Part IV

MARKET OPERATION

The purpose of this brief concluding section is to call attention to some things that might be done to improve the way that futures markets work and to pick up some loose ends, particularly having to do with controversial issues, that have been left dangling. To this point we have looked at what the markets are, how they operate, and how they have developed, looked at what they are about in terms of the economic functions undertaken and performed, and looked at how they are used by people in the commodity trades and by speculators. It is sorely tempting at this point to say that to understand is enough and end the discussion. But no member of the economics fraternity can resist an opportunity to evaluate and pontificate.

Futures markets are dynamic institutions: new exchanges are formed and old ones decline and disappear, commodities come and go, the total volume of trade doubled during the decade of the 1960's, and increased even more rapidly in the 1970's, the rules under which exchanges operate are continuously changed, and the laws regulating exchange operation and trading are continually revised. The changes in futures trading are influenced by the commodity context within which markets operate, by the governance of the exchanges and by the regulation of exchanges and trading. The future development of markets will be influenced by changes in the economic needs for their use and knowledge of their operation by people in the commodity trades, by actions of exchanges, and by regulation.
Market Operation

In the past, markets have had to swim upstream against an extensive ignorance of their usefulness in the commodity trades, against efforts to maintain less than fully competitive positions by industry, against a generally negative governmental attitude, and against exchange operations that have both failed to grasp the economic role of futures trading and pandered to the negative clamor surrounding them. What is needed now is not more controversy over the same old ground, but a positive look at the potential role to be played in a competitive economy and the weaknesses in the system that impair expansion to fill the role. There needs to be much less passing of aggregate judgment about good or bad and more acceptance of markets for what they are so that the bits and pieces can be examined for points where improvement is needed. The markets need to be accepted for what they are. They are old and venerable institutions that have stood the test of time. Economic usefulness is proved by persistence and by use. At the same time, there are weaknesses in operations that impair usefulness and changes that need to be made.
CHAPTER 14

Market Performance

How good are these markets? The question has to be answered in terms of how well they perform their economic functions in relation to how well the functions might be performed in the absence of the markets on the one hand and how well they perform in relation to how well they might perform if changes in their organization and operation were made. In the past, most of the evaluation has been made in the context of "there ought to be a law," either to abolish and prohibit all futures markets or specific markets as onions and potatoes or to further regulate markets to prevent speculative excesses and abuses. This context has resulted in a choosing up of sides in which the protagonists tend to be either for or against and find only good or evil. The weight of the arguments has tended to find futures markets "not guilty," at least not guilty to the point that they should be banished from the scene or completely circumscribed. Only in the one instance—onions in 1958—has a market been executed by law although numerous other attempts have been made. A large amount of legislation and regulation has been passed and exists. However, a major revision and extension of regulation was largely rejected by the Congress in 1966. The major revision passed in 1974 was very different than the original punitive bills proposed in 1973. There appeared to come out of the extensive hearings the most favorable (or least unfavorable) image the institutions have had. It would almost seem that the "either/or" controversy was laid to rest and a decision made to limit circumscribing legislation.1 Perhaps never before have comprehensive legislative proposals been so thoroughly battered by so many people. If this did end broadside attacks and put discussion out of the halls of

1 See To Amend the Commodity Exchange Act, Hearings before the Subcommittee on Domestic Marketing and Consumer Relations of the Committee on Agriculture, House of Representatives, on H.R. 11788, April 4, 5, and 6, 1966.
Congress, a useful purpose was, indeed, served. The either/or context tends to prevent the probing for weaknesses and small adjustments that make for progress.

Are futures markets good or bad? Some of both. They are here, they will remain for the foreseeable future, and they are growing. They will change and they can be improved.

Fun and Games

The first evaluative comment that seems to evolve out of our discussion of the use of futures is that they are large, exciting games that the participants enjoy. The markets have important economic functions but to facilitate this performance is not why people trade. Some firms—processors, warehousemen, etc.—use futures markets for serious business purposes but many tradespeople and speculators trade for the sport of it. Making and losing money is a serious matter but it is also a way of keeping score in a contest.

Professional football players compete to their utmost to win divisional championships so that they get into playoffs and Superbowls. They make a lot more money if they win than if they lose. What is the motivation? For some, football may be a grubby business in which they participate because it is the best way that they can make a living. But one doubts that money is the overriding motivation or that the sport exists for the sole benefit of the spectators and the people who make money from the spectators. The sport exists, in part, for the noneconomic benefits that the players, coaches, and owners derive. So it is with futures trading. It is not a spectator sport and so the players must pay the cost of operating the game. Whether this Simon pure amateurism is good or bad is for someone else to decide.

Our look at the history of futures trading with the major role played by speculation, the extent to which hedging in futures markets is speculative, the importance of speculation by commodity tradespeople, and speculation by the public all suggest that the basic orientation of futures trading is price speculation. The markets are about speculation and the economic functions performed are spun off from this central core.

How good are these markets as games that are open to the public? The entry fees, in terms of commissions paid, are large. How fair a shake does the participant get? This question is not posed in a bucket shop context of whether they should be prohibited to protect the public. The players are over 21 and members of a more or less free society. Whether or not they trade is quite their own affair and not a reasonable province of government, for if we prohibit people from losing money, we also deny them the opportunity to make money.

In Chapter 5 the markets were examined in the context of a model of pure competition with the conclusion that they are one of the closest approximations to the theoretical model to be found. The commercial reality of futures prices
has been repeatedly mentioned. The price game is about the real world. The trader who is right about the course that prices will take inevitably makes money and the one who is wrong loses money. In this regard, it is an eminently fair game.

In connection with the fairness of the game, there are two sensitive spots, one is manipulation and price distortion and the other churning of accounts for commissions. Both of these are treated in the next two chapters. At this juncture we should only observe that he must know the game that he is playing and adjust his operations to it.

It is widely believed with reasonable ground that the technical conditions of markets sometimes result in short-term fluctuations that are not related to commercial market forces. If this is the case, such fluctuations are caused by unsophisticated trading by locals, by inadequate liquidity of markets, and the placement of orders dependent on market actions—stop losses, chart formations, etc. The basic notion is that markets grow on what they feed on; that a move in one direction triggers a further move in the same direction. An old belief is that markets always look strongest at the top and weakest at the bottom. But we noted earlier that day-to-day price variations are random. It is doubtful that traders are chopped up by technical conditions; it just seems like it. If technical moves in markets do exist, they present, not only a hazard to the outside trader, but an opportunity as well for they are distortions from real value and profiting from distortions is what speculation is about. If technical moves do occur, they are not relevant to the fairness of the game.

As we have seen, commissions are large; not large in relation to the value of the commodities traded but large in relation to the estimated profits and losses of traders. The earnings of commission houses and of most registered representatives are directly dependent on the volume of trading. We have also noted that an important aspect of speculation is the limitation of commissions. There is no doubt that some speculators get talked into making trades that are not contributions to their trading programs. This may be a market weakness but is not germane to the fairness of the game. The responsibility for prevention rests with the trader; he must control his own operations and if he gets hustled, it is his own fault.

**Risk-Shifting Financing**

Futures markets are devices for shifting price risks from people who are unwilling and/or unable to carry them to speculators, and through this process markets become devices for generating equity capital. In an expanding commodity economy and an increasingly commercial agriculture there is an expanding need for this combined risk-shifting financing function. The extent to which futures markets perform this function will determine the future growth and size of the markets.
**Hedgers’ Viewpoint.** The most narrow ground on which markets can be tested for their effectiveness as risk shifting mediums is that of their usefulness to practicing hedgers. What a hedger wants of a market is that it be continuously available and that it be willing and able to absorb his sales and purchases of futures instantly without price concession.\(^2\) To what extent do futures markets do this? The older, established, high volume markets do this very well. The corn warehouseman, the wheat exporter, the soybean processor, the feed manufacturer covering soybean meal requirements, or the cattle feeder can, if he exercises reasonable skill, get orders executed promptly without important, if any, price concession. These markets appear to be capable of absorbing all of the hedges that trade interests care to place. They are the liquid markets that are so extensively praised in the literature. They are the markets that have been so carefully examined for price bias and nonrandomness. There are minor imperfections that hedgers complain about so that rules and contract terms are continually changed, but, in general, they pass with high marks.

From the hedger’s point of view, the successful markets work fine. But this is far from all of the active markets. This volume is not an appropriate place to grade the active futures markets for their effectiveness as hedging media. However, it is worthwhile to mention some hedging problems. Wheat futures are traded in Chicago, Kansas City, and Minneapolis. Minneapolis is a hard spring wheat market, Kansas City a hard winter wheat market, and Chicago a multiple kind of wheat market, both hard and soft wheats. Chicago trades, typically, with sufficient liquidity that the execution of hedging orders is possible without great difficulty. The Kansas City market is capable of absorbing a substantial volume of hedges but lacks liquidity so that hedges must be placed carefully and over a protracted period of time. The Minneapolis volume is small and the market appears incapable of absorbing much hedging.

To illustrate, on September 30, 1975 the positions in million bushels of reporting hedgers and volume of trading during September at the three markets were:

<table>
<thead>
<tr>
<th></th>
<th>Long</th>
<th>Short</th>
<th>Volume</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chicago</td>
<td>111.2</td>
<td>145.2</td>
<td>6,624.4</td>
</tr>
<tr>
<td>Kansas City</td>
<td>87.8</td>
<td>90.3</td>
<td>251.3</td>
</tr>
<tr>
<td>Minneapolis</td>
<td>27.9</td>
<td>30.2</td>
<td>122.2</td>
</tr>
</tbody>
</table>

The total open interest of reporting hedgers at Chicago was about 1.5 times as large as that at Kansas City but the volume of trading at Chicago was more

\(^2\) It should also be noted that he would like for it to provide him with a profitable set of price relationships—carrying charges if he is hedging a stored inventory and inversions if he is covering a requirement. But he should realistically only ask that it provide him with an accurate reading of the going market price of storage; prices that are made by his and other hedgers’ actions.
than 26 times that of Kansas City. The volume to total open hedges at Chicago was 25.8 to 1, that at Kansas City was 1.4 to 1 and Minneapolis 2.1 to 1. During the month of September the total open interest at Chicago increased 25.0 million bushels, that at Kansas City decreased 11.6 million, and that at Minneapolis increased 7.9 million. The volume to open interest change at Chicago was 265.0 to 1, at Kansas City 21.7 to 1, and at Minneapolis 15.5 to 1. One can reasonably ask the question of whether so much volume is necessary to change the open interest so little, but it should not be asked of a hedger. To him, volume is liquidity and ease of execution and the more the better.

Both the Chicago Board of Trade and Kansas City Board of Trade operated grain sorghums futures markets for years without success. In 1971 the Chicago Mercantile Exchange substantiated the commercial need for such a market and started trading in a carefully structured contract as a part of a cattle feeding futures program. After a good start with 8,155 contracts in 1971, trading fell to 1,354 in 1972. Even at its best, hedges were difficult to place and nearly impossible to remove without significant price concessions. Would-be commercial users of grain sorghums futures prefer to cross hedge in the liquid corn market in spite of the absence of precisely parallel price movement of the two cash commodities.

The soybean oil futures market is large, liquid, and an effective hedging medium but cottonseed oil futures trading dwindled to zero by summer, 1970. The hyper-active pork belly futures market can absorb any and all hedges incidental to the main activity of speculation but trading in skinned hams is so small that hedging is impossible.

How, then, do we grade the markets from the hedgers' viewpoint? Some are excellent and some, at times, are lacking in sufficient volume to effectively absorb hedges. But this is only part of the story. A hedging market that is not satisfactory will not be used and will pass out of existence eventually. Thus, that which we see and can examine is generally satisfactory but it does not take into account the potential risk shifters in other commodity trades who are frustrated by the absence of liquid, unbiased markets.

Aggregate Viewpoint. A second context within which markets might be appraised is the more general one of how well they fill the risk accommodation and equity financing roles described in Chapters 6 and 7. The general goal here is to maximize the economic efficiency of the commodity production and marketing processes. Specifically, the objective is to get the risks of price variability assumed and the equity capital for the financing of commodity value variations provided at a minimum cost. To achieve this objective the jobs should be turned over to speculators for they do it free.

The theory of normal backwardation—the existence of a risk premium—is not applicable to the developed, active futures markets. The theory does appear to be applicable to the informal forward contract markets that have generally
Market Operation

preceded initiation of futures trading and to some of the low volume markets.² Our examination of the results of speculator operations and the generally accepted notion that speculators lose money suggest that speculators do not treat risk assumption as a disutility but rather are willing to assume risks at zero or a negative return in exchange for the opportunity to profit from risk assumption. This willingness of speculators may exist because they are, separately, so egotistical that they think they can beat a zero sum game (minus commissions), or may exist because they are willing to accept the probability of loss of an unimportant amount of money in exchange for the possibility of gaining an important amount, or may exist because they like the sport of trading, or may exist because their greed overpowers their better judgment. Probably all of these things enter in. But this is neither here nor there. The germane fact is that the willingness to assume and finance risks at no cost is present in the developed markets. This is a significant spin-off from the markets. It is difficult to improve on zero cost in the quest for economic efficiency.

A dramatic example of the reduction in the cost of risk assumption was provided by the development and demise of the onion futures market.³ The market was active from 1949–58. The market died in 1958 when trading was banned by law. Gray computed the index of seasonal price variation for a period before futures trading was initiated, during the period of active trading, and for a four year period following futures trading. The before and after indexes were nearly identical and ranged from a harvest low of about 75 to a spring high of about 145. The index during trading had a harvest low of 87 and a spring high of 118. Seasonal variation in cash onion prices was greatly reduced during the period of futures trading and went back to the earlier levels when the market was killed. The seasonal variation in cash onion price during the period of active futures trading was approximately equal to the cost of storing onions from harvest to spring.

Farmers sell onions from the fields to dealers who store and merchandise them through the winter. During the first period their bids to farmers reflected their storage costs minus an allowance to cover the risks of price decline. During the period of futures trading their bids reflected the futures price minus the cost of storage. Following the demise of the speculators, they went back to their old, conservative bid policy that clearly included a risk premium. There was a substantial normal backwardation before and after futures trading that was totally absent during futures trading. These dealers reaped rewards for risk assumption and a return on the capital that it required. The speculators did not receive the reward or even a part of it but did the job free.

The literature of futures trading written by trade people in testimony before

Congress and for assorted education symposia is replete with testimony that an allowance for risk assumption would be necessary in the absence of the opportunity to hedge in futures markets. The onion market is not an isolated example. It is a unique situation in which a before, during, and after comparison can be made. From these things it follows that the more of the risks that are assumed and financed by speculators, the lower will be the costs associated with the commodity processes.

How Large Are the Markets? The standard measure of the size of futures markets is the volume of trading and it is large. In 1974 there were 27,733,328 contracts traded on U.S. exchanges. The average value of each contract was on the general order of $16,750 so that the total dollar volume was approximately $465 billion. The only purpose that such a number can serve is to call attention to the fact that commodity futures trading is big business. As we have seen, it takes a lot of volume of trading to change the open interest very much and nearly all futures contracts are offset by opposite transactions so that few are finally consummated and result in change in ownership of cash commodities. Volume of trading is significant in that it relates to liquidity but it is not a meaningful measure of the size of markets.

The meaningful measure of the size of markets is the open interest. It represents the quantities and values that are at hazard; the amount of risks outstanding. Some are hedger to hedger (or, more accurately, trade interest to trade interest), some hedger to speculator, and some are speculator to speculator. In most markets a fairly high proportion of the open positions are opposite cash positions and thus represent actual commodities. The number of open contracts and their value for the regulated (under supervision of CFTC) commodities at the end of 1975 appears on the next page.

Trading in the regulated commodities is on the general order of 75 percent of all trading. The value of the regulated commodities traded was 350 billion, some 52 times the value of outstanding contracts. The amount of money at hazard was substantially less than the $6.7 billion value of open contracts. Margin requirements are on the general order of 5 to 10 percent of the value, say a 7.5 percent average. Both sides are margined so that the minimum capital investment is 15 percent or $1 billion. More money is carried in accounts than is required for margin and, as we noted in Chapter 13, losses are frequently greater than a margin requirement. Thus, the equity capital generated by the system is greater than $1 billion.

These are interesting numbers but are not 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.
## Market Operation

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Open Contracts</th>
<th>Value (Mil Dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>62,508</td>
<td>1,078.3</td>
</tr>
<tr>
<td>Corn</td>
<td>88,875</td>
<td>1,177.6</td>
</tr>
<tr>
<td>Oats</td>
<td>2,541</td>
<td>17.9</td>
</tr>
<tr>
<td>Soybeans</td>
<td>87,526</td>
<td>2,078.7</td>
</tr>
<tr>
<td>SBO</td>
<td>34,314</td>
<td>329.4</td>
</tr>
<tr>
<td>SBM</td>
<td>21,319</td>
<td>277.1</td>
</tr>
<tr>
<td>Eggs</td>
<td>1,780</td>
<td>20.0</td>
</tr>
<tr>
<td>Cattle, live</td>
<td>29,521</td>
<td>487.1</td>
</tr>
<tr>
<td>Cattle, feeder</td>
<td>1,311</td>
<td>21.1</td>
</tr>
<tr>
<td>Hogs</td>
<td>17,270</td>
<td>228.0</td>
</tr>
<tr>
<td>Frozen pork bellies</td>
<td>12,199</td>
<td>263.5</td>
</tr>
<tr>
<td>Coconut oil</td>
<td>25</td>
<td>4.5</td>
</tr>
<tr>
<td>Palm oil</td>
<td>15</td>
<td>1.7</td>
</tr>
<tr>
<td>Cotton</td>
<td>19,354</td>
<td>580.6</td>
</tr>
<tr>
<td>Orange juice</td>
<td>5,417</td>
<td>48.8</td>
</tr>
<tr>
<td>Maine potatoes</td>
<td>14,025</td>
<td>70.1</td>
</tr>
<tr>
<td>Idaho potatoes</td>
<td>250</td>
<td>2.0</td>
</tr>
<tr>
<td>Imported beef</td>
<td>202</td>
<td>3.6</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>398,452</strong></td>
<td><strong>6,690.0</strong></td>
</tr>
</tbody>
</table>

Production, average stock, and open interest for five commodities for 1975 were:

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Production (Mil. Bu.)</th>
<th>Ave. Stock (Mil. Bu.)</th>
<th>Open Int.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wheat</td>
<td>2,138</td>
<td>1,469</td>
<td>312</td>
</tr>
<tr>
<td>Corn</td>
<td>5,767</td>
<td>3,334</td>
<td>444</td>
</tr>
<tr>
<td>Soybeans</td>
<td>1,521</td>
<td>981</td>
<td>438</td>
</tr>
<tr>
<td>Cattle</td>
<td>15,500</td>
<td>7,440</td>
<td>1,122</td>
</tr>
<tr>
<td>Hogs</td>
<td>81,267</td>
<td>49,196</td>
<td>2,245</td>
</tr>
</tbody>
</table>

The size of the risk load is difficult to define. Producers are subject to price uncertainty on the entire crop so that the risk load might be defined as the crop size. But, as we have seen, for the grains they are also subject to production uncertainty and price and production variations are inversely related so that forward contracting the entire crop may not be the least risk program. Some 35 percent of corn production is consumed on the farms where it is grown so that price uncertainties really relate to livestock prices. The total of the risk load for grains is less than the total of production.

The three grains are the biggest volume futures markets and two are the oldest markets. Yet, only a small proportion of the risk of price variability is transferred to futures markets. Merchants and warehousemen transfer most risks of their risks of ownership of these grains to speculators. Converters and processors transfer a smaller but major proportion of their risks. 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 markets.

The live cattle market grew rapidly from 1964 onward and is one of the most successful of new futures markets. The best measure of the risk load is the
number of cattle on feed (average stock). One of the strongest of all cases for
the consistent use of futures markets for risk shifting and equity financing can
be made in connection with cattle feeding. Yet, even if we assume the total of
the open interest is hedger to speculator—which it obviously isn’t—only 15
percent of outstanding risks were shifted in 1975.

The risk load for hogs is more difficult to define because it involves a produc­
tion cycle some eighteen months long. A reasonable construction of the total
amount at hazard might be 1 1/2 times the annual production. At a minimum the
amount at risk is the average stock of butcher hogs. The definition of the risk
load is not important; the average size of the open interest is but a trifle of the
risk load, however defined.

Conclusion. Some conclusions about futures markets as risk-shifting financing
institutions are warranted. First, those of them that work are quite good. A
liquid, speculatively active futures market is a useful and effective tool that can
be and is used extensively by people who have risk problems. The developed
markets not only perform the risking functions effectively but do so at a cost so
low as to defy measurement.

Second, many of the markets do not work well. They lack the liquidity and
risk carrying capacity required of effective hedging media.

Third, the markets are large enough to be of major economic significance but
are quite small in relation to the total risk load in the commodity trades.

From this it follows that the growth potential is fantastic. It is not surprising
that the number of commodities traded and the volume is so large but rather
that it is so small; not surprising that the volume doubled in the decade of the
1960’s but that it only doubled. The key question is to account for their small­
ness and to determine means by which growth can be encouraged.

Price Variability

The speculative pricing function and the consequences of the quality with
which it is performed were discussed in Chapter 8. We must now concern
ourselves with some evaluation of the quality of the job done by speculators in
futures markets. The goal of speculative discounting of events that lie in the
future is complete price stability. If all things were foreseeable and their effects
on prices perfectly discounted, the results would be unchanging prices at equi­
librium levels and relationships. Thus, the extent to which prices fluctuate is a
measure of market imperfection. So, the markets are less than perfect.

Much, if not most, of the controversy surrounding futures trading relates to
the effects of speculation on price variability. The argument is made that
speculation causes greater price variability than would otherwise exist and the
counterargument says that high volume futures markets have a stabilizing influ­
ence and under-speculated markets have greater price variability than do those
Market Operation

in which there is a large amount of speculation. For many years the anti-futures trading arguments tended to prevail so that speculation was treated as a necessary evil that accompanied the desirable hedging process. During the last decade the balance appears to have shifted so that a favorable view is more widely held. It is doubtful that the favorable view is yet in the majority but it is generally held by students of futures markets and increasingly held by members of Congress and by the CFTC.

The earlier view was typified in a statement by J. M. Mehl:5 "It is recognized that in the commodity futures markets there is need for some speculation. Merchants and processors hedge their inventories by making short sales of futures against these inventories and holding the short futures contracts until the cash commodity is sold. Some of the short contracts of hedgers, of course, are offset by the long hedging contracts of other merchants or processors whose forward cash sales exceed their inventories. Under most conditions, however, members of the trade are net short in the futures markets. Speculators, by buying the offsetting contracts of hedgers, assume the risk of price changes, and merchants and processors thus obtain the equivalent of insurance against price risks, which in turn enables them to operate on smaller margins of cost. It is not believed that speculation is a basic factor in determining the general level of prices in the long run. It is believed, however, that an undue amount of speculation tends to make price fluctuations more erratic and at times accentuates price trends. We know from the number and character of traders entering the market that at times speculation does have a short-run effect upon prices."

A later comment on onions by CEA was in the same vein,6 "After reaching its high of $2.20 per 50 pound sack on February 4, the price of the March futures on the Chicago Mercantile Exchange registered a low of $.85 on March 6. Since that date there has been a substantial recovery with the futures expiring on March 22 at $1.58 to $1.60. Price movements such as this cannot be justified by supply and demand factors and must be attributed either to manipulative activity, or, as appears to be the case in this instance, to a wave of excessive speculation." The main line of the argument was that uninformed traders, both large and small, made no real effort to evaluate supply and demand conditions but follow market trends and play the psychology of the market. Prices move and sharp moves catch the attention and imagination of the public who rush in and accentuate the move, pushing prices past their equilibrium level. When this wave of speculation is exhausted the inevitable decline occurs as some speculators take profits. The decline triggers stop losses and panic selling ensues, pushing prices well below equilibrium levels. It says price moves grow on what they feed on and so carry to excess.

5 Mehl, J. M., Administrator, CEA, before the Joint Committee of the Economic Report, November 24, 1947.
6 USDA, CEA, Speculation in Onion Futures, January–March, 1957.
The shift toward a more favorable view of the influence of speculation is primarily the result of the attempts to find the impacts of speculation that have failed. The evidence that price variations are random tends to refute the argument that markets grow on what they feed on. The clear evidence of backwardation in markets where there are no futures markets or where futures trading volume is small and the absence of backwardation in the high volume markets is strongly suggestive of a stabilizing influence. The Economic Research Service of the USDA examined the question "The nature of speculations in grains and their bearings on fluctuations in prices and whether minimum margin requirements by the CEA could be a feasible tool for controlling or helping to control excessive fluctuations" and found that speculators' transactions often moderate rather than accentuate price volatility.

The question of the effects of speculation on price variability is difficult to measure. It really relates to whether there is more or less variation than if there were no futures markets. There cannot simultaneously be both futures markets and no futures markets for a given commodity. In its study, the ERS concluded, "The price effects can be measured quantitatively. But for the effects of speculation to be isolated from many other factors influencing price, it is necessary to have a reasonably complete model of price behavior." As yet, no one has devised such a model.

**Level of Prices.** It is fairly clear that the level of commodity prices is higher in the presence of active futures markets than it would be in their absence. We have seen that speculators, in the aggregate, are long most of the time. We have also seen that they not only fail to get paid for risk assumption but most lose money. We have seen testimony that hedgers would have to make an allowance for risk assumption if they could not hedge. Were there a cost of risk it would be borne by primary producers in the form of lower prices.

**Seasonal Price Patterns.** There is substantial evidence that there is no all-consistent seasonal variation in the prices of stored commodities for which there are developed futures markets, the cost of storage taken into account. We earlier discussed the absence of a consistent seasonal variation in corn and soybean futures prices. Gray has examined an assortment of futures markets for seasonal bias. He found that those markets that are traded in volume and have large open interests do not have discernible seasonal patterns of prices, while those markets in which volume of trading and open interest are small have upward seasonal price patterns in futures prices from harvest to the end of the storage season.

The major grains are the clearest example of the effect of speculation on seasonal price patterns. Before, during, and immediately after harvest farmers

sell larger quantities than move into consumption. These are bought by mer-
chants and hedged in futures. As we have seen, merchants and warehousemen
are somewhat flexible regarding hedging or standing open. When they hedge
they do so because they elect not to stand open at the prices that speculators are
bidding. Were there no futures markets they would still buy and store the grain
that farmers offered for sale but only at lower prices. Speculators can assume
ownership at harvest only because they are the highest bidders. That which they
buy they subsequently sell. Therefore, their actions result in higher prices at
harvest and lower prices later in the season than would otherwise exist. The
interesting thing is that, at times, they are so exuberant about it that they foul
their own nest in the high volume markets.

Interim Variation. As we move from the longer run effects to the short term
variations we also move from agreement to controversy. The constructive
influence of speculators in their seasonal risk-bearing behavior is widely recog-
nized and the unsettling influence ascribed to them by many people is generally
limited to the short run. Commodity Research Bureau, Inc. claims that their
published studies indicate that there are definite seasonal price move tendencies.
The question has not been explored enough that a final answer is possible.

The first point that we would make here is that to separate the long run and
short run effects is difficult and to suggest that one is different from the other is
inconsistent. For a given season, the open interest builds up gradually and is
liquidated gradually. In most instances, its magnitude is a function of the
hedges in the market. The open interest, not the volume of trading, is the
appropriate measure of the amount of speculation. There are no short-term
variations in the amount of speculation, rather there are seasonal and intersea-
son variations. If there are no short-term variations, it is impossible to ascribe
short-term price variations to variable speculation.

One buys and becomes long or one sells and becomes short. Gains and losses
are the results of changes in price while positions are held; the result of taking a
position, not of buying or selling. A buys and B sells. There is one open contract
and the volume of trading is one. B buys and C sells. There is still one open
contract but the volume has risen to two. B sells again and D buys. There are
now two open contracts and the volume is three. B buys and E sells. There are
still two open contracts and the volume is now four. The size of positions and
the amount of money at hazard does not change as B trades in and out. Posi-
tions influence price as inventory is accumulated and liquidated and as money is
put at hazard—one does not margin a trade, he margins a position.

The failure to associate the amount of speculation with the open interest
rather than the volume of trading leads to interesting and troublesome errors.
In the CEA study Speculation in Onion Futures the "excessive" price variation
was attributed to excessive speculation. The volume of trading was quite large
during the reference period but the open interest gradually declined from 3,260
contracts on January 31 to 636 contracts on March 6. There was not a wave of speculation, excessive or other.

Second, price variability is related to the frequency and the causes of speculator changes of mind about the future course of prices. The volume of trading is functionally related to the open interest. As two people want to take positions, one long and other short, they trade and there is volume. The line of causation between price variation and volume is the thing that is at issue. Does trading come into the market and cause prices to run up and down or do prices become variable because of increased uncertainty about production, stocks, uses, etc. and speculators react to the same uncertainty by frequently changing their minds and moving in and out? The answer to the question depends upon what makes speculators buy and sell when and as they do. Do they forecast price changes on the basis of new information and move prices by taking positions or are their actions determined by price variations? Do they control markets or are they controlled by markets? The answer is likely some of both. With such an extensive amount of the literature on how to trade based on chart, trend, and movement trading and the use of stops, both to enter and leave the market, there must be some trading based on market action. However, as we have seen, different chartists interpret the same price patterns differently and different number systems indicate different market positions. At least some of movement trading is offsetting.

Some of the regular traders described in the last chapter traded in a long list of commodities. They tended to go to those commodities for which prices were most variable, moving as price variability changed. They did not stay with positions for very long, tending to indicate an absence of fundamental convictions about prices. For example, one trader had a net profit of about $15,000 which was made up of 46 profitable trades and 41 loss trades. During the course of a year he traded in cocoa, sugar, cattle, bellies, silver, palladium, copper, corn, wheat, orange juice, eggs, potatoes, soybeans, and soybean oil. Obviously, no one can know enough about each of all those commodities to exert an intelligent influence on price. We do not know, however, whether he was trading market action or following commission house advice. There was some day trading. One speculator traded 130 contracts of bellies in one month without ever taking a position larger than 5 and most trades were one and two. (His net loss on that venture was almost exactly equal to the commissions paid.) There were speculators who were clearly trading with the direction of the price movement but there were others who were trading against the trend. The Blair Stewart study indicated about as much trading against price trends as with them. On the other hand, there were speculators who traded in one or two commodities indigenous to the area where they resided and who held positions for protracted periods. Their trading appeared to be based on firm convictions about longer term equilibrium values.
One line of argument that speculator behavior increases price variability relates to trading the psychology of markets. This point of view was well put by Keynes. "Or to change the metaphor slightly, professional investment may be likened to those newspaper competitions in which the competitors have to pick out the six prettiest faces from 100 photographs, the prize being awarded to the competitor whose choice most nearly corresponds to the average preference of the competitors as a whole, so that each competitor has to pick not those faces which he himself finds prettiest but those he thinks likeliest to catch the fancies of the other competitors, all of whom are looking at the problem from the same point of view. It is not a case of choosing those which, to the best of one's judgment, are really the prettiest, nor even those which average opinion genuinely thinks the prettiest. We have reached the third degree, where we devote our intuitions to anticipating what average opinion expects average opinion to be." This line of reasoning loses some of its steam when we extend it to a fourth, fifth, etc. estate at which state of confused semantics some of the competitors decide to go back to the first estate and choose the six prettiest girls. In the case of commodities it loses more of its steam on first delivery day when commercial forces take over.

The case that markets generate their own volatility gets difficult to make when we consider that for every long there is a short, for everyone who thinks the price is going up there is someone who thinks it is going down, and for everyone who trades with the flow of the market, there is someone trading against it.

Again, we would point out that futures trading is a zero sum game in which speculators try to take money away from other speculators. The open interest is composed of short hedgers, long hedgers, long speculators, and short speculators. The hedged positions do not balance and are predominately short. Part of the speculative positions offset the imbalance of the hedge positions. In addition, there are speculator opposite speculator positions. In some markets this superstructure of speculation opposite speculation is quite small and in others, for example, pork bellies, it is quite large. As we have seen, hedgers hedge for a variety of reasons, only one of which is price expectations. The speculator standing opposite the hedger has a competitive edge because his actions are only influenced by price expectations. He is at the mercy of nothing save his own judgment. The speculator opposite another speculator is in a fully competitive position. From this it follows that markets in which there is a large superstructure of speculative opposite speculation are more competitive and unbiased in their aggregate price expectations than markets in which the speculative superstructure is small. We should expect the more competitive markets to do a better pricing job than the less competitive because on doing a better job rests the financial fate of the speculator.

Three conclusions are warranted: (1) There is a lot of willy-nilly trading that may be unsettling or may be offsetting, (2) There is a lot of conviction trading in which positions are taken and held until forces in cash markets settle the question of the equilibrium price, and (3) when uncertainty is great, prices are volatile and vice versa, and when prices move from one level to another because of changes in supply-demand conditions, prices are volatile.

**Price Forecasting**

The pricing job that is undertaken by speculative or forward markets in seasonally produced commodities is to establish a price at the outset of trading that will finally turn out to have been the equilibrium price. Ideally, the price would remain constant throughout the production and marketing season. In the non-storage markets the objective is to establish and hold constant the price that will prevail during the delivery month. The skill with which markets do these things is the measure of their performance as pricing institutions. Prices do vary and there are frequently major changes. We must, therefore, conclude that the job is done somewhat less than perfectly. But how good are they? This question is countered with another: Compared to what? There is no standard by which to measure them. There is no four minute mile as in footracing or 400 batting average as in baseball. Accomplishment of the objectives would be the equivalent of batting 1000, all home runs.

How well markets perform should be evaluated on the basis of the difficulty of the forecasting job. This varies by commodities and from time to time for the same commodity. Prices of some commodities are inherently more volatile than those of others. Demand for some is more inelastic than for others. Inelastic demand contributes to price volatility. Prices of some commodities are influenced by many more factors than those of others and information is much more complete for some than for others. For example, soybean oil is but one of a dozen edible fats and oils that are more or less interchangeable so that the price of soybean oil is affected by the supplies of the others. These are produced all over the world and information is incomplete, late and much less than perfectly accurate. Substantial inventories are built up and liquidated. On the other hand, statistics about broilers are very complete, accurate, and immediate. Broilers compete with a limited number of products and demand is relatively elastic. It would seem to be easier to forecast broiler prices than soybean oil prices, thus the performance standards should be different.

Figures 8 through 11 show some price histories of markets in volatile situations. Figure 8 is the price history of the blight-stricken 1970 corn crop. The season was uneventful, save for a minor drought scare in late June, until the end of July. An unprecedented infection struck a high proportion of the corn. The extent of damage was not known until harvest in October and November. The
FIGURE 8. The Blight-Stricken 1970 Corn Crop

JULY 1971 CORN FUTURES

DEC. 1970 CORN FUTURES
news spread as fast as the blight and prices rose rapidly. Within a week the price moved into a narrow range that lasted five months. The subsequent downward adjustment suggests the first adjustment was too much. However, there was an inadequate supply of blight resistant seed and it was not known how much blight vulnerable seed farmers would plant. Heroic measures increased the amount of good seed and farmers increased the acreage planted, hence the decline. The abortive run-up in June was a reasonably based blight scare. (The air was sampled and numerous spores found.) We should vote the performance excellent. The market quickly made the necessary adjustment in an unprecedented situation fraught with uncertainty.

Figure 9 is the 1974 corn crop. Land preparation went very well until late April. Then planting was delayed until quite late by excessive rainfall. There followed a very hot, dry summer and finally the late maturing crop was severely damaged by a record early and severe frost the third week of September. On October 4 some export sales were suspended by the federal government changing, arbitrarily, the rules of the game. It is doubtful that this action had a significant impact on what ultimately was to be the equilibrium price. The major reduction in use necessitated by the short crop was made in domestic utilization for feed; hog and broiler numbers were reduced and cattle were marketed without going through feed yards.

The price was at a rational level in May of 1974. It should have responded to the May rains sooner. The adjustment to drought and frost was quite rational if abnormal weather is really not predictable. The five month decline in price from October suggests that the market over-estimated the increase in price necessary to force reduction in domestic use; that the July, 1975 future should have gone to about $3.30 instead of $4.00. We must have some reservations about this conclusion of error. It may be necessary to overprice to get the attention of users sufficiently that adjustments are made promptly. On balance, it was a typical short crop pattern: quick adjustment to supply forces and underestimation of the impact of higher prices on use. There is an old adage, "Beware of the long tail of a short crop" that was certainly true in 1974–75. Actual information about the rate of use is only available quarterly as stocks are measured. Thus, it was not known that feeders were making sharp cuts until January 24, 1975, when most of the decline had already taken place. To have done better the market would have needed to forecast users' response to price and such forecasting is quite difficult. How should the performance be rated? Good? Fair? Poor? There is no standard. But it wasn't as good as 1970–71.

Figure 10 is the 1973 wheat crop. Russia had a small wheat crop in 1972 and bought heavily from the United States, pulling reserve stocks down to quite low levels. This was thought to be a non-repetitive event and world crops in 1973 were expected to be good, hence the $2.50 to $2.80 during much of June-July of 1973. World grain crops in 1973–74 were of record size and supplies were
FIGURE 10. The 1973 Wheat Crop

DAILY HIGH, LOW & CLOSE

CENTS PER BUSHEL

MAY 1974

CHICAGO

CENTS PER BUSHEL

© Commodity Research Bureau 1977
www.crbtrader.com
abundant by historical standards. The seven month rise from $2.50 to $6.25 was the result of increasing world demand. The demand increase was partly the result of worldwide prosperity and partly a flight from money associated with worldwide inflation. The March-May 1974 decline suggests that the long price increase was overdone. However, U.S. supplies were oversold; more wheat was committed for shipment before the 1974 harvest than there was wheat. It was necessary to go to buyers in destination countries and arrange postponement until after harvest. They were quite cooperative but might not have been had prices not been inverted. On February 25, 1974, Chicago wheat prices were: Cash $6.88, May $6.27, and September $5.67.

The market did a poor job anticipating the strength of world demand for wheat. In the end, it took decisive action to solve a problem. People associated with the wheat trade were used to thinking in terms of $1.50 as a reasonable value prior to 1972 and in 1973 reasonably thought the effect of the short Russian crop was past and the world was back to a normal oversupply of wheat. Prices of $4 and $5 for abundant supplies were very difficult to believe. The rapid decrease in the value of money associated with petroleum price increases was not appreciated. How much of the error is forgiveable? It was a very difficult situation, but not done well.

Figure 11 is the April, 1974 cattle futures price with the current cash cattle price. The price started out about where it ended but followed a long route between; 1973–74 was a year of stress in cattle prices. The supply of beef was down, consumer demand was up, and the pricing process was badly disturbed by a period of governmentally imposed price ceilings. The April futures price was affected by cash prices, basing expectations about the future on today’s reality. In addition, the market over-estimated the prices that would prevail in the future. With the benefit of hindsight, this appears to have been a failure of the market to accurately appraise the willingness of consumers to reduce consumption in response to price. How good a job? On the face of it, poor. But the situation was without precedent and consumer response is difficult to anticipate.

In general we should give the high volume futures market good marks for two reasons: First, when seasonal price patterns and price variability of the low volume and high volume markets are compared, the high volume markets appear to be with minimal seasonal bias and more stable. The actively speculated markets appear to bring all available information about supplies and uses to bear on prices. The larger the volume of trading, the greater are the resources devoted to the collection of information and price analysis. The process of speculation, with its rewards for being right about ultimate equilibrium prices and penalties for being wrong, must result in a greater sophistication in price analysis than would otherwise exist.

10 This is an excellent example of the kind of market error that can be exploited by a good trend-following system.
FIGURE 11 Cash and Futures Prices of Cattle

CATTLE (LIVE) APRIL 1974

MONTHLY AVERAGE CASH PRICE OF CHOICE STEERS AT OMAHA
Second, these markets must be pretty good because they are so hard to beat. Many try but few succeed. If the markets performed as poorly in establishing prices as is frequently alleged, every ordinarily competent price analyst would be wealthy.

Commodity prices vary over wide ranges. They fail to fully foresee and accurately interpret events to come. There is a lot of uninformed speculation that cannot contribute to effective price formulation. Just as there is a need for more speculation to support more liquid, unbiased risk-shifting financing markets there is need for more speculation of greater sophistication to improve price establishment.