Behavioral Finance for Farmer Marketing Strategy Recommendations

Behavioral finance is a relatively new field of inquiry that may help better understand farmer marketing. The theory argues that people tend to make certain psychological biases that cause them to not be fully rational in an economic sense. For example, people tend to be about twice as upset about a loss as they would be happy about a gain of the same size. The theory can help explain why producers would pay a marketing consultant even when markets are efficient. Extension programs need to consider the psychology of marketing. The theory suggests that decisions need to be framed in terms of their effect on the whole farm operation and in terms of Profit's over a series of years.

The old model of extension marketing programs assumed inefficient markets, asymmetric information, and producer ignorance. Extension education programs were geared toward increasing producer incomes with outlook information and by educating them on how to use futures and options. Yet, research results show that agricultural markets are very close to being efficient (Brorsen and Irwin; Zulauf and Irwin). There is a more recent body of theory called behavioral finance that may have some implications for extension marketing programs. This theory suggests that many people are not completely rational in an economic sense because people tend to make psychological mistakes.

I.BEHAVIORAL THEORIES

Traditional finance uses models, in which the economic agents are assumed to be rational, which means they are efficient and unbiased processors of relevant information and that their decisions are consistent with utility maximization. Unfortunately, after years of effort, it has become clear that basic facts about the aggregate stock market, the cross-section of average returns, and individual trading behavior are not easily understood in this framework.

Behavioral finance is based on the alternative notion that investors (farmers), or at least a significant minority of them, are subject to behavioral biases that mean their financial decisions can be less than fully rational. Evidence of these biases has typically come from cognitive psychology literature and has then been applied in a financial context.

Examples of biases include

- ***Overconfidence and overoptimism***—investors (farmers) overestimate their ability and the accuracy of the information they have.
- ***Representative ness***—investors (farmers) assess situations based on superficial characteristics rather than underlying probabilities.
- ***Conservatism***—forecasters cling to prior beliefs in the face of new information.
- **Availability bias**—investors (farmers) overstate the probabilities of recently observed or experienced events because the memory is fresh.
- ***Frame dependence and anchoring***—the form of presentation of information can affect the decision made.
- ***Mental accounting***—individuals allocate wealth to separate mental compartments and ignore fungibility and correlation effects.
- ***Regret aversion***—individuals make decisions in a way that allows them to avoid feeling emotional pain in the event of an adverse outcome.
- Behavioral finance also challenges the use of conventional utility functions based on the idea of risk aversion.

II.BEHAVIORAL ASSET PRICING

Whereas academics talk about asset pricing and about explaining the cross-section of stock returns, for practitioners, the same issues fall under the simpler heading of "stock picking." If behavioral biases among investors (farmers) cause mis-pricing of stocks in a predictable fashion, then active managers may have the scope to beat the market by using strategies based on these sources of mis-pricing.

Investor (farmers) Sentiment. One important issue is whether investor (farmers) sentiment has the potential to affect stock returns, which is considered self-evident by most practitioners. But traditional finance theory has little role for sentiment in asset pricing.

Recent behavioral literature (Baker and Wurgler 2006; Kumar and Lee 2006; Tetlock 2007) suggests evidence of investor (farmers) sentiment affecting stock returns. The effect is most pronounced for stocks that are difficult to value and/or hard to arbitrage. This category includes small stocks, young stocks, nonprofitable stocks, and extreme growth stocks. When investor (farmers) sentiment is high, subsequent returns for these types of stocks tend to be relatively low, and vice versa.

Causes of swings in investor (farmers) sentiment vary and, in some cases, can be quite trivial. Hirshleifer and Shumway (2003) present evidence that daily returns across the world's markets are affected by the weather in the city of the country's leading stock exchange. Unfortunately, a strategy to exploit this predictability in returns involves quite frequent trading, and trading costs may well eliminate any available gains for most investors (farmers). Kamstra, Kramer, and Levi (2003) provide similar evidence, showing that returns in various countries through the year are related to hours of daylight—a result possibly driven by the occurrence of seasonal affective disorder.

The effect of sentiment is evident in various arenas. For example, Gemmill and Thomas (2002) show that

noise trader sentiment, as proxied by retail investor (farmers) fund flows, leads to fluctuations in the discount of closed-end funds. Of note, one measure of sentiment that does not predict returns is the current sentiment—bullish or bearish—of investment newsletter writers. Rather, recent past returns predict the sentiment of the writers, which, in turn, has no correlation with future returns (Clarke and Statman 1998).

III.Efficient Market Hypothesis

The efficient market hypothesis is the theory upon which modern extension programs is based. The theory says that

- All available supply and demand information is used to determine today's price and that when storage and interest costs are ignored,
- The best predictor of tomorrow's price is today's price, and
- Expected returns will be the same no matter when a commodity is priced. The theory also appears under other names such as rational expectations (Thraen and Irwin) and the law of one price (Kohls and Uhl).
- The efficient market theory says that prices reflect all available information. Since new information causes prices to change.
- It is new information that makes tomorrow's price different from today's price. This fact raises questions about analyst's ability to predict prices.

IV.Efficient Market Theory:

The theory believes that all market participants receive and act on all of the relevant information as soon as it becomes available. If this were strictly true, no investment strategy would be better than a coin toss. Proponents of the efficient market theory believe that there is perfect information in the market. This means that whatever information is available about a stock to one investor (farmers) is available to all investors (farmers) (except, of course, insider information, but insider trading is illegal). Since everyone has the same information about a stock, the price of a stock should reflect the knowledge and expectations of all investors (farmers).

The bottom line is that an investor (farmers) should not be able to beat the market since there is no way for him/her to know something about a stock that isn't already reflected in the stock's price. Proponents of this theory do not try to pick stocks that are going to be winners; instead, they simply try to match the market's performance. However, there is ample evidence to dispute the basic claims of this theory, and most investors (farmers) don't believe it.

V.Random Walk Theory:

An investment theory which claims that market prices follow a random path up and down, without any influence by past price movements, making it impossible to predict with any accuracy which direction the market will move at any point. In other words, the theory claims that path a stock's price follows is a random walk that cannot be determined from historical price information, especially in the short term. Investors (farmers) who believe in the random walk theory feel that it is impossible to outperform the market without taking on additional risk, and believe that neither fundamental analysis nor technical analysis have any validity. However, some proponents of this theory do acknowledge that markets move gradually upward in the long run.

- ***Brownian motion:***

A theory or model that is used to explain random motion. Traditionally, Brownian motion was developed to explain the random movement seen in suspended particles, but is commonly applied today to the stock market. Brownian motion is just one theory that attempts to explain stock market fluctuations, along with the random walk theory and Markov process.

VI.The Equity Risk Premium.

The relatively high level of the equity risk premium—that is, the excess return of equities over bonds or T-bills—is another empirical finding regarded by some authors in the traditional finance literature as a puzzle. Behavioral theories may offer some solution to the puzzle. Benartzi and Thaler (1995) argue that loss-averse investors (farmers) who evaluate their portfolio on a regular—at least annual—basis will require a high risk premium to be induced to invest in equities. For these investors (farmers), losses are weighed more heavily than comparable-sized gains, and given the distribution of gains and losses at short horizons, investors (farmers) who regularly evaluate their portfolios will often be confronted with painful losses.

Considerable progress has been made in making marketing strategy recommendations to farmers. The dominant paradigm is the efficient market hypothesis that suggests that little profits can be made by trying to time when to sell farm produces. The paradigm says that farmers will receive an average price on average.

A view that is now showing up at extension meetings is that farmers do worse than average. The idea of farmers selling in the bottom third of the market is not without theoretical foundation. New results from behavioral finance find that people have systematic psychological biases (Brorsen and Anderson). These biases could result in herding behavior in such a way that the majority could always be wrong. A study by Slusher is the only one that we know of that has ever addressed the issue of actual farmer performance and it is based on a narrow survey of Indiana corn farmers done 15 years ago. There is an immediate need for rigorous research to either challenge or support the claim that farmers sell in the bottom third of the market.

The general objective of this project will be to determine the actual pricing performance of farm producers. The two specific objectives:

- determine if most farm producers sell in the bottom 1/3 of the market, and
- determine if there is any pattern in when farm producers tend to sell.

Granger causality tests are used to determine the pattern in when producers sell. Such tests are tests of whether producers are noise traders (Black; Sanders, Irwin, and Leuthold). Noise traders trade on noise as if it were information. Positive feedback noise traders buy after price increases while negative feedback traders sell. Sanders, Irwin, and Leuthold defined a feedback trader as having long memory if more than the most recent periodís return influenced decisions.

Conclusions

The hypothesis, farm producers sell in the bottom 1/3 of the market, was not supported by this research. Thus farmers do not need to use market advisory services or marketing pools that seek to obtain an average price since they are getting a better than average price. Farmers have a strong price incentive to sell early in the crop year. Regions far from consuming areas and with later harvest dates can be expected to greater returns to storage than producers. Thus, while a twelve-month pool would work poorly in one district, it might be fine in other states.

In the short run farmers are negative feedback traders since they sell after price increases and tend to hold after price decreases. They are also noise traders since their sales did not predict price changes. Thus producers have been successful in deciding whether to sell in June or in March, but they have had little or no success in deciding whether to sell today or tomorrow. Thus, extension-marketing programs that have ignored day-to-day movements and concentrated on how to respond to market signals of when to time sales still seems the best way to go. There is some indication of producers storing grain longer than is economical, so there is benefit from an extension program that encourages farmers to sell. Inaction can result from the psychological mistake of being reluctant to realize losses. The results also imply that producers are doing a good job of marketing and they do not need to invest more in marketing. Producers should spend scarce management resources concentrating on being a low-cost producer or on marketing activities that add value rather than trying to predict what the price is going to be tomorrow or next week.