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# The Only Thing That Is Constant Is Change: A Brief Overview on How Technology Has Changed Futures Markets in Recent Years Part I

Fabio Mattos

*University of Nebraska-Lincoln*, [fmattos@unl.edu](mailto:fmattos@unl.edu)

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# Cornhusker Economics

***The Only Thing That Is Constant Is Change:***  
**A Brief Overview on How Technology Has Changed**  
**Futures Markets in Recent Years**  
**Part I**

Market Report	Year Ago	4 Wks Ago	10-23-15
<b>Livestock and Products,</b>			
<b>Weekly Average</b>			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight. . . . .	170.00	128.78	138.00
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb. . . . .	283.74	228.84	225.42
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb. . . . .	241.72	194.20	200.88
Choice Boxed Beef, 600-750 lb. Carcass. . . . .	249.50	218.66	216.03
Western Corn Belt Base Hog Price Carcass, Negotiated. . . . .	90.60	69.19	68.32
Pork Carcass Cutout, 185 lb. Carcass 51-52% Lean. . . . .	101.91	82.41	87.50
Slaughter Lambs, woolled and shorn, 135-165 lb. National. . . . .	163.50	154.71	158.51
National Carcass Lamb Cutout FOB. . . . .	378.40	361.18	360.60
<b>Crops,</b>			
<b>Daily Spot Prices</b>			
Wheat, No. 1, H.W. Imperial, bu. . . . .	5.21	4.20	3.95
Corn, No. 2, Yellow Nebraska City, bu. . . . .	3.05	3.57	3.44
Soybeans, No. 1, Yellow Nebraska City, bu. . . . .	9.08	8.29	8.29
Grain Sorghum, No.2, Yellow Dorchester, cwt. . . . .	5.86	6.00	5.89
Oats, No. 2, Heavy Minneapolis, Mn, bu. . . . .	3.46	2.59	2.60
<b>Feed</b>			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton. . . . .	197.50	185.00	180.00
Alfalfa, Large Rounds, Good Platte Valley, ton. . . . .	85.00	82.50	75.00
Grass Hay, Large Rounds, Good Nebraska, ton. . . . .	85.00	80.00	77.50
Dried Distillers Grains, 10% Moisture Nebraska Average. . . . .	120.00	127.00	111.25
Wet Distillers Grains, 65-70% Moisture Nebraska Average. . . . .	43.00	50.50	56.00
<b>* No Market</b>			

During this month of October, we have read in the news several articles about trading in futures markets related to recent practices that are becoming increasingly prevalent. A US presidential candidate suggested the creation of a tax on high-frequency trading (HFT), referring to it as unfair and abusive. The focus appeared to be on the large magnitude of order cancellations in some HFT strategies. We also read in the news that the Commodity Futures Trading Commission (CFTC), the US derivatives regulator, filed a complaint against a Chicago-based proprietary trading firm that has allegedly been “spoofing” futures markets. Then the head of the CFTC indicated that the agency plans to address turbulence in Treasury futures markets, supposedly caused by automated trading. And there is the trial of an investor accused of “spoofing” commodity futures markets, who the Chicago Tribune reported to be the first criminal defendant to be “tried under the anti-spoofing legislation included in the 2010 Dodd-Frank Act”.

These are just some examples of recent news related to spoofing, HFT, and automated trading. This kind of news was just unimaginable 30 years ago. Even 10 years ago, these types of trading were still not widespread. Although these phenomena are relatively recent, they are already common in the news. Thus, it is useful to understand what these trading practices are and clarify some usual misunderstandings. Let us

start with *electronic trading*, which essentially refers to orders to buy and sell in the futures market that are placed and executed through a computer system. Trading decisions can still be made and executed by a person, but the orders are transmitted to the futures exchange through a computer. Therefore, electronic trading simply indicates how orders are transmitted, not how they are determined or executed.

Focusing on agricultural commodities, 15 years ago there was barely any trading in electronic platforms in agricultural futures markets. For example, less than 5% of all futures contracts in corn, soybeans and wheat were traded electronically in the early 2000's. Almost all trading happened in the pits, through the traditional open outcry system. In 2006-2007 electronic trading started to pick up and by 2010-2011 electronic trading was already dominant in agricultural futures markets. In 2011, more than 90% of all futures contracts in corn, soybeans and wheat were traded electronically. The CME Group eventually decided to close its trading pits and eliminate the open outcry system. Since July 2015 all futures contracts in agricultural markets are traded electronically.

The rapid development of computer technologies and quick growth of electronic trading brought to light other types of trading systems. One of them is *algorithmic trading*, which broadly refers to orders to buy and sell in the futures market that are determined by computer programs, which calculate all characteristics of the orders (such as price, quantity, and entry time). Trading decisions are made by computer programs based on pre-programmed instructions, and the orders may be placed and executed manually (through a computer) or by the computer itself. The key point here is that computer programs determine the characteristics of the order, but it may still be reviewed or approved by a trader before it is executed. Another term that has become popular is *automated trading*, which essentially denotes orders to buy and sell in the futures market that are fully automated, without human direction. Orders are generated and placed by computer programs. However, there is typically a risk manager overlooking the automated system, as well as built-in controls within the computer program.

The term that has probably been the most prevalent this month is *high-frequency trading*, or simply *HFT*. This is a general term that indicates a type of algorithmic trading characterized by high speeds that can only be maintained by computers. In the HFT world, trading execution time is typically measured in milliseconds (one thousandth of a second) or microseconds (one millionth of a second). If it takes one millisecond to execute a trade, then 1,000 trades can be executed in one second. HFT systems are basically designed to move in and out of short-term positions (many times for just a few seconds) with high volumes. When they are profitable, they typically capture small profits in each trade (sometimes less than a penny). This is why they often trade very large volumes, so that their profit margin per trade can be leveraged.

Finally, a specific trading practice that emerged with electronic trading and became more common with HFT is *spoofing*. It consists of intentionally placing orders with the intention of cancelling them before they are executed. Thus, "spoofers" do not place orders because they actually want to make those trades, but rather because they want to mislead other traders. The basic idea is not new to futures markets (or financial markets in general). In the 1800's, when commodities were traded in open markets in the streets, "Joe Spoofer", a corn trader, could have a friend offer to sell corn at a price below the current market price (without any intention to actually sell corn). As other traders adjusted their offers downward, Mr. Spoofer would rapidly buy corn at lower prices, while his friend would quickly disappear from the market. Once other traders realized that the price had been artificially deflated, they would readjust their offers upward and the market price would rise back to where it was before the spoofing started. At that point, Mr. Spoofer would be able to sell at higher prices the corn he had just bought at an artificially lower price. When futures exchanges were formally organized, such as the Chicago Board of Trade and Chicago Mercantile Exchange, there was anecdotal evidence that spoofing still happened in the open outcry system, following the same basic process.

The news we have been recently reading about spoofing, as mentioned in the first paragraph, refers to trading practices based on the exact same principle. Buy orders are placed above the current bid, while sell orders are placed below the current offer, in order to mislead other traders into changing their bids and offers and allow the “spoofers” to take advantage of that. However, modern-day spoofing brings a new dimension to it. In a world of high-speed electronic trading, spoofing became faster, anonymous and larger, which makes it potentially more disruptive to futures markets. This practice was actually made illegal by the 2010 Dodd-Frank financial reform law. But, as recent events suggest, traders still seem to be doing it (and those who are caught are subject to fines and/or trial).

The question that emerges is whether electronic trading and the new environment it created has actually benefited the market. We will go back to this question next week. The purpose of this first part was to explain how the market has changed in the recent past and the new types of trading that emerged. Almost all trading is now electronic, and a large proportion of it is algorithmic and/or automated (which includes HFT). In the next article, we will talk about advantages and disadvantages of the new environment, and discuss whether it is benefiting or disrupting the market.

Fabio Mattos, (402) 472-1796  
Assistant Professor  
Department of Agricultural Economics  
University of Nebraska-Lincoln  
[fmattos@unl.edu](mailto:fmattos@unl.edu)