

School of Futures – Interactive Brokers

Session 7: Trading the “Curve” in Energy Futures

Presented by Pete Mulmat and Dan Gramza

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Dan Gramza

President of Gramza Capital Management, Inc. and DMG Advisors, LLC. He is a trader, consultant to domestic and international clients, an advisor to hedge funds and is a developer of ETF securities.

www.dangramza.com



Futures Resource Center

QUOTE BOARD									
Quotes and Charts delayed 10 minutes									
Symbol	Contract	Open	High	Low	Last	% Change	Change	Exchange Margin	Volume
ESZ14	E-mini S&P 500	1924.50	1952.00	1922.25	1947.50	+1.17%	+22.50	\$5,060/4,600	1147280
NQZ14	E-mini Nasdaq 100	3947.00	4014.75	3939.50	4008.00	+1.49%	+58.75	\$3,630/3,300	203487
CLZ14	Crude Oil WTI	80.42	82.37	80.05	81.41	+1.11%	+0.89	\$3,740/3,400	254238
GCZ14	Gold	1241.7	1244.9	1226.3	1229.0	-1.32%	-16.5	\$4,400/4,000	113742
E6Z14	Euro FX	1.26500	1.26800	1.26170	1.26530	+0.04%	+0.00050	\$2,200/2,000	149878
ZBZ14	T-Bond	142-18	142-28	141-13	141-16	-0.64%	-0-29	\$2,145/1,950	252323
NGF15	Natural Gas	3.832	3.848	3.779	3.824	-0.10%	-0.004	\$2,981/2,710	26127
ZCZ14	Corn	352-0	359-4	351-0	357-2	+1.20%	+4-2	\$1,375/1,250	84424



MARKET NEWS & ANALYSIS

Crude Oil Climbs After Saudi Arabia Said to Cut Supply to Market

By Moming Zhou - Thu, 23 Oct 2014 13:39:14 GMT

(For Bloomberg fair value curves, see CFVL <GO>)

Oct. 23 (Bloomberg) -- Brent gained and West Texas Intermediate rose from a two-year low after [Read More »](#)

U.S. Stocks Rally as Profits From GM, Caterpillar Beat Estimates

By Callie Bost and Lu Wang - Thu, 23 Oct 2014 13:35:30 GMT

Oct. 23 (Bloomberg) -- U.S. stocks advanced after earnings from Caterpillar Inc. and General Motors Co. exceeded analysts' estimates and data showed a surprise gain in euro-area manufacturing.

..... [Read More »](#)

U.S. Stocks Rise With Dollar, Treasuries Drop on Growth Optimism

By Nick Gentle and Stephen Kirkland - Thu, 23 Oct 2014 13:31:58 GMT

THE DAILY FUTURES REPORT
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Agenda

Most attractive, valuable, diverse franchise in exchange sector

- Crude Oil
 - West Texas Intermediate (WTI)
 - Calendar Spreads
 - How are they quoted
 - What is Backwardation and Contango (shape of the curve)
 - Trading Opportunities with Bull and Bear Spreads
- Natural Gas
 - Calendar Spreads
 - How are they quoted
 - March-April “Widow Maker” spread
- CME Group Resources Available

Why Trade?

- To make money from the various commodity & financial markets
- As part of a diversification of one's portfolio
- To generate a return greater than the risk-free rate of return
- As a profession/business



Important Terminology

- Trading Venues for Futures and Options on Futures
 - Open outcry
 - Electronic Trading
 - Globex
- Regulated Exchanges
- Category of Trades
 - Outright
 - Long or Short
 - Spreads
 - InterMonth (calendar spreads)
 - InterMarket (within an exchange)
 - IntraMarket (geography)



A Closer Look At A Futures Contract

- Agreement to buy or sell a commodity at a date in the future
- Everything is standardized except the price
- Price of the commodity is determined in the trading pit or on the electronic trading system of a futures exchange
- What is standardized?
 - Commodity
 - Quantity
 - Quality
 - Delivery Date
 - Delivery Point or Cash Settlement



NYMEX WTI

The World's Most Liquid Crude Oil Benchmark

- Key Facts about NYMEX Light Sweet Crude Oil
 - Most Liquid
 - Open Interest
 - Increased Access and Production
 - Most Transparency
 - Efficient Margining



WTI Light Sweet Crude Oil Futures

- Most liquid benchmark oil contract
- Unprecedented access to profit potential
- Deep pool of liquidity
- Flexible contract sizes to capitalize on supply and demand fluctuations

Product	Light Sweet Crude Oil Futures
Trading Venue ¹	CME Globex
Ticker Symbol	CL
Underlying Instrument	1,000 Barrels of Light Sweet Crude Oil
Approx. Dollar Value*	\$91,000 per contract
Minimum Tick	\$0.01 per barrel
Dollar Value of One Tick	\$10.00
Options	Yes

¹ Also available for trading in Open Outcry and for submission to clearing via CME Clearport
 * As of 10/09/2014

Trade Scenario 1: Oil Futures

Strategy: Buy Oil Futures • Specs: 1,000 Barrels

October 10

Buy 1 November Crude Oil @ 90.00

Contract Value (\$90.00 X 1,000 Barrels)	\$90,000
Initial Margin	\$3,740

October 14

Sell 1 November 2014 Crude Oil @ 91.22

Contract Value (\$91.22 X 1000 barrels)	\$91,220
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\$90.00	Buy Price
\$91.22	Sell price
\$1.22	Difference

\$1.22	Difference
x 1,000	Barrels
\$1,250	Profit

Trade Profit	Margin Requirement	Percentage Gain
\$1,220	÷ \$3,740 =	32%

E-mini Crude Oil Futures

- Smaller contract size allows traders the opportunity to participate with less market exposure
- Lower margin requirement

Product	E-mini Crude Oil Futures
Trading Venue ¹	CME Globex
Ticker Symbol	QM
Underlying Instrument	500 Barrels of Light Sweet Crude Oil
Approx. Dollar Value*	\$45,500 per contract
Minimum Tick	\$0.025 per barrel
Dollar Value of One Tick	\$12.50
Options	No

¹ Also available for trading in Open Outcry and for submission to clearing via CME Clearport
* As of 10/092014

Calendar Spreads

- A calendar spread is the price differential between the front (nearest to expiration) contract and each corresponding future contract.
- Backwardation: Positive spread
- Contango: Negative spread



Futures Calendar Spreads

- Futures calendar spreads trade as a separate product aside from the outright future contract.
- Active months tend to have liquid, tight bid/ask differentials.
- This allows for futures calendar spreads to be entered as one order, eliminating legging risk.
- Here's an example:



Trader Dashboard – WTI Crude Oil

CL Spread is Deferred - Front
 $81.50 - 81.86 = -.36$

WTI Curve									
X WTI Curve +									
Contract	Last	Change	Change %	Bid Size	Bid	Ask	Ask Size	Volume	
	Price	Quantity	Time in Force	Type	Lmt Price	Destination	Transmit	Status	
CL Dec'14 @NYMEX	81.86	+1.34	1.66%	6	81.87	81.88	7	206K	
CL Jan'15 @NYMEX	81.50	+1.37	1.71%	1	81.50	81.51	10	36.0K	
CL Feb'15 @NYMEX	81.18	+1.37	1.72%	5	81.17	81.19	10	14.5K	
CL Mar'15 @NYMEX	80.93	+1.39	1.75%	3	80.92	80.94	10	17.4K	
CL Apr'15 @NYMEX	80.71	+1.39	1.75%	5	80.71	80.74	10	13.0K	
CL Dec/Jan'15 Calendar	-0.37	+0.02	5.13%	508	-0.38	-0.37	54	19.4K	
CL Jan'15/Feb'15 Cal	-0.32	0.00	0.00%	584	-0.33	-0.32	254	5.31K	
CL Feb'15/Mar'15 Cal	-0.26	+0.01	3.70%	12	-0.26	-0.25	526	2.75K	
CL Mar'15/Apr'15 Calendar	-0.20	+0.02	9.09%	337	-0.21	-0.19	590	2.97K	
CL Dec/Mar'15 Calendar	-0.95	+0.03	3.06%	2	-0.95	-0.94	87	4.80K	

Note: If the refined product value is higher than the price of the crude oil, the cracking margin is positive

Trader Dashboard provided by Interactive Brokers

CL - December



Charts provided by Interactive Brokers

CL – December/January Spread



Charts provided by Interactive Brokers

CL – December/March Spread



Charts provided by Interactive Brokers

Contango Vs. Backwardation

- Contango is when the futures price is above the expected future spot price. Because the futures price must converge on the expected future spot price, contango implies that futures prices are falling over time as new information brings them into line with the expected future spot price.
- Backwardation is when the futures price is below the expected future spot price. This is desirable for speculators who are "net long" in their positions: they want the futures price to increase. So, normal backwardation is when the futures prices are increasing.
- Contango and normal backwardation are influenced by differences in the futures price and the spot price for a given commodity — a difference known as the “basis”.

Factors Driving WTI Backwardation

- Supply – Demand
 - Domestic and International
- Refinery capacity and seasonality
- Pipeline Infrastructure in the U.S.
- Geopolitical events
- Overall Market Direction



Why Has the Speculative Community Focused on the Energy Markets?

Wide Trading Ranges



Charts provided by Interactive Brokers

Natural Gas Futures

Factors That Can Influence Natural Gas Prices

- Majority of Natural Gas consumed in the US is produced domestically
- Weather temperatures effect pricing
- Increasing use in power consumption
- Natural gas cannot be “shipped” around the world in pipes
 - It is difficult to store/transport unless converted to liquid natural gas
 - Seasonality/Storage Dynamics



Futures Curve

- A futures curve is a graphical representation of the current prices for the various delivery dates of a particular instrument.
- A futures curve that shows prices that increase as time moves forward is called a normal curve, sometimes referred to as a normal market.
- An inverted curve, or inverted market, on the other hand, exists when the prices for faraway deliveries are below the current spot price.



Natural Gas Futures

- 3rd largest traded energy contract
- Increased production with “fracking” techniques
- Changing dynamics in terms of demand

Product	Natural Gas
Trading Venue ¹	CME Globex
Ticker Symbol	NG
Underlying Instrument	10,000 mmBtu
Approx. Dollar Value*	\$37,250
Minimum Tick	\$0.001 mmBtu
Dollar Value of One Tick	\$10.00
Options	Yes

¹ Also available for trading in Open Outcry and for submission to clearing via CME Clearport
* As of 10/22/2014

Trader Dashboard – Natural Gas

NG Spread is Deferred - Front
 $3.819 - 3.733 = .086$

Natural Gas Curve										
X Natural Gas Curve WTI Curve +										
Contract	Last	Change	Change %	Bid Size	Bid	Ask	Ask Size	Volume		
Action	Quantity	Time in Force	Type	Lmt Price	Destination	Transmit	Status	Tr		
NG Dec'14 @NYMEX	3.733	-0.012	-0.32%	10	3.732	3.734	17	36.7K		
NG Jan'15 @NYMEX	3.819	-0.009	-0.24%	5	3.817	3.819	5	21.7K		
NG Feb'15 @NYMEX	3.815	-0.008	-0.21%	9	3.813	3.815	3	9.27K		
NG Mar'15 @NYMEX	3.759	-0.009	-0.24%	5	3.757	3.759	3	16.0K		
NG Apr'15 @NYMEX	3.570	-0.019	-0.53%	10	3.571	3.575	2	10.2K		
NG Dec/Jan'15 Calendar	0.085	+0.002	2.41%	365	0.084	0.085	2	6.48K		
NG Jan'15/Feb'15 Cal	-0.004	+0.001	20.00%	349	-0.005	-0.004	242	5.40K		
NG Feb'15/Mar'15 Cal	-0.056	-0.001	-1.82%	1	-0.056	-0.055	136	1.96K		
NG Mar'15/Apr'15 Cal	-0.185	-0.006	-3.35%	14	-0.186	-0.184	7	5.99K		
NG Dec/Apr'15 Calendar	-0.163	-0.007	-4.49%	5	-0.162	-0.158	5	298		

Note: If the refined product value is higher than the price of the crude oil, the cracking margin is positive

Natural Gas - December



Charts provided by Interactive Brokers

Natural Gas – December/January Spread



Charts provided by Interactive Brokers

Natural Gas – March/April Spread



Charts provided by Interactive Brokers

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Thank you

Pete Mulmat

pete.mulmat@cmegroup.com

Dan Gramza

www.dangramza.com

