

Industrialization in Agriculture: Discussion

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Drabenstott and Davis and Langham both present insightful discussions of the causes and consequences of industrialization in agriculture. Their discussions address industrialization as defined by the Council of Food, Agriculture, and Resource Economics (CFARE). According to CFARE, industrialization includes two components, increased consolidation of farms and increased vertical coordination within the marketing channels for food and fiber. Davis and Langham focus primarily on the causes and consequences of increasing consolidation of farms, while Drabenstott focuses on the causes and consequences of vertical coordination. This definition of industrialization should be expanded to include consolidation of firms that provide inputs and services to agriculture and consolidation of firms that handle and process agricultural products.

Drabenstott and Davis and Langham correctly point out that while the terminologies associated with "industrialization" may be new to the profession, certainly the trends of farm consolidation and increasing use of vertical coordination are not new to agriculture. They note that the level of public policy interest is increasing. Drabenstott suggests that attention has been focused on industrialization due to its acceleration. It is likely that the increased level of interest stems from a variety of sources, including taxpayers' concerns regarding government spending on agricultural programs and publicly funded research. While consumers desire a safe, abundant, and diverse source of food at low prices, as taxpayers, they also

desire an efficient use of tax dollars in facilitating the provision of this source. The issues of market power and separation of the management function from labor at the farm level each have important implications for market, environmental, and rural development policies. According to Padberg, "Most of the rationale for laws providing facilitating functions for farm commodities and food products were written before 1950...Given the structural changes in the food industry among producers, handlers, processors, distributors and consumers, are policies intended to insure orderly marketing still valid?" (foreword).

Using CFARE's definition of industrialization, diverse levels of industrialization have taken place across various segments of agriculture. As measured by vertical coordination, Drabenstott notes that while the broiler industry is almost completely industrialized, grains show little movement toward formal vertical coordination at the farm level. Still other industries, such as the pork industry, exhibit signs of increased vertical coordination taking hold. The North Carolina pork industry serves as a case in point, where a new plant will have the capacity to process about 8 percent of U.S. hog production (Hurt). Drabenstott links the lack of private vertical coordination in certain crops, such as grains, to the presence of commodity programs that provide "government contracts". He suggests that if programs for crops, such as grains, are cut, the necessity for other mechanisms to coordinate and stabilize production will increase.

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However, if consolidation is used as a measure of industrialization, even certain program crops cannot be excluded from the trend. The 1992 Census of Agriculture estimates showed almost a 20 percent decrease in the number of wheat and cotton farms compared with 1987. For wheat farms less than 100 acres and cotton farms less than 250 acres, the decreases in numbers were around 34 percent and 44 percent, respectively. Also, Marion and Kim's study showed that, during the 1980's, concentration of sales increased dramatically among leading manufacturers of products that use program crops, including flour milling, wet corn milling, soybean crushing, and cottonseed milling.

Effects on Market Participants

Drabenstott proposes that the segmenting of the U.S. food market into many niche markets necessitates closer coordination between retail marketing and processing. The prevalence of market niches is evidenced in the number of new food products introduced each year. By the 1990's, over 13,000 new food products were introduced annually (Russo and McLaughlin). Furthermore, Barkema, Drabenstott, and Cook suggest that decision-making power ultimately will shift to those with consumer information. Drabenstott emphasizes that scanning technology, as yet, has not been used to its full potential by retailers. According to a survey of industry experts by Russo and McLaughlin, 78 percent of the respondents believed that retailers will increasingly be able to dominate the retailer/manufacturer interface by using scanner data. The advantage of the trend toward closer market coordination to consumers is access to a wide variety of foods, for which abundant product information is available. The effects on retail prices are less clear. Prices may be affected by increased market power of retailers and processors. However, prices may also benefit from economies of scale and internalization of transactions.

Industry consolidation and use of vertical control will not only affect consumers, retailers, processors, and producers, but will also impact the economies of rural communities. Industrialization's effects on rural employment and revenues transcend those on farm labor and management to effects on employment and revenues in local service industries. Davis and Langham note that the industrialization of agriculture is encouraged by quantity discounts and

bulk purchases of inputs. As they point out, with larger firms, local dealers may be bypassed, and purchases made directly from the supplier source. These effects will be magnified by vertical coordination. According to Coffey, "The size of the market available to the traditional farm supplier is shrinking and its arms-length retailing relationship with the farmer is being replaced by the arm-twist management of the integrator and contractor," (p. 1132) Consolidation will also reduce the need for local assembly industries and local handlers of farm products.

Policy Implications

As more transactions are internalized and the links between consumers and producers are tightened, policies necessary to facilitate orderly marketing and stabilize food prices will likely change. For example, with more tailored products for niche markets, sorting of products into broadly defined grades may send distorted market signals. Furthermore, in market channels with a high degree of vertical control, internal standards rather than external grading systems may provide the benchmarks. Drabenstott proposes a movement away from "commodity" policies in product-oriented markets. With farm consolidation and increased vertical control, the relevance of policy objectives to stabilize farm incomes and preserve a traditional farm structure are in question. If vertical coordination improves the information links between consumers and producers, industrialization will tie farm incomes more directly to the consumer as suggested by Drabenstott. However, if producers must contract through a monopsonistic or oligopsonistic channel, the potential for extraction of rents from producers exists.

Industrialization will not only affect market and commodity policies, but will also likely affect future focus of rural development policies. Given consolidation of farms and potential displacement of local rural service industries, employment opportunities in agriculturally-based industries in rural areas will increasingly lie beyond the farm gate. Therefore, rural development policies centered around agriculture will likely place increased emphasis on how to attract processing and distribution facilities into rural areas to coordinate with pockets of specialized agricultural production. As suggested by Drabenstott, larger rural

communities may hold advantages over smaller communities in attracting processing facilities. According to Johnson and Beale, although greater population retention in the Farm Belt was exhibited in the early 1990's as compared with the 1980's, only 35 percent of farming-dependent counties grew. Nonmetro growth tended more often to be in retirement, recreation, and manufacturing areas.

The trends of increased farm size and increased vertical control will also have implications for policies to foster sustainable development. Davis and Langham point out that increased size can provide a firm with greater opportunities to manage risks. As Davis and Langham note, smaller firms may be overwhelmed within the more regulated environment that they will be operating in the future. There is no doubt that as public policies increasingly focus on sustainable development, environmental liabilities will increase. Smaller firms may be less able or willing to bear the financial and legal risks associated with large environmental liabilities. Therefore, increased emphasis on sustainable development in agriculture may prove a driving force toward further industrialization.

A long held concept by society is that of the farmer owner-operator as the steward of the land (van Ravenswaay). With increased prevalence of separation of the management function from labor at the farm level through contract production and vertical integration, the concept of stewardship within agricultural production may come under question (Ervin and Smith). Issues such as removal of management decisions from direct contact with spillover effects, differences in planning horizons resulting from production contract lengths, and technology choice in large vertically coordinated facilities will be important influences on sustainable development.

As production becomes concentrated in fewer, larger facilities, this will allow greater ease in assigning environmental liabilities than in a diffused production base. With fewer, larger firms,

and more vertical coordination, the public may be less willing to support environmental policies that are voluntary or provide positive financial incentives for compliance and may be in favor of those that are punitive in nature. For example, command and control oriented policies and taxation may replace voluntary policies that are linked to subsidies. Market solutions to controlling environmental liability, such as environmental liability insurance, will also likely become more prevalent.

Conclusions

The research challenges posed to the profession by the trend of industrialization are many. Not inconsequential will be to identify what constitutes market information. Certainly, as linkages become tighter and prices are more often determined in private agreements, what is considered market information will change. With an industry structure evolving that is becoming more complex, projecting market outcomes will become more difficult. The research focus of the new empirical industrial organization (NEIO) centers around use of structural models to estimate effects of market power and strategies on market outcomes. However, as Caswell and Perloff suggest, models often cannot capture the complexities of firm strategy or incorporate political tradeoffs.

Drabenstott poses some important questions regarding the clientele base of the land grant system as the industry structure changes. If a goal of the land grant system is to conduct and extend research that facilitates the efficient production and marketing of food and fiber products, then we need to recognize that our clientele are a from a diverse base, including farmers, processors, retailers, consumers, policymakers, regulators, and taxpayers. Davis and Langham correctly assess that the profession will be limited in its ability to make policy contributions to the extent that it recognizes that the traditional boundaries of farm firms have changed, as have researchable issues affecting the food and fiber industry.

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