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# Lending to Integrated Agricultural Production Firms: Part I

by David A. Lins and Michael Boehlje

*This is the first of a two-part series on issues associated with lending to integrated agricultural producers. This article provides a background on changes occurring in production agriculture and suggests that financial standards and norms applied to traditional independent producers are of limited value in evaluating the financial position of integrated producers. The second article, to appear in the Spring issue, will focus on a broader set of issues in lending to integrated vs. independent producers.*

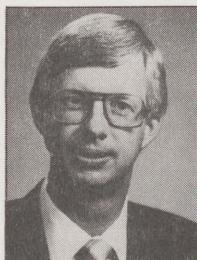
Agricultural production in the United States is undergoing substantial change – change that is increasing the coordination and integration among firms and reducing the independence of producers. Contract production of broilers, eggs, and turkeys is already far more common than independent production. Contract production of hogs also is growing, and some analysts expect the dairy industry to follow the types of change occurring in pork production. Contract production of vegetables, specialty grains, and identity preserved commodities also is increasing in relative importance.

These changes in production agriculture create new challenges for lenders in evaluating the financial performance of agricultural producers. In addition, the nature of risks faced by integrated producers tend to be very different from those faced by independent producers.

This article begins with a description of the changes occurring in the structure of production agriculture. It then develops two major themes: (1) financial standards and norms applied to traditional independent producers are of limited value in evaluating the financial position of integrated producers, and (2) much of the analysis associated with lending to integrated producers must be done outside the purview of financial statements.



Lins



Boehlje

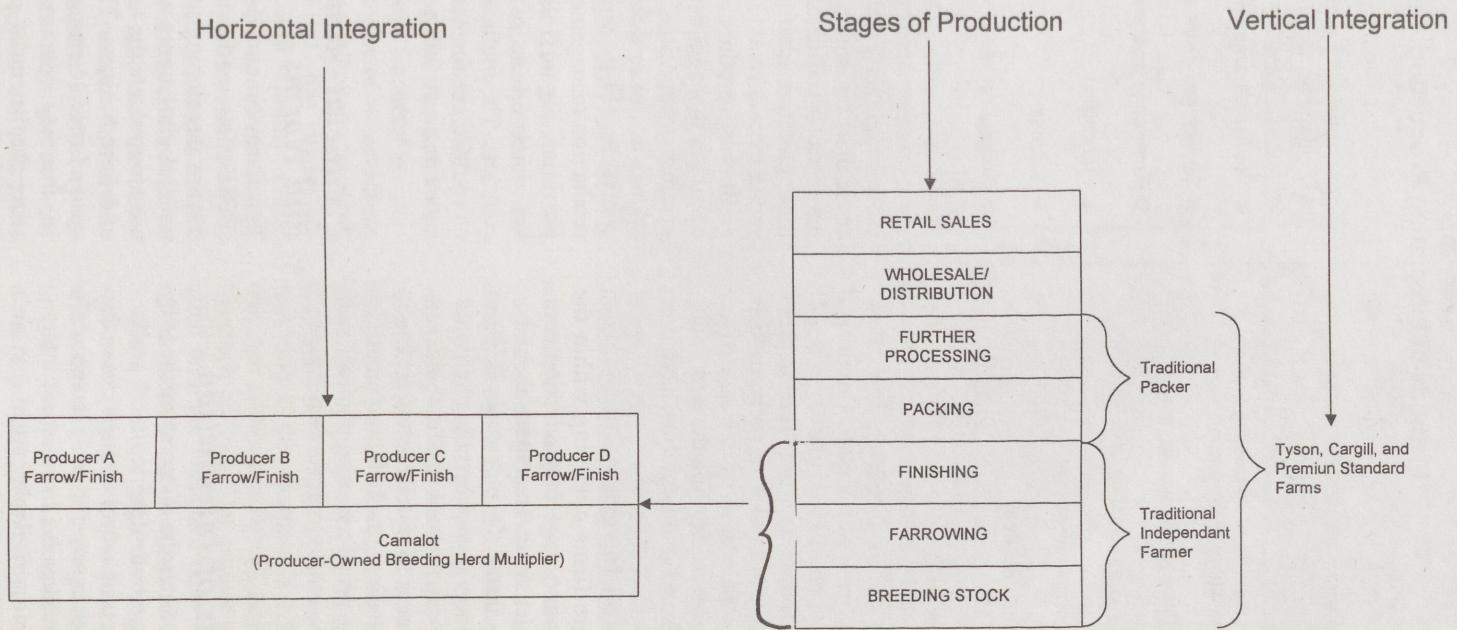
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## **Background on Integration**

To evaluate the kinds of integration occurring in agricultural production it is useful to define the term "stage of production." A stage of production is defined as an activity capable of producing a salable product or service. Figure 1 illustrates the traditional stages of production in the pork industry. Notice that there are at least seven distinct stages of production.

**Vertical Integration** involves combining two or more stages of production under the administration of one firm. Traditional independent pork producers often raise most of their own breeding stock (gilts), farrow the pigs, and fatten them to market weight. Likewise, the traditional packer is involved in packing and further

**Figure 1**  
**Stages of Production and Intergration in the Pork Industry**



**Figure 2**  
**Methods of Integrating Production**

Control Through Ownership	Control Through Alliances
<ul style="list-style-type: none"> <li>■ Expansion of an existing firm into a new stage of production</li> <li>■ Merger of two or more firms</li> <li>■ Acquisition/buyout</li> <li>■ Minority investment</li> <li>■ Joint ventures</li> </ul>	<ul style="list-style-type: none"> <li>■ Production contracts</li> <li>■ Service and distribution contracts</li> <li>■ Knowledge partnerships</li> <li>■ Franchising</li> <li>■ Licensing</li> <li>■ Strategic alliance</li> </ul>

processing, but not in raising hogs. However, some firms like Tyson, Cargill and Premium Standard Farms have vertically integrated all the way from breeding stock to wholesale distribution of pork products. While large-scale firms of this nature have received much attention in the pork industry, other forms of integration have been more dominant.

**Horizontal Integration** occurs when two or more firms operating within the same economic stage of production combine their activities. Examples abound in the pork industry. One example is Camelot, a producer owned breeding herd multiplier that was formed to allow independent producers to obtain better access to quality breeding stock. Other examples include hog producers who contract with neighbors or others to grow feeder pigs on contract.

### *Methods of Integration*

Figure 2 outlines the different methods by which integration of agricultural production can occur. Control through ownership is most commonly found in large-scale units that are involved in vertical integration. Limits on available capital may also force these types of units to control some economic stages of production through

grower contracts. Control through alliances is most commonly found in horizontal integration. The desire to maintain some independence may be a primary motivating force behind horizontal integration.

Because production contracts are becoming a more important method of integrating production, we will focus our attention on the three primary types of contracts: (1) market specification, (2) production-management, and (3) resource providing. Figure 3 illustrates some of the key characteristics of these three types of contracts. The implications for lenders are quite different for each of these types of contracts as we will note shortly.

### *Financial Standards and Norms*

The Farm Financial Standards Council (FFSC) has made substantial progress toward developing uniformity in the financial statements and financial ratios used to evaluate the financial performance of a farm business. The FFSC has developed a list of 16 financial ratios (the sweet 16) that they recommend for use in evaluating the financial performance of the farm business. There have been less successful efforts to develop standards or

Figure 3

## Types of Production Contracts

Characteristics	Market-Specification	Production-Management	Resource-Providing
Involvement by contracting firm	Low	Medium	High
Level of producer's independence	High	Medium	Low
Contractor ownership of inputs or resources	None	Some	Many
Quality standard	Medium	High	High
Contracting firm's management input	Low	Medium	High
Contracting firm's ownership of final product	No	Possibly	Majority of the time
Marketing channel for producer	Guaranteed	Same	Same
Pricing of products	Fixed price specified in contract or tied to open market prices plus a premium	Fixed price is normally specified in the contract	Ownership often retained by contractor so payment is for services rendered not for the commodity
Overall producer risk	High	Medium	Low
Overall contractor risk	Low	Medium	High

Adopted from: Coaldrae, Karen, "Contractual Arrangements in the Production of High-value Crops in East Central Illinois: Contract Types, Producer Characteristics and Producer Attitudes," University of Illinois, 1992.

norms for these ratios. The ratios are intended to measure financial performance in five key areas: 1) liquidity, 2) solvency, 3) profitability, 4) financial efficiency, and 5) repayment capacity. The following sections consider these financial performance measures in terms of independent vs. various types of integrated producers.

**Liquidity:** The FFSC has suggested two different measures of liquidity: 1) the current ratio – defined as current assets divided by current liabilities, and 2) working capital – defined as current assets minus current liabilities. Our focus here will be on the current ratio. For the traditional independent grower, the current ratio tends to vary across product types (i.e. dairy, hogs, grain, etc.) and by time of year. However, most lenders have standards or norms that suggest that an ideal current ratio is at least 1.5:1 or higher. A

current ratio under 1:1 is often considered a major weakness. But are these same standards applicable to contract growers?

Consider the highly aggregated balance sheets for an independent grower and a contract grower of hogs illustrated in Figure 4. The independent grower has current assets including grain and feed inventory plus market livestock inventory. The current ratio in this example is 1.59. In contrast, the contract grower of hogs owns no livestock or feed. The grower is compensated on a per pig space basis for the use of the facilities and the provision of labor.

Thus there are logically very few current assets. However, the contract grower was required to build new grow-out facilities to raise hogs under contract and the current portion of facilities loans is included as a current liability. The current ratio for this producer is 0.84.

Figure 4

## Sample Balance Sheets: Independent vs. Contract Growers of Hogs

## Independent Grower

Current Assets		Current Liabilities	
Cash	\$14,500	Accounts Payable	\$20,100
Grain Inventory	68,200	Notes Payable	55,000
Feed Inventory	19,500	Current Portion of Non-current	22,000
Market Livestock	46,100	Other Current Liabilities	6,200
Other Current Assets	15,900	<b>Total Current Liabilities</b>	<b>\$103,300</b>
<b>Total Current Assets</b>	<b>\$164,200</b>		
Non-current Assets		Non-current Liabilities	
Breeding Stock	\$17,500	Facilities Loan	\$140,000
Machinery & Equipment	142,000	Land Loan	168,000
Land & Facilities	490,400		
<b>Total Non-current Assets</b>	<b>\$649,900</b>		
<b>Total Assets</b>	<b>\$814,100</b>		
CA/CL = 164,200 / 103,300 = 1.59		<b>Total Non-current Liabilities</b>	<b>\$308,000</b>
D/A = 411,300 / 814,100 = 0.51		<b>Total Liabilities</b>	<b>\$411,300</b>
		<b>Net Worth</b>	<b>\$402,800</b>

## Contract Grower

Current Assets		Current Liabilities	
Cash	\$12,200	Accounts Payable	\$ 2,400
Other Current	5,700	Current Portion of Non-current	18,800
<b>Total Current Assets</b>	<b>\$17,900</b>	<b>Total Current Liabilities</b>	<b>\$21,200</b>
Non-current Assets		Non-current Liabilities	
Machinery & Equipment	\$28,400	Facilities Loan	\$162,400
Land & Facilities	225,000		
<b>Total Non-current Assets</b>	<b>\$253,400</b>		
<b>Total Assets</b>	<b>\$271,300</b>		
CA/CL = 17,900 / 21,200 = 0.84		<b>Total Non-current Liabilities</b>	<b>\$162,400</b>
D/A = 183,600 / 271,300 = 0.68		<b>Total Liabilities</b>	<b>\$183,600</b>
		<b>Net Worth</b>	<b>\$87,700</b>

Which of these two producers has the greatest degree of risk from a liquidity perspective? When asked this question, most lenders respond: "It depends." They go on to explain that it depends upon the nature of the contract and the financial strength of the firm offering the grow out contract. If the contract is considered fair and is offered by a financially strong contractor, many lenders believe that the contract grower has less liquidity risk. Yet some admit to an unwillingness to make the loan to the contract grower because it is "out of standards." If the loan is made,

it may also require more work to justify why the loan is viable despite being out of standards.

The differences between liquidity for a contract grower and an independent producer tend to be most noticeable in "resource providing contracts" – contracts that normally have the contractor retain ownership of the final product and responsible for the provision of inputs (for example the feeder pigs and feed). With market-specification or production-management contracts, there are often very few differences in the liquidity position of

contract vs. independent growers.

In summary, lenders dealing with producers operating under resource-providing contracts need to recognize that these producers are likely to have poor liquidity by traditional standards, even when liquidity risk is low. Thus credit scoring models may not be appropriate. In this situation, cash flow projections may be a much more relevant measure of liquidity than balance sheet measures.

**Solvency:** The Farm Financial Standards Council has suggested three ratio measures that help identify the solvency position of a farm firm. The three measures are: 1) debt/asset ratio, 2) equity/asset ratio, and (3) debt/equity ratio. Our focus will be on the equity/asset ratio.

One of the primary issues here is the level of equity required for contract vs. independent producers. Again, the primary differences observed in the market today appear to be for contract growers operating under resource-providing contracts – contracts that are most typical in livestock production. An informal discussion with farmers in the Southeastern part of the United States revealed that hog producers operating under contract could obtain up to 90% debt financing for new hog operations. In contrast, independent growers in the same area had trouble obtaining more than 50% debt financing.

The move toward integrated production also has spawned a number of alternatives to owner equity for highly leveraged producers. Input suppliers have a strong vested interest in selling inputs to integrated production units. Examples of strategies used by input supply firms to help lower lender risks include loan guarantees, non-funded participations, reduced margin feed contracts, and cash flow assistance programs. Likewise, on the processing/distribution side some integrated growers have obtained market access agreements, floor-ceiling contracts, or other types of price level contracts that reduce risk and the need for equity.

Lenders need to recognize that price and/or yield risks for growers under contract may be lower than for independent producers, thereby allowing a higher de-

gree of leverage. Traditional standards and norms for the level of owner equity in a business may have to be altered to deal with growers operating under resource-providing contracts. In addition, integrated producers may want and seek the advice of their primary lender on how to obtain financial assistance from input supply and processing/distribution firms.

**Profitability:** The FFSC has identified four important measures of profitability: 1) rate of return on farm assets, 2) rate of return on farm equity, 3) operating profit margin ratio, and 4) accrual net farm income. All of these measures are important to both independent and integrated producers. However, there are a number of unique factors to consider for integrated producers.

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*The FFSC has identified four important measures of profitability.*

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First, as with most new ideas or technologies, early adopters of integrated production tend to generate the highest returns. A new integrator may offer very favorable contracts to compensate producers for "taking a chance" on an unproven product or firm. As the integrator becomes more established, less favorable contracts may be offered.

Second, in livestock production, large-scale highly efficient integrated units are lowering the costs of production. These efficiencies will lead to competitive pressures that lower product prices. Likewise, integrated production units tend to have established markets for their products. Consequently, independent producers become the residual supplier – and as a result face potentially more volatile prices.

In lending to integrated producers, remember that early adopters of contract production often face the highest risks of integrator failure, but are compensated by

Figure 5

### Comparison of Selected Financial Efficiency Ratios for Integrated vs. Independent Growers

Ratio Measure	Independent <sup>1</sup>	Contract Producer <sup>2</sup>
<b>Hogs</b>		
Operating Expenses/VFP	57.7%	13.5%
Depreciation Expenses/VFP	11.5	43.6
Interest Expenses/VFP	8.6	35.3
Net Farm Income/VFP	22.2	7.6
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>
<b>Dairy</b>		
Operating Expenses/VFP	60.4%	44.6%
Depreciation Expenses/VFP	10.0	30.3
Interest Expenses/VFP	10.5	8.4
Net Farm Income/VFP	19.1	16.8
<b>Total</b>	<b>100.0%</b>	<b>100.0%</b>

<sup>1</sup>Based upon a 5-year average for farms of this type in the FBFM record keeping program.

<sup>2</sup>Contract producer raising hogs that are owned by the contractor. The contract dairy producer sells calves at 2 weeks old and buys them back under contract as 2-year-old bred heifers.

more lucrative contracts for taking a chance. However, past performance of existing contract growers may not be a reliable signal about how late adopters will fare because integrators tend to offer less favorable contracts once they are well established and interest on the part of producers in serving as a grower is high.

Lenders should also recognize that historical commodity prices may not be a reliable indicator of expected future performance, especially if the process of integration lowers per unit costs of production. Tradeoffs between risk and return need to be evaluated carefully in the lending relationship. Likewise, flexibility in repayment schedules (or in restructuring debt) is essential for integrated producers.

**Financial Efficiency:** The FFSC has identified five ratios that help measure the financial efficiency of farming operations: 1) asset turnover ratio, 2) operating expense ratio, 3) depreciation expense ratio, 4) interest expense ratio, and 5) net farm income from operations ratio. The last four ratios must sum to 100% and can be calculated by dividing by either gross revenues or by value of farm production.

These financial efficiency ratios can be substantially different for integrated vs. traditional independent producers. Figure 5 illustrates examples of these differences.

For the traditional independent hog producer, operating expenses accounted for nearly 58% of the total value of farm production. For a contract grower of hogs, operating with a contract that requires the producer to provide facilities and labor and the contractor to provide feed and livestock, operating expenses are only 13.5% of the value of farm production. In contrast, depreciation/VFP and interest/VFP ratios are much higher for the integrated producer than for the traditional independent producer.

For the dairy example shown in Figure 5, the independent producer raises all of the young stock on the farm and has a depreciable basis of zero in this livestock. The contract producer in this example is a dairy operation that sells calves shortly after birth, and buys back bred heifers under contract. Since the breeding stock is all purchased, the depreciation/VFP ratio is much higher for the contract producer than for the independent producer. Like-

wise, the ratio of operating expenses/VFP tends to be much lower under contract production because there are no expenses for raising young stock.

As these examples illustrate, operational efficiency ratios tend to vary substantially between independent and integrated producers. Lenders again need to be cognizant of these differences as they attempt to evaluate credit applications from integrated producers.

**Repayment Capacity:** The FFSC has suggested two different, but related measures of repayment capacity. The first is the "term debt and capital lease coverage ratio." This ratio is defined in the following manner:

$$\frac{(\text{Net farm income from operations} + \text{Total non-farm income} + \text{Depreciation/amortization expense} + \text{Interest on term debt} + \text{Interest on capital leases} - \text{Total income tax expense} - \text{Owner withdrawals})}{(\text{annual scheduled principal and interest payments on term debt} + \text{Annual scheduled principal and interest payments on capital leases})}$$

To understand the impact of integrated production on this ratio, consider again our example of a dairy producer that purchases all young stock under contract as shown in Figure 5. Notice that net farm income from operations as a percent of VFP is just slightly lower than for the independent producer. In contrast, depreciation as a percent of VFP is much higher. The net effect is to significantly raise the term debt and capital lease coverage ratio for the contract dairy producer as compared to the independent producer. The contract producer would appear to have much better capital debt service capacity. Yet, this may be a distorted view since the contract grower also has to purchase much more capital (the bred heifers being added to the herd) than does the independent producer. This problem is further magnified if the contract grower uses an operating line rather than term debt to purchase the bred heifers.

A second measure suggested by the FFSC is the "capital replacement and term debt repayment margin." The computation

for this measure is as follows:

$$\begin{aligned} & \text{Net farm income from operations} \\ & + \text{Total non-farm income} \\ & + \text{Depreciation/amortization} \\ & \quad \text{expense} \\ & - \text{Total income tax expense} \\ & - \text{Owner withdrawals} \\ & = \text{Capital replacement and term} \\ & \quad \text{debt repayment capacity} \\ & - \text{Payment on unpaid operating debt} \\ & \quad \text{from a prior period (loss carry-} \\ & \quad \text{over)} \\ & - \text{Principal payments on current} \\ & \quad \text{portion of term debt} \\ & - \text{Principal payments on current} \\ & \quad \text{portion of capital leases} \\ & - \text{Total annual payments on} \\ & \quad \text{personal liabilities (if not} \\ & \quad \text{included in withdrawals)} \\ & = \text{Capital replacement and term} \\ & \quad \text{debt repayment margin} \end{aligned}$$

As before, this calculation results in a much higher capital replacement and term debt repayment margin for the dairy producer contracting for the production of young stock than for the traditional independent producer. To avoid misinterpretation, some lenders have gone to a calculation of "capital replacement and term debt repayment margin **after** net capital asset replacement." This helps prevent the kind of distortion identified above since the dairy producer contracting for young stock has substantially higher capital asset replacement than the traditional producer who raises all young stock.

The preceding discussion has focused on the traditional financial performance measures used to evaluate the financial strengths/weaknesses of agricultural producers. Significant differences in some financial performance measures were identified, especially in resource-providing contracts. Lenders need to be cognizant of these differences as they evaluate credit applications from integrated producers.

In addition to the financial performance measures, there also are a broader set of issues in lending to integrated vs. independent producers. We turn to that topic in the next issue.