

# Discussion

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In thinking about the modeling of commodity markets, one's initial reaction is that it should be comparatively easy because the products involved are homogeneous and often traded in organized markets under conditions of competitive efficiency. Yet the closer one gets to actual markets, the more one realizes how complex the modeling of market behavior may become. This is all the more true when there is extensive government intervention in particular markets. While the modeling of commodity markets thus poses many problems, the need for understanding these markets has increased greatly in recent years with the rapid acceleration of inflation, the formation of producer cartels, and the call for higher and more stable prices for commodities as part of the New International Economic Order.

An interesting and important issue that has been addressed in the paper by Johnson, Grennes, and Thursby is whether commodity markets can be distinguished from markets for industrial products in terms of product homogeneity or heterogeneity. It is common in trade theory to assume that products are homogeneous, and, in the monetary approach to the balance of payments, commodity arbitrage is assumed to take place, which will insure that the law of one price will hold. In this regard, there have been a number of recent studies of the characteristics of internationally traded products that suggest important departures from the assumptions of product homogeneity and the law of one price. Why is this?

Johnson, Grennes, and Thursby note that spatial price differences may arise because of transfer costs between markets and because of intertemporal variations in production and demand among countries. Furthermore, prices may differ for particular products in a given market because of product differentiation, information costs, and for statistical reasons because of aggregation problems. The former two explanations of price differences have

been treated elsewhere in the literature under the rubric of "experience" versus "search" goods. This is a rather interesting distinction that might be explored further in investigating price behavior in order to identify the structural factors that may distinguish the different types of goods and how these factors change through time in terms of the price differentials observed. In light of the theory of the product cycle, for industrial goods at least, one might expect price spreads to diminish. Presumably the same thing should apply to commodities.

Abbott notes in his paper that patterns, techniques, and objectives of government intervention may vary a good deal among countries and through time. Such intervention constitutes another important reason why prices may differ, and, to the extent that policies change, the differentials may vary. The Johnson, Grennes, and Thursby and Abbott papers thus suggest that an interesting next step in research would be to attempt to explain the reasons for persistent price differences and for variations in these differences for particular commodities and commodity groups. I would surmise that such research would be helpful in suggesting appropriate techniques for modeling behavior in different markets.

Turning now to questions of modeling, Abbott is to be commended for his efforts in endogenizing government behavior. By the same token, his empirical proxies for government intervention are not altogether clear in terms of the objectives and consequences of government policies in different countries. At best, his research points up the limitations of the spatial-equilibrium-model elasticity estimates. Yet his empirical work stops far short of providing convincing estimates of endogenous government behavior. In pursuing this question further, it seems to me that classical regression procedures may not be well suited to the undertaking. And it might be desirable, moreover, to study a few countries in depth rather than to impose a simplified model across a wide variety of countries.

Johnson, Grennes, and Thursby devote a

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substantial part of their paper to an elaboration of the Armington model, and, in this respect, their reliance on this model seems unbalanced. They take note of the properties of the Armington model and its important restrictions with respect to cross-price and expenditure elasticities. I might note parenthetically that knowledge of these restrictions predates Armington, as will be clear from the literature on estimating the elasticity of substitution discussed in chapter 3 of Leamer and Stern's 1970 book, *Quantitative International Economics*. In contrast to their elaboration of the demand side of their model, Johnson, Grennes, and Thursby treat supply as exogenous. This is perhaps understandable in a short-run context and in view of the difficulties of modeling the supply side, but it is unfortunately not always elucidating in enhancing our understanding of the market behavior at issue. In discussing applications and extensions of the model, Johnson, Grennes, and Thursby make reference to handling changes in policies. Space did not permit them to indicate precisely how this is to be done, whether from the demand or supply sides. Unless both sides were modeled effectively, it is not clear what degree of confidence one might have in the results.

Finally, let me make a couple of brief re-

marks on the paper by Blandford and Lee. They mention the importance of nonsystematic factors, and I would presume that government intervention might be one example of what they have in mind. In constructing commodity models, it is obviously important to assess the significance of nonsystematic factors. This is particularly the case because if, as noted above, intervention policies vary so much, it may be extremely difficult to construct reliable models that can in turn be used with a high degree of confidence in evaluating different proposals for stabilization. I would also like to take note of the possibility of being carried away with the analysis of instability per se, when the real issue, particularly in the call for a New International Economic Order, is how to transfer more resources from consuming to producing countries. If this perception is correct, the policy rules for intervention or the objective functions of policy makers that are to be used in commodity models need to be revised accordingly.

#### Reference

- Leamer, Edward E., and Robert M. Stern. *Quantitative International Economics*. Boston: Allyn and Bacon, 1970, pp. xii, 209.