United States Agricultural Trade: Where Are the Gains?: Comment

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At the WAEA meeting in Honolulu July 10–12, 1988, Professor Andrew Schmitz delivered the opening paper entitled, "U.S. Farm Policy and Gains from Trade." This paper has since appeared in the December 1988 *WJAE* under the title, "United States Agricultural Trade: Where Are the Gains?" In both presentations Schmitz offers an interesting synopsis of the U.S., European Community (EC), Canadian, and Australian trade and policy situations. As always, he provides a cogent and concise discussion of the impact of various forms of policy intervention on national gains from trade. After examining several international wheat marketing policy alternatives, he concludes with a specific policy recommendation: Since it appears that free trade cannot be achieved, the leading wheat exporters should pursue coordinated production controls. Or, as Schmitz puts it, "The alternative solution to free trade is clearly production controls by all including the EC."

In a nutshell, Schmitz's argument is as follows. The world import demand for grains (wheat) is price inelastic. Rather than subsidizing exports or dumping grain, exporters as a group should pursue harmonized supply management to, in effect, cartelize the world grain market. This would result in: (a) an increased price for exported grain, (b) increased gross revenues from international sales for cartel members, and (c) reduced cost of government farm (grain) programs in the cartel member countries.[1]

At first blush, Schmitz's proposed policy alternative has a rather pleasing ring. It seems to follow a well-marked logical path, and, of course, he presents it quite persuasively. On further reflection, however, the Schmitz proposed alternative has at least four troubling elements.

(1) Schmitz appears to ignore the issue of long-term supply response in the grain- (wheat-) importing part of the world. A simple scenario illustrates a potential flaw in the Schmitz proposal.

Accepting, only for a moment, Schmitz's demand elasticity assertion, let us assume the excess demand elasticity facing wheat exporters is $-.5$.[2] According to the U.S. Department of Agriculture, annual world wheat production in recent years has been about 510 million metric tons (mmt). Wheat-importing countries have combined annual production of about 320 mmt, and world wheat trade has averaged approximately 105 mmt per year.

Now let's presume that cartel members agree to raise the wheat export price by 20%. To prevent a build up of stocks, a 10% harmonized reduction in supply for export will be required. In this case, cartel members will experience a short-term increase in export sales revenues. But, of course, the Schmitz line of reasoning only hangs together if it is assumed that importers are passive market participants. If, however, they respond to the induced higher world wheat price with increased self-supply, the cartel's gains may disappear.

One can readily conjure up a scenario under which a rise in the price of wheat leads importers to invest in new production technologies and increased wheat plantings, thereby increasing their long-run supply. Importers

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[1] This is essentially the argument made in Schmitz et al.

[2] To be correct, we are really interested in the price flexibility of excess demand. If we accept that the flexibility is approximately the inverse of the elasticity, then we have a price flexibility of -2. Thus a 1% change in quantity marketed will yield a 2% change in price. For a detailed explanation of the elasticity-flexibility relationship, see Houck (1965).

need only increase their wheat output by 4% to more than compensate for the exporter's supply controls.

The cartel's move to a new, higher price equilibrium on the assumed excess-demand curve sets in motion a process that actually shifts the excess demand to the left. Gross revenues decline due to loss in both volume and downward pressure on price. Further, history demonstrates that once additional productive capacity is in place, it is not quickly or inexpensively abandoned.

It should also be noted that excess demand for wheat is affected by importers' self-supply of other grains particularly rice. Thus, an appreciation of their supply responsiveness in rice relative to changes in the wheat price is necessary in fully assessing the viability of a cartel.[3]

(2) Even ignoring the long-run supply response issue, the question of the elasticity of excess demand remains an important one. Schmitz simply asserts that world grain markets are price inelastic. This assertion rests on his rejection of all empirical estimates which find the contrary along with a smattering of anecdotal evidence. Clearly, there is no consensus in the empirical literature with respect to price elasticity of demand for wheat. In reviewing this literature, Gardiner and Dixit reported finding estimates ranging from $-.14$ to -6.72. Since Schmitz's prescription rests heavily on the assumption that excess demand is price inelastic, some empirical support would be comforting.

A modest extension of the theoretic framework utilized by Schmitz suggests that, rather than being price inelastic, the excess demand faced by a wheat cartel is actually likely to be price elastic. Under this framework, we know the elasticity of excess demand (E) equals the weighted sum of the importers' domestic demand and supply.[4] The weights are the ratio of domestic demand to imports and the ratio of domestic (importer) supply to imports, respectively, such that:

$$|E| = |e_d|\left(\frac{D_d}{Q_T}\right) + |e_s|\left(\frac{S_d}{Q_T}\right).$$

[3] Further, if the demand for wheat is affected by the rice price, that is, if wheat demand includes a cross elasticity with rice, then the price flexibility is not precisely the inverse of the price elasticity (see Houck 1965).

[4] For a more detailed discussion of this relationship, see McCalla and Josling or Houck (1986).

Here e_d is the elasticity of domestic demand, D_d is total domestic demand, Q_T is the quantity traded, e_s is the elasticity of domestic supply, and S_d is total domestic supply.

For an importer we know that $\left(\dfrac{D_d}{Q_T}\right)$ is always greater than one. Thus we know that excess demand is unambiguously more price elastic than domestic demand. We also know that the ratio D_d/Q_T equals 425/105 or 4.20 and that S_d/Q_T currently equals 320/105 or 3.25.

Now let us examine an extreme case, where the domestic supply is perfectly inelastic ($e_s = 0$). For excess demand to be inelastic, say $-.95$, the domestic demand elasticity must be less than $-.23$. If the short-run supply function is even moderately elastic, the domestic demand must be extremely inelastic for the excess demand to be inelastic. If $e_s = .20$, then e_d must be less than $-.07$.

Given the fact that a declining share of world wheat consumption is traded, Schmitz's reasoning only holds if the importers' domestic demand is almost perfectly price inelastic. Since an increasing portion of traded wheat is imported by low income countries, such a very low elasticity seems unlikely. Note for example that according to Schmitz et al., "a working hypothesis is that the elasticity of import demand in low income LDCs [Less-Developed Countries] is in the range of -1 to -1.5."

(3) Schmitz does not address the issue of possible grain production and marketing economies-of-scale in exporter countries. If grain production and marketing in these countries is on a constant or increasing long-run average cost function, then harmonized supply reduction will, at worse, leave per-unit production and marketing cost unchanged. If, however, grain production and marketing is on a declining long-run average cost function, then the Schmitz prescription could lead to increases in per-unit production and marketing costs as output is forced back up the cost function. In this instance, Schmitz's expected gains in export prices and revenues could be completely or partially offset by production and marketing cost increases. Whether grain production and marketing economies-of-scale do, indeed, exist is open to empirical assessment. It seems reasonable, however, to expect that production and marketing considerations be addressed in any serious debate on multilateral supply management.

(4) Schmitz concludes with a pragmatic argument. It is his contention that the likelihood of a U.S.-EC agreement on removal of all trade distorting agricultural programs is extremely small. Yet he argues that it is entirely reasonable to expect that the U.S., the EC, and the others can reach an agreement on the complex set of elements necessary to make a cartel function. Schmitz provides little support, beyond conjecture, that agreement on creation and operation of a grain cartel can be more readily achieved than agreement on trade liberalizing policy reform.

Professor Schmitz has a reputation for being bold and provocative. He certainly lived up to his reputation at the WAEA meetings. His paper and subsequent *WJAE* article raise again a number of important researchable issues. If it is, indeed, his intention to be a serious advocate for the creation of a grain cartel, then he bears a major responsibility for analytically responding to questions such as those raised here. The burden of proof rests with the advocate. If, however, his purpose is to stimulate a scholarly debate, then all of us with an interest in agricultural trade and trade policy have work to do.

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