the response which Kelso's pronouncements generated in the *Journal* revolved around (1) the issue of art or science (or what?), (2) the injured feelings of some practitioners in the profession who felt that Kelso was unduly harsh in his treatment of quantitative techniques, and (3) the extent to which the application of quantitative methods brought departures from reality in the interests of elegance of presentation or conceptual completeness [2, 4, 9].

Some themes have recurred more than once in recent years as luminaries in the field or those in leadership roles in the profession (who are, on occasion, both) have assessed its progress. My old friend and former colleague, Glenn Johnson, reflecting the turbulent concerns of the campus at the turn of the 1970s, addressed the topic of the search for relevance in agricultural economics [6]. With the decline in pressing rural problems in the early 1970s, Johnson noted the tendency of that time for agricultural economists in growing numbers to transform themselves into other kinds of economists seeking broader bases of inquiry, even to such arcane areas as urban problems. Johnson's view was that, indeed, the field was not disappearing. Rather, the challenge was to pursue problem solving, pragmatic issue-oriented work, which was amenable to multidisciplinary efforts, properly administered, in contrast to a continued pursuit of more narrowly oriented problems of a disciplinary nature lacking in practical consequences. Johnson's point, it seems to me, was that the emerging problems were at once clearly relevant for the skills of agricultural economists and so complex as to necessitate a multidisciplinary form of attack.

The theme of relevance recurs in the Presidential Address of Jim Neilson three years later, in 1974, when he observed that, "Selection of more relevant problems to work on is the most crucial step in performance—we want to apply appropriate methods to the problems we work on. But in the past decade, I believe we have overinvested in the development and refinement of quantitative methods. We have spent too little time and energy on discovering and tackling the emerging economic and social problems that most trouble our society" [10]. Further, Neilson sensed that the key to future support for the profession lay in improved accountability—of justification of use of public funds in terms of purposes, progress made, and results obtained. Neilson also cited among elements of performance needing im-

provement our ability to predict economic events, particularly at the macroeconomic level, noting failures to predict such economic and social phenomena as the behavior of the economic system, inflation, unemployment, farm prices, consumer prices, and aggregate incomes.

Jim Bonnen, in his Presidential Address to the American Agricultural Economics Association in 1975, found one of the profession's serious areas of neglect to be obsolescence of concepts in current use in agricultural data systems [1]. Bonnen pointed to the serious consequences of the failure to update concepts—such conceptual notions as the farm as a unit of measure, and farm income as a concept—as data have been updated and improved. This responsibility in the area of economic magnitudes for agriculture, Bonnen emphasized, is the appropriate task of the agricultural economist—not the statistician.

The need for multidisciplinary team efforts of economists, in conjunction with animal scientists, agronomists, entomologists and other specialists, to resolve policy or production management issues was stressed by Lee Kolmer, Dean of Agriculture at Iowa State in the same year, who also expressed continued concern for recognizing and coping with the practical economic problems of a changing agriculture [8].

Ken Farrell, in his Presidential Address in 1976, was most critical of the contributions of agricultural economists in policy analysis [5]. Farrell cited several aspects in describing these shortcomings. His list includes areas of inadequate knowledge of linkages of food production and environmental quality, lack of knowledge of the impact of certain institutional factors on foreign demand for U.S. commodities, lack of knowledge of linkages between macroeconomic variables and food demand, and obsolescence of our data systems. Farrell criticized the partial and independent nature of analyses of phenomena which are clearly interdependent. Also included in Farrell's view of inadequacies of the profession were the crudity of models linking the farm input and product markets, the obsessive concern with production agriculture, and the tendency to ignore the interdependence of farm and nonfarm sectors as these compete for resources. His discussion was not completely negative toward the accomplishments of the profession, however. He gave positive credits to our pragmatism and technical expertise, and the ability of our profession to stay in tune with reality through the linkages of research and extension programs.

In the same year, 1976, Ed Schuh, in an invited address, castigated the profession for

its failure to correct the error of treating the macroeconomic problems of U.S. agriculture in the context of a closed economy, and thus failing to treat the linkages between farm and non-farm sectors as well as the increasingly important linkages to an international economy into which U.S. agriculture and the economy must fit in an interdependent fashion [11].

Emery Castle, another past president of AAEA, in an invited address last year, shares Jim Martin's concern that agricultural economists may become no more than technicians for microeconomic analysis rather than respected policy scientists [3]. Castle feels that possibility may come about through lack of emphasis in graduate training in such areas as macroeconomics, monetary and fiscal policy, international trade, and economic development. Such deficiencies may lead agricultural economists to neglect these aspects of current problem sets to the extent that other professionals must fill the gap.

Castle also feels that the profession may have failed to distinguish properly between quantitative techniques and an empirical orientation. As Castle sees it, our empirical orientation has the constructive purpose of allowing the researcher to analyze reality better, whereas many of our quantitative techniques are unrelated to this role. Castle cites the normative nature of much of the programming work and the futuristic aspects of systems dynamic models in support of this view. He concludes that the traditional well-deserved reputation of agricultural economists for empirical work may be seriously impaired by overemphasis on quantitative techniques with builtin normative assumptions.

To summarize some of the features of status of our profession, viewed from the recent past, I offer several impressions.

1. Our profession is, and is likely to remain, a people-oriented discipline, limited in precision by the behavioral variability of its subjects, yet concerned with measuring its observations and applying quantitative techniques to analyze them—and well adapted for multidisciplinary efforts with professionals in other fields.
2. We have a continuing need to recognize the changing nature of the problem sets which we as agricultural economists are to address, and to remember the pragmatic orientation of our past successes.
3. By the very nature of most of our employment, we have continuing concerns for relevance in the problems we choose

to analyze and responsibilities for accountability in the use of public funds in the research we do and the programs we initiate.

4. Our fascination with quantitative techniques must be tempered with a willingness to maintain an orientation to reality; we must recognize that economic concepts as well as techniques can become obsolete and ours is the responsibility for revision of each.
5. By any standards, our profession appears to be awarded high marks in the microeconomic area. This view is uniformly held.
6. The profession has a responsibility for recognizing areas of weakness such as our lack of emphasis on macroeconomic aspects of agricultural problems, farm-nonfarm sector relationships and the like, and the possible consequences for the position we occupy in policy questions. The profession has a responsibility to take steps to improve, both in training new practitioners and in renewing skills of current members of the profession.

I would like to close my comments by returning to one of the main thrusts of Jim Martin's review as I see it—that we, as a profession, leveled off in the late 1960s and have made little progress in the development of innovative analytical techniques in the macroeconomic area. We must ask rhetorically, why has this happened? Why has the profession moved more slowly and cautiously since the late 1960s?

I would like to advance, in response, a speculative hypothesis. Agricultural economists, like all academic discipline followers, are still in the shock wave of the growing public disenchantment with higher education which began in the early seventies and the increased reluctance to support higher education. To this is added the forecast of declining enrollments in colleges and universities by the turn of the century, or earlier, and the dilemma of some disciplines already faced with serious underemployment. It is my hypothesis that these developments have led practitioners in our profession to become more apprehensive of cutbacks in support and to return to areas of traditionally higher payoff and greater security. Is the observed increase in demand for new graduate Ph.D.s with interests in such traditional areas as marketing and farm management a mere cyclical swing from the emphasis on development and resource economics of a few years ago, or is it reflection of the

relative decrease of funding for more venture-  
some areas and retrenchment toward areas

which in the past have shown a positive payoff  
with traditional clientele?<sup>1</sup>

<sup>1</sup>An anonymous reviewer also suggests that the course of future development of the analytical techniques is shaped by the areas of investigation most heavily supported. For example, the thrust during the 1950s and 1960s toward international development economics contributed greatly to more a macroeconomic type of analysis, whereas its decline in support in the 1970s has reduced emphasis in macroeconomic analysis. Similarly, the return of emphasis to the traditional area of farm management can be expected to contribute more to development in microeconomic analysis.

As a second anonymous reviewer points out, there are several other possible reasons for the diminished progress in developing new techniques generally. They include the responses of agricultural economists to the economic rewards system, with more attractive rewards in the private sector and the comparative effort/payoff in academe of application of existing techniques versus the development of new analytical methods.

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