

Options Flow Algo //characteristics and strategies

Input Data

SPY/SPX options transaction flow/SPY ETF transaction flow: volumes, greeks, OI.

Goal

Estimate impact of delta/gamma hedging vs. general options sentiment on SP500 index.

Phenomena

Options market impact on SP500 universe presents unique opportunities because of market maker's obligations (expressed through hedging).

Metrics used

Flow (**F**): filtered by greeks and size, large transactions on options market.

Sentiment (**S**): filtered by greeks and size, mid and small transactions on options market.

Observed Tendencies

$F > S$ = bullish; $F < S$ = bearish

$F > 1.0$ = bullish; $F < 1.0$ = bearish

$F > S$ at RTH close[0] = bullish RTH close[+1]; $F < S$ at RTH close[0] = bearish next RTH close[+1]

Data Set (July 22 2021 - November 5th 2021)

Although the tendencies described above are observed and documented since late 2019, the detailed strategies I will refer to in this document are based on 1 minute data starting **from July 22nd 2021 until November 5th 2021**. Detailed tests on wider time scale would require robust intraday options order flow data which at this point are out of my reach.

Conclusions

Flow/Sentiment options model has predictive properties which allow to construct strategies with positive expectancy, beating a benchmark by relatively large margin. The model can not be easily classified as trending or mean reversion one. Highest probability trades occur when all tendencies are in unison.

Base parameters:

Tested data-set timeframe: 07/22/2021-11/05/2021

Optimisation/ML used: none

Asset traded: SPY ETF/eminiES(multiply SPY*10)

Benchmark: SPY ETF

Base Strategy is using three different metrics to derive direction and size of transaction. There can be either 1 or 3 units traded (or multiples). Units (eminiES contracts or SPY stocks) are determined by model Confidence.

Factors which determine Confidence:

f1) $F > S = +1$ unit; $F < S = -1$ unit

f2) $F > 1.0 = +1$ unit; $F < 1.0 = -1$ unit

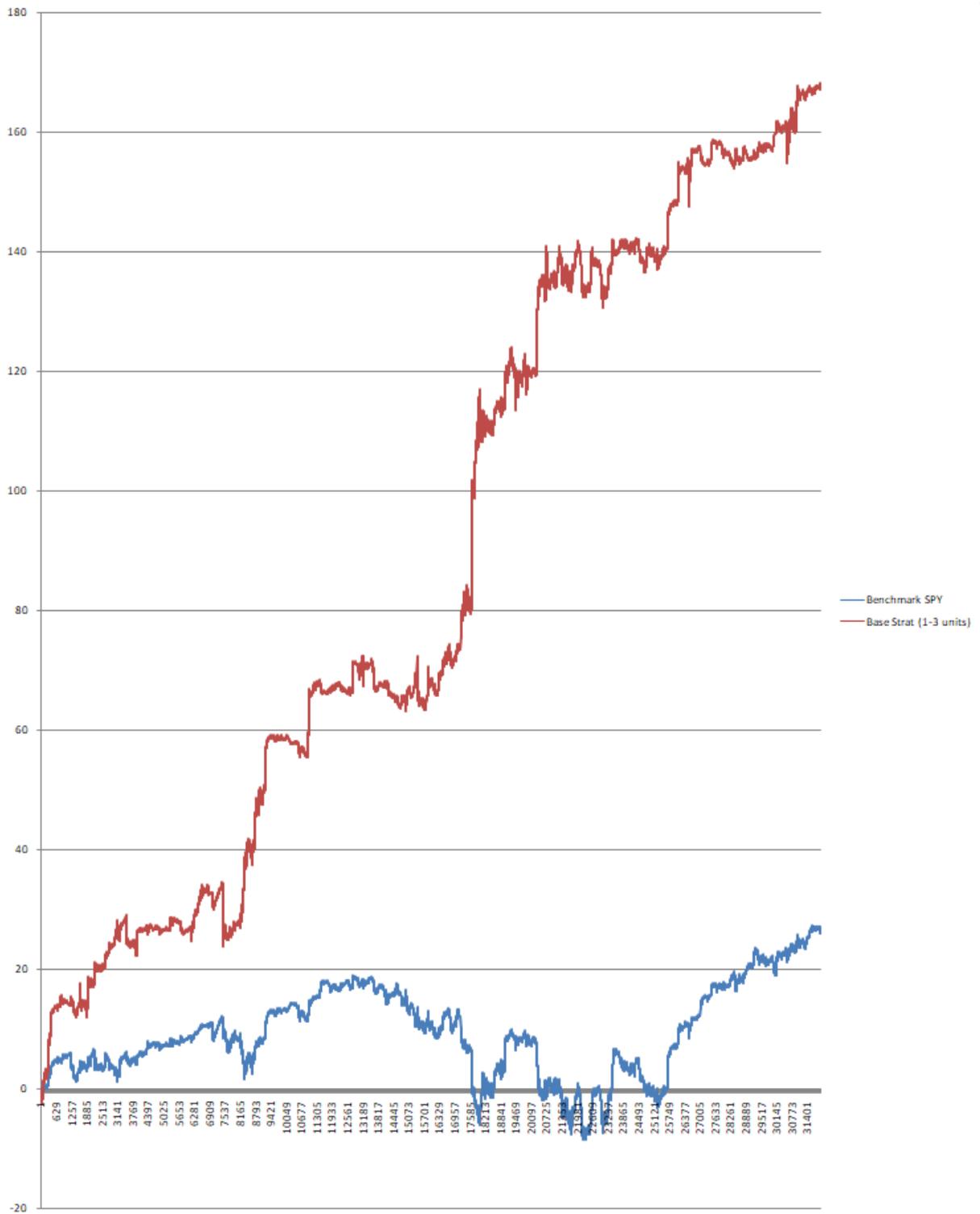
f3) $F > S$ at RTH close[0] = +1 unit; $F < S$ at RTH close[0] = -1 unit

Confidence (position size) = $f1 + f2 + f3$

Risk estimation

σ (standard deviation) = 11.3 (SPY points)

Strat "killswitch" = $\max(\text{PnL}) - 2\sigma$

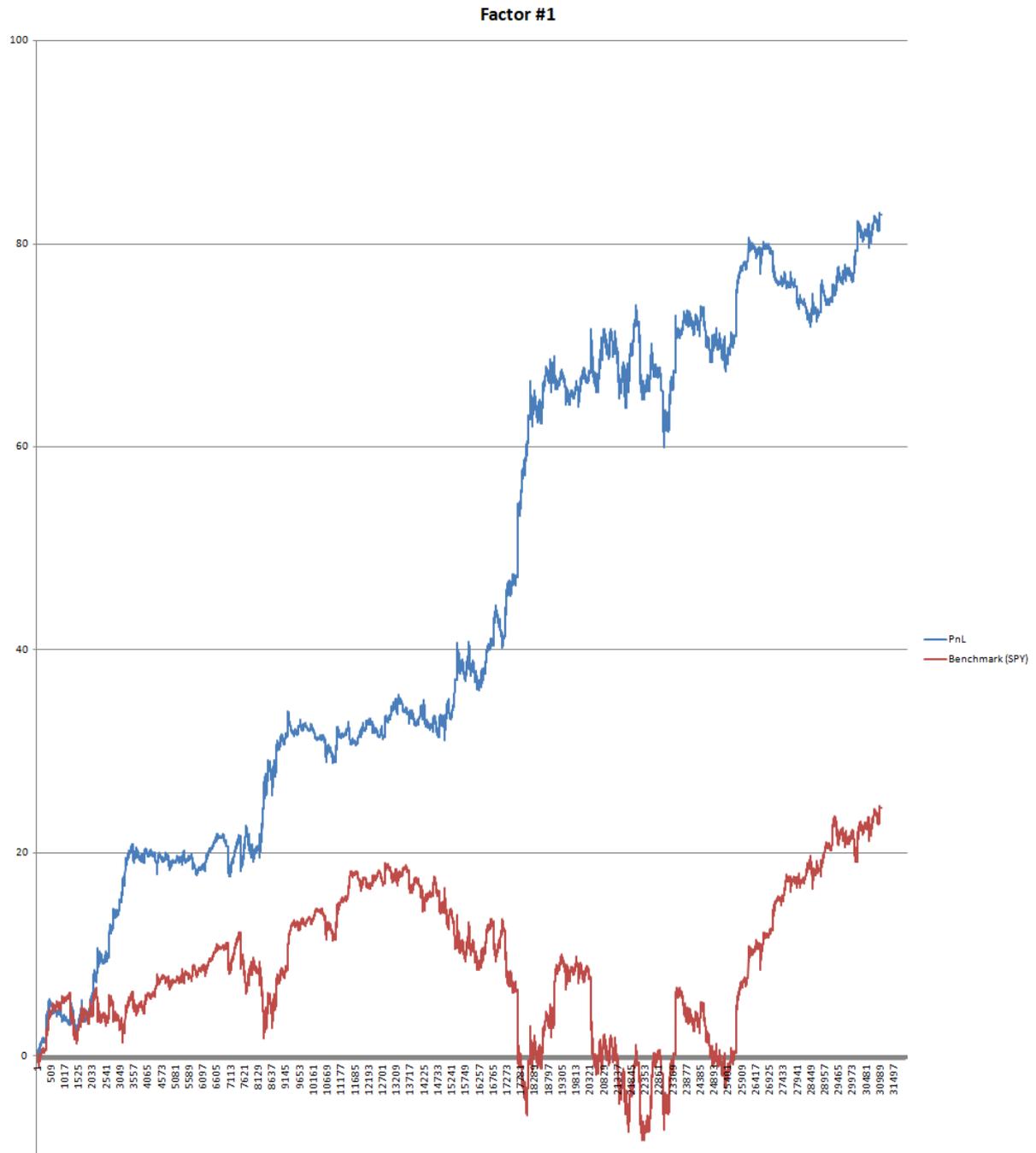


*1 minute timeframe, full dataset

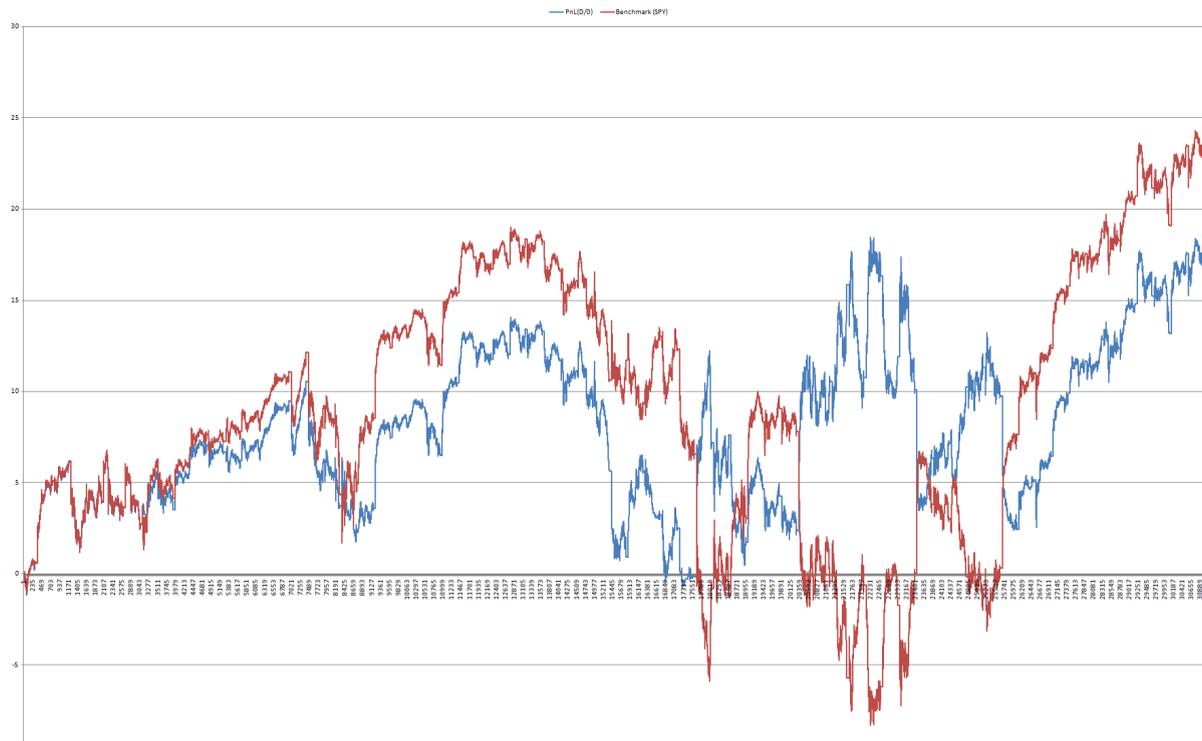
Isolated factors vs. benchmark (SPY)

f1) $F > S = +1$ unit; $F < S = -1$ unit

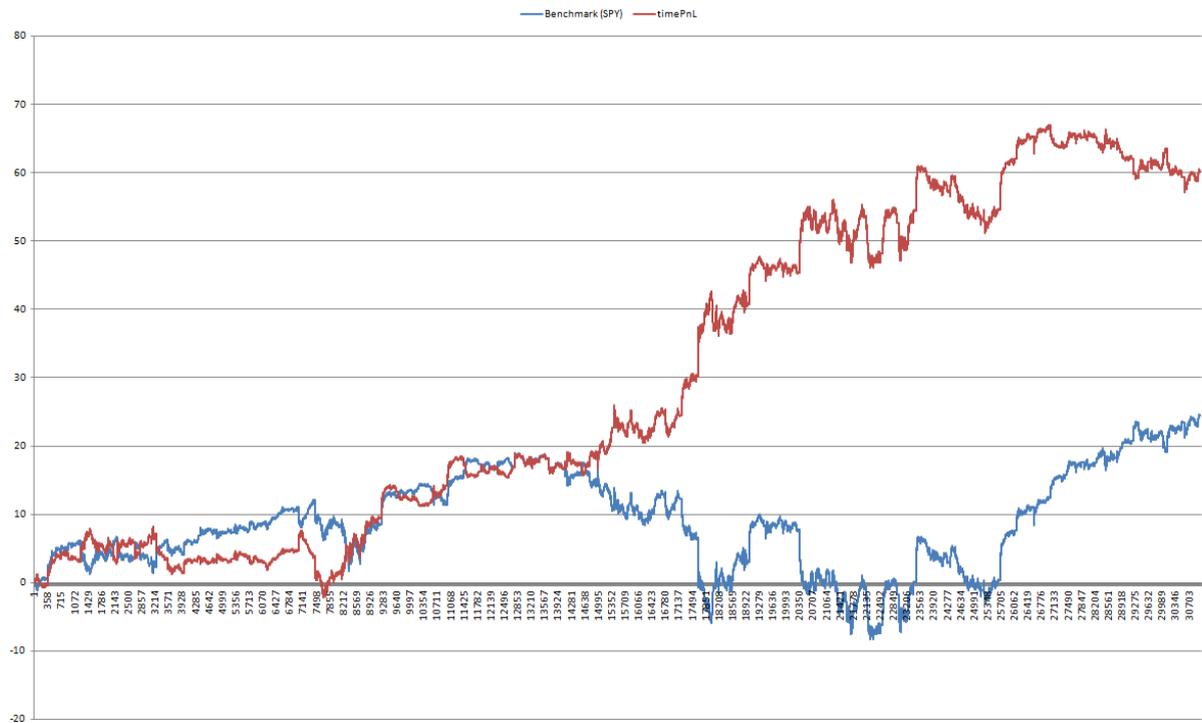
1 unit traded. SPY points.



f2) $F > 1.0 = +1$ unit; $F < 1.0 = -1$ unit

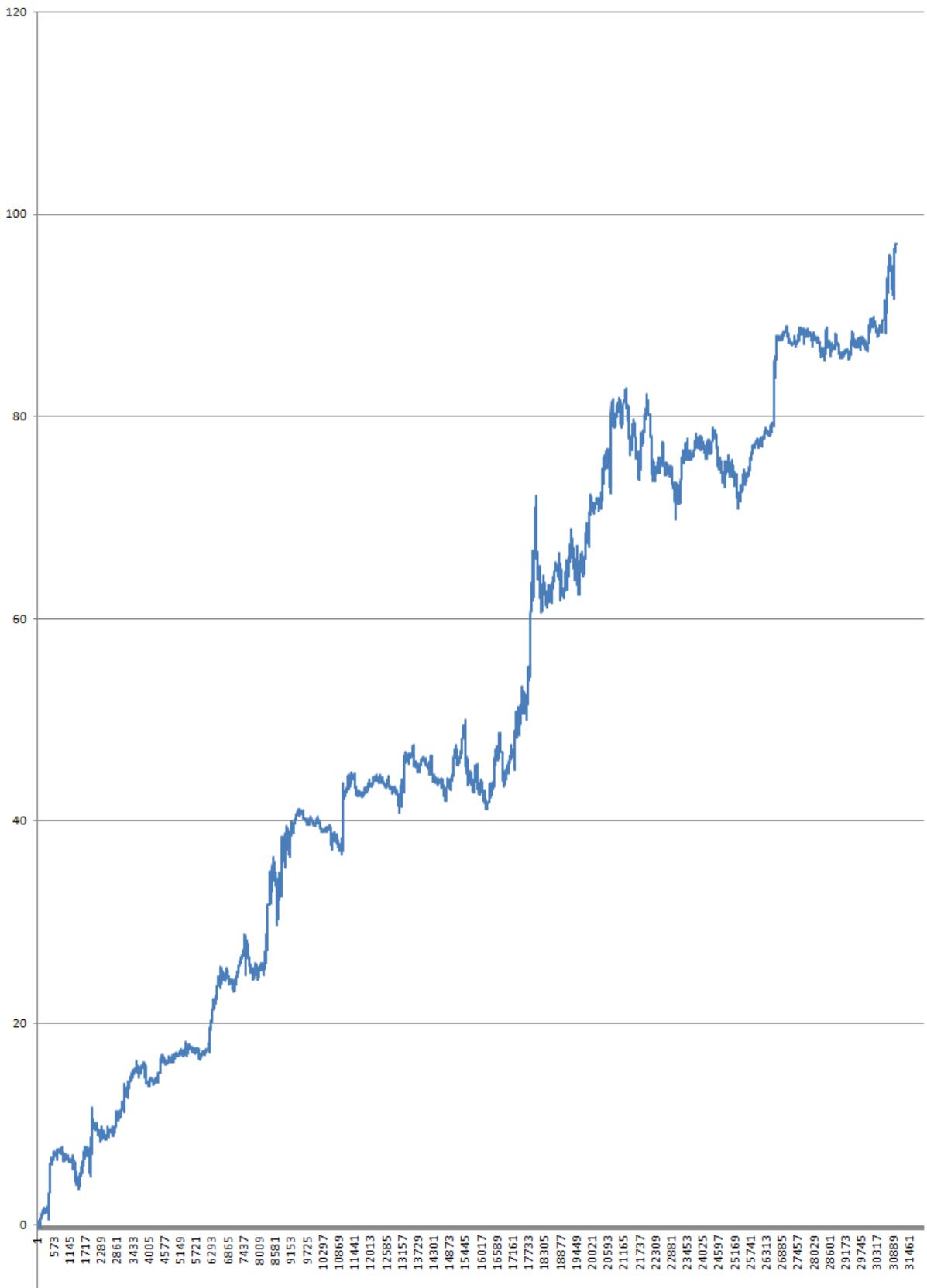


f3) $F > S$ at RTH close[0] = +1 unit; $F < S$ at RTH close[0] = -1 unit



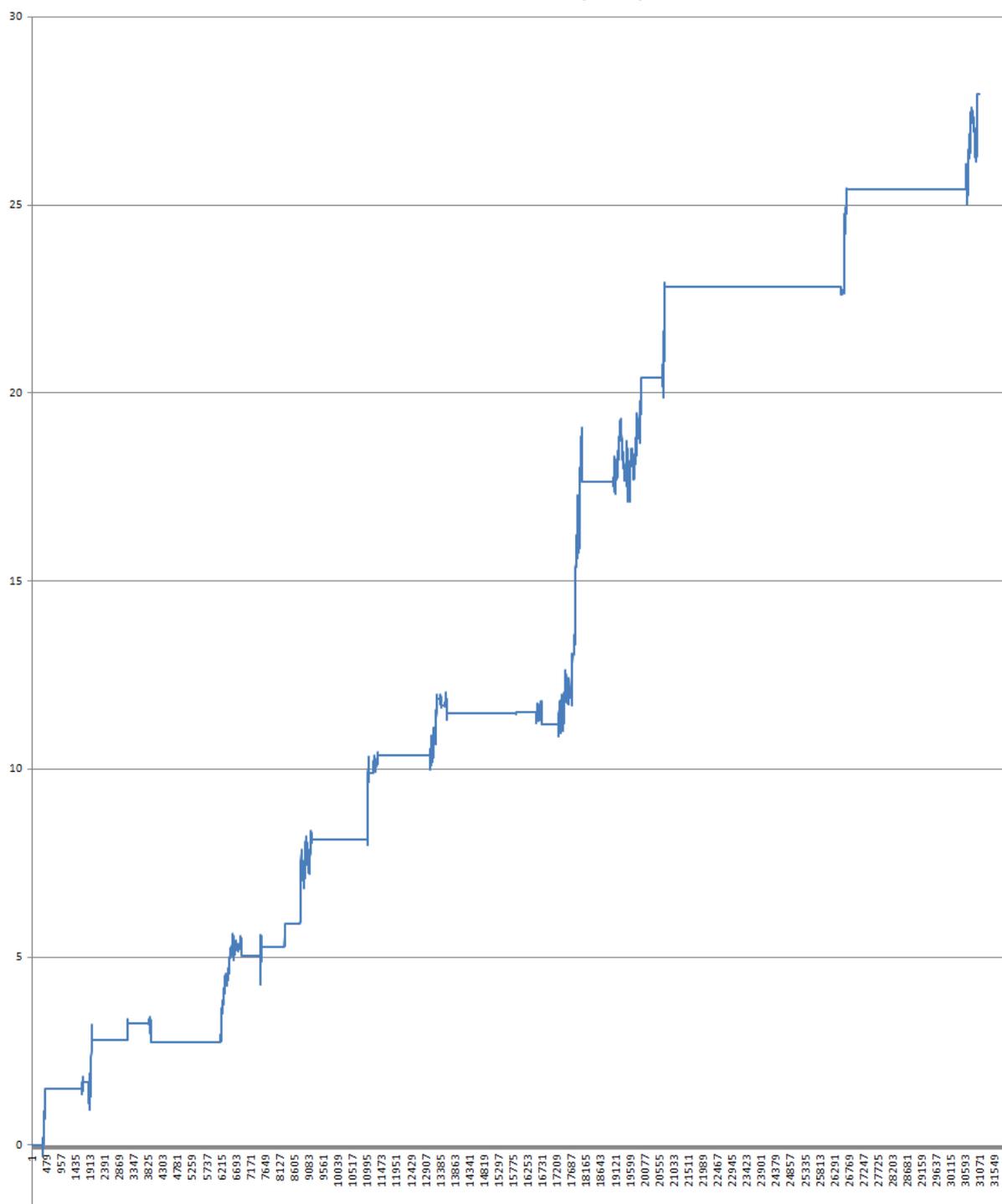
Base Strategy trading during RTH session from 9:40 to 16:00. 1-3 Units.

Base strategy during RTH session only (9:40-16:00)



Base Strategy trading during RTH session (9:30-16:00) if $f1+f2+f3=3$ or -3 (1 unit)

RTH if f1+f2+f3=3 or -3 (1 unit)



Base strategy with Compounding. Increasing size x2 every 20 SPY points gained.

compounding

