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CHANGING ECONOMICS OF LOCALLY OWNED AGRIBUSINESS FIRMS AND IMPACTS ON RURAL COMMUNITIES

Presented at

American Association for Advancement of Science Annual Meeting Hyatt Regency Chicago

February 11, 1992

by

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ABSTRACT

THE CHANGING ECONOMICS OF AGRIBUSINESS

Farm supply and grain marketing agribusiness firms in Iowa and other rural Midwest states are an important economic player in the very smallest of rural communities. Even in towns where most mainstreet businesses have already vanished some type of grain handling and farm input supply firm has continued to service the agricultural producers in the area and provide primary employment for local residents.

Current trends in this industry have created serious financial stress for a significant fraction of this industry. Fewer and larger farm customers, a decline in government subsidized storage programs, excess capacity, contract livestock production, increasing capital investment requirements for handlers of grain, an increasing capital requirement to meet fertilizer and ag chemical regulations taken together are threatening the viability of approximately 1/2 of these firms. The industry has divided itself into a group of "have" and "have nots". About half of the industry has shown positive trends in profits and cash while the other half show negative trends. Employment, tax base, and civic leadership are likely to be noticeably reduced in communities where these "have nots" firms fail.

THE CHANGING ECONOMICS OF LOCALLY OWNED AGRIBUSINESS FIRMS AND IMPACTS ON RURAL COMMUNITIES*

Roger G. Ginder

Iowa, like many rural midwestern states, has numerous small towns and villages. Population has been stable at best in most of these small centers and the vast majority have been steadily losing population. For some this process has been in progress since before the turn of the century. Figure 1 shows the peak county population figures for Iowa 1870-1990. In 44 Iowa counties the peak population was reached prior to 1900.

Certainly not all rural lowa towns and communities have experienced a steadily declining population since 1900. The process started more recently for many counties--dating from the Great Depression or the post World War II migration to cities and suburbs. But the fact remains that the majority of rural villages and towns have been shrinking for the past forty years and there is little prospect for this trend to be reversed in the near future.

Population declines are nearly always accompanied by reduction in local business activity and employment opportunities. Most of the towns and villages in states like Iowa were built around one industry--agricultural production. To be sure there were various manufacturing and processing activities other than agriculture located in some rural population centers but these were the exception rather than the rule. From settlement times most of the local Iowa towns and villages have existed to serve the surrounding

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farming areas.

The trend in total farmer numbers (as a fraction of the total U.S. population) has been declining for more than 200 years. As the number of people and families involved in agricultural production surrounding many rural towns has fallen, the mainstreets of such agricultural based towns have also declined. In addition to fewer farm families other changes have created an acceleration in the decline of mainstreet business. Better roads and the widespread availability of personal transportation has resulted in a larger fraction of consumer goods being purchased in larger more distant trade centers. These trends in real per capita retail activity can be seen most dramatically in figure 2. Rural counties in lowa lost real per capita retail sales at a much faster rate than the state average loss of about 10%.

Until very recently, one major exception to the trend toward doing business in more distant trade centers has been the agricultural input supply firms located in rural communities. Since 1950 these firms have grown rapidly. This growth over the past 40 years occurred in response to rapid increases in the level of purchased farm inputs. Changes in farming practices and technology during this period have almost always involved the use of more fertilizer, chemicals and processed feed ingredients and other inputs not produced on the farm.

In general, the firms filling these farm input needs are diversified locally-owned firms with grain storage, grain marketing, retail feed milling or mixing, retail fertilizer, agricultural chemicals, and in some cases, retail petroleum distribution. The storage and marketing of commodities such as corn, soybeans and oats involve the assembly of these products from area farmers. In most cases the farmer customers are operating within a ten mile

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radius of the agribusiness firm.

The distribution of the purchased inputs required for grain and livestock production has typically been combined with the grain storage and marketing functions. Both involve the movement of large quantities of bulk commodities at relatively low gross margin per unit of product. While such activities do not generate large levels of net margins (or profits) they have provided employment for significant numbers of people in rural areas. This is particularly true in the fertilizer and ag chemical product lines where providing application services to farmers has been important. For many of the small sized towns in Iowa and surrounding states these locally owned agricultural input supply and marketing firms have been a mainstay in the rural economy.

Table 1 shows the relative importance of input supply and marketing firms as employers in Iowa, Kansas and Nebraska. Data in table 1 indicate that these firms are among the top ten private sector employers in 2/3 of the towns where they operate. Perhaps more significant, they are the largest employers in 24 percent of the Iowa towns where they operate and they are among the top three employers in 40% of the towns.

	Percent of Firms						
Employer position in community	lowa	Combined Iowa, Nebraska, Kansas					
Largest	24%	18.4%					
Second or third	15.8%	20.1%					
4th - 10th	26.9%	26.8%					
More than 10	33.3%	34.5%					

Table 1. Relative Importance of Local Agribusiness Firms Among Private Sector Employers in Rural Towns - Iowa, Nebraska, Kansas

Despite the fact that local agribusiness firms have increased in size and number since 1950 changes observed during the past decade have begun to indicate that a wholesale erosion in their number could occur in the 1990s. There are several factors which appear to be signaling a radical change in the structure of the industry during the next decade. These include:

- 1. CHANGING DEMOGRAPHICS -- FEWER LARGER FARM CUSTOMERS
- 2. GOVERNMENT FARM POLICY CHANGES AND EXCESS INDUSTRY CAPACITY
- 3. CONTRACT PRODUCTION AND VERTICAL COORDINATION OF PRODUCTION
- 4. HIGHER CAPITAL INVESTMENT REQUIRED TO MEET INCREASINGLY STRINGENT ENVIRONMENTAL REGULATIONS
- 5. TRENDS TOWARD SUBSTITUTION OF KNOWLEDGE FOR PHYSICAL PRODUCTION INPUTS

Each of these will be examined in more detail.

CHANGING FARM DEMOGRAPHICS - FEWER LARGER FARM CUSTOMERS

The number of farm operations has continued to decline over the past 50 years. Furthermore, the farm operator population itself continues to become more diverse with fewer and larger producers accounting for an ever greater fraction of the nation's food production (see table 2). Smaller part-time operations (with a majority of their family income generated from off-farm sources) make up an increasing fraction (86%) of the

	Number of farms (000)	Percent of farms	Cash sales (billions)	Percent of total
Farms by sales class:				
Under \$10,000	1,028	49.2	\$3.40	2.5
\$10,000 - \$49,999	546	26.1	\$13.11	9.6
\$50,000 - \$99,999	218	10.4	\$15.66	11.5
\$100,000 - \$499,999	264	12.6	\$51.92	38.1
\$500,000 and more	32	1.5	\$51.95	38.1
U.S. TOTAL	2,088	100.0	\$136.05	100.0

Table 2. Distribution of U.S. Farms by Market Value of Products Sold, 1987.

Source: USDC, Census of Agriculture.

total number of producers but account for a much smaller percentage (24%) of total production. This division of the producer population into two more or less distinct sets rather than the more homogeneous group of producers of the past will create problems for the traditional agribusiness firm.

These trends are not new but they do imply that significant adjustments will be required in the structure of the locally owned farm input supply industry. The number of such firms has not declined nearly as quickly as the number of agricultural producers. This has resulted in a narrowing of the business base for each firm in terms of the number of customers it serves. The increasing disparity in size further complicates matters. While the level of production has been maintained it is concentrated in the hands of fewer large scale farmer-customers and those customers are demanding different kinds of programs, products and services.

CHANGES IN GOVERNMENT POLICY AND EXCESS CAPACITY

Those firms providing production inputs and storage services are currently facing severe adjustments from the excess industry capacity built during the late 1970s and early 1980s. Government policies subsidized the building of on-farm storage during the late 1970s. Rapid build up of stored grain stocks in the mid 1980s resulted in large carryover stocks to be stored from one crop year to the next. This spurred additional building. At times the carryover stocks of corn and wheat were nearly equal to a normal year's production. While some of the storage capacity used was temporary or makeshift, much of it was not. In relation to the anticipated 1992 crop, Baumel and Wisner have estimated that excess corn storage capacity is about 50% and excess wheat storage capacity is about 80%.

The current government policy calls for the virtual elimination of CCC stocks and the Farmer Owned Reserve by the end of 1992. This will result in a great deal of unused storage capacity--much of it owned by local farm input supply and marketing firms in the midwest and plains states. Excess capacity of this magnitude will exacerbate the problems faced by local agribusiness firms. They will bear a greater share of the cost of excess capacity than their share of total storage capacity would indicate. This will occur because farmers already own much of the capacity required to store a normal sized crop. There is little cash outlay required for farmers to use this capacity. Thus, farm storage capacity tends to be used before commercial elevator capacity is used. Even when grain is moving to elevators there has been a tendency to sell under price later contracts to avoid paying elevator storage charges.

Because fixed costs make up the largest fraction of the cost of providing storage

services, local elevators have few alternatives to reduce their costs when storage revenues fall. The costs continue to be incurred but there is no storage revenue to cover them. This means that the agribusiness firm must cover these costs from other sources of revenue or experience net operating losses.

CONTRACT PRODUCTION AND VERTICAL COORDINATION

Trends toward contract production and vertical coordination through the market channel will also have an increasing impact on locally owned agribusiness firms. Historically, crop and livestock products brought to market by U.S. producers have been treated as commodities. Independent farmers have made individual decisions about the amount produced, the genetics used, the inputs used, the timing of marketing, the production practices used, and the facilities or equipment employed. Commodity markets, processors, and final consumer users have absorbed whatever quantity and quality farmers as a group chose to put on the market. Price adjusted to provide signals to producers to either increase or decrease quantities produced. Farmers absorbed the risk and reaped the profits or loss.

This commodity oriented system of production and marketing appears to be changing and the rate of change is expected to accelerate during the next decade. Advances in genetics will permit farm product characteristics to be more closely tailored to intermediate user and final consumer needs. Rather than accept the wide range of product characteristics that prevail when hundreds of thousands of producers make independent decisions about the genetics used, inputs used, production practices used and equipment used there will be an increasing trend toward coordination of these production decisions. The objective of coordination will be to tailor final product characteristics more closely to processor needs and/or the demands of final consumers for specific attributes. For example, final consumers may wish to have pork chops with lower fat content, and more consistent size, shape, and flavor. Pork processors may wish to have carcasses that are uniform enough to permit automated machinery to be used in slaughter and processing. Such consistency and uniformity cannot be achieved economically (or easily) given the large number of uncoordinated production decisions. Genetics, production practices and even the inputs used must be standardized over time in order to achieve and maintain the desired set of product attributes.

Similar forces are at work in the markets for grains. Physical attributes such as fewer stress fractures, better physical integrity and proper moisture content in corn kernels can make a significant difference in quality of grain during shipping and handling. Likewise intrinsic attributes or components such as oil content, protein content, and starch content may have much different values to different processors and end users. To provide these values to customers, production practices such as fertilizer levels, pesticide application, drying practices, harvesting methods, seed selection, and other similar activities will need to be more closely controlled and standardized. If these values are to be provided the grain cannot be co-mingled as a bulk commodity the way it is today. Instead, it will need to be kept in smaller lots of grain with similar characteristics.

The effect of these changes on local input supply and marketing firms is at this time uncertain. Some may find ways to participate in this changed system. Others, however, will find that the movement to these more coordinated systems will be beyond their ability to find adequate capital, build the needed staffing skills, or establish linkages with

processors or intermediate users.

MORE STRINGENT ENVIRONMENTAL REGULATIONS

The explosive growth in the sales of fertilizers and agricultural chemical pesticides over the past 50 years has not been without its problems. During the late 1980s and early 1990s there have been increasing levels of concern about the effects of these materials on the environment. Of particular concern have been the effects on groundwater supplies originating from point sources near dealerships where mixing, loading, and washing of equipment is done.

Many states have established more stringent requirements for fertilizer and pesticide handling, mixing and application. Investments in improved storage facilities, in building structures to control runoff during washing and mixing and in building dikes to manage accidental spills have been mandated by law. These investments raise the per unit costs of handling such products and usually require the agribusiness to find additional debt or equity capital.

Smaller firms with limited sales volume are adversely affected in two ways. Because sales volume is relatively low they have fewer units to spread the fixed costs of such facilities. Smaller firms also tend to be undercapitalized so they have greater difficulty in raising the necessary debt or equity capital to build the facilities in the first place. The net effect is to make fertilizer and ag chemical sales less profitable to smaller firms. Although larger firms must also make these investments, they are typically able to spread the costs over a larger volume of sales. The resultant lower per unit cost permits larger firms to offer more competitive prices and still maintain the necessary profit margin.

TRENDS TOWARD THE SUBSTITUTION OF KNOWLEDGE FOR PHYSICAL PRODUCT

A final change occurring in the industry is a movement toward reduced application of physical inputs and increased emphasis on the substitution of knowledge, information and intensified management as a strategy to maintain yields. The decade of the 1990s promises an acceleration in this trend. Larger scale farmers are already seeking more technical expertise from input suppliers along with the products they buy. As commodity prices decline to world market levels producers will be under greater pressure to maintain yields while reducing per unit costs of production of corn, soybeans, and wheat.

In the case of corn and soybeans one means of accomplishing lower production costs is to reduce the amount spent for chemical fertilizers and pesticides. Some farmers are already tailoring their application of fertilizers more closely to very localized soil conditions (often within the field) rather than applying the maximum to the entire area. Plant tissue tests are being developed to permit farmers to monitor plant needs during the growing season. This kind of information will permit farmers to make additional localized applications on an "as needed" or "just in time" basis to ensure maximum nutrient utilization by the plant and minimal run-off. The net effect is to reduce the amount of fertilizer used while maintaining yield results similar to those achieved by fertilizing for maximum yield prior to planting.

Similar strategies are being employed for the application of chemical pesticides. Crop scouting to determine insect infestation levels and calculation of economic damage thresholds (where an application of pesticides saves more yield than its cost) are being offered on a fee basis to farmers by some agribusiness firms. These Integrated Pest Management programs are substituting "as needed" pesticide applications for the large

scale prophylactic treatments which have been routinely used in the past. The net effect is to reduce the physical volume of chemicals while obtaining comparable profits.

Other dealers are beginning to offer assistance to producers in maintaining records on chemical applications on a field by field basis to meet more strict reporting and recordkeeping requirements. Still others are offering assistance in financial recordkeeping and calculation of production costs. To offer such services agribusiness firms must recruit highly trained specialized professional employees. In most cases, a larger number of farm customers per firm is required to support and spread the cost of these personnel. While some smaller firms will be able to make this transition, many will not.

These information and knowledge based programs are examples of the trend to manage the use of inputs more intensively and reduce the input cost per bushel produced. They are consistent with government policies toward reduced price supports and a lower environmental impact of agriculture. They signal the beginning of very individualized, farm specific or tailored input application recommendations rather than general blanket recommendations.

These programs also support the trends toward coordinated production of farm products to meet specific end user demands. Where the end product attributes demanded by processor or final consumers are specialized, closer crop monitoring, controlled application of inputs, and more careful management of harvesting, handling and storage are more likely to be required.

CURRENT CONDITION OF THE INDUSTRY

The effects of these five factors on the local input supply industry are already becoming evident. Historically the profitability of the industry has been cyclical. But

changes since the late 1980s indicate that a more fundamental change may very well be underway. Data in table 3 show several key financial measures from a random sample of 80 locally owned input supply marketing firms in Iowa. Firms in the sample are part of a longitudinal study of financial conditions begun in 1980.

	Average for most profitable <u>half of sample</u>	Average for least profitable half ofsample	$H_{o} \mu_{1} = \mu_{2}^{*}$
Total Sales and Service Inc.	22,243,401	7,827,099	S
Grain Sales	17,537,644	5,537,405	S
Dollar Gross Margins	1,723,560	553,468	S
Total Assets	7,135,663	2,396,254	S
Net Profit	264,382	(43,501)	S
Net Cash Flow	554,405	60,168	S
Total Assets Net Profit Net Cash Flow	7,135,663 264,382 554,405	2,396,254 (43,501) 60,168	S S S

Table 3. Comparison of Most Profitable Half of Agribusiness Firms With Least Profitable Half

* S = significantly different. Reject null hypothesis. α = .005.

N = Not significant.

Sample firms were separated into two groups based on their dollar profits in calendar year 1990. The most profitable firms were about three times as large as the least profitable half of firms when measured by total sales, grain sales, dollar gross margins and total assets. These differences between the means for most profitable half and least profitable half were found to be statistically significant at the 99% level.

Profits and cash flow, however, depart from the three to one scale. Although the mean profit and cash flow was significantly different, bottom half firms averaged a net loss and averaged only about 10% as much net cash flow as in the top half of the sample in

the industry. This situation is not sustainable in the long run. Approximately 90% of the cash flow in the industry is going to the most profitable firms and only about 10% is going to the remaining 50% in the least profitable group. This implies that the least profitable half of the industry will be less able to service debt, replace fixed assets or use internally generated cash for expansion.

To determine how 1990 top half and bottom half firms have fared over a longer time period, average profits and cash flows were calculated for the six year period 1985-1990. These are shown in figure 3. Panel (A) shows the dollar profits and panel (B) shows the profits per dollar of sales. Showing profits as a percent of sales eliminates the effect of size differences. Prior to 1988, both top half and bottom half firms enjoyed profits and cash flows in rough proportion to their sales and assets. The cash flow was more evenly spread across the industry. This period closely coincided with the period of heavy government storage payments to farmers and elevators.

In 1988, when widespread drought in the midwest resulted in a nearly 50% reduction in the corn crop, much of the grain in storage was needed to meet normal demand. As a result, stocks in storage were depleted. The storage income generated by local agribusiness firms fell precipitously. The reduction in storage income affected both the most profitable half of the industry and least profitable half.

However, the larger more profitable half of the industry began to show increased profits and cash flow in 1989 and 1990 while the least profitable firms continued to decline. Preliminary analysis of 1991 data indicate that the trend has continued into 1991. Unless there is a change in these divergent trends in the industry profits and cash flow, half the industry is on a collision course with failure. Figure 3.

B.

A. Industry Average Dollar Profits Top Half Vs. Bottom Half



Profits as Percent of Sales & Other Income Top Half vs. Bottom Half



Source: ISU Econ, Ginder, IGFA Fin Stds Project

CONCLUSIONS AND IMPLICATIONS FOR RURAL COMMUNITIES

Current changes in the structure of agriculture and various government policies have created a group of "haves" and "have nots" among the firms in the local input supply industry. A continued uneven distribution of profits and operating cash flow in the industry (similar to the experience of 1989-90) will place the survival of half the industry in question. These firms will find it difficult to make the required investments to meet changes that are occurring in the agricultural production sector during the 1990s. They will also find it difficult to meet increasingly strict environmental policies and laws. Unless sources of profits and cash flow are more evenly distributed over the industry (as was the case during the late 1980s when government storage payments were large) it appears unlikely that many of the smaller firms will survive through the decade.

Because these firms are a major employer in most of the rural communities where they operate this change will have a significant impact on the smaller rural communities -- especially in the western corn belt and plains states. Agribusiness firms themselves are a major taxpayer in these communities and the people they employ provide additional tax base. Without these firms, many communities will face a significant reduction in tax revenue beyond the level that was directly paid by the agribusiness firm itself. Revenue from employees of the firm who reside in the community will also be reduced or lost.

Perhaps of equal importance, owners, managers, and employees in these firms are a major source of civic leadership in the communities where they operate. Owners and managers possess planning and organizational skills that play a key role in the communities where they are located. They are accustomed to putting plans into action

to accomplish results. When local firms cease to operate or are acquired and operated as a part of a larger firm, many of the better trained higher paid managerial and skilled employees will no longer be a part of the community. The process will negatively affect both the financial and the civic vitality of the community.

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1. CHANGING FARM DEMOGRAPHICS -- FEWER LARGER CUSTOMERS

FEWER LARGER FARM CUSTOMERS

- MORE DIVERSITY
- SHRINKING BUSINESS BASE
- 86% PRODUCE 24% OF THE FOOD
- 14% PRODUCE 76% OF THE FOOD
- DEMANDING MORE INFORMATION

- 2. GOVERNMENT FARM POLICY CHANGES AND EXCESS INDUSTRY CAPACITY
 - GOVERNMENT SUBSIDY FOR FARM STORAGE CONSTRUCTION IN 1970
 - LARGE STOCKS IN MID-1980S BROUGHT STORAGE INCOME
 - CURRENT POLICY -- ELIMINATION OF FARMER OWNED RESERVE & CCC STOCKS
 - EXCESS STORAGE CAPACITY
 - + 50% IN CORN
 - + 50% IN WHEAT
 - FARM STORAGE FILLED FIRST
 - FIXED COSTS REMAIN WITH NO REVENUE TO COVER THEM

3. CONTRACT PRODUCTION AND VERTICAL COORDINATION OF PRODUCTION

- VERTICAL COORDINATION WILL HAVE GREATER IMPACT
- INDEPENDENT DECISIONS BY PRODUCERS
 - + GENETICS
 - + INPUTS
 - + **PRODUCTION PRACTICES**
 - + TIMING OF MARKETING
 - + FACILITIES AND EQUIPMENT
- CONSUMER ADJUSTED TO QUANTITY AND QUALITY PRODUCE
- PRODUCT CHARACTERISTICS BROADLY DEFINED AS COMMODITIES

4. HIGHER CAPITAL INVESTMENT REQUIRED TO MEET ENVIRONMENTAL REGULATIONS

- SURFACE AND GROUND WATER
- MATERIALS HANDLING AND STORAGE
- NEED TO SPREAD FIXED COSTS

- 5. TRENDS TOWARD SUBSTITUTION OF KNOWLEDGE FOR PHYSICAL PRODUCTION INPUTS
 - LARGE FARMERS WILL DEMAND
 - + INFORMATION
 - + TECHNICAL EXPERTISE
 - ATTEMPT TO MAINTAIN YIELD AT LOWER INPUT COST
 - MORE INTENSIVE MANAGEMENT OF FERTILITY
 - + APPLICATION TAILORED TO CONDITION WITHIN FIELD
 - + TISSUE TESTING DURING SEASON
 - + "JUST IN TIME" APPLICATIONS
 - INTEGRATED PEST MANAGEMENT
 - + CROP SCOUTING
 - + ECONOMIC THRESHOLD
 - + FEWER PROPHYLACTIC APPLICATIONS
 - RECORDKEEPING

CONSISTENT WITH GOVERNMENT POLICY

- + COMPETITIVE PRODUCTION COST
- + REDUCTION OF MATERIALS USED
- + LOW IMPACT AGRICULTURE

CHANGE TO MORE PROCESSOR END USER-ORIENTED PRODUCTS

- PRODUCTS TAILORED TO BUYER NEEDS
- COORDINATION OF PRODUCTION DECISIONS
- MORE UNIFORM CONSISTENT PRODUCTS
- SOME LOCAL FIRMS WILL BE ABLE TO PARTICIPATE
 - + FIND CAPITAL
 - + BUILD STAFF
 - + ESTABLISH LINKAGES

		Percent of Firms
		Combined
Years in Business	lowa	lowa, Nebraska, Kansas
0-10 years	21.6	18.4
11-25 years	15.2	15.5
Over 25 years	63.2	66.0

Longevity of Agribusiness Firms -- Iowa, Nebraska, Kansas

Number Full Time Employees in Local Agribusiness Firms - Iowa, Nebraska, Kansas

	Percent of Firms						
		Combined					
Number of Employees	lowa	lowa, Nebraska, Kansas					
Less than 5	27%	35.1					
6-10	34%	27.1					
11-20	24%	22.2					
20 and over	15%	15.6					