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FEEDER-CATTLE MARKETING CHANNELS AND EXCHANGE ARRANGEMENTS

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Feeder-cattle marketing may be viewed as beginning when feeder calves are weaned and ending when grown feeder cattle are placed in feedlots for finishing. Available data and previous studies do not provide a very complete description of the feeder-cattle marketing system in the United States. The information available, however, suggests that that the marketing system is quite traditional: coordination is achieved primarily through market-determined prices, while public markets (i.e., local auctions and terminals) play an important role. Further, no major changes in the marketing system are underway now even though it seems that feeder-cattle marketing costs are relatively high and that feeder-cattle prices do not accurately transmit value differences. Research is needed to provide a better understanding of how the present system operates and to design feasible alternatives to the present system that would improve performance.

The major purpose of this paper is to assemble information about the operation and performance of the feeder-cattle marketing system. Specific objectives are: (a) to describe the present marketing channels and exchange arrangements for feeder cattle including evident differences among selected regions in the United States, (b) to identify shifts that have occurred in these channels and arrangements in recent years, (c) to point out some performance consequences of the present marketing channels and exchange arrangements, and (d) to suggest some topics for research. The scope of the paper excludes a discussion of marketing channels and exchange arrangements for non-fed slaughter cattle and for feeder cattle originating in dairy herds.

Much of the discussion is based on data collected in studies in Arizona [8], Nebraska and Kansas [5, 6, 7, 11], Ohio [3], and in the Southern Plains [1, 2]. In addition, some information was obtained from recent interviews in Colorado, Kansas, Oklahoma, and Texas [10], and Iowa.

PRESENT MARKETING CHANNELS AND EXCHANGE ARRANGEMENTS

Production Stages

Feeder-cattle marketing channels span three states of production: cow-calf operations, growing operations and feedlot finishing operations. A discussion of some characteristics of these production operations reveals the nature of the tasks performed by the feeder-cattle marketing system.

Cow-calf operations are widely dispersed with relatively small herds. Table 1 shows that each of the 15 states had more than one million beef cows on Feruary 1, 1974, and that these 15 states accounted for less than 70 percent of the total U.S. beef cow herd. On December 31, 1969, the average herd size in the United States was only 26 cows, and average herd size exceeded 100 cows only in three of the 15 leading states. Because of these characteristics of cow-calf operations, feeder cattle enter the growing stage of production in relatively small lots at widely scattered locations.

The growing stage begins when feeder cattle are weaned (typically 350-500 lbs.) and ends when they weigh 600-750 lbs. Growing may involve backgrounding, grazing or wintering. The growing operation may be under the same ownership and at the same location as the cow-calf operation; or it may be tied to a feedlot operation under different ownership and at a different location. There are also specialized growing operations. A recently completed study provides considerable data on growing operations in Nebraska and Kansas [5], but much less information is available on growing operations in other states.

Table 1. Beef cow-calf operations in the United States: inventories and average herd sizes for 15 leading states.

	February 1, 1974			*December 31, 1969*
State	*Beef cow inventory*	*Percentage of total U.S. inventory*	*Cumulative percentage*	*Average herd size*
Texas	6,470,000	15.1	15.1	82.5
Oklahoma	2,594,000	6.1	21.2	57.8
Missouri	2,379,000	5.6	26.8	37.2
Nebraska	2,248,000	5.2	32.0	73.0
Kansas	2,058,000	4.8	36.8	59.3
South Dakota	2,050,000	4.8	41.6	76.6
Iowa	1,790,000	4.2	45.8	36.6
Montana	1,746,000	4.1	49.9	153.0
Mississippi	1,285,000	3.0	52.9	67.0
Kentucky	1,282,000	3.0	55.9	34.4
Florida	1,247,000	2.9	58.8	199.0
Tennessee	1,178,000	2.8	61.6	33.5
North Dakota	1,125,000	2.6	64.2	74.6
Colorado	1,125,000	2.6	66.8	106.1
Arkansas	1.096,000	2.6	69.4	54.0
Total U.S.	42,874,000	100.0	100.0	26.0

Sources: Crop Reporting Board. Cattle. U.S. Dept. Agr. Stat. Rptg. Serv. Feb. 1974.
U.S. Bureau of Census. Census of Agriculture, 1969. U.S. Govt. Printing Office. Volume V. Special Rpts. Part 9. Cattle, Hogs, Sheep, Goats, 1973.

From growing operations feeder cattle enter feedlots for finishing. Feedlot operations, in contrast to cow-calf operations, have become spatially concentrated in surplus grain producing regions and individual operations have greatly increased in size. In 1972, 84 feedlots, each with 10,000 or more head capacity, produced one-third of all the fed cattle marketed. Table 2 shows that, in 1973, the seven largest feeding states produced about 75 percent of the fed cattle marketed. Also, in all except two of the leading states, most of the cattle were fed in feedlots that market more than 1,000 head per year.

Comparison of Tables 1 and 2 reveals one of the major functions performed by the feeder-cattle marketing system. Small and scattered lots of weaned feeder calves must be grown and assembled and placed in large-scale feedlots that are concentrated in certain regions of the United States. This assembly function has not only a spatial dimension, but also time and form dimensions. The feeder-cattle marketing system matches this production flow with the more seasonally uniform demands of feedlot operators for specific qualities of feeder cattle.

VERTICAL COORDINATION AND EXCHANGE ARRANGEMENTS

Ownership (vertical integration), market-determined prices and contracts based upon market-determined prices coordinate the activities of cow-calf, growing and feedlot operations.

Vertical Integration

Integration of cow-calf and growing operations or of growing and feedlot operations is common at least in some states. Operations integrated from the cow-calf herd through the feedlot operation are much less common, particularly large-scale operations.

Table 2. Cattle-feeding operations in the United States: total marketings and marketings by size of feedlot for 9 leading states, 1973.

	Fed-cattle marketings (1000 head)	*Percentage of total U.S. marketings*	*Cumulative Percentage*	*Percentage of marketings from large feedlots*[a]
Texas	4412	17.4	17.4	97.8
Nebraska	3617	14.3	31.7	60.8
Iowa	3389	13.4	45.1	12.7
Kansas	2500	9.9	55.0	84.0
Colorado	2144	8.5	63.5	92.3
California	1942	7.7	71.2	99.9
Illinois	945	3.7	74.9	11.4
Arizona	919	3.6	78.5	99.9
Minnesota	892	3.5	82.0	6.9

[a] Large feedlots are those marketing more than 1000 head per year.

Source: Crop Reporting Board. Cattle on Feed. U.S. Dept. Agr. Stat. Rptg. Serv. Jan. 1974.

In a recent study of Kansas and Nebraska growing operations, it was found that more than half of the growing operations were operated in conjunction with cow-calf operations, and more than a third of the growing operations were managed in conjunction with the feedlot operation [5, pp. 8-9]. In the same study, it was found that about a third of the operators of small feedlots (less than 1000 head capacity) also had cowherds, but a much smaller percentage of operators of large feedlots had cowherds [6, p. 8].

The amount and kinds of vertical integration evidently vary between regions. About 65 percent of the calves produced in southeastern Ohio in 1972 were produced by specialized cow-calf operators [3, p. 7]. In the South, cow-calf operations also are usually separated from growing operations [2, p. 7]. In Iowa, most feedlots purchase feeder calves and then combine the growing and feedlot operations.

Price Coordination

Most feeder cattle change hands at least once from the time they are weaned until they are placed in a feedlot. And, most often this change of ownership is effected in an open market. A large proportion of the feeder cattle passes through at least one local auction, and many are purchased one or more times by an order buyer.

The study of cow-calf operations in southern Ohio provides some information about sales of weaned feeder calves. In 1972 more than 80 percent of the calves sold were sold at local auctions [3, p. 7]. Direct sales were next most important but accounted for less than 10 percent of the calves sold. The relative importance of auctions and direct sales did not vary systematically with the size of the cow-calf operation. Marketings were heavily concentrated in the fall, especially marketings from small cow-calf operations.

Information on purchases of feeder calves by growing operations is available only for Kansas and Nebraska [5]. In Kansas and Nebraska, growers purchase most of the cattle they grow (the remaining cattle are supplied by their own cowherds), and the proportion purchased increases with the size of the growing operation. The most common sources are purchases direct from cow-calf operations and purchases from local auctions. Cattle are purchased either by growers themselves or by order buyers, but order buyers are more important for larger growing operations.

The Kansas-Nebraska study also provides some information in sales of grown cattle. Auctions are the most common outlet for grown cattle and are especially important for small growers. For larger operations, direct sales either to feedlots or to order buyers are common. There is a strong seasonal pattern to sales of grown cattle with peaks in the fall and spring. Only 13 percent of the growers sell cattle continuously [5, pp. 28-29].

Information on purchases of feeder cattle by feedlots is available for several major feeding states. Table 3 shows sources of feeder cattle

Table 3. Feedlot sources of feeder cattle in selected states.

Source	*Colorado (1966-67)*	*Kansas (1971)*	*Nebraska (1971)*	*Oklahoma (1966-67)*	*Texas (1966-67)*
			Percentage of Cattle		
Raised	----	1.4	2.4	----	----
Auction	47.0	55.8	48.6	49.3	60.6
Terminal	5.0	2.2	4.1	0.2	2.3
Direct	48.0	35.3	40.5	50.5	37.1
Traders	----	5.3	4.4	----	----
Totals	100.0	100.0	100.0	100.0	100.0

Sources: Burke, R. L. Characteristics of Beef Cattle Feedlots: California, Colorado, and Western Corn Belt, U.S. Dept. Agr. Mktg. Res. Rpt. No. 840. (Undated)

Dietrick, R. A. The Texas-Oklahoma cattle feeding industry. Texas Agr. Exp. Sta. B-1079, 1968.

Smith, Q. C., *et. al.* The Kansas-Nebraska feedlot industry. Kansas Agr. Exp. Sta. Res. Pub. 583. (North Cent. Reg. Pub. No. 220) Forthcoming.

for feedlots in five major feeding states. Auctions and direct purchases from cow-calf or growing operations are the major sources in all five states. Direct purchases become relatively more common as feedlot size increases.

Table 4 presents information on the types of buyers used by feedlots in these five states. In four of the states (all except Oklahoma) more than half of the cattle are purchased by order buyers. Except in Colorado, about a third of the cattle are purchased by the feedlot operators. Salaried buyers are important only for relatively large feedlots.

In Iowa the major sources of feeder cattle also are auctions and direct purchases. Order buyers are used heavily, especially on direct purchases. Feedlot operators are also important buyers, but they buy primarily at auctions.

In all these states, direct purchases from a cow-calf operator by the feedlot operator with no intermediaries are uncommon. And typically feedlot operators know little about the nature or length of the marketing channel for feeders they do not purchase directly from cow-calf operators.

Contracting

Marketing contracts and custom growing or feeding arrangements are the most common types of contractual arrangements in feeder-cattle marketing. Marketing contracts are used to some extent on direct sales between cow-calf operators and growers and, to a larger extent, on direct sales between cow-calf operators or growers and feedlots. Cattle are sometimes custom grown for cow-calf operators or feedlots and are sometimes custom fed for cow-calf operators and growers.

Contracting by growers, at least in Kansas and Nebraska, is not very extensive. In 1971, only about 15 percent of the cattle purchased

by growing operations in Nebraska were contracted, and less than 5 percent of cattle purchased by growers in Kansas were contracted. About two-thirds of the cattle contracted were contracted through order buyers [5, pp. 11-13]. Contractual sales by growers were only slightly more extensive. In 1971, 10 percent of cattle grown in Nebraska and 20 percent of those grown in Kansas were sold on contract [5, p. 30]. About half of the cattle contracted were contracted with order buyers.

A significant proportion of feedlots operators buys at least some cattle on contract, but the proportion of cattle purchased on contract is relatively small. In 1971, about 20 percent of Kansas and Nebraska feedlots purchased cattle on contract, but less than 15 percent of total feeder-cattle purchases were contracted [11, p. 25]. Contracting is more prevalent among larger feedlots. A 1971 survey of ten Texas feedlots revealed that all but one purchased some cattle on contract [2. p. 16]. One feedlot purchased half of their feeder cattle on contract.

Pricing provisions of feeder-cattle contracts evidently vary among regions. In Kansas and Nebraska, most contracts are negotiated in the summer for fall delivery, relate the price to a local auction or terminal market price at delivery time, and specify loading and weighing conditions and pencil shrink [11, p. 25]. In Texas [2, p. 16] and in Iowa, contract provisions differ in that a definite price is specified at the time the contract is negotiated.

Table 4. Types of buyers used by feedlots to purchase feeder cattle in selected states.

Origin or type of buyer	*Colorado*[a] *(1966-67)*	*Kansas (1971)*	*Nebraska (1971)*	*Oklahoma*[b] *(1966-67)*	*Texas*[b] *(1966-67)*
			Percentage of Cattle		
Raised	----	1.2	2.4	----	----
Operator	9.0	33.8	33.1	25.9	30.9
Salaried buyer	6.0	6.7	3.9	26.8	----
Order buyer	85.0	58.3	60.6	42.2	69.1
Other	----	----	----	5.1	----
Totals	100.0	100.0	100.0	100.0	100.0

[a] Percentages are for feedlots with capacity exceeding 8000 head.

b Percentages are for feedlots with capacity exceeding 10,000 head.

Sources: Burke, R. L. Characteristics of Beef Cattle Feedlots: California, Colorado, and Western Corn Belt, U.S. Dept. Agr. Mktg. Res. Rpt. No. 840. (Undated.)

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Custom growing arrangements may be used to permit cow-calf operators and feedlots to participate in cattle growing, and custom feeding arrangements may be used to permit cow-calf operators and growers to participate in cattle feeding. Custom growing evidently is not a common practice and is usually done for feedlot operators [5, p. 24]. Custom feeding, on the other hand, is very common, especially in large feedlots. The patrons of custom feeding operations include cow-calf operators and growers [2, p. 20], professional cattle feeders, beef slaughterers and processors and other investors. Data indicating the relative importance of these groups of patrons or changes over time or among regions in their relative importance are not available.

Other Characteristics of Exchange Arrangements

Other important characteristics of feeder-cattle exchange arrangements are weighing conditions, relationships with order buyers, preconditioning, grades and standards and sources of market information.

Feeder cattle are typically weighed early in the morning before loading, and a 3-4 percent pencil shrink is deducted to determine the payweight. In instances where suppliers refuse pencil shrink, weighing is usually done at the final destination or otherwise after a haul.

The relationship between an order buyer and his client typically is well-established and based on repeated dealings. Preferences of the feedlot operator became known to the buyer so they need not be stated in full before each transaction. The role of order buyer may be mixed with other roles, such as dealer or auction operator. Little published information is available on order-buying businesses; i.e., typical sizes of order buyers, their sources of supply and dealings with one another, etc.

Preconditioning generally refers to a group of management practices that feeder cattle are subjected to before they are marketed. The intent is to reduce stress on feeder cattle and thereby reduce death loss and improve feedlot performance. Most Kansas and Nebraska feedlot operators indicated that they pay a premium for preconditioned cattle [11, pp. 24-25]. Some, however, feel that adequate information on the value of preconditioning is not available. Williams and Farris [12] concluded preconditioning increases the value of light-weaned calves by $2.00 per head but does not increase the value of heavy-weaned calves.

Both USDA and other feeder-cattle grades are used in market reporting and exchange negotiations. The USDA feeder-cattle grades parallel live and carcass grades for slaughter cattle, and the main quality attributes considered in assigning grades are slaughter potential and thriftiness. Although the USDA grades are perhaps the most widely used, other grades supplement or even replace them in some regions of the United States. For example, "Okie No. 1" and "Okie No. 2" are commonly used grades in the Southwest. These grades do not have universally accepted definitions. Rather they are a convenient means of

conveying information about breed and (or) origin of feeder cattle as well as about quality.

Sources of market information mentioned by Iowa feedlot operators were radio, television, newspaper and magazine reports, and order buyers. Iowa order buyers rely on feedlot operators, cow-calf operators, growers, and USDA reports. The feeder-cattle futures market was mentioned as a source of information but is not widely used for hedging.

SHIFTS IN CHANNELS AND EXCHANGE ARRANGEMENTS

Areas of particular interest as far as changes in feeder-cattle marketing channels and exchange arrangements are concerned include trends in integration and contracting and trends in the use of public markets and order buyers.

Neither forward integration by cow-calf operators nor backward integration by feedlots is increasing rapidly. McCoy [6, p. 20] suggested financing is a substantial impediment to forward integration by cow-calf operators. He also suggests financing and management problems have limited backward integration by feedlots [6]. The Kansas-Nebraska study found establishment or expansion of cowherds by feedlots was limited to relatively small feedlots [11, p. 26].

Use of marketing contracts by growers and feedlots is expanding gradually, but is very dependent on current conditions. Contracting by growers in Kansas and Nebraska, and especially larger growers, increased between 1967 and 1971. Contracting by feedlots also increased in these states. Some reports, however, suggest the amount of contracting by feedlots has dropped sharply since 1973.

Sharp trends in the use of auction markets or order buyers are not noticeable in the major feeding states. There are, however, differences in the use of auctions versus direct sales among different sizes of feedlots. For the largest feedlots, direct purchases through order buyers are more important than they are for small feedlots. In states where feedlot size is increasing, there may be a trend away from the use of local auction markets and a trend toward the use of direct purchases through order buyers.

PERFORMANCE OF THE FEEDER-CATTLE MARKETING SYSTEM

The design of the present feeder-cattle marketing system is perhaps not hard to understand given the nature of the needed assembly function. There are, however, some important deficiencies in the performance of the system.

Several characteristics of the present feeder-cattle production and marketing system result in relatively high feeder-cattle marketing costs. The grading systems used do not permit selling by description, thus

visual inspection is required. And, because most feeder cattle are produced in small lots, physical assembly is often required before cattle are visually inspected and sold. It is more costly to assemble cattle before sale than to ship them directly from seller to buyer. Further, the cost of assembly is higher than it would be if the sizes and locations of auction markets were those that minimize combined assembly, in-auction and delivery costs. Still another source of high marketing costs is multiple handling of feeder cattle during the marketing process. This results not only in increased transportation, feed, and market agency costs, but also in increased shrink loss and stress, which increases death loss and otherwise reduces feedlot performance. Finally, a study by Williams and Farris [12] suggests that costs are higher than they would be if contracting and (or) vertical integration were more common. Costs of cattle produced in systems vertically integrated from the cow-calf operation to the feedlot operation were estimated to be from $2.00 to more than $10.00 per head lower than costs of cattle produced in an open market system.

There may also be deficiencies in feeder-cattle pricing. Because feedlot operators usually have no contact with the producers of the feeder cattle they purchase, prices become the sole means of communication about value differences. Studies have shown there are systematic differences in prices paid for feeder cattle with different characteristics [7]. But there also is evidence that these price differences do not effectively transmit value differences from feedlot operators to feeder-cattle producers. For example, results of a study in Oklahoma [9] suggest there is wide disagreement between feeder-cattle producers and feedlot operators about the characteristics that give value to feeder animals. Concern also has been expressed that small and geographically dispersed auction markets do not provide a competitive environment for price making [3].

Another deficiency in the performance of the feeder-cattle marketing system may arise in the allocation of risk. Production operations such as growing for which value added is a relatively small part of the finished value are subject to considerable price risk. Yet, the extent of, or perhaps opportunity for, risk shifting through contracting or hedging is limited.

Longer-run coordination is also a source of concern. The problem of matching the size of the beef-cow herd with consumer demand for finished beef is one that has not been, and perhaps could not have been, handled well in the past two years.

RESEARCH TOPICS

There is a need for research that would provide a better understanding of the operation of, and trends underway in, the present feeder-cattle marketing system, and for research aimed at designing alternatives to the present marketing system that would lead to improved performance.

Many aspects of the present feeder-cattle marketing system are not well understood. The advantages and disadvantages of specialization in a single stage of feeder-cattle production are not clear. Specialization may permit better use of resources in certain regions of the United States (e.g., central Iowa may well be suited for growing operations but not for cow-calf operations or vice-versa), but it may increase producers' price risk. Neither the extent of nor the trends in specialization is clear. Information on the extent of multiple handling in feeder-cattle marketing is not available. Also, the benefits or reasons it is done, the costs, and the incidence of the benefits and costs are not understood. Similarly, the amount of cross hauling, the benefits and costs, and the incidence of benefits and costs from cross hauling are not clear. Clearly order buyers are very important intermediaries, but little is known about the structure and competitive environment of the order-buying industry. The impacts of size and level of utilization on auction market costs have been studied, but least-cost location patterns that take into account assembly, in-auction and delivery costs under typical market-share patterns have not been determined. Very little information on contracting is available. Benefits and costs of contracting are not clear, nor are factors causing fluctuations in the use of contracts. Also, given the results by Williams and Farris [12], it is not clear why contracting and vertical integration has not increased more rapidly. There have been complaints that prices at local auction markets are not competitively determined, but it is not clear what conditions are needed (e.g., the number of bidders) for prices to be competitively determined. Also, feeder-cattle prices evidently do not convey information about value differences back to producers, but it is not clear what kind of information package is needed to effectively convey this information. For many of these topics, a regional research effort would probably be more successful than a research effort confined within the boundaries of a single state.

Research on these topics might be a part of a broader regional research program to design and evaluate alternative marketing systems. The broader program of research might involve these steps: (1) identify attributes of market outcomes that are affected by, and should be considered in evaluating the design of a marketing system; (2) define measures of these attributes; (3) design alternative marketing systems; (4) obtain a value of each attribute measure for the present and each alternative marketing system; (5) use these results to determine "attribute possibility frontiers"; and (6) develop an objective function by assigning weights to measures of the attributes and determine how the "best" design of the marketing system changes as the relative weights assigned to the attributes are changed.

Several problems would need to be overcome before useful results could be obtained from such a research program. A few can be anticipated. It would be difficult to develop a manageable but comprehensive list of attributes to be considered, especially if the use of vague

terms such as "pricing efficiency" is avoided. It would be difficult to define any measures of some attributes but for others there would be several measures. Also, it would be difficult to define a comprehensive list of alternative marketing systems. It may help to first define components of a system. For example, one component might be the coordination instrument. Alternatives here should surely include both price and nonprice instruments. Further, alternative price-coordination instruments might include telephone auctions, teletype auctions, and electronic exchange mechanisms [4]. But, there very likely are others that should be considered if imagination can produce them. Facilitating institutions, such as the grading system and implementing legislation or institutions would also need to be considered. Values of attribute measures for each alternative marketing system will be hard to obtain because there will be no sample period on which to base empirical work.

If these problems, and other problems encountered, could be overcome, some very useful information could result. It would be possible to determine tradeoffs between market attributes. For example, the tradeoff between time required to complete a transaction and exchange efficiency could be determined. Also, it would be possible to determine over what range of relative weights in an objective function a given marketing system remains "best." This sort of information is not now available but really is needed to make responsible recommendations.

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