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APPLICATION OF PRICE ELASTICITIES TO FARM POLICY ANALYSIS: REPLY

Earl A. Stennis and W. Lanny Bateman

Huang's comment on our article in a recent issue of this journal [2] points out two ideas that could have been more clearly stated. We will reply to his comments in the order in which they appear.

First, our illustration of the two approaches to examining the market was to demonstrate how economic theory could be used to show the importance of the world market to producers of cotton and soybeans. One approach separates the total market into domestic and export components. We pointed out that the elasticity estimates used for the domestic ($-.35$) and export (-1.76) markets and the production data for 1976 give a total elasticity estimate for the U.S. of $-.98$ if the world elasticity is $-.5$. The other approach (the primary subject of Huang's comment) uses a single world market and illustrates how the U.S. affects or is affected by it. Use of the second approach gives a U.S. elasticity of -1.0 when the world elasticity is $-.5$. It was not our intention to compare the two approaches as to consistency of estimate, although the example may have implied such an argument. Given the same data base and consistent methods in estimating the separate demand functions, the results should be similar.

To illustrate the "flaws" in our analysis, Huang derives the same results for the second approach that we presented in Table 1. It is interesting to note that, as we did not show our calculations for the table, Huang's comments had to be predicated on his assumption of our procedure. However, the issue is not arithmetic—the table was proposed to demonstrate the tendency for the world market to dilute potential benefits to U.S. producers from unilateral supply control.

Huang's dissatisfaction with our results may arise from our choosing to show a range of elasticities with U.S. production held at close to 50 percent of world soybean supplies. Varying the proportion of the market supply would perhaps have provided a more vivid illustration, emphasizing that the level of benefits to domestic producers depends not only on the market, but also on how large a part we play in it.

We are unable to discern with what Huang is taking issue in his statement, "but I know of no economic theory supporting their representation." The economic theory employed is that which relates to elasticities and, thus, suggests their application to policy analysis. His reference to "truisms" confirms our reasoning for presenting the original article—i.e., what economists accept as givens or truisms often are not that easily accepted by lay audiences.

Huang states our estimating procedure is "inconsistent" with our reservations about the use of a relatively large (30 percent) production cut. Admittedly, the terminology used in expressing our reservations was vague. Likewise, our statement "also, elasticities are generally considered appropriate only over a relatively small range" should have been explicitly stated as "an elasticity coefficient holds only over a relatively small change in price." Huang must agree, because he later points out that the elasticity does change as one moves along a demand curve. Obviously, the elasticity coefficient has no effect on the arithmetical procedure used, but the magnitude of the coefficient is important.

In discussing demand curves versus elasticity of demand Huang claims to discover a mistake in the analysis. The analysis was not in error, but our statement "toward the more inelastic portion of the demand curve" [2, 8.109] is not correct when taken out of context. Discussion of the total elasticity for our equation 4 is based on two separate demand functions, the domestic market and the export market. The domestic market is generally considered to be more inelastic for soybeans when estimated as a separate component of the total market. Thus, our statement should have been, "Production cuts will tend to move the U.S. toward the more inelastic demand curve, as is demonstrated in equation 4."

Huang's comments point out grammatical deficiencies in two areas of our paper and offer some computational insight. Otherwise, his comments are not at issue with the thrust of our article. We used previously estimated demand elasticity coefficients for two somewhat extreme examples of world-traded

commodities to demonstrate the importance of the world market for these commodities. Soybeans have become an important cash crop and have no history of supply control; the U.S. supplies almost half of the world's soybeans. Cotton, with a history of production control, is a commodity for which we were once a major supplier and for which our share of the world market dropped from 56 to 18 percent between 1920 and 1976.

This fact provides the foundation for our reservations about benefits of acreage controls to U.S. producers for a crop such as soybeans

even when the U.S. is the major source of supply. Partial equilibrium analysis using elasticities may show a potential increase in revenue, but more comprehensive analysis is required to show the final outcome. Movement to the left on a given demand curve (reduction in supply) toward a higher elasticity limits the extent to which production cuts could be effective even in the short run. Whether the level of production cuts would provide sufficient net income to maintain producer numbers is a question that we believe has not been adequately studied or communicated.

REFERENCES

- [1] *Agricultural Statistics*, various issues, USDA. Washington, D.C.: U.S. Government Printing Office.
- [2] Bateman, W. L. and E. A. Stennis. "Application of Price Elasticities to Farm Policy Analysis," *Southern Journal of Agricultural Economics*, Volume 10, 1978, pp. 108-111.
- [3] Huang, Chung-Liang, "Application of Price Elasticities to Farm Policy Analysis: Comment," *Southern Journal of Agricultural Economics*, Volume 11, Number 2, December 1979.