Commodities 1

You've recently been promoted and are now in charge of the crude oil trading desk at a medium-sized energy hedge fund. Your fund's mandate is to generate trading profits by taking long and short positions in crude oil, based on your micro and macro view of geopolitical and crude-related news events.

Since your hedge fund just takes financial (speculative) positions on crude oil, you do not have access to any physical oil infrastructure (storage tanks, pipelines, tankers, etc.). Instead, your fund solely trades futures contracts for Crude Oil, which are a near-perfect proxy for crude oil[1].

From your past experience, you've found that the market is primarily driven by news releases that provide insight into the future supply and demand for crude, and by government data releases that report the current actual supply and demand for crude. Forecasting how the market will react to these two types of releases is essential to generating profits in this market.

The Department Of Energy (DOE) releases their numbers once per week on Wednesdays. Running various regressions on historical data, you have found that the price sensitivity of crude to crude supply shocks is approximately $0.10 per million barrels. That is, if there are 1 million more barrels of crude in storage than expected, the price will fall by approximately $0.10. Vice versa if there is a 1 million barrel shortfall.

Crude oil reports are segregated into three categories, Crude, Gas, and Distillate. All three appear to have the same effect on the price of crude.[2]

Macro-economic, geopolitical, and crude-related news effects are much more difficult to quantify. With each release, the market typically reacts based on the following three factors:

1. Is the effect (disruption in supplies, extra use of crude, etc.) severe or minor?
2. Is the effect going to happen immediately or at a later date, if so how much later?

[1] Trading case F2 – Contango Trading elaborates on the pricing relationship between Crude Oil Futures versus Physical (spot) and demonstrates how arbitrage links the two markets.

[2] The price sensitivity of $0.10 per million barrels is completely fictional and not related in any way to real market dynamics, which are much more complicated. Similarly there are typically differentials between the price sensitivities of Crude, Gas and Distillates. All of these simplifications are designed solely for the purpose of teaching the drivers of crude markets, but should not be applied to trading real markets.

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3. Is the effect going to have a long duration, or a short duration?

These three main factors will drive price changes with markets typically being more sensitive to severe, immediate, and long-duration effects, and less sensitive to minor, later dated, short duration effects. From your experience, significant effects can cause prices to move as much as $3. Since the crude market is very efficient, prices will always reflect information very shortly after news has been released (within 60 seconds of trading time).

You will be trading for a month of calendar time and your goal is to generate trading profits by going long or short-selling crude oil when you believe market prices will appreciate or decline.

Commodities Trading Simulation #1 – COM1

In this trading simulation, you can purchase or sell futures contracts for delivery of crude oil (CL-1F). If you sell more contracts than you currently own (have a negative position), you will be short and be required to buy-back futures at the end of the month. If you buy more contracts than you have sold, you will be long and will be required to sell futures at the end of the month[3]. Each contract represents 1000 barrels of crude oil.

You have a net trading limit of 100 contracts. This means that you cannot have a position larger than 100 contracts long or -100 contracts short. There is a fee of $2.5/contract.

The case represents 1 month (4 weeks) of calendar time, and that month is simulated over 8 minutes of trading time (2 minutes per week).

Discussion Questions and Follow Up:

(1) Why is it a good idea to scale your position, and have larger positions when you believe there will be a large move in crude, and have smaller positions when you believe there will be a small move in crude?

(2) What would happen if your long (or short) futures contracts weren't closed out automatically for you at the end of the month (at the delivery date)?

(3) What is the profit (or loss) generated on a position that is long 5 contracts @ $80.00, when the price of crude falls to $75.00?

(4) If there was an increase of 5 million barrels of crude in storage for a particular week, why is the price reaction different given an expectation that the increase would be 4 million barrels versus 6 million barrels?

[3] Having a positive (long) position of crude oil futures at the end of the month means you plan to take delivery of physical crude. Since you have no facilities to store said crude, you must sell your contracts before month end. Likewise if you are short, you must deliver crude which you cannot so you must buy contracts to cover the short position.