STRATEGIES BASED ON OBV OPTIONS PRICING

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Agenda

Black-Scholes Model versus ObV Model

Results of back testing using ObV theory

Results of back testing using B-S theory

Conclusions

Difference between Black-Scholes theory and ObV theory

The difference lays in used different Langevine equation.

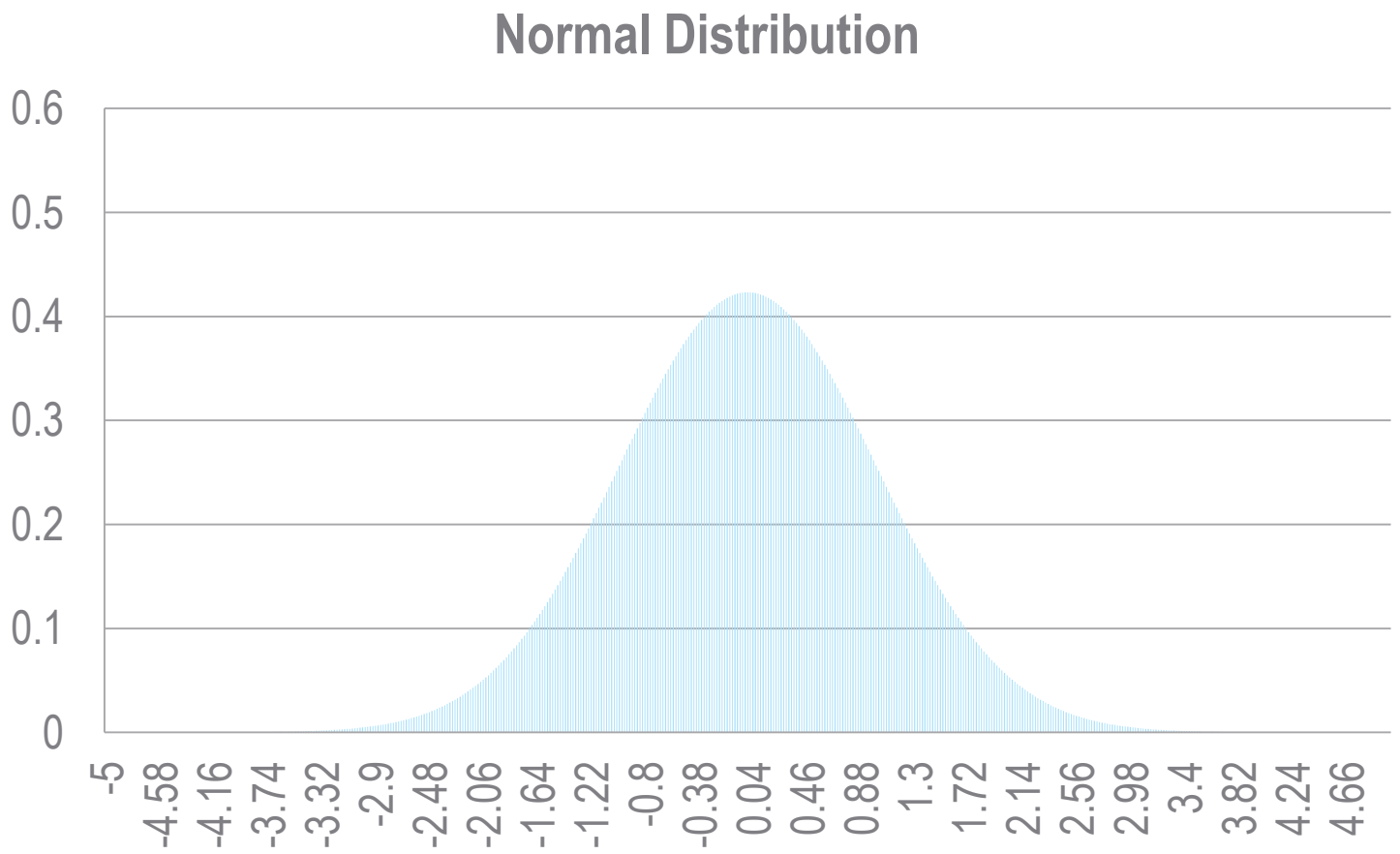
The consequance of this is that in option pricing we use different Probability Distribution Function of returns.

Mr. Black and Mr. Scholes assume Wiener process and as a consequence Normal distribution of returns.

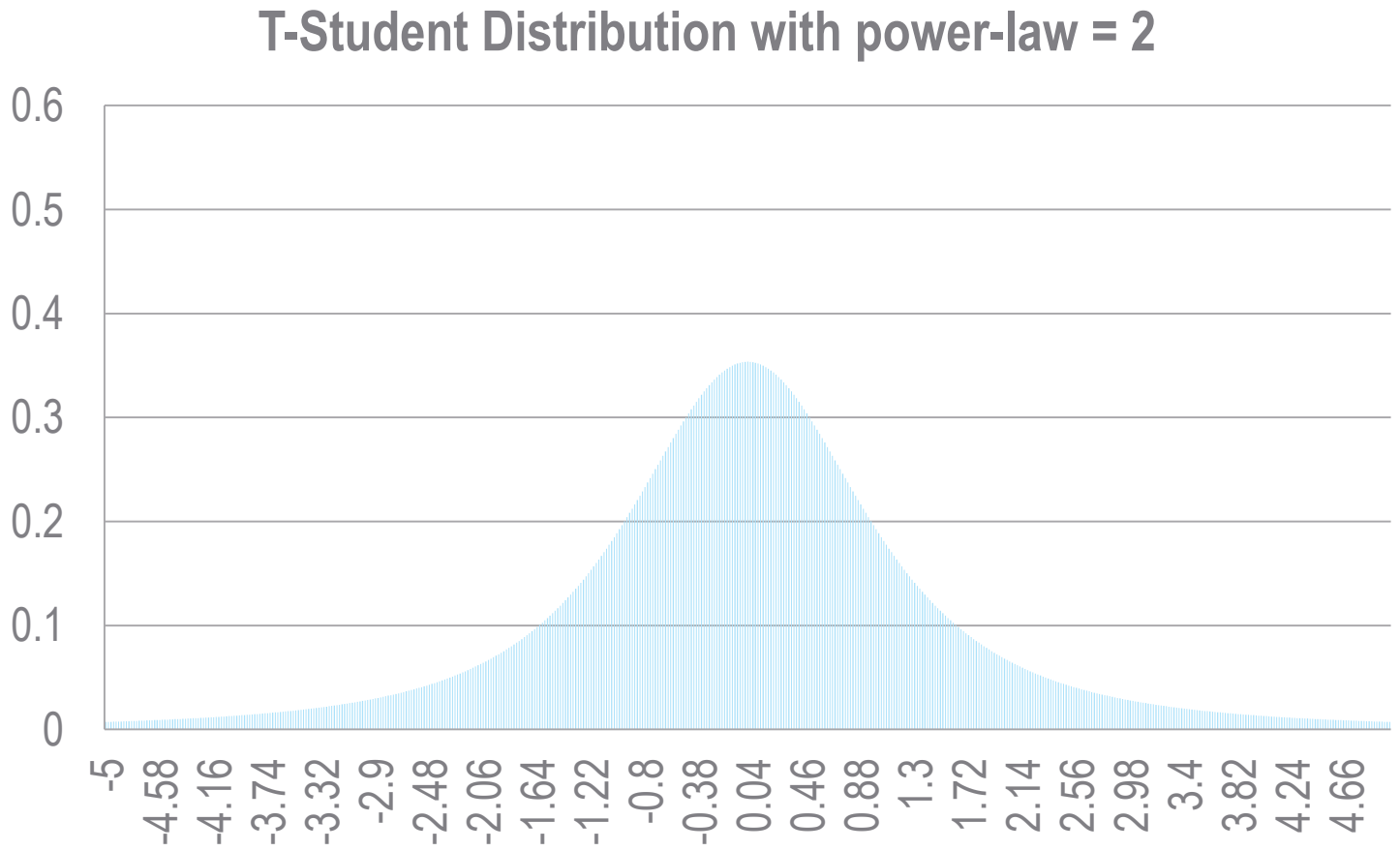
Mrs. Lisa Borland as well as we assume more general form of Wiener process and as a consequence Power-Law Distribution.

In next slides we show difference in used distributions.

Probability Density Distributions – from Normal to Power-Law



Probability Density Distributions – from Normal to Power-Law

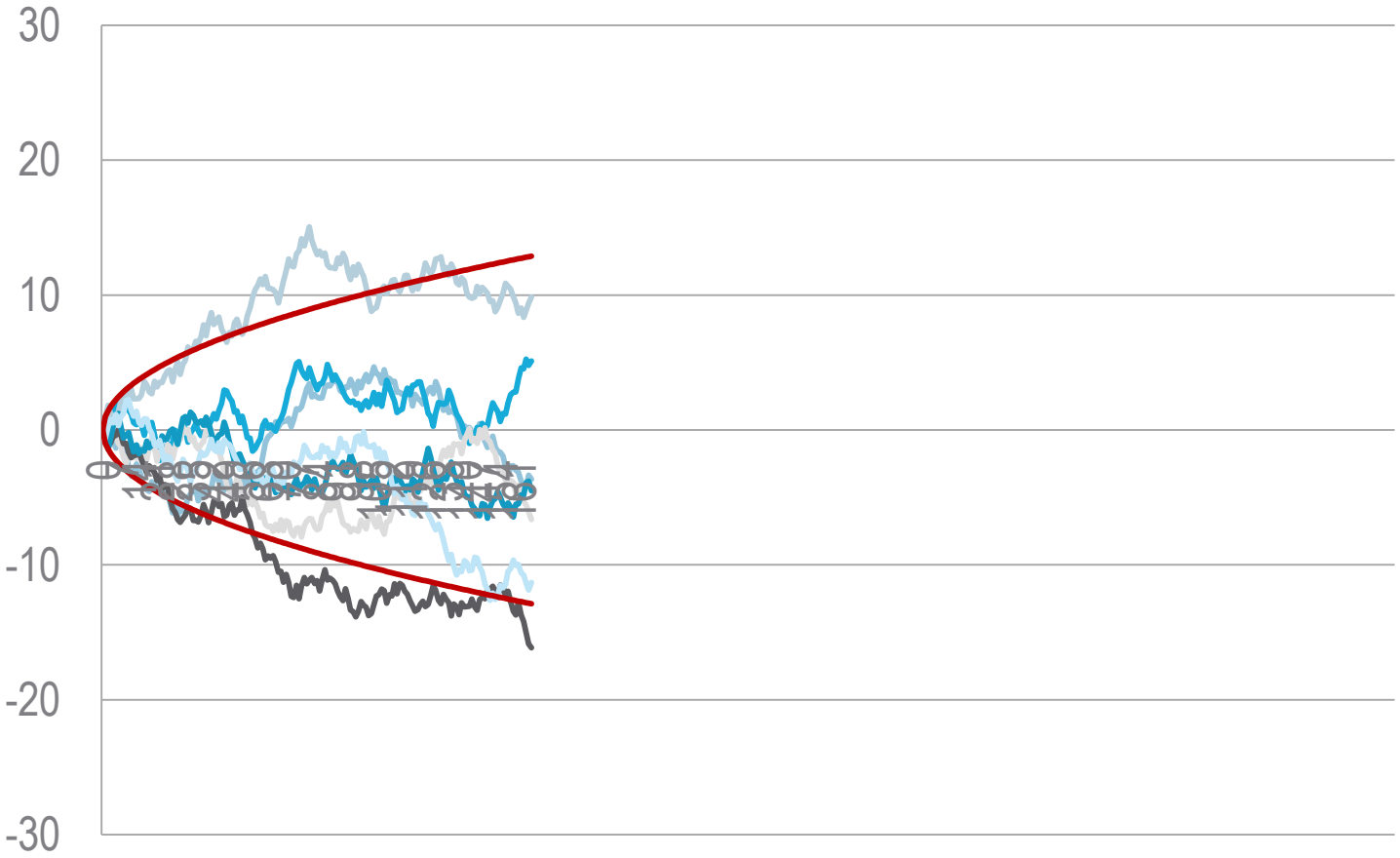


Difference between Black-Scholes theory and ObV theory

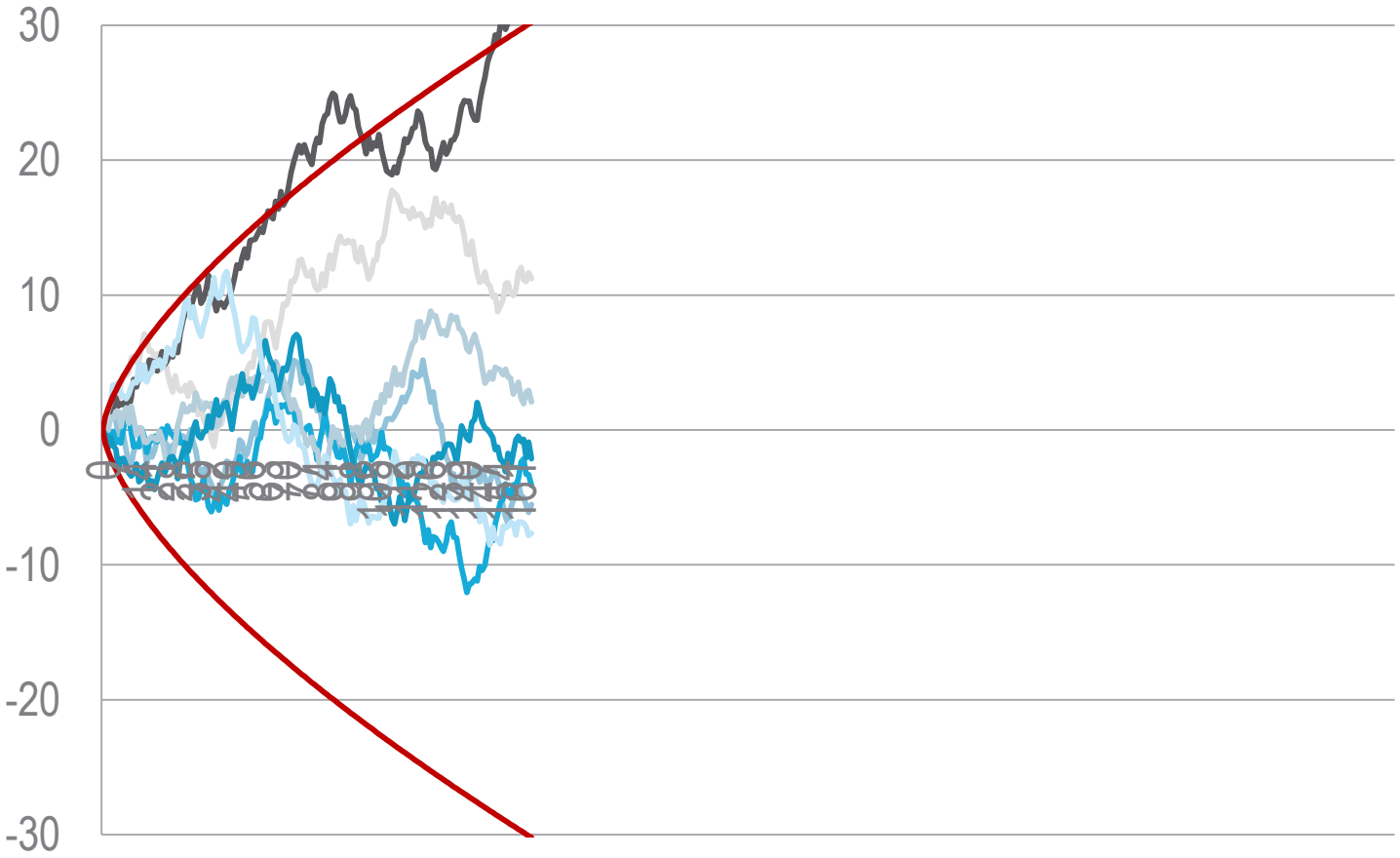
When we use different models for stochastic differencial equation, we come up we different option prices.

In next slides we show schematically what is the difference in option price caluclations.

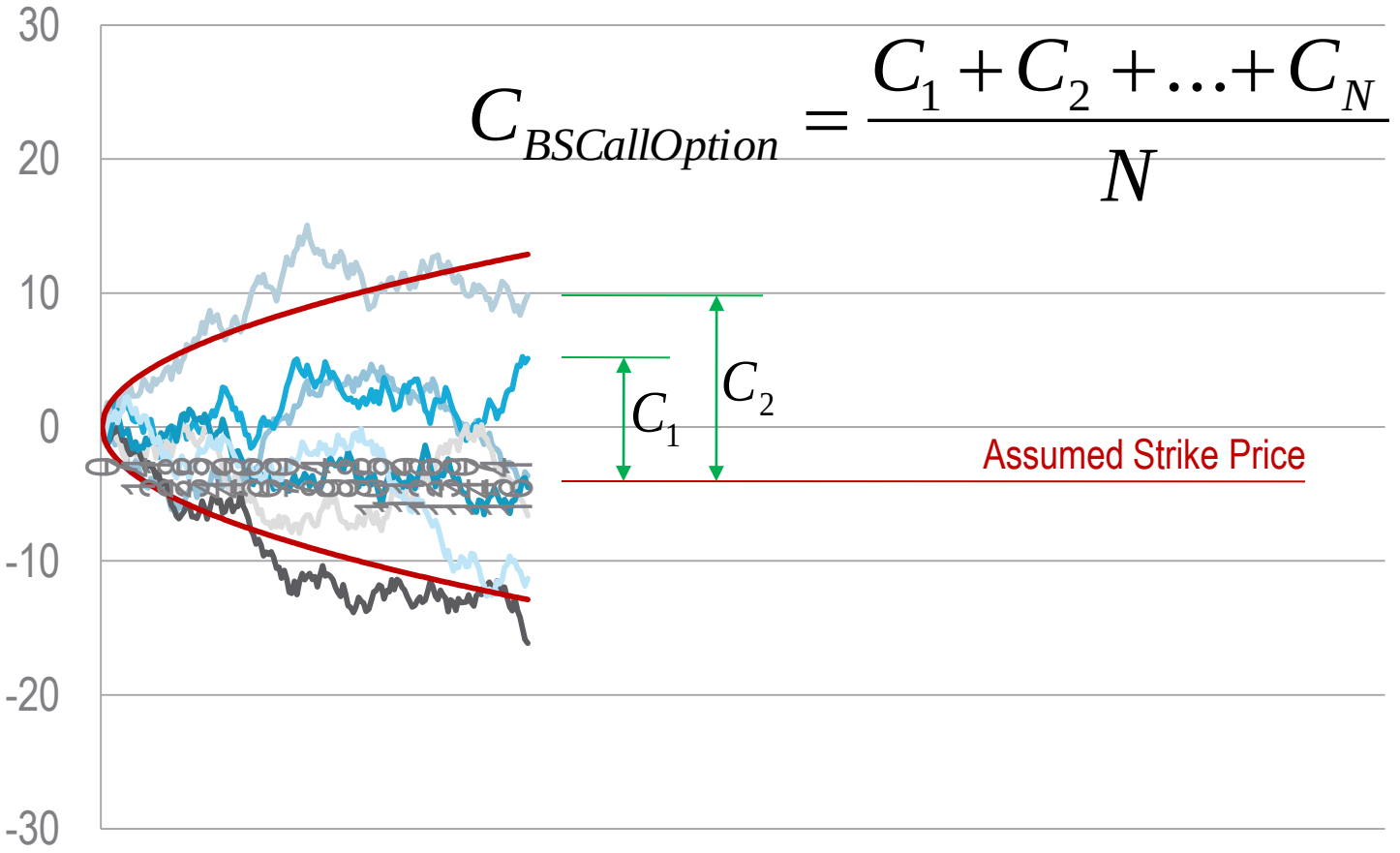
Black-Scholes theory – behaviour of probable future prices in time



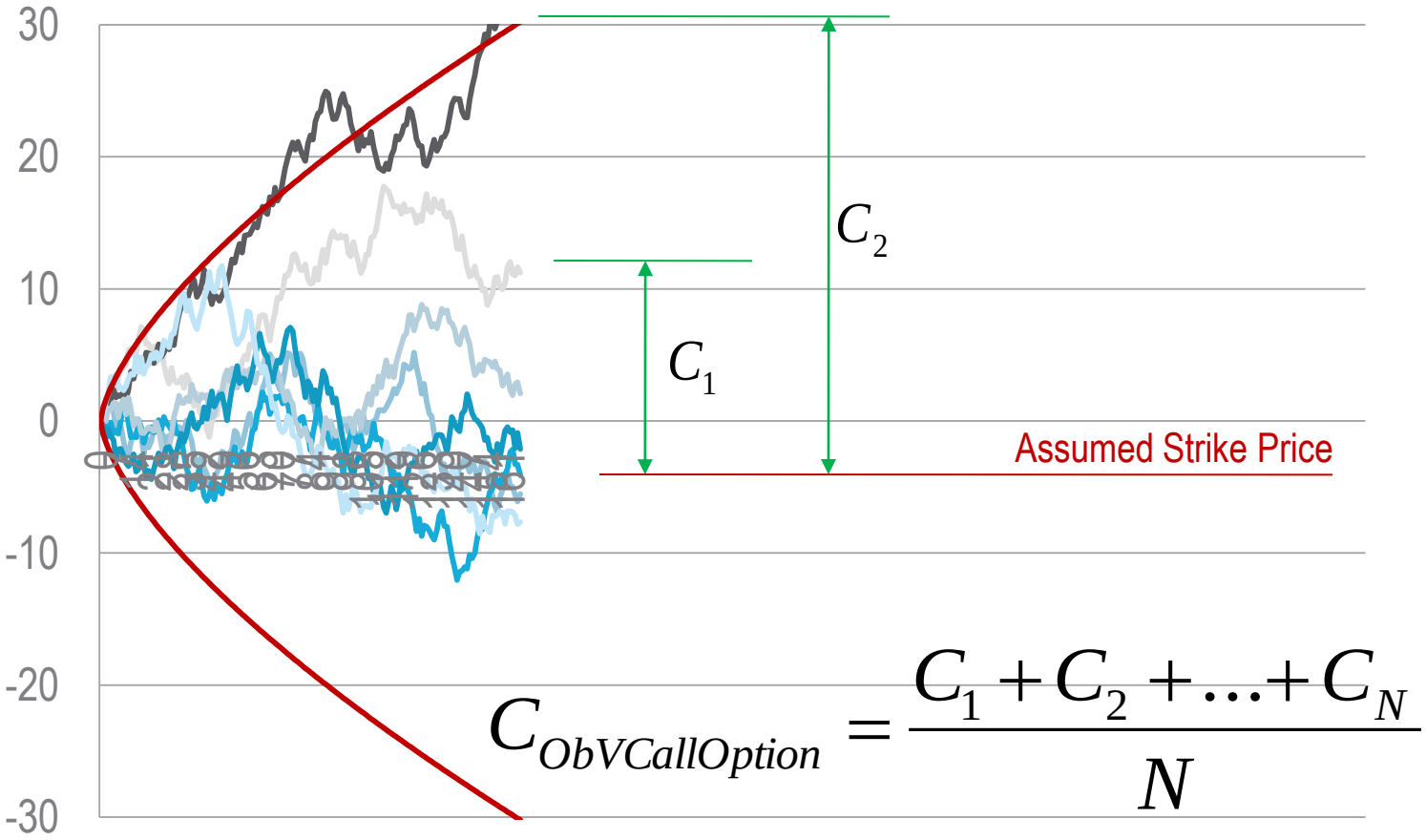
ObV theory – behaviour of probable future prices in time



Black-Scholes theory – option price



ObV theory – option price



$$C_{ObVCallOption} = \frac{C_1 + C_2 + \ldots + C_N}{N}$$

The Strategy: base mechanics

The signal BUY of option is sent when

- ObV Price > 1.1 * Option Price

The signal SELL of option is sent when

- ObV Price < 0.9 * Option Price

The signal CLOSE BUY is sent when

- ObV Price < Option Price

The signal CLOSE SELL is sent when

- ObV Price > Option Price

Every signal is executed in the day of sending.

Strategy with hedging

Option is the right to buy or sell of underlying asset.

The Soybeans Call option is the right to buy one Soybeans future contract with the same expiration month as option.

Price of Soybeans Call option depends on the price of Soybeans future contract.

If the price of the Soybeans future contract change of 1$ than the option price is changing $\Delta$$.

Δ Is the Greek letter Delta.

If we would like not to change the portfolio profit, we have to buy 1 call option and sell Δ future contracts.

The Δ is practicaly unknown and we have to estimate from theory.

Strategy parameters

The Strategy buy/sell 100 option contracts of 5000 bushels.

It hedges with 100*Δ future contracts of the same size.

The signal of buy/sell or close is sent only when:

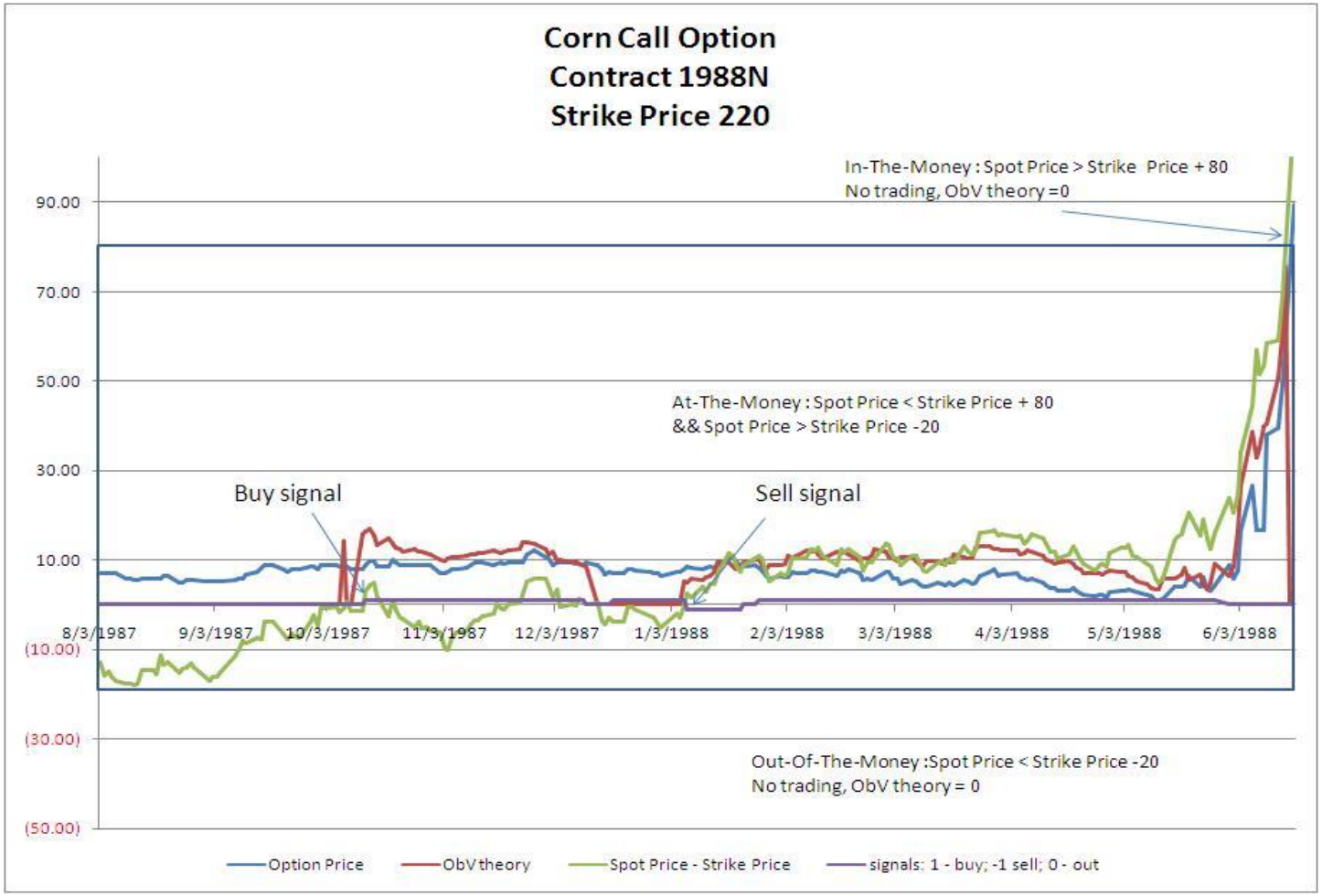
- For ATM and not deep OTM options
- Open Interest on option > 500

The open positions are closed in the last bussines day before delivery.

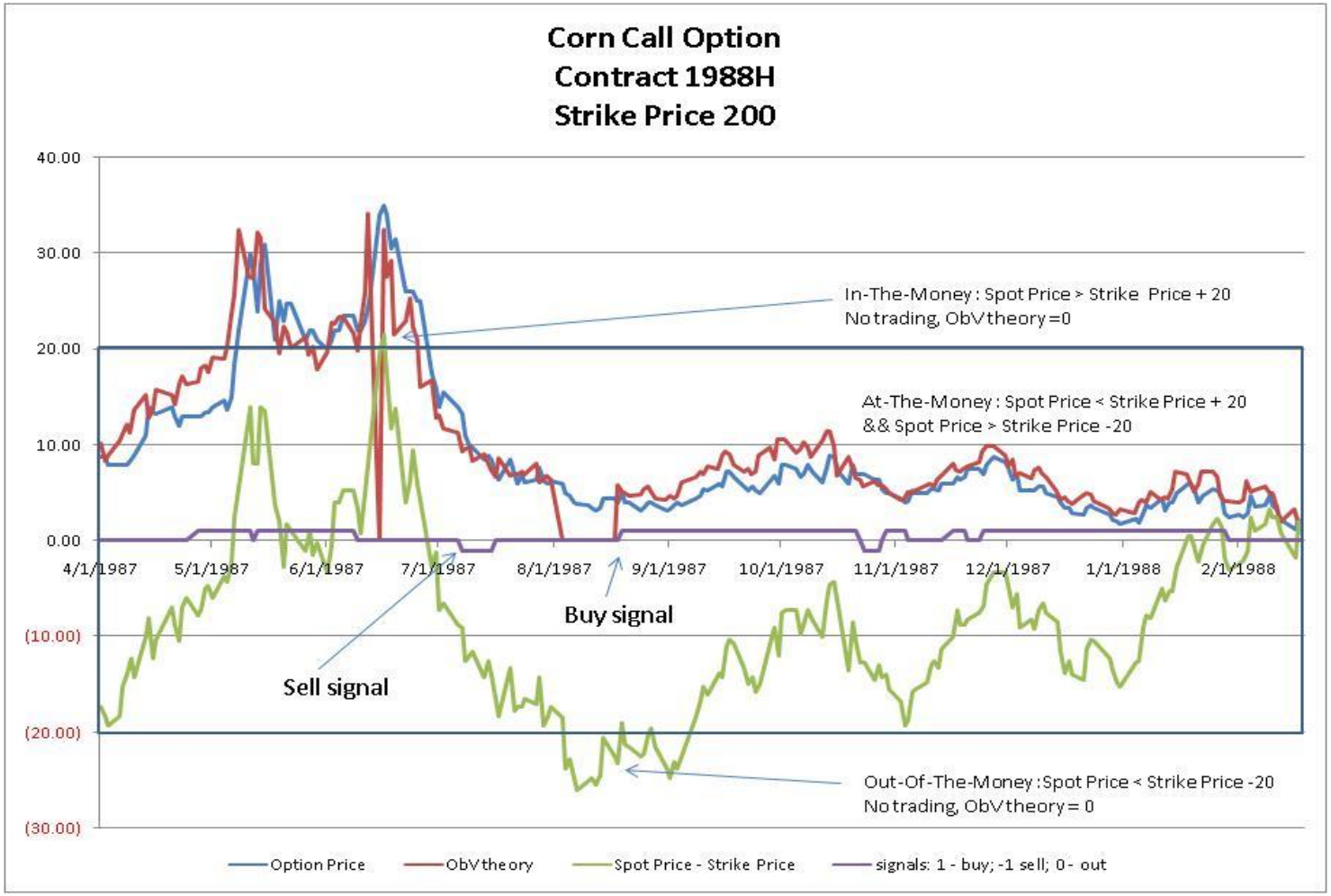
The sllipage 2 ticks is taken from every trade on options as well as on futures

Tick size: Option: 1/8 of cent, Future: 1/4 of cent pro bushel.

The Strategy: example of trading mechanics

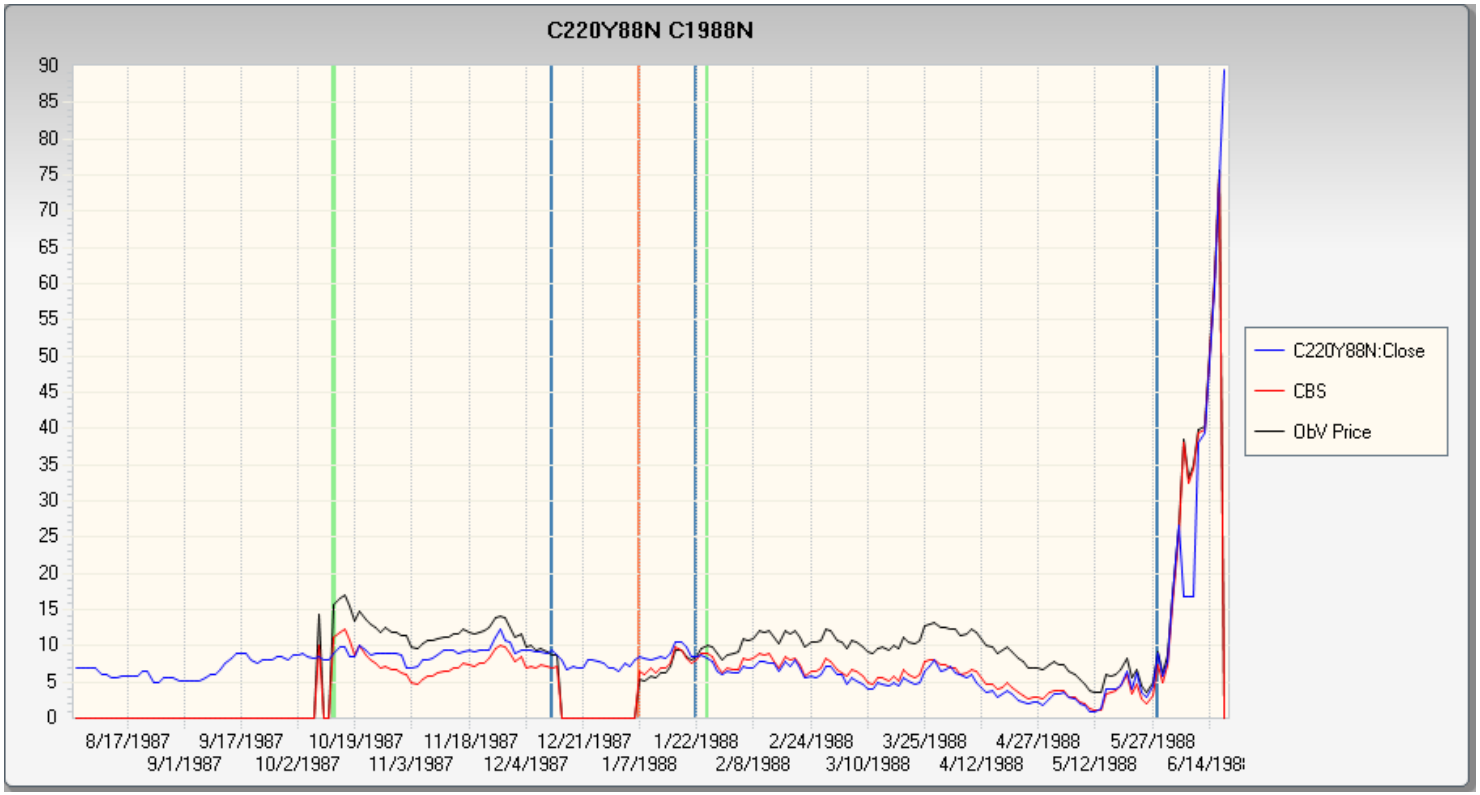


The Strategy: example of trading mechanics (ATM = Strike Price ± 20)



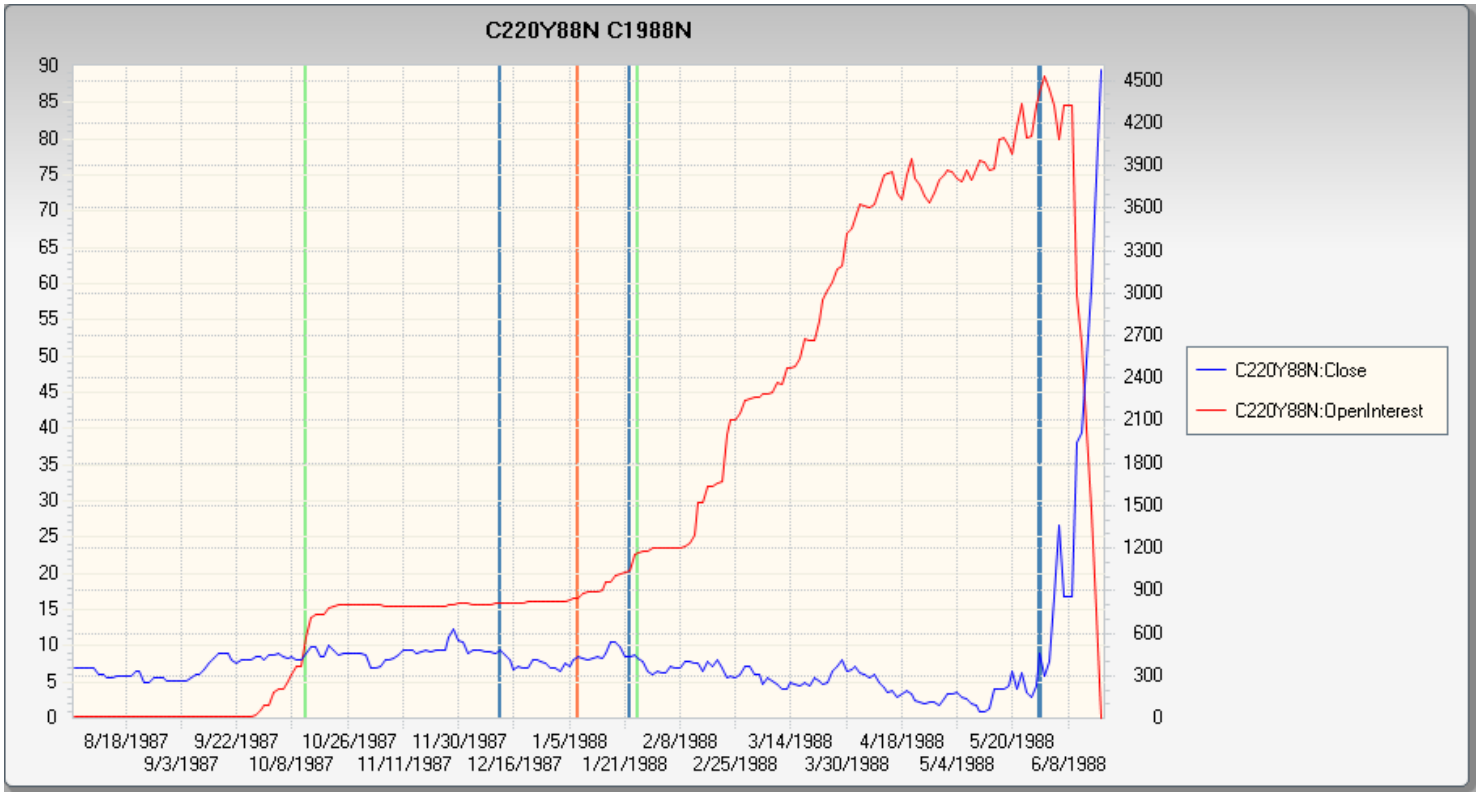
The Strategy: example of difference between ObV and BS theory

Red vertical line is sell, green is buy and blue is close

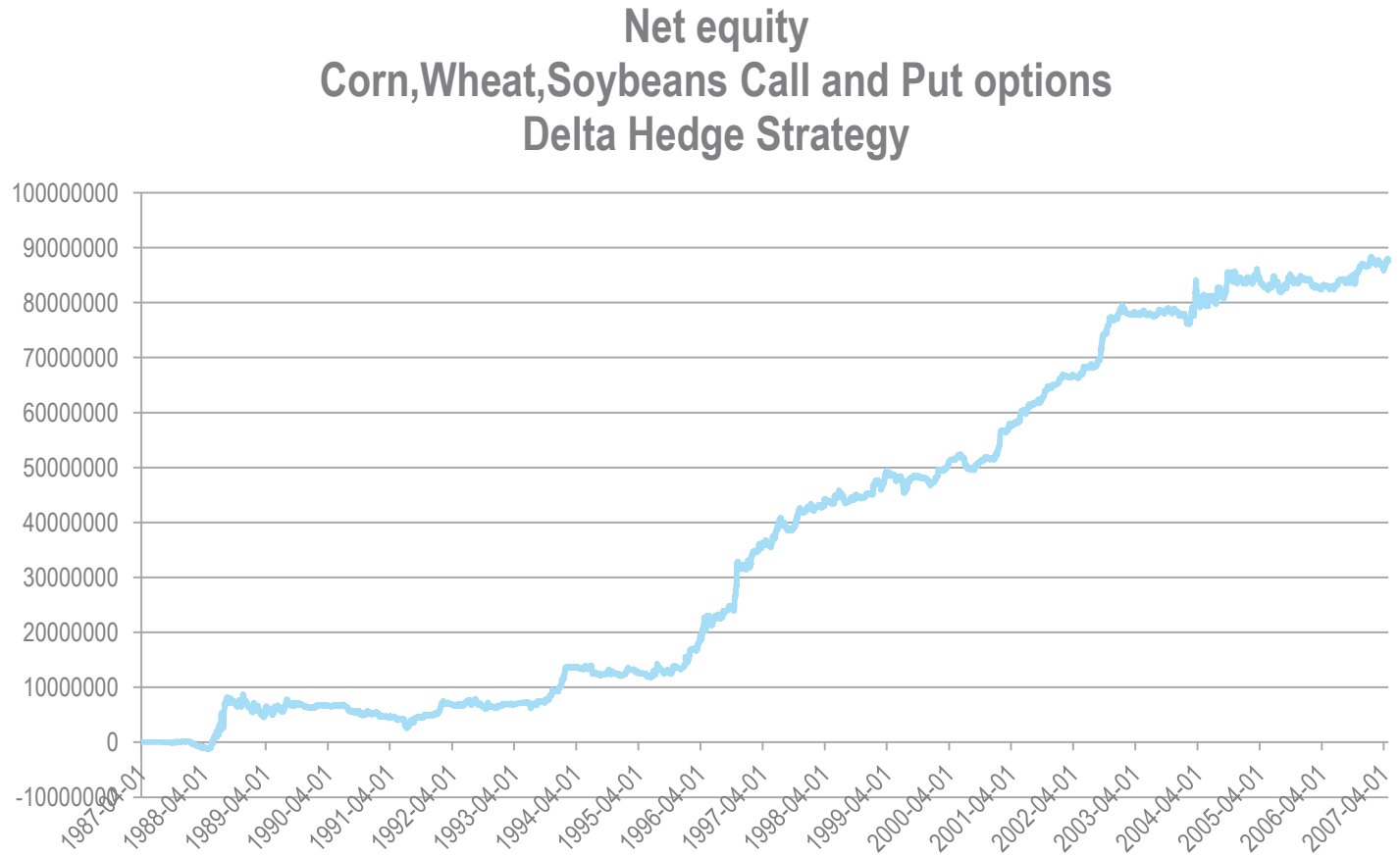


The Strategy: example of signal creation only when Open Interest > 500

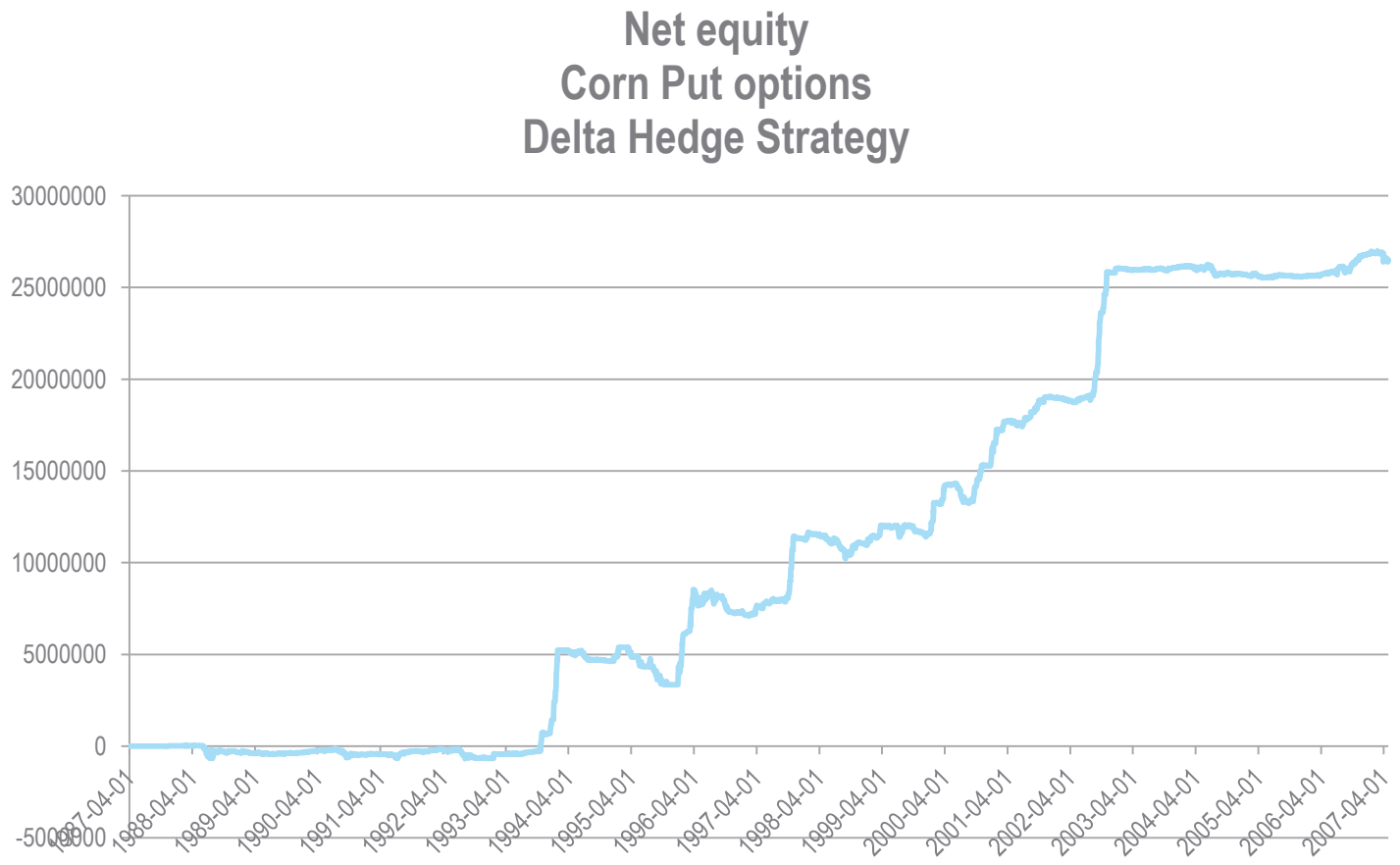
Red vertical line is sell, green is buy and blue is close



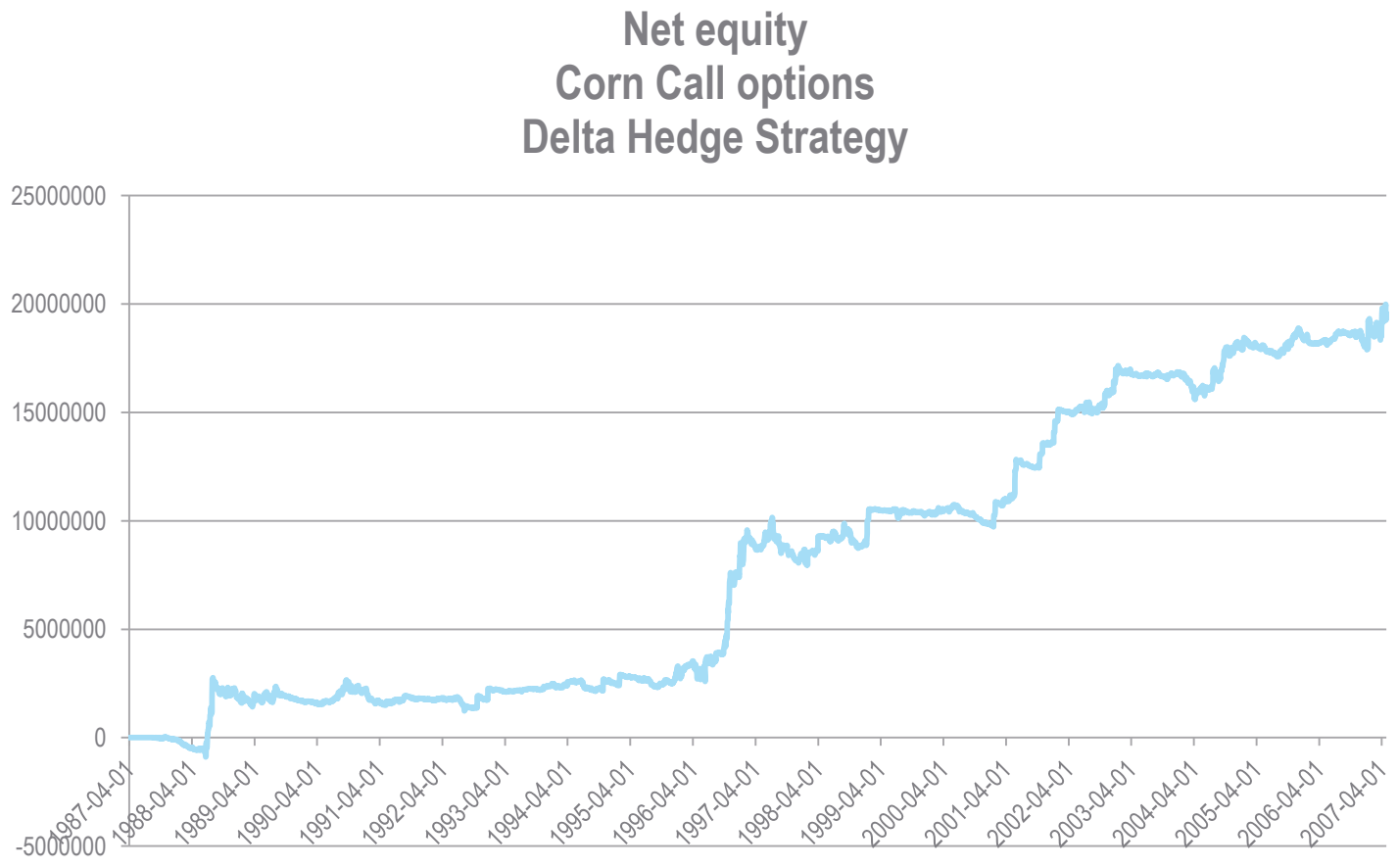
Delta Hedging Strategy: Results of back testing for portfolio



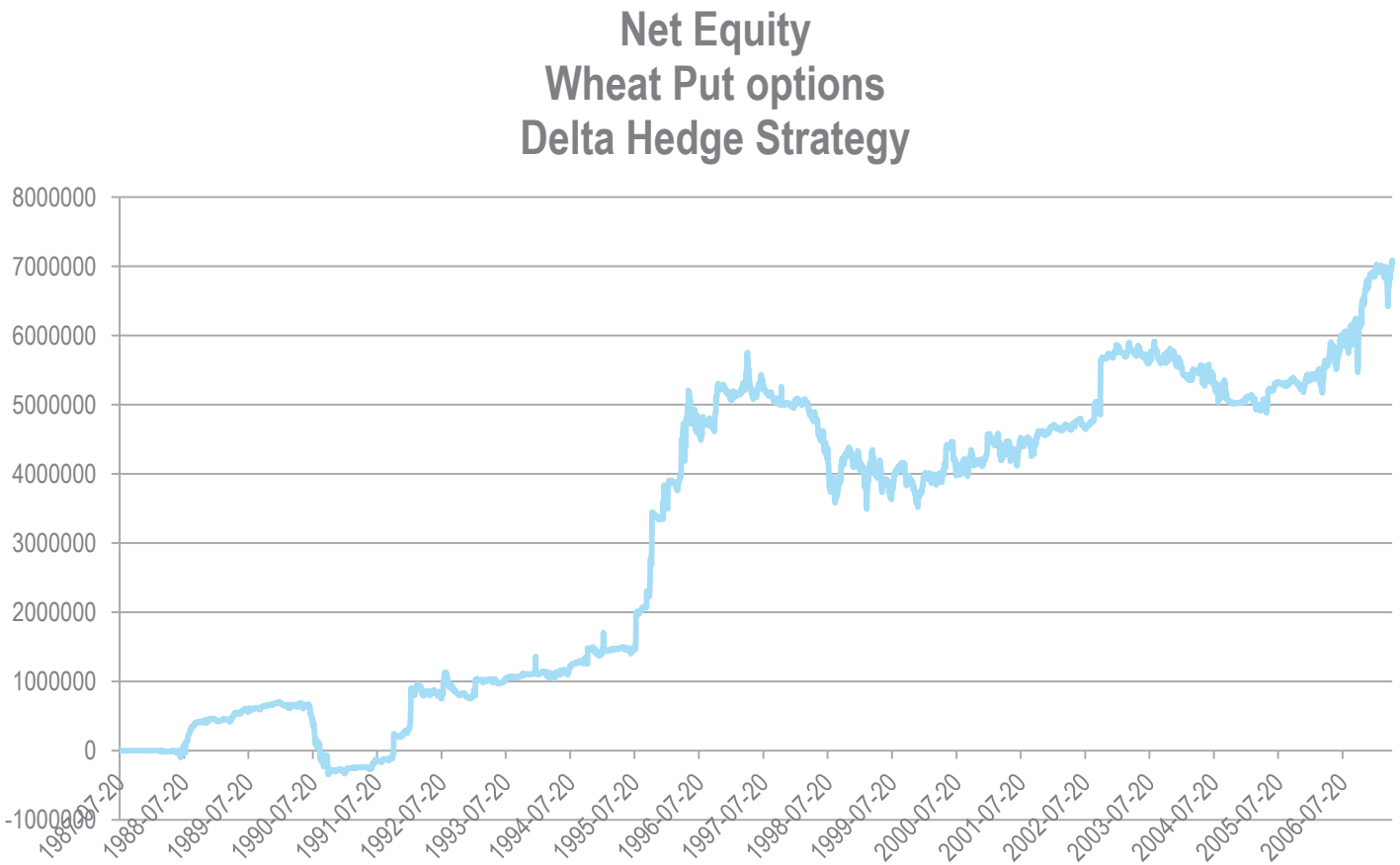
Delta Hedging Strategy: Results of back testing on CORN PUT



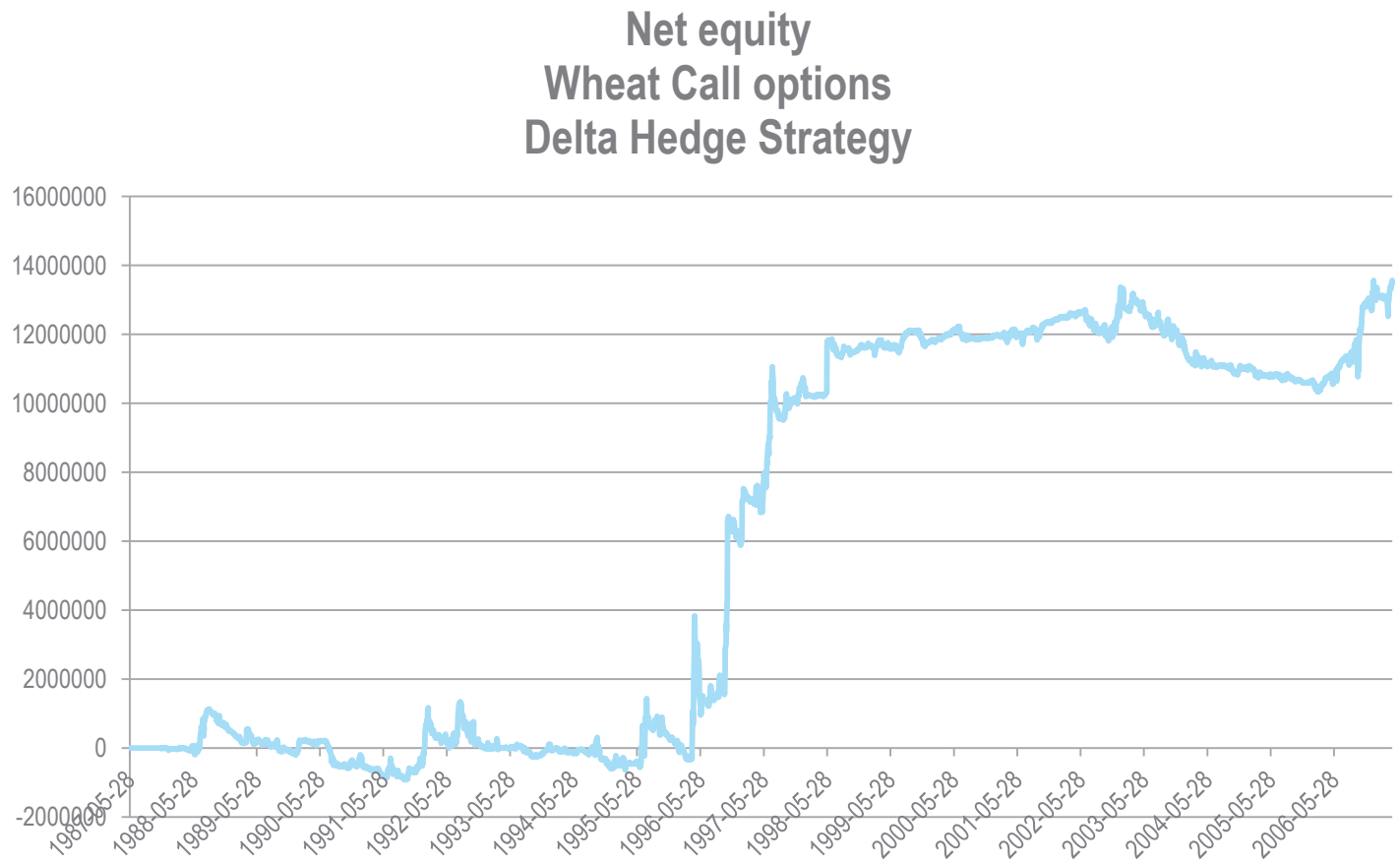
Delta Hedging Strategy: Results of back testing on CORN CALL



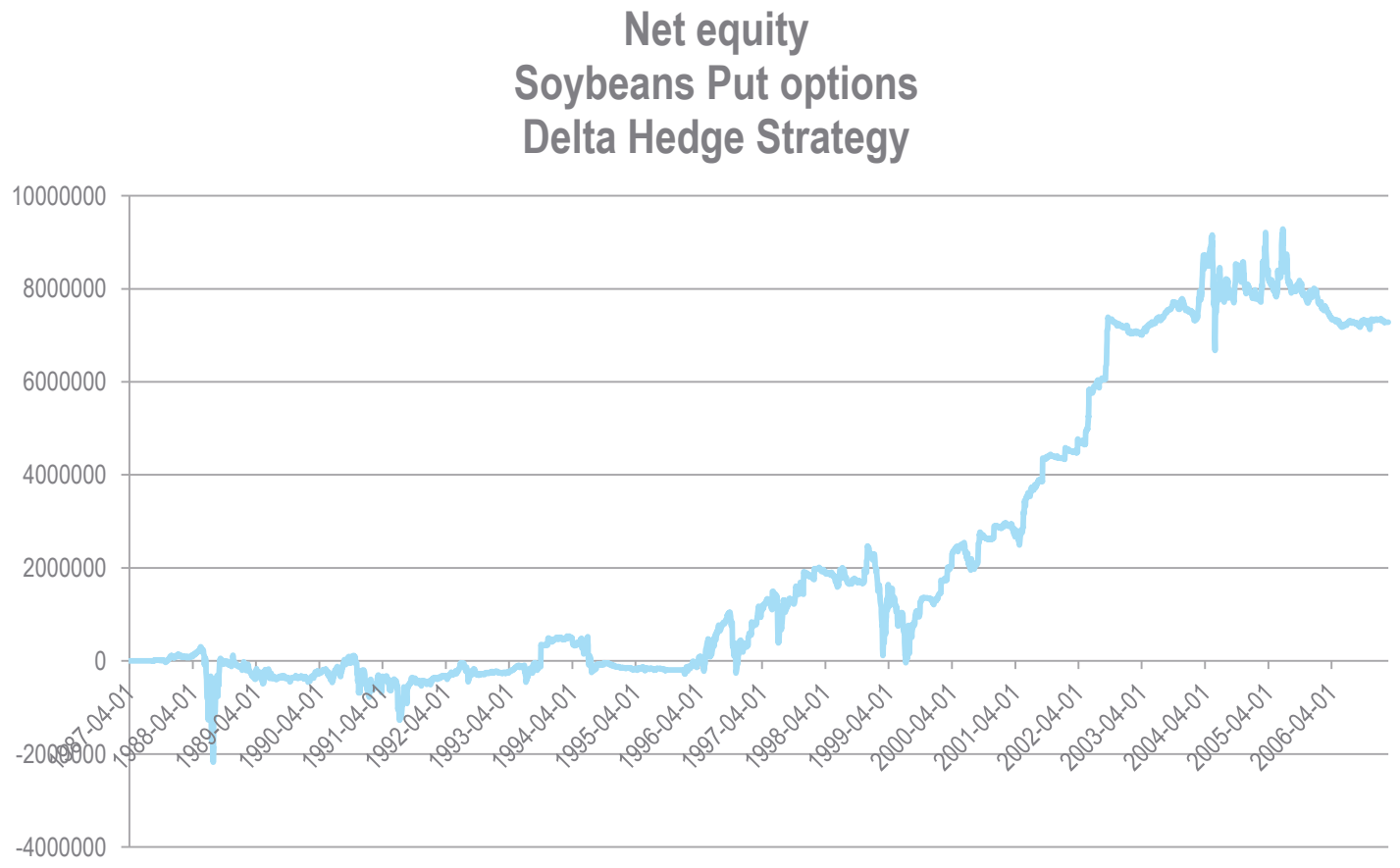
Delta Hedging Strategy: Results of back testing on WHEAT PUT



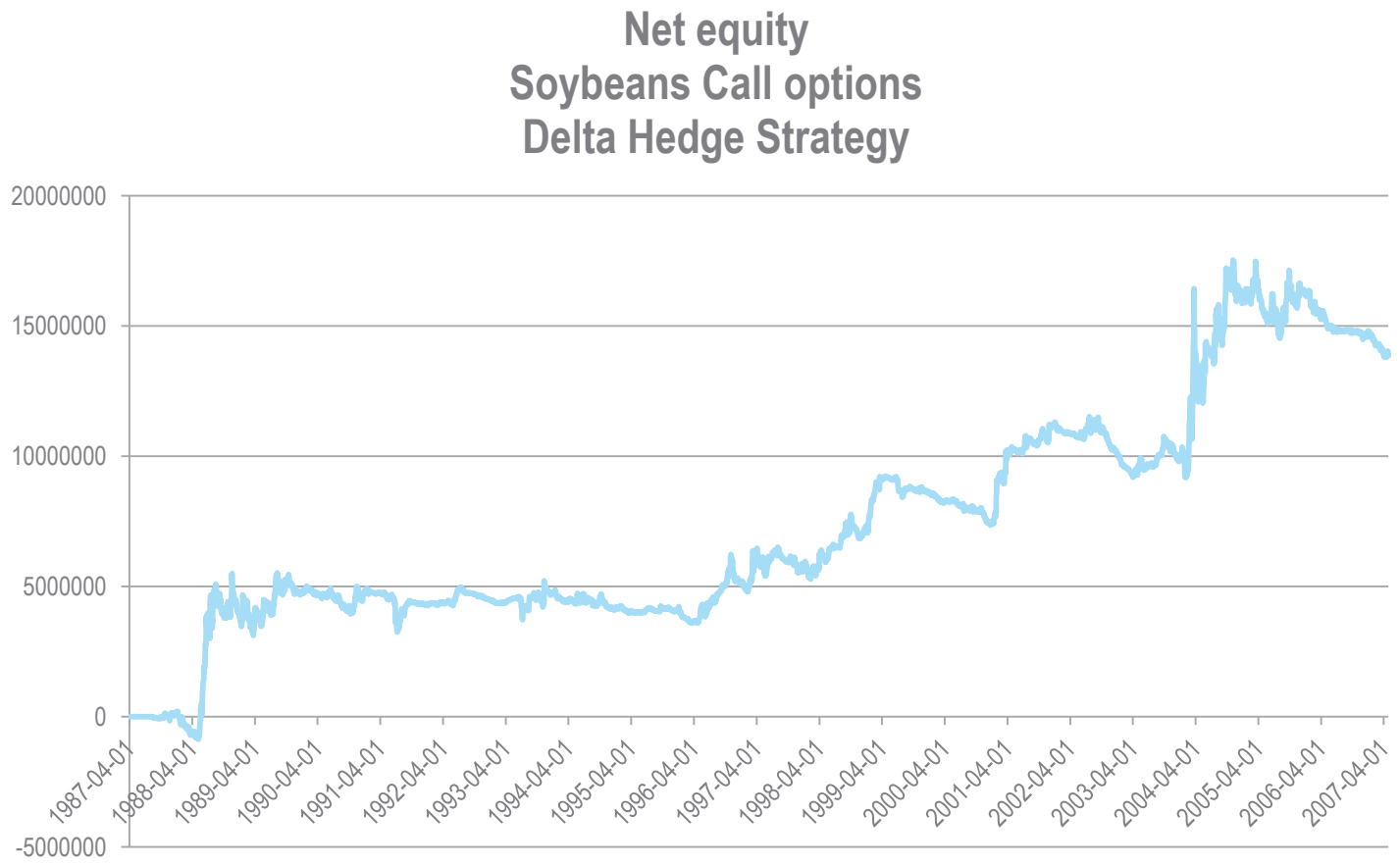
Delta Hedging Strategy: Results of back testing on WHEAT CALL



Delta Hedging Strategy: Results of back testing on SOYBEANS PUT



Delta Hedging Strategy: Results of back testing on SOYBEANS CALL



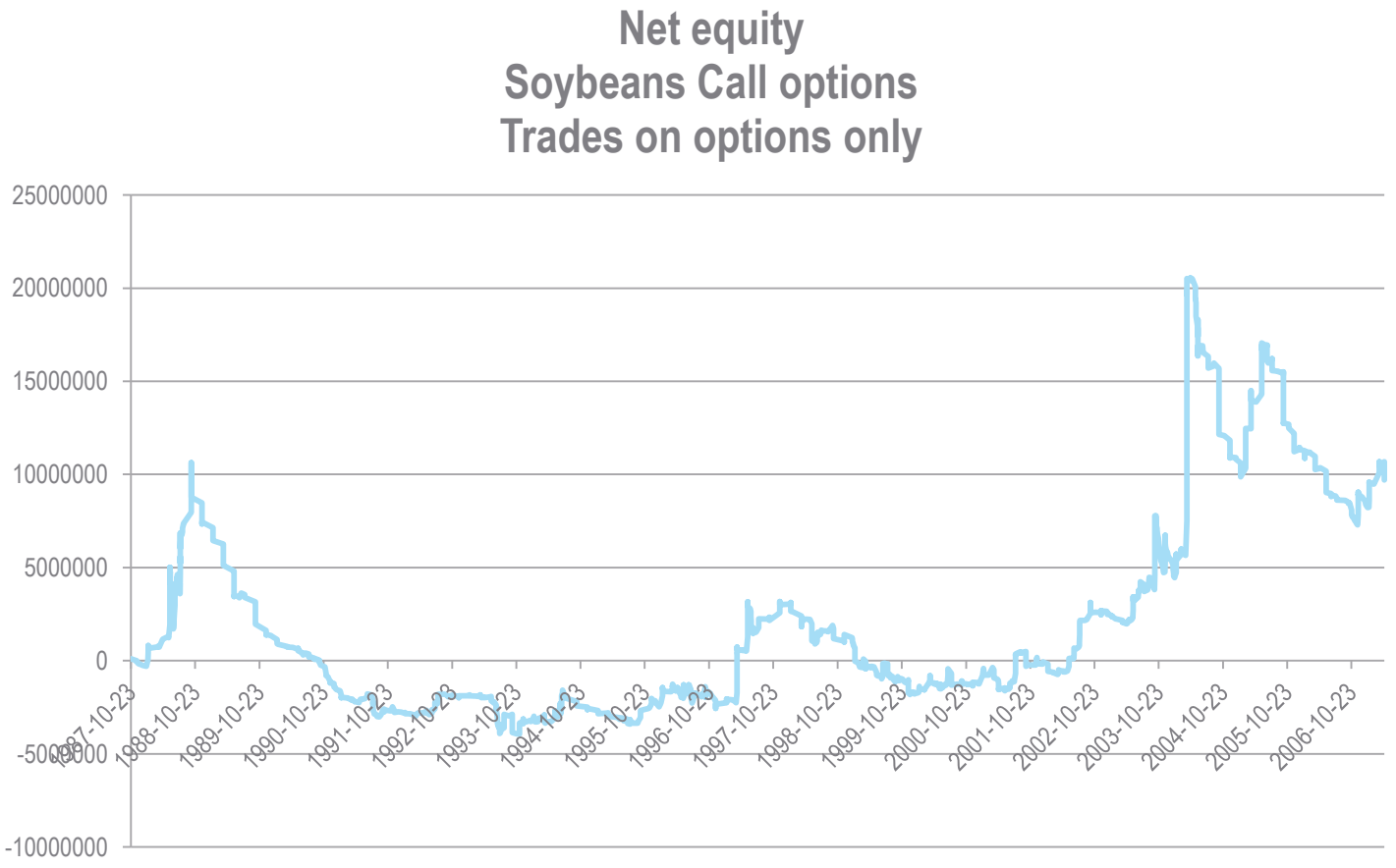
Seperating the profits made by only options and only futures

The above profit is cumulative overall return from Delta Hedge Strategy.

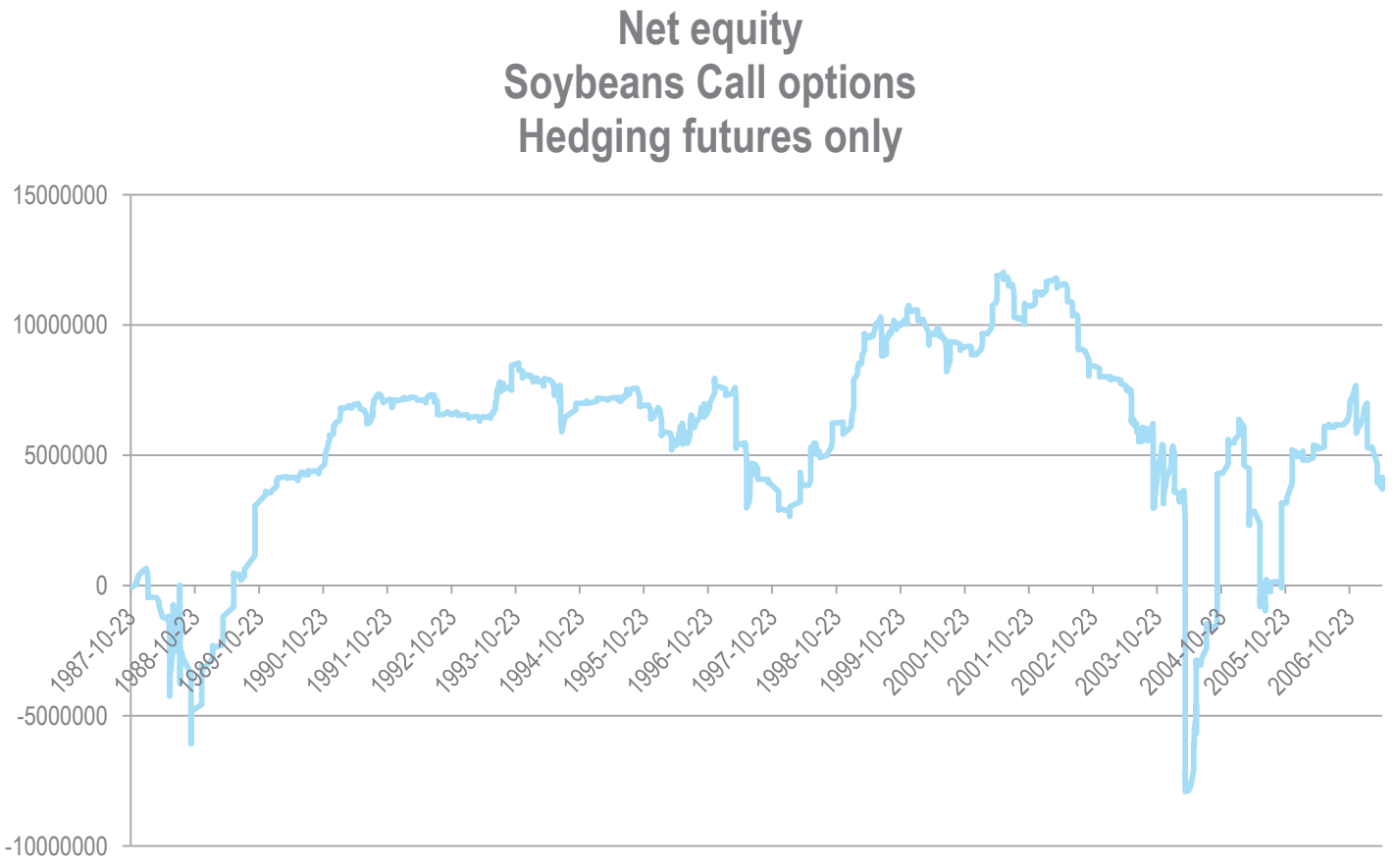
We can split profits on made by options and hedging futures.

Next slides show the cumulative profits seperate by type of derivatives.

Delta Hedging Strategy: Results of back testing on SOYBEANS CALL



Delta Hedging Strategy: Results of back testing on SOYBEANS CALL



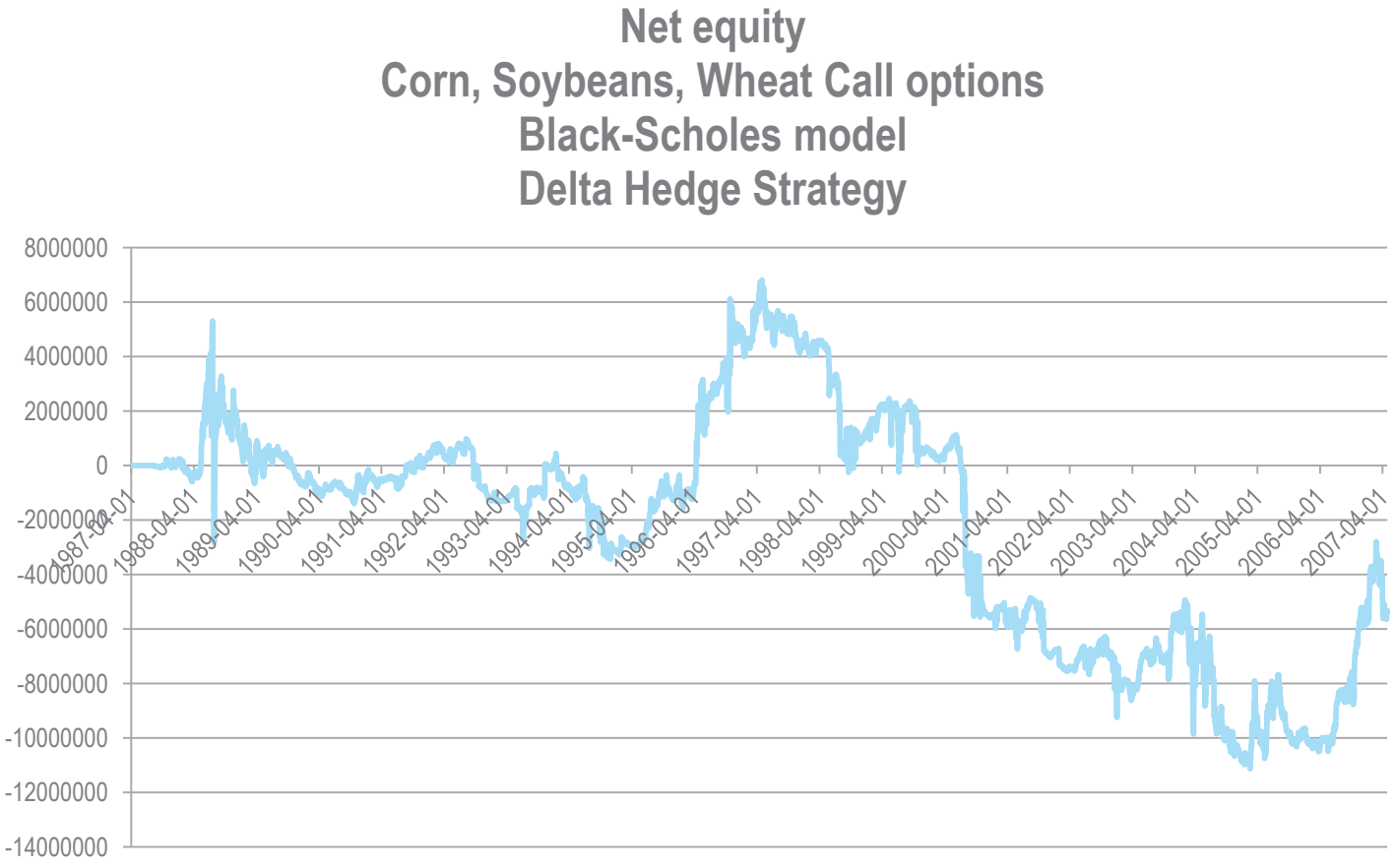
Result of the Strategy based on Black-Scholes Model

For the comparison purposes we use the Black-Scholes Model to the Strategy.

Whole the Strategy is the same as for the ObV option pricing and the only change is that we calculate the fair option price using Black-Scholes Model.

In next slides we show the results of back testing.

Result of the Strategy based on Black-Scholes Model



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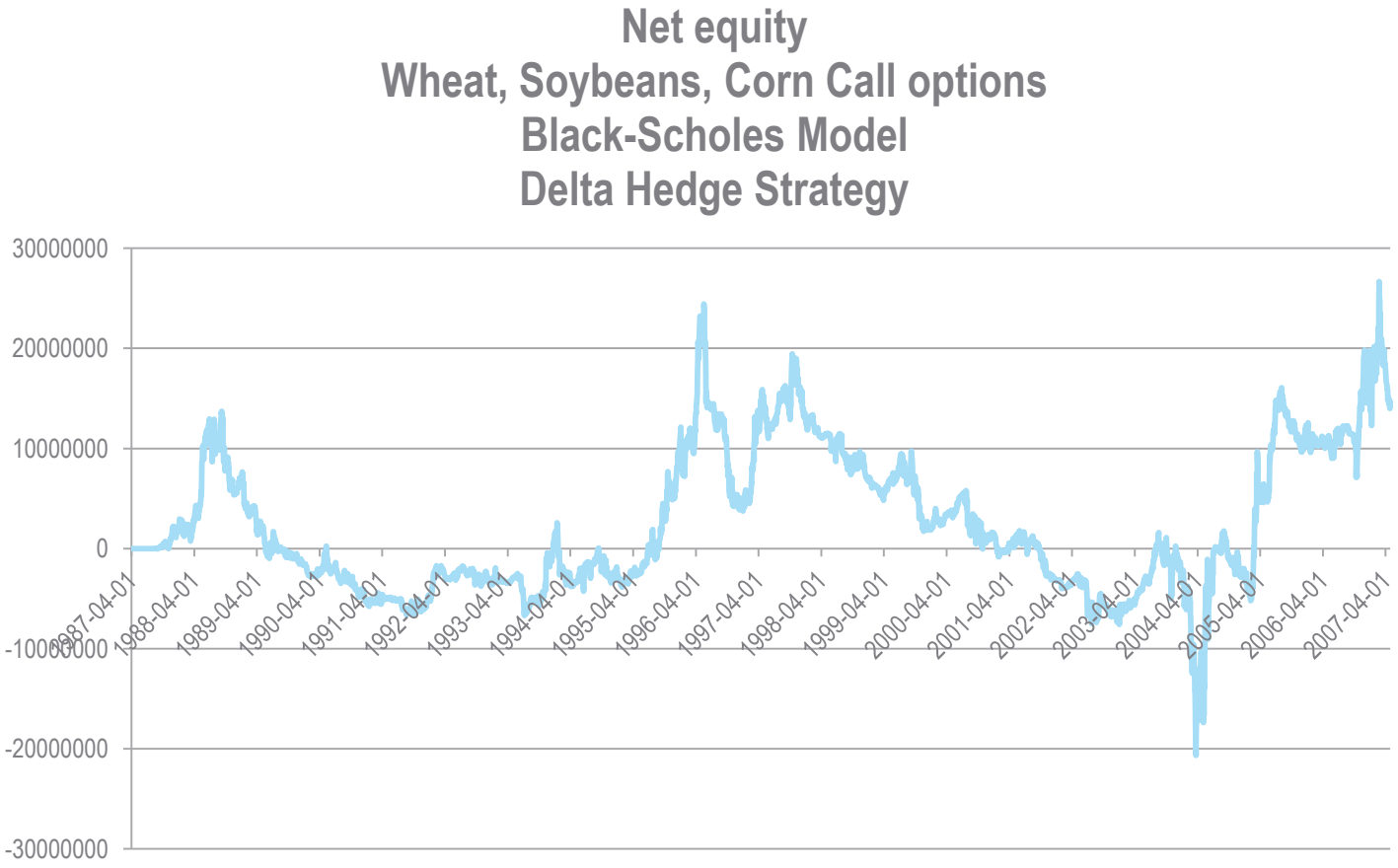
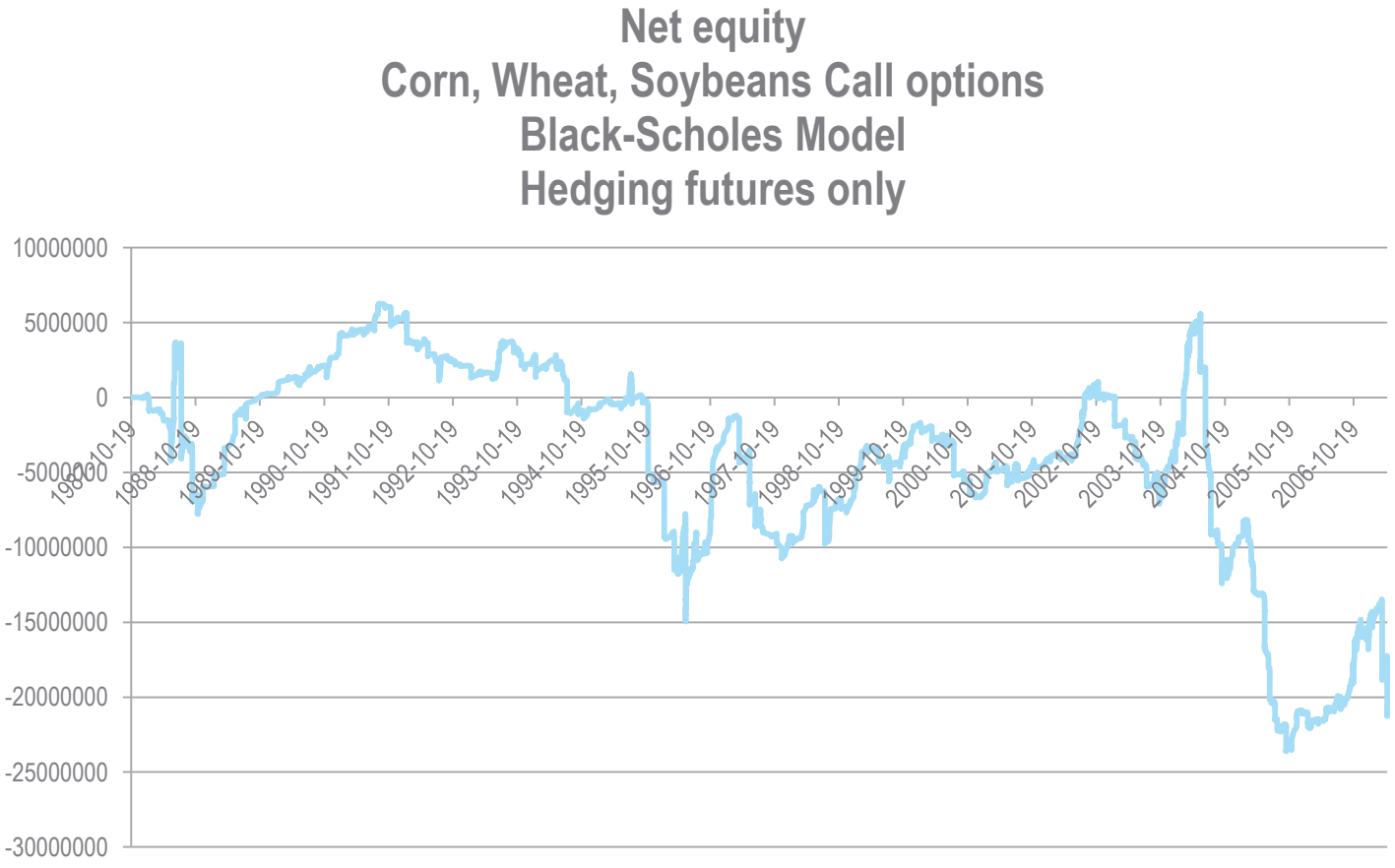


Result of the Strategy based on Black-Scholes Model



Conclusions

- The ObV theory describes the fair value of Call and Put options.
- The Delta Hedge Strategy make a good performace for all the availble data.
- The ObV theory is based on finacial standard so that it possess no free parameters.
- The Strategy is robust because it does not need any optimization.

Thank you.
Questions, comments send to wonabru@gmail.com
See http://www.wonabru.com