

# INVESTMENT STRATEGIES

## The Risk Reducing and Income Enhancing Buy-Write Strategy

A summary of “15 Years of the Russell 2000 Buy-Write”  
By Nikunj Kapadia and Edward Szado  
2011

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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”) exchange-traded fund (ETF). 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. 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. The complete study is available at: [www.OptionsEducation.org](http://www.OptionsEducation.org).

## Introduction

This summary updates results and analysis of a 2007 paper by Kapadia and Szado<sup>1</sup> 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. Exhibits 1 and 2 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 Exhibit 3, 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 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 sub-periods were selected to allow analysis of varying market conditions. Exhibit 4 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 Exhibit 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

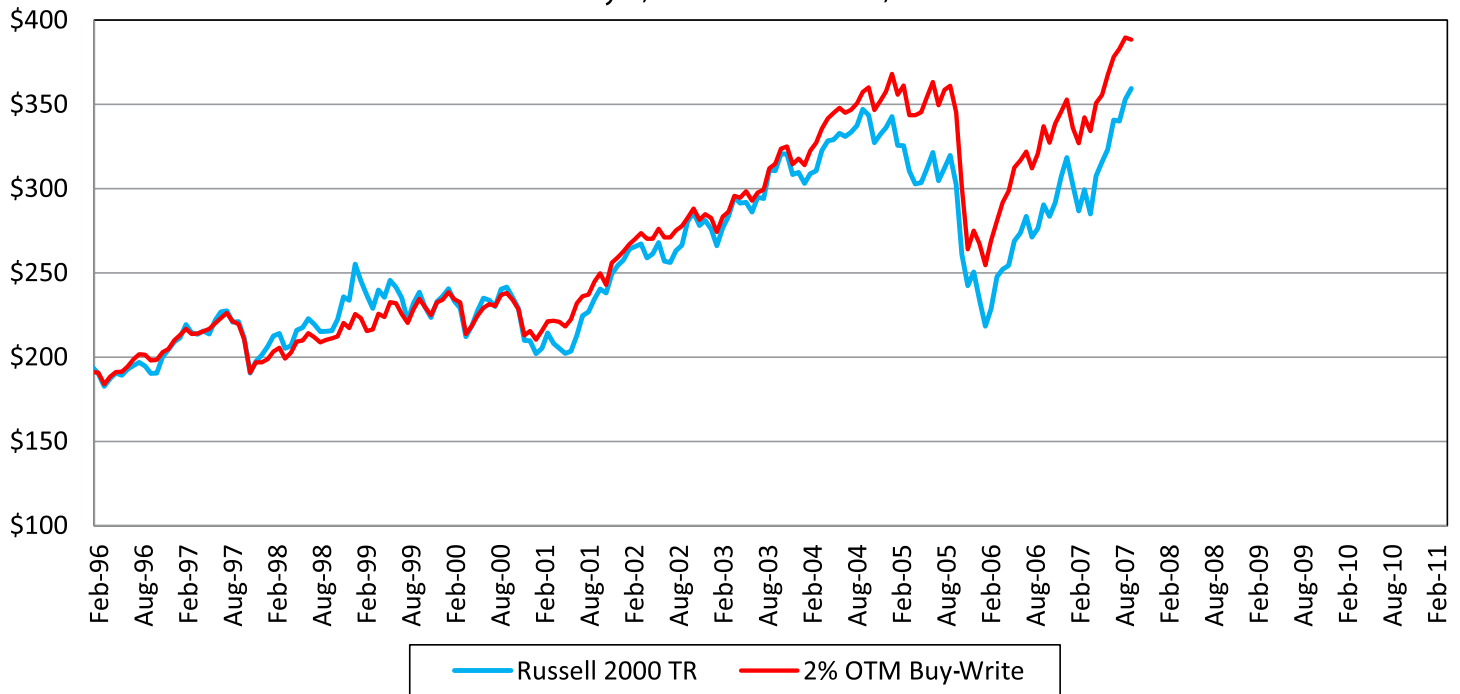
The period from February 1, 1996 to February 28, 2003 is a somewhat favorable period for the buy-write (relative to the underlying performance). The second half of the period seems particularly favorable for the buy-write since the underlying performance experiences a downward trend. While the period 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% vs. 3.28%) at about three-quarters the volatility (16.76% vs. 21.83%).

<sup>1</sup> 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.

**Exhibit 1: Growth of \$100 (RUT, 1-Month 2% OTM Buy-Write)**

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

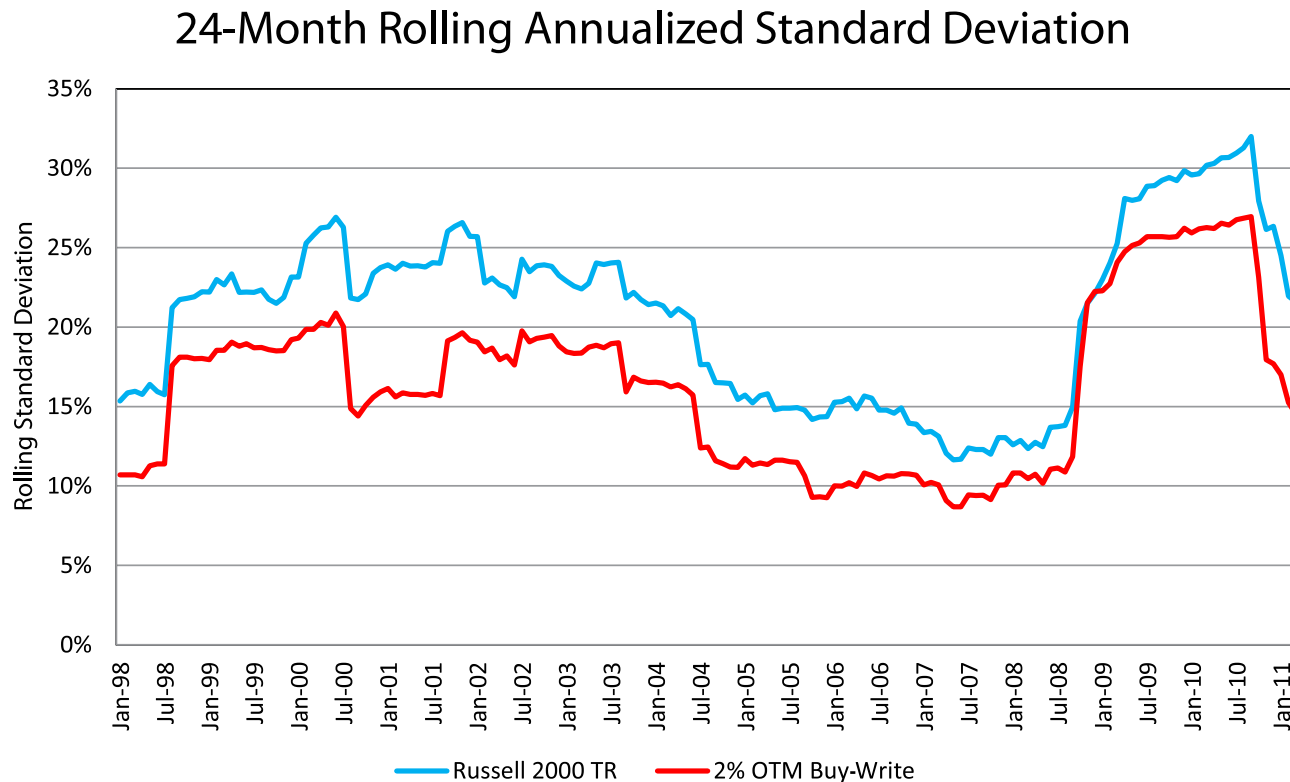
February 1, 1996 to March 31, 2011



**Exhibit 2: Results of RUT, 1-Month Buy-Write Strategies Feb. 1, 1996 to Mar. 31, 2011**

1-Month Call Buy-Write Feb 1, 1996 to Mar 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%
Maximum Run Up	226.2%	264.7%	193.0%
% Down Months	38%	33%	31%
% Up Months	62%	67%	69%
Number of Months	182	182	182
Period Return	226.17%	263.06%	191.13%

### Exhibit 3: 24-month Rolling Annualized Standard Deviation



#### 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 4 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 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 4 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) vs. a total return of 6.95% (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 four-fifths 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.

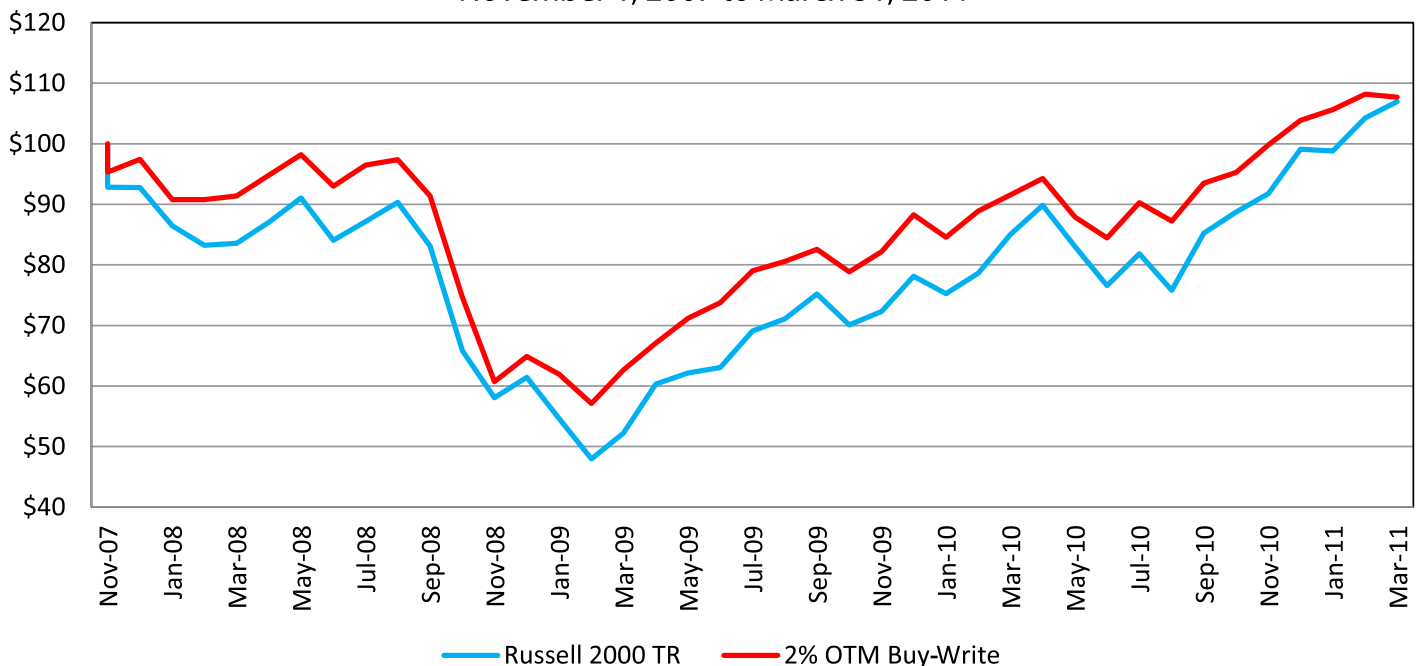
**Exhibit 4: Results of RUT, 1-Month Buy-Write Strategies Sub-Period Results**

	Feb 1, 1996 to Feb 28, 2003			Mar 1, 2003 to Oct 31, 2007			Nov 1, 2007 to Mar 31, 2011		
	Russell 2000 TR	2% OTM Buy Write	ATM Buy Write	Russell 2000 TR	2% OTM Buy Write	ATM Buy Write	Russell 2000 TR	2% OTM Buy Write	ATM Buy Write
Annualized Return	3.28%	5.49%	4.40%	20.92%	19.63%	15.79%	1.99%	2.20%	2.36%
Annualized Standard Deviation	21.83%	16.76%	15.09%	14.08%	10.52%	7.89%	26.78%	22.07%	20.02%
Correlation with RUT	1.00	0.92	0.89	1.00	0.89	0.81	1.00	0.92	0.87
Sharpe Ratio	-0.06	0.05	-0.02	1.27	1.58	1.61	0.03	0.05	0.06
Mean Monthly Return	0.47%	0.57%	0.46%	1.68%	1.55%	1.25%	0.46%	0.39%	0.37%
Median Monthly Return	0.91%	1.25%	1.15%	1.70%	1.94%	1.82%	3.01%	2.21%	1.74%
Minimum Monthly Return	-19.42%	-18.38%	-17.31%	-6.84%	-5.21%	-4.74%	-20.80%	-18.69%	-17.84%
Maximum Monthly Return	16.51%	8.18%	7.33%	10.73%	9.47%	7.70%	15.46%	9.68%	10.16%
Maximum Drawdown	-35.1%	-28.9%	-26.7%	-10.8%	-7.5%	-5.1%	-52.0%	-42.9%	-37.7%
Maximum Run Up	93.3%	72.1%	59.7%	147.1%	130.8%	98.2%	123.0%	89.5%	75.0%
% Down Months	44%	38%	34%	30%	23%	21%	39%	37%	37%
% Up Months	56%	62%	66%	70%	77%	79%	61%	63%	63%
Number of Months	85	85	85	56	56	56	41	41	41
Period Return	25.66%	46.06%	35.63%	142.68%	130.78%	98.21%	6.95%	7.71%	8.29%

**Exhibit 5: Growth of \$100 (RUT, 1-Month 2% OTM Buy-Write) Nov. 1, 2007 to Mar. 31, 2011**

### 1-Month Buy Write Growth of \$100

November 1, 2007 to March 31, 2011



## 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 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<sup>2</sup>.

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<sup>2</sup> See, for example, Renicker and Mallick [2005] and Szado and Schneeweis [2010].