



Phone: 1-408-356-1800

Web: [www.TradingSystemLab.com](http://www.TradingSystemLab.com)

## CRUDE OIL “TRADING” HEDGE STRATEGY

Due to the potential for volatile energy prices it is desirable for suppliers to hedge against significant price declines during holding periods. Many vehicles exist for hedging strategies including futures, options on futures and ETF's. At the time of this writing a new Oil ETF, the United States Oil Fund (ticker: USO) has begun trading offering yet another speculative or hedging alternative. For the supplier or purchaser of the Crude Oil, typical hedging strategies would:

1. Sell calls against the underlying physical resulting in actual or accounting based lockup of the physical until either exercise or expiration of the call. The supplier must be aware that the underlying physical may have to be liquidated to unwind the option should the call be exercised. In other words, the supplier must be willing to part with some or all of the physical. Simulations of options movements normally do not include implementation of trading strategies. TSL however, has developed a back testing and forward testing platform allowing the creation of equity streams resulting from trading strategies merged with options data bases.
2. Buy puts on the underlying adjusting for delta neutral to ensure a near perfect hedge. Note that profits on price increases are offset by losses on the options. The supplier will have to sell the puts at some time in the future by liquidating a portion of the physical to pay for any losses or simply sell the puts at a profit and accept the price decline on the underlying should prices decline.
3. Sell forward contracts in favor of the supplier assuming that the market will support favorable pricing to the supplier or purchaser.

All of the above strategies are offering little or no “income” for the supplier while he keeps his supply intact during price declines. Since the supplier is unlikely to “fire sell” his physical during a price decline, the move downward in price of the commodity goes uncaptured. An alternative strategy is to trade the liquid physical futures market, taking only short positions using a trading model. This model is “evolved” using a L-AIMG (1); the most advanced Genetic Program available today and may be essentially described as “software that writes software”. There are many variations possible using this strategy. One potential strategy is as follows:

1. Take short signals only, trading a portion of the equivalent underlying physical in the futures market. Include the sale of calls and as an additional source of income.

This may result in excellent income potential while protecting against price declines. In this model, no physical commodity is liquidated unless trading drawdowns are encountered immediately upon execution. Entrance analysis can mitigate this potential.

Figure 1 shows the resultant 10-year income per 1 contract (1000 bbl), not including any slippage or commission, nor any income derived from the sale of out of the money calls covered by the underlying physical. The trading strategy shows an average 10-year income of approximately 32% per year using the value of the underlying commodity as the assumed account size, thus no leverage is assumed.

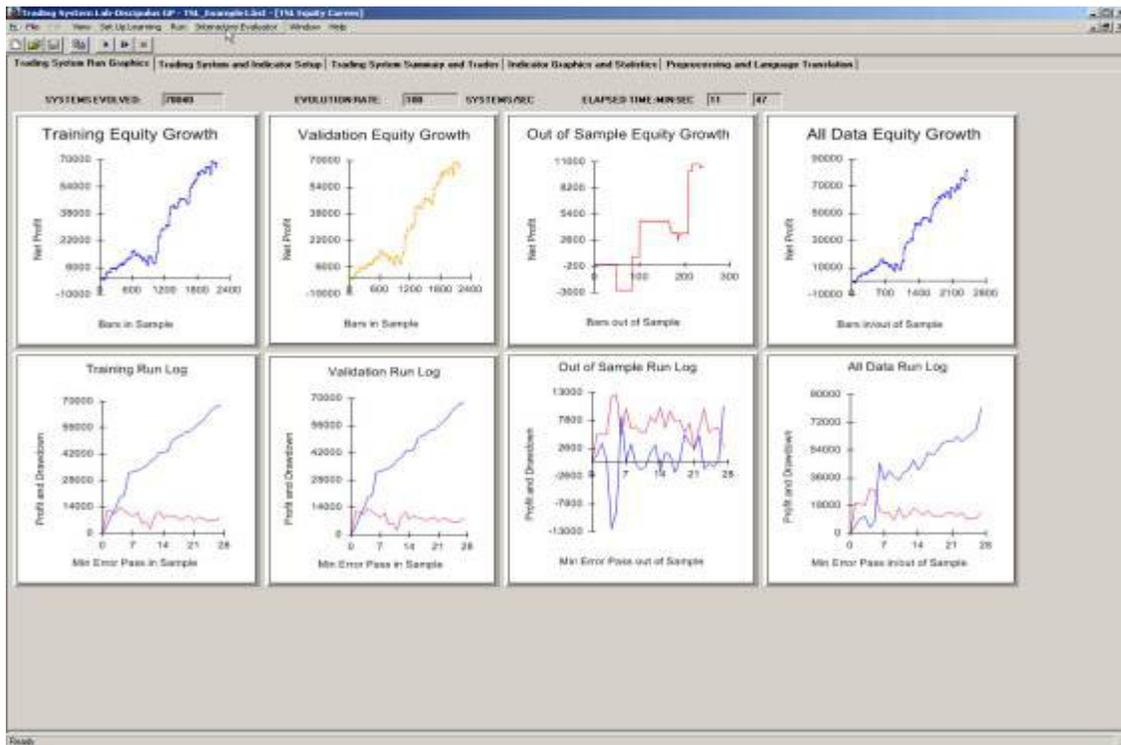


Figure 1. 1,000 bbl (1 contract) 10-year strategy analysis (10% out of sample data)

Returns are based on the following:

1. Short only strategy selling Crude Oil futures contracts using the TSL strategy trading approximately 15 times per year.
2. Returns are based on profits generated by the trading strategy using the prior months end value of the underlying physical commodity as the assumed account size. For example, yearly returns of 32% means that \$22.4M is generated per 1M bbl of Crude Oil at an assumed price of \$70/bbl (\$70M account size assumed).
3. Returns do not include slippage, commission, fees or protective puts.
4. Returns do not include the income derived from the sale of out of the money calls covered by the underlying commodity.

The 10-year back test includes the most recent 1-year (10%) of the data held out of sample. A screen shot of the actual system evolution is shown in Figure 2. Over 78,000 models were evaluated during the run, manipulating 62 inputs comprising the basic genetic material of price based patterns and indicators. Note the similar shape and smoothness of the in sample and out of sample streams of the resultant equity curves. This is one indicator of a robust trading model. Note that from a liquidity standpoint, on the NYMEX, approximately 193,000 futures contracts and 51,900 options contracts are traded daily (2).

Additional studies may include the following:

1. Inclusion of additional data streams such as COT data, Core Inflation rates, CPI, Middle East peace indices, etc.
2. Inclusion of money management schemes determined by the GP.
3. Inclusion of optimal options combinations using the GP to determine strike price and days to expiration for both the underlying protective put as well as the income producing covered call.
4. Inclusion of profits derived from unwinding of positions occurring from, for example, favorable price movements resulting in liquidation of portions of the underlying supply while the short only trading strategy is flat.

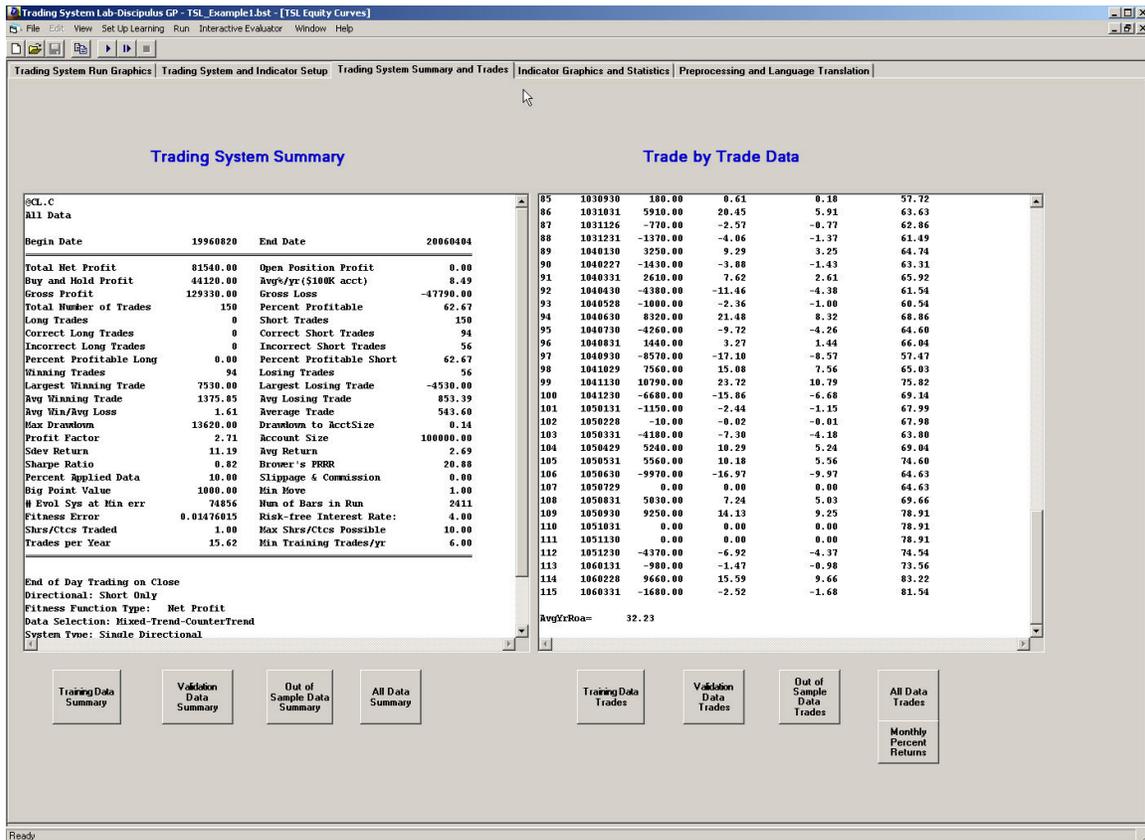


Figure 2. Trading System Lab evolution process after 11 min. run time.

For the supplier, we offer analysis and additional trading based hedging strategies employing the most advanced analytics available today. We offer advanced high-speed trading analytics and options simulations engines producing equity curves (3). No other platform offers these advanced analytical tools and techniques. Please feel free to visit [www.tradingsystemlab.com](http://www.tradingsystemlab.com) to learn more about this revolutionary new analytical platform and how we can help you protect your supply against price declines. (4/10/06)

References:

- (1) Trading System Lab ([www.tradingsystemlab.com](http://www.tradingsystemlab.com))
- (2) Futures Magazine 2006 Traders View Of The World, April 2006, pg 67.
- (3) An Options Data Base Engine, Part 1 and 2. ([www.tradingsystemlab.com](http://www.tradingsystemlab.com))

**HYPOTHETICAL PERFORMANCE RESULTS HAVE MANY INHERENT LIMITATIONS, SOME OF WHICH ARE DESCRIBED BELOW. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. IN FACT, THERE ARE FREQUENTLY SHARP DIFFERENCES BETWEEN HYPOTHETICAL PERFORMANCE RESULTS AND THE ACTUAL RESULTS ACHIEVED BY ANY PARTICULAR TRADING PROGRAM.**

**ONE OF THE LIMITATIONS OF HYPOTHETICAL PERFORMANCE RESULTS IS THAT THEY ARE GENERALLY PREPARED WITH THE BENEFIT OF HINDSIGHT. IN ADDITION, HYPOTHETICAL TRADING DOES NOT INVOLVE FINANCIAL RISK, AND NO HYPOTHETICAL TRADING RECORD CAN COMPLETELY ACCOUNT FOR THE IMPACT OF FINANCIAL RISK IN ACTUAL TRADING. FOR EXAMPLE, THE ABILITY TO WITHSTAND LOSSES OR TO ADHERE TO A PARTICULAR TRADING PROGRAM IN SPITE OF TRADING LOSSES ARE MATERIAL POINTS WHICH CAN ALSO ADVERSELY AFFECT ACTUAL TRADING RESULTS. THERE ARE NUMEROUS OTHER FACTORS RELATED TO THE MARKETS IN GENERAL OR TO THE IMPLEMENTATION OF ANY SPECIFIC TRADING PROGRAM WHICH CANNOT BE FULLY ACCOUNTED FOR IN THE PREPARATION OF HYPOTHETICAL PERFORMANCE RESULTS AND ALL OF WHICH CAN ADVERSELY AFFECT ACTUAL TRADING RESULTS.**