



Same-day Options Help Traders Deal with Market Volatility

Trading volume in crude oil and natural gas futures contracts has significantly grown over the past year, spurred by increased market volatility and the round-the-clock availability of the New York Mercantile Exchange, Inc. futures and options markets on internet-accessible electronic trading platforms

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Each day, the trading landscape changes for a variety of fundamental and technical reasons, and market participants react accordingly: Hedgers trade to protect their physical market positions against severe price movements. Speculators increase their holdings in oil and natural gas, looking to add energy exposure to portfolios. Increased media coverage brings focus and attention to energy trading.

As an example of the market volatility, the price of NYMEX light sweet crude oil futures for the first time hit \$100 a barrel on January 2, 2008, amid continuing concerns about global supply problems and violence in the Middle East, and a weakening dollar. At the start of 2008, natural gas futures traded around \$8.00 per million British thermal units (MMBtu), and by May the price of crude topped \$130 and gas was \$12. Large intraday swings are common for natural gas prices due to weather patterns and storage reserves. High energy prices and market volatility have helped to fuel more futures trading activity.

Making money trading under these market conditions is not a simple undertaking, especially for day traders.

Relatively new products, such as the same-day options contracts for crude oil (CD) and natural gas (KD), give investors the ability to speculate on a single day's price direction or trade



against existing front month futures positions. As the name implies, these contracts expire on the same day that they are listed, at the close of the NYMEX open outcry trading session at 2:30 PM, New York time, and carry no overnight risk exposure. For this reason, same-day options can be viewed as taking a position on the day's futures settlement price.

The underlying price is that of the front month futures contract. For natural gas same-day options, the underlying price is the prompt month natural gas futures contract (NG) and, similarly, the crude oil options are priced off of the first nearby month of the light sweet crude oil futures contract (CL).

Same-day options are cash settled. Traders know whether their same-day options contract settled in- or out-of-the-money after the exchange posts the daily settlement data for the front month futures contracts. The value of an in-the-money call option at the end of the day is the futures settlement price minus the strike price. If the call

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settles out of the money, it expires worthless. For out-of-the money options, the seller of the option collects the premium from the buyers through a clearinghouse cash transfer. The settlement of a put options contract is the strike price minus the futures settlement price with a floor of zero.

Early exercise of these options is not possible and holders of the contracts are not assigned futures positions at the end of the day. The options are financially settled instruments.

Market participants for same-day options include banks, hedge funds, NYMEX floor locals, energy producers, and energy consumers.

The same-day options market generates the most interest on days when news affects the energy markets. The national crude oil inventory numbers are updated weekly on Wednesday mornings, for example. The American Petroleum Institute and the Energy Information Administration (EIA) of the U.S. Department of Energy report primary inventories of crude oil and refined products. Changes in week-on-week inventories can have a large impact on the price movements. Other news affecting crude prices include OPEC meetings, Federal Reserve Board economic statistics, and other broad U.S. economic data.

Natural gas is primarily a domestic product that can respond quickly to changes in supply and demand which, in turn, are heavily influenced by changes in the weather. On Thursdays, the EIA reports the weekly natural gas storage totals and the drawdowns or

additions to inventory. Hurricanes on the Gulf Coast and abnormally hot or unseasonably cold weather can add volatility to the price.

The typical bid/offer spread on a crude oil same-day options contract is \$0.08 wide and 100 lots up on either side. Same-day crude oil options trading can be volatile. On certain days, only a few hundred lots trade. On active days, same-day options can trade more than 1,000 lots at a time and the daily volume can be several thousands of lots.

For example, traders may see a quote: CL 88.00 puts 0.04/0.10 same-day. These are \$88.00 puts expiring that day on the prompt contract month. Suppose the offer gets lifted for \$0.10 per barrel. If the options contract settles out-of-the-money, the seller keeps the premium of \$0.10. If the options contract settles in-the-money, the seller pays the difference between the strike price and the settlement price.

For natural gas, the bid/offer spread on a starting market for a same-day option is \$0.015 per MMBtu wide. A typical market might be Mar 08 7.85 puts 0.005/0.015. The bid is known as a half tick and the offer is at one and a half ticks. The buyer of the put pays the seller a premium of 1.5¢ per MMBtu. If the \$7.85 puts settle out of the money, the buyer is out the premium. If the option settles in the money, the buyer collects the difference of the strike and the futures net the premium.

Same-day options typically do not actively trade throughout the day. Most of the volume is traded between the hours of 8:00 AM to 11:00 AM, New York time. While the NYMEX floor opens at 9:00, brokers begin quoting and trading the one-day options over-the-counter an hour earlier. Occasionally, the afternoon around 1:00 PM to 2:00 PM may see a flurry of trades. There is usually little or thin volume during the noon and early afternoon hours.

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different ways depending on a trader's view and appetite for risk.

Hedging programs that are delta-neutral (consisting of offsetting positions) for same-day options are difficult to implement because of pin risk – the risk that an option will expire close to the strike price – and because the underlying markets in crude oil and natural gas are inherently choppy with large price gaps. Following a strict delta hedge program using a Black-Scholes-calculated delta actually may hurt the trader's profit and loss because of execution costs.

Naked short selling options carries large risk. Only well-capitalized traders should consider naked short positions on same day options.

Traders typically create a general set of rules for hedging same-day options, attempting to protect against short option positions and capitalize on long option positions.

For instance, an options buyer can let the position ride without hedging. Assuming the options contract settles out-of-the-money, the buyer loses his premium. If the option goes in-the-money, the buyer collects on the difference between the strike price and the futures settlement price. Long positions can be used as a stop against a futures position.

Others under-hedge long options. Under-hedging gives the trader the possibility of participating in the upside if the futures moves through the strike price. The trader then uses a trade-at-settlement (TAS) order to flatten his futures position at the end of the day.

A trader may flip an option position for a few pennies, in which case options are used as a low-delta method of trading the futures. Traders can also look to leg into put spreads or call spreads by selling options with strike prices farther away from their original strike for the same value or higher premium. A trader must take a market view and trade accordingly.

The Black-Scholes options pricing formula can be used to price same-day options. The same-day options parameter inputs are the same as for any plain vanilla options contract.

The premium is a function of option type – put or call, the underlying futures price, strike price, time to expiry, and one-day volatility. The discounting rate is typically set to zero.

Front month at-the-money volatility is a reasonable estimate for same-day option volatility. On certain days, such as when the inventory numbers are released, same-day volatility can run higher. Typically, there is little volatility skew – that is, option volatility is flat across different strike prices. Traders adjust their bids and offers depending on market demand for options on that day.

Assume that the number of minutes in a trading day is 390, including the additional hour of OTC trading. This equates to the time between 8:00 AM and the 2:30 PM closing time of the open outcry session on which the daily futures contract settlement prices are based. As time progresses, the time to expiry diminished from one day to zero. For example, at 11:30 AM there is roughly half a day left. Same-day options become worthless around 2:15 PM, except for those with at-the-money strike prices.

Modeling same-day option prices is approximate because of the limited liquidity and short duration. Traders will tend to transact primarily on the basis of their external views of the market.

Options contracts give the investor staying power in volatile markets. These options contracts can be used as protection for a futures position. Selling options help to generate additional income on a portfolio if the trader knows he will have to carry a position over time. Same-day options are the perfect vehicle for technical day traders and for position micro-management. ♦

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