

Strategies To Capture Higher Gross Revenues

R. S. Firch

ABSTRACT

Research on futures price behavior indicates that farmers may find it feasible to use selective hedging or forward contracting to increase gross receipts from the sale of their commodities. University economists have been telling farmers for many years that selective hedging--hedging only in some years rather than all years or no years--should not be considered as an alternative to hedging every year or never hedging. If selective hedging is to be a feasible strategy for farmers, they must have some system for correctly predicting the direction of futures price changes during the production period in most years.

INTRODUCTION

Research at the University of Arizona now strongly suggests that predicting the direction of futures price changes with a high level of accuracy may not only be possible but has been practiced successfully by a large number of cotton farmers in Arizona. The research shows that producers of cotton, wheat, fed cattle, soybeans, and corn in the past have only had to have good judgment about what constitutes a relatively high price of the futures contract, that matures soon after harvest, at the time that the production period is begun. That is all that was needed to forecast the direction of futures price change correctly nearly 9 out of 10 times. A relatively high futures price at the beginning of the production period portends that prices will fall from then to the time of harvest nearly 90 percent of the time, and farmers should hedge or forward contract to avert the consequences of falling commodity prices. If the futures price is relatively low at the beginning of the production period, the farmers should not hedge or forward contract because past experience tells us that nearly 90 percent of the time the price will rise during the production period.

THE INVERSE FORECAST MODEL

In the formal research on the behavior of futures prices described above, the pattern of high prices resulting in falling prices and low prices resulting in rising prices has been labeled the, "inverse forecast model." The futures price data for the field crop commodities shows two distinctive time periods. The first period is 1973-80 and the second is 1981-87. The futures price data for fed cattle contracts shows that there have been 3 distinct time periods since the futures began trading in 1965 with the first period ending in 1975 and the second period ending in 1984. The price that constitutes a relatively high price is substantially lower in the later time periods. The user of the simple inverse forecast model, after having recognized the existence of 2 time periods, would have forecast the correct direction of futures price change in all but one year in cotton and one year in wheat. In soybeans the model gives wrong direction forecasts in 2 years and in corn in 3 of the 15 years. If the user of the inverse forecast model could have anticipated the existence of the 3 time periods in cattle futures prices, the model would have given correct forecasts of the direction of fed cattle futures price changes nearly 90 percent of the 137 forecasts tested in the research.

The pattern of high prices at planting time being followed by falling prices, and low prices at planting time being followed by rising prices, is a pattern that is followed nearly 90 percent of the times in the commodities and years that have been studied. In the field crop commodities, 6 of the 7 errors in direction forecast are either 1974 or 1983. 1974 was the year of the unexpected and large purchase of grain by the USSR. 1983 was a year in which the PIK program took large acreages out of production, and there was a substantial summer drought. Excluding

the years 1974 and 1983, the inverse forecast model would have given correct direction forecasts 55 out of 56 forecasts in the field crop commodities.

This leads to two logical questions: 1) Why does the inverse forecast model give correct futures price direction forecasts? and 2) if the markets are really as simple as the inverse forecast model implies, why don't people recognize the pattern, and in the process of capturing personal gains, destroy the pattern? The probable reason that the inverse forecast model works is that both buyers and sellers of cotton look to the December futures as a legitimate forecast of what the futures price will be in December. If the December cotton futures prices on April 1 is at \$1.00, farmers will produce more cotton than if that futures price were lower. The same \$1.00 price seen by users of cotton will signal them to organize to use less cotton and more synthetics in order to maintain their profits. With more supply and less demand than anticipated at planting time, the price must fall to clear the market. The reverse pattern would follow from December cotton futures prices at 40 cents on April 1.

Several things probably contribute to the lack of awareness of the patterns in futures prices formalized in the inverse forecast model. The research was carried out on futures prices that had been adjusted for general price inflation that was relatively high in the 1970's. The patterns are not nearly so obvious in futures prices that have not been adjusted for inflation. Some prices that would have been classified as relatively low prices in the 1973-80 time period for the field crop commodities or 1976-84 for fed cattle futures would have been relatively high in later time periods. Therefore, someone who learned to correctly forecast the direction of futures price changes in earlier time periods, and failed to recognize the changes that occurred in 1981 in the field crop commodities and 1985 and 1976 in fed cattle futures, would likely make errors in forecasting direction of futures price changes in later years. A third possible reason that people fail to see the existence of the inverse forecast model is that it does make some errors in forecasting the direction of futures price changes. If 1974 and 1983 are set aside as truly unusual years, then the pattern of the inverse forecast model becomes much more obvious.

The most challenging part of applying the inverse forecast model is being able to recognize the changes that occur periodically, such as the changes in 1981 for field crops and 1976 and 1984 for fed cattle futures prices. The most likely cause in the case of the field crops futures prices was that 1981 marked the change from an economy of high and/or rising inflation to an economy of low and/or falling inflation.

Does the inverse forecast model have the potential to raise total revenue from the sale of agricultural commodities? Using the inverse forecast model to choose when to forward contract cotton at planting time would have raised gross revenues 8.1 percent in the 1973-80 period. In the 1981-87 period, the inverse forecast model would have resulted in total revenue rising by 12.2 percent, in spite of the fact that the model would have resulted in forward contracting in 1983 when that was the wrong thing to do. Forward contracting cotton at planting time every year in the first time period would have reduced total revenue by 8.6 percent, and forward contracting every year in the second period would have raised gross revenue by only 7.1 percent. Comparable results follow from application of the inverse forecast model to forward pricing of wheat, soybeans, and corn. Using the inverse forecast model on cattle pricing decisions uniformly increases gross revenue in fed cattle, but the percentage increases are not as large as for the field crop commodities. Those percentage increases may not seem to be very large, but they are obtained at very little added cost so that almost all of the increase appears in increased profit.

Do farmers have the ability to forecast the direction of futures price changes? A very comprehensive study of forward contracting cotton in Arizona in the years 1974-79 showed that farmers gained from total forward contracting activity over the 6 years in spite of the fact that prices declined in 4 of the 6 years. The evidence, combined with a general look at proportions of the cotton crop forward contracted in relation to whether prices rise or fall during the production period, lead to the conclusion that Arizona cotton farmers have indeed done a good job of forecasting the direction of futures price changes and have used the model to make appropriate decisions on forward contracting.

All it takes to make the inverse forecast model work for you is to develop good judgment about what constitutes a relatively high December futures price at planting time. In a particular year if the futures price is relatively high at planting time, then you should forward contract or sell futures contracts for a quantity that is about half of what you expect to produce.