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EXAMPLES FROM EUROPE AND
THE U.S.**

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Abstract

The traditional organization of the hog-pork subsector, characterized by independent hog production and open market coordination, is being challenged as never before. Rapid growth of

large, industrialized production firms with close ties to processors in non-traditional areas such as North Carolina and Colorado indicate the need for change in traditional systems in the Midwest if these producers and communities are to continue to participate in the hog-pork subsector. Given that few, if any, traditional producers have the capital to attain minimum cost size for a complete production system that fully uses new more efficient technology, some means to coordinate production and marketing of a number of producers will be required. Cooperative coordination of the production and marketing of independent producers is one alternative to achieve and capture for producers the additional returns from a coordinated system. This discussion describes and evaluates alternative models of cooperative coordination in the hog-pork chain. These models were obtained by interviewing executives from selected cooperatives and other leaders who are involved in the hog-pork industry in Europe and the U.S.

Keywords: Cooperative coordination, hog-pork system, industrialization, food chain coordination, alternative cooperative models

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Introduction

The traditional organization of the hog-pork subsector, characterized by independent hog production and open market coordination, is being challenged as never before. Technologies that offer significant cost savings such as split sex feeding, all-in, all-out stocking and medicated early weaning are not compatible with traditional production systems. Consumers are demanding a greater diversity of products with very specific characteristics that challenges the ability of a traditional system to respond. Flow and quality control necessary to satisfy consumers' desires suggest a need for closer coordination from genetics through processing and retailing than has been achieved in the past.

Rapid growth of large, industrialized production firms with close ties to processors in non-traditional areas such as North Carolina and Colorado indicate the need for change in traditional systems in the Midwest if these producers and communities are to continue to participate in the hog-pork subsector. The growth rate of the industrialized segment suggests that present producers and communities have only a few years to find the means to participate in the subsector as independent entities and, as such, to share fully in returns that accrue to system efficiencies now available. The alternatives are to use up facilities and exit or to contract with one of the large system integrators as access to product markets and genetics becomes limiting even for those willing to accept lower returns.

Given that few, if any, traditional producers have the capital to attain minimum cost size for a complete production system that fully uses new more efficient technology, some means to coordinate production and marketing of a number of producers will be required. Cooperative coordination of the production and marketing of independent producers is one alternative to achieve and capture for producers the additional returns from a coordinated system. And this cooperative coordination might extend further— back into genetics and other inputs and forward into slaughter, processing and even merchandising.

The purpose of this discussion is to describe and evaluate alternative models of cooperative coordination in the hog-pork chain. These models were obtained by interviewing executives from selected cooperatives and other leaders who are involved in the hog-pork industry in Europe and the U.S. The firms interviewed were selected based on the differences in their approach to vertical alliances or coordination in the chain and/or their significance or role in the hog-pork industry. Our purpose is to illustrate and stimulate rather than draw concrete conclusions concerning the most successful model of cooperative coordination. The discussion will first briefly describe the major reasons why the hog-pork industry is moving from market coordination to negotiated coordination. Then we will present the firm and country case studies and illustrations. Finally, we will draw

implications from these cases concerning objectives, functions and performance of these cooperatives in hog-pork chain coordination.

Coordination Alternatives

The food production and distribution system in general and the hog-pork subsector in particular has traditionally been coordinated through market mechanisms. Most hog farmers operated on a produce and then sell basis. Marketing transactions have transferred both the physical products as well as the information between the economic stages in the production-distribution value chain from genetics to consumers. But increasingly open, impersonal markets are being replaced by negotiated personal and often closed contractual linkages or alliances. And linkages between stages in the food chain that once were external have now become internal through acquisitions and integration, resulting in unique problems of cost allocation and transfer pricing within a firm.

Arguments favoring contract/ownership coordination include both potential economic incentives/rewards and biological capacity to successfully exploit those potential rewards. One of the prime arguments for contract/ownership coordination is the reward from responding to increased specificity in consumer demand. Richer consumers are more demanding consumers. They expect quality control and products with specific characteristics to be available when desired. Given the expected continued increase in standard of living and increased ethnic diversity of markets, the trend toward product diversity will continue.

High fixed costs at all stages of processing provide a strong incentive to stabilize volume processed. Flow scheduling and capacity utilization are essential to cost control. Plants and animals bred or engineered for specific end uses will also require production practices tuned to the specific end use.

Risk has been a hallmark of the agricultural sector, and business strategies to reduce risk have significant structural and coordination implications. One risk is that of prices of inputs or products. A common business strategy is to reduce the risk of high prices for inputs by contracting for supplies. A related strategy is to reduce the price risk exposure on products by contracting product sales. Some firms reduce price risks by vertically integrating into the input supply or product distribution channels. These coordination methods attempt to reduce the impact of market fluctuations that are part of the open market spot pricing system.

A second source of risk is related to quantity and/or quality features. Food packaging and processing unit costs have become very sensitive to operating at full plant capacity; thus flow scheduling is critical to being cost competitive. Matching the physical capacity of various stages (for example, hog finishing capacity with packing plant kill capacity) is critical to overall efficiency of the system. This coordination may be more difficult to attain in open markets. Conformance to specific quality standards may be more easily accomplished with a contract/ownership coordinated system. Compliance with regulations on the use of drugs and chemicals also requires a greater degree of coordination of activities at more than one level of the food system. Some technologies, such as specialized feed mixing and blending equipment to manufacture specific rations, may not be economical at the scale of a single farm. The coordination needed to ensure both quality and quantity

for efficient operations can be achieved through contracts, ownership of more than one stage, joint ventures, or similar arrangements in the food production and distribution chain.

A third source or type of risk in the food chain that has become more serious in recent years is that of the safety/health risk in food production. This risk has two dimensions, the health risk of food borne disease; and the risk of polluting water, air and land resources in the food production processes. These risks can result in significant direct costs and liability exposure for not only the responsible firm in the food chain, but also firms that supply related inputs and purchase products from the “responsible” firm in the case of strict (joint and severable) environmental liability related to chemical use. Thus system coordination to reduce or control these risks may be in part a response to the broad sweep of product and environmental liability law.

The need for greater diversity, more exacting quality control, and flow control will tax the ability of spot markets to coordinate production and processing effectively. Open spot markets increasingly encounter difficulty in conveying the full message concerning attributes (quantity, quality, timing, etc.) of a product and characteristics (including services) of a transaction. Where open markets fail to achieve the needed coordination, other options such as contracts, integration, or joint ventures will be used. Thus, relationships between input suppliers, producers, and processors are expected to become less impersonal and more personal.

Related to the difficulty of spot markets conveying the proper information is the speed of information flows and the rate of adoption with different coordination mechanisms. In general, negotiated coordination results in more rapid transmission of information between the various economic stages and consequently enhanced ability of the system to adjust to changing consumer demands, economic conditions, or technological improvements. The ability of the production and distribution system to be more responsive and adjust rapidly to changing conditions is increasingly important with the increased rate of change in economic and social systems worldwide.

Finally, a key determinant of contract/ownership coordination (perhaps the prime explanation for why it has not occurred as rapidly as predicted in the 1960's for the hog/pork complex) is the biological capacity to respond to consumer demand for specific attributes. Recent advances in genetics, nutrition, reproduction, etc. have resulted in more control and predictability, thus increased capacity to biologically engineer the products that consumers want. In essence, biological capacity to respond to consumer demands may be the linchpin to capturing the benefits of contract/ownership coordination.

These arguments suggest that in traditional commodity markets where specific attributes are not demanded, supplies are fully adequate and can be obtained from various sources, and information flows between the various stages is minimal, traditional spot commodity markets can function quite effectively and efficiently. As one deviates from these conditions—which is increasingly the case with more specificity in raw materials, information flows, and fewer potential sources of acceptable supplies—various forms of negotiated coordination systems become more effective and necessary for efficient functioning of the production and distribution system.

The Hog/Pork Value Chain

Figure 1 summarizes the stages in the hog/pork value chain from genetics to consumer. Also summarized in this figure are the typical means of coordinating the various stages (left side of Figure 1), and typical combinations of ownership integrated coordination (right side of Figure 1). We will briefly describe each stage of this value chain. The genetic seed stock stage involves the production of the grandparent male and female hogs that will be used in the breeding herd. The multiplier stage involves the production of parent females that will be used in the commercial production phase and mated to the selected males from the previous stage. The farrowing stage includes the breeding, gestation, and farrowing. The nursery stage includes growing pigs from weaning to approximately 40-50 pounds and the finishing stage involves the feeding phase from that weight and age to slaughter.

Note that all of these stages require various resources and services including equipment, machinery, labor, transportation, etc.; the feed manufacturing input is noted separately because it is a major input into the production process and often is combined with specific production activities and stages in typical farming or livestock production firms.

The assembly stage involves accumulating the pigs from various sources through buying stations or other means for smaller producers for delivery to the slaughter plant; larger producers will typically deliver directly to the slaughter facility and by-pass this stage. The slaughter plant includes the killing and dressing of the animal to obtain a chilled carcass, whereas carcass cutting involves breaking the carcass into appropriate cuts such as loins, hams, bellies, etc.; in many plants these stages are combined. The processing stage involves additional activities for some products such as special curing of hams and bacon, manufacturing of sausage, cutting of pork chops, etc. The wholesale/broker stage involves selling and transporting the product from processor to retail outlets such as meat counters of grocery stores or food service businesses such as fast food and other restaurants, institutional food preparers and other food service organizations which merchandize the pork product to the final consumer.

Cooperative Coordination: Some Examples

European Systems

United Kingdom

The pork industry in the United Kingdom might be best characterized as fragmented and mature. Consumption of pork has been relatively constant at 53 pounds per person for the last decade. Meat products such as sausages and meat pies comprise almost half of total pork consumption with fresh pork totaling about a third and bacon the remainder of the market. Consumption of fresh pork and convenience products is increasing while bacon consumption is decreasing. With the exception of Greece, per capita pork consumption in the UK is the lowest in the European Union. The UK is approximately 70 percent self sufficient in pork production; bacon, ham, meat products and canned meat are imported primarily from Denmark, The Netherlands, and France. UK consumers are very concerned about the origin of their meat and the treatment of animals as well as the methods of processing. Trace back from final pork product to producer is a critical element of the pork industry in the UK.

Stages, Coordination, and Integration in the Pork Subsector

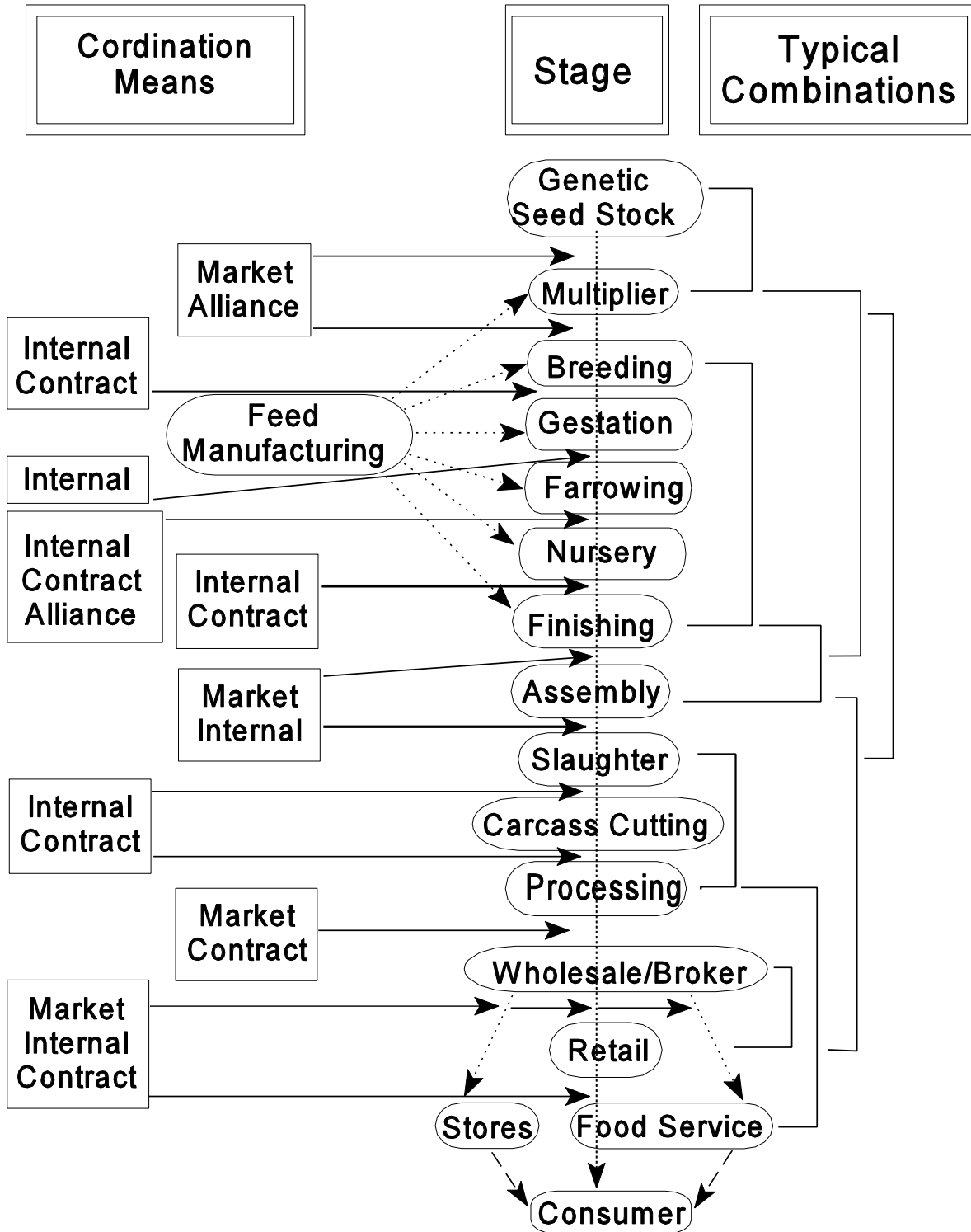


Figure 1

Pork production in the UK totals about one million tons. As in most developed countries, the number of pork producers is decreasing and average size is increasing; the average breeding herd consists of about 70 sows. Most producers are independent, but feed company ownership of hogs is estimated by some to be as much as 1/3 of total production. Although there are more than 500 slaughter houses in the UK, the meat processing industry is dominated by five companies. The retail trade is also highly concentrated with super-markets distributing 45 percent of the fresh meat, 53 percent of the bacon and almost 50 percent of the meat products. Many of the large chain stores have their own store brand.

Generally, producers in the United Kingdom produce lighter carcasses compared to other countries in the European Union. The dominant form of production in the UK is farrow to finish with only limited numbers of independent farrowing systems or finishing only production systems.

In contrast to Denmark, the Netherlands or even France, the hog/pork subsector in the UK is very fragmented with little ownership or contract integration through the pork chain except for feed company finishing of hogs. Cooperatives play a very limited role in the industry with most of the cooperative activity in the form of marketing groups. Two examples of such marketing cooperatives are Cambac and UPB/Porkafram. Cambac is a mutual stock company with approximately 30 producer-owners that sell 150,000 head of pigs per year. Average size of the producers is 250 sows with a range of 150 to 750 sows. Cambac is unique among UK marketing groups in that it has an exclusive contract with a major supermarket retailer in the UK - Sainsbury; most other marketing groups do not have this linkage to a single slaughter plant or retail outlet. Cambac's agreement with its producer-owners is in essence an annual shackle space commitment with prices determined on a weekly basis as quoted by the Meat and Livestock Commission—an industry funded government agency. Cambac's members invest in the company and have a financial obligation as well as a commitment to deliver a specific number in terms of quantity and quality. The information flow from retailer through packer to producer allows trace back and sharing of performance data; this is not the case with other UK linkages between retailer, packer, and producer where little information is shared. Cambac owns its own trucks for hog pickup and delivery and is responsible for managing logistics; this is considered one of its strategic advantages along with the focus on product quality and the unique linkage to a well respected retail outlet—Sainsbury.

UPB/Porkafram is a stock company that markets in excess of 750,000 head of hogs per year or approximately six percent of UK production. Producers contract with this marketing group for one year with the base price again set on a weekly basis using the average all pigs price quoted by the Meat and Livestock Commission. UPB/Porkafram also has a breeding/genetics division with 3,000 sows; the seedstock for this division is Landrace/Large White for inside (confinement) production (approximately 85 percent of total production) and Duroc/Landrace/Large White for outside production (15 percent of total production). The company also provides other services including feed, artificial insemination, records, etc. Members are not required to use these other services or the genetic stock to participate in the marketing group activity; 20 percent of the annual marketings of the company are from the genetics of UPB/Porkafram. UPB provides a range of ration specifications for producers and most producers buy feed from local mills according to these specifications. Pigs are sold on a quality grade system based on backfat and weight with quality premiums and discounts accounting for 8-10 percent of the base price. Secure price or other forms of fixed price contracting is not available through UPB and generally not commonly available in the UK market (estimates are

that only five percent of total contracts include a fixed price). The linkages between the packer and the producer are not as exclusive in UPB/Porkafram as with Cambac although trace back and assurances concerning drug control and welfare standards are increasingly part of the marketing system. UPB does not have its own trucks but coordinates pig movements with independent truckers.

The regulatory environment with respect to animal welfare and environmental issues is a key concern in the UK pork industry. Lenders are cautious and concerned about the future of the industry, and consequently limited capital is available for modernization and/or expansion in pork production in the United Kingdom. Furthermore, low prices and profit margins in recent years combined with excess capacity throughout the pork chain have discouraged capital investment and modernization.

Cooperatives play a limited role in the pork industry, whether it be in supplying feed and other inputs, or in coordinating the marketing activities from producer through retailer. The prime role of cooperatives appears to be that of group marketing of hogs from independent producers with a focus on quality assurance, coordination of delivery and logistics. Producer cooperatives have in the past attempted to integrate into slaughter and processing activities in the UK, but have not been successful; there is little interest in producer integration forward into these activities as of the mid 90's. Expansion of integration activity is likely to come slowly in the UK, and the initiative will most likely be taken by retailers or processors rather than by producers or feed suppliers.

France

The pork industry has grown significantly in France during the past 10 years following a period of slow growth and lackluster performance. Domestic consumption of pork totals 84 pounds per capita; the French consume more pork per capita than any other meat product. Unlike the UK, branded pork products are not common. Total pork production in France amounts to approximately 2 million tons. France is almost self-sufficient in pork production (92 percent of the pork consumed is produced domestically); pork imports include both live hogs and processed products.

Pork production in France occurs on more than 140,000 farms, but as in other EU countries, concentration is increasing—particularly in Brittany (northwest France) where the industry has expanded significantly in the last 20 years. Most French pig farmers are members of a cooperative producers group with more than 85 percent of total output estimated to be marketed through 130 cooperative associations. Cooperatives also control approximately 50 percent of the slaughter capacity in France. Like much of the European Union, slaughter plants have as much as 30 percent excess capacity which means that profit margins are very low or non-existent.

Cooperatives have not moved further up the value chain from slaughter to processing; much of the processing is done by smaller private companies. Supermarkets account for approximately 75 percent of the wholesale and retail trade with local butchers and small retail shops accounting for the remaining 25 percent of product movement. Linkages between supermarket retailers and processors are becoming more formalized.

In general, the production and slaughter activities of the pork value chain are dominated by producers through the cooperative structure, whereas the processing and retail distribution systems are dominated by private non-cooperative companies with an increasing consumer focus. The link between slaughter and processing is the source of some conflict, in part because it is the point of transformation from producer dominance through cooperatives to private companies. A combination of competitive market conditions and government policy make it highly unlikely for this linkage between slaughter and processor to be bridged by either a cooperative slaughterhouse linking forward into processing or a private processor linking backward into slaughter.

Cooperative dominance of pork marketing is a relatively recent phenomenon in France. A decline in domestic self-sufficiency in pork production during the 1960s stimulated the French government to support pork producers by encouraging the development and expansion of cooperative structures. This support came in the form of low interest rate loans for construction and renovation if a producer was a member of a cooperative group, free technical advice and price stabilization to reduce the risk of expansion and modernization. This government support combined with an expanding market resulted in pig production in France increasing by over 20 percent from 1983 to 1993.

The role of cooperatives in pork production and marketing is illustrated by the activities of CECAB. CECAB is a farmer cooperative that provides a broad spectrum of inputs to livestock and crop farmers in France and markets and processes their products. CECAB entered the pork business in 1965 and pork is their most important animal product. Approximately 580 producers with 600,000 pigs participate in the CECAB pork management and marketing program. The member/producers acquire a large proportion of their production inputs from CECAB (90 percent of their feed, 50 percent of medications, the majority of female breeding stock, etc.), and have in the past obtained building design and construction services as well. CECAB provides trucks for transportation of pigs to the slaughter house and schedules and manages the logistics of pig delivery. Approximately 90 percent of the members pigs are slaughtered at OlymPIG—a cooperatively owned slaughter plant with 58 percent of that ownership by CECAB. Producer members sign a binding contract to market all pigs through the cooperative, but no formal contract is used for purchasing of inputs. A six month notice is required to terminate the marketing contract. The marketing contract is a quantity contract with prices set by the weekly Brittany auction market. Various price weighting schemes are available (for example averages of two week or three week auction prices), but a pricing scheme choice is made only once a year and involves a full year commitment. Producers are paid premiums and discounts based on carcass characteristics. Producers invest one percent of their annual sales in the marketing group and pay a small commission on a per pig basis as well.

CANA is a similar producer/cooperative south of Brittany that markets approximately 600,000 pigs per year. Approximately 30 percent of this production is slaughtered in CANA's own slaughter facility with the remainder slaughtered by other cooperative slaughterhouses. Again prices are set at the Brittany auction market. Producers are committed by contract to sell their hogs through the cooperative; they can purchase inputs from any source but 85 percent of the feed and genetics are obtained through the cooperative.

As noted earlier CECAB slaughters the majority of its pigs at OlymPIG, a cooperatively owned slaughter plant. Four cooperatives and one feed company own the stock of this slaughter

facility. OlymPIG slaughters 2.5 million hogs per year with 85 percent of them coming from cooperatives and 15 percent from the open auction market. OlymPIG is the first French slaughterhouse with a fresh branded product which is sold by the three largest food retailers in France. Prices paid for all pigs purchased (even those under contract) are determined by the Brittany auction market prices; the key participants in this auction are the six major cooperative marketing group sellers and 12 major slaughter plant purchasers representing approximately 70 percent of total slaughter plant capacity in France. In essence, the marketing structure in France involves a negotiated contractual linkage between producer and marketing group, and then an open market between marketing group and slaughter plant.

Most of the current movement to more explicit vertical linkages in the hog/pork chain in France involves further networking and cooperative activity in those stages of the chain where cooperatives have traditionally been strongest. Thus, continued integration of the feed and other input supply stages, breeding and genetics, production, marketing, and slaughter is expected to be the focal point of additional cooperative activity. Although some cooperatives have moved into processing of pork, competitive pressures combined with the political power of retailers and processors is likely to limit much expansion by cooperatives in these stages of pork production and distribution. It is unlikely that either cooperative or private companies will vertically integrate the entire hog/pork chain in France from genetics to retailer in the near future.

Denmark

Denmark is a small country with a population of about 5.2 million. But Danish farms produced 20 million pigs in 1994. Seventy-five percent of pork produced is exported. The Danish pork sector is dynamic. Pig production within the cooperative system increased 39 percent from 1984 to 1994, a period when the number of producers decreased by 47 percent. In 1980 there were 20 slaughter companies (18 cooperative) and today there are 4, all of which are cooperatives. It is a market driven system. Thirty-six percent of exports are outside the E.U. with Japan and U.S. important customers.

The four remaining slaughter and processing cooperatives slaughter more than 96 percent of all hogs produced in the country. These cooperatives jointly own ESS Food, a cooperative trading company with offices around the world. They also own a major interest in Tulip International with processing plants in U.K. and Germany. These cooperatives are competitors for hogs and in product markets but cooperate in other areas to develop markets and to increase system efficiency.

The cooperatives are controlled by boards made up primarily of pig producers and representatives of employees. An organization of the slaughter cooperatives directs a breeding program, veterinary program, and research related to the swine system. Funding for research comes from a producer levy, a slaughter levy, and from government.

The swine producer needs only to tell the cooperative he or she wishes to be a member. No membership fee or capital investment is required. The commitment is to be a member and to market all hogs produced through that cooperative for one year. The producer gives notice before April 1 to market through the cooperative for the year beginning in October.

Producers choose the breeding stock they will use from those that are recommended by the quality committee of the slaughterer's organization. Payment for hogs is based on carcass weight with adjustments for lean percentage and carcass weight. Nearly all producers use Danish genetics. No special feeding programs are required. Some 55-60 percent of feed is purchased from cooperatives (not affiliated with the slaughter cooperatives) and the rest from private suppliers.

Producers rely on a farmer organized advisory system (part of Danish Farmers Union) for advice on feeding, breeding, etc. Records and performance comparisons are a part of economics extension.

The same price is paid to producers at all locations and by all four cooperatives. The only difference in producer payment is the bonus or patronage refund paid by the cooperative at the end of the year. There may also be a premium to producers selling more than a specified number per week. There also are some contracts to produce special pigs for specific markets with payments adjusted for differences in cost of production.

A committee of the slaughter cooperatives sets the price to be paid to producers for the next week based on pork product prices in world markets. A feeder pig price based on current slaughter hog prices is issued as an advisory price only.

Producers notify their cooperative of the number of pigs that will be ready for slaughter in the following week. Apparently no other coordination is needed to achieve a relatively constant flow.

The Danish pork industry is an integrated system with remarkably little direct control of producer action. Price incentives and a unified system of advice and breeding as well as a cooperative attitude has allowed the system to adapt to changing markets. Performance of the Danish system is impressive, the more so because of the flexibility that appears to exist at the producer level and the structural change that has occurred in what might have become a tradition bound system.

The Netherlands

Netherlands is a major pork exporter with pigs outnumbering people by 24:15 and production at 2.7 times domestic use in 1994. There is a current 25 percent excess of slaughter capacity as is also the case in Germany and to an even greater extent in the U.K. Active competition among slaughterhouses for live animals means that market access for producers is not a problem. Here too, there has been major structural adjustment in the production sector. The total number of pig farms fell from 44 thousand in 1980 to 24 thousand in 1994. Slaughter increased from 13 million to 20 million head in the same period. The number of slaughterhouses has also been reduced. Thirty firms slaughter more than 100,000 head per year. Production expansion is effectively stopped by regulations on manure disposal although manure disposal rights may be exchanged among types of operations.

About half the pig feed is supplied by cooperatives. Cooperatives accounted for about 25 percent of slaughter until a recent reorganization. Little production is under contract to slaughterers, down from nearly 50 percent in the mid 70s.

There were two cooperative slaughter companies. The one to be described (COVECO) was part of a federated system (CEBECO) that includes cooperatives producing feed. The cooperative slaughter company had a pig breeding and feeder pig production subsidiary using its own genetic lines. About 80 percent of their slaughter volume was from members and the remainder is purchased in competition with other slaughter firms and exporters.

Participating producers bought feeders that were produced under contract from the breeder subsidiary, feed from an affiliated cooperative, and sold finished hogs to the slaughter cooperative. Most of the carcasses are sold to a processing firm owned jointly with the federated cooperative and regionals. Nearly all these transfers were at market prices at time of transfer.

A reorganization of slaughterhouses in 1995 resulted in a combination of the two cooperative slaughter firms with another firm to form DUMECO which operates on the same basis as other non-cooperative firms.

Hogs produced under specified feeding and medication controls are paid a premium. Prices for slaughter hogs are negotiated around a weekly price quote generated at a meeting of pig dealers and buyers on Friday evening for the following week.

Some system coordination and self regulation is provided by the Product Board for Livestock and Meat. This board, sanctioned by law, includes members from all levels of the livestock and meat systems and advisors from government. The objective is to improve quality, efficiency, and performance of the full sector. This board has initiated a system - Integrated Quality Control (IKB). It is a system to trace meat back from processing (eventually from retail) to the hog producer. Practices in all phases of production are specified and documented. Logs of medication, feed, mortality, etc. must be maintained. Audits may be conducted at any level of the system. The primary motivation is to respond constructively to the health concerns of consumers.

There is recognition that closer coordination of production and processing will be needed in the future to achieve the quality and purity demanded by the market. Retailer power is increasing and slaughterer/processors desire more control of the system.

Germany

The structure of production and processing is less concentrated in Germany than Denmark or Netherlands, and Germany is an importer of pigs and pork. The largest 10 slaughter firms account for 56-58 percent of German slaughter. There are four large cooperative slaughterers that slaughter nine million of the 38 million head produced. Farms are small with 288,000 producing hogs. Only 0.2 percent produce more than 1000 head per year.

The situation at one of the cooperatives (Norddeutsche Fleischzentrale) is typical of the cooperative group. Thirty to 35 percent of their volume is under contract with producers. The remainder of their hogs are purchased in competition with other firms. About 25 percent of their volume is on contracts that take the whole volume of production from the farm. Producers buy feeder pigs from the cooperative if not a farrow to finish operation. If farrow to finish, genetics are specified by the cooperative. The production schedule is not fixed but the producer provides an

estimate of production for the year early in the year. Contracts are for an indefinite term but may be canceled by either party on three months notice. Producers must notify the cooperative by Thursday for hogs to be picked up the following week. Feed may be purchased from any source but the formula is specified by the cooperative.

Price to producers is market at time of delivery. Payment is based on carcass weight with adjustments for lean percentage.

About 10 percent of the cooperative's volume is under contract to supply a premium product under strict control from genetics to supermarket under supervision of a state board. This involves special feed, no antibiotics, and special controls in the slaughter process. Some of this pork is marketed under packer label and some under store label.

One feeder pig and marketing cooperative (Schweine-Vermarktungs-Gesellschaft) markets about 300,000 head. A major problem has been obtaining high quality feeders from small producers. This cooperative exercises strong control on feeder production (genetics, technique, and health) to guarantee the quality of the pigs to hog finisher. All transfers are at market and members are free to sell outside the system.

Selected Cases in the United States

Michigan Livestock Exchange/Thorn Apple Valley, Inc.

In December 1994, Michigan Livestock Exchange (MLE) signed a ten year full supply contract with Thorn Apple Valley, Inc. (TAV) slaughter facility in Detroit, MI. The arrangement has evolved to the point that MLE is handling procurement for the TAV plant.

Michigan Livestock Exchange is a Section 521 cooperative doing business as Michigan Livestock Exchange in Michigan and Ohio, as Indiana Livestock Exchange in Indiana and as Kentucky Livestock Exchange in Kentucky. MLE acquired Thorn Apple Valley buying stations as a part of the 1994 agreement. MLE also operates the Indianapolis and Bourbon (Louisville) stock yards. A subsidiary, Michigan Livestock Credit Corporation, provides credit for livestock producers.

The Thorn Apple Valley agreement was motivated by a desire to find the means for swine producers in the Great Lakes Region to remain competitive and continue to be a part of a growing industry. Producers needed assurance that they would be able to sell their hogs competitively. MLE's goals were:

1. Provide market access for all producers
2. Facilitate production of product quality consistent with consumer needs
3. Develop a uniform pricing structure that pays for quality product produced
4. Facilitate adoption of latest technology
5. Provide access to capital.

Thorn Apple Valley recognized the need for swine production in the area for their slaughter facility in Detroit to be viable. The recognition of mutual dependence of the packer and producers

provided the basis for the MLE/TAV agreement. The objective of both parties to the agreement was to change what had been an adversarial relationship between producers and packers to cooperation. A significant part of the agreement is provision of additional information to producers. Prior to the agreement, Thorn Apple Valley procured hogs only on a live weight basis. The agreement provided for objective quality feedback to producers on all hogs regardless of how purchased.

MLE has assumed full responsibility for supplying all of TAV's hog needs with three employees stationed in the TAV plant. Quality is being measured using ultrasound. Accuracy of measurement is still being improved. The parties behave as partners with management of MLE meeting monthly with top management in Thorn Apple Valley to improve operations for mutual benefit.

Michigan Livestock Exchange continues to market hogs through other packers and this provides the basis for pricing to Thorn Apple Valley. MLE will provide hogs to satisfy plant needs at prices competitive with other packers. MLE continues to route a member's hogs to achieve the best price for the member. Procurement for the Thorn Apple Valley operation continues to be on a day-to-day basis. That is, there is no guarantee to supply a specific volume to the plant. Volume is offered to Thorn Apple Valley at prices competitive with other packers. TAV management can elect not to pay those prices but to cut volume instead. At present, most of the volume continues to be purchased on a live weight basis with about 20 percent on a carcass merit basis. Quality feedback is provided to producers regardless of method of purchase. Producers have the option to enter a six month commitment to TAV with price determined on a formula basis.

Thorn Apple Valley also agreed to provide capital to finance production through Michigan Livestock Credit Corporation. A major objective of credit being provided is to encourage the building of state of the art facilities and to take advantage of current technology. Between 25 and 30 million dollars have been advanced to producers for the construction of facilities for farrowing, nursery, and finishing operations.

Michigan Livestock Exchange operates two patronage pools. One covers the traditional MLE territory of Michigan and Ohio locations and the second includes the operations of Indiana Livestock Exchange and Kentucky Livestock Exchange.

MLE volume of hogs has increased substantially since the signing of the Thorn Apple Valley agreement. Marketings for large producers have increased substantially with almost no negative reaction among producers. The MLE/TAV contract has not materially affected MLE relationships with other packers.

Pigeon Michigan Group

The Pigeon Michigan Group is associated with Cooperative Elevator Co. in Pigeon, Michigan and is recognized as one of the successful producer networks. Cooperative Elevator played a facilitating role in the system with some members of the management group as producer participants but with no equity owned by Cooperative Elevator. The system grew from the felt need on the part of hog feeders for a source of high quality feeder pigs. The producers involved had been feeding pigs

acquired from other areas and from many sources with all the problems associated with such a system.

The system started in 1979 as a 300 sow feeder pig production unit that has been expanded to 1750 sows. A second unit, conceived with the same intent, was built as a farrow to finish operation. The participants decided that, rather than building or expanding their feeding units on the farm, it would be more economical to feed and market the larger number as a unit. The original group of about 10 people chose one of their number to manage the operation.

The second farrow to finish unit is now used as a multiplier to supply gilts for the other sow units that now supply feeder pigs for producer owners. The group recognized the need for uniform genetics to make the system work. There have also been changes to adopt new production technology such as all-in, all-out and early weaning.

There are now three units producing pigs and the latest addition was a nursery unit that serves the three sow units. The unit used as the multiplier was added in 1983 and the others in 1988 and 1989. Each of the three sow units and the multiplier unit are organized as separate Subchapter S corporations. These four corporations own the nursery unit (separately incorporated). Bloomer Enterprises supplies management for all five corporations. Each has its own board and the units have different shareholders. Some producers are shareholders in more than one of these units.

All the shareholders are hog producers some of whom contract with others to finish some of their pigs. All but about 10 percent are primarily engaged in other farming activities. Contracting serves to expand existing hog operations, or in a few cases the farmer entered the hog business using contract feeding. Shareholders in the sow units get feeder pigs in proportion to their share holdings in the units.

Another entity, Michigan Lean Genetics, markets all the hogs for producers who elect to participate. This entity markets the hogs for its members and uses a pool system to offset the seasonal price variation that might affect returns under the all-in, all-out system of production. All hogs receive a base price at the time of sale. MLG holds the funds over this base with final settlement at the end of a cycle. The cycle is defined as the period needed for each producer in the system to get and finish one lot of pigs. For ten feeding floors it takes about eight months to complete a cycle with selling during four months. They were on cycle 12 at the time of interview. The money in the fund at the end of the cycle is split between all who participated in the cycle. Co-op Elevator does the accounting for the marketing pool. Each producer is responsible for his death loss and off-quality pigs. Only the number one pigs are in the MLG system.

There are 42 stockholders in the sow units. Because some are shareholders in more than one unit, there are about 36 people involved. Twenty-five of the feeding floors are in the MLG arrangement. MLG feeders feed only pigs from the system, some of which may be purchased from others within the system.

Pigs are transferred to the nursery at a fixed price for the target weight. This price represents the cost of the highest cost unit for the 15-17 day old pig. Producers pay the nursery for the feeder pigs. In the end after returns from their sow unit, producers get the pigs at cost from their sow unit,

the number determined by share holding. Gilts from the multiplier unit (at , say 240 lbs) are transferred to sow units at market plus a premium to reflect the added cost of the breeders, extra labor, a fixed return to capital, etc. Some market risk is taken by the multiplier unit.

It has been necessary to commingle the pigs in the nursery to get the 1000-1200 pigs to fill feeding floors on an all-in, all-out program. They now produce about 1700 feeders per week. There are two 1200 sow units and one 1750. The problem of capital gains taxes and the valuation of the older units were the major obstacles to putting the whole feeder pig production system in one corporation. At the end of 1995, the group was considering placing all sows and pigs under one ownership to spread the risk of feeder pig production over more than one sow unit.

Pigs are weaned twice per week. A missed litter is out of the system. The nursery unit has two 6400 head capacity facilities each with 8 rooms of 800. Pigs are in the nursery 6.5 weeks.

MLG controls the sort and decides when and where to sell. The sorting and marking is now performed by Michigan Livestock Exchange under contract. MLG now handles about 75,000 head per year. At the time of interview, a substantial portion of the hogs were going to a packer under contract with some risk sharing provisions.

Producers' equity represents about 40 percent of the sow unit assets. Local banks and Farm Credit supply the credit. Seventy percent of MLG hogs are finished by other producers under contract to members, mostly using a standard contract.

A producer leaving MLG cannot return without a favorable vote of the remaining members.

One of the secrets of success was said to be willingness of producers to work together for the good of all. Not all good hog producers are good cooperators.

HOG INC.

Originally chartered in 1962 by six farmer-owners to buy inputs, HOG INC. expanded into the marketing of swine, swine production cost analysis, and an insurance cafeteria to better serve its members. HOG INC.'s 1994 membership included approximately 100 shareholders in its purchasing division and 150 shareholders in its marketing division. Each member must purchase stock and guarantee that they will generate a minimum level of annual commissions through purchases or sales. Volume of business in both divisions exceeds \$45 million. Expenses total approximately .6 percent of gross revenues. This extremely low percentage is primarily a function of the kinds of services HOG INC. provides and the way they do business. HOG INC. serves as a purchasing or marketing agent for their members with the focus on negotiating the best price and terms of trade arrangement that is possible from suppliers or buyers. HOG INC. provides no credit, logistics, warehousing, distribution, transportation or other services. Expenses incurred are primarily for personnel, computer and information processing activities, communication and office space. In essence, HOG INC. performs the information gathering and negotiation function of marketing for its farmer-members. These functions are carried out by a staff of four; HOG INC.'s only investments are office equipment and computer software.

The marketing division merchandises approximately 500,000 hogs per year for its 150 members. HOG INC. currently works with seven packers to match price bids for certain quality characteristics with producers' production characteristics. Members provide HOG INC. information on a weekly basis concerning expected number of animals they will sell, preferred shipping date, preferred pick-up location, preferred trucker, etc. HOG INC. coordinates marketing requests to fill 50,000 pound trailer loads with similar animals. A market is selected based on carcass data from previous sales, existing marketing agreements, and packer bids. Producers are notified by telephone, FAX, or electronic mail to confirm loading time, date, and other details of the sale. Payment by the packer as well as carcass information is transferred to HOG INC., which records this information and transfers payment to the producer on the date of receipt. HOG INC. retains \$.40 per head commission on full trailer-loads and \$.50 for part loads. The carcass information from all marketings is entered into a data base where members can compare their carcass performance. Additional information concerning genetics, nutrition and housing is gathered to assist members in improving the management of their business to produce lean, high quality pork carcasses. The data base also allows regular comparisons of procurement strategies by various packers. HOG INC. has attempted to improve the lean content of their members pork carcasses by setting a goal of a minimum of 52 percent lean yield. It has chosen one breeder as a preferred source of genetics and uses its data base along with this preferred supplier relationship to improve members carcass quality.

The purchasing division of HOG INC. has as its prime goal to reduce procurement cost through pooling of orders and sharing of knowledge about suppliers pricing and other marketing strategies. Orders for all types of agricultural production inputs are placed with the purchasing coordinator at any time; most purchases involve pork production, but most other agricultural production inputs can be purchased through HOG INC. All inputs are directly shipped to the purchaser with HOG INC. providing no warehousing services. Transactions are on a cash only basis; payments to vendors are made to take advantage of cash discounts and members are required to pay HOG INC within 15 days of billing. HOG INC. has accounts with more than 100 suppliers and will take orders from members on a daily or monthly basis. Daily orders incur a one percent higher commission than monthly orders. Commissions vary with the products being purchased with the lowest commission of one percent or less for trailer loads and the highest commission of four percent for daily purchases of small items. Discounts from suppliers are significant because of the reputation and the volume purchasing of HOG INC.

In addition to these two core businesses, HOG INC. also provides other services to its members. One such service is a cafeteria plan of medical benefits for members and their employees as well as retirement and investment plans. Another service is detailed cost benchmarking. This service is provided under contract through Agrimetrics, an information and consulting company that does detailed cost analysis and comparisons for agribusiness companies. A third service is the production of superior genetic seedstock through a 1200 sow genetic multiplier. This program is expected to save participants approximately 30 percent per female replacement compared to purchases from other suppliers. This multiplier venture will involve a significant capital investment by HOG INC. which is a unique approach for the company in terms of business strategy.

HOG INC. has been in operation since 1962; it has maintained a relatively narrow focal point on procurement of inputs and more recently marketing of agricultural products with an emphasis on volume and informed negotiation. Past purchasing and selling activities of HOG INC. have imposed

few constraints on members. As HOG INC. looks to the future and implements plans to negotiate preferred supplier contracts with packers that include specific carcass and other characteristics, the cooperative may find it necessary to impose more constraints and/or requirements on its members. This movement to more interdependence may present a challenge for those members who prefer the independence they now have.

ValAdCo

ValAdCo, Renville, Minnesota, was organized in 1991 as a swine production cooperative to market effectively (add value to) corn produced by members. In mid 1995 there were 39 member shareholders of which only a few were producers of hogs on their own farms. Membership is controlled to match the production capacity of the cooperative. Membership (share holding) carries the right and obligation on the part of the member to deliver a fixed amount of corn to the account of the cooperative. ValAdCo provides the means for the corn producer members to extend their farm business into pork production on an efficient scale not possible individually and without reducing their personal input into their crop operation.

The cooperative is organized as a section 521 "exempt" cooperative which, in addition to tax benefits, carries an exemption from securities regulation. It is operated on a cooperative basis with net earnings returned to members in proportion to corn delivered which, in this case, is also proportional to capital invested. Equity shares may be traded but the corn delivery obligation goes with the shares. Shareholders must be corn producers.

Each original share (64) was purchased by the original 38 members for \$5000 and carried the right and obligation to supply 5000 bushels of corn per year. Before starting the second unit, each \$5000 share was converted to five \$1000 shares with a 1000 bushel corn commitment. New shares for expansion were offered first 10 each to current members. Shares not purchased under this arrangement were placed in an option pool to be bid for by any member. Shares not all taken by members were offered to other qualified producers. Debt financing has been provided by St. Paul Bank for Cooperatives. Forty to fifty percent equity is required by the Bank.

ValAdCo owns one-third share of United Mills, a feed milling cooperative. Other shareholders are Co-op Country Farmers Elevator and Midwest Investors of Renville (an egg production cooperative owned by corn producers). United Mills provides feed to the member owners at cost.

As of August 1995, ValAdCo operations included a multiplier unit of 1250 sows for the commercial facilities. The multiplier unit operates as a two site system. There are two commercial units of 2500 sows each with separate nursery and finisher units for three site production. They are on an all-in, all-out basis and were in the process of implementing artificial insemination in 1995.

Producer members deliver corn to Co-op Country Elevator who supplies United Mills. Co-op Country retails feed from United Mills to customers other than ValAdCo and Midwest.

Finished hogs are being marketed to three packers. The initial idea was to work with one packer but they found that sorting to fit the desires of the three buyers produced a better return. Each

prefers a different weight. Ninety percent of the hogs were under contract, either a window, cost plus, or futures contract. Risk management is taken seriously.

Gold Kist Inc.

Gold Kist is a centralized cooperative involved in farm supplies and marketing with broiler production and marketing the dominant activity. Swine operations are managed by the Poultry Group.

Gold Kist entered the pork business in 1972/73 with the purchase of two small packers with their own brands of meat. These operations each slaughtered 500-1000 head per day. By 1978 it was determined that the plants were too small to be competitive and that the production in the area would not support expansion. The plants were closed in 1978 but contract production was continued. Brands remain in use with products custom manufactured by others and sold through the poultry distribution system.

Gold Kist's contract production in full confinement resulted in more efficient production than was being accomplished by traditional producers in the Southeast at that time. There has been little expansion in pork production; lack of financing for farmers has been a limiting factor.

Gold Kist owns and manages its own multiplier herd to produce gilts and boars for the contract operations. Genetics are selected based on performance with no long term arrangements with breeders.

Producer members of Gold Kist produce on contract. Gold Kist owns the pigs and furnishes feed and service. Producers provide facilities and labor. Contracts pay a fixed fee per head with performance incentives. There are about 50 contract producers, some farrowing only, some farrow-to-finish, and most are finishing only. Contracts are typically for one herd at a time. There have been no contracts terminated except for gross problems.

There were 16,000 sows in the program at the time of interview with plans to reduce the number by 2,000-3,000 in the near future.

Gold Kist generally markets to packers on six month contracts to deliver a guaranteed weight and quality. Sales are priced relative to USDA six market quotes. Some are sold on grade and yield basis and others on a live weight basis to several packers on the basis of the best terms available at the time.

A separate pork production patronage pool is maintained. Patronage refunds are paid to member contract producers. Feed is provided by poultry feed mills and transferred to pork production at cost.

Gold Kist does finance some pork producers. Lending is by a subsidiary company for facilities construction. If the producer owns a farm, Gold Kist may finance 100 percent of the hog facility.

The swine program is clearly not a growth area for Gold Kist. In 1994 pork production generated patronage refunds of \$660,678, \$2.92 per hundred weight of pork produced. In the same year broiler operations generated \$45,605,866 in patronage.

Farmland Industries

Slaughter, Processing and Marketing

Farmland's involvement in the swine industry is based on the belief that there is a role for the cooperative to help independent swine producers make the transition to a food chain or system perspective. They see the need to integrate independent producers in a commitment to the food chain approach. Farmland's vision is to accomplish this through assisting producers to access appropriate genetics, feed, and management and to carry the product through to retail and into international markets through Farmland Foods.

Farmland Foods is a leader in marketing branded fresh pork with the **Extra Tender** label. The objective of the system is to produce the quality needed at costs less than or equal to competitors to maintain a dominant position in branded pork at retail. Farmland Foods is working with food retailers, food service companies, and international customers to build, in effect, sole supplier relationships. They want to work with the retailer to maintain or enhance the profitability and attractiveness of the meat case. The system must provide quantity and quality assurance to the retailer partner.

Farmland is very active in marketing to the food service sector. That is more important for processed products. Portion control and loin eye size are more important in food service than in food stores. At present, neither export or food service demand a different carcass than for food stores. The food service market provides opportunities for creative products such as Farmland's flavored and smoked loins. Products developed for food service can be moved into food stores later.

Farmland's objective is to influence the system back to the genetics to provide what the consumer desires and is willing to pay for. This is to be done through existing producers and local cooperatives. Farmland does not wish to own hog production facilities or the animals.

At present the raw material for the branded program comes from hogs purchased on the open market. Buying on grade and yield has been effective in getting leaner pork and a more desirable size of hog.

Lack of consistency of hogs remains a problem. There is some specialization among Farmland plants such that hogs can be directed to the plants that can make best use of the type of hogs in a particular lot. That is, the variation can be accommodated by product mix as well as in processing.

As the volume of product marketed in the **Extra Tender** program increases, it will be more critical to have consistent quality. It will not be possible to buy what will be needed to meet Farmland's specifications outside their own system. Meeting drug use guarantees for the customer also requires control throughout the system. Farmland managers see an inability to satisfy their more sophisticated customers' specifications by buying hogs or meat on the open market. It is an open

question whether there will be a place in Farmland's system for producers who cannot or will not produce to market specification in five years. There will be fewer options to fix the problem of lower quality hogs through processing as has been the practice in the past. Much progress has been made in reducing variation, but there remains room for improvement.

Contract Production

The objective of Farmland's contract production system is to partner with independent producers to give these producers access to the new production technology. This relationship gives producers a risk umbrella that assists in obtaining financing. Producers are eligible for patronage from contract operations.

Farmland's contract system included 16,500 sows in August 1995. All but 1,200 (a grandparent multiplier) were on producer farms. Sow units range from 300 to 3,600 sows. Farmland owns the sows and the feed. Contract payments are based on a fixed fee per sow per month with a bonus for performance.

Pigs go to contract finishers. The aim is for each farm to have two 900 head feeding floors to be operated on an all-in, all-out system within 200 miles of the kill floor. All hogs go to Farmland plants for slaughter and processing. There are 180 feeding buildings involved. Activity has been concentrated in western Iowa, southern Minnesota, southeastern South Dakota, and northeastern Kansas.

All finishing contracts have a minimum annual payment per head of space. Most are a minimum of five to ten year term with some shorter term for operators coming into the system with existing facilities.

Thirty-three Farmland locals are involved in contract feeding operations. The locals sell feed to Farmland and are not involved in ownership of pigs.

Financing may also be provided by an affiliate of Farmland.

The Livestock Production Division of Farmland also provides contract management services for others including a northwest Iowa group and Alliance Farms.

The northwest Iowa group operates a 2,400 sow unit. Sixteen to eighteen feeders formed their own co-op. The risk is borne entirely by the member farmers. Farmland provides advice for a fee. It has been restructured for three site operation.

Alliance Farms

Alliance Farms is a separate cooperative corporation with each share having one vote. Owners include Farmland, Farmland locals, and farmers. The purpose is to produce feeder pigs for members. New shares are being marketed to producers. Alliance is a section 521 cooperative.

Alliance Farms represents a significant advance toward the full chain approach. It provides the legal structure to allow producers to invest in the production of quality feeder pigs. Interest is growing; however, timing has not been favorable. The start-up problems are behind them. There are six 2,400 sow units in operation in Colorado and construction of the seventh has begun.

The model is 2,400 sow units with 17 shares per unit to produce about 46,000 pigs per year. Each unit consists of a sow unit with nursery at a separate site one to two miles away. One share should provide about 900 feeders every 20 weeks. This allows for some extra pigs for sale beyond member commitment.

Farmland Industries provides management services for a fee per pig shipped.

One share costs \$80,000. Shareholders must sign a feeder pig purchase agreement for the corresponding share of pigs to be produced. Pigs are transferred at 12 month average of finance cost plus operating cost plus \$4.50 per head plus delivery cost. Finance cost is tied to the particular share block of the shareholder. The original 68 shares constitutes one finance block. Each subsequent 17 share block will stand alone. Operating costs are to be averaged over all units in operation at a given time. Earnings are paid back to members as patronage refunds.

The shareholder owns the pigs once they leave Alliance facilities. Farmland Foods expects (hopes) to slaughter them.

About 95 percent of these pigs are marketed under contract with Farmland Foods. This requires use of feed from Farmland. Contracts run for a minimum of four years. Contractors are members of Farmland Foods at \$1,000 per share and business is on a patronage basis. Producers can have patronage refunds retained to pay for the share of stock.

Marketing contracts are window contracts. Basically similar contracts are available for producers who are not Alliance Farms members as well as for those who are. The price window provides for the producer to receive the market price when the market is within the window and for the producer to share in the gain and pain when price is above or below the window range. The base price is the plant price average for the 20 weeks prior to the delivery week. The minimum number contracted is 2,600 per year with penalties for failure to deliver. Farmland-recommended feeding is required.

At present there are some genetic lines that work better for some products than for others. There are some niches that are better served by very specific genetic lines. However, genetics selection is based primarily on efficient lean meat production rather than driven by specific end uses. Farmland executives see the influence of genetic firms decreasing in the future.

Producers are direct members of Farmland Industries. There is a separate patronage pool for pork.

Countrymark Cooperative

Countrymark is a federated farm supply and marketing cooperative serving member cooperatives in Indiana, Ohio, and Michigan. The cooperative began a hog contracting program in the late 1980s. The objective is to develop a production and marketing program for hog producers to be successful in an interdependent pork industry. The contracting program was initiated to apply state of the art technology in local conditions and to help new producers obtain financing with the idea of being independent producers at the end of their contract.

Early in the program Countrymark worked with a new slaughter-processing company to develop a coordinated program on a cost-plus contract for hogs produced with packer selected genetics and controlled production conditions. The original agreement would allow contract production with facility payout in five to seven years. A change of ownership of the packer and problems with the original genetics ended the agreement.

Today the objective is to develop a swine contract production and marketing program that will meet certain market needs and produce pork competitively by using resources of the Countrymark Co-op System. The early operations were farrow-to-finish but production is currently moving to multi-site operations with farrow-to-feeder units matched with contract finishing units.

Contracting is handled through a subsidiary corporation, FarBest. The plan is to set up units centered on a 1,200 sow farrowing/nursery in cooperation with a local member cooperative. The farrowing/nursery units may be owned by FarBest, by the local, or some combination with finishing by contract producers.

Countrymark desires relationships with packers to limit risks to the system. The goal is to have 50,000 sows in the system. Countrymark or Countrymark and a member cooperative take the market risk and most of the production risk on contracts to assure cash flow to producers sufficient to obtain financing for facilities. Once the contract is completed and the facilities paid off, the producer may elect independent production. Income or losses from contract operation go to Countrymark or the Countrymark/member cooperative partnership with no direct patronage dividend to the producer from this activity.

Contract growers are members of the local cooperative and are selected only with approval from the local.

Growmark

Growmark is a federated farm supply and marketing cooperative serving primarily Illinois, Iowa and Wisconsin. FS PORK-NETTM is Growmark's swine production and marketing program designed to provide the means for the smaller independent swine producer to compete effectively with the very large integrated producers. The goal of the program is to provide the genetics, technology, management, and marketing to independent producers who are willing to commit to a coordinated system. The present plan spans gilt production through marketing finished pigs. The long term goal is branded meat products. At the moment this does not include ownership of a slaughter plant.

FS SELECT LEAN™ genetics will provide gilts produced on a southern Illinois crossing farm. Purchased breeding stock are selected to produce lean, cost efficient, high quality carcasses. The crossing farm is expected to produce gilts for transfer to farrowing operations. The multiplier unit of 1,200 to 2,400 sows will be owned by Growmark.

Growmark does not plan to own hogs beyond the multiplier unit. The objective is to coordinate a three-site program with independent producers at each level.

FS PORK NET will provide access to swine specialist advice on all aspects of production. Custom feed formulation is available. Financing for feed, livestock, and facilities is also available for producers.

The marketing program (FS Quality Marketing Program - FSQMP) is a cooperative effort between Interstate Producers Livestock Association (IPLA) and Growmark. At the time of interview there were 100,000 hogs committed in the marketing program. The goal is 2,000,000 head. Not all in the program are now using SELECT LEAN genetics and feeding. The program cost includes a per head fee in addition to regular IPLA fees.

The producer signs two agreements to participate in the marketing program. There is a participation agreement with Growmark and a marketing agreement with IPLA. The agreements are for a one year minimum with automatic renewal unless canceled. The agreements commit all the signing producer's hogs to the program. The agreement specifies a number of pigs to be marketed. Producers must notify the marketing program that hogs are ready by noon on Friday for the following week. Producers receive the price realized for their individual lot. Kill sheets are to be provided within 48 hours of the sale.

All the FSQMP pigs will be on an FS feed program. This may be as premix, supplement, or a complete feed at least from 60 pounds to market weight. Eventually, all growers in the program will be on SELECT LEAN or comparable genetics. The marketing program is expected to gain from product consistency and volume sales. Producers are to receive quality feedback on every load.

The goal is to have all hogs in the FSQMP system level three certified in the National Pork Producers Council Pork Quality Assurance (PQA) Program. At the time of interview 35 percent were certified.

FS PORK-NET offers producers alternative ways to participate in the system. Farmers will own the pigs beyond the multiplier stage. For example, a farrow-to-finish operator may decide to concentrate on farrowing but retain ownership through finishing as follows:

1. purchase breeding stock from FS,
2. transfer pigs to contract nursery at 10-14 days,
3. transfer pigs to contract finisher at 55 pounds,
4. market hogs through FSQMP.

Coordination is accomplished by FS PORK-NET. Other farmers are involved as contract nursery producers or contract feeders.

There appears to be no reason the feeder cannot buy pigs from the farrowing farm, either at 10-14 days or as 55 pound feeders. Any combination of ownership and contract operation would be feasible within the program. PORK-NET is designed to put together those who need to be together in a variety of arrangements within a system that will produce what the market desires at lowest cost.

Implications and Observations

Objectives of Cooperative Systems

The following appear to be major objectives of cooperatives active in the hog/pork subsectors. Some are stated and some are implied.

Access technology: A number of technologies such as all-in, all-out stocking cannot be accomplished within a traditional operation.

Access markets: Integration and contract production threaten access to markets by traditional producers with low volume or variable quality.

Access quality inputs: High quality feeder pigs from a single source and feeds to supply the all-in, all-out finisher requires a systems approach.

Added value-bargaining: Value of the producer's hogs can be increased through coordination of marketing and the professional search for the best outlet for the particular quality and volume available. Marketing groups expect to gain from control of larger quantities.

Added value-processing: Value added in slaughter, processing and marketing may be captured for producers.

Access to information: Information can be acquired and used for the benefit of producers more effectively as a group than as individuals. This includes the areas of production efficiency, quality evaluation, and market evaluation.

Quality control: Matching quality to consumer desires including meat characteristics, trace back, drugs, feeding, and animal treatment are concerns that are difficult for open markets to accommodate.

Risk reduction: A number of risks in production and marketing can be addressed as a group effort. Individual risks of pricing inputs and products may be reduced through pooling. Total risk may be reduced through altered production technology and improved coordination. A multi-purpose cooperative may absorb producer risks through contracting.

Cooperative Functions

Cooperative activities were observed at all stages of the swine subsector. Most coordination activities can be characterized as one or a combination of the following five basic functions.

1. Producing parent stock with known genetics for feeder pig production (the multiplier stage).
2. Producing high quality feeder pigs for finishing farms. This activity usually includes the stages identified as farrowing and nursery earlier in the paper. Single source, disease free pigs are the product.
3. Coordinate, sort, and sell fattened hogs for finisher farms.
4. Provide slaughter and perhaps processing services. This can extend to wholesaling of branded consumer products.
5. Cooperative hog production operated as a means to market feed grain produced on grain farms. This recent phenomenon usually includes a combination of 1-3 above.

Cooperative systems may include combinations of these functions. In fact, the Danish system includes all of the above plus a breeding program to supply grandparent stock from its own genetic lines. The organization and relationship of cooperatives to farmers differs widely as does the scope for independent decisions by the farmer member.

Figures 5 and 6 illustrate the role of the case cooperatives in terms of functions involved and their contributions to the hog/pork system. Only major areas of contribution are checked recognizing that each of the cooperatives may contribute more broadly than noted here.

The nature of the cooperative organization and the relationship between members and the organization may limit its role. One dimension of interest is whether the cooperative involved in the hog/pork chain has a single commodity focus or a multi-commodity interest. For example, the general farm supply cooperatives of several countries have some direct involvement in the hog/pork subsector. Contract production by the feed supply organization is not unusual. In these cases, net earnings (and risks) associated with the swine activity may or may not flow to only the swine producer members. The multi-commodity cooperative has the potential to spread the hog system risk over a broader patron group.

Other cooperatives limit their scope to one or more stages in the direct marketing chain and are owned and controlled by producers of hogs. Benefits, if any, of participation in the single commodity cooperative flow only to the hog producers or, in the case of the organization described in 5 above, to its grain producer members. Equity financing of single commodity organizations is usually by members in close proportion to their business with the cooperative. For some recently organized U.S. hog cooperatives there is a direct link between capital supplied and the right *and obligation* to buy a fixed number of feeder pigs from or deliver a specified number of finished hogs

Figure 5. Stages of the Hog/Pork Chain Included in Case Cooperatives

	Country or Cooperative												
	UK	FR	DK	NE	DE	MLE	PMG	HOG	VAC	GK	FI	CMC	GM
Genetics			X										
Multiplier					X		X		X	X	X	X	X
Farrowing							X		X	X	X	X	
Nursery							X		X	X	X	X	
Finish									X	X	X	X	
Assembly	X	X	X		X	X	X	X	X	X	X	X	X
Slaughter		X	X	X	X						X		
Processing			X	X	X						X		
Wholesaling			X	X	X					X	X		

UK = United Kingdom FR = France DK = Denmark NE = The Netherlands
 DE = Germany MLE = Michigan Livestock Exchange PMG = Pigeon Michigan Group
 HOG = Hog Inc. VAC = ValAdCo GK = Goldkist FI = Farmland Industries
 CMC = Countrymark Co-op GM = Growmark

Figure 6. Contributions to the Hog/Pork Chain by Case Cooperatives

	Country or Cooperative												
	UK	FR	DK	NE	DE	MLE	PMG	HOG	VAC	GK	FI	CMC	GM
Access Technology			X	X	X		X		X	X	X	X	X
Access Markets	X	X	X	X	X	X	X	X	X	X	X	X	X
Risk Sharing		X	X				X		X	X	X	X	
Risk Reduction		X	X		X						X		
Flow Control			X		X		X		X	X	X	X	X
Quality Control			X	X	X	X	X	X	X	X	X	X	X
Information	X	X	X	X	X	X	X	X			X	X	X
Consumer Franchise			X	X						X	X		
Response to Demand			X								X		
Add Value to Farm Product	X	X	X	X	X	X	X	X	X	X	X	X	X

or other products (i.e. grain in the case of Val-Ad-Co) to the cooperative. In general the commitment of the member to the single function cooperative is expected to be stronger than is common between members and a general purpose cooperative.

One also finds cases in which the multi-commodity cooperative established a division or subsidiary that behaves much the same as the single function organization. The larger established organization may also provide management services for a separately capitalized specialty cooperative.

Comments on Performance

The Danish system provides an example of the almost completely (96 percent) cooperatively coordinated hog/pork sector from genetics to branded consumer products. Four slaughter cooperatives, directed by their members, compete for producer business, work jointly to influence the quality of Danish hogs and develop products to expand markets for Danish pork. The system has been successful at expanding export markets, improving efficiency, allowing (encouraging) needed adjustments in industry structure, and changing the hog to meet consumers' desires. Producers do make one year commitments to market to one cooperative. The system is fully integrated yet largely market coordinated. Producers make their choices, but the price incentives are strong and clear to achieve the quality that is desired. Uniform pricing of hogs by all the cooperatives facilitates the use of price signals to achieve mutually beneficial changes in producer behavior. Recognition of mutual interdependence is an important factor in the system's performance. The achievements of the system are impressive. However, it is difficult to see how such a system could be created anywhere else today.

Producer commitment to a cooperative is an important factor determining its performance. Regardless of functions the cooperative performs, a single commodity cooperative is more likely to enjoy producer commitment (to deliver to or buy from the cooperative) than a multi-commodity cooperative. A direct producer role in financing and perhaps in the formation of many single commodity organizations results in a higher stake and interest in the success of the organization. Having one's own money at risk focuses attention. Activities of a large multi-commodity cooperative, risking the broader membership's capital, are much more likely to be regarded as simply another alternative source of inputs or market to be used or not depending on price at the time of a transaction -- thus seriously limiting the cooperative's coordination role. One also sees a much higher level of commitment to new marketing cooperatives (3 above) with relatively small membership than to the old large membership traditional marketing cooperatives performing the assembly function.

With the exception of Denmark, cooperative slaughter and processing has not resulted in coordination other than that achievable through the market. Farmland Industries has the structure in place to move in that direction. Countrymark's early effort to coordinate with a packer was not successful for reasons not related to the concept. Excess slaughter capacity in much of Europe means that there is little profit to be captured from that level and little perceived need for producers to commit either product or capital. No cooperative examples of production commitment matched to slaughter capacity that could effectively coordinate product flow and quality were found in Europe or the U.S. outside of Denmark.

Controlled membership cooperative production of feeder pigs is being accomplished successfully in several countries. Production is matched to member commitments and these

organizations have allowed producers to take advantage of technologies not feasible at the scale of single farms.

Marketing groups have achieved success in the reduction of transaction costs as well as a degree of coordination with slaughterers. A key function of these groups has been the transfer of quality information to members to assist them in providing the quality that is rewarded in the market. It is too early to assess the performance of the Michigan Livestock Exchange/Thorn Apple Valley arrangement.