Risks Associated With Marketing

November, 2013

Federal Reserve Bank of Chicago

CME Group

Market Risk (Price Risk) is Always Present

Two Components

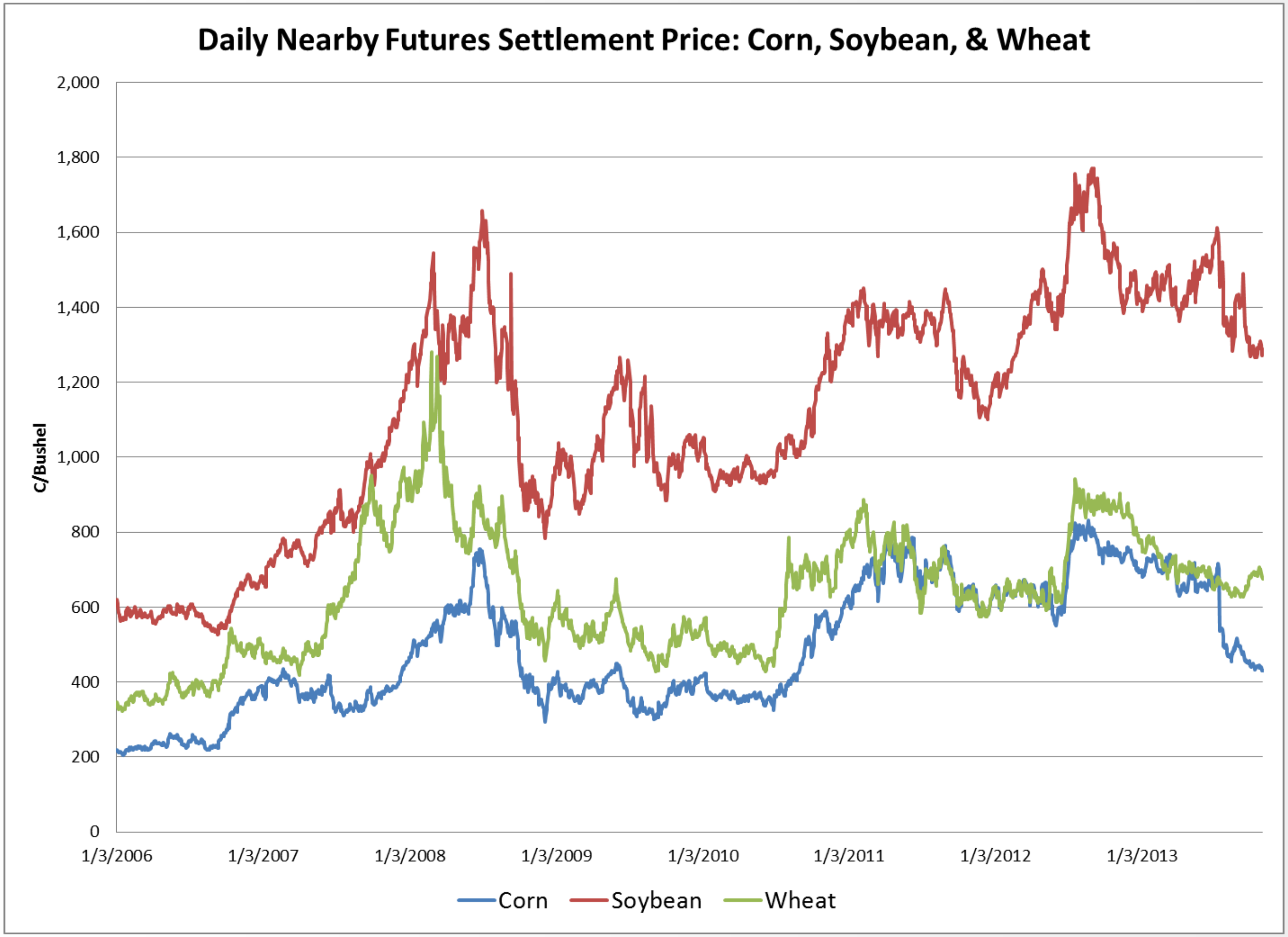
- Futures Price Risk
- Basis Risk (Cash price relative to futures price) caused by
  - Storage costs
  - Transportation costs
  - Handling costs and processing margins
  - Quality
  - Local Supply and Demand

Solution

- Use the best risk management tool to manage the uncertainty of cash (physical) market transactions.

Tools – Futures, Options, Swaps & Cash Market Contracts

Grain & Oilseeds prices have been highly volatile



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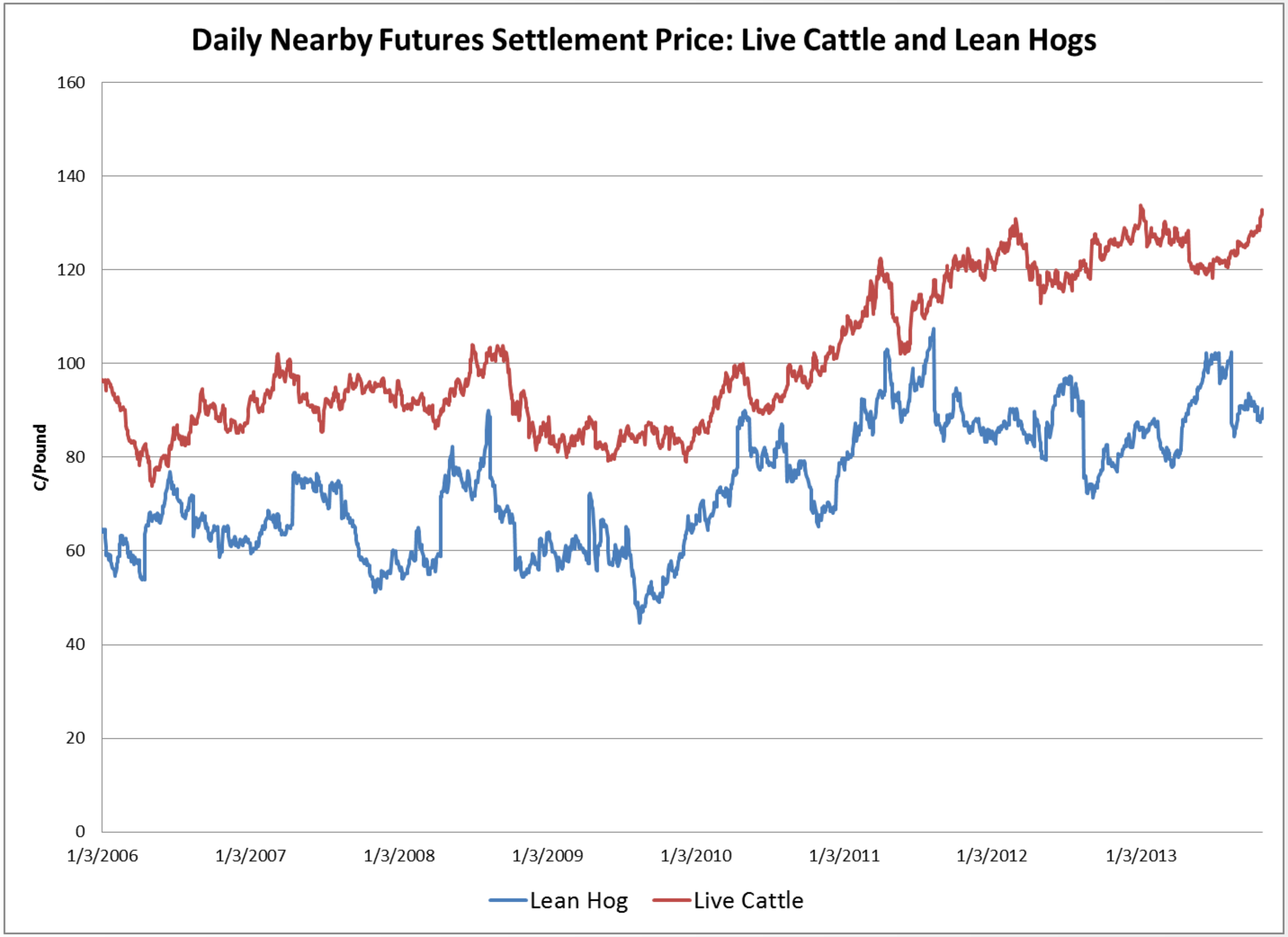
Livestock prices have also been volatile



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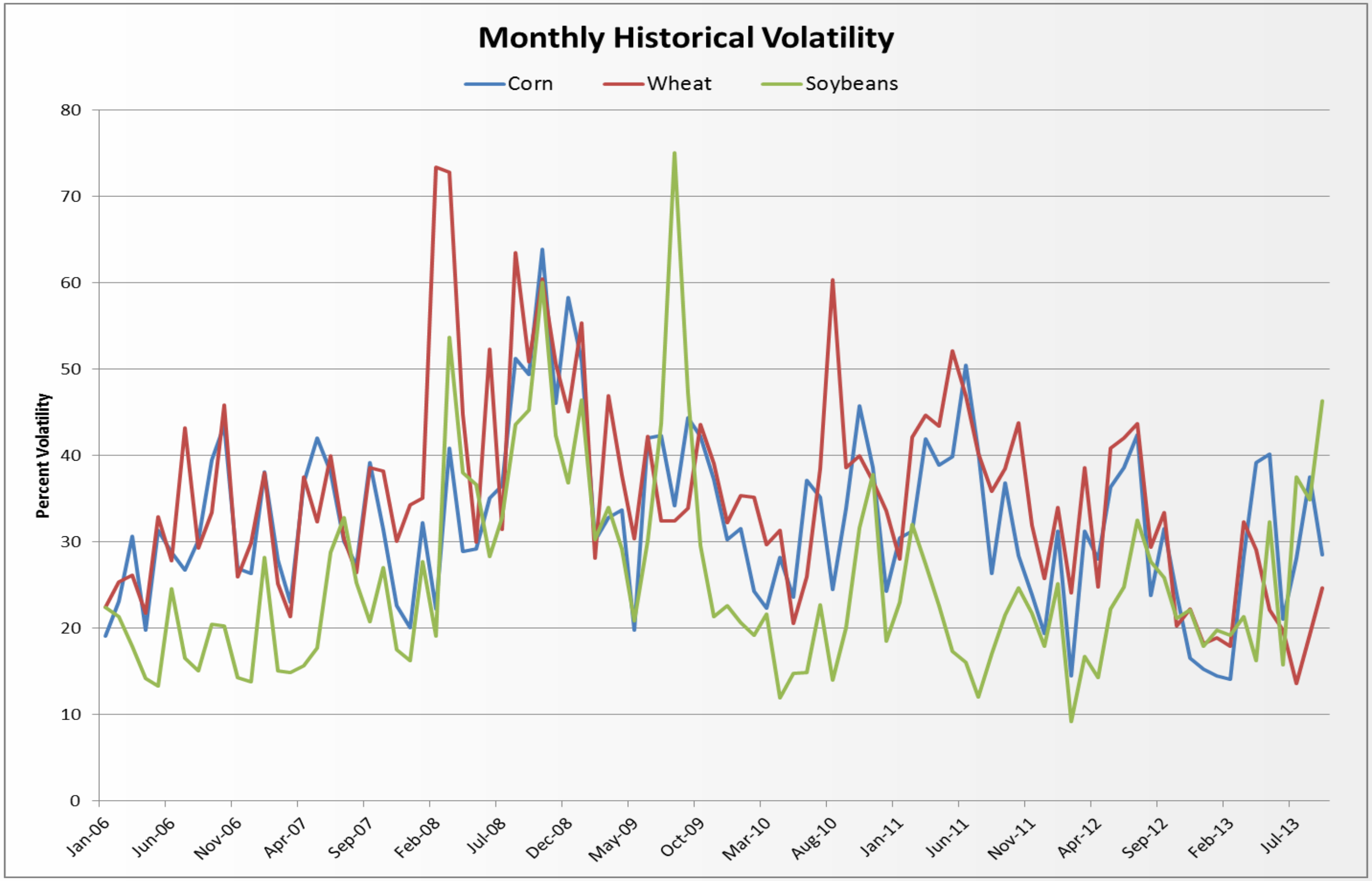

- Historical volatility is calculated as the annualized standard deviation of daily price returns for the nearby futures contract.
- During the past 7 years, annualized historical volatility for corn, wheat and soybeans averaged about 30%, meaning that futures prices at any point in time for these commodities are expected to range +/-30% over the coming year.
- Grain & Oilseeds prices show relatively high volatility (30%), compared to equity indexes (20%) and U.S. Treasury Bond futures (10%).

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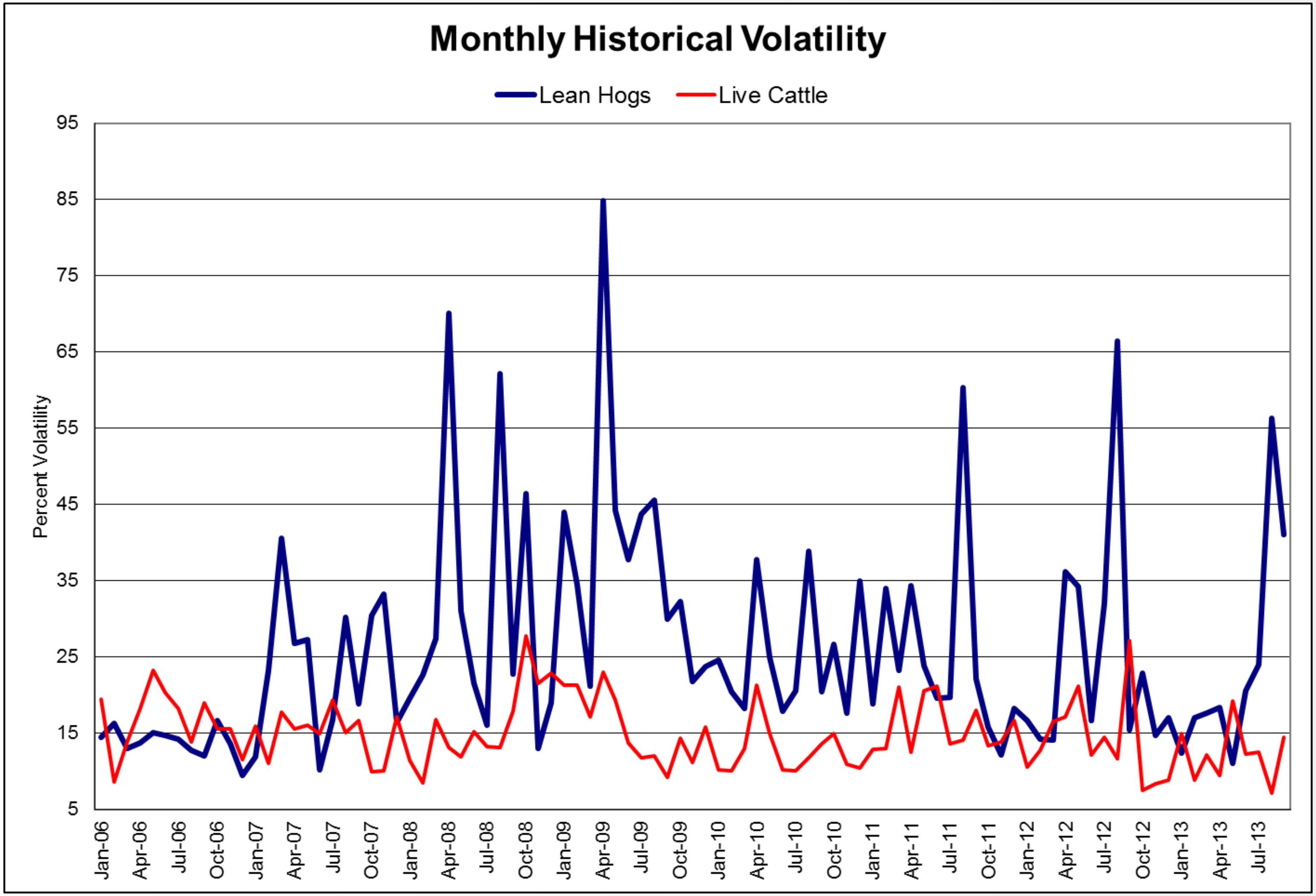

Lean hog prices are also highly volatile, with significantly greater volatility than Live Cattle.

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CME Group Agricultural Commodity Product Complex: Futures, Options, and OTC Cleared Swaps

Grains and Oilseeds:

- Corn Futures, Options & Swaps
- Mini-sized Corn Futures
- Wheat Futures, Options & Swaps
- Mini-sized Wheat Futures
- KC Wheat Futures and Options
- Wheat-Corn Spread Options
- Soybean Futures, Options & Swaps
- Mini-sized Soybean Futures
- Soybean Meal Futures and Options
- Soybean Oil Futures and Options
- Soybean Corn Price Ratio Options
- Crude Palm Oil Futures
- Ethanol Futures, Options and Swaps
- Oat Futures and Options
- Rough Rice Futures and Options

Livestock:

- Feeder Cattle Futures and Options
- Live Cattle Futures and Options
- Lean Hogs Futures and Options

Dairy Products:

- Butter Futures and Options
- Butter Spot Call
- Milk Class III Futures and Options
- Milk Class IV Futures and Options
- Cheese Futures and Options
- Cheese Spot Call
- Nonfat Dry Milk Futures and Options
- Nonfat Dry Milk Spot Call
- Dry Whey Futures

Weather

- Heating Degree Day and Cooling Degree Day futures and Options
- Hurricane Futures and Options

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Cash Market Contracts

- Spot purchase or sale
- Cash forward sale
- Long term purchase agreement
- Basis contract

Although they are cash market instruments, most are based on a futures or options contract.

Economic Functions of CME Group Agricultural Products

1. Price Discovery

- Transparent Price Information
- Cash contracts based on futures or options contracts
- Two-way price impact
  - Futures & options market contracts impact cash market contracts
  - Cash market contracts impact futures markets

2. Price Risk Management

- Use CME Group products and services to protect cash market positions and anticipated positions

Types of Market Participants

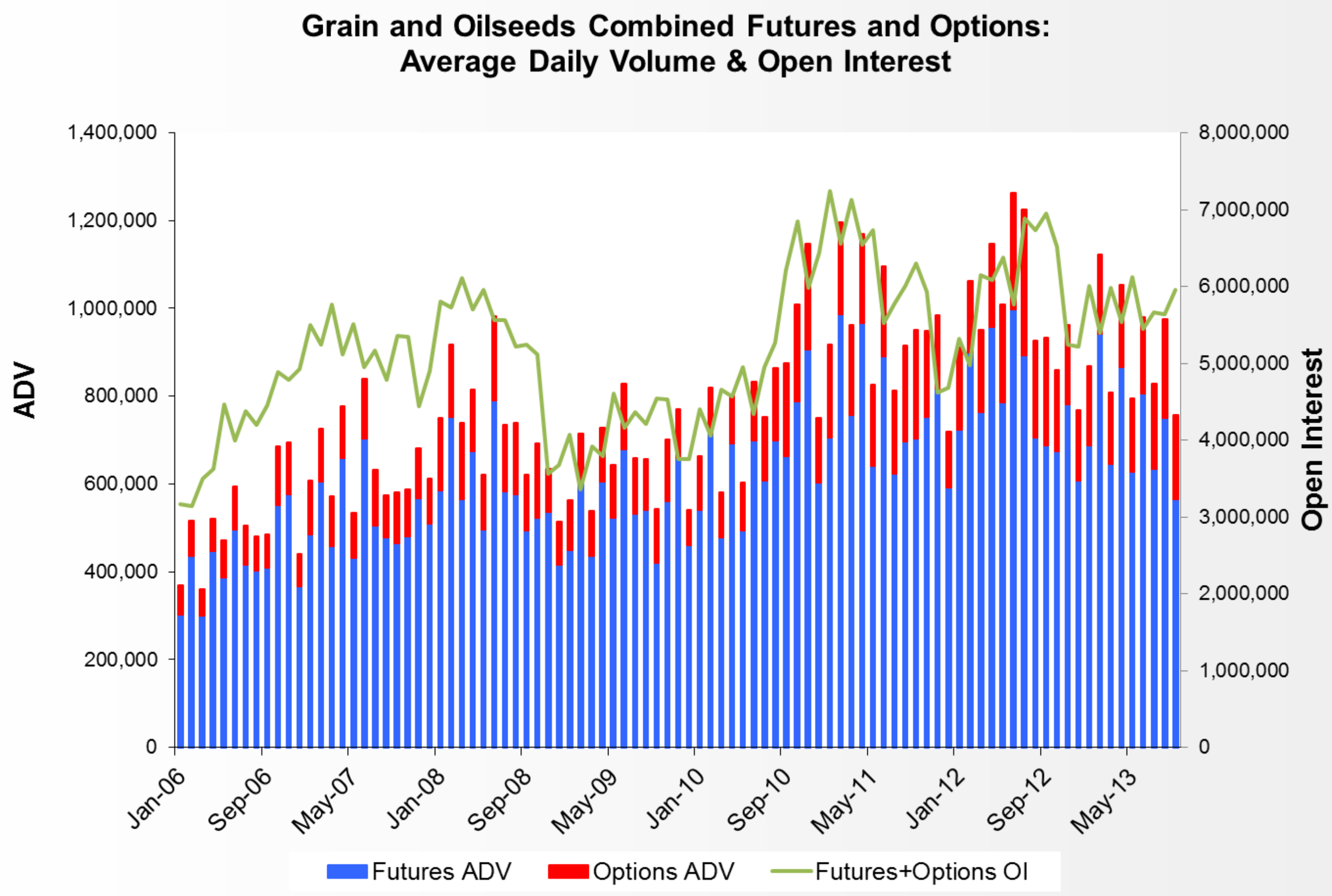
Hedgers

- Have positions in the cash (physical) market
- Do not like price risk but must accept it and manage it

Speculators

- Do not have positions in the cash (physical) market
- Look for price risk – trading opportunities may exist where risk exists

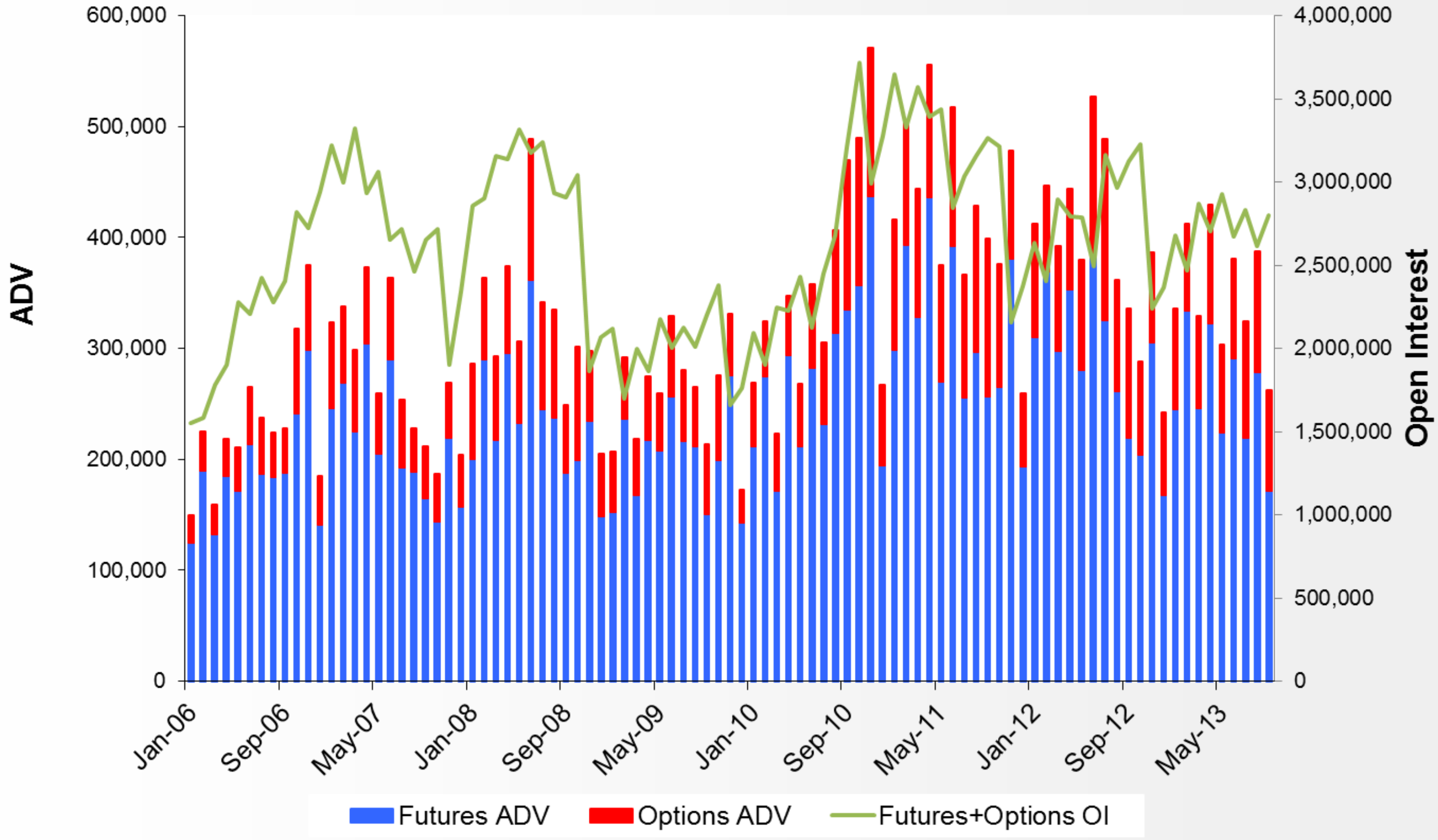
Risk shifts from hedgers to speculators



Liquidity is highly important:

- Easy to find counterparties
- Lower transaction costs

Corn Futures and Options: Average Daily Volume & Open Interest



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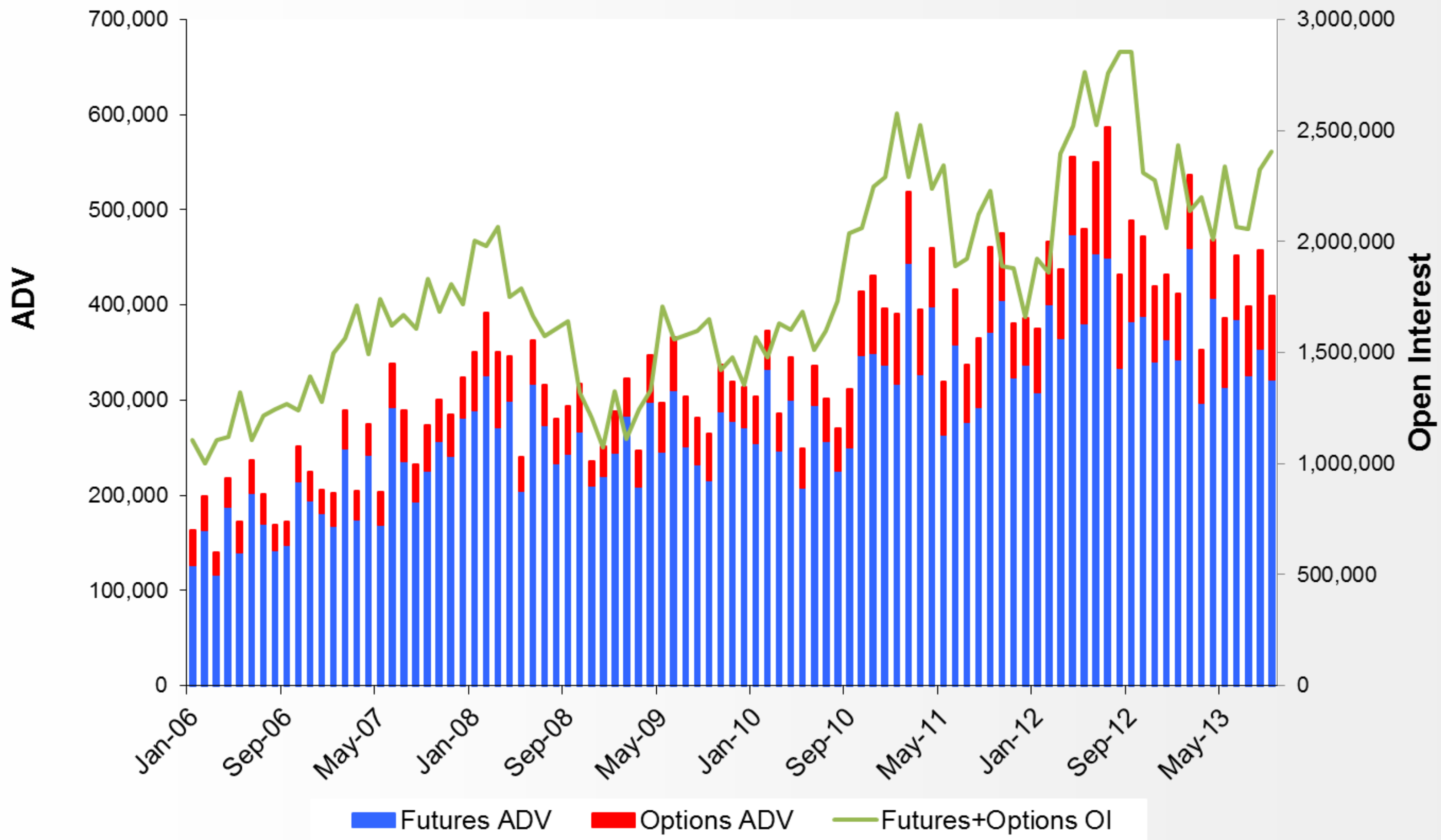
Soybean Complex Futures and Options: Average Daily Volume & Open Interest



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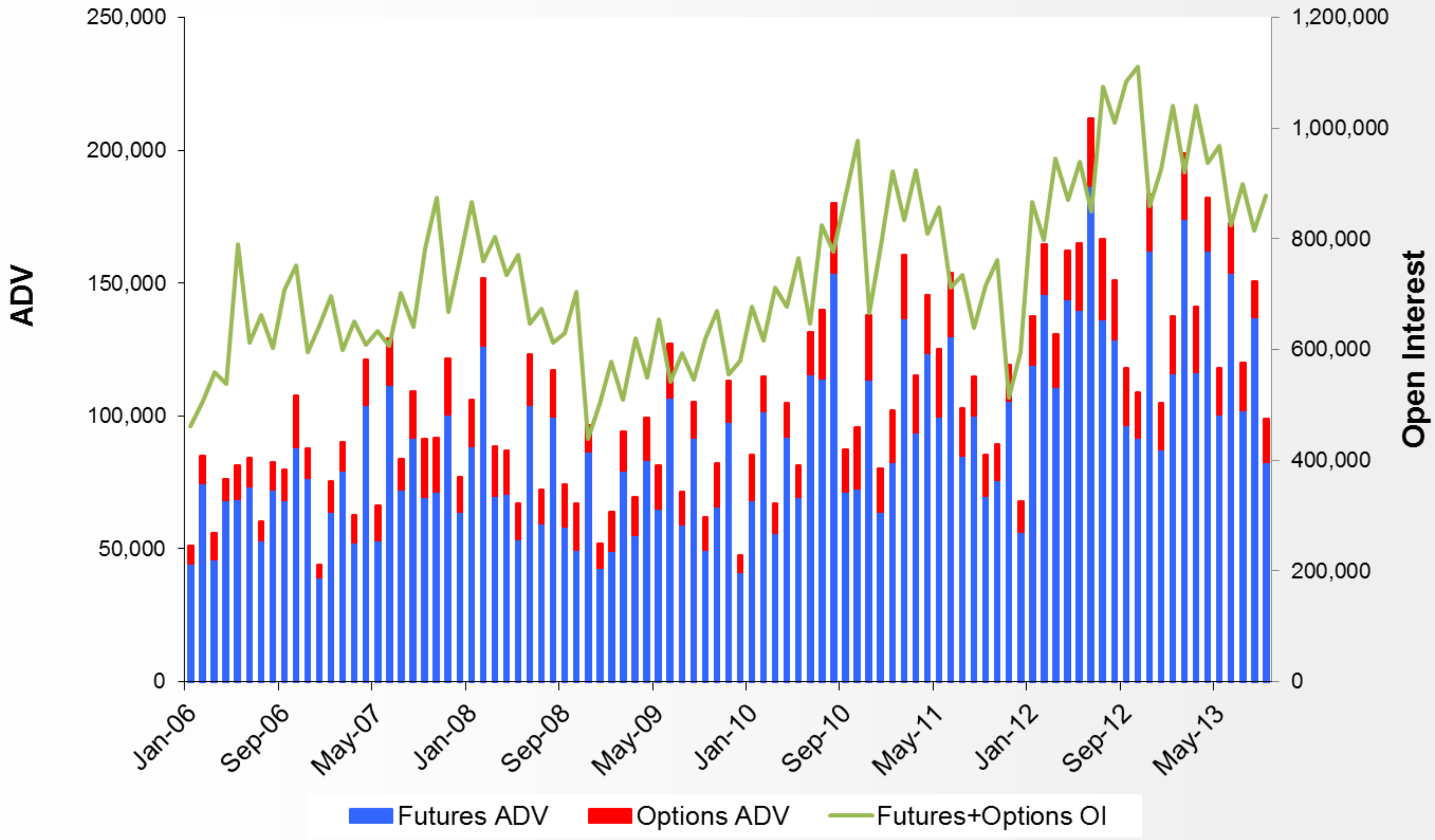
CBOT and KCBT Wheat Futures and Options: Average Daily Volume & Open Interest



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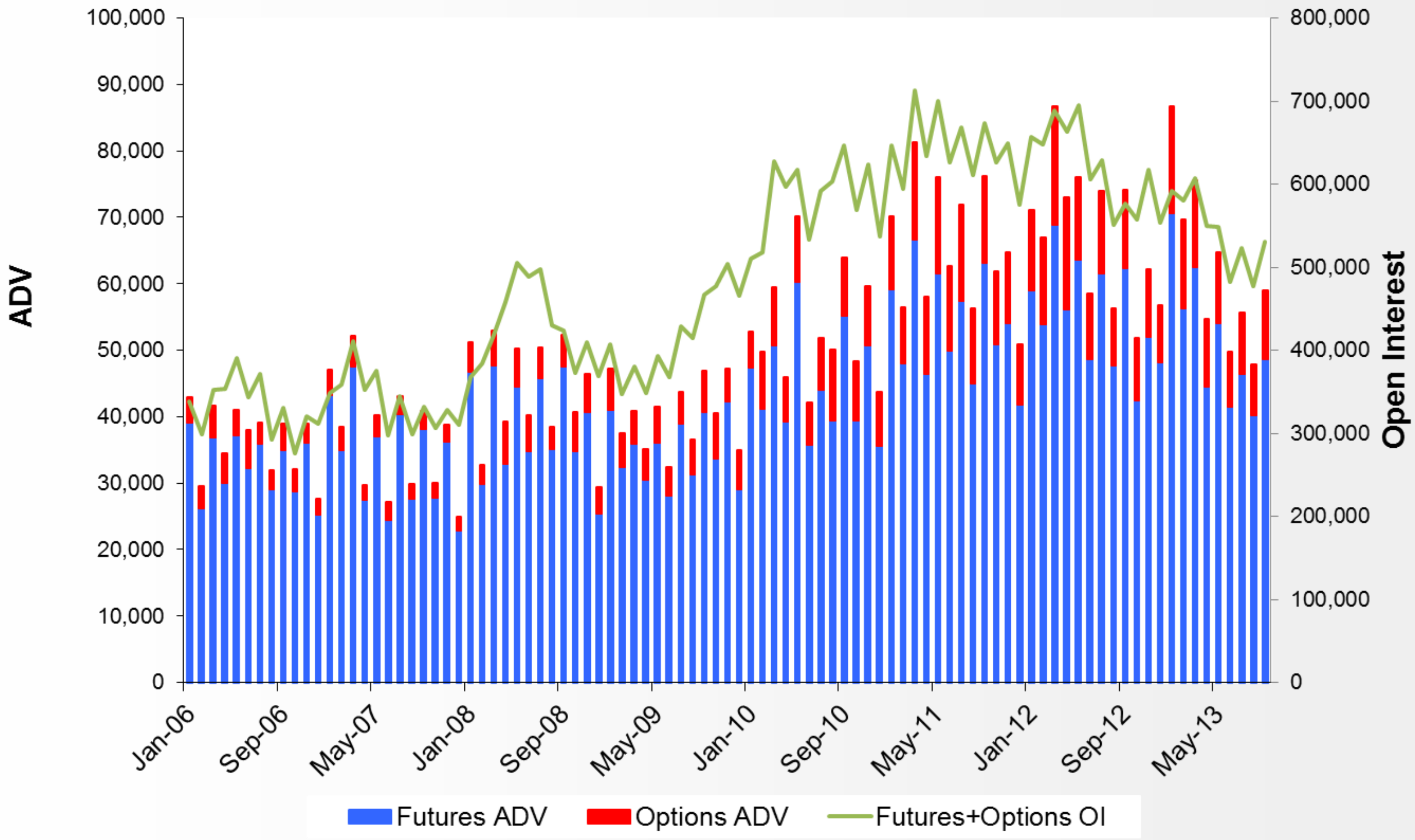
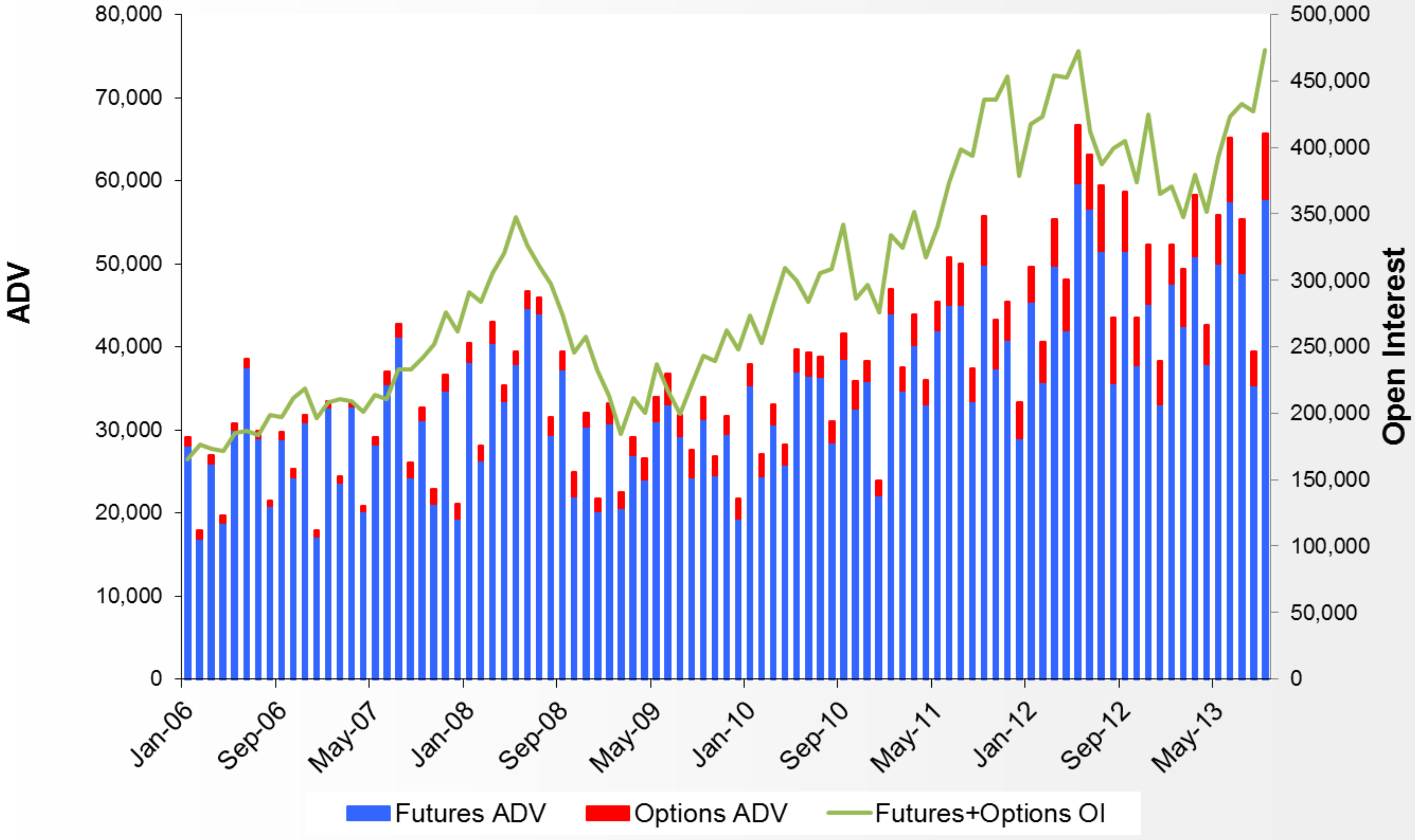
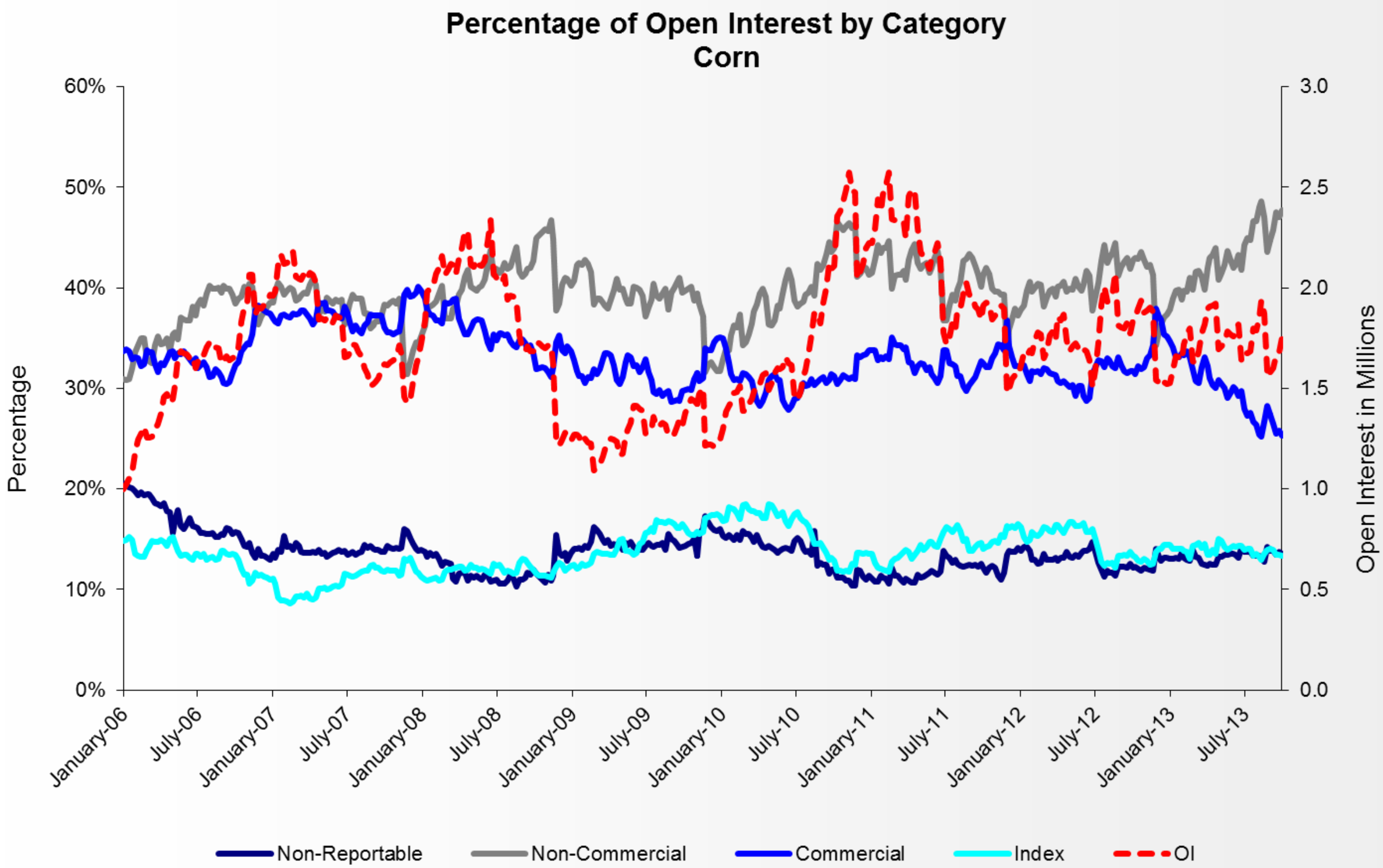
Live Cattle Futures and Options: Average Daily Volume & Open Interest



Lean Hogs Futures and Options: Average Daily Volume & Open Interest



Market Participants by Type



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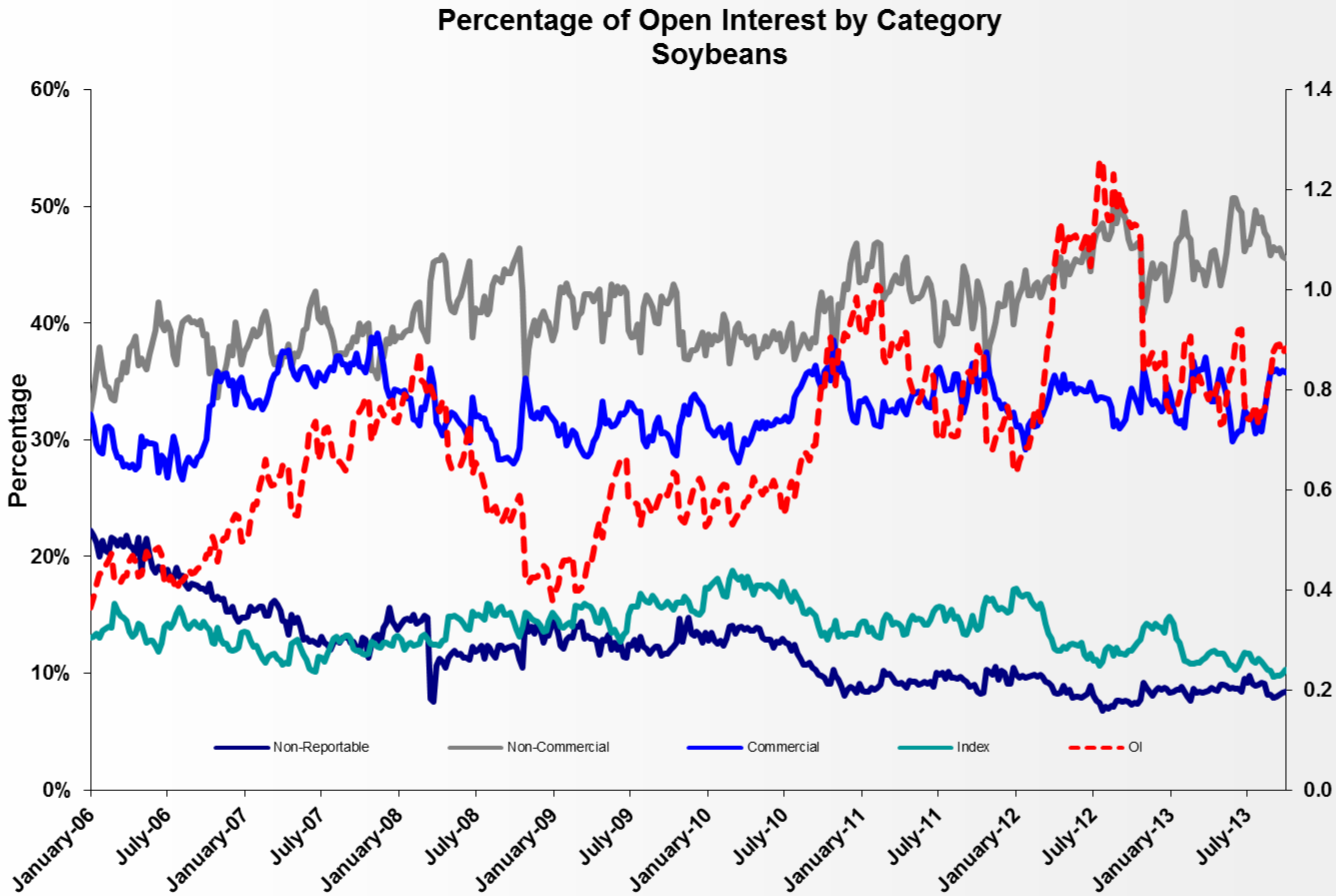
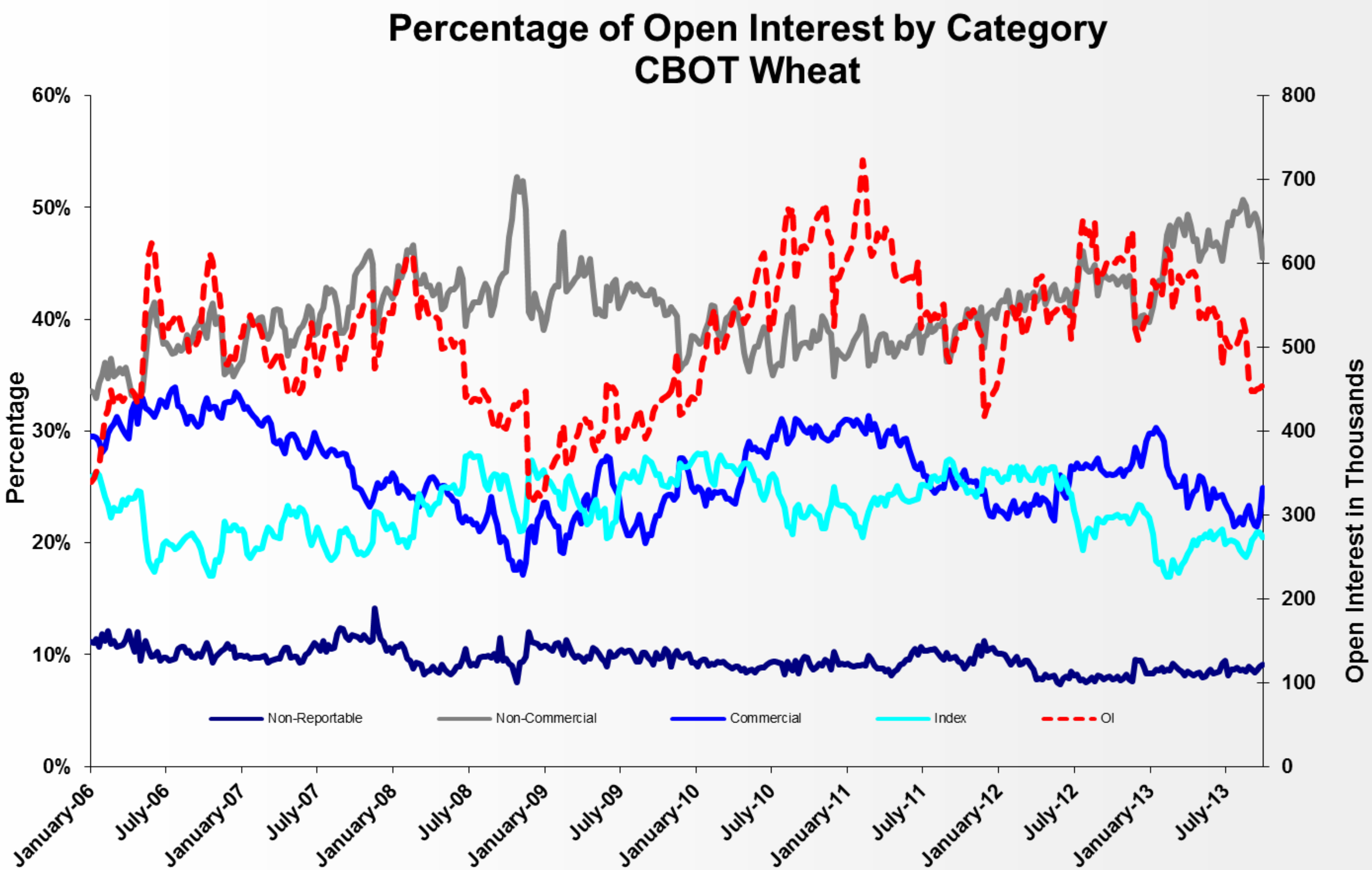

Percentage of Open Interest by Category
Soybeans
Percentage
Open Interest in Millions
60%
50%
40%
30%
20%
10%
0%
1.4
1.2
1.0
0.8
0.6
0.4
0.2
0.0
Non-Reportable
Non-Commercial
Commercial
Index
OI
January-06
July-06
January-07
July-07
January-08
July-08
January-09
July-09
January-10
July-10
January-11
July-11
January-12
July-12
January-13
July-13


Percentage of Open Interest by Category
CBOT Wheat
Percentage
Open Interest in Thousands
60%
50%
40%
30%
20%
10%
0%
800
700
600
500
400
300
200
100
0
Non-Reportable
Non-Commercial
Commercial
Index
OI
January-06
July-06
January-07
July-07
January-08
July-08
January-09
July-09
January-10
July-10
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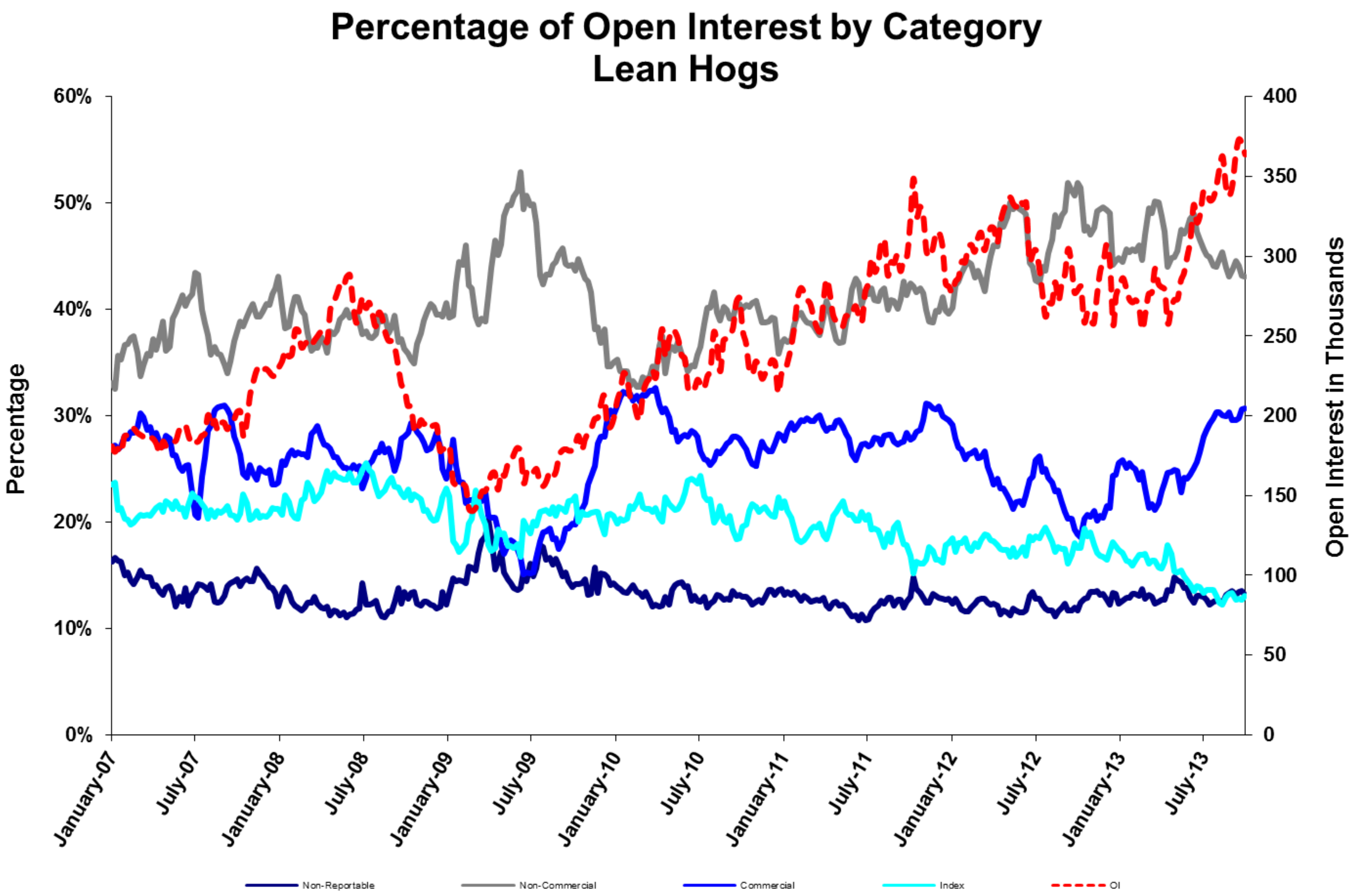
July-12
January-13
July-13


Percentage of Open Interest by Category
Lean Hogs
Percentage
Open Interest in Thousands
60%
50%
40%
30%
20%
10%
0%
400
350
300
250
200
150
100
50
0
January-07
July-07
January-08
July-08
January-09
July-09
January-10
July-10
January-11
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January-12
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January-13
July-13
Non-Reportable
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Commercial
Index
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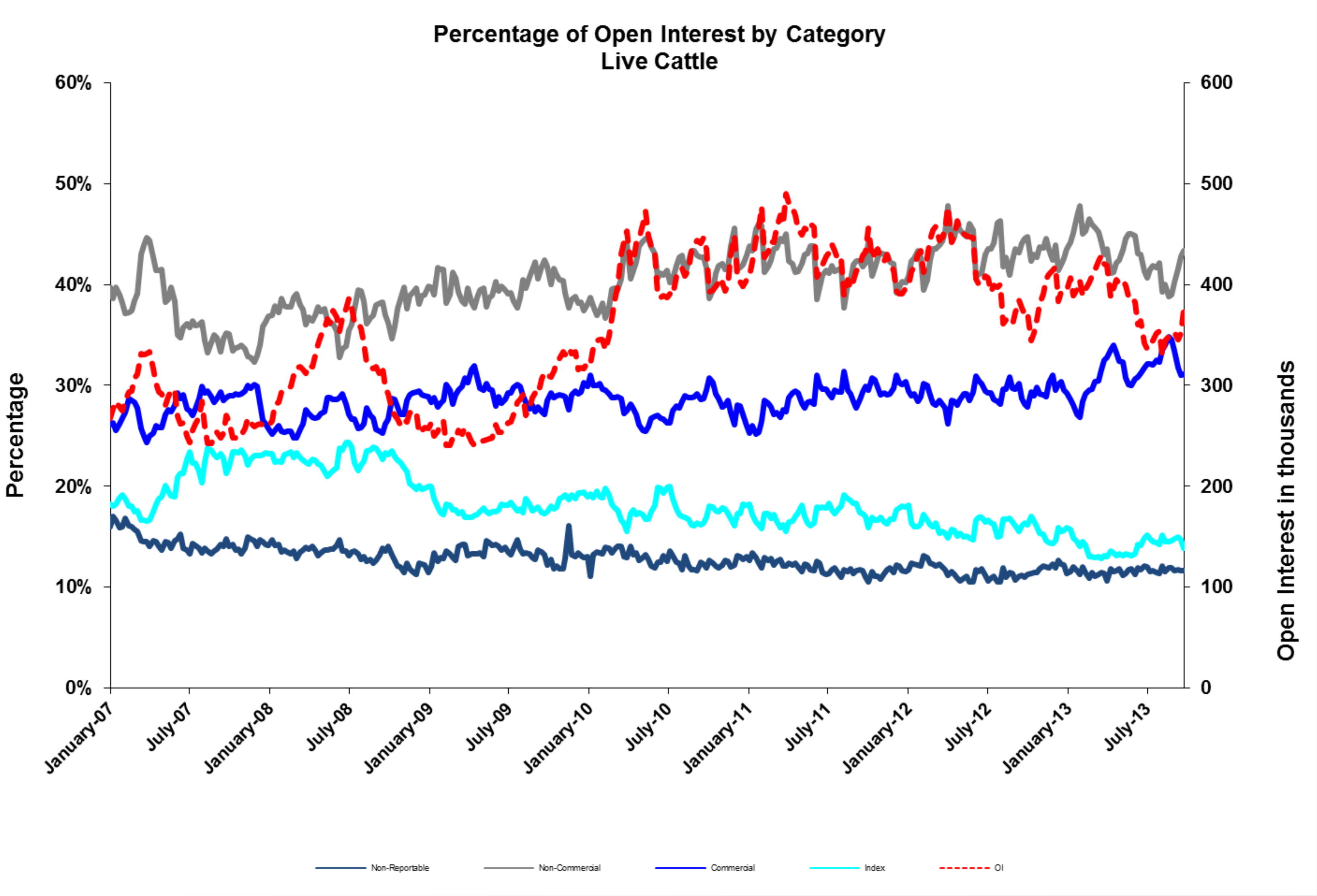

Percentage of Open Interest by Category
Live Cattle
60%
50%
40%
30%
20%
10%
0%
Percentage
600
500
400
300
200
100
0
Open Interest in thousands
January-07
July-07
January-08
July-08
January-09
July-09
January-10
July-10
January-11
July-11
January-12
July-12
January-13
July-13
Non-Reportable
Non-Commercial
Commercial
Index
OI

Product Innovation

CME Group has enhanced Agricultural option suite by successfully launching innovative option products over recent years:

- Calendar Spread Options (CSOs)
- Weekly Options
- Short-Dated New Crop Options (SDNCO)

Short-dated New Crop Options

- Definition:
  - The Short-Dated Options on the deferred (new crop) months are early expiring options that reference the December Corn Contract, November Soybean Contract and July Wheat Contract

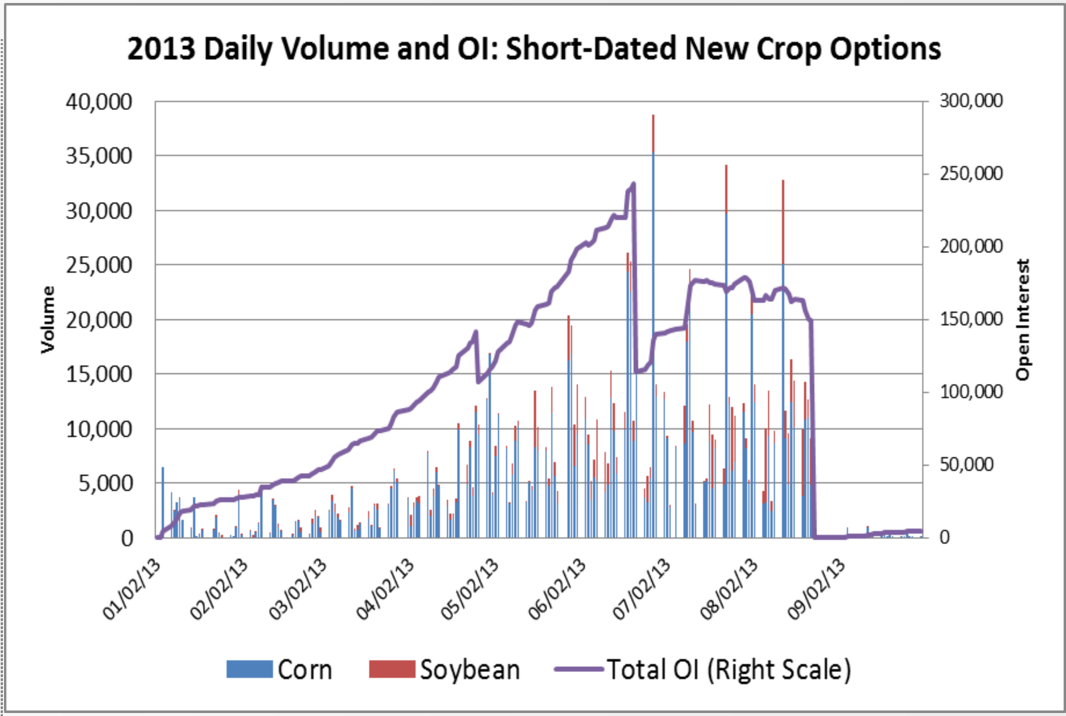
- Key Benefits:
  - Cost-effective: lower premiums due to lesser time value
  - Facilitate hedging early in the planting and growing season
  - Manage risk during specific windows of the growing season at reduced costs
  - Useful for trading around key USDA reports
  - Allow Greek sensitivity hedging
  - Can be used to hedge old/new crop Calendar Spread Options (CSOs) positions
  - Arbitrage opportunities between outrights, CSOs and Short-Dated options

Contract Specifications

Contract Term	Short-Dated New Crop Corn Options	Short-Dated New Crop Soybean Options	Short-Dated New Crop Wheat Options
Underlying Contract	The December Corn futures contract (5,000 bushels) nearest to the option expiration.	The November Soybean futures contract (5,000 bushels) nearest to the option expiration.	The July Wheat futures contract (5,000 bushels) nearest to the option expiration.
Strike Price Interval	Five (5) cents per bushel. More details on strike price intervals are outlined in Rule 10A01.E.	Ten (10) cents per bushel. More details on strike price intervals are outlined in Rule 11A01.E.	Five (5) cents per bushel. More details on strike price intervals are outlined in Rule 14A01.E.
Ticker Symbols	CME Globex: OCD Open Outcry: CDF	CME Globex: OSD Open Outcry: SDF	CME Globex: OWD Open Outcry: WDF
Tick Size	1/8 of one cent per bushel ($6.25 per contract)		
Daily Price Limit	Same as the daily price limit applied to standard and serial options.		
Contract Months	March, May, July, September	March, May, July, September	March, May, December
Last Trade Date	The last Friday which precedes by at least two business days, the last business day of the month preceding the option month.		
Exercise	The buyer of a futures option may exercise the option on any business day prior to expiration by giving notice to the Clearing House by 6:00 p.m. Chicago time. Option exercise results in an underlying futures market position. Options in-the-money on the last day of trading are automatically exercised.		
Expiration	Unexercised Short-Dated New Crop options shall expire at 7:00 p.m. on the last day of trading.		
Trading Hours	CME Globex:	7:00 pm - 1:15 pm CT, Sunday - Friday with a 45-minute break each day between 7:45 am and 8:30 am	
	Open Outcry:	8:30 a.m. – 1:15 p.m. CT, Monday - Friday	

Short-Dated New Crop Options (SDNCO)

- 2014 listing cycle for SDNCO on Corn and Soybeans began on 8/26/13 with four contract months: March, May, July, and Sep 2014.
- 2014 listing cycle for SDNCO on CBOT and KC Wheat began on 8/26/13 with three contract months: Dec 2013 and March, May 2014.
- Combined corn, wheat and soybean volume has surpassed 1.23 million since inception.
- Open interest reached peak at 243,213 on 6/21/13, the day July contract expired.
- Corn set a new record daily volume of 35,355 on 6/27/13.
- Soybean set a new record daily volume of 7,706 on 8/12/13.
- 7,454 contracts have traded during the new 2014 cycle; OI reaches 6,631.
-
- Both CBOT and KC Wheat have traded.



Structuring Minimum Price Contracts with SDNCO

- MPC provides producers with the ability to lock in a minimum price for the production they commit to deliver while still being able to benefit from higher prices that could occur subsequent to the sale.

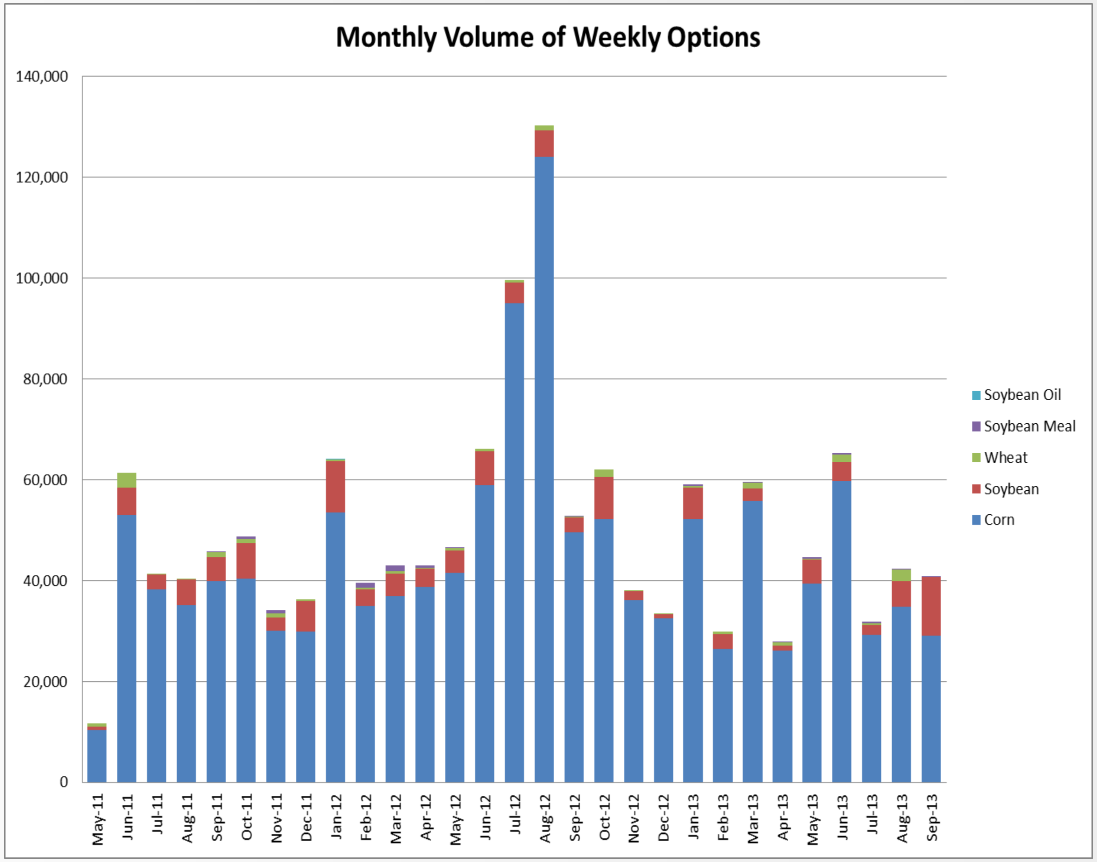
- To structure an MPC, a grain merchandiser buys an option and incorporates the option premium into the producer's minimum selling price.

- Producers can benefit from structuring MPC with SDNCO because of SDNCO's lower time value, and consequently, lower premiums, as illustrated in the table.

	Standard	Short-Dated New Crop		
	December Put Option	September Put Option	July Put Option	May Put Option
December Corn Futures Price	$7.00	$7.00	$7.00	$7.00
Basis	-$0.25	-$0.25	-$0.25	-$0.25
Forward Price	$6.75	$6.75	$6.75	$6.75
Option Premium Price	$.67	$.56	$.48	$.38
Protection Period	326 days (thru Nov)	235 days (thru Aug)	172 days (thru June)	109 days (thru April)
Offered MPC	$6.08	$6.19	$6.27	$6.37

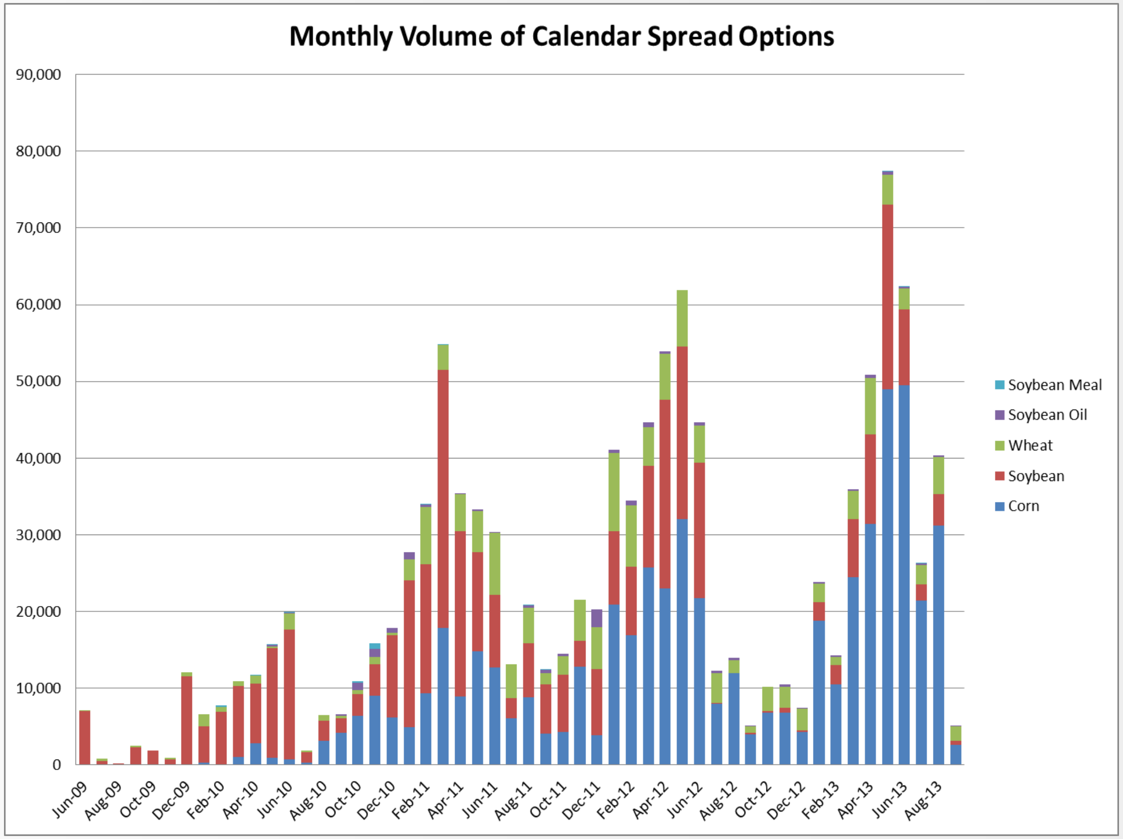
Weekly Options

- Weekly options on Corn, Soybean, and Wheat futures launched on May 23, 2011.
- Weekly options on Soybean Meal and Soybean Oil launched on September 26, 2011.
- Since launch till the end of Sep 2013, more than 1.4 million contracts have traded.
- 2013 YTD ADV=2,140. Corn is the most active, accounts for 88%, Soybean 10%, wheat/soymeal 2%.
- Sep 2013 total volume=40,868, 22% lower than Sep 2012.
- Record high monthly ADV 5,668 was set in Aug 2012, amid the drought.
- Reduce hedging costs due to low time value, thus low premium.
- Used to hedge short term events such as USDA crop reports and weather forecasts during growing season.
- Market familiarity leading to steady volume almost every day.



Calendar Spread Options (CSOs)

- CSOs for Corn, Soybeans, Wheat, Soybean Meal and Soybean Oil launched in June 2009
- Since launch through the end of Aug 2013, more than 1.15 million contracts traded.
- 2013 YTD ADV = 1,788.
- Sep 2013 total volume=5,076, which is about same as than in Sep 2012.
- A new tool to hedge grain inventory and futures spread risk, especially old/new crop.
- CSOs are sensitive only to the value and volatility of the spread itself, rather than the price of the underlying commodity.
- More efficient and precise than combining options on two different months in an effort to replicate the spread.



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