

How futures markets work

Convergence between cash and
futures

Futures markets

- Futures markets have existed over 150 years as a means for managing price risk
- Futures contracts are purchase and sales agreements - allow dealers in commodities to offset risk
- Farmers who produce crops SELL futures to protect against price decline – called short hedgers
- Millers who need constant commodity supply BUY futures to protect against price rise –called long hedgers
- Futures contracts are “proxy” instruments, which are liquidated when cash purchase or sale is completed

Futures trading instruments

Buyers and sellers in futures marketplace transact in futures contracts:

- purchase and sales agreements created by the exchange with standardized terms/obligations:
 - Quantity
 - Quality
 - Price basis (\$/bu; €/MT)
 - Delivery months/periods
 - Delivery method

Futures contract example – French (Matif) milling wheat

Quantity:	50 MT EU origin wheat
Grade:	Sound, Fair, Merchantable Qlty
Months:	Jan, Mar, May, Aug, Nov
Price basis:	Euros per MT
Min price tick:	25 euro cents (€12.50)
Divy method:	WHR in store Rouen
Last trdg day:	10 th cal day of trading month

Futures contract example – French (Matif) milling wheat

Delivery Period: Any business day from the last trading day to the end of the specified delivery month

Initial Margins

(London CH): €950 (=10% contract value for wheat @ €190/MT x 50 MT)

Daily Price

Limit: +/- €16 from previous close
(€800 per contract)

What is Convergence?

The narrowing of the price difference between the physical cash market and spot futures contract during the delivery period.

Convergence occurs via simple arbitrage

Long holder

- If a futures long can buy the physical commodity at a lower price than the futures price, then he/she will buy cash and sell futures holding.
- The selling of futures to liquidate an existing long futures position is called an “offset”

Short seller

- If a futures short can sell cash commodity at a higher price than the futures, then he/she will sell cash and buy back the futures short.
- The buying of futures to liquidate an existing short futures position is called an “offset”

Delivery against futures short

- At expiration of a futures contract – those with open sales positions [shorts] must deliver the commodity to fulfill contractual obligations.
- Short will tender notice to clearinghouse of its intentions: quantity, quality, location
- Clearinghouse will then notify longs with oldest long date of their obligation to receive and pay for the tendered commodities.
- Sellers/buyers make/take delivery when they think it is more economical than selling/buying cash and offsetting futures.

Sellers Beware!!! [one of the biggest misconceptions about futures]

- Only shorts holding deliverable receipts/certificates in warehouses registered with the Exchange can make deliveries

Farmers [natural shorts] cannot deliver!! even if they bring grain alongside the delivery warehouse. For this reason –farmers normally receive a discount to futures prices for their cash grain. The farmer with futures sales will have to buy them back and sell cash at the price offered.

Delivery warehouses have much control

- Delivery warehouse decides when to deliver [if demand is high for spot, warehouse will deliver last day of month or vice versa]
- Delivery warehouse decides what to deliver [if demand is high for good quality, WH will deliver the poorest]
- Delivery warehouse decides where to deliver [if WH has multiple warehouses, it will deliver in the least desirable]

The long taker will receive deliveries at the worst time, worst quality, worst location – this is all priced into futures price.

Growing areas US – SRW, corn soybeans



CORN

SOYBEANS

WHEAT

Delivery areas



CORN/SOYBEANS WHEAT

Deliverable stocks of grain – released by CME weekly

GRAIN	02/01	WEEK AGO	YEAR AGO	02/01	WEEK AGO	YEAR AGO	02/01	WEEK AGO	YEAR AGO	02/01	WEEK AGO	YEAR AGO
CORN	CHICAGO			CREVE COEUR - PEKIN			LOCKPORT-SENECA			OTTAWA-CHILLICOTHE		
Deliverable Grades	677	567	1,265	0	0	1	635	585	856	981	911	1,175
Non-Del Grades/Ungraded	0	0	0	0	0	0	0	0	0	1,153	1,062	310
CCC Stocks	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL CORN STOCKS	677	567	1,265	0	0	1	635	585	856	2,114	1,973	1,485
OATS	CHICAGO			DULUTH - SUPERIOR			MINNEAPOLIS					
Deliverable Grades	52	97	180	9,160	9,252	12,118	14,163	14,614	21,222			
Non-Del Grades/Ungraded	0	0	0	71	71	257	860	837	577			
CCC Stocks	0	0	0	0	0	0	0	0	0			
TOTAL OATS STOCKS	52	97	180	9,231	9,323	12,375	15,043	15,451	21,799			
RICE	ARKANSAS (Thousands of CWT)			SOYBEANS			CHICAGO			CREVE COEUR - PEKIN		
Deliverable Grades	17,562	17,686	17,337				265	613	2,328	38	249	168
Non-Del Grades/Ungraded	114	116	199				0	0	0	0	0	0
CCC Stocks	7,461	7,252	4,461				0	0	0	0	0	0
TOTAL RICE STOCKS	25,137	25,034	21,997				265	613	2,328	38	249	168
SOYBEANS	HAVANA-GRAFTON			LOCKPORT-SENECA			OTTAWA-CHILLICOTHE			ST LOUIS RIVER AREA		
Deliverable Grades	609	491	2,581	144	187	107	623	742	504	279	740	880
Non-Del Grades/Ungraded	502	657	248	0	0	0	115	107	460	328	153	716
CCC Stocks	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL SOYBEANS STOCKS	1,111	1,146	2,829	144	187	107	738	849	964	607	893	1,396
WHEAT	CHICAGO			MISSISSIPPI RIVER			NORTHWEST OHIO			OHIO RIVER		
Soft Red Winter	13,592	13,835	12,446	8,948	9,395	10,652	9,785	10,055	10,888	9,424	10,791	8,793
Hard Red Winter	0	0	0	0	0	0	0	0	0	0	0	0
Dark Northern Spring	0	0	0	0	0	0	0	0	0	0	0	0
Northern Spring	0	0	0	0	0	0	0	0	0	0	0	0
Total Deliverable Grades	13,592	13,835	12,446	8,948	9,395	10,652	9,785	10,055	10,888	9,424	10,791	8,793
Non-Del Grades/Ungraded	0	0	300	700	700	4,935	486	534	1,179	3,228	3,499	8,428
CCC Stocks	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL WHEAT STOCKS	13,592	13,835	12,746	9,648	10,095	15,587	10,271	10,589	12,067	12,652	14,290	17,219
WHEAT	ST LOUIS			TOLEDO								
Soft Red Winter	1,417	1,689	1,629	25,329	25,412	29,368						
Hard Red Winter	0	0	0	0	0	0						
Dark Northern Spring	0	0	0	0	0	0						
Northern Spring	0	0	0	0	0	0						
Total Deliverable Grades	1,417	1,689	1,629	25,329	25,412	29,368						
Non-Del Grades/Ungraded	1,625	1,608	1,589	2,482	2,482	296						
CCC Stocks	0	0	0	0	0	0						
TOTAL WHEAT STOCKS	3,042	3,298	3,218	27,811	27,894	29,664						

Regular capacity for deliveries on the futures market from reporting warehouses (thousands of bushels):

ILLINOIS RIVER AREA
50,859
CHICAGO AREA
20,080

DULUTH-SUPERIOR
35,731
TOLEDO-MAUMEE AREA
50,344

OHIO RIVER AREA
43,209
ARKANSAS (Thousands of CWT)
21,917

NORTHWEST OHIO AREA
41,757
ST LOUIS AREA
9,708

MINNEAPOLIS-ST PAUL AREA
39,980
MISSISSIPPI RIVER AREA
49,721

Simple cash conversion [very simple]

Warehouse: Long inventories/ short futures

- On April 30, May Wheat futures are trading at \$7/bu
- Highest price in cash market for warehouse is \$6.90
- Warehouse tenders notice to deliver inventories against short futures position
- [CH assigns deliveries to “oldest” long date]

Warehouse: Long inventories/ short futures

- On April 30, May wheat futures are trading at \$7/bu
- Highest price in cash market is \$7.10
- Warehouse buys back short futures at \$7.00 and sells inventories into cash market

In CME contracts – deliveries [and redeliveries] can occur throughout the month

Simple cash/futures conversion

Exporter: short cash sales/long futures

- Dec Corn futures trading Nov 30 at \$6.50/bu
- Cash corn is available at \$6.50 /bu for small quantities
- Exporter enters delivery period long Dec futures to receive deliveries
- [CH will assign deliveries to exporter when they are tendered by shorts. As exporter receives deliveries along Illinois River it places barges for load-out]

Exporter: short cash sales/long futures

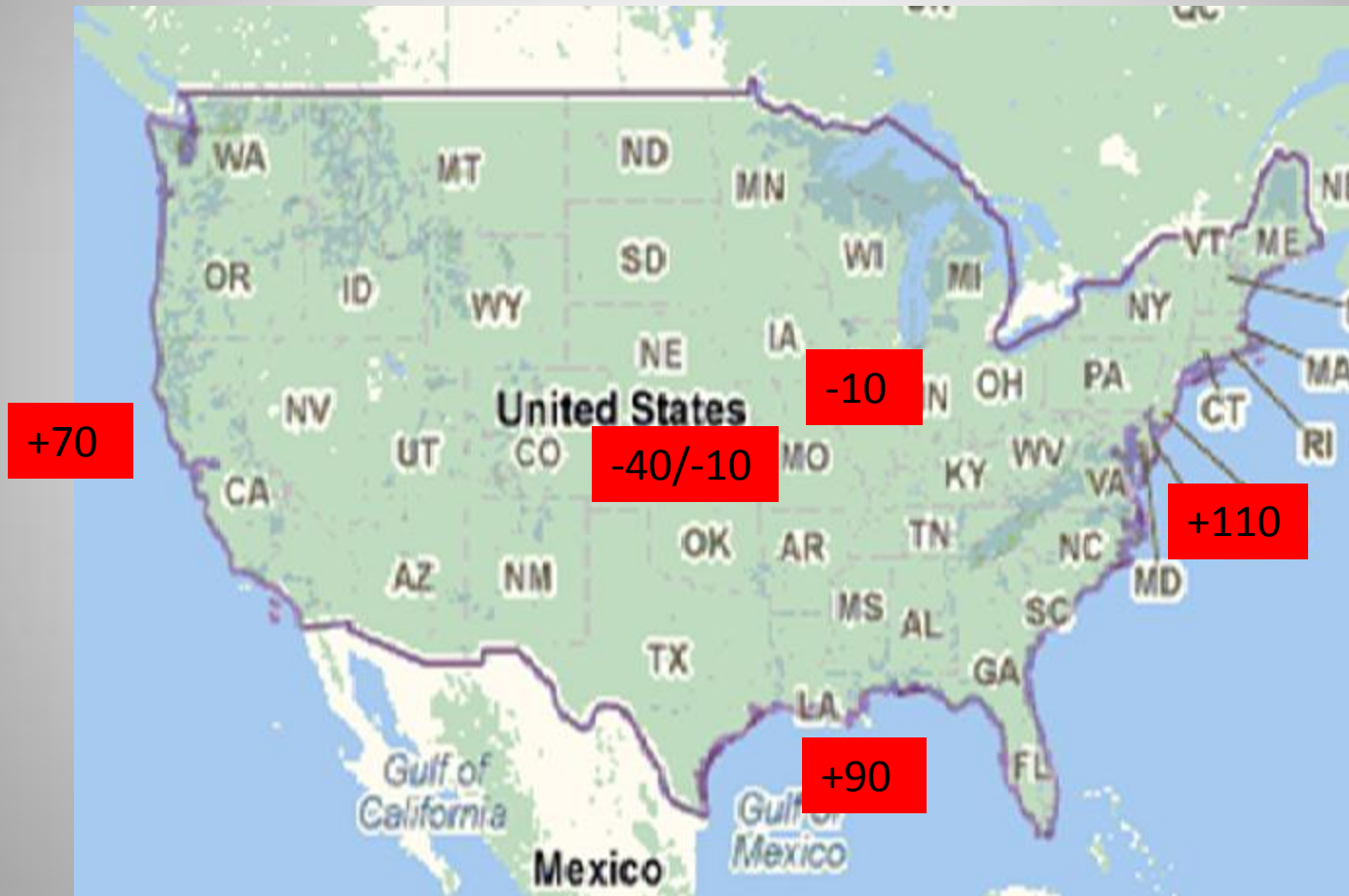
- Dec Corn futures trading Nov 30 at \$6.50/bu
- Cash corn is available at \$6.45 /bu for large quantities
- Exporter sells Dec futures position and buys cash to fulfill export sale

Cash/futures conversion in the real world

- Taking delivery to execute a sale is usually the choice of last resort – owing to uncertainty of time/locations of deliveries
- Normally exporter will buy fob cargoes [Gulf –or other origin] and liquidate long futures
- For example, if fob gulf soybeans for June shipment are trading at +\$.90 May and the cost of barge frt and export elevation = \$.92, then exporter will not take delivery

All transactions in grain involve basis calculations that include domestic frt, fobbing, [elevation], interest, ocean frt, insurance, demurrage/dispatch calcs

Typical basis levels US corn



Basis level to Japan includes ocean frt and other costings – about +200

Arbitrage at work

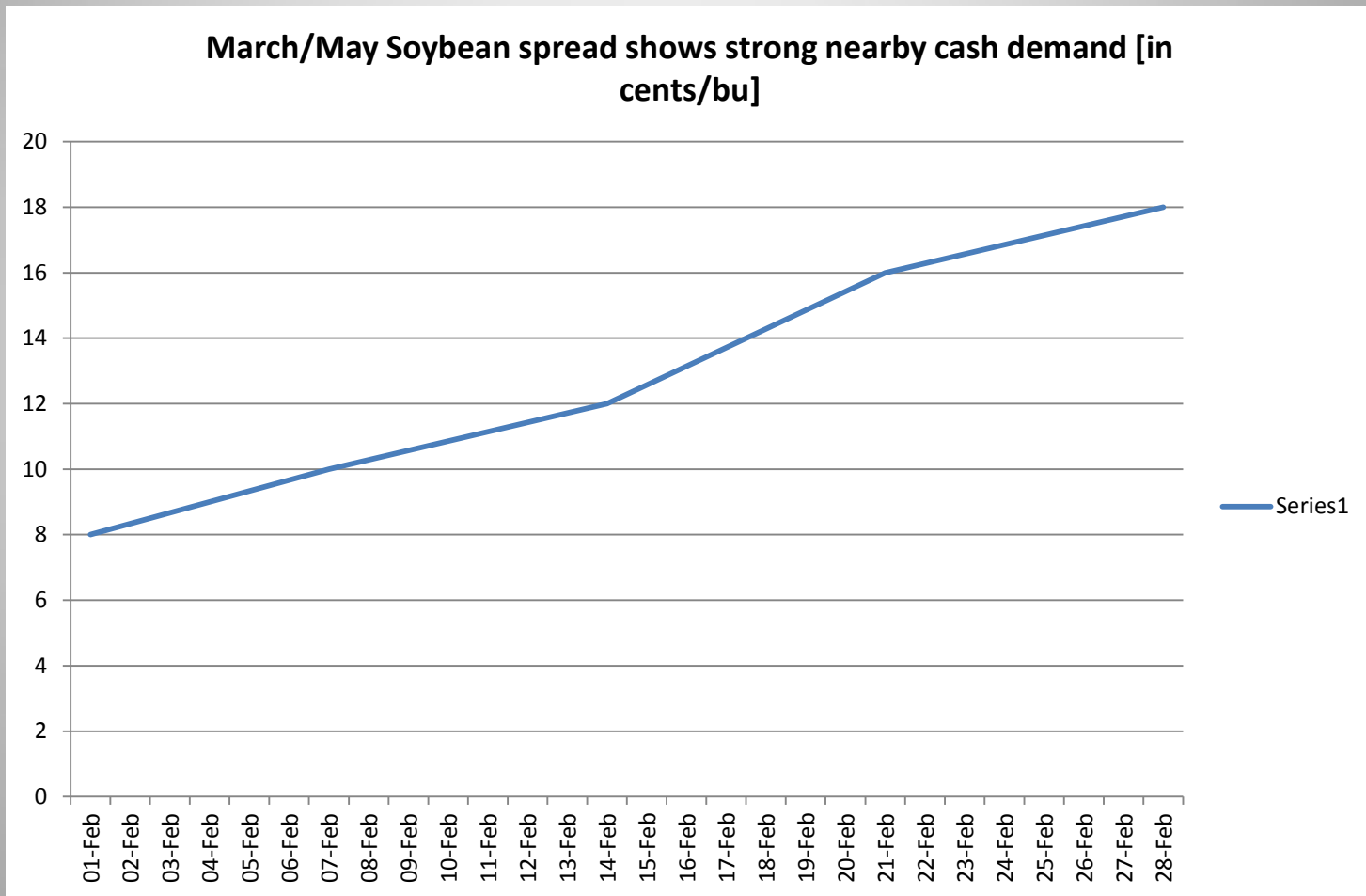
- Switching in and out of cash and futures positions [arbitrage] to achieve the best execution price by both longs and shorts causes convergence
- If cash is too high vs. futures – long will tend to take delivery
- If cash is too low vs. futures – short will tend to make deliveries

100% convergence between cash and futures not possible – always “friction” surrounding process

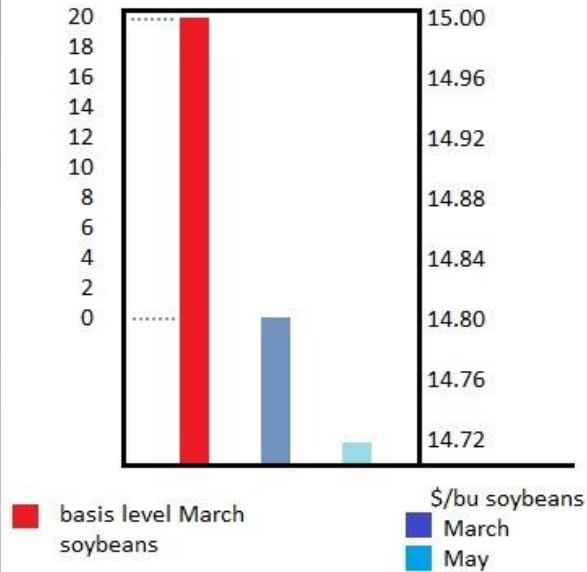
Recent soybean spread activity

- Normally when cash prices are higher than futures, the front month gains on next month [arbitrage at work – futures rise to cash price]
- When the front month becomes a premium to next month , the forward curve is said to inverted or backwardated.
- Currently soybean cash values are extremely high due to large export demand – quoted at +10 -20 March along Illinois River
- The March/May spread has become highly inverted

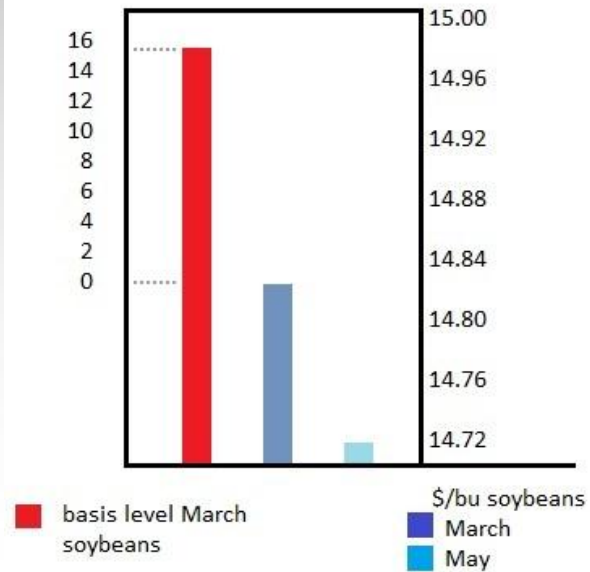
March soybeans are increasing vs. May to encourage soybeans into delivery market area



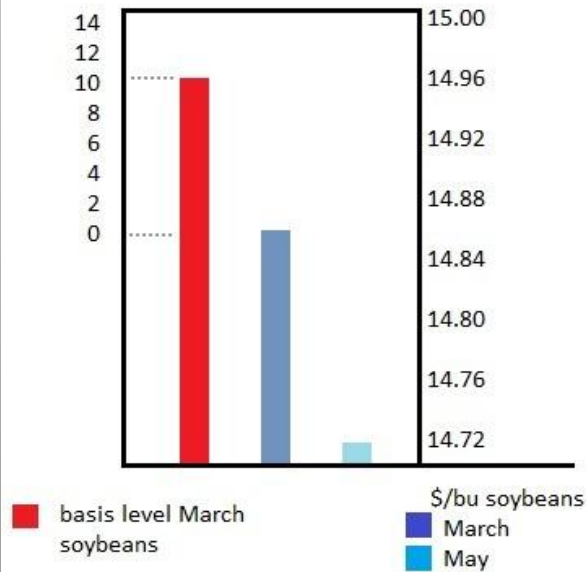
Feb 1



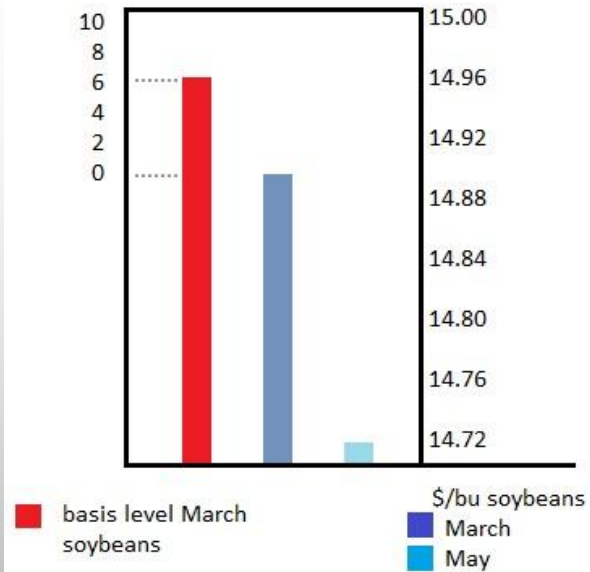
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Soybeans cash/futures convergence

- Ongoing as we speak
- Cash is still higher than March futures
- No deliveries against March [so far]
- Nominal stocks in delivery market
- Potential for March to go higher [vs. May] to break basis back to zero, forcing convergence.

Traders say: That is the “job” of the market