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COMMENTS ON ENERGY PROBLEMS AND ALTERNATIVES: IMPLICATION FOR THE SOUTH

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My general reaction to Debertin and Pagolatos' presentation is that it is too narrow. In looking at the implications of higher liquid fuel costs for Southern agriculture, Debertin and Pagolatos have concentrated almost exclusively on on-farm adjustments. It is important to try to understand such adjustments, and the report is helpful as a starting place for further analysis. But the on-farm adjustments to higher liquid fuel prices are not independent of other adjustments taking place beyond the farm gate — adjustments in the agricultural sector generally and in the total economy. Indeed, there is a simultaneity in the overall adjustment process that not only makes the production economices perspective too narrow but also suggests the need for a general, as opposed to partial, equilibrium perspective.

Let me document my case, at least in a cursory way. According to a study by Stienhart and Stienhart (1974), the processing and transporting sectors associated with agriculture used about 1.60 times as much energy in 1970 as did farmers to produce the commodities being processed and transported. The trend of this ratio, from 1950 to 1970, was upward (in 1950, the ratio was 1.49 and 1960, 1.52). Indeed, direct fuel use in transportation of agricultural products amounted to about 106 percent of the on-farm use to produce the products in 1970.

Another, perhaps isolated, example helps to dramatize the point I wish to make. An 800-carton refrigerated truck loads lettuce that costs $2.50 per carton in the Salinas Valley. It takes $6.00 per carton to haul that lettuce to New York (*Landowner*). As the price of liquid fuel increases, the cost of hauling the lettuce can be expected to increase in relation to production cost. Undoubtedly, over the intermediate and long runs, technical innovations in transportation will serve to moderate the increases in transportation costs resulting from higher fuel prices. But off-farm fuel costs are likely to continue to be very large in relation to on-farm fuel costs. To assess the implications for Southern agriculture of higher liquid fuel costs without looking at the processing and transportation sectors is to overlook the very areas from which impetus for adjustments is most critical — i.e., regional comparative advantage and interregional trade.

If I understand Debertine and Pagolatos correctly, they seem to give little evidence to suggest major changes in relative production costs in the South *vis-a-vis* other producing regions. But with higher transportation cost, locational considerations become increasingly important. To the extent that agricultural production can be relocated in relation to markets and transportation costs can be reduced by more than any increases in production costs, such shifts in production patterns should be anticipated. Whether these tradeoffs in favor of a more geographically decentralized pattern of agricultural production are valid is an empirical question. If they are not, the end result must be higher consumer real prices for agricultural products and, depending on the elasticity of demand, some reduction in the quantities of certain products that can be sold. In such a case, consumers would presumably end up with less varied market baskets for which they are forced to lay out higher percentages of their income.

But if the tradeoffs are in favor of decentralized production, we might expect more diversity in Southern agriculture. By diversity I do not necessarily mean increased diversity of enterprises on individual farms, but rather a more diverse set of enterprises within the region. The growing urban population of the South represents a substantial market for agricultural products produced in the region if production versus transportation costs are favorable. Southern agriculture is also well situated, in comparison with the Far West and the Great Plains, to compete favorably in the markets of the major population centers of the Northeast. One might also expect greater decentralization of processing industries and diversification of these industries within the region. The overall result would be greater regional self-sufficiency, although it is unlikely that self-suffic-

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iency would ever be total.

What about implications for the structure of Southern agriculture? Debertin and Pagolatos give some tentative evidence to suggest that higher liquid fuel costs will slow the historical trend toward larger and increasingly more mechanized farms. For instance, they state:

> "...as real prices of liquid fuels increase, high levels of mechanization will not necessarily always be most profitable. Efforts must increasingly turn to approaches which make maximum use of resources other than liquid fuels."

Debertin and Pagolatos explicitly note that subsistence farms are not very fuel efficient, so they rule out a return to the very small farm units. But if increased mechanization is questioned, there is an implicit suggestion that intermediately mechanized farms are probably most compatible with the exigencies of a high-fuel-cost economy. These are farms with moderate labor-to-capital and land-to-capital ratios, certainly not the big corporate farms that seem to cause so much worry currently in USDA (ESCS). Some large operations already heavily dependent on mechanization may be broken up because they are dinosaurs in an era of high fuel costs, and if so, the structure of Southern agriculture — particularly in the Delta — might be dramatically changed. In scope and depth the analysis currently available is insufficient to allow one to make definitive statements. But it is entirely plausible that an era of high fuel costs will favor owner-operator (owners who exploit their own labor in ways the old plantation owners would never have thought of doing), very conservation oriented farms of modest scale rather than the type of large-scale, mechanized, resource-exploitive farms (those whose owners have never sat in the driver's seat of a tractor) that have been increasingly evident in the 1960s and 1970s in many of the more productive farming areas of the South.

I see a need for an intense regional research effort making use of the most appropriate interregional competition models to examine some of the tradeoffs I have mentioned. Because I made some stumbling efforts to build such a model a couple of years ago, I am well aware of all the problems involved. Not only are there enormous data problems, there are very disheartening computational problems because such a model would be very large and would require more computer storage and CPU time than most university computer centers are willing or able to allocate. Such work is almost certainly beyond the capabilities of any one researcher or any one experiment station. Yet, if we are really to examine the implications of higher fuel costs on Southern agriculture, such an effort is required and, working together, we might succeed.

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