

**AUTHOR'S NOTE**

An invitation to address the use of fundamental analysis and price forecasting provided an opportunity to vent the frustrations of years of attempting to forecast the prices of midwest agricultural commodities. It also provided an opportunity to dispel the notion that feeding a sufficient amount of data into a computer and pushing the right buttons could accurately describe the future. When will we stop questing for the Holy Grail? We won't, because such is human nature. What is really apparent is that advanced speculative markets are tremendously efficient at gathering pertinent information and processing it into current prices.

## THE USE OF FUNDAMENTAL ANALYSIS AND PRICE FORECASTING

### INTRODUCTION

### CHAPTER 33

The title under which these comments are flying is somewhat misleading. It implies that there is something which differentiates fundamental analysis from other analysis, generally described as technical. There is no sound basis for such differentiation. So-called fundamental analysis can be quite technical, and good technical analysis involves measuring the impacts of underlying economic forces. The second implication is that I am going to tell you how to forecast prices. Even if I really knew how, time would not permit it; there are books written on the subject.

What I shall try to do is identify some of the problems encountered in price forecasting and to put these in the context of the current agricultural commodity price situation. It will probably sound like an apology for what those of us in the trade cannot do. But it is important that at the outset we recognize that careful analytical work can cast some light and improve the odds in taking speculative positions, but there is no engineering-type system for forecasting prices accurately.

A basic premise of my comments is that price change is the process of adjustment to the inevitable. There is one, and only one, price that will exactly equate the supplies available to the requirements for them. This equilibrium price is the value which the market is continually seeking and towards which current prices are continually moving. This concept of an inevitable price makes price forecasting interesting because it is easy to grade price forecasters: they are right, or they are wrong.

### THE NATURE OF THE GAME

There are five generalities about the game of price forecasting which are useful to an understanding of the problems involved. First, price forecasts are made for the purpose of speculation. To speculate is to contemplate the future and take a position in anticipation of gain. This is more or less successful as price forecasts are more or less accurate. There are numerous speculators forming the market; in

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futures markets these include all of the commercial interests as both direct and indirect participants, professional speculators, and the speculating public. They all contemplate the future and take positions, long and short. The weight of these positions forms prices. Current prices, then, are the aggregate judgment of the market of the prices that will exist at various times in the future. Current prices in consumption are conditioned by expectation about futures prices. The price forecaster is participating in a speculative game in competition with other forecasters.

Were the aggregate judgment of all the participants omniscient, capable of foreseeing and discounting all events to come accurately, there would be no changes in prices. Price changes are the result of changes in the judgments of market participants a confession of error. To forecast a change in price is to challenge the judgment of the market, to say, "The market is making a mistake; I know more than it does." Thus, it is necessary not only to forecast the inevitable equilibrium price but also to identify the error the market is making. One should not be so cavalier as to be unconcerned about why the market thinks as it does, for many times (not most, one hopes) the market will be right and the forecaster wrong. Error identification is an important part of price forecasting.

Second, the forces affecting the price of a commodity are numerous and subtle in their effects. Information about them is never absolutely complete or accurate. Many of the forces are nonrepetitive. As a result, the use of advanced statistical techniques and econometric models as sole forecasting techniques is not sufficient.

Third, there are many kinds of forecasts and many things about which forecasts are made. Different people have different speculative problems, and price forecasts must be adapted to the problem. In substantial measure, these differences relate to the length of time a market position is held. At one extreme is a scalper in a futures market pit. He is concerned with the next order that comes into the pit, whether it will be buy or sell, whether the price will move up or down the minimum trading unit, say, 1/8 cent per bushel. A meat packer may be concerned about whether to buy heavily on Monday or anticipate buying heavily on Tuesday. A feeder with a drove of cattle weighing 1,000 pounds each has a month-long period within which he must pick the time to sell. A farmer who is planning how many acres of corn and soybeans to plant is concerned with the relative prices over the whole of a production and marketing season. It takes about one year to produce a hog after the decision to breed, rather than sell, a gilt is made; the producer is concerned with the price a year forward. A firm contemplating building a plant to make synthetic amino acids must make a very long-range forecast of soybean meal prices.

There is a sequence of information that flows into the market. This consists of acreage estimates, yield estimates, stock reports, movement into and out of stor-

age, cattle on feed, etc. Much of this information is furnished by the federal government on a schedule that is known in advance. The market forms its own opinion about what the next report will show and adjusts the price, in advance, to its expectation. If it is correct, there is no effect on price, but if it is wrong, the price changes, and the change may be substantial. These adjustments tend to be instantaneous. The impact is in the market before a trade can be made. Thus, two forecasts are necessary: one of what the report will be and one of what the market expects the report to be.

Prices develop and change as the information becomes available in sequence. The market forecasts and responds to many things having short-term effect while en route to its long-term goal of discovering the equilibrium price for a longer period, such as crop year. Thus, forecasting is a continuous process made up of a succession of bits and pieces which finally form a whole.

Different forecasters have different skills. The pit trader is skilled at reading the flow of orders and forecasting price changes within a trading session. An analyst working for a corn processor may be skilled at predicting a season's average prices and price patterns. Or one may be a long-term analyst who works with consumer incomes, expenditures for food, export demand, and producer supply reactions for purposes of projecting prices several years ahead. It is important that each forecaster identify his own skills and limit his speculative activity to the things at which he is skilled.

Fourth, markets respond to pressures which are not readily quantifiable and which are recognized by very few people. These pressures may be selling at a faster-than-usual rate before or during harvest and reflect a larger-than-estimated production. Or, the flow of hogs may be smaller than expected on the basis of production reports, reflecting an error in estimation. These pressures are more apt to come from the demand side, as demand information is less readily available and more difficult to appraise than supply information. The price of cattle during the past year has been a case in point. Prices were forecast on the basis of supplies which turned out to be right and the usual patterns of consumer buying, but consumers shifted their demand schedules to the right faster than their incomes increased. Real market forces assert themselves whether or not they are foreseen.

The market response to unseen pressures has given rise to a school of thought on the omniscience of markets, which says that the wisdom of the market is greater than that of the sum of its parts; that, somehow, the market obtains and weighs all the information and seeks its own level. This is a persuasive argument, particularly to people who have encountered difficulty in forecasting prices, but the forces which move prices can always be understood, and the nature of forecasting mistakes determined, with the benefit of hindsight. The fact remains, however, that

the things that seem to be market errors when they are occurring turn out afterwards to be not errors at all, but, rather, things that were overlooked. In such cases, realizing rather than anticipating markets exist.

The existence of realizing markets presents a problem to the forecaster. His role is to challenge the wisdom of the market, yet he must recognize that the market may be right and he may be wrong. Accomplished forecasters tend to develop a sense of danger they cannot see—which seems to arise out of experience in dealing with adversity. Much of forecasting is a science based on hard information and its interpretation, but some aspects of it remain an art.

Fifth, the forecaster must possess a large amount of information about a commodity, have that information systematically collated, and be experienced in forecasting the commodity's price. There is a tremendous store of information about every commodity that is actively traded, often so much that it is difficult to see the forest for the trees. However, one weakness of speculative markets is that relatively few people systematize information sufficiently well to put it in perspective. It is said that the market has an excellent memory for yesterday, a week ago, and a year ago, but has little knowledge of other times. This is the case because reports tend to refer to yesterday, a week ago, and a year ago.

There is no substitution for experience in forecasting the price of a commodity. The forecaster must live with a market to understand it. Each commodity has its own personality and subtleties. One key consideration in this regard is identification of important forces. Out of the multitude of things affecting a commodity price at some given time, there may be one of overriding importance; that will make or break the forecast. The problem is to identify and estimate the influence of the important forces, to ask the right question. Again, there is a major element of artistry in price forecasting.

#### **PLACE OF SOPHISTICATED STATISTICAL TECHNIQUES**

There are immutable laws governing price. Under a given set of quantities, uses, incomes, costs, expenditure preferences, and technological circumstances, there can be but one price or series of prices. There exist functional relationships among the various forces affecting prices. For example, supply schedules slope upward to the right, demand schedules downward to the right. Most of the forces can be quantified, and the information is readily available. Thus, it is conceptually possible to put together pertinent data and, from them, to develop systems of equations which measure existing functional relationships and to project the results into the future. Much progress has been made in developing such systems. One quickly envisions a time in which one feeds numbers into a computer and correct answers come out.

However, we are a long way from such a happy situation. These studies must be tied to the past, and we live in a dynamic world; dynamics are necessarily introduced, and this involves projecting the status quo. Forces affecting prices are numerous, and the mass of data is huge; a lot of pulling together is needed to make the problems manageable. This pulling together extracts information from the real world and makes simplifying assumptions. As these are greater, we depart further from reality. Complex models for many commodities have been developed. These are quite useful for describing structural relationships but are of limited application toward making specific forecasts, particularly for the short time periods with which most operational decisions are concerned. Their most important use is in establishing frameworks within which shorter-range studies can be placed.

In the commodity world, there is a plethora of data. A quite high proportion of it is generated by the federal government. It is of a very high order of accuracy and is universally and simultaneously available. Commodity analysts are in the pleasing situation of competing in a world in which they are on a nearly equal raw material (data) basis. The data, though, are less than perfect. We never really know just how large a corn crop is or precisely what stocks were where on a given date, such as October 1, 1973. We calculate feed and residual disappearance of corn, which is an important number in forecasting prices, but we must recognize that the residual part is largely an error term related to inaccuracies in measuring production and stocks. We estimate sows farrowing and from this forecast hog slaughter; the relationship is imprecise. One reason is that the estimate of sows farrowing is imprecise. It is important that the analyst always view his data with skepticism.

As the result of aggregation and data imprecision, structural relationships need always be looked at in a probability context. There is always a range surrounding a definite forecast, and the chances of the real value falling within some given range can be established. The size of the range is inversely related to the odds; if one wants favorable odds, he must accept a wider range.

I think that what all of this gets us to is a system of forecasting from bits and pieces, from numerous studies of small things that fit together into a continuum of fairly short-range forecasts. From structural studies, the analyst finds a broad range of prices which should contain the intrinsic value toward which the market is moving. As time passes, the range is narrowed as information and market response become firmer. A lot of not-very-sophisticated small statistical studies go into the making of a continuum of forecasts, all set in a probability context.

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