MINNESOTA
farm business
NOTES

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What Does Vertical Integration Mean for Agriculture?

Darrell F. Fienup

The history of agriculture is a story of adjustment to change. Farmers have gone from horse power and hand labor to nearly complete mechanization. Farm production has become more efficient—higher yields per acre, more production per man hour. The result has been more total output from agriculture, fewer farmers, and bigger farms.

In this process of change farmers, in general, have remained independent businessmen. Farmers have supplied their own capital or borrowed it on the basis of their equity position; they have provided their own management and decision making; and they have supplied most of their own labor. This describes the typical family farm as we have always known it.

New developments are appearing which may change these generally accepted characteristics of family farms. This is the trend in some farm enterprises toward vertical integration or contract farming.

What Is Vertical Integration?

Briefly, vertical integration means bringing together under central management two or more of the processes involved in the production, processing, and marketing of farm products. Integration is accomplished either through contracting or by outright ownership.

Integration can be effected by any one of the groups involved in the grower to grocer chain. If the grower or farmer is the integrator he does it through the farm cooperative. All cooperatives represent a form of integration. Here farmers retain control of the process, but it must be remembered that farmers must also provide the capital through their cooperative business. Those who contribute most of the capital in a business also control major decision making.

Contract farming is a limited type of integration. For example, the farmer who raises turkeys contracts with a feed company to use the company's feed and supervised management in return for the financing or capital the company provides. In this case the farmer supplies all other facilities and assumes all risks. There may be a further agreement to sell to a particular processor. In this case the farmer has given up his selling decision but in return usually receives some premium over regular market price.

In some cases the farmer may not own the turkeys but contracts to raise them for the integrator at a guaranteed price for his labor and use of buildings. This agreement completely eliminates price and capital risk; it also leaves the farmer with very limited management decisions. Such an arrangement is an advanced form of integration which typifies much of the broiler industry.

What Enterprises Are Integrated?

Contracting with producers and integration have advanced farthest in the broiler industry where it is estimated that 90 percent of all broilers are produced under some form of contract. Contracting is becoming increasingly important in the turkey industry.

Preliminary findings indicate that most turkey growers in Minnesota contract with a feed company to supply them their feed. Contracting of hog feeding operations is not widespread in Minnesota at present but seems to be increasing. Some eggs are produced on a contract basis. Contract cattle feeding is extensively developed in California and some western states but is relatively undeveloped in the Middle West. Canning crops and sugar beets have been grown under contracts for a long time.

Why Has Integration Developed?

Integration has developed mainly because of two separate yet interrelated forces. One force results from the retail food chains and the product requirements of mass retailing; the other is the technological advance in agriculture which makes possible large specialized units with low unit costs.

Chain stores have become "big businesses" which owe much of their success to high sales volume per store, uniform quality, and a large selection of products. These stores need large, dependable sources of supply. Processors who do business with these large buyers must meet the chain stores' demands of large volume, more constant supply throughout the year, and uniform quality standards.

In many cases processors have found they can best meet these demands by contracting for their supply from farm producers, rather than depending on the open market. In order to assure their supply and achieve lower procurement costs processors sometimes pay the producer a guaranteed price or a premium over market price at the time of sale.

Large producers can meet the standards of quality, large volume, and more uniform production throughout the year better than small producers. In the broiler and turkey industry, large scale production usually means lower cost per unit of production. This is also the case in cattle feeding operations and may be in hog production. Large producers of turkeys and broilers require more intermediate credit than can be supplied by the individual operator. In some cases they need $100,000 of credit at one time.

Typically feed companies have stepped in to finance the operation in order to sell their feed. Only by providing management along with the capital is the feed company willing to finance the major portion of the operation. In this way the loan is secured with a smaller producer equity. They have extended credit farther than the usual lending institutions have been willing to go.

(Continued on pages 2 and 3)

Trends in Farm Loan Interest Rates

Reynold P. Dahl

Perhaps the most notable development in farm credit in the last year was increases in interest rates. Farmers may have wondered why and how much interest rates have been increased by various lenders. Interest rate charges of most institutional lenders of farm credit are closely related to the general level of interest rates in the whole economy. This is particularly true of lenders that are a part of the Farm Credit Administration such as the Federal Land Banks and the Federal Intermediate Credit Banks.

Both banks obtain their loan funds by selling bonds in the money markets to the investing public. When interest rates in the money markets rise, the cost of funds to these institutions also goes up. This in turn is reflected back in higher interest rates on their loans to farmers.

The demand for funds was pressing the available supply in the money markets during most of 1956 and 1957; as a result interest rates rose. This was due in part to the actions of the Federal Reserve System in making less funds available as a step in curbing inflation.

As shown in table 1, interest rates paid on new issues of Federal Land Bank bonds rose during 1956 to a high of 4.8 percent in October 1957. As a result, the interest rate charged on Federal Land Bank farm mortgage loans, which had been 4 percent for several years, was raised .5 percent three times to 5.5 percent in November, 1957. This rate was reduced to 5 percent in February of this year and made retroactive on loans made at the higher rate.

Eighteen of the 21 Production Credit Associations also raised their interest rates last year. These local credit cooperatives make non-real estate loans to farmers. At present 2 PCA's are lending at 7 percent interest, 12 at 6.5 percent, 5 at 6 percent, and 2 at 5.5 percent. Increased rates followed rises in the discount rate of the Federal Intermediate Credit Bank through which they obtain their loan funds.

Table 1. Bond and Loan Rates, Federal Land Bank of St. Paul, 1955-1958

Effective date	Bond interest rate plus costs	Loan rate
	(percent)	(percent)
Feb. 1, 1955	2.76	4.0
Oct. 3, 1955	3.11	4.0
Feb. 15, 1956	3.10	4.0
May 1, 1956	3.45	4.0
Sept. 15, 1956	3.90	4.5
Feb. 15, 1957	4.15	5.0
May 1, 1957	4.00	5.0
July 15, 1957	4.62	5.0
Oct. 1, 1957	4.80	5.0
Feb. 14, 1958	3.48	5.5
Feb. 23, 1958		5.0

Table 2. Debenture and Discount Rates, Federal Intermediate Credit Bank of St. Paul, 1955-1958

Effective date	Debenture rate plus costs	Discount rate
	(percent)	(percent)
Jan. 1, 1955	1.80	1.75
July 1, 1955	2.10	2.50
Sept 1, 1955	2.75	2.75
Nov. 1, 1955	3.15	3.00
Mar. 1, 1956	3.15	3.25
June 1, 1956	3.75	3.50
Nov .1, 1956	3.95	3.75
Dec. 1, 1956	3.85	4.00
Feb. 1, 1957	3.97	4.25
July 1, 1957	4.35	4.50
Oct. 1, 1957	4.72	4.75
Nov. 1, 1957	4.82	4.75
Dec. 1, 1957	4.97	4.75
Jan. 1, 1958	3.75	4.75
Feb. 1, 1958	3.10	4.25
Mar. 1, 1958	2.55	4.25
Apr. 1, 1958	2.10	3.75

The interest rate on FICB debenture bonds rose to a new high in 1957 (table 2). New money cost this bank 4.97 percent in December of last year. This was the highest rate since the bank was organized back in 1923.

The differences between the bond interest rate and the loan interest rate of both the Federal Land Bank and the Federal Intermediate Credit were reduced in 1957. Thus, their operating margins were also reduced.

Interest rates charged by insurance companies, commercial banks, and individuals also increased last year. Although rate increases by both commercial banks and individuals were probably less than by other lenders, their rates are not as sensitive to changes in the money markets.

While many farmers have little or no debt and hence pay only a small amount of interest, others have substantial debts and interest payments are a major factor in production costs. Higher interest rates added to production costs of the latter group of farmers in 1957. As shown in the Outlook Corner of this issue, farm income per $100 of debt in Minnesota has declined substantially in recent years. However, without credit restraint it is likely that other costs of farmers would have increased more than interest.

MINNESOTA
farm business
NOTES

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The interest rate situation has changed considerably since the beginning of 1958. In an attempt to curb the business recession which became evident during the latter part of last year, the Federal Reserve reduced the discount rate and made more money available through lowering of required reserves and through its open market operations.

The Federal Intermediate Credit Banks sold a new issue of debentures at 2 percent on April 1 of this year. This was the lowest rate since July 1955. It made possible a reduction in their discount rate to 3.75 percent. Since this results in lower money costs to the PCA's, several are now considering reducing their rates to farmers. The Federal Land Banks also borrowed money at 3.48 percent in February of this year. This made possible a reduction in their interest rate to farmers to 5 percent.

Vertical Integration—

(Continued from page 1)

Capital needs have increased rapidly in farming. Lack of capital causes many farmers to operate on too small a scale. Contract farming provides a source of needed capital and takes away some of the risk usually involved in borrowing money. If there is some form of guaranteed price, the price risk is also reduced. It permits more efficient, higher volume farm units. Expert management is also provided. Specialists in feeding, housing, sanitation, and disease control are on the job. This tends to further increase efficiency of production.

What's Ahead in Integration?

For agriculture, integration will undoubtedly lead to greater specialization on the farm with increased capital requirements. Integration also means larger units which produce efficiently at low cost. Past experience shows that total output also is likely to increase.

Farmers Must Forecast Hog Prices in Advance

R. B. Zoller and S. A. Engene

Hog producers must forecast market prices for hogs several months in advance when making production plans. If production plans are carried out on the basis of estimated prices the accuracy of the forecasts affect considerably the chances for profit.

In order to determine the accuracy of farmers' price forecasts members of the southeastern and southwestern Minnesota Farm Management Associations were asked during March 1957 to estimate hog prices on the South St. Paul market for the last six months of 1957. These farmers as well as professional price forecasters, underestimated hog prices for this period. The estimates of 221 farmers and the prices that actually occurred are shown in table 1.

Table 1. Comparison of Estimated and Actual Prices*

Month	Price estimates	Actual prices	Difference
July	$19.14	$21.30	$2.16
Aug.	18.50	21.68	3.18
Sept.	17.39	19.68	2.29
Oct.	16.00	17.39	1.39
Nov.	14.73	17.27	2.54
Dec.	14.02	18.90	4.88

* Monthly Average of Daily Quotations per 100 pounds for U.S. No. 1, 2, and 3 Barrows and Gilts, 200-220 pounds on the South St. Paul Market.

Table 2. Percent of 221 Farmers' Price Forecasts in Each Price Range by Months

Estimated price	1957 July	August	September	October	November	December
$10.00-10.99	.....	.....	.....	.....	.....	1.2
11.00-11.99	.....	.....	.....	1.2	2.4	4.9
12.00-12.99	.....	.....	.....	2.4	7.3	17.1
13.00-13.99	.....	.....	1.2	4.9	19.5	17.1
14.00-14.99	.....	.....	3.7	13.4	25.7	22.0
15.00-15.99	.....	4.9	8.5	25.7	15.9	24.4
16.00-16.99	7.3	8.5	18.3	24.4	19.5	8.5
17.00-17.99	7.3	11.0	26.9	11.0*	4.9*	2.4
18.00-18.99	22.0	34.2	26.8	11.0	2.4	1.2*
19.00-19.99	26.8	19.5	9.8*	2.4	1.2	.....
20.00-20.99	19.5	13.4	2.4	2.4	.....	1.2
21.00-21.99	11.0*	6.1*	.....	.....	.....	.....
22.00-22.99	4.9	2.4	1.2	.....	1.2	.....
23.00-23.99	1.2	.....	1.2	1.2	.....	.....

* Starred figures indicate the price range into which the actual price that month fell.

The tendency to forecast low prices was probably due to the expectation of substantial increases in production for 1957 over 1956. Undoubtedly the memories of the low prices of late 1955 were still fresh on the farmers' minds as they contemplated the probable results of the anticipated 1957 production increase. It should be remembered that the 1955 situation was unique for in no other time in the past had hog prices fallen so much in a six month period.

Ordinarily a 10 percent increase in production will result in a 15 to 17 percent drop in price. However, from July to December 1955 the price dropped 29 percent as a result of only a 12 percent increase in production. Recently hog prices have been much more sensitive to increases in marketings than was the case several years ago.

While the average estimate of all farmers was considerably below the prices that actually occurred there were a few whose expectations were realized. Table 2 shows, however, that the forecast of most farmers was wide of the mark. The survey also points out the great range in the expected prices that farmers have for the comparatively near future.

The certainty of his price forecast is very important to the individual farmer who is contemplating a change in his hog output based on that forecast. In response to a question regarding the certainty of their October price forecast, 55 percent of the farmers felt that there was only one chance in 10 that the price would be as much as $1.25 above their price estimate for October. For the remaining 45 percent who were less certain of their estimate it is unlikely that they would be willing or wise to adjust production on the basis of their forecast.

A recognition of the uncertain and inaccurate forecasts of this group of farmers emphasizes the difficulty of adjusting hog supply to demand. Insofar as the increased sensitivity of hog prices contributes to farmers' uncertainty, production adjustments are now more difficult than in the past.

The broiler industry is an example: 143 million birds were produced in 1940, 631 million in 1950, and one and one-third billion in 1956. This has been mainly due to greater efficiency of production. The rapid technological advance in this industry has been accelerated by integration.

Greater production efficiency and larger total volume will mean lower margins and will put increased pressure on the more inefficient producers. If integration spreads into different types of farm production it will tend to limit the number of profitable enterprises available to the general farmer. Today the production of broilers or turkeys needs to be a major enterprise of the farm to be profitable. Greater geographical concentration of production by commodities is also likely.

One of the dangers of integration is the matter of competition. As long as the producers in a given area have a choice of several integrators to contract with, competition may remain strong. However, if a few integrators become dominant, the danger of unfair contracts to the producers exists. This seems an ever present danger because of the unequal bargaining position of the individual farmer.

Vertical integration will not envelope us overnight but it is a continuing trend. It presents both problems and opportunities. For those who need capital to operate efficiently, it can be an opportunity. Those who want to operate independently in an integrated industry will probably find it increasingly difficult.

An independent farmer is three things: a laborer, a manager and decision maker, and finally an owner of capital who furnishes land, equipment, and money for the operation of the farm. The owner of capital in the business also controls decision making. Vertical integration means more outside capital in the farm business.

In summary, vertical integration on the farm means the farmer gives up some and perhaps all the important decision making for the benefit of reduced risk and the capital supplied by the integrator. This is the basis on which the farmer must make his choice about integration.

Minnesota Farm Prices Feb. and March 1958

Prepared by Larry Denison

Average Farm Prices for Minnesota

February 1958, March 1958, 1957, 1956*

	Feb. 1958	Mar. 1958	Mar. 1957	Mar. 1956
Wheat	$ 2.04	$ 2.07	$ 2.08	$ 2.09
Corn	.68	.71	1.06	1.14
Oats	.52	.53	.64	.55
Barley	.89	.85	.92	.91
Rye	.97	1.02	1.13	.97
Flax	2.92	2.81	2.95	3.32
Potatoes	1.35	2.25	.51	1.70
Hay	14.90	14.00	16.10	15.60
Soybeans†	1.94	2.01	2.18	2.30
Hogs	19.80	20.30	16.80	12.50
Cattle	19.80	20.40	15.80	14.00
Calves	24.30	23.80	18.50	17.60
Sheep-lambs	21.63	20.83	19.99	17.79
Chickens	.129	.142	.106	.172
Eggs	.280	.360	.240	.340
Butterfat	.65	.65	.63	.62
Milk	3.15	3.15	3.15	3.00
Wool†	.39	.36	.48	.40

* Average prices reported by the USDA.
† Not included in Minnesota farm price indexes.

Average prices of Minnesota farm commodities increased 6 percent from February to March 1958. Crop prices contributed most to the increase with potato prices showing the largest individual increase.

Corn prices increased more percentagewise than did prices of hogs and cattle so that the livestock feeding ratios fell from the record levels reached in February. Due primarily to higher egg prices the egg-feed ratio is the highest since October, 1953.

Comparison of February and March Prices

Commodity class	Average March prices as a percentage of average February prices
Crops	128
Livestock	102
Livestock products	102
All commodities	106

Indexes for Minnesota Agriculture*

	Average Mar. 1935-39	Mar. 1958	Mar. 1957	Mar. 1956
U. S. farm price index	100	240.8	217.0	210.6
Minnesota farm price index	100	239.9	191.2	192.4
Minnesota crop price index	100	241.7	143.2	218.8
Minnesota livestock price index	100	271.0	217.9	181.4
Minnesota livestock products price index	100	200.2	184.0	191.7
Purchasing power of farm products				
United States	100	99.3	92.6	93.7
Minnesota	100	99.0	81.5	85.5
U. S. hog-corn ratio	13.5	20.3	14.0	10.2
Minnesota hog-corn ratio	15.9	28.6	15.8	10.8
Minnesota beef-corn ratio	14.0	28.7	14.9	12.3
Minnesota egg-grain ratio	20.7	16.1	9.4	13.3
Minnesota butterfat-farm-grain ratio	40.4	40.9	32.3	33.6

* Minnesota index weights are the average of sales of the five corresponding months of 1935-1939. U. S. index weights are the average sales for 60 months of 1935-1939.

The Outlook Corner — FARM DEBTS

The debt load of Minnesota farmers has increased substantially in recent years. As shown in the table, the total farm debt in the state rose $295 million, or 75 percent, from 1950 to 1957. The real estate debt increased $213 million and non-real estate $82 million.

The main factor in the rise of the farm mortgage debt was the transfer of farms at higher prices. The increase in the non-real estate farm debt has been due to the cost-price squeeze and to increased purchases of production supplies by farmers.

Farm income, on the other hand, has gone down. Net farm income in Minnesota declined from $659 million in 1951 to an estimated $446 million in 1957. Net farm income has declined in every year but one since 1951.

The income per $100 of debt fell from $145 in 1951 to $64 in 1957. In other words, in 1951 the net income for 8 months would have paid up the debts; in 1957 the entire income would have paid off only two-thirds of the debts. However, delinquency is at a relatively low level with very few foreclosures, but inefficient farmers are probably under pressure.

The volume of farm mortgage loans fell in 1957. The outlook is for further increases in debt, but the increase will likely be smaller than in recent years. There may be fewer farm real estate transfers, and increased use of sales contracts. Higher interest rates have caused farmers to be reluctant to make long-term commitments at the currently high rates. In addition, they cause farmers to be less willing to refinance and increase old farm mortgage loans that have low interest rates.

Farm Debt, Net Farm Income, and Income per $100 Debt, Minnesota Farmers, 1950-57

Year	Total farm debt*	Total net farm income†	Income per $100 debt
	(millions of dollars)		
1950	398	516	130
1951	454	659	145
1952	511	601	118
1953	540	554	102
1954	543	543	100
1955	592	470	79
1956	647	542	83
1957	693	446‡	64

* Held by principal lenders at beginning of year excluding CCC loans.
† Gross farm income less production expenses, adjusted for inventory changes.
‡ Estimated.

The farm non-real estate debt will also increase during 1957, but probably at a slower rate than in recent years. The demand for short-term credit will continue heavy because of higher operating costs. However, reports indicate that commercial lenders are screening loan applicants more carefully, particularly inexperienced operators and those with thin equities. This may increase the volume of operating loans by the Farmers Home Administration, mercants, and dealers.

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