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Economic Theory in Agricultural Economics Research

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An inevitable tension prevails between the application of a science and its parent discipline The worker who wishes to address actual problems must use a general theory that is often ambiguous when applied in certain circumstances Few contemporary agricultural economists would deny the importance of economic theory, but opinions vary about its use generally and the most effective specific theory for addressing particular problems

Agricultural economists use as well as contribute to economic theory A few examples of theory contributions serve to make this point

T W Schultz and J Kenneth Galbraith are agricultural economists whose work is of such generality that they have been claimed by the parent discipline of economics Both have held professorships in recognized university departments of economics, and both have served as president of the American Economic Association Schultz is a Nobel Laureate in economics Others, Fred Waugh, Mordecai Ezekiel, and Elmer Working, for example, have done research that was promptly recognized in the parent discipline and became a part of mainstream literature Marion Clawson's theoretical insight on demand for outdoor recreation led to an enormous literature in recreation economics Original work by other agricultural economists was recognized only after comparable discoveries had been made by economists The work by Heady and Dillon preceded by a decade comparable developments on duality in economics (Berndt and Field, p 3) [1] Halter, Carter, and Hocking's note on the transcendental production function anticipated the "translog" production function in current use Mark Regan's contribution in using welfare economics as a theoretical base for benefit-cost analysis was recognized by only a few contemporaries doing comparable work In Regan's case, it probably could not have been otherwise because of the nature of his USDA appointment As a member of the interagency committee that developed the controversial "Greenbook," he was not free to publish his work independently until considerable time had passed By then others had covered the same ground in more academically oriented literature

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[1]See complete citation at end of article

Intensity of Use of Economic Theory

Agricultural economic literature varies with respect to the intensity of use of economic theory At one extreme, theory is used only as a general guide to inquiry by assisting in delineating problems, isolating major variables, and suggesting cause and effect relation ships Empirical investigations resulting from such an approach may be, but are not necessarily, highly quantitative Here, one's primary intent is not to question the applicability of economic theory, but inadequacies or anomalies may be noted and preserved in the hope they will be addressed in subsequent theoretical investigations This general use of theory does not permit theory to be "tested" except in a most indirect way

The above approach is not in style today A closer correspondence between theory and real world conditions is now believed more appropriate This view, which stems from logical positivism, holds that theoretical concepts are valid only if they can be quantified or lead to theoretical propositions that can be quantified For applied research purposes, theoretical concepts without major modification may be adequate for real world situations (in effect, theoretical propositions are assumed to have empirical content) In such circumstances, the purpose of the investigation is not to question deductions from theory but rather to apply or illustrate them in a particular setting Rigorous methods may well be employed Economic models may be specified mathematically, elaborate surveys may be conducted, and sophisticated quantitative techniques may be used But the employment of such methods will not ensure that either the empirical content of economic theory will be questioned or economic phenomena will be better understood Theory may be rescued from reality in several ways models may be reformulated, variables defined differently, significance levels adjusted, and different data sets tried

The most intensive use of economic theory in applied research assesses the correspondence of theoretical explanations or predictions with reality An attempt is made to judge whether the investigation has led to an improvement in real world understanding beyond that implicit in the theory And here is the rub How is this to be decided, or how does one know that better understanding has been achieved? Neither the philosophy of science nor the methodology of economics pro vides a ready answer

Research Methodology in Applied Economics

Logical positivism and logical empiricism dominated the philosophy of science for a period and have had a major influence on the methodology of many disciplines, including economics Under logical positivism, theoretical propositions are to be tested or confirmed by experience Many scientific advances have emerged from the research of those who used, or believed they were using, this approach, but there has been a steady erosion in the adherents of this point of view within the philosophy of science Karl Popper proposed that positivism be modified by requiring that theoretical propositions were scientific only when capable of being falsified Thomas Kuhn reacted to Popper by saying falsification is not the way science is practiced and questioned whether science could be practiced that way Others, for example, Peter Feyerabend, have argued against a general methodology in science altogether A more moderate position is that of Imre Lakatos, who believes science proceeds in the context of research programs, rather than by crucial tests of particular hypotheses He sets forth criteria for judging if research programs are progressive or degenerative (see Blaug, Caldwell, and Hausman for summaries)

These developments in the philosophy of science have not gone unnoticed in economics A journal, *Economics and Philosophy,* established in 1985, examines methodological approaches in economics by the use of philosophy as well as economics Recent books on methodology in economics include Blaug, Caldwell, and McCloskey Although the three agree on one point (that economists give far more lip service to falsification than can be justified by the use they make of it), their prescriptions for the improvement of economics are quite diverse Blaug would have economists give greater attention to falsification—they should practice what they preach Caldwell recommends pluralism alternative approaches for the explanation of economic phenomena should be pursued and compared McCloskey is more critical of the rhetoric of economics than of its content He argues that economists should be more explicit about their methodology If they were, he believes they would utter fewer brave words about falsification and rigorous tests of theoretical propositions

Such matters have received some recent attention by agricultural economists In 1985, Alan Randall organized a session and presented a major paper at the annual meeting of the American Agricultural Economics Association on alternative theoretical approaches utilized in natural resource economics Yet, one can hardly say that agricultural economists are preoccupied currently with the philosophical or methodological base from which they work This contrasts with their considerable familiarity with quantitative methods, including operations research techniques and data processing

Theory and Reality

A theory may be said to be rich in empirical content if it predicts or explains real world phenomena well The applied economist may assume a theory and use it for a particular purpose rather than test it For example, the estimation of welfare gains and losses from a particular market intervention is likely to carry with it many theoretical assumptions, some explicit and some implicit, about the way the world actually is

Few practicing economists would argue, however, that available theories are adequate for all purposes, the applied economist has a major stake in history improvement Such improvement can occur in at least two ways One is by a deductive process making a theory internally consistent with as few premises as possible, given the objectives of the theory The other is to enrich its capacity to predict or explain (improve its empirical content) Applied economists may be able to make significant contributions in this respect because they typically work with information based on real world experience Developments in the philosophy of science and the methodology of economics in the past two decades suggest that it would be fruitful for agricultural economists to establish a dialogue on how the empirical content of the theory they use might be improved Agricultural economists make numerous conjectures, projections, and predictions about events yet to occur In even greater abundance are explanations of past events, which range from the qualitative to the highly quantitative But neither set of activities, standing alone, is likely to have much impact on the empirical content of a theory

The two should be combined When projections, predictions, or conjectures are made, the raw material for an additional investigation is at hand For example, when the supply response of a type of farming area is projected, the projection can become a hypothesis for subsequent research If the projection missed what actually happened, why did the projection err? Were input prices incorrectly specified? Were the coefficients close to what prevailed? Were the behavioral assumptions highly suspect? Conversely, historical explanation of past events can be used to make predictions for comparable future conditions The announcement of new policy initiatives often creates a laboratory for judging the reliability of explanations of past comparable events

If this kind of rigorous exposure of theory to reality is to occur, agricultural economists will need to establish an attitude with respect to anomalies or failures of their theories to explain or predict On Bayesian grounds, it might be argued that existing theory incorporates past discoveries, and that failure of a theory in a particular case pits this past accumulation of knowledge against a single discrepancy Under such circumstances, the discrepancy may be treated as an anomaly and dismissed But, if all anomalies are dismissed, the so-called accumulation of knowledge clearly is biased because only confirmations are taken into account The attitude of the profession regarding the accumulation of discrepancies or anomalies becomes fundamental Will they be accumulated systematically and conscientiously, or will they be dismissed or ignored? My colleague, Steven T Buccola, has likened a body of theory to an open access resource If the incentive system facing applied workers or theory users is inappropriate, the body of theory may be depleted rather than enhanced If incentives are biased to favor the publication or preservation of theory successes only, a biased view of a theory will develop over time If failures as well as successes are noted, there is hope a theory will become more robust or that alternative theoretical explanations will be advanced

On occasion the awards program of the American Agricultural Economics Association has seen fit to recognize research that reported anomalous results For one example see the award winning publication by Edwards and others Journals serving agricultural economics should establish explicit policies with respect to the publication of anomalies or theory failures

Alternative Theories

The prevailing theoretical orthodoxy in agricultural economics is that of neoclassical equilibrium economics The recent publication of *The New Palgrave A Dictionary of Economics,* however, calls our attention to the enormous range and diversity in theoretical formulations upon which the agricultural economist may draw A contemporary classification system would include neoclassical economics, institutional economics, radical or Marxian economics, and Austrian economics (Caldwell and Randall) Surely the adoption of such a classification system is to paint with a broad brush Not only are there theory subsets within these broad classifications, but concepts from one approach may be utilized within an alternative framework While overlap among alternative theories may exist, direct comparison of theories is exceedingly difficult The philosophy of inquiry underlying different theories may not be the same, and it may be inappropriate to apply the same standards to all (Caldwell, chap 13)

Except for the advantages of specialization, there is no fundamental reason agricultural economists should confine themselves to one theoretical formulation or approach The benefits of individual specialization are considerable, however, and the costs of pluralism may be high To learn rigorously the prevailing orthodoxy requires demanding intellectual effort When a graduate student has done so, there may be insufficient time in a graduate program to acquire an understanding of alternative theories The result may be research that repeatedly uses a particular theoretical formulation The mechanical use of the same theoretical formulation may be combined with sophisticated empirical procedures with no provision for the identification, preservation, and subsequent investigation of anomalies or discrepancies This may create the impression of an advanced scientific enterprise even when there is no accommodation for knowledge growth

Greater eclecticism in the use of economic theory would improve agricultural economic research (Hausman) This does not necessarily imply the rejection of neoclassical economics This body of thought has been able to survive because it is capable of alternative interpretations When a particular formulation of the neoclassical model fails to explain, predict, or give a desired result, it can often be rescued by another plausible neoclassical formulation For an example, note the great variation in recommendations for a rate of discount on public works projects, many of which have been derived from alternative neo classical models (Lind) One may note the different policy implications of alternative neoclassical models applied to regional development (Weber and Deaton)

No tract on the use of economic theory for applied research would be complete without mention of the normative base of economics Economists need not be wedded to a particular normative position such as utilitarianism Greater flexibility in this respect may make the results of economic analysis more acceptable to noneconomists, a matter of some importance to those numerous agricultural economists who do research designed to evaluate public policies

Much public policy research in agricultural economics is based on Pareto optimality models or Kaldor-Hicks compensation tests The appeal of these approaches is that they appear to avoid the necessity of making interpersonal utility comparisons, but Pareto superiority tests provide no guide as to which parties will reap the surplus that results from moving from an "inefficient" to an "efficient" arrangement Furthermore, the distribution of income and wealth is not usually a variable when such analyses are made Respectable alternative approaches include the use of social welfare functions as well as "rights"-based

frameworks The works of the philosophers Rawls and Nozick provide examples of alternative approaches [2]

According to Rawls, the fundamental rules in society should be derived from behind a veil of ignorance While Rawls was not the first to use the veil of ignorance technique, it is his formulation that is receiving the greatest attention Rules may be said to be "fair" if they are formulated by people who have no knowledge of their particular circumstances with respect to such matters as conditions of birth, nationality, race, or generation By use of this technique, Rawls comes to the conclusions that reorganizations are fair only if those in the least advantageous position benefit from the reorganization This is not the place to argue the merits of the Rawls position but rather to establish it as an alternative to Pareto-based rules (see Baumol, Varian, and Wunderlich for examples of economic research on fairness)

Nozick's work is at the opposite philosophical pole He believes individuals have rights and any infringement of those rights is morally unacceptable According to Nozick, the minimal and maximal state that can be justified is that state which protects people's property rights As a consequence, people may not be indifferent as to whether goods are produced by the public or private sector, as would be the case for the utilitarian In the jargon of the welfare economist, rights are in the nature of nonwelfare information Such information may be incorporated in social welfare functional forms, in function parameters, or as side constraints Clearly, the imposition on an economic system of this kind of nonwelfare information will have a major impact on outcomes, as would the requirement that "fairness" conditions be met [3]

Summary and Conclusions

I make a plea for the systematic treatment of anomalies in research and for pluralism in the use of economic theory Every agricultural economist, of course, is unlikely to become knowledgeable in all facets of economic theory Nevertheless, a case can be made for greater diversity of theoretical approaches This applies to alternative uses of neoclassical economics as well as to the employment of concepts from Marxian, Austrian, and institutional economics

Much of the current policy research done by agricultural economists is greatly influenced by Pareto-based criteria for comparing alternative policy outcomes Research results stemming from this normative base may not always be persuasive Users of such research may be unwilling to accept the implicit Pareto version of fairness, or they may not be indifferent with respect to the role of the state The issue here is not that of selecting the "correct" normative stance but rather of recognizing that alternative normative positions exist and are capable of being incorporated into economic research

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[2]The final part of this essay has benefited greatly from conversations with Steven Buccola

[3]Nozick's position does not exhaust the possibilities of the rights based approach Welfare state entitlement to certain necessities might also be viewed as a right imposed on an economic system

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