Contract Hog Production: A Case Study of Financial Arrangements

By R. Brent Ross and Peter J. Barry

Contract production in the hog industry has increased substantially in recent years to reach 53.4 percent of hog production in 2001 (Economic Research Service, U.S. Department of Agriculture). Among other industry classes, only poultry and egg production, at 81.3 percent, exceed this level. The drivers of this major structural change include consumer preferences, institutional change in the food system, new technologies, efficiency and size economies, and risk considerations (Barkema and Cook; Lawrence et al.). Such increases in vertical coordination and consolidation can profoundly affect the allocation of risk and returns in the food system, management and control responsibilities, and the extent of market information and concentration (Barry).

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Contract hog production can operate in various ways, but the
binding element is the contractual arrangement between the
producer and the integrator. Typically, the producer supplies
labor, buildings and facilities, and waste disposal, and receives
compensation from a fixed payment per unit plus incentives.
The integrator supplies management, feed, animals, genetics
and related technologies, marketing, health maintenance,
producer training, and other operating inputs. The producer,
thus, relinquishes management autonomy as well as price risk
and part of the production risks, in exchange for an investment
in fixed assets (buildings, facilities, etc.), higher financial
leverage, and potential uncertainties about the continuation of
the contractual relationship. In financial terms, the fixed assets
are on the producer's balance sheet and off the integrator's
balance sheet, while current assets (i.e., operating inputs) are off
the producer's balance sheet and on the integrator's. In some
cases, the contractor may assist in providing or arranging
financing.

While the general features of contract hog production are well
known, less information is available about the financing
arrangements, contract terms, and characteristics of, and
relationships between, the contracting parties. Our goal in this
article is to provide a case study addressing these issues for hog
production contracts in Illinois, in which producer loans for
buildings and facilities are guaranteed by the Illinois Farm
Development Authority (IFDA). The case study, thus, focuses
on operations unable to obtain commercial financing without
the credit enhancement offered by the guarantee. In some
cases the guarantee is utilized for borrowers with high credit
risk. In others, the lenders prefer a guarantee because of their
lack of familiarity with contract production. Relevant questions
for lenders are arising from these relationships, and involve the
organizational structures of contract producers, their ability to
obtain and service debt, and the capacity of community banks
and other lenders to deal with specialized hog production.

Producer Profiles and Contract Characteristics
The IFDA specialized livestock guarantee program was
developed in 1996, and by 2002, 53 loans were guaranteed for
hog farmers who established a contractual relationship with an
integrator (Table 1). The IFDA credit files for these loans
provided the primary database for this study, with most of the
data items representing values at the time of loan origination.

Financial data for independent Illinois hog farms are also
presented for comparisons.

The average age of the producers was 40, considerably lower
than the 54 years of age average for farmers nationwide
(NASS). In 41 of the 53 loans, the producer had non-farm
income averaging $28,000, suggesting that the contract
production arrangements allow the farm family considerable
time for alternative employment. The farm enterprises averaged
471 acres with a relatively high (for Illinois) ratio of land
owned to total land operated of 46 percent.

The enterprise was typically organized as a sole proprietorship
(28 loans), although partnerships (18 loans) were also common,
while 6 units were incorporated. Of the partnerships and
corporations, family relationships within and across generations
dominated.

Most of the producers had sought external financing to
establish, expand, and/or improve facilities for non-farrowing
operations (i.e., wean-to-finish, feeder-to-finish). The average
sizes of the proposed hog operations were 3,095 market hogs
and 850 sows for non-farrowing and farrowing operations,
respectively. Regarding the financial characteristics, the
producers on average had a pro forma net worth of $395,766
and total assets of $1,062,164. The producer's debt-to-asset
ratios averaged 0.70 and current assets comprised 9 percent of
total assets. In spite of the high proportion of fixed assets,
liquidity was relatively high, as evidenced by an average current
ratio of 2.38. These financial measures directly reflect the
producer's reduced business risk and, thus, higher debt capacity
of the contract production arrangement compared to
independent production.

The original loan balances averaged $473,151. The resulting
loan-to-value ratio was 0.96, indicating that the guarantee
allowed the commercial bank to finance the entire project. The
contract length ranged from 7 to 10 years, with a median value
of 7.5 years. Repayments were rescheduled on a monthly basis
for 38 loans, quarterly for 10 loans, and semi-annually or
annually for 5 loans.

The average production contract length of 7.5 years reflects a
long-term commitment by the integrator, commensurate with
the long-term financial obligations for fixed assets incurred by
the producer. Shorter-term contracts were associated with older, remodeled buildings. As contract hog production began in the early 1990s, shorter term, annual contracts often predominated. Thus, considerable progress in gaining contract stability has occurred. The longer-term contracts generally, however, compensate the producers in terms of a fixed base payment per pig space (averaging $35.62) that remains constant over the term of the contract. No mechanism is in place in these contracts to adjust this level for inflation. An annual inflation rate of 3 percent, for example, would reduce the real value of the payment at year 7.5 by about 20 percent.

Integrator Characteristics

Two major types of integrators were parties to these contract production arrangements: agribusinesses and farmer integrators. Agribusinesses are those companies that specialize in hog production and the related building design, genetics, and production technologies. They may engage in processing operations or have close contractual arrangements with processors. In contrast, farmer integrators are larger-scale independent hog producers who contract with neighbors or other local acquaintances to perform one of the hog production stages in a fashion that mimics the contract terms of the agribusiness integrator. Among the 53 contract production loans in this study, 37 involved 6 agribusiness integrators and 16 involved farmer integrators.

The agribusiness integrators tend to have more formal and detailed contractual arrangements with producers than do farmer integrators. The farmer integrators themselves generally are in a greater risk position and may experience greater difficulties in sustaining their involvement in contractual relationships over all of the phases of the hog cycle.

The integrators generally prefer to contract with experienced hog producers. The shift by producers to contract production, however, is an all-or-none situation. Animal health is a major consideration. Mixing a producer's own herd with the integrator's stock is not permitted. Thus, farmers who shift to contract production must relinquish their status as independent hog producers.

Structural Characteristics

The producer and integrator profiles can be further characterized by type of integrator, age of producer, and type and size of hog operation. These categories provide further insight on different approaches to formulating and financing contract arrangements.

Table 1 reports averages of selected producer characteristics categorized by type of integrator. For comparison, certified financial data for 128 independent hog operations participating in the Illinois FBFM system loans are included. These categorizations show substantial differences in producer characteristics between the two types of integrator. In particular, the agribusiness integrators contract with producers who are older (42 years versus 35 years), farm large acreages (569 acres versus 203 acres), and have larger hog enterprises (e.g., more buildings and animals). Producers who contract with agribusiness integrators also have lower financial risk, evidenced by a lower average debt-to-asset ratio and a higher current ratio. Furthermore, producers who choose to establish farrowing operations consistently affiliated with the agribusiness integrators. The independent producers on average are older than contract producers, have lower leverage, larger acreages, and likely have greater income from crop operations. Liquidity as indicated by the current ratio and ratio of current to fixed assets also differs from that of IFDA-funded contract producers, consistent with the feed and animal ownership by the independents.
These characteristics suggest that the agribusiness integrators are preferred by producers relative to farmer integrators and that such preferences are reflected in a producer’s tendency to gravitate toward affiliation with agribusiness integrators. The latter may offer a higher quality of services, greater likelihood of survival, more tightly controlled operations, and other preferred attributes. At the same time, the agribusiness integrators may prefer to contract with larger, more experienced, and more financially secure producers.

Table 2 reports the contract producer profiles for different age classes of the principal-operator. The producers are broadly dispersed across the three age categories with 21 farms owned by operators under 35 years of age, 18 producers were in the 36 to 45 year range, and 14 were older than 45. The average acreage controlled by each category increases modestly with age. In contrast, the mean size of the hog operation decreases with age in both farrow (915; 900; and 720 sows, respectively) and non-farrow operations (3,339; 2,838; and 3,050 market hogs, respectively).

As one would expect, total assets and net worth both increase significantly with age. The older age categories, however, exhibit a slightly higher degree of solvency, and are in a much stronger liquidity position. The IFDA-guaranteed loan is also about the same size across the age categories. Finally, the dispersion of integrator types is similar for the first two age categories, although the over 45 group was much more likely to affiliate with agribusiness integrators than those in the two younger categories.

Table 3 reports the producer profiles by type and size of hog operation. Contract producers with non-farrowing operations earn substantially more income from non-farm sources; 38 of the 47 non-farrow operations report an average non-farm income of $30,000 compared to four of the farrow-to-wean producers who have average non-farm incomes less than $15,000. Clearly, the less labor-intensive feeding operations allow more time for off-farm employment.

Most of the farmer integrators (11) contract with producers who are smaller in terms of numbers of feeder animals and buildings. Feeders also have modestly larger net worths and total assets, and greater investments in the fixed asset category. Solvent levels for the two types of operations appear comparable to each other, although the current ratio of the non-farrowing operations is relatively low.

Other Contract Issues

A major issue with contract hog production is the loss of control and managerial autonomy experienced by the producer; independent production is foregone in exchange for substantial reductions in risk. The IFDA personnel expressed concern whether a public credit program in this case should be used to finance farmers into a “subservient” position. At the same time, however, their anecdotal observations suggest that most of their producer customers who shift to contract production ultimately welcome the change. The producers have become accustomed to the reduced labor and handling requirements, high degrees of automation, new technologies, and managerial assistance, in addition to the reduction in business risk. Other positive features of contract production include single-day deliveries of feeder pigs in contrast to multiple-day farrowings; easier scheduling of daily activities, including off-farm employment; and delivery of feed in contrast to on-farm milling.

Some tensions may arise because the past experience of producers allows them to recognize, diagnose, and treat emerging animal health problems, however they must notify the integrator for these purposes according to the terms of the contract. The scheduling of marketing times for finished animals is also at the discretion of the integrator. Feed efficiency and pounds of gain tend to decline as hogs grow heavier (i.e., from 240 to 280 lbs.). Because bonuses and incentive payments may depend on these performance factors, adverse scheduling by integrators could be harmful to producers. Integrators generally recognize these problems and try to avoid penalizing producers for adverse scheduling.

Concluding Comments

The rapid growth and current high level of contract production in the hog industry are characterized by the emergence of different financial benchmarks and structural characteristics of the respective parties. The trade-off between business risks and financial risk for producers is clearly evident in this case study. While the IFDA-guaranteed producers likely experience greater credit risks than others engaged in contract production, the relatively large loans (averaging $473,151) imply that others
may need external financing as well, augmented by the reallocation of risks. Longer term contracts, relatively young operators, smaller sizes of farms, relatively high non-farm income, and partnering with family members and others are additional notable attributes of producers engaged in contract production. The agribusiness and farmer integrators largely fill different market niches and contract with different types of producers.

In general, contract production has become a standard organizational arrangement in the hog industry and may continue to increase in importance. The governance structures, contracts, and financing practices have also become more predictable and stable. These conditions are characteristic of an increasingly mature industry segment. At least for these 53 producers financed by public credit guarantees, the advantages of shifting from independent to contract production appear to exceed the disadvantages. The rapid growth of contract hog production nationwide suggests similar satisfaction by other producers, and continued development of integration arrangements for other sectors of agriculture.

Endnotes
1 IFDA is an independent, self-funded agency that provides public credit programs for Illinois agriculture. Included is a specialized livestock guarantee program in which loans made by local lenders (community banks) receive an 85 percent guarantee of principal and interest.

References


Table 1. Farm Structure and Loan characteristics for Contract and Independent Production

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of Farms</th>
<th>No. of Hog Buildings</th>
<th>Total Acreage</th>
<th>Land Tenure Ratio</th>
<th>Non-Farm Income</th>
<th>Amount</th>
<th>Hog Type</th>
<th>Size</th>
<th>Loan Size</th>
<th>Source</th>
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</thead>
<tbody>
<tr>
<td>under 35</td>
<td>21</td>
<td>2.43</td>
<td>3.5</td>
<td>3.28</td>
<td>617</td>
<td>4.5%</td>
<td>14</td>
<td>53</td>
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<td></td>
</tr>
<tr>
<td>36-45</td>
<td>13</td>
<td>2.94</td>
<td>3.5</td>
<td>3.28</td>
<td>617</td>
<td>4.5%</td>
<td>14</td>
<td>53</td>
<td></td>
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<tr>
<td>over 45</td>
<td>14</td>
<td>3.5</td>
<td>3.28</td>
<td>617</td>
<td>4.5%</td>
<td>14</td>
<td>53</td>
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Table 2. Farm Structure and Loan characteristics by Age, Contract and Independent Production

<table>
<thead>
<tr>
<th>Age</th>
<th>No. of Farms</th>
<th>No. of Hog Buildings</th>
<th>Total Acreage</th>
<th>Land Tenure Ratio</th>
<th>Non-Farm Income</th>
<th>Amount</th>
<th>Hog Type</th>
<th>Size</th>
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<th>Source</th>
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<tr>
<td>over 45</td>
<td>14</td>
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<td>617</td>
<td>4.5%</td>
<td>14</td>
<td>53</td>
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</table>

* Financial Characteristics of Illinois Farms, Center for Farm and Rural Business Finance, 2002. Hog farms are those which have the value of feed fed more than 40% of the crop returns and the hog enterprise received more than half of the value of the feed fed.


Table 3. Farm Structure and Loan characteristics by Type and Size of Operation

<table>
<thead>
<tr>
<th>Type and Size of Operation</th>
<th>Total/</th>
<th>FBFM</th>
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<tbody>
<tr>
<td>Farrow (Sows)</td>
<td>under 1000</td>
<td>over 1000</td>
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<td>No. of Farms</td>
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<td>3</td>
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<tr>
<td>No. of Hog Buildings</td>
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<tr>
<td>Total Acreage</td>
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<td>940</td>
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<td>Land Tenure Ratio</td>
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<td>0.56</td>
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<tr>
<td>Age</td>
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<tr>
<td>Non-Farm Income</td>
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<tr>
<td>Amount</td>
<td>2.73</td>
<td>3.06</td>
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<td>Organizational Structure</td>
<td>Sole Proprietorship</td>
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<td>Corporations</td>
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<td>Hog Type</td>
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<tr>
<td>Non-Farrow</td>
<td>19</td>
<td>16</td>
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<tr>
<td>Size</td>
<td>Farrow (Sows)</td>
<td>915</td>
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<tr>
<td>Non-Farrow (Market Hogs)</td>
<td>3,339</td>
<td>2,838</td>
</tr>
<tr>
<td>Net Worth</td>
<td>Total Assets</td>
<td>269,650</td>
</tr>
<tr>
<td>906,314</td>
<td>1,130,533</td>
<td>1,208,038</td>
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<td>1,249,088</td>
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<table>
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<tr>
<th>Ratios</th>
<th>Debt:Asset</th>
<th>Current Ratio</th>
<th>Current Ratio to Total Assets</th>
<th>Loan Size</th>
<th>Total/average</th>
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</thead>
<tbody>
<tr>
<td>under 1000</td>
<td>0.75</td>
<td>0.67</td>
<td>0.67</td>
<td>0.70</td>
<td>0.33</td>
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<tr>
<td>over 1000</td>
<td>1.31</td>
<td>1.43</td>
<td>5.23</td>
<td>2.38</td>
<td>2.26</td>
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<tr>
<td>Total/average</td>
<td>0.1</td>
<td>0.12</td>
<td>0.07</td>
<td>0.09</td>
<td>0.27</td>
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<tr>
<td>Loan Size</td>
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<td>474,056</td>
<td>468,357</td>
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<tr>
<td>Source</td>
<td>Agribusinesses</td>
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<td>12</td>
<td>12</td>
<td>37</td>
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<td>County Integrator</td>
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<td>2</td>
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Financial values based on pro forma data.