

Solving the Income Dilemma: Periodic Payments While Reducing Interest Rate and Credit Risk

Generating income from a range-bound index return strategy.

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Investors have typically turned to fixed coupon bonds for consistent periodic income. However, an extended period of low yields and a rising interest rate environment has led investors to consider fixed income alternatives to bridge the gap between the prevailing interest rate levels and their income requirements. In particular, investors are looking for liquid and transparent strategies that provide steady and high cash flows without taking on significant equity, credit or interest rate risk.

Taking the view that equity returns will be within a specific range over the short term offers an alternate source from which to generate income. Asymmetry in the demand for insurance against equity market volatility provides a premium for taking the risk that equity returns are range-bound. To demonstrate this asymmetry, we compare the market's expectations of the range of calendar month returns of the S&P 500[®] Index as implied by option prices with the actual range of S&P 500 calendar month returns.

We propose investment strategies that monetize this asymmetry to generate income and provide returns that have a low correlation to returns from equity and bond benchmarks. We propose two variations of the investment strategies: "fixed-range strategies" that target a level of risk and "fixed-premium strategies" that target a level of income. We conclude with the proposition that an optimal investment strategy is a mix of fixed-range and fixed-premium strategies.

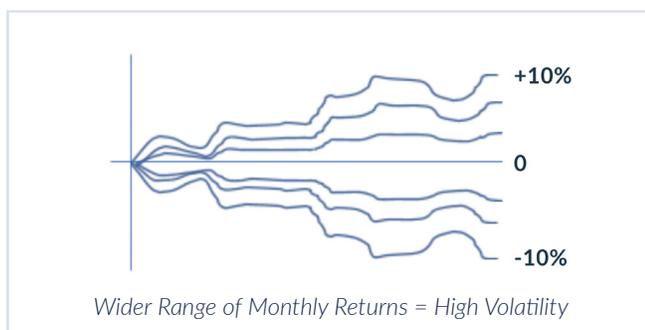
Whenever the stock market takes an unexpected dive, investors wish they had something in their portfolio, a rocket booster if you will, to counteract the downward forces. So, when most of their investments are losing money due to turbulence in the equity market, the rocket booster would deliver gains.

This strategy of hedging against often broad-based market volatility becomes a priority for investors when they observe sudden spikes in risk as the equity market absorbs new negative news or sudden outflows as investors become more risk averse. Since the stock market crash of 1987 and more recently with the extreme volatility during the 2008-09 credit crisis, many investors and institutions have bought insurance against market volatility. This has contributed to the asymmetry between the numerous buyers of such insurance and the fewer number of market participants willing to sell it. To understand how one might buy or sell insurance against periods of market volatility requires an understanding of how *Volatility* is measured and how options—unique financial instruments that price volatility in the marketplace—work.

Introducing: Volatility and Options

Let's consider the S&P 500 Index, a broad measure of the performance of the largest 500 publicly listed companies in the U.S. If the market expects the future monthly returns of the index to be in a wide range (e.g., up or down 10% with 75% probability), the volatility of the S&P 500 would be expressively high, as seen in Figure 1. Conversely, if the market anticipates future monthly returns

FIGURE 1: HIGH VOLATILITY IS DEMONSTRATED BY A WIDE RANGE OF MONTHLY RETURNS



will be in a narrow range (e.g., up or down 4%), as shown in Figure 2, then the volatility would be considered low.

Volatility measures how an asset price moves and the dispersion of those moves over a fixed period of time. The more volatile the asset, the broader the range of returns generated.

The financial instruments that give us a window into the market's expectation of volatility are *Options*. Options have similar features to personal property insurance contracts, as they make a payment on a future date that is contingent on an event taking place. The amount of the payoff on that date is proportional to the magnitude of the event with respect to a reference. The payment for options is linked to a *Reference Asset* and is dependent on the performance of that reference asset being

Options are contracts that trade billions of dollars in value on major national exchanges. The payment for options linked to a reference asset is dependent on the performance of that asset being above or below a reference strike price at a specific date in the future.

above or below a *Reference Strike Price* at a specific date in the future. And like they do with personal property insurance contracts, buyers of options pay a premium for the right to receive a payment in the event the price of the reference asset goes above or below the specified strike price.

FIGURE 2: LOW VOLATILITY IS DEMONSTRATED BY A NARROW RANGE OF MONTHLY RETURNS



There are two types of options: *Call Options* and *Put Options*. Call options provide a payment if the reference asset is above a reference strike level at the settlement of the call option contract. The magnitude of the payment is proportional to the magnitude by which the reference asset is above the reference strike level. Put options provide a payment if the reference asset is below a reference strike level at the settlement of the put option contract. The magnitude of the payment is proportional to the magnitude by which the reference asset is below the reference strike level.

Figure 3 depicts two types of options contracts that are linked to the S&P 500 Index, when the index is trading at the level of \$2,000 at the start of the month:

- End-of-Month Call Options with Strike of \$2,200
- End-of-Month Put Options with Strike of \$1,800

The Asymmetry

When it comes to personal property insurance, the cost of protection to the insured, over time, is usually greater than the expected loss. Buyers may recognize this, but are compelled by fear, risk-aversion or regulatory reasons to buy this protection. The personal property insurance industry is characterized by an imbalance between excessive demand and limited supply. This asymmetry leads to a higher price for insurance than the price the probability-weighted expected loss calculation would suggest. Put another way, the asymmetry means the probability and magnitude of expected losses implied from the price of insurance are higher than the frequency and magnitude of losses observed in reality.

FIGURE 3: TYPES OF OPTIONS CONTRACTS THAT ARE LINKED TO THE S&P 500 INDEX

End-of-Month Call Options with Strike of \$2,200 give the buyer the right to receive a payment that is proportional to the extent to which the performance of the S&P 500 Index is above \$2,200 at the end of the month.

End-of-Month Put Options with Strike of \$1,800 give the buyer the right to receive a payment that is proportional to the extent to which the performance of the S&P 500 Index is below \$1,800 at the end of the month.

Option prices are driven by expected volatility. The higher the expected volatility, the higher the price of the options. The lower the expected volatility, the lower the price of the options.



FIGURE 4: HIGH VOLATILITY AND WIDER RANGE OF RETURNS DEMONSTRATE HIGHER PRICE OF OPTIONS



FIGURE 5: LOW VOLATILITY AND NARROWER RANGE OF RETURNS DEMONSTRATE LOWER PRICE OF OPTIONS



“Investment insurance” in the financial markets works in a similar manner; numerous buyers seek protection against market volatility while few are prepared to sell it. The demand for insurance against market volatility is generally expressed as demand for options on equity indexes such as the S&P 500 Index. The asymmetry between buyers and sellers of options impacts their prices to the extent that the probability and magnitude of

More demand for insurance against market volatility impacts the price of S&P 500 Index options. The prices imply probability and magnitude of index returns that are different from the frequency and magnitude of returns observed in reality.

index returns implied by the prices is different from the frequency and magnitude of returns observed in reality.

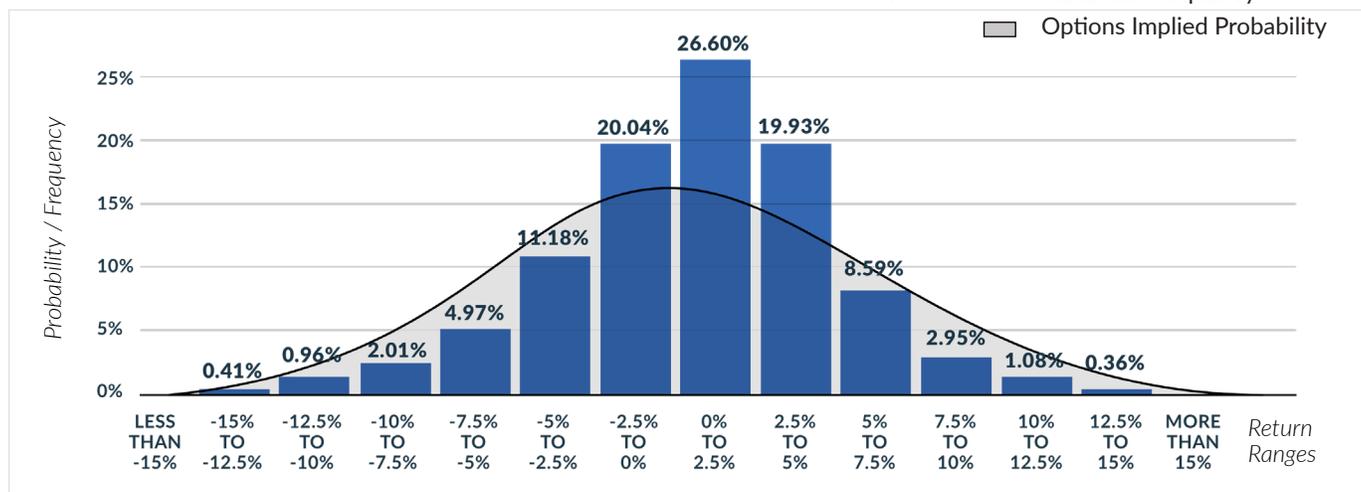
A way to visualize this is to look at the information in option prices about the expected range of returns. We reviewed data over the last ten years (January 2006 to August 2016) and, using the average options prices of this time frame, estimated the expected range of monthly returns of the S&P 500 Index and probabilities of the returns being in those ranges. We also reviewed, over the same time period, the historically observed range of the index’s monthly returns and frequency with which the observed returns fall within those ranges. Figure 6 shows a comparison of the data.

As can be seen, on average, option prices reflect a distribution of monthly returns that varies considerably more than historical monthly returns data would suggest. The data shows that the option prices are implying a higher probability of returns being in the +/-10% range than the probability suggested by actual observations of monthly returns. Conversely, the data shows that there is a higher frequency of the observed monthly returns being in the +/-5% range than the options prices are implying. This is clear visual evidence of the asymmetry.

Note that while in general the above asymmetry holds true, there are instances when the option implied range is lower than the actual realized monthly returns. For instance, in the beginning of the month of September 2001, options prices were implying a low probability of the S&P 500 Index being down more than 5%. When the month ended a few weeks after the terrorist attack of September 11, 2001, the S&P 500 index was down more than 8%.

Personal property insurance can see instances where, over a specific period of time, the insurance price implied probability of the event taking place was, after the fact, lower than the frequency actually experienced. These are times when purchasers are pleased to have owned insurance. Similarly, the markets can have instances when the options price implied range of returns and probabilities are narrower than what actually occurs. However, more often than not, this is not the case.

FIGURE 6: DISTRIBUTION OF S&P 500 INDEX MONTHLY RETURNS (JAN 2006 - AUG 2016)



Investment Strategies

Investment strategies can be developed that seek to monetize this wider return range that is often priced into index options compared to the actual realized range. Specifically, an S&P 500 Index option selling strategy can be structured to seek to collect premium income by selling monthly calls and puts each month with strike prices set to match the limits of the range. Such an investment strategy will not suffer losses if the S&P 500 Index returns at the end of the month are within the range bounded by the strike prices of the call and put options sold. Losses are limited to those months when,

Continuously selling “insurance” against the monthly returns of the S&P 500 Index going outside a range and collecting the upfront premium as a unique source of income can be an attractive investment strategy.

at the end of the month, the index closes outside of the range defined by the strike prices of the options. Losses will be proportional to the extent the index is outside the range at the end of the month. The strategy can provide positive returns if the index remains inside a range at the expiration of the options and can apply the option

premium collected to mitigate some of the losses in the periods when it is outside the range.

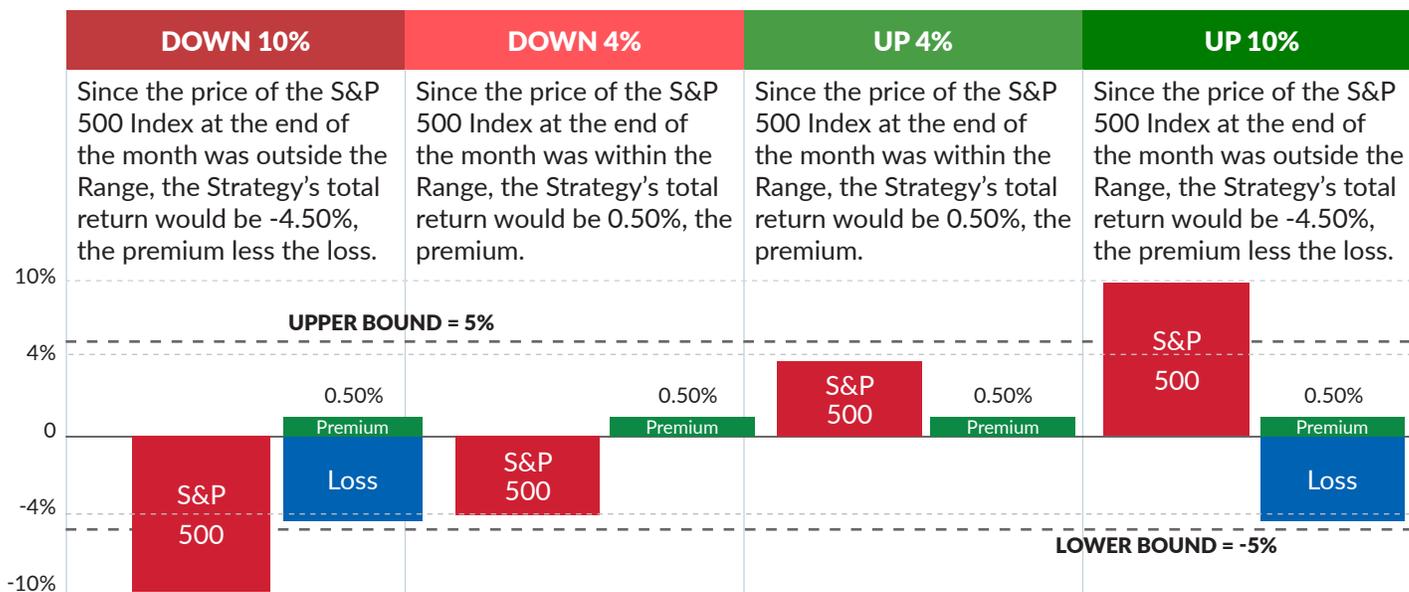
This paper explores such range-bound investment strategies, in particular, two variations: those that target a level of risk and those that target a level of income.

Fixed-Range Investment Strategy: Targeting a Level of Risk

Strategies can be constructed with a predefined percentage range (e.g., +/-5% range), where the premium collected will vary with dynamic volatility conditions. We call this the “Fixed-Range Strategy”. Figure 7 depicts hypothetical scenarios of how the monthly returns of a +/- 5% Fixed-Range Strategy will vary depending on the performance of the S&P 500 Index.

Using option price data from January 2006 to February 2017, we calculate the time series of monthly returns for a +/- 5% Fixed-Range Strategy and a +/-10% Fixed-Range Strategy. Figure 8 contains two total return time series based to \$100. Also, included for context are the time series of total returns of the S&P 500 Index and the Markit iBoxx USD Liquid High Yield 0-5 Index. The Markit iBoxx USD Liquid High Yield 0-5 Index is an index of high yield corporate bonds issued in the U.S. with less than five years to maturity and is a commonly used performance benchmark for the U.S. high yield market.

FIGURE 7: AN ILLUSTRATION OF HOW THE +/-5% FIXED-RANGE STRATEGY WORKS



The time series of the Fixed-Range Strategy shows mostly steady monthly performance. In most months, the strategy collects the options premia, and because the index returns are inside the range set by the options strikes, it does not suffer losses. However, the time series does show instances of losses, such as the last quarter of 2008, when the index returns fell outside the range set by the options strikes. The upwards trajectory of the total return time series, despite the few instances of losses, is a testament to the persistence of the asymmetry described earlier.

As expected, the +/-5% Fixed-Range Strategy delivers a higher total return than the +/-10% Fixed-Range Strategy. The +/-5% Fixed-Range Strategy collects a higher level of premium each month, in compensation for the higher level of risk the narrower range strategy takes. Also in line with expectations, the +/-5% Fixed-Range Strategy suffers from more frequent and greater losses than the +/-10% Fixed-Range Strategy.

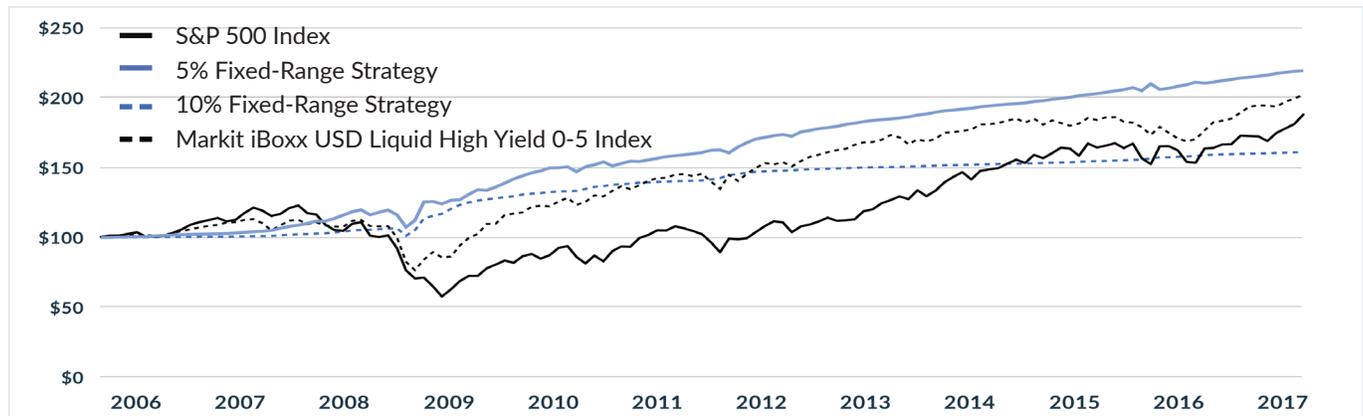
The overall performance of the Fixed-Range Strategies

per unit of risk (defined as the volatility of monthly returns), is superior to similar measures for the S&P 500 Index and the Markit iBoxx USD Liquid High Yield 0-5 Index as shown in Figure 9. We compare these strategies over an 11-year period that encompasses the high volatility years of the global financial crisis as well as over the five years ending February 2017. In the latter period, both the returns and volatility of the Fixed-Range strategies were lower, but the favorable return/risk ratio persisted.

Fixed-Range Strategies offer investors a simple way to access returns from the asymmetry in option-implied expectations of variability of monthly returns and actual variability, while tailoring their level of risk by adjusting the size of the range. Such strategies provide variable return linked to prevailing levels of market volatility.

Fixed-Range Strategies do not bear significant levels of equity, interest rate or credit risk. To demonstrate this, we first look at the correlation of the strategy to equity and bond benchmarks.

FIGURE 8: TOTAL RETURN TIME SERIES OF FIXED-RANGE STRATEGIES VS. S&P 500 INDEX AND MARKIT IBOXX USD LIQUID HIGH YIELD 0-5 INDEX (JAN 3, 2006 - FEB 28, 2017)



Source: Bloomberg, Cboe Vest

FIGURE 9: PERFORMANCE OF FIXED-RANGE STRATEGIES

	5 Years Ending 2/28/17			Entire Period (1/3/06 - 2/28/17)		
	Annualized Return	Risk	Return / Risk	Annualized Return	Risk	Return / Risk
5% FIXED-RANGE STRATEGY	5.09%	1.80%	2.83	7.25%	5.29%	1.37
10% FIXED-RANGE STRATEGY	1.80%	0.34%	5.29	4.31%	3.26%	1.32
S&P 500 INDEX	11.67%	10.14%	1.15	5.42%	14.59%	0.37
MARKIT IBOXX USD LIQUID HIGH YIELD 0-5 INDEX	5.84%	5.45%	1.07	6.34%	10.40%	0.61

Risk is Annualized Volatility of Monthly Returns

Source: Bloomberg, Cboe Vest

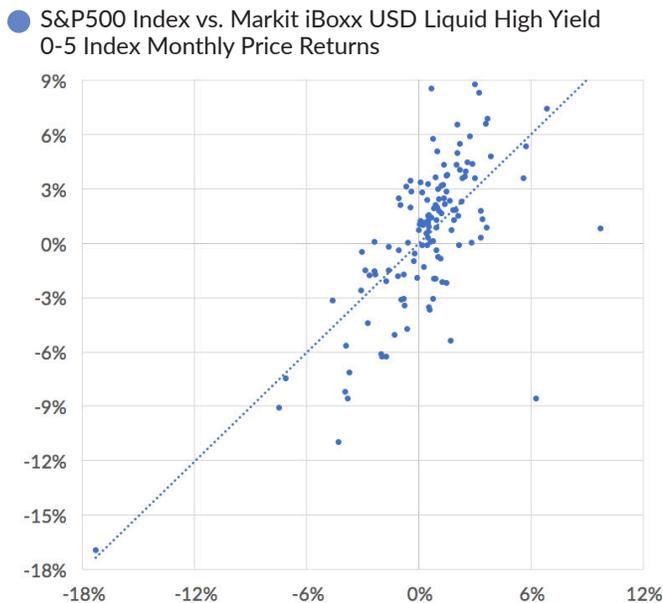
Correlation with Equities and Bond Returns

A way to study correlation of returns of two different financial assets is to plot their returns against each other. As an example, consider the scatter plot of monthly returns from January 3, 2006 to February 28, 2017 shown in Figure 10, from the S&P 500 Index and the Markit iBoxx USD Liquid High Yield 0-5 Index. The upward sloping trend-line shows that most negative returns in the U.S. equity markets occur at the same time as negative returns in the U.S. high yield bond market. Most positive returns in the two indexes also happen at the same time. This suggests a high level of positive correlation. Indeed, the correlation between the two indexes is 72%.

To assess the equity risk, interest rate risk and the credit risk, we plotted the monthly returns for the same period from the 5% Fixed-Range Strategy against the monthly returns from the S&P 500 Index, the Bloomberg Generic 10-Year US Treasury Notes Index and the Markit iBoxx USD Liquid High Yield 0-5 Index.

The scatterplots in Figure 11 show that the 5% Fixed-Range Strategy has weak correlations to the S&P 500

FIGURE 10: MONTHLY PRICE RETURNS OF S&P 500 INDEX VS. MARKIT IBOXX USD LIQUID HIGH YIELD 0-5 INDEX
(JAN 3, 2006 - FEB 28, 2017)



Source: Bloomberg, Cboe Vest

Index, the Bloomberg Generic 10-Year US Treasury Notes Index and the Markit iBoxx USD Liquid High Yield 0-5 Index. The correlation statistics are 22% with the S&P 500, 28% with the Bloomberg Generic 10-Year Treasury returns and 46% with the Markit iBoxx USD Liquid High Yield 0-5 Index, for January 3, 2006 to February 28, 2017, which suggests that the Fixed-Range Strategy has a low level of correlation with stock and bond benchmark indexes. So in addition to showing better risk and return characteristics, the fixed-range strategies can bring diversification benefits to investment portfolios.

Note that the primary advantage of the Fixed-Range Strategy is also its flaw. During times of extremely high volatility, it collects very high premiums. However, during such times, by keeping the ranges static, it also suffers from substantial losses. An alternative investment strategy would be to target a fixed level of income and vary the range to achieve that level of income.

FIGURE 11: MONTHLY PRICE RETURNS OF 5% FIXED-RANGE STRATEGY VS. S&P 500 INDEX, US TREASURY INDEX AND MARKIT IBOXX USD LIQUID HIGH YIELD 0-5 INDEX
(JAN 3, 2006 - FEB 28, 2017)

- 5% Fixed-Range Strategy vs. S&P 500 Index Monthly Price Returns
- ◆ 5% Fixed-Range Strategy vs. US Treasury Index Monthly Price Returns
- 5% Fixed-Range Strategy vs. Markit iBoxx USD Liquid High Yield 0-5 Index Monthly Price Returns



Source: Bloomberg, Cboe Vest

Fixed-Premium Strategy: Targeting a Level of Income

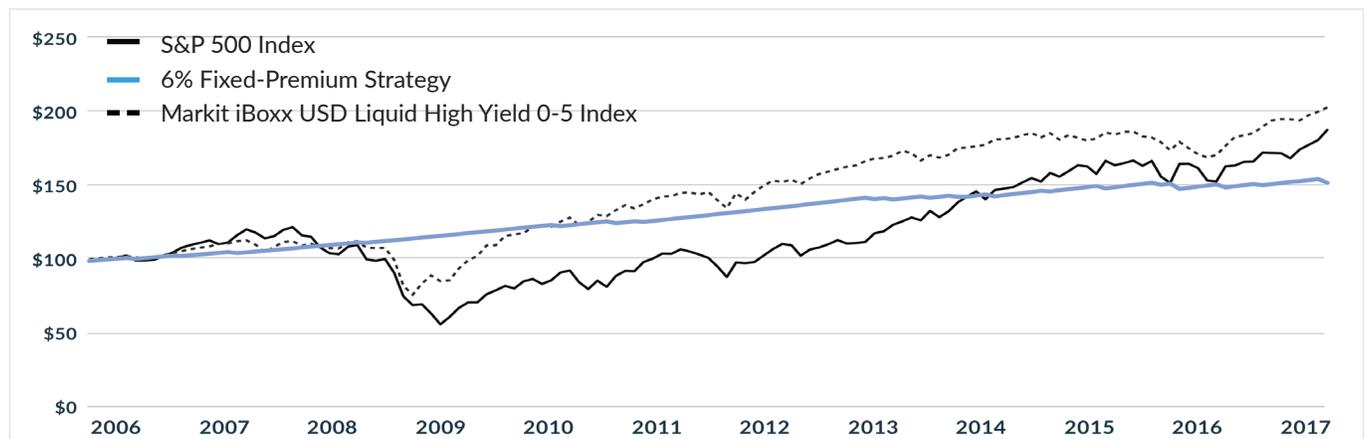
While the low correlation return property of Fixed-Range Strategies can provide a diversified source of income-focused returns, many investors have a strong preference for consistent levels of monthly income. Income-based investments are generally made to meet certain ongoing cash-flow needs. An alternative solution would be through a “Fixed-Premium Strategy.” These strategies are constructed to target a specific level of premium per month (e.g., 0.50%) and allow the strike prices to vary with dynamic volatility conditions. Since option prices change with volatility, the strike price of options sold each month to achieve a 0.5% premium may be in tighter or wider ranges depending on volatility conditions. Fixed-Premium Strategies differ from Fixed-Range Strategies in that they forego the possibility of collecting higher premiums during periods of high volatility and instead opt for a wider range of strike prices to reduce the likelihood of loss. On the other hand, during periods of low volatility, the range of strike prices may be

tighter to reflect the smaller moves in the index that are being priced into options at that time.

We calculated the performance of the 6% Fixed-Premium Strategy (targeting a premium of 0.50% per month) and compared it to the performance of the S&P 500 Index and the Markit iBoxx USD Liquid High Yield 0-5 Index in Figure 12.

Just like the Fixed-Range Strategy, the overall performance of the Fixed-Premium Strategies per unit of risk (defined by the return standard deviation) is far superior to the performance and risk of the S&P 500 Index, as seen in Figure 13. However, unlike the Fixed-Range Strategy, the Fixed-Premium Strategy is more adaptive to market conditions. As the frequency and severity of losses are inversely related to the size of the predefined range, the Fixed-Premium strategy receives its targeted premium by having a wider range of strike prices during times of high volatility and thus suffers lower losses.

FIGURE 12: TOTAL RETURN TIME SERIES OF S&P 500 INDEX, FIXED-PREMIUM STRATEGY AND MARKIT IBOXX USD LIQUID HIGH YIELD 0-5 INDEX (JAN 3, 2006 - FEB 28, 2017)



Source: Bloomberg, Cboe Vest

FIGURE 13: PERFORMANCE OF 6% FIXED-PREMIUM STRATEGY

	5 Years Ending 2/28/17			Entire Period (1/3/06 - 2/28/17)		
	Annualized Return	Risk	Return / Risk	Annualized Return	Risk	Return / Risk
6% FIXED-PREMIUM STRATEGY	2.79%	2.16%	1.29	3.97%	1.68%	2.36
S&P 500 INDEX	11.67%	10.14%	1.15	5.42%	14.59%	0.37
MARKIT IBOXX USD LIQUID HIGH YIELD 0-5 INDEX	5.84%	5.45%	1.07	6.34%	10.40%	0.61

Risk is Annualized Volatility of Monthly Returns

Source: Bloomberg, Cboe Vest

Mixed Strategies: Timing Matters and Other Factors

As discussed above, Fixed-Range and Fixed-Premium strategies are two ways to access returns from volatility risk. Fixed-Range strategies collect increased premiums during periods of higher volatility. These strategies, however, can suffer from periods of low premium collection, particularly when implied volatility is low. Fixed-Premium strategies have the benefit of wider ranges of strike prices during periods of increased volatility, reducing the likelihood of loss relative to a Fixed-Range strategy. However, these strategies can miss out on higher premiums during periods of high volatility and expose an investor to higher levels of risk during periods of low volatility. Investors may benefit from a mix of the two strategies, structured to generate relatively stable premiums during times of low volatility, while opportunistically taking advantage of higher premiums during periods of increased volatility.

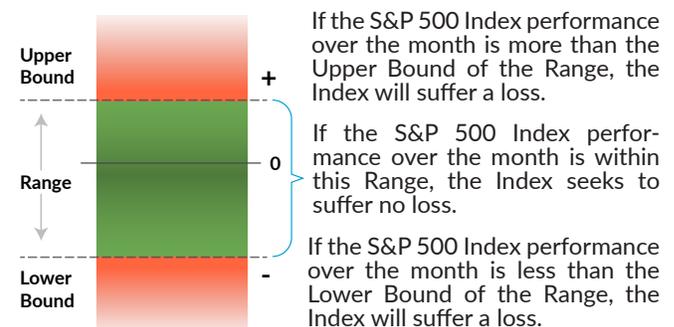
Periods of increased volatility offer a particularly opportunistic time to monetize the asymmetry described above, because it is during such times that it is most acute. This is because at times demand for insurance to protect against downside risk can be counterintuitive. Through early work in behavioral psychology and economics, loss aversion has been shown to be a larger motivator than gain satisfaction. When the stock market is relatively stable, investors tend to have greater confidence and their demand for insurance drops, making options less expensive. However, after a crisis, the demand for insurance shoots up, and the cost of options increases accordingly. When you think about it, it's highly unlikely that lightning will strike the same house two days in a row. Yet this paradox exists, giving an advantage to those selling options at such times.

Timing is not the only aspect to consider when reviewing such strategies. Other factors to consider when implementing these strategies include: duration; reference asset; liquidity of options on the reference asset; and the degree of losses the investor is prepared to endure if the price of the asset ends up outside the range of strike prices. Asset managers deploying a strategy of selling options should also consider others who employ such strategies and the popularity of such strategies around certain option expiry dates.

The Cboe Options Exchange¹ recently published the Cboe S&P 500 Range-Bound Premium-Income Index (“SPRI Index”), illustrated in Figure 14, that represents a mix of these two strategies. The SPRI Index tracks the returns of an investment that, over a period of approximately one month, seeks to provide a target level of premium income from sales and purchases of options while minimizing the risk of loss from the options positions. The strategy that the SPRI Index represents is a Fixed-Premium strategy in low volatility conditions, converts to a Fixed-Range strategy during medium volatility conditions, and then reverts back to a Fixed-Premium strategy in high volatility conditions. The flexibility of mixing the two strategies provides a consistent level of distributions for the investor in lower volatility regimes, but allows for the opportunity to earn higher returns by capturing more premium during high volatility periods. The combination of approaches has resulted in higher performance for both time periods studied while retaining a favorable ratio of return to risk.

Figure 15 and Figure 16 show returns and risks of the SPRI Index in comparison to the S&P 500 Index and the Markit iBoxx USD Liquid High Yield 0-5 Index. For both the longer-term and more recent five-year period, the SPRI Index posted strong returns relative to a risk profile that was similar to that of the high yield index but lower than that of the S&P 500.

FIGURE 14: CBOE S&P 500 RANGE-BOUND PREMIUM-INCOME INDEX



¹ The authors work for Cboe Vest Group Inc. (“Cboe Vest”), which is an indirect, majority-owned subsidiary of the Cboe Holdings, Inc (“Cboe”). Certain option and index products, including those proprietary to Cboe, may be recommended by Cboe Vest and its subsidiaries from time to time. Such products may trade on one or more Cboe affiliated exchanges, resulting in transaction and other revenues accruing to Cboe. Any views expressed herein are solely those of Cboe Vest and not of Cboe.

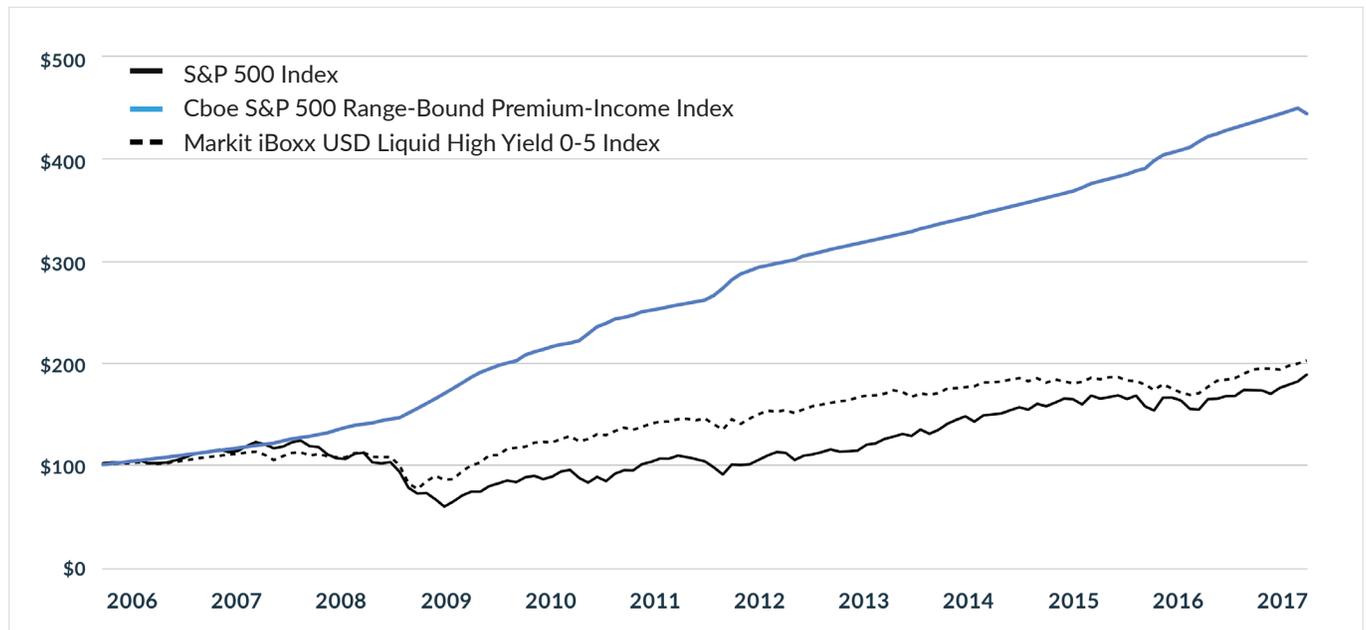
FIGURE 15: PERFORMANCE OF CBOE S&P RANGE-BOUND PREMIUM-INCOME INDEX

	5 Years Ending 2/28/17			Entire Period (1/3/06 - 2/28/17)		
	Annualized Return	Risk	Return / Risk	Annualized Return	Risk	Return / Risk
CBOE S&P 500 RANGE-BOUND PREMIUM-INCOME INDEX	8.45%	5.46%	1.55	14.13%	11.77%	1.20
S&P 500 INDEX	11.67%	10.14%	1.15	5.42%	14.59%	0.37
MARKIT IBOXX USD LIQUID HIGH YIELD 0-5 INDEX	5.84%	5.45%	1.07	6.34%	10.40%	0.61

Risk is Annualized Volatility of Monthly Returns

Source: Bloomberg, Cboe Vest

FIGURE 16: TOTAL RETURN TIME SERIES OF CBOE S&P 500 RANGE-BOUND PREMIUM-INCOME INDEX, S&P 500 INDEX AND MARKIT IBOXX USD LIQUID HIGH YIELD 0-5 INDEX (JAN 3, 2006 - FEB 28, 2017)



Source: Bloomberg, Cboe Vest

The mixture of the two strategies, as represented by the SPRI Index, also shows improved correlation statistics.

FIGURE 17: CORRELATION STATISTICS BASED ON MONTHLY RETURNS

JAN 3, 2006 - FEB 28, 2017

	Correlation with SPRI Index
S&P 500 INDEX	-7.39%
MARKIT IBOXX USD LIQUID HIGH YIELD 0-5 INDEX	7.35%
BLOOMBERG GENERIC 10 YEAR TREASURY BOND INDEX	10.26%

Source: Bloomberg, Cboe Vest

CONCLUSION

In the current low interest rate environment, many investors are looking for alternatives to fixed coupon bonds to meet their income requirements. A way to do this is to take advantage of the asymmetry in the demand for insurance against equity market volatility, expressed as demand for options on equity indexes such as the S&P 500 Index. Since there are generally more buyers of these options than there are sellers, the prices of options tend to reflect a wider range of expected returns (higher volatility) than that which is observed in reality.

In this paper, we analyzed two investment strategies that monetize this asymmetry to generate income and provide returns that have a low correlation to equity and bond returns. These strategies seek to collect a premium by selling monthly call and put options with strike prices set to match the limits of a range of returns. One strategy—a “Fixed-Range” strategy—targets a level of risk. It is constructed around a predefined range of returns, where the premium collected will vary with dynamic volatility conditions, so the income generated is variable. The other—a “Fixed-Premium” strategy—targets a level of income. It is constructed to generate a specific level of premium per month and allow the strike prices to vary depending on volatility conditions, so the risk is variable. Our analysis shows that both strategies can generate superior risk-adjusted returns to those of widely followed equity and high yield bond benchmarks over the last 10 years.

While Fixed-Range strategies can offer a diversified source of return due to their low correlation to stock and bond returns, Fixed-Premium strategies offer consistent levels of monthly returns, which many investors require to meet ongoing cash-flow needs. Fixed-Range strategies collect higher premiums during periods of high volatility, but can suffer from periods of low premium collection when volatility is low. Fixed-Premium strategies are less likely to experience a loss when volatility is high, but miss out on higher premiums when volatility is high and expose an investor to higher levels of risk when volatility is low.

We propose that an optimal investment strategy is a mix of both strategies. The Cboe S&P 500 Range-Bound Premium-Income Index (“SPRI Index”) offers that mix. It represents a Fixed-Premium strategy in low volatility conditions, converts to a Fixed-Range strategy during medium volatility conditions, and then reverts back to a Fixed-Premium strategy in high volatility conditions. The flexibility of mixing the two strategies provides a consistent level of distributions for the investor in lower volatility regimes, but allows for the opportunity to earn higher returns by capturing more premium for the investor during the high volatility periods. The combination of approaches has resulted in higher performance for both time periods studied while retaining a favorable ratio of return to risk, making it an attractive fixed income alternative.



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The strategies discussed in this document are sophisticated investments and involve the use of options. It should be noted that options strategies are constantly being developed, and that some of the risks of new options products and strategies do not become apparent until there has been significant experience in trading and using them. Accordingly, you should be aware that there is a risk in newness, particularly if the new option or strategy is complicated or complex, that cannot always be identified or described.

You should also be aware that not all options strategies will be suitable for your investment purposes, and that certain strategies may expose you to significant potential losses. As with any investment strategy, there is the risk of loss of some or all of your investment. Any performance return discussed herein is for reference only and has not been achieved through actual trading.

For more information and to better understand the features and risks of the strategies discussed herein, you should always contact your investment professional.