



A Simple Options Trading Strategy based on Technical Indicators

Francesco Carlier*

Ministero dell'istruzione, Genova, Italy. *Email: francescocarlierpm@gmail.com

Received: 03 January 2021

Accepted: 10 March 2021

DOI: <https://doi.org/10.32479/ijefi.11144>

ABSTRACT

This paper is devoted to research the validity of options strategies with a particular emphasis on weekly options. The author proves that options, when traded successfully, could be a better substitute than buying or selling the underlying and that options with a good given volatility strategy and with a well capitalised underlying stocks could give superb results. The author analysed a simple strategy using the simple moving average and the bollinger bands on the US market. Then a new capital allocation method is explained with the target of maximizing the results obtained. For further comparison the options strategy is compared with the same strategy made with selling or buying the underlying.

Keywords: Financial Markets, Options, Technical Analysis Indicators

JEL Classifications: G11; G15; G24

1. INTRODUCTION

Trading on financial market has always received a really close attention from investors and researchers, nowadays an individual investor can use really advanced trading techniques using derivatives and leverage to better perform in markets. Options since a long time have a special role in speculation and in trading strategies, an investor can use them directionally or for take profit on volatility changes. Options are especially used in trading because allow investors to take profit even in a neutral market and without a significant price fluctuation. (Anand, A. and S. Chakravarty 2007). Greeks are the quantities representing the sensitivity of the price of options. An expert investor could choose an option that has what he needs, for example weekly out of the money options have a big time decay and a big Vega. Conversely, long time out of the money options have a much smaller time decay and a lower Vega. Using options spreads in trading strategies could help investors defining risk. (Bakshi G., Cao C., Chen Z. 1997; Chong, J. 2004; Eraker B., Johannes M. J., Polson N. G. 2003; Eraker, B., 2013). The highest loss is given by the width of the spread and this give a big advantage over simple leveraged cfd trading.

When a black swan event happen a leveraged cfd's owner can lose more than his initial investment.

Conversely, a black swan event can give a really high change of margin requirement in case of writing naked options. Over the years researchers have used options for trading, (Sinha, N. and W. Dong. 2011) but some came to the conclusion that options are only a cost for the traders and some thought that those derivatives could help traders outperforming the market. Guo (2000) in his study ended that profits after commissions for delta neutral and straddles were equal to zero. Hemler and Miller (2013) discovered that buying the underlying and selling a covered call, creating a synthetic put, could outperform buy and hold strategy.

Technical analysis is a mean of evaluating trading opportunities by statistical trends and market patterns. A technical analyst believe that if he can find a market pattern he could easily individuate where the market will go. Over the years a lot of technical indicators have been done, some better than others. (Ahmed S. Alanazi and Ammar S. Alanazi, David McMillan 2020). Technical analysis, as highlighted in the review of Park and Scott H. Irvin (2004), gave positive results: 58 studies on 92 indicated that using technical indicators could lead to profit.

The aim of the study was to take advantage of the flexibility of options for maximizing return on investment on a strategy that deploy technical indicators as bollinger bands and simple moving average (50).

The first indicator was developed by Bollinger (2002), and it is made by calculating a simple moving average of 20 days and writing at two standard deviations upper and lower bands. In previous studies (Doran and Fodor, 2006; Dash et al., 2007, Alexander, S.S. 1961) gave mixed results: often it is not enough to outperform buy and hold techniques. The SMA (50) is the simple moving average with a parameter of 50 days. The aim of this paper is to test this strategy: when SMA (50) is above (below) the upper (lower) bollinger band, writing a call spread is profitable in the long term, and to highlight any possible problems about capital management and the selection of the underlying.

The starting hypothesis of this study is that trading with options is much more flexible than trading the underlying, options are a loss only if the underlying goes strongly against the direction that we estimated profitable with technical indicators.

2. THE STRATEGY

The strategy needs the allocation of a risk capital and the following writing of a put or a call spread.

Specifically it is necessary to trade using the already explained technical indicators. When SMA(50) is above (below) upper (lower) bollinger band a call (put) spread (selling call (put) out of the money and the buying a further out of the money call (put)) slightly out of the money with an expiration date of 4 days. This strategy can be done with index, stocks, commodities and forex. The priority when using options is to use a well capitalized and traded underlying, this is extremely important because with a highly traded underlying there are lower bid ask spread. Selling a spread margin requirement for broker is equal to the spread's width and could allow the trader to better managing the risk. Using options in this strategy offer a really high protection rate because often, during black swan events there are movements out of daily normal distribution. In case of a such events a stop loss, that is often used to protect investments, isn't helpful. This is a big problem when working with high leverage because it could lead to a margin call from the broker.

The author evaluated two cash allocation methods. The first consist of trading a 5% of capital each for each trade, the other consist of allocating a fixed amount for every trade. There is a substantial difference between those two methods and the results are subject to the compounding effect: in the first cash allocation method a series of unfortunate trade could lead to an important portfolio lost.

Two high leverage methods are evaluated, a 10% and a 20% allocation methods for every trade.

Maximum trade positions opened together are 3, but not more than one on a single underlying. When working with a high leverage

buying a call spread on vix when trading could be helpfull to hedge the possibility of a black swan event. Another possibility is an early close option if a 50% gain is already made. The comparison strategy using directly the underlying consist of selling (buying) it when the call (put) spread is written.

3. METHODS

Us market data is used in this study. Implied volatility is taken from data and, when not available, estimated using historical volatility. The model for pricing options is the Black a Scholes model (Black, Fischer & Scholes, Myron S, 1973). Assuming a normally distributed market results price of call is calculated as

$$C(S,t) = S_t N(d_1) - Ke^{-r(T-t)} N(d_2)$$

$$P(S,t) = Ke^{-r(T-t)} N(-d_2) - S_t N(-d_1)$$

where

S_t is the price of the underlying

K is the strike of the option

r is the risk free rate, expressed annually

$N(x)$ is the standard normal cumulative distribution function

$$d_1 = \frac{\ln \frac{S_t}{K} + (r + \frac{1}{2}\sigma^2)(T-t)}{\sigma\sqrt{T-t}}$$

$$d_2 = d_1 - \sigma\sqrt{T-t}$$

The starting capital for the test is 10000\$. Analysis of data has been done with an ad hoc software created for it. The time period of this study starts from January 2005 and ends on January 2013. The analysed stocks were: Apple, SPY etf and Walmart. Options were sold out of the money 0.5-1% both for call and put. The spread should yield 35-40% yield on capital allocated during high volatility periods and 25-30% during low volatility. Usually a spread of a percentage point was taken. The results aren't accounting for selling commissions and bid ask spread because the price inserted was given by previous formulas. The analysis of the comparison strategy was done by confronting the data of the option strategy with those of the underlying strategy, Selling and buying underlying were made by utilizing a stop loss of 3% and a trade target of 3%. Commissions and spreads for this model weren't calculated.

4. RESULTS

Apple results are quite satisfactory and in line with expectation, on 120 trade made, 21 were a total loss, and 2 were a middle loss. Winning percentage was 80.8% (Table 1). The yield on risk capital per trade is an average of 32.2%. Evaluating gains and losses it is clear that during high volatility periods the strategy suffered some losses, while during low volatility better results are achieved. Both cash allocations method ended up with a profit: the first method of 5% of capital netted a 141% gain while fixed allocation gave an 80% (Table 2). Sp500 moved 18.7% during the same time. With a leveraged position, the first strategy, 10% gave a 495% profit and for a 20% allocation gains were an

astonishing 1805%. Gains started to be substantial after 2008 crisis and losses were far less frequent.

The strategy used on SPY resulted in 60 trades, 9 were a complete loss and 2 were a middle loss and one ended neutral. Winning percentage was 80.7% (Table 1). The yield on risk capital per trade is an average of 31.9%. The strategy yield similarly to Apple: during low volatility profits were high and during high volatility suffered severe losses. Both cash allocations methods ended up with profits, 5% of the capital yielded a 48.7 while with fixed allocation strategy the gains are 41.8% (Table 2). Consequential losses affect the yield of the first strategy and the compounding effect drastically reduce the gains. The 10% strategy gains were 205% and the 20% yielded 359%.

Walmart trades were 52.9 were complete losses, one ended with a loss of 1/3 and one ended neutral. Winning percentage was 80.8% (Table 1). The yield on risk capital per trade is an average of 31.5%. The strategies gave a far lower yield, 5% strategy netted a 19.5% while fixed allocation gave a 20%. Those different results were given by a series of bad losses that compounded to a huge loss. 10% allocation resulted in a 35.8% gain while the 20% gave a 53.9%.

All strategies better performed during low volatility periods.

Comparison strategies gave the same amount of trades, but a different result: Apple on 120 trades gives 69 winning trades, with a percentage of 57.5. Gains were 179.1%. The strategy with Spy performed far worst giving on 60 trades a winning percentage below 50%, 46.7 for a total of 28. Gains were 19.5%, not much higher than buy and hold strategy for the same time period.

Apple strategy with options outperformed by 38.1% the underlying strategy, validating the starting thesis about the flexibility of options in trading. The author believes that the higher result of the underlying strategy because of the incredible performance Apple had during this period of time.

Walmart underlying strategy performed equally to the options strategy granting a 19.7 total return.

On a 52 trades only 27 were positive giving a winning rate of 51.9%. Winning probability of an out of the money call option calculated with an average near the money volatility of 0.19 and a 4 days expiration date is 74%. If we compare it with our realised winning probability, and we assume a normal

Table 1: Statistics for trades

	Win	Losses	Total	Winning percentage
Apple	97	23	120	80.8
Walmart	42	10	52	80.7
Spy	48	12	60	80

Table 2: Statistics for capital at risk

	5%	10%	20%
Apple	141	525	1880
Walmart	19.6	36.8	54.9
Spy	48.7	211	371

distributed results, we can note how the second is greater than 6%. This performance tell us that this technical analysis strategy is working correctly and validate the theory that this analysis could lead to profit as highlighted before. Another issue found with the underlying strategy is the inability to work with a high leverage for the problems explained earlier. Trading spy gave a much higher performance with options revealing that leveraging it during low volatility periods could lead to high gains. Options strategy give to the trader the opportunity to gain even if the market isn't having a significant price fluctuation and this strongly diversify options strategies from buy and hold techniques.

5. CONCLUSION

Starting hypothesis were correct, options are a really flexible financial derivative for trading and could be an effective means for trading if are supported by a correct use of technical analysis. Using leverage in low volatility periods often led to higher profits. This strategy perform well in financial markets and the author believe that it can be improved with some effort maybe selling naked options or using as described before as call spread on vix to hedge black swan events. For further improvement a trader can evaluate selling call spread out the money, in case of SMA (50) over upper bollinger band and buying a put spread out of the money. The strategy could be implemented with an important money allocation on low volatility periods while using a far lower capital during higher volatility periods. It will be necessary to open maximum one trade during low volatility periods and not more than three on high volatility. Capital not used could be invested in SP500 giving to the trader a much higher profit.

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