

Risk Reducing & Income Enhancing Buy-Write Strategy

15 Years of the Russell 2000® Buy-Write

About OIC

The Options Industry Council (OIC) is an industry resource provided by OCC, the world's largest equity derivatives clearing organization. Its mission is to provide free and unbiased education to retail investors, financial advisors and institutions about the benefits and risks of exchange-listed options. OIC offers education which includes webinars, online classes, podcasts, videos, investing tools, and live help. OIC's Roundtable is OIC's advisory group and is comprised of representatives from the exchanges, member brokerage firms and OCC. For more information on the educational services OIC provides for investors, visit www.OptionsEducation.org.

About Russell 2000® Index

As of July 31, 2011

The Russell 2000 Index measures the performance of the small-cap segment of the U.S. equity universe. The Russell 2000 is a subset of the Russell 3000® Index representing approximately 10% of the total market capitalization of that index. It includes approximately 2000 of the smallest securities based on a combination of their market cap and current index membership.

The Russell 2000 Index is constructed to provide a comprehensive and unbiased small-cap barometer and is completely reconstituted annually to ensure larger stocks do not distort the performance and characteristics of the true small-cap opportunity set.

A Summary of

15 Years of the Russell 2000 Buy-Write

By Nikunj Kapadia and Edward Szado

September 2011

The Options Industry Council (OIC), as part of its mission to provide education and research to institutional investors, helped sponsor a paper on the performance of a buy-write strategy on the Russell 2000® (“RUT”). The study was conducted by Edward Szado, Research Associate and Nikunj Kapadia, Associate Professor, Isenberg School of Management, University of Massachusetts. Research support for this study was provided by OIC, a service of OCC. Research results, however, represent those of the authors and do not necessarily represent the views of OIC. The following pages contain a summary of the study as well as an explanation of the buy-write strategy.

This summary updates results and analysis of a 2007 paper by Kapadia and Szado¹ now highlighting the 15-year performance of a buy-write strategy on the Russell 2000. The buy-write strategy provided a higher return than a long RUT portfolio while producing a significant reduction of risk. Exhibit 1 and Figure 1 show that over the 182 month period, the 2% out-of-the-money (“OTM”) buy-write returned 263% (8.87% annually), while the return on RUT was 226% (8.11% per annum).

Over the entire period the annualized standard deviation for the buy-write portfolio was 16.57%, almost 4 ½ percentage points lower than for the RUT portfolio. As is clearly evident by the rolling annualized standard deviation in Figure 2, the buy-write implementation’s superior returns came with significant risk reductions throughout the entire period. The paper also analyzes the performance for three sub-periods including the 3 ½ year period beginning with the onset

¹ Nikunj Kapadia and Edward Szado, “The Risk and Return Characteristics of the Buy-Write Strategy on the Russell 2000 Index,” *Journal of Alternative Investments*, Spring 2007, Vol. 9, No. 4, pp. 39-56. Some minor changes in methodology were made from the 2007 analysis but information presented in this summary is consistent in its analysis. The original paper reported monthly data from expiration to expiration. The current update reports monthly data from month-end to month-end. In addition, the current methodology picks the closest strike price to the desired strike price from those options with full data over the life of the option. The previous study chose the closest strike nearer the ATM whereas the current methodology picks the closest strike whether it is further ITM or OTM.

One Month 2% OTM Buy-Write Growth of \$100

February 1, 1996 to March 31, 2011



Figure 1. Growth of \$100 (RUT, 1 month 2% OTM Buy-Write)

24-Month Rolling Annualized Standard Deviation



Figure 2. 24-Month Rolling Annualized Standard Deviation

Exhibit 1.

Results of RUT, 1 month Buy-Write Strategies February 1, 1996 to March 31, 2011

1-Month Call Buy-Write 2/1/1996 to 3/31/2011	Russell 2000 TR	2% OTM Buy-Write	ATM Buy-Write
Annualized Return	8.11%	8.87%	7.30%
Annualized Standard Deviation	21.06%	16.57%	14.66%
Correlation with RUT	1.00	0.92	0.87
Sharpe Ratio	0.23	0.33	0.27
Minimum Monthly Return	-20.80%	-18.69%	-17.84%
Maximum Monthly Return	16.51%	9.68%	10.16%
Maximum Drawdown	-52.9%	-42.9%	-37.7%
% Down Months	38%	33%	31%
% Up Months	62%	67%	69%
Number of Months	182	182	182
Period Return	226.17%	263.06%	191.13%

of the credit crisis. During the credit crisis sub-period from November 2007 to March 2011, the 2% OTM buy-write strategy had an annualized gain of 2.20% while RUT gained only 1.99% annually. The 2% OTM buy-write added 21 basis points to the annual return but with only four-fifths of the volatility of the RUT.

The study's subperiods were selected to allow analysis of varying market conditions. Exhibit 2 provides details for the three sub-periods: February 1, 1996 to February 28, 2003; March 1, 2003 to October 31, 2007; and November 1, 2007 to March 31, 2011. As can be observed in the shaded portion in Figure 1 the break points were chosen specifically to capture the strong and steady four-plus year run up of the RUT from its low in March 2003 to its pre-crisis high in October 2007.

Buy-Write Strategy in Favorable Market Environment

The period from February 1, 1996 to February 28, 2003 is a somewhat favorable period for the buy-write (relative to the underlying performance). The second half of the period seems particularly favorable for the buy-write since the underlying exhibits a downward trend. While the period includes some strong run ups, they are not nearly as strong and sustained as in the second (unfavorable) period or in the third (crisis) period. As expected, in this period, the 2% OTM buy-write outperforms the underlying index. The buy-write generates almost twice the return (5.49% versus 3.28%) at about three-quarters the volatility (16.76% versus 21.83%).

Buy-Write Strategy in Unfavorable Market Environment

The period from March 1, 2003 to October 31, 2007 is perhaps the epitome of an unfavorable environment for the performance of a buy-write strategy (relative to the performance of the underlying index). The annualized return for the Russell over this 56-month period was 20.92%. In addition, the run up occurs with low volatility – the annualized volatility in the March 2003 to October 2007 period is 14.08% compared with 21.83% for the earlier period. Thus, focusing on the results from March 2003 to October 2007 allows one to understand how “badly” the buy-write strategy performed relative to the index in one of the least favorable 56-month periods in the entire sample period. Interestingly, even in this unfavorable market environment, Exhibit 2 shows that the 2% OTM buy-write strategy performs credibly with an annualized return

of 19.63% almost equaling the return of the index (20.92%). The annualized volatility of the strategy was only 10.52% compared to the Russell’s volatility of 14.08%. In other words, the buy-write strategy achieved almost the same return as the index at about two-thirds the index volatility.

Buy-Write Strategy during the Financial Crisis

The period from November 1, 2007 to March 31, 2011 covers the financial crisis. In this period, the Russell 2000 exhibited a rapid and very significant loss in value followed by a strong recovery. In addition, the period also exhibited large spikes in realized and implied volatilities. Perhaps the single statistic that best defines the impact of the financial crisis on the Russell 2000 is the maximum drawdown. Over the 41 months of this period, the Russell 2000 experienced a maximum drawdown of -52.0%. In such an

Exhibit 2.

Results of RUT, 1 month Buy-Write Strategies Sub-Period Results

	2/1/1996 to 2/28/2003		
	RUSSELL 2000 TR	2% OTM BUY WRITE	ATM BUY WRITE
Annualized Return	3.28%	5.49%	4.40%
Annualized Standard Deviation	21.83%	16.76%	15.09%
Correlation with RUT	1.00	0.92	0.89
Sharpe Ratio	-0.06	0.05	-0.02
Minimum Monthly Return	-19.42%	-18.38%	-17.31%
Maximum Monthly Return	16.51%	8.18%	7.33%
Maximum Drawdown	-35.1%	-28.9%	-26.7%
% Down Months	44%	38%	34%
% Up Months	56%	62%	66%
Number of Months	85	85	85
Period Return	25.66%	46.06%	35.63%

environment, one would expect the extra income that call writing generates may have benefited performance by providing a cushion to the drawdowns. However, this benefit is mitigated by the reduced participation in the market recovery. Exhibit 2 shows that the buy-write strategies did provide a degree of return enhancement over the period with a significant reduction in standard deviation. The 2% OTM buy-write generated a total return of 7.71% (2.20% annually) versus a total return of 6.95% for the underlying (1.99% annually) at an annualized standard deviation of 22.07% (26.78% for the underlying). Therefore, the buy-write generated a slightly higher return at about 4/5 the standard deviation. Finally, maximum drawdown was reduced from -52.0% for the underlying to -42.9% for the buy-write. It is interesting to note that only in this period did the ATM buy-write strategy perform better than the 2% OTM buy-write strategy.

Conclusion

The updated analysis examined the returns on buy-write strategies on the Russell 2000 over the period of February 1996 to March 2011, extending the analysis of Kapadia and Szado [2007] by approximately five years. Overall, the results suggest that the buy-write strategy can outperform the index under standard performance measures. This risk adjusted outperformance even holds during the unfavorable market conditions of March 2003 to October 2007, where the Russell 2000 was steadily trending upwards. Although the main driver of the return is the underlying index, both transaction costs and the option volatility risk

3/1/2003 to 10/31/2007			11/1/2007 to 3/31/2011		
RUSSELL 2000 TR	2% OTM BUY WRITE	ATM BUY WRITE	RUSSELL 2000 TR	2% OTM BUY WRITE	ATM BUY WRITE
20.92%	19.63%	15.79%	1.99%	2.20%	2.36%
14.08%	10.52%	7.89%	26.78%	22.07%	20.02%
1.00	0.89	0.81	1.00	0.92	0.87
1.27	1.58	1.61	0.03	0.05	0.06
-6.84%	-5.21%	-4.74%	-20.80%	-18.69%	-17.84%
10.73%	9.47%	7.70%	15.46%	9.68%	10.16%
-10.8%	-7.5%	-5.1%	-52.0%	-42.9%	-37.7%
30%	23%	21%	39%	37%	37%
70%	77%	79%	61%	63%	63%
56	56	56	41	41	41
142.68%	130.78%	98.21%	6.95%	7.71%	8.29%

One Month Buy-Write Growth of \$100

November 1, 2007 to March 31, 2011



Figure 3. Growth of a \$100 (RUT, 1 month 2% OTM Buy-Write)

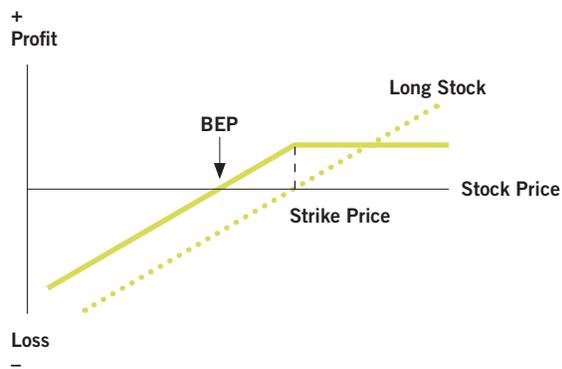
premium (defined as the implied volatility less the realized volatility) are critical to the performance of the strategy. It is clearly evident that the method of execution of the strategy as well as the choice of the options has a large impact on the performance of the strategy. In this light, Szado and Kapadia provided a somewhat conservative analysis of the buy-write strategy's performance, in the sense that the implementation does not allow for an active selection of the moneyness or time to expiration of the calls. There is some evidence in the literature that a more active approach to call selection can result in significantly higher absolute and risk adjusted returns.²

² See, for example, Renicker and Mallick (2005) and Szado and Schneeweis (2010)

Buy-Write Strategy

The covered call is a strategy in which an investor writes a call option contract while at the same time owning an equivalent number of shares of the underlying stock. If this stock is purchased simultaneously with writing the call contract, the strategy is commonly referred to as a “buy-write.” In either case, the stock is generally held in the same brokerage account from which the investor writes the call, and fully collateralizes, or “covers,” the obligation conveyed by writing a call option contract. This strategy is the most basic and most widely used strategy combining the flexibility of listed options with stock ownership.

Covered Call / Buy-Write



Market Opinion

Neutral to bullish on the underlying stock.

When to Use

Though the covered call or buy-write can be utilized in any market condition, it is most often employed when the investor, while bullish on the underlying stock, feels that its market value will experience little range over the lifetime of the call contract. The investor desires to either generate additional income (over dividends) from shares of the underlying stock, and/or provide a limited amount of protection against a decline in underlying stock value.

Benefit

While this strategy can offer limited protection from a decline in price of the underlying stock and limited profit participation with an increase in stock price, it generates income because the investor keeps the premium received from writing the call. At the same time, the investor can appreciate all benefits of underlying stock ownership, such as dividends and voting rights, unless he is assigned an exercise notice on the written call and is obligated to sell his shares. There is a significant chance that an option whose underlying stock is paying a dividend may be exercised prior to expiration.

Risk vs. Reward

Maximum profit will occur if the price of the underlying stock you own is at or above the call option's strike price, either at its expiration or when you might be assigned an exercise notice

on the call before it expires. The risk of real financial loss with this strategy comes from the shares of stock held by the investor. This loss can become substantial if the stock price continues to decline in price as the written call expires. At the call's expiration, loss can be calculated as the original purchase price of the stock less its current market price, less the premium received from the initial sale of the call. Any loss accrued from a decline in stock price is offset by the premium you received from the initial sale of the call option. As long as the underlying shares of stock are not sold, this would be an unrealized loss. Assignment on a written call is always possible. An investor holding shares with a low cost basis should consult his tax advisor about the tax ramifications of writing calls on such shares.

PROFIT POTENTIAL Limited	UPSIDE PROFIT AT EXPIRATION IF ASSIGNED	UPSIDE PROFIT AT EXPIRATION IF NOT ASSIGNED
LOSS POTENTIAL Substantial	Premium Received plus Difference (if any) Between Strike Price and Stock Purchase Price	Any Gains in Stock Value plus Premium Received

Risk vs. Reward.

Break-Even Point (BEP) at Expiration

BEP: Stock Purchase Price less Premium Received

Volatility

If Volatility Increases: Negative Effect

If Volatility Decreases: Positive Effect

Any effect of volatility on the option's price is on the time value portion of the option's premium.

Time Decay

Passage of Time: Positive Effect

With the passage of time, the time value portion of the option's premium generally decreases – a positive effect for an investor with a short option position.

Alternatives Before Expiration

If the investor's opinion on the underlying stock changes significantly before the written call expires, whether more bullish or more bearish, the investor can make a closing purchase transaction of the call in the marketplace. This would close out the written call contract, relieving the investor of an obligation to sell his stock at the call's strike price. Before taking this action, the investor should weigh any realized profit or loss from the written call's purchase against any unrealized profit or loss from holding shares of the underlying stock. If the written call position is closed out in this manner, the investor can decide whether to make another option transaction to either generate income from and/or protect his shares, to hold the stock unprotected with options, or to sell the shares.

Alternatives at Expiration

As expiration day for the call option nears, the investor considers three scenarios and then accordingly makes a decision. The written call contract will either be in-the-money, at-the-money or out-of-the-money. If the investor feels the call will expire in-the-money, he can choose to be assigned an exercise notice on the written contract and sell an equivalent number of shares at the call's strike price. Alternatively, the investor can choose to close out the written call with a closing purchase transaction, canceling his obligation to sell stock at the call's strike price, and retain ownership of the underlying shares. Before taking this action, the investor should weigh any realized profit or loss from the written call's purchase against any unrealized profit or loss from holding shares of the underlying stock. If the investor feels the written call will expire out-of-the-money, no action is necessary. He can let the call option expire with no value and retain the entire premium received from its initial sale. If the written call expires exactly at-the-money, the investor should realize that assignment of an exercise notice on such a contract is possible, but should not be assumed. Consult with your brokerage firm or a financial advisor on the advisability of what action to take in this case.

For more information on OIC or the buy-write strategy, or for a copy of the full study, contact The Options Industry Council at 1-888-OPTIONS or visit www.OptionsEducation.org.

References

Bakshi, Gurdip, and Nikunj Kapadia, "Delta-Hedged Gains and the Negative Volatility Risk Premium," *Review of Financial Studies*, 16 (2) (2003), pp. 527-566.

Callan Associates Inc., "Profit/Loss and Historical Evaluation of the CBOE S&P 500 Buy Write Index Strategy," Callan Associates Inc., October 2006.

Feldman, Barry, and Dhruv Roy, "Passive Options-Based Investment Strategies: The Case of the CBOE S&P 500 Buy Write Index," Ibbotson Associates, July 28, 2004.

Gray, Tim., "Buy Write Funds: A Blast From the Industry's Past," *New York Times*, October 15, 2006, Money and Business/Financial Desk Late Edition – Final, Section 3, Page 6, Column 1.

Hill, Joanne M., Venkatesh Balasubramanian, Krag (Buzz) Gregory, and Ingrid Tierens, "Finding Alpha via Covered Call Writing," *Financial Analysts Journal*, Sept/Oct 2006, pp. 29-46.

Leland, Hayne E., "Beyond Mean-Variance: Performance Measurement in a Non-Symmetrical World," *Financial Analysts Journal*, Jan/Feb 1999, pp. 27-35.

Renicker, Ryan, and Devapriya Mallick, "Enchanted Call Overwriting," *Lehman Brothers Global Equity Research*, Nov. 17, 2005.

Stutzer, Michael, "A Portfolio Performance Index," *Financial Analysts Journal*, May/June 2000, Vol. 56, No. 3: 52-61.

Szabo, Edward and Thomas Schneeweis, "Loosening Your Collar – Alternative Implementations of QQQ Collars," *Journal of Trading*, Spring 2010, Vol. 5, No. 2, pp. 35-56.

Whaley, Robert E., "Return and Risk of CBOE Buy Write Monthly Index," *The Journal of Derivatives*, Winter 2002, pp. 35-42.

Options involve risks and are not suitable for everyone. Individuals should not enter into options transactions until they have read and understood the risk disclosure document, Characteristics and Risks of Standardized Options, available by visiting OptionsEducation.org or by contacting your broker, any exchange on which options are traded, or The Options Clearing Corporation at 125 S. Franklin St., #1200, Chicago, IL 60606.

In order to simplify the calculations used in the examples in these materials, commissions, fees, margin, interest and taxes have not been included. These costs will impact the outcome of any stock and options transactions and must be considered prior to entering into any transactions. Investors should consult their tax advisor about any potential tax consequences.

Any strategies discussed, including examples using actual securities and price data, are strictly for illustrative and educational purposes and should not be construed as an endorsement, recommendation, or solicitation to buy or sell securities. Past performance is not a guarantee of future results.

Copyright © 2020. The Options Clearing Corporation. All rights reserved

Russell 2000 is a registered trademark of Russell Investment Group.

S&P 500 is a registered trademark of Standard & Poor's Financial Services, LLC.

OIC The Options
Industry Council

1-888-OPTIONS
www.OptionsEducation.org

125 S. Franklin Street, Suite 1200
Chicago, Illinois 60606