Relevance of Duality Theory to the Practicing Agricultural Economist: Discussion

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My discussion of the papers by Rulon Pope and Ramon Lopez (To Dual or Not to Dual?) (Applications) takes the form of a number of recommendations from an "old head" to the younger generation of agricultural economic theorists.

1. It would be helpful to the uninitiated to have a glossary of terms in words to make the transition from the duality concepts back to the traditional economic definitions, e.g., homothetic, separability, marginal rates of substitution and homogeneous.
2. In using the so-called flexible functional forms like the translog and generalized Leontief equations, the researcher should try to replicate his results using random number data.

   In a study by Daniel Kohler of the Rand Corporation, it was found that fitting so-called flexible forms to data generated at random and using the same restrictions as were used on actual data gave elasticity estimates so similar that it was difficult to tell the difference between the two sets of estimates. The author concluded that the actual data did not contribute in any way to the numerical value of estimated elasticity.
3. In imposing restrictions in the estimation of parameters that are deduced from duality theory, the researcher should realize that these are in effect maintained hypotheses. Whether these imposed restrictions are consistent with observed behavior or it constitutes a misspecification needs to be tested. One needs evidence from other empirical studies to show similar responses as to those shown by the new techniques. Otherwise the confidence you place in the new estimates depends upon the maintained hypotheses and not on reported significance measures.
4. Too much dependence on theoretical models may allow masses of concrete detailed information contained in technical journals, reports of engineering firms and private marketing organizations to be neglected. Let us not allow this to happen in our agricultural economics research efforts.
5. Leontief gives us some more good advice in his recent letter to the Editor of *Science*. He again chides the economics profession for developing mathematical models and exploring them in great detail for formal properties, fitting algebraic functions of all possible shapes to essentially the same set of data without being able to advance in any perceptible way to systematic understanding of the structure and operation of the real system. Leontief asks: How long will researchers working in adjoining fields such as demography, sociology, and political science on one hand and ecology, biology, health science, engineering and other applied sciences on the other, abstain from expressing serious concern about the state of stable, stationary equilibrium and the splendid isolation in which academic economics now finds

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itself? He retorts as long as tenured members of leading economics departments continue to exercise tight control over training, promotion and research activities, the situation will not change. One wonders if this might also apply to agricultural economics profession as well. Let us not allow it to continue.

6. As a matter of historical interest, Halter, Carter and Hocking were the founders of the translog production function. In a poorly type-set article in 1957, we presented the so-called functional form which is mistakenly credited to Christensen, Jorgenson, and Lau in 1973. We don't mind the younger generation ignoring the earlier literature, but sometimes there isn't much new under the sun.

References

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