

Farm and Industry Short Course Grain Marketing

Grain Markets and Price Determination

Lecture 1, January 21, 2004

Introduction

Marketing is becoming an increasingly important part of managing a farm business. Twenty years ago the most important decisions a producer faced was what to produce and how to produce it. These are still important issues, but financial management and marketing have become equally important.

Producers have always had to decide how and where to sell, but the timing of sales has become much more critical. For most businesses outside of farming, marketing refers to promotion activities such as advertising. Each firm is trying to convince consumers that their product is unique and should be preferred by the consumer. In economic jargon, these firms are often called price makers because they determine the price at which they are willing to sell their products. The more unique their product, the greater the discretion they have on the price they can set. Market concentration, or the number of producers in the market, also influences price discretion. The fewer the number of producers the more influence any single firm has on price.

For grain farmers, there are few unique products (everyone producing number 2 corn is selling the same product as everyone else producing number 2 corn), and there are lots of producers. The result is that no individual grain farmer has any influence over market price. Grain farmers are price takers, and their marketing decisions do not include advertising or price determination. Their decisions do include deciding how much to produce and when to sell it. Thus, while farmers generally cannot influence prices directly, they can improve the average prices they receive at the farm level by deciding when to sell. This requires an awareness of different pricing strategies and understanding how farm level prices are determined.

Agricultural Market Structure

Farm level prices for agricultural commodities have become much more volatile in recent years as a result of changes in government farm programs and international trade arrangements. Volatility refers to how much a price changes from one period to the next. For example, if corn prices are moving between \$2.00 per bushel and \$2.10 per bushel over some period of time, they are less volatile than if they range from \$1.85 per bushel to \$2.50 per bushel. The more volatile prices are, the more price risk there is in the market. In other words, the more likely a producer who is not employing a sound marketing strategy is to receive a price that is unacceptable. Marketing at the farm level is focused on minimizing price risk and insuring a profitable outcome.

Assume you produce 30,000 bushels of corn. If you average \$2.00 per bushel your gross return to corn production would be \$60,000. However, if you could average \$2.20 per bushel, your gross revenue would increase by \$6000, or 10 percent. If you could average \$2.60 per bushel, your revenue would increase \$18,000. A lot of corn is sold each year for \$2.00 or less per bushel, yet there are times during the year when prices are substantially higher. While most producers put significant effort into maximizing yield potential, the return to a little marketing effort is often greater than the return from increasing yields by a few bushels per acre.

In recent years, the U.S. grain marketing system has grown more complex. Industrial use of grain products has grown, but international competition has also increased. Government programs have increased planting and marketing flexibility, but also reduced the level of income support provided. Many of the factors which influence farmer prices take place great distances from the farm, and an astute marketer needs to learn what these factors are and how they may influence price.

Grain is produced in an annual production cycle. One of the functions of the grain marketing system is to allocate production over an entire year of consumption. Further, grain tends to be produced a significant distance from major consumption areas. The grain pricing system must encourage movement of grain away from the production areas and into the areas of major consumption (areas of large population).

Grain Price Formation

Figure 1 depicts the current U.S. grain marketing system. The pricing system in U.S. grain markets establishes values at the various stages of the marketing channel, from the farm to the export market. It provides incentives and signals for grain movement into different uses and different geographic locations. A central feature of the pricing system is the futures market.

Understanding futures markets is critical to developing an astute marketing program. The entire food marketing system relies on futures markets to determine prices paid to suppliers and charged to customers. Most pricing opportunities grain producers face are influenced by price action in the futures market.

There are lots of futures exchanges in the U.S. and around the world. For our purposes, however, we are going to focus on grain contracts traded at the Chicago Board of Trade. This is where corn, soybeans, and soft red winter wheat are traded.¹

¹ Oats also trade at the Chicago Board of Trade, and there are wheat contracts traded in Minneapolis and Kansas City. However, they are for different classes of wheat. The Kansas City wheat contract, for example, is for hard red winter wheat. In general, futures exchanges offer unique contracts, meaning that the same commodity does not trade at two different exchanges. One exception, however, is in the dairy sector. Nearly identical milk futures contracts are traded at the New York Commodity Exchange and the Chicago Mercantile Exchange (which is not associated with the Chicago Board of Trade).

Figure 1.

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| <p>LOCAL ELEVATOR:</p> <ul style="list-style-type: none">Grade GrainCondition GrainStore GrainReveal the first public price for grain |
| <p>SUBTERMINAL ELEVATOR:</p> <ul style="list-style-type: none">Linked to local elevator by rail, barge, or truckOften do not buy directly from farmersMajor function is to concentrate grain into large shipmentsReveal second public price for grain.Basically the local elevator price plus transportation and handling costs. |
| <p>TERMINAL ELEVATOR:</p> <ul style="list-style-type: none">Sell to export markets and processors. Do not buy from farmers.Reveal third public price for grain.Sub-terminal price plus transportation and handling costs. |
| <p>EXPORT TERMINAL ELEVATORS:</p> <ul style="list-style-type: none">Very concentrated industry. Over half of the U.S. export capacity is owned by Cargill, Bunge, and Louis Dreyfus.Offer the export price to compete in the international market. |

Futures Markets

Futures markets for U.S. produced grain were initially developed in the 1860's with the establishment of the Chicago Board of Trade.² Since the 1970's, volume of trade in futures markets has increased significantly, and the types of products traded have grown. Futures contracts on livestock were developed at the Chicago Mercantile Exchange beginning in the 1960's, and contracts on non-agricultural products have also developed over the last 30 or 40 years.

A commodity futures contract is a legally binding commitment calling for the holder of the contract to either deliver or accept delivery of a commodity at a specific price, on a

² The concept of futures trading dates back several thousand years. However, the Chicago Board of Trade is the oldest futures exchange currently in existence. It began trading modern futures contracts in October 1865. For a complete discussion of the history of futures markets, see "Starting Out in Futures trading", by Mark Powers.

specific future date, at a specific location. Futures contracts can initially be either bought or sold. If you sell a futures contract, you go short the market. This means you take on a legal commitment to deliver the commodity specified in the futures contract on the date the contract matures.³ Since the futures contract requires delivery at some later date, it is possible to sell something in the futures market that you do not physically have. This is not unique to futures markets, however. A car dealer could agree to sell you a pickup truck for delivery in August 2000 even though he does not yet have the truck on his lot. He would be taking on a legal commitment to deliver a truck to you in August, at a specific price, and with specific options.

One unique feature of futures markets is that futures contracts are traded on margin. Margin requirements in futures markets are generally very low. Many margin requirements are 8 to 10 percent of the value of the futures contract, but sometimes margins are as low as 1 percent of a futures contract's value. There are really two separate margins involved in futures transactions. The first is called the initial margin. This is the amount of money a trader must have in a futures trading account in order to initiate a position in the futures market. In the corn example above, the initial margin was \$500. If I choose to buy or sell corn for July delivery today, I must post at least \$500 in my margin account (the margin account will be held by my broker). If I buy corn, and the price by the end of the trading day is 2 cents per bushel less than where I bought, then I have lost 2 cents times 5000 bushels, or \$100. My account will be debited \$100 at the end of the day, and anyone earning a profit from the price of corn going down (those who had earlier sold corn for July delivery) would be credited with profits. Those earning profits could withdraw all monies in excess of the \$500 initial margin at the end of the day if they so chose.

The second type of margin involved in futures trading is the maintenance margin. The maintenance margin is generally less than the initial margin (there are rare circumstances where the maintenance margin may equal the initial margin), and it represents the minimum value a trader's account must have before the trader is required to deposit additional funds to his/her trading account in order to maintain a futures position. Assume in the corn trading example that the maintenance margin is \$350. When I bought corn and incurred a 2 cent per bushel loss after the first day, the value of my account fell from \$500 (the initial margin) to \$400. While \$100 was deducted from my account and placed in the account of a trader who profited from the 2 cent price decline, I was not forced to put additional money in my trading account because its value was still above the maintenance margin of \$350. However, if I incurred another 2 cent per bushel loss on the next trading day, my account value would fall to \$300. At this point I would be required to make a deposit to my trading account, and restore its value to the full initial margin amount. If I failed to do so, my position would be liquidated and I would no longer have a futures position.

When an additional deposit is required to return the account value to its initial margin amount, the trader faces what is called a margin call. Technically, all margin calls are

³ In reality, the delivery date for a grain futures contract actually spans a period of almost three weeks. Actual delivery can happen anytime over the three-week period.

due by the opening of trade the following day. However, many brokerage firms give their customers two or three days to make a margin call. The exchange clearing house does not extend the same courtesy to the brokerage firms, so in essence the brokerage firm makes the margin call on the customers behalf and then waits for reimbursement.

Table 1 illustrates a trading account and its changing value as price changes. In the example, a trader bought 1 July corn contract at \$2.50 per bushel. The initial margin is \$500, and the maintenance margin is \$350. Remember that any amount above the initial margin can be taken out of the account at any time, but when the account value falls below the maintenance margin, a deposit sufficient to return value all the way to the initial margin is required.

Table 1. Margin Account Maintenance.

| Date | Price per Bushel | Action | Margin Action | Account Balance |
|--|------------------|----------------|-------------------|-----------------|
| Initial margin = \$500 Maintenance margin = \$350 | | | | |
| 17-Jan | \$2.50 | Buy July corn | Deposit \$500 | \$500 |
| 18-Jan | \$2.48 | | | \$400 |
| 19-Jan | \$2.46 | | | \$300 |
| | | | Margin Call \$200 | \$500 |
| 20-Jan | \$2.47 | | | \$550 |
| 21-Jan | \$2.40 | | | \$200 |
| | | | Margin Call \$300 | \$500 |
| 24-Jan | \$2.43 | | | \$650 |
| 25-Jan | \$2.45 | | | \$750 |
| 26-Jan | \$2.49 | | | \$950 |
| | | | Withdraw \$450 | \$500 |
| 27-Jan | \$2.51 | | | \$600 |
| 28-Jan | \$2.55 | Sell July corn | | \$800 |