

**AUTHOR'S NOTE**

Economists of my era of training have a strong bent toward theory. I think that we subconsciously envision ourselves as reincarnations of Adam Smith and Alfred Marshall. In the piece "Futures Markets and Equity Capital," the development of a theoretical base was irresistible. It was built on observation of the worlds of both futures trading and changing agriculture. As was then my strong bent, the discussion led to advocacy of more and better systematic speculation in futures markets.

## FUTURES MARKETS AND EQUITY CAPITAL

### CHAPTER 28

The purpose of this first presentation of this program is to set the theoretical framework into which the more applied aspects of the place of futures trading in agribusiness finance should be placed. The basic point that I want to make is that futures contracts are financial instruments, and futures markets are financial institutions. This concept of futures markets is in sharp contrast to the more usual view that they are glorified crap games that, happily, have a useful economic spin-off in the provision of a risk-shifting hedging medium.

The traditional discussions of futures trading describes its origin and development out of the need to shift risks, the generation of short futures positions by inventory holders, and of off-setting long positions taken by speculators. It is clear that the need to shift risks was the original impetus for the development of the markets and that, for more than a century, the hedging of price risks has been the dominant force in determining the size of the markets and the fluctuations in the level of trading. However, this description does not explain why the activity takes place—why some businessmen involved in commodity production, marketing, and use have a compulsion to hedge risks while others do not. To observe the practice is useful and adequate for understanding the past and present. It is necessary to inquire into the motivations of hedgers and the institutional arrangements lying behind the hedging activity if we are to fully understand the why of that which has taken place and to make progress in charting the course that lies ahead.

### FINANCIAL INSTRUMENT

A futures contract is a financial instrument, and futures trading is a financial institution engaged in gathering and using equity capital. It is not a financial institution in the sense of a bank in which money is received from one group of people and loaned to another. Rather, it is a means by which loans made by banks or operating money otherwise secured by businesses is guaranteed against loss. When a bank loan or capital from other sources can be protected from part or all of potential losses, it is more readily forthcoming than when it cannot. Operating

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businesses acquire debts that they add to their own new worth to build a total operating capital structure. By this process, they can control capital without owning it, and the people from whom they obtain funds can own capital without administering its use. The financial system is the means by which the ownership of real capital is separated from its control. Futures markets are a part of the system. In this context, a futures contract is the exchange of a monetary obligation, or debt, for a commodity obligation, or debt. The long speculator exchanges his own monetary obligation, or debt, for a commodity obligation, or debt. The long speculator exchanges his own monetary obligation to pay for the commodity for the obligation of the hedger to deliver the physical commodity. The short speculator exchanges a monetary obligation to buy and deliver for the commodity obligation of the hedger to accept and use the commodity. Thus, the hedgers remove themselves from financial debts by substituting commodity debts for them. The financial obligations are assumed by the speculators.

This process of debt exchange through the financial system enables resources to be used more productively, and from this the social benefits of the financial system flow. The consolidation of resources through the exchange of debt enables the increased productivity associated with large-scale enterprises. The ownership of scarce resources is widely diffused, and if it were not possible to consolidate their control, production would be quite as diffused as ownership. This would result in small-scale production, limited technological advance, and less total productivity. Control of capital needs to be consolidated into the hands of the people who can use it most efficiently, and people who can operate businesses most efficiently need access to capital beyond their own equity.

Historically, we have tended to look on speculators as the people who accommodate the hedgers in a null fashion, appearing when and only as needed. As we turn to borrowing money from banks to finance stored inventories, we tend to merely note that warehousemen who have their inventories hedged can borrow more money than those who do not. This does not do justice to the speculator. By committing his wealth to commodity futures, he influences the warehousing activity and its cost and, thus, becomes an important financier.

### **FINANCING PROCESS**

The process by which equity capital is raised through futures trading can best be seen by some examples. First, the importance of hedging in financing stored inventories of grain has long been recognized. Terminal elevator operators, cotton merchants, grain processors, and, to a lesser extent, country grain warehousemen are able to borrow in excess of 90 percent of the value of stored commodities at prime rates of interest, providing that the inventories are offset by short positions in

futures markets. Warehouse receipts serve as collateral for the loans so that the general balance sheet and liquidity of the company are not affected by the inventory ownership except for the small difference between the value of the cash commodity and the amount of the loan. In some cases in which the capital position of the company is so fully extended before borrowing to buy inventory that the commodity loan would restrict financing of noninventory activities, separate warehouse companies are established or a system of field warehousing is used. In such cases, the commodity inventory does not enter the balance sheet.

The inventory loans are sometimes worked up to quite high levels. Banks frequently loan the margin deposit on the futures transactions as well as a high proportion of the current value of the inventory. Or they loan the full value of the inventory on the basis that the margin deposit is quite enough protection. In general, the value of stored commodities tends to increase in relation to the futures price as the storage season progresses. For example, corn in country locations may sell 25 cents under the July futures price at harvest and typically sell for 4 cents under the July on July 1. There is thus a highly probable 21-cent storage profit in a hedging operation. Armed with this information, the country elevator operator may go to his banker and ask for the full purchase price of the corn, the margin requirements, and even a part of the storage earnings and thus finance part of his operating costs in addition to the inventory. Bankers are not inclined to go so far, but the operator may get away with the full purchase price and margin plus a promise of the storage earnings as they accrue.

As time passes, the price of the commodity and, hence, the market value of the warehouse receipts, changes. If the price goes down, the bank reasonably wants part of its money. It is readily available out of the increased value of the short futures position. The warehouseman asks his commission futures for the money the bank wants. If the price goes up, the short futures position shows a loss, and the commission house calls for margin. The value of the warehouse receipts has increased, and the additional margin is forthcoming from the banker.

The point of this is that ordinary bank financing is readily available for the purchase and storage of hedged inventories. This is not the case for unhedged inventories. The transaction is put on the balance sheet, and a normal liquidity margin is required. The proportion of the loan may be 60 percent or so—certainly a great deal less than for hedged inventories. The equity capital that the operator must furnish is very much less for hedged than for unhedged inventory. The uncertainty of the warehouseman's return is reduced by hedging, but the total uncertainty of the storage venture is not. The fact remains that the market value of the commodity may decline so that the return to storage may be less than zero, or it may increase so that the return is much more than the cost of storage. Losses are taken

out of someone's equity, and gains are paid into someone's equity. On the other end of the hedges stand the speculators. The flow of funds from commission house to warehouseman to bank or from bank to warehouseman to commission house as prices decline or increase, flows further to the clearinghouse and then from or to the speculators, decreasing or increasing their equity. The speculator is thus a financier, furnishing the equity capital required to absorb changes in price level.

This process of financing is roundabout and specialized. It would be theoretically possible for the warehouseman to go directly to individuals for the money, selling them warehouse receipts and charging them storage. The individuals would, in turn, go to banks and borrow, on the basis of their net worth, the money to buy receipts. It would be a clumsy system, with banks making very small loans to speculators instead of a few large loans to hedgers. More important, it would have little attraction to speculators because they would be furnishing the total of the funds rather than the equity necessary to finance price variations. Further, it is difficult to visualize such a scheme sufficiently sophisticated to afford liquidity comparable to that of futures trading. More likely, the warehousemen would reorganize the financial structure of their businesses in a way that would make the assumption of equity financing possible.

Futures markets originated out of a need by country grain merchants for equity capital, just as egg warehousemen turned to their friends for the equity capital to carry inventories. It is worth noting they did not necessarily lack the net worth to obtain funds from the banking system; in the case of eggs, net worth was more often adequate than not. They simply preferred not to endanger their capital structure to the extent they judged the price risks of a full inventory would endanger it. The system evolved over a long period of time as the most attractive among the alternative ways of gaining access to equity capital.

A second example relates to cattle feeding. The production of market beef is a two-stage process. The animals are raised from breeding herds on the grazing lands of the West and South and moved into specialized feeding yards or onto grain-producing farms for further growth and fattening. The traditional pattern, now much modified by the development of large, specialized feeding yards, was from the forage-producing lands of the plains and mountain states to the corn-production lands of the central states, particularly Iowa and Illinois, and then on to the central markets for slaughter and shipment to eastern consumption markets. Farmers buy feeder cattle, feed them grain and other concentrates, and sell them for slaughter. Their profits and losses depend on their skills in feeding cattle and on the price of fat cattle in relation to the purchase cost of feeder cattle and the cost of feed. They are part cattle feeder and part cattle speculator.

Some cattle feeders follow the same pattern, year in and year out, buying the same size and quality of feeders at the same season each year and feeding them to the same weight and quality for sale. For these people, variations in the feeding margin average out over a number of production cycles so that, in the long run, they get the industry average returns (plus or minus their own technological skills in relation to those of the industry). But the long run may be several years so that a large reserve of equity capital is necessary for survival. This group of people are speculative nulls. Most cattle feeders, however, vary their operations on the basis of existing and expected prices and price relationships, becoming active participants in the speculative game. They buy different sizes, kinds, and qualities of cattle and sell at different weights and qualities in different production cycles. At times, they leave their lots empty and sell part of the feed supplies that they have produced on their own farms and, at other times, they increase the size of their operation and buy additional feed. The extent to which programs are varied differs greatly within the cattle-feeding fraternity. Some of the members are more speculator than feeder.

On the farm that the operator owns, which produces a surplus of feed, and on which one or two carlots of cattle are fed each year, the money to purchase feeder cattle is readily forthcoming from usual financial institutions. On smaller farms where more cattle are fed or on tenant-operated farms, money for the purchase of cattle is more of a problem. The equity position of the feeder influences the size and kind of operation. With a small equity, they feed small droves of small cattle. When calves (300 to 500 pounds) are bought and fed to 1,100 to 1,200 pounds, variations in the fat cattle price endanger the security of loans used to purchase feeder animals less than in the case when 900-pound cattle are fed to 1,100 pounds. Who feeds what size of cattle is partially determined by the equity position of the feeder, just as entry into the business is limited by the availability of equity capital.

When cattle futures trading was started in 1964, the game changed. Suppose that a young tenant farmer approaches his banker for a loan to purchase a drove of 700-pound feeder cattle; he already owes the bank for a loan to pay part of his operating costs in feed production. He shows the banker the purchase cost of the cattle, operational costs in feeding, the current price of fat cattle, and the profit margin. The banker says, "If the price of fat cattle goes down, you can't pay off; your equity is too small. I won't make the loan. However, if you will sell cattle futures, you will be guaranteed a profitable operation. On this condition I will make the loan." Without the sale of futures contracts the equity is inadequate, while with it, it is. From whence cometh the equity capital? From the purchasers of the contracts—the speculators.

## PYRAMIDING OF CAPITAL

The command of resources can be greatly increased by hedging inventory risks or by pricing finished product before operating costs are committed. A loan rate of 90 percent on hedged inventory enables a firm with \$1,000 of equity capital to contract and use, in a storage and merchandising activity, \$10,000 worth of a commodity. A loan rate of 60 percent is two-thirds as much; however, it enables the control of only \$2,500 of inventory. Thus, the increase in the borrowing rate from 60 to 90 percent enables the control of four times as much capital. This is illustrated here at a 60 to 90 increase so that the numbers remain finite. As we have seen, a 60 to 100 increase is feasible. In this case, the equity capital requirement for price protection is zero, and the multiplier is infinite. Constraints on the growth of the business are from sources other than equity capital for inventory control.

The impact of equity financing through fixing sales prices of products ahead of production is equally impressive. Suppose that a corn producer is operating 1,000 acres and is contemplating expanding to 2,500 acres by leasing additional land. Assume that his lease cost is \$40 and his operating cost other than return on fixed investment in machinery and equipment is \$40 per acre, his anticipated yield is 100 bushels, and the net price that can be obtained is \$1 per bushel. He thus has a prospective operating margin of 20 cents, or a total of \$50,000 compared to a current \$20,000. He will use up virtually all of his balance sheet liquidity in the purchase of additional equipment. He has to furnish a bank guarantee for payment of the lease. How much of his own equity must he hold for operational costs? It depends on the percentage loan. Price-vulnerable, the bank may loan 60 percent, requiring \$40,000 of operator equity, but not price-vulnerable, the bank may go 90 percent, requiring only \$10,000. This latter amount is not really a price vulnerability equity but rather a guarantee of the organization and management skills of the operator in the production process his technical ability. If his past performance record is excellent, the bank may loan the whole of the operational cost and the lease guarantee.

The ability to obtain the operating capital is not the only consideration in fixing sales prices. It protects the operator from his own mistakes. The market may not offer a price as high as \$1, making the expansion less attractive or possibly unprofitable. The operator may optimistically—as is the nature of farmers—expect the price to eventually turn out to be \$1 or more, commit his own equity, and fail. If the futures market will not furnish the equity and he cannot otherwise obtain it, he, the operator, is protected.

More important, the process protects the equity capital of the operator. He may not elect to make the expansion if it must be done at the hazard of the equity that he has built up. He may be willing to hazard his net worth on his ability as a corn pro-

ducer but not as a corn speculator, especially if he recognizes that he is tied to the long side of a speculation with no flexibility. He would be long 250,000 bushels of corn throughout the production period and thus a speculator on the price of corn. The old 100,000-bushel level may be more attractive. If it is, the expansion may not be made. Equity capital from futures markets may affect the business structure and efficiency of corn production. This is but one example. Others can be drawn from any of the commodities actively traded.

#### ATTRACTION OF THE SPECULATOR

There is something ridiculous about explaining to a member of the speculating public who is a chemist or a private detective that he, fine and noble entrepreneur, is furnishing the equity capital to feed cattle or produce plywood. Told so, he is apt to reply, "Who, me? I'm just trying to make a fast buck in a market where I can get high leverage on money that I am willing to lose (heaven forbid)." Shades of Adam Smith; not only is he led by an invisible hand to increase total productivity, but he thinks it is a quite different one.

This process of equity capital flow from speculative markets is an example of commercial specialization among financial institutions. The process of gathering up money is separated from hazarding equity. One is the business of the banking system, while the other is that of speculators.

The division and specialization is the thing that attracts speculators. Had they to furnish the whole of the operating capital to produce corn or buy feeder cattle, there would be little attraction. They are only interested in furnishing the equity and taking the risks. A high proportion of commodity inventories for which futures markets exist are hedged. But only a small part of the production of corn, cattle, plywood, orange juice, etc., are forward-priced in futures markets: the equity capital is otherwise forthcoming.

This gets us to the question of the adequacy of futures markets, regarding both size and cost. Futures markets are larger financial institutions than is generally recognized. In 1969, there were 11,206,685 contracts traded on U.S. exchanges. The average value of each contract was on the general order of \$11,000, so that the total dollar value was on about \$123 billion. But this is not the most meaningful measure of the size of the markets. A more meaningful one is the open interest. It represents the quantities and values that are at hazard, the amount of risks that are outstanding. Some are hedger to hedger (or, more accurately, trade interest to trade interest), some hedger to speculator, and some speculator to speculator.

In most markets, a fairly high proportion of the open positions are opposite cash positions and thus represent actual commodities. The average number of open

contracts for the regulated commodities (about 80 percent of all trading) in fiscal 1968–69 was about 240,000. Their value was approximately \$1 billion. Not all of this was at hazard because price variations are less than 100 percent. If we think in terms of price variations on the order of plus or minus 10 percent, some 20 percent of the value, or \$380 million, was truly at hazard.

These are interesting and impressive numbers, but they are not very meaningful unless they are compared to something. In the context of the effectiveness of the system in providing equity capital, the germane comparison would seem to be with the total risk load. Production, average stock, and average open interest for five commodities for fiscal 1968–69 were as follows:

COMMODITY	PRODUCTION	AVERAGE STOCK	AVERAGE OPEN INTEREST
Wheat (mil. bu.)	1,570	1,346	215
Corn (mil. bu.)	4,375	3,011	246
Soybeans (mil. bu.)	1,080	707	167
Cattle (thous. head)	14,063	5,920	897
Hogs (thous. head)	94,496	57,205	67

These are some of the oldest, largest, and most highly developed markets. They are used extensively by producers and commercial people and are widely regarded as useful tools in production and inventory management. But as we compare the total risk load, as measured by either production or stocks, it is clear that only a small proportion of the total risks ever get involved with futures trading. One must be impressed not with how large the markets are but rather with how small they are relative to their potential.

#### NEED FOR MORE SPECULATION

The structure of agriculture is changing from small units to larger units, and an increasing proportion of inputs is variable costs in contrast to fixed cost on land. The need for equity capital per unit of output is increasing rapidly. I should thus expect a rapid growth in futures markets. The total volume of trade doubled in the decade of the 1960s. There should be a much greater growth in the 1970s.

These markets are an excellent source of equity financing. Extensive studies of price variations in futures markets have been made. The conclusion is that in the developed, successful markets, variations are random. From this it follows that returns to speculators are zero minus the cost of doing business commissions. In hedged inventory and production operations, there is a zero or negative interest rate on the high-risk capital that finances price variations compared to a usual bank interest note on the nonrisk capital. It is difficult to think of a better source of equity financing than one that furnishes it free.

From this notion that equity financing flows from futures markets, it follows that speculators are truly investors in the production and marketing processes. From the smallness of the markets in relation to the total risk load, it follows that there is need for much more speculation. The great weakness of futures markets is that they are grossly underspeculated.