WORKSHOP
PROCEEDINGS

VERTICAL COORDINATION

IN

LIVESTOCK MARKETING

SOUTHERN REGIONAL LIVESTOCK MARKETING
RESEARCH COMMITTEE

March 11-14, 1969

Houston, Texas

VERTICAL COORDINATION IN THE LIVESTOCK INDUSTRY--
ITS EXTENT, NATURE, CAUSES

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Vertical coordination of economic activity is defined by Mighell and Jones ([6], pp. 4, 11) as including all ways in which the various stages of production and marketing are fitted together either through internal or external activities of the firm. The free market of Adam Smith is an institutional arrangement for accomplishing this; in fact it is the traditional norm for economic analysis. Inasmuch as the directions for preparing these papers specify using the Mighell-Jones definition, a documentary of free market performance in the livestock industry from the Civil War period to date would be in order.

This introduction to the assigned topic should not be taken as a jest, but as an introduction to the following considerations: The free market has not done too bad a job in reflecting consumer demand, allocating resources or promoting efficient production. If consumer preference is reflected by per capita consumption in the long run, consumer preference for beef has prevailed at the expense of pork and lamb. Free-market data also indicate an expansion of red meat production relative to meat prices.

Vertical coordination in this paper will be used in a somewhat broader context than the term vertical integration[1] inasmuch as contractual arrangements will be considered where possible.

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[1]Defined by Mighell and Jones [6] as another term for internal coordination of stages of production.

Extent of Vertical Coordination in the Livestock Industry

The extent of vertical coordination in the livestock industry may be considered in the dimensions of the national trend and a cross-sectional, spatial context for cattle, hogs and sheep. The national trend in contractual arrangements will be considered first followed by national trends in ownership and the spatial dimensions of the same.

Contracting for future delivery of slaughter cattle by 41 meat packing companies were reported by the Food Commission for the 1957-64 period ([7], p. 103).

	Cattle Purchased in Advance of Slaughter	
	11-30 days (1,000 head)	Over 30 days (1,000 head)
1957	23	7
1958	24	4
1959	22	4
1960	30	5
1961	37	5
1962	76	6
1963	72	6
1964	80	7

Short term contracts prevailed and showed a substantial increase in the early 1960's.

Contracted cattle made up 2.1 percent of these firms' slaughter in 1957 and 3.0 percent in 1964. Longer term contracts (over 30 days) were inconsequential, and are probably the only contracts representing vertical coordination.

In the 1957-64 period, purchases of sheep and lambs 10 days or more prior to slaughter ranged from 1 to 3 percent of slaughter by these firms. Unfortunately neither of these series have been maintained in the post-Food Commission era.

Feeder cattle have been contracted for some time. No data concerning the volume of these contracts are available. Qualitative comments indicate that the volume of contracting varies with the cattle cycle.

Feeder-pig contracts have increased in recent years. Many of these are contracts involving commercial feed companies. Again volume data are not available.

One form of vertical coordination between the meat packer and retail firms involves formula pricing. Meat packers and processors surveyed by the Food Commission in 1964 reported 41 percent of their beef and veal, 41 percent of their fresh and frozen pork and 24 percent of their lamb sales to their most important customers being sold on a formula price. Williams in a special report prepared for us this fall [9] indicated that some observers of the industry felt 70 percent of the meat in their areas was being sold on a formula basis. However, Williams concluded from his own investigation that mainstream packers, the shipper-type packers, were resisting formula pricing in any form and that the volume of meat involving by formula is a "good deal" less than supposed.

Vertical integration exists in its true sense when two or more stages of production and/or processing have a common ownership. One form of vertical integration in the cattle sector involves cattle feeding by ranchers who produce feeder calves. In 1964, Williams analyzed the structure of 15 major cattle feeding States for the Food Commission ([10], p. B7). He estimated that 15.5 percent of the fed cattle marketed during 1964 from feedlots in

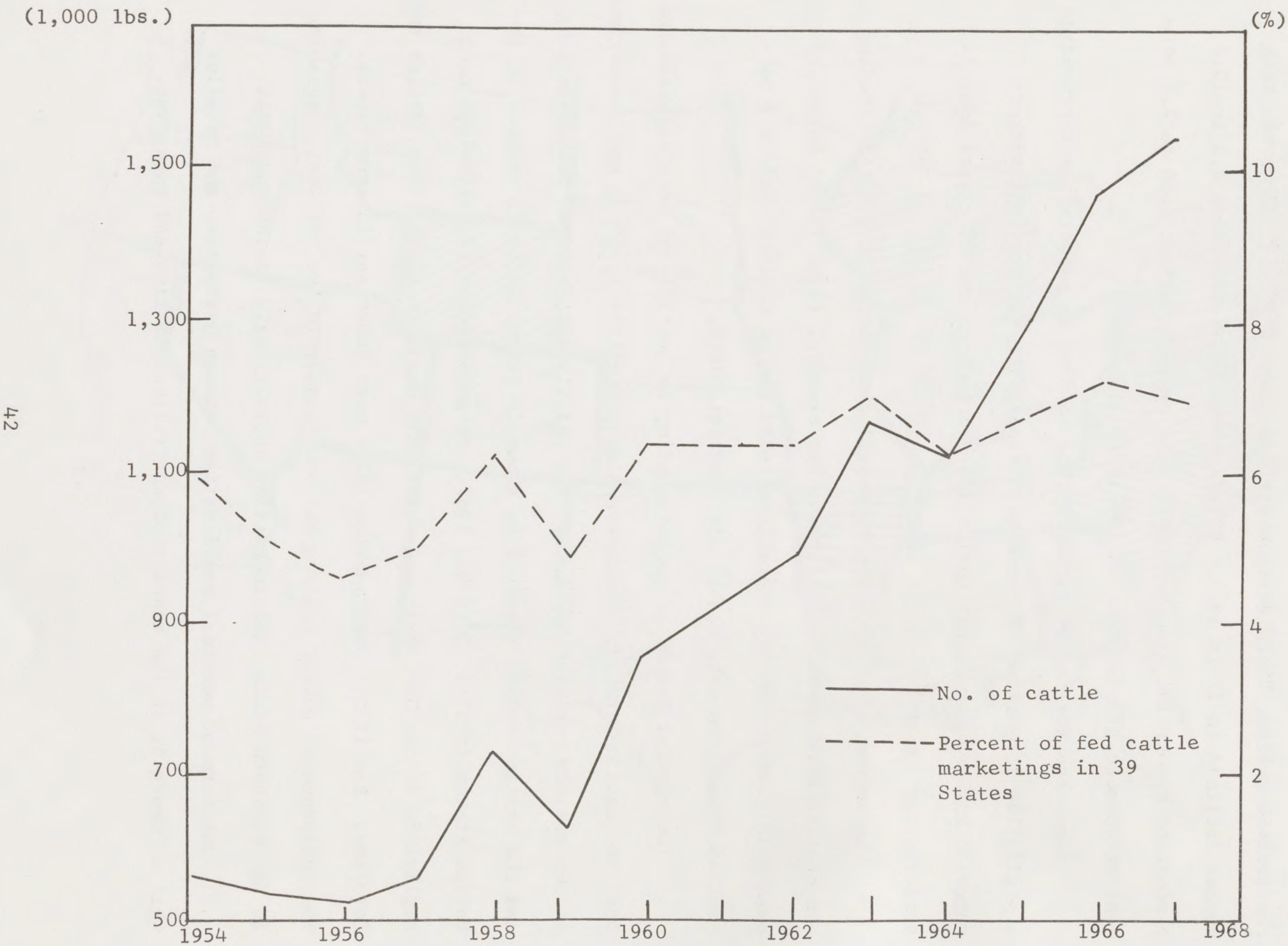
15 states were owned by ranchers. In 1966-67, separate studies by Burke and Dietrich [1, 4] indicated that 11 percent of all cattle surveyed in the feedlots they sampled were owned by ranchers. When only feedlots having a capacity over 1,000 head were considered, ranchers owned 13 percent of the marketings from these larger lots.

The phase of vertical coordination which is causing widespread concern in the livestock industry today is the feeding of cattle by meatpackers. Considerable data on the extent of packer feeding has been generated by the Food Commission and the Packers and Stockyard Administration.

According to the Packers and Stockyard Administration, 165 meatpackers fed cattle in 1954 while 198 fed in 1967 [8, T8]. During this 13-year period, the number of packers feeding cattle ranged from 151 in 1957 to 215 in 1962. The number of cattle on feed owned by packers is shown in Figure 1 along with the relationship between packer feeding and all cattle feeding. While the number of cattle fed by packers has increased threefold since the mid-1950's, much of this expansion has been correlated with the growth of cattle feeding in general. In 1956, packer-owned cattle in feedlots represented 4.6 percent of fed cattle marketings. Packer-feeding was expanded to 7 percent of fed cattle marketings in 1963 and remained relatively stable through 1967.

Additional cattle are fed by packer-associated interests. This amounted to an additional 770,000 head in 1965. Inclusion of cattle fed by packer associates raised the percentage of "packer-controlled" cattle to 11.8 percent of fed cattle marketings in 1965.

Figure 1.--Packer ownership of cattle on feed



Meatpackers have also been engaged in lamb feeding activities. During the 1960-64 period, 25-30 meatpackers fed lambs [8, T11]. However, this number declined to 12 in 1967. Packer-owned lambs comprised 3.3 to 10.2 percent of commercial slaughter from 1962 to 1966, but dropped to 7.2 percent of commercial slaughter in 1967.

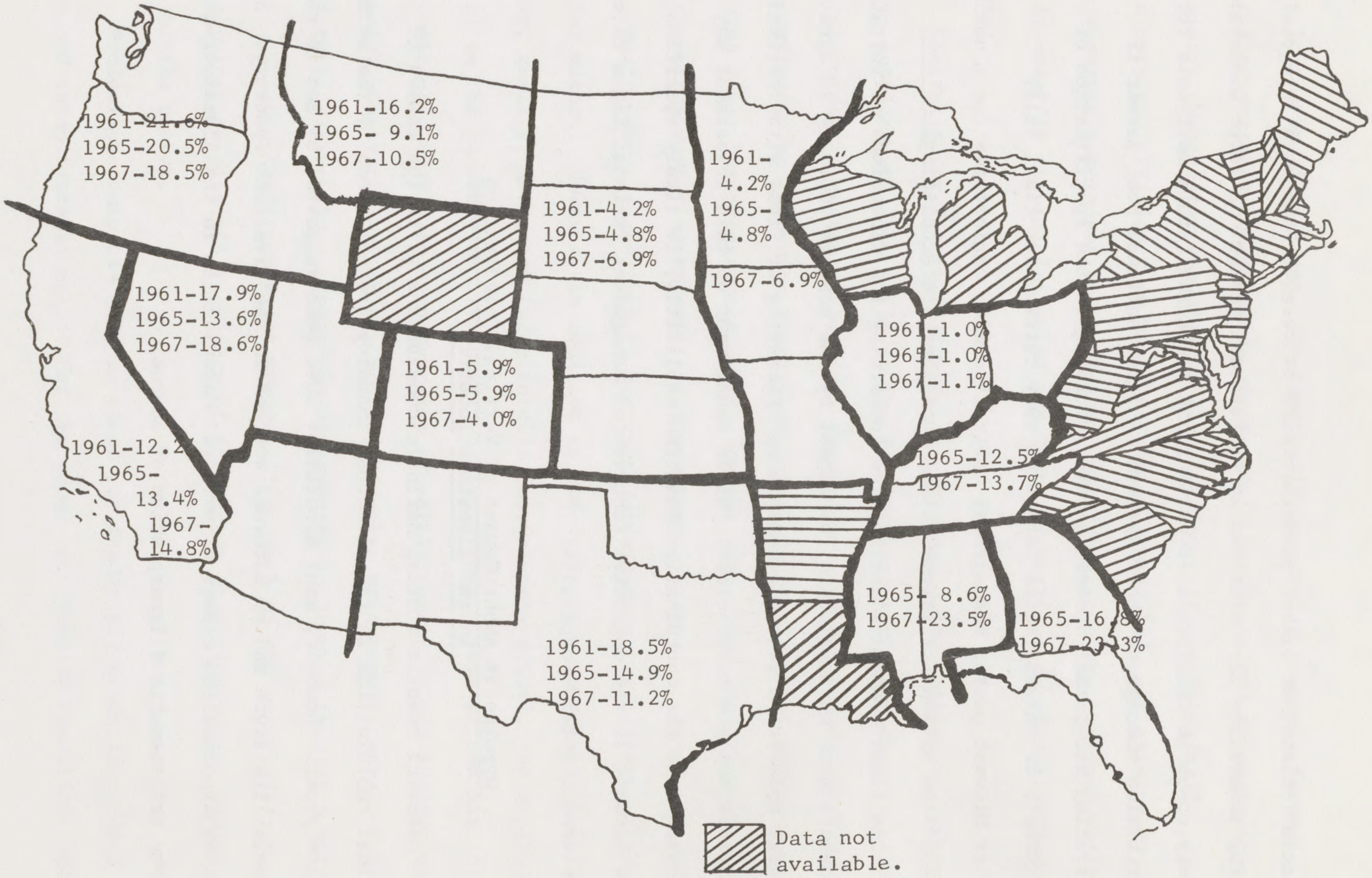
Some hogs are fed by packers. Hog feeding by packers has represented a negligible proportion of commercial slaughter. Twenty-four packers reported hog-feeding operations in 1967 to Packers and Stockyard Administration, as opposed to 43 in 1962.

The extent of integration by retail food stores into cattle feeding has created more "smoke than fire." For example, in Williams' survey of commercial cattle feeding operations in 15 States in 1964, only 0.7 percent of the cattle were fed by all food retailers.

The spatial nature of packer-feeding is possibly of more significance than the national trend. Packer-feeding activities in 30 of the 48 contiguous States are now reported by State. The relationship between packer-feeding and the cattle feeding industry is shown in Figure 2 for 12 regions of the United States in 1961, 1965 and 1967. Packer-feeding of cattle has been negligible in the Corn Belt and relatively small in the Northern Plains and Colorado. But it has been substantially more important in other areas. The incidence of packer feeding has been stable in the Far West, declining in the Southern Plains and increasing substantially in the Southwest.

One form of vertical coordination between meatpacker and retailer that is emerging is the concept of centralized cutting and packaging.

Figure 2.--Ratio of packer-fed cattle to fed cattle marketings, 1961-1967.



Potential exists for either packer-forward or retailer-backward integration. Several innovators have effected an operational system. A large wholesale grocery co-op in California is cutting and packaging retail meat cuts for distribution throughout their system. A large national beef packer is fabricating sub-primal wholesale cuts according to the specification of restaurants or retail chains for quick easy cutting for final sale. Another Midwest packer has already contracted with chainstores for a national distribution system for frozen retail cuts they are processing.

One final comment might be made concerning the dimensions of vertical coordination in agriculture. Investment by the nonfarm populace in agricultural enterprise is now commonplace. Financing of firms with vertical dimensions may now be possible. While management of this investment may not enter into the coordination function explicitly, it likely specifies a new element in the objective function of management (maintaining a rate of return on outside capital).

Hypothesis About Causes of Vertical Coordination in the Livestock Industry

Research results stating definite conclusions as to the causes of vertical coordination in the livestock industry are not known by the author of this paper. However, many hypotheses have been suggested by and in the economic literature and by informed sources in the livestock industry. Some of these hypothesized causes of vertical coordination in the livestock-meat economy are summarized irrespective of source.

In the broadest sense, the hypothesis concerning economic forces generating vertical coordination arrangements may be termed reducing uncertainty. Manchester sub-divides this into operational (physical) efficiency and efficiency in the information system [5]. In this paper, more specific hypotheses about economic considerations are outlined which likely underlie the initiation of the types of vertical coordination specified herein:

<u>Contracts for future delivery</u>: In periods of the cattle cycle when feeder supplies are low, it is to the feedlot operator's advantage to contract in order to guarantee supply. The feeder also can establish price with certainty and can also specify quality characteristics. Contracting may also lower his procurement costs. On the other hand, contracting reduces the rancher's marketing expense and guarantees a price.

Meatpacker's incentives to contract for slaughter cattle are of a similar nature. However, in addition to the feature of establishing future supply, quality, and price (or a formula for delivery price), the contract may allow the packer some latitude in delivery date. This allows him to use contracted cattle to even supplies of cattle coming to him through other channels. Contracts may or may not lower packer procurement costs. Contracts for direct delivery to a packer can be expected to lower a feedlot's marketing costs. While a feeder does not remove all or much of the uncertainty of final price, he pits his knowledge of the market at delivery time against that of the packer.

Production contracts such as those for feeder pig production set a price and establishes an outlet for the producer. Usually operating capital is provided. Currently, the contracts are generally offered by feed manufacturing companies or other suppliers of input services. The contract guarantees a market for their product and they may also profit by resale of the animal.

Formula pricing of meat as a form of contracting has gained in importance as selling costs rose for medium and small volume packers in particular. The growing need for retailer's to specify quality of product have also been a stimulus. However, imperfections in the communication of market information are hypothesized by many as the leading cause of formula pricing.

Coordination through Ownership: Some ranchers have had all or a portion of their feeder cattle production custom fed or have built their own feedlots. One of these courses of action may be initiated by what they feel is an unsatisfactory feeder-cattle price or their desire to share the profits (or losses) from feeding. Retained ownership provides operating capital for feedlot operations. Custom feeders are merely selling services, feed, or both.

Many hypotheses have been raised concerning the meatpacker impetus to feed. One hypothesis advances the premise that the packer can use his cattle as a supply regulator to affect market price of all cattle. Other hypotheses on the packer side relate to reasons similar to those supporting contracts. The packer can use his own cattle to maintain a steady flow of cattle through his plant (within specified time limits). By doing his own feeding, he can control the kind and quality of cattle he desires. Transportation and other procurement costs may or may not be reduced; they may be shifted back to the feeder procurement level. Packers may enter the feeding business for profit, and at times tax advantages may accrue to the dual operation. On the other hand, large feedlot operations may go into the meatpacking business for the reversal of the same reason. Inherent complimentary technology and organizational efficiency may be advanced as an overall hypothesis for either forward or backward integration between the meatpacker and livestock feeder.

Centralized meat packaging may be initiated by either retail firms or packers. Retailers have the lures of maintaining their specifications, lowering butcher costs at the store level and evening out the flow of product to its final destination. Packers who fabricate retail cuts can produce a differentiated product which may be able to command a higher price. Transportation costs may be lowered not only as a result to further weight reduction but also as a result of a more efficient use of shipping vehicle space. Considerable potential exists for economies of scale, particularly in the area of by-product disposal.

The final dimension of coordination listed in this paper was the influx of outside capital. Some investors may look on it as a competitive rate of return. However, the return to capital in agricultural processing has usually been low; this gives rise to the hypothesis of investment for tax shelter. Hoy Carmen discusses this situation for breeding stock investment [2]. Similar situations are likely present in other areas where long-term capital gains are involved.

Vertical coordination in the livestock industry has been a widely discussed topic for over 15 years. Throughout this period, its extent has in general been minor with few clearcut trends. Data for research of an hypothesis-testing nature have not been available. Yet much concern pervades the industry, since the hypothetical causes for increased vertical coordination lead them to believe that the potential for profits through the efficiencies it offers are as bright or brighter than ever.

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