



ARE 415: Introduction to Commodity Futures Markets

Lecture 2: THE NATURE OF FUTURES CONTRACTS

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10.15am – 11.30am
Gardner 3214, NCSU***



INTRODUCTION

THE GOALS OF THIS COURSE

This course presents an economic introduction to **futures** and **options** markets, a primary focus will be on agricultural and natural resource commodities. Topics include:

- futures exchanges and the institutions that facilitate trade;
- the historical development and importance of these markets today;
- to managing commodity price risk for sellers and buyers by hedging with futures and options;
- the role of futures markets in price discovery;

CENTRAL CONCEPT WE BUILD UP TO IS: HEDGING

Hedging entails participating in the futures or options market to neutralize the effects of asset (commodity or financial) price risk.

- Allows effective risk management by the transfer of risk to another party



WHAT THIS CLASS IS NOT

- This course is **NOT** designed to teach you how to make your first million through speculating on futures and options markets.
- In fact most individuals who speculate on futures and options markets lose
<http://www.futuresfacts.com/tools-a-research/61-seminar-a-courses/341-why-most-futures-traders-lose-money>
- However speculators are critical to the market and those who do it for a living are highly skilled and disciplined individuals who trade according to self-imposed well defined and refined set of rules
 - For example, most speculators do not hold a position overnight and are in and out of the market in a single day. They make their money on making many trades taking measured risks.
 - Reward and risk are always related. It is unrealistic to expect to be able to earn above-average investment returns without taking above-average risks as well.



WHAT THIS CLASS **IS** ABOUT

- Provide a basic understanding of practical operations and economic rationale underlying futures & options markets.
 - We want you to become literate in the jargon and terms and mechanics
- Discuss the economic benefits of derivative markets like futures & options.
 - The critical role of effective risk management and how to use futures and options as a tool
- Study the use of futures & options as instruments in business decision-making & portfolio management.
 - Remember the tails and feather have to be feed everyday whereas growing feed products (corn, soybeans, wheat) is a one shot deal
 - Sellers want to sell high & buyers want to buy low but this often occurs at times when they do not have or want the physical commodity



Big Picture Theme

- Agriculture is a *risky* business
 - Managing risk has never been more important than in the past ten years
 - period of volatile markets
- Markets *do* work
 - Understanding agricultural demand and supply and that price will function to equalize the quantity demanded by consumers and the quantity supplied by producers resulting in an economic equilibrium is the crucial aspect of agricultural economics.
 - Key agricultural markets trade daily on new information and expectations about demand and supply (eg. WASDE)
 - <http://www.usda.gov/oce/commodity/wasde/>
 - Accurate and up to date information and data are *critical* to the process of markets trading and forming reasonable expectations regarding current and future prices
 - This information is reflected in the market prices
 - This does not mean farmers need to be glued to CME daily though





BIG PICTURE FOCUS

The fate of NC agriculture is entwined with events in the US/rest or world. This explains the need to look at US/world events in considering the economic outlook. Some events happen others are slower but very real.

These kind of things you will learn in your commodity brief research

Examples of very close/fast acting links are:

- ❑ Weather events in prominent agricultural countries can impact prices in NC (e.g. Sth American drought)
- ❑ Increases in world oil prices increase NC farmers costs for fuel, fertilizer etc.
- ❑ US Farm Bill developments have immediate effect on NC farmers
- ❑ EPA regulations can impact a NC farmer's ability to operate
- ❑ Changes in the Renewable Fuel Standard (RFS) divert corn from feed to ethanol

Examples of slower yet very real links are:

- ❑ Gradually changing diets in developing world, people wanting to eat more animal protein as incomes increase, increases world demand for feed grains, resulting in higher feed prices for NC broiler/hog producers (but helps NC feed grain producers). Could also be beneficial to NC broiler/hog producers with increased exports
- ❑ Research on new plant varieties/biotech eventually lowers costs of production for NC row crop producers and NC users of feed grains.



Crop Disasters Around the World-- (USA-Midwest June 2011)

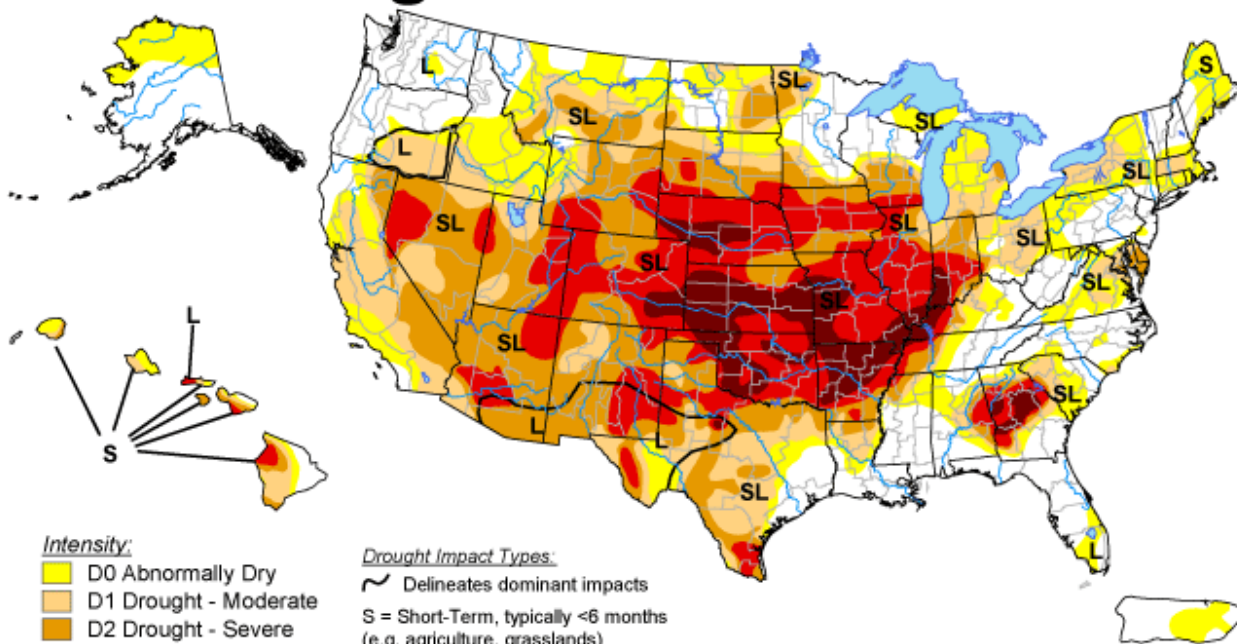




Crop Disasters Around the World-- (USA-Midwest August 2012)

U.S. Drought Monitor

August 14, 2012
Valid 7 a.m. EDT



Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional

Drought Impact Types:

- Delineates dominant impacts
- S = Short-Term, typically <6 months (e.g. agriculture, grasslands)
- L = Long-Term, typically >6 months (e.g. hydrology, ecology)

The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu/>



Released Thursday, August 16, 2012

Author: Michael Brewer/Liz Love-Brotak, NOAA/NESDIS/NCDC



Crop Disasters Around the World— Australia (Jan 2011)





What a Difference a Year Can Make: Australia in Jan 2012

Cotton grower Matt Norrie, with dog Andy on his property near Narrabri in NSW, says confidence has come surging back.

Source: Australian,
December 2011.

Cotton's king again but facing reign clouds



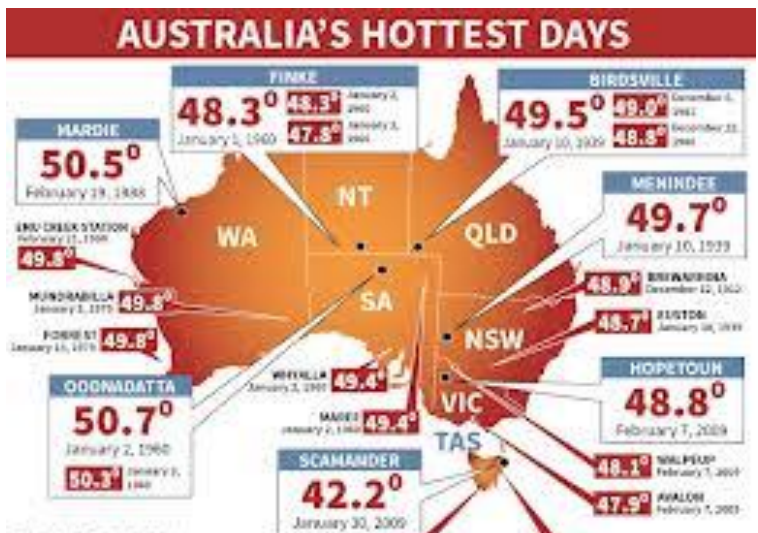
JAMES CROUCHER

Cotton grower Matt Norrie, with dog Andy on his property near Narrabri in NSW, says confidence has come surging back



What a Difference a Year Can Make: Australia in Jan 2013

50°C
=
122°F





Futures Markets Provide Information

- ❑ Primary function of the futures/options is the *discovery* of prices
 - Today's best guess of what prices will be in the future
 - For example, useful information about making planting decisions
- ❑ Participants register by taking a position in the market
 - Everyone has an opinion but it only matters if you put your money where your mouth is by taking a position
- ❑ Futures markets establish prices for deferred delivery
 - All forward pricing relies on futures prices
- ❑ Options are traded on underlying futures contracts



Usual Planting and Harvesting Dates Major Field Crops, North Carolina

Jan. | Feb. | Mar. | April | May | June | July | Aug. | Sept. | Oct. | Nov. | Dec.

Soybeans

Corn
(Grain)

Wheat

Cotton

Tobacco
(Type 12)

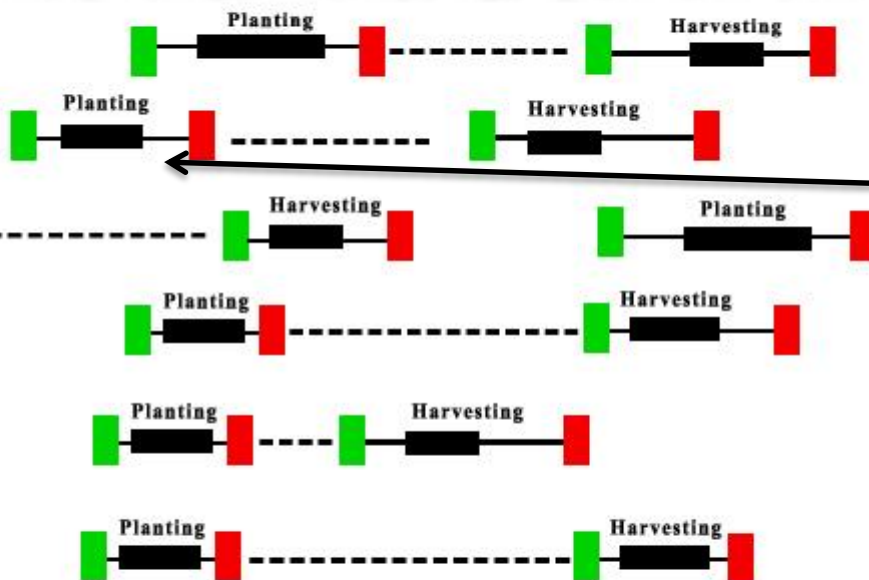
Peanuts

Begin

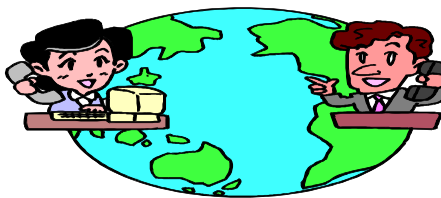
Most Active

Maturing

End



Look at C-Dec futures—
New Crop futures



Incorporates Information from Around the World

- A farmer in North Carolina who expects a bumper crop
- A farmer in Australia who is exporting her crop
- A Chinese buyer wanting to import feed grains
- Opinions regarding the next USDA report
- A feedlot in Iowa who expects to need more grain
- Opinions of production in other countries and their stocks



CBOT 1929



CBOT Floor







Why Do Futures Markets Work?

- A large number of participants**
 - For any one individual or entity it is not possible to manipulate the market

- Standardized: Quantity, Quality, Delivery Time and Place**

- Easy entry and exit at a low cost**

- Reduces the cost of doing business**

- Highly regulated to ensure they remain competitive and all trades clear (important example later)**



Market Participants Differ in Important Ways

Different goals and objectives --

- Farmer who produces grain
- Miller that needs grain





What is a Futures Contract?

- ❑ **Legally binding agreement to buy and sell a commodity in the future**

- ❑ **Only variable is price**
 - **Determined on the futures exchange floor**

- ❑ **This price once agreed upon does not change and is the price paid and received at the delivery date**



It Takes Two To Have A Contract

Needs to be a buyer and seller for each contract

- **SELLER** (called the *short*) agrees to deliver the specified quantity at the agreed upon price at the designated date in the future
- **BUYER** (called the *long*) agrees to purchase the specified quantity at the agreed upon price at the designated date in the future



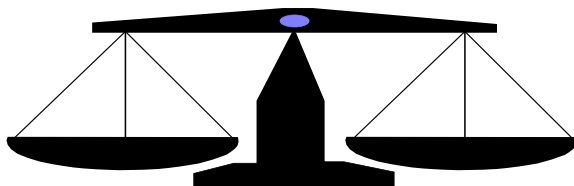
What is an option?

- An option gives one the right, but not the obligation, to purchase or sell a particular commodity futures at a certain price for a limited period of time
- For this right you must pay a premium
- *Put Option*: the right to **SELL**
- *Call Option*: the right to **BUY**



Hedging

- ❑ Trading futures with the objective of reducing or controlling risk
- ❑ Give up chance for additional profits due to favorable price changes in return for a reduction in risk exposure to adverse changes in prices
 - ❑ THIS WILL BE COVERED IN MUCH MORE DETAIL LATER





Potential Hedgers

- **Potential hedgers: Anyone that must enter the cash market sometime in the future**
 - Grain farmers wanting to reduce exposure to price declines before selling their grain (*short*)
 - A miller wanting to reduce exposure to price increases before purchasing grain (*long*)
- Requires taking an **opposite position** in the futures market today than you have in the cash market currently



The Basic Principle of Hedging

Gains and losses in the cash position must be offset by gains and losses in the futures position

Cash
Market

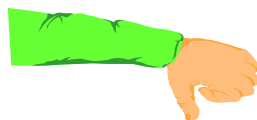
Futures
Market

Net
Result

Gain

Loss

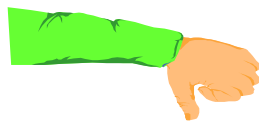
Neutral



Loss

Gain

Neutral





Some questions about what we learned today?

- ❑ When a farmer places a corn seed in the field in May for harvest is she *long* or *short* the cash market?
 - What is their expectations about prices?

- ❑ What is a primary function of futures markets?

- ❑ How many people does it take to have a futures contract? What are their different goals and objectives?



Challenge: **What will be the price of corn in Dec 2018?** Nick and Wally disagree and want to have a wager on it but Nick is known to renege and Wally is always correct. How can Wally be sure to get paid if he wins?

- ❑ Wally & Nick have differing opinions?
 - Wally says corn is going to \$4.80/bu. Is he **bullish** or **bearish**?
 - Nick says its going to \$2.80/bu. Is he **bullish** or **bearish**?
- ❑ Wally & Nick decide rather than argue they will have wager--\$5000 about who is right! Wally knowing he is always right is worried that **when** he wins Nick will not pay up. How can they make this bet using the C-Dec 2018 and Wally can be sure to be paid his \$1000?

CBOT:ZCZ2018 O:382.4 H:383.4 L:382.4 C:382.4



Wally places a limit order to **buy** 1 C-Dec 2018 (5,000 bu) at \$3.80 once filled place a sell order at \$4.80.

Nick places a limit order to **sell** 1 C-Dec 2018 (5,000 bu) at \$3.80 once filled place a buy order at \$2.80.

Of course, Wally is right and the market hits \$4.81 on 3/30/2018. What ensures Wally gets his \$5000 and Nick cannot renege on the bet?



Homework #2

Due Tuesday, January 16th, 2016 at the beginning of Class

Goal: Begin to familiarize yourself with the futures contract you have chosen and with futures market terminology.

Commodity assignments will be available before 5pm tomorrow (1/12/2018) on the class website:
<https://are415.wordpress.ncsu.edu>

1. What is the commodity that your contract specifies? Where is it produced? How is it used? These are open-ended questions; your answers don't need to be more than a paragraph.
2. On what futures exchange is your futures contract traded, and where is the exchange located?
3. How large is a single contract (in bushels, ounces, dollars, etc.)?
4. What are the units for the price quote? (That is, dollars/pound, cents/bushel, light-years/kilogram.)
5. For what months and years are contracts traded?
6. How large is open interest in the nearest delivery contract? Put a dollar value on your number for open interest using a recent price.
7. For how long have futures contracts existed for your commodity? (Answering this question may not be as straightforward as answering the other questions.)