

Income-With-Growth Solution: *Converting Future Dividend Growth Into Current Income*

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EXECUTIVE SUMMARY

Most investors expect a certain level of current income in their portfolios. They also expect the principal from which income is collected to grow at rates higher than inflation over the long term. Traditionally, fixed-income securities have been the go-to investment to meet current income needs. However, an environment of rising interest rates or rising inflation can expose the lack-of-growth vulnerabilities of bonds and can put income investors in a tough spot.

Many investors have turned to dividend-paying stocks for income, but these investments come with their own challenges. Stocks that pay high dividends have the promise of meeting investors' income needs but may have lower-quality business and financial fundamentals compared to stocks that focus on dividend growth. Dividend growth stocks, for their part, may fall short of many investors' income targets.

To meet investors' dual needs for income and growth, Cboe Vest developed a distinct index-based solution that seeks to generate attractive current income from dividend growth stocks while also retaining the opportunity to achieve strong total returns: the Cboe S&P 500 Dividend Aristocrats Target Income Index Series. The primary driver of total returns is the stock-selection criteria of consistent long-term dividend growth, while the income enhancement comes from an innovative option strategy that seeks to monetize a portion of the potential upside of the stock portfolio. As we will demonstrate in this paper, this strategy strikes the dynamic balance between income and growth to potentially deliver an optimal income-with-growth solution.

BACKGROUND

THE INCOME-WITH-GROWTH CHALLENGE

Investors expect a level of current income from their investment portfolios to help pay bills, boost immediate spending and service long-term liabilities. While this is particularly true for investors in or near retirement (who would like their investment income to replace their employment income), a level of current income is desirable in all investment portfolios. Moreover, since income needs tend to go up over time, investors want the principal from which income is collected to grow at rates higher than inflation over the long term.

Income investors have traditionally utilized fixed-income securities, like fixed-coupon bonds. Historically, bonds have provided a significant yield advantage over other investments, such as equities, which have been the drivers of growth in investment portfolios.

Since the global financial crisis, however, fixed-income yields have fallen near the low end of their secular range. As central banks have shifted away from expansionary monetary policy, government bond yields have begun to rise, improving yields somewhat, but bringing the potential duration¹ risk of bonds to the forefront of investor concerns. This has resulted in a triple challenge for fixed-income securities: Yields may be lower than most investment portfolio income targets; prices depreciate as rates rise from low levels, hurting fixed-income returns; and the principal in fixed-coupon bonds may not keep up with inflation.

The challenge faced by fixed-income securities in such an environment can leave a gaping hole in the income portion of income-with-growth investment portfolios. Increasingly, investors may bridge that gap by turning to dividend-paying stocks to deliver the level of current income they require. However, as investors look at these stocks, it becomes clear that not all dividend-oriented stock strategies are created equally.

Two specific strategies that represent opposite ends of the spectrum are “high-dividend payers” and “dividend growers.” High-dividend payers are stocks that focus on paying higher-than-average dividends, while dividend growers are stocks that focus on consistently increasing their dividends over time.

INCOME FROM EQUITIES: HIGH-DIVIDEND PAYERS VS DIVIDEND GROWERS

High-dividend-payer strategies have the promise of meeting investors' income needs, but these stocks may have lower-quality business and financial fundamentals compared to dividend growers. Many of these companies have paid high dividends relative to their stock price because they have lower growth prospects for investing cash internally. As a result, high-dividend payers may show lower total returns accompanied by higher volatility,² particularly during periods of market turmoil. Strategies based on such stocks may also sacrifice benefits of diversification by being concentrated in certain sectors, like energy and utilities, or by including stocks whose dividend yields are high simply because the stock price has fallen sharply.

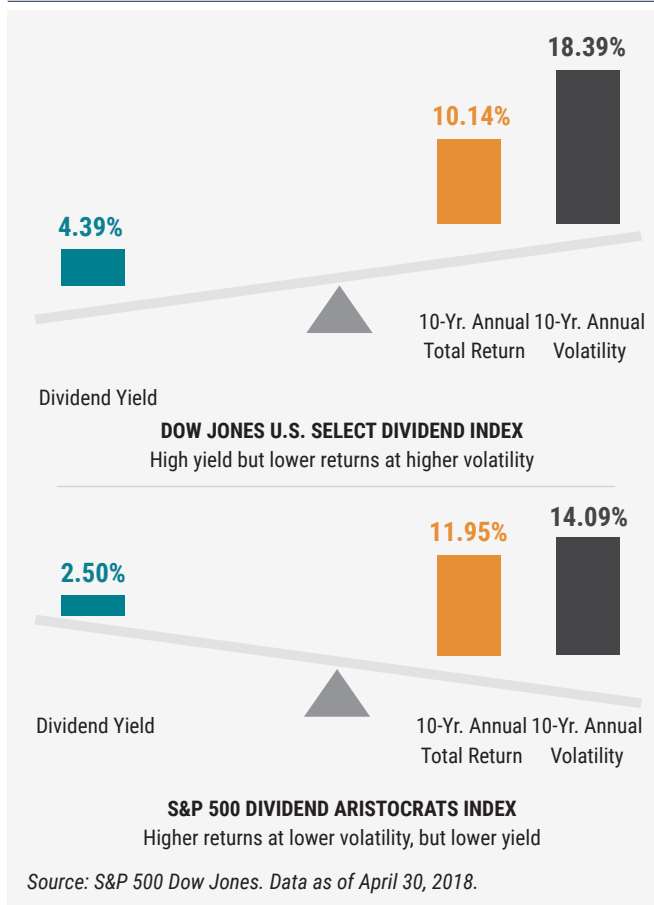
On the other hand, most dividend-grower strategies include stocks that have increased dividend payments for consecutive years over extended periods. Dividend growers are typically high-quality companies with strong balance sheets, stable cash flows³ and a history of earnings growth. Consistently increasing dividends has been a way for management to signal confidence in their companies' prospects.

These dividend growth companies with strong fundamentals have shown a history of total return outperformance relative to high-dividend payers, particularly during periods of market turmoil. However, these stocks may not be among the highest sources of yield, despite consistently increasing their dividends. As a result, they could fall short of investors' income needs.

Investors thus face a conundrum—that of choosing between a high level of income and a high level of total returns at lower volatility—when selecting dividend-paying equities. Figure 1 illustrates this by comparing the yields, total returns and volatility of two indexes that represent the high-dividend-payer and dividend-grower strategies.

In this paper, we examine a distinct index-based solution that seeks to generate attractive current income while retaining the opportunity to achieve higher total returns than the S&P 500® Index at lower volatility.

FIGURE 1: TRADE-OFF BETWEEN YIELD, TOTAL RETURN AND VOLATILITY



This goal is achieved by exploiting the unique properties of call options to monetize the potential upside of stock price moves and incorporating this feature into a high-quality dividend-grower stock-selection strategy. The primary component of enhancement to income comes from selling options on a small portion of the stock holdings, while the methodology for stock selection and portfolio construction drives the return and risk features of the strategy. Combining an options strategy with a rules-based stock-selection strategy based on dividend growth provides investors an income strategy that also has a significant growth component, providing the potential for strong total returns.

Before we examine the benefits of using options as a vehicle for shifting potential capital appreciation to income, let us look more deeply at the features of dividend growth as a basis for stock selection.

PART I. DIVIDEND GROWTH AS A BASIS FOR STOCK SELECTION:

THE S&P 500 DIVIDEND ARISTOCRATS INDEX

The S&P 500® Dividend Aristocrats® Index is a "smart beta"⁴ dividend growth factor index based on an equal-weighted approach to portfolio construction. Created by S&P Dow Jones in 2005, the index has the benefit of a long track record to assess performance and the fundamental features of its holdings. In this section, we discuss the different aspects of the S&P 500 Dividend Aristocrats Index that make it such a good candidate for a much-needed income-with-growth solution.

QUALITY STOCKS

The S&P 500 Dividend Aristocrats Index consists of S&P 500 companies that have increased their dividends year over year for at least 25 years. The criterion of consistent dividend growth results in a selection of stocks that are high quality—companies with strong balance sheets, stable cash flows and a history of earnings growth. Companies with a long track record of raising dividends have a history of cash flows to support those dividends, as well as sufficient earnings growth to increase them each year.

The quality advantage in dividend growth stocks is clearly illustrated by looking at the quality metrics for the portfolio of stocks in the S&P 500 Dividend Aristocrats Index. This index ranks high on quality compared with the S&P 500, and especially compared with the Dow Jones U.S. Select Dividend Index, which selects stocks on the basis of high dividend yield, as shown in Figure 2. S&P Dow Jones has a quality ranking system that ranks stocks in the S&P 500 into A and B categories. According to S&P, as of June 29, 2018, 63% of S&P 500 Dividend Aristocrats Index constituents had rankings of A- or higher, compared to 36% of S&P 500 stocks, and only 27% of stocks in the Dow Jones U.S. Select Dividend Index.⁵ For investors looking for income, the higher risk and lower quality of stocks with high dividends is also indicated by the high percentage (53%) of Dow Jones U.S. Select Dividend Index stocks that are rated B or less.

63% of S&P 500 Dividend Aristocrats Index constituents had rankings of A- or higher, compared to 36% of S&P 500 stocks and 27% of Dow Jones U.S. Select Dividend Index stocks (as of June 29, 2018).

DIVERSIFICATION

Another key feature of the S&P 500 Dividend Aristocrats Index is its use of an equal-weighting portfolio construction methodology. As such, this index has a higher degree of stock and sector diversification than indexes that are market-capitalization weighted or dividend-yield weighted. Unlike traditional market-capitalization weighting, equal weighting treats each company as an equivalent and distinct investment opportunity, which results in an index that is not overly dependent on a few large holdings for performance.

The S&P 500 Dividend Aristocrats Index is composed of a minimum of 40 qualifying stocks that are equally weighted and rebalanced quarterly. This means that no one stock will constitute more than about 2.5% of the index at the quarterly rebalancing point. With 53

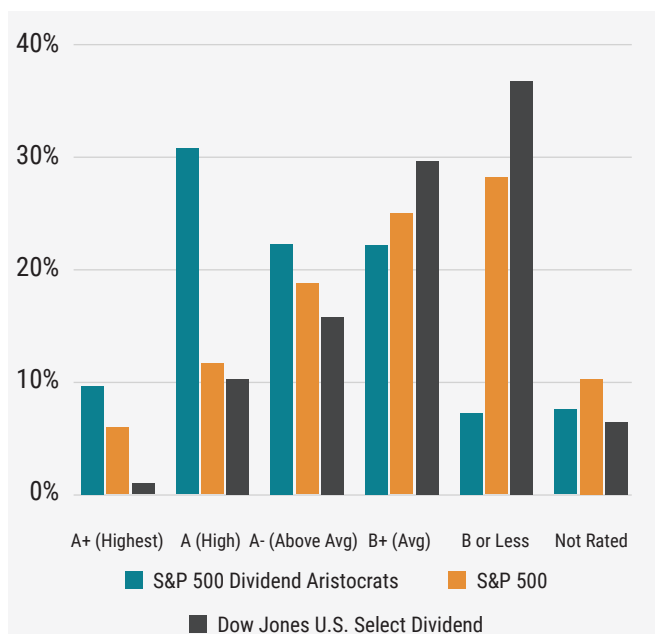
constituents as of June 29, 2018, each stock in the S&P 500 Dividend Aristocrats Index has an approximate index weight of 2% when it is reweighted each quarter.

In addition, the index is diversified across a wide range of sectors. Most high-dividend-yield strategies tend to be concentrated in sectors such as utilities, energy and financials, offering less diversification in addition to other vulnerabilities, such as higher sensitivity to interest rate changes.

Equal weighting treats each company as a distinct investment opportunity, which results in an index that is not overly dependent on a few large holdings for performance.

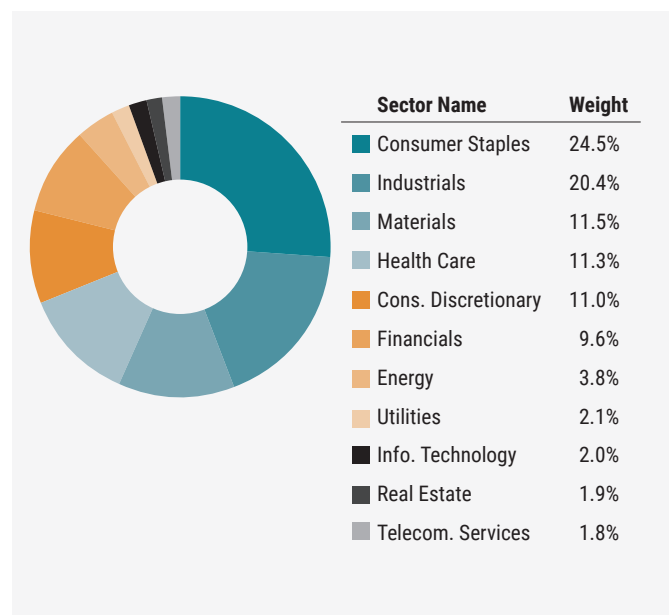
The index methodology also calls for a maximum weight of 30% in any one sector at the annual index rebalance in January. Figure 3 shows the sector diversification of the S&P 500 Dividend Aristocrats Index as of April 30, 2018. The largest sectors are consumer staples, industrials, materials, health care, and consumer discretionary. Note that sectors that often carry a high weight in indexes targeting high-dividend-yield stocks, such as

FIGURE 2: QUALITY RANKINGS OF THE S&P 500 DIVIDEND ARISTOCRATS VS S&P 500 AND DOW JONES U.S. SELECT DIVIDEND



Source: S&P Dow Jones, as of June 29, 2018

FIGURE 3: S&P 500 DIVIDEND ARISTOCRATS SECTOR WEIGHTS



Source: S&P Dow Jones Indices LLC. Data as of April 30, 2018. Chart is provided for illustrative purposes.

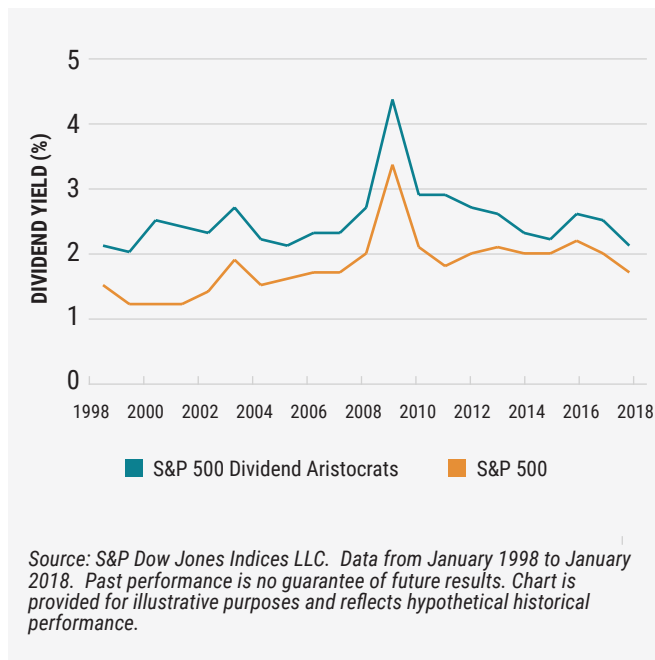
energy, utilities and telecommunications, carry a lower weight in this index, because of its selection criteria based on the historical pattern of growth rather than the level of dividends.

DIVIDEND YIELD

Because all stocks in the S&P 500 Dividend Aristocrats Index pay and grow dividends, it has historically had a dividend yield⁶ slightly higher than that of the S&P 500, which includes large stocks that pay no or low dividends. Since the S&P 500 Dividend Aristocrats Index's inception in 2005, the spread of the dividend yield of the index to the S&P 500 has been in the range of 30 to 130 basis points, as shown in Figure 4.

As of May 31, 2018, the spread was 51 basis points (2.41% for the S&P 500 Dividend Aristocrats Index vs. 1.90% for the S&P 500).

FIGURE 4: DIVIDEND YIELD OF THE S&P 500 DIVIDEND ARISTOCRATS VS S&P 500



RETURN AND RISK

One of the most attractive aspects of using the stock-selection criterion of dividend growth as the basis of an income strategy is performance relative to risk. The S&P 500 Dividend Aristocrats Index has generally outperformed the S&P 500 with slightly lower volatility over the last 10 years. Figure 5 shows the annualized returns of the S&P 500 Dividend Aristocrats Index versus the S&P 500 and Dow Jones U.S. Select Dividend Index for the last three, five and 10 years, along with annualized volatility. For most periods, the return of the dividend growth index has been higher and the relative risk lower. For example, over the 10-year period, the risk was 94% that of the S&P 500, while the excess return was nearly 3% annualized. Compared with the Dow Jones U.S. Select Dividend Index, we also see lower risk and superior returns for this 10-year period, which included the bear market of 2008.

FIGURE 5: THE S&P 500 DIVIDEND ARISTOCRATS INDEX GENERALLY OUTPERFORMED THE S&P 500 WITH LOWER VOLATILITY (AS OF 5/31/2018)

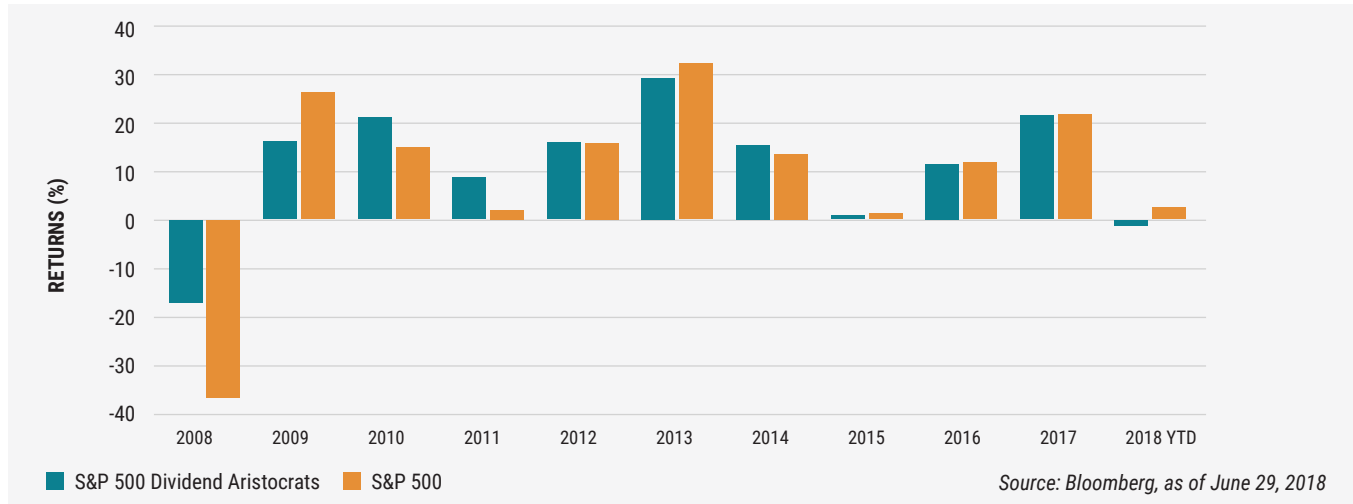
RETURN (Annualized)			
	S&P 500 Dividend Aristocrats	S&P 500	Dow Jones U.S. Select Dividend
3 Year	9.92%	10.88%	11.61%
5 Year	12.20%	12.98%	12.61%
10 Year	11.99%	9.14%	9.71%

VOLATILITY (Annualized)			
	S&P 500 Dividend Aristocrats	S&P 500	Dow Jones U.S. Select Dividend
3 Year	9.73%	10.30%	8.28%
5 Year	9.88%	9.87%	8.84%
10 Year	14.09%	15.00%	14.87%

Source: S&P Dow Jones Indices, as of May 31, 2018

Figure 6 shows the comparable returns for the S&P 500 Dividend Aristocrats and S&P 500 on a calendar-year basis beginning in 2007 through June 29, 2018.

FIGURE 6: CALENDAR YEAR RETURNS FOR THE S&P 500 DIVIDEND ARISTOCRATS INDEX VS. THE S&P 500 (AS OF 06/29/2018)



PERFORMANCE IN RISING AND FALLING EQUITY MARKETS

The stock-selection methodology of the S&P 500 Dividend Aristocrats Index offers yet another advantage in its lower volatility profile. The lower risk of this index vs. the S&P 500 comes from outperformance in periods when the S&P 500 had negative performance. In Figure 7 we show the percentage of months between June 2005 and December 2017 that the index has outperformed in markets when the S&P 500 posted positive capital returns (up months) and negative returns (down months).⁷

As shown in the table, the statistic of overall outperformance in 53% of the months comes primarily from months when the S&P 500 had a negative return, when the index outperformed 72% of the time. We can see this strength in falling markets also by looking at the average monthly excess return for all months and those months that had positive and negative returns, as shown

FIGURE 7: MONTHS OF OUTPERFORMANCE VS. S&P 500: MAY 31, 2005-DEC. 29, 2017

Outperformance History (Using monthly returns)	S&P 500 Dividend Aristocrats
All Months	53.29%
Up Months	44.76%
Down Months	72.34%

in Figure 8. The positive return months for the S&P 500 have had on average a negative excess return of 22 basis points (bps),⁸ but the outperformance in negative return months has been very strong with an average of 97 bps. This is likely reflective of the tendency of S&P 500 Dividend Aristocrats Index stocks to be of higher quality than the overall S&P 500, and thus have had their best relative performance in more challenging equity market environments.

Now that we have reviewed the potential benefits of dividend growth as a stock-selection strategy—high quality, broad diversification and attractive return for the risk, among others—let us examine how options can be used in an effort to generate income from the potential capital appreciation of stocks. In the next section, we explain how options have the power to remodel portfolios to higher income levels and how strategy design choices can influence both the level of income and the potential growth component of returns.

FIGURE 8: AVG EXCESS MONTHLY RETURNS HISTORY: MAY 31, 2005-DEC. 29, 2017

Avg. Excess Monthly Returns History	S&P 500 Dividend Aristocrats
All Months	0.15%
Up Months	-0.22%
Down Months	0.97%

PART 2. OPTIONS OVERWRITING:

GENERATING INCOME BY MONETIZING THE UPSIDE POTENTIAL OF STOCKS

MOVING BEYOND DIVIDENDS WITH OPTIONS

Many of us have benefited from a remodeling or home improvement project. We may love our home for its location, school system, design, yard or other features. At some point, however, we may need to make changes, such as building an in-law suite, upgrading the kitchen or bathrooms, or finishing a basement, to better meet the current needs of the family and improve the home's utility. Investment strategies, like houses, can be "remodeled" to better match investment goals. Instead of drills, hammers and nails, the remodeling tools for investments are options, which can be used to adapt investments to achieve investors' preferred combination of income and growth without disturbing other parts of the portfolio.

Options are contracts that give an investor the right, but not the obligation, to buy or sell a security or other financial asset (reference asset) at a predetermined price (strike price) on or before a specific date in the future (exercise date). In the case of a call option, the buyer pays an upfront premium and acquires the right to a stock's future returns above the strike price. The seller, on the other hand, gives up the right to the stock's future returns above the strike price in exchange for upfront premium income. Options thus confer on a stock owner the unique ability to convert a stock's uncertain future returns into certain upfront premium income.

Investors holding a basket of stocks can repeatedly sell call options on a portion of the stockholding to convert some of the future returns into upfront premium income, while preserving the majority of the potential growth from the price appreciation of the stocks. This approach can work very well with strategies that select stocks based on their potential for capital appreciation, such as dividend growth strategies. The premium income collected from the options sold, combined with the dividends from the remaining stocks, can become a source of high current income.

THE CBOE S&P 500 DIVIDEND ARISTOCRATS TARGET INCOME FAMILY OF INDEXES: A RULES-BASED SOLUTION

This income-enhanced, dividend growth strategy can be incorporated into a smart beta index that is essentially a "remodeled" version of the S&P 500 Dividend Aristocrats Index, whose return drivers and risk features have been described earlier. The Cboe S&P 500 Dividend Aristocrats Target Income Index Series, which includes the Cboe S&P 500 Dividend Aristocrats Target Income Index (SPAI) and Cboe S&P 500 Dividend Aristocrats Target Income Index Monthly Series (SPATI), incorporates such "remodeling" to shift a greater portion of the base index's total returns into income. The indexes do this by "writing" (or selling) weekly or monthly call options on a small portion (typically 5% to 15%) of each stock position to convert a portion of the stocks' total returns into income. This is known as a partial-covered-call strategy,

The specific goal of these income-with-growth index strategies is to generate income from option premia, along with stock dividends, that is 3.0% (SPATI) or 3.5% (SPAI) over the dividend yield of the S&P 500 Index. We believe both indexes may hold great promise as a much-needed income-with-growth solution for the large-cap equity allocation of an investor's portfolio.

WRITING COVERED CALLS

Covered-call writing is an established means of capturing some of the potential capital appreciation of stocks in the form of upfront premium income. By selling a call option on a stockholding, the investor receives a premium in exchange for foregoing the stock's upside returns above the option strike price over a specific time horizon. In effect, this strategy transforms potential capital returns above the strike price into a known level of income at the start of each period. The premium income received from repeatedly selling calls that expire each week or month can be significant on an annual basis. However, some of this income is offset by limited upside returns on the portion of each stockholding that is "covered" with options.

Some basic principles of option pricing are relevant to the design of a covered-call strategy with an income target. Specifically, when choosing to implement covered-call writing, an investor can select the strike price of the options sold, the portion of the stock position to be overwritten, and the term of the options sold. We examine the implications of each of these design choices to a covered-call strategy and their bearing on the design of the SPAI and SPATI indexes.

FIXED VS. VARIABLE PARTIAL OVERWRITE

Some widely followed indexes of covered-call strategies, such as the Cboe S&P 500 BuyWrite Index (BXM), incorporate writing call options on the full stock position. This allows maximum capture of the option premium but limits upside returns on the entirety of the stock holdings, making the strategy geared more toward income at the expense of growth.

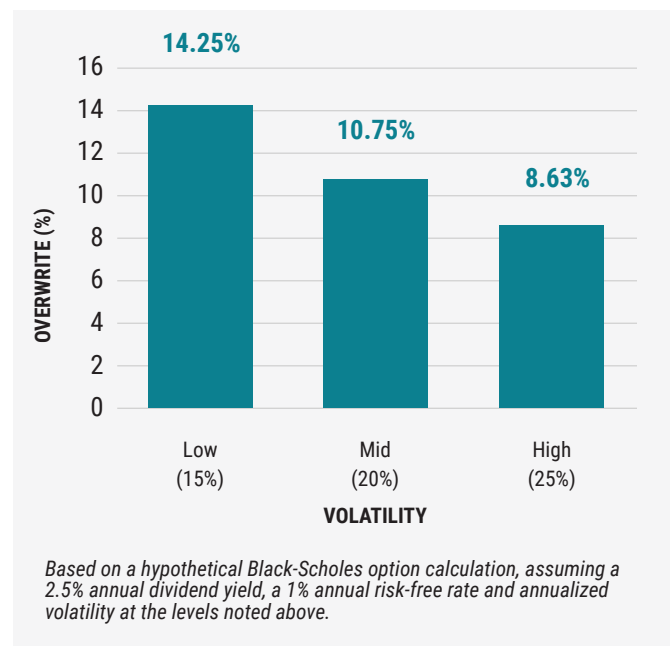
To balance the income target with the potential for growth, one can implement a variation of the 100% covered-call strategy by writing call options on a smaller fixed portion, such as 15%, of the stockholding. Doing so ensures that the strategy benefits from participating in 85% of the upside of the stock holding beyond the strike price. However, with a fixed portion of the portfolio overwritten, the premium income collected from the sale of call options will vary over time. Typically, during times of higher volatility, the premium income collected from the sale of call options is higher than during times of lower volatility.

The SPAI and SPATI indexes are designed to deliver a targeted level of income. The objective of targeting a stable level of income can be best achieved by varying the portion of the stock position that is overwritten in response to changes in the prices of the call options related to shifts in volatility. So, during times of higher volatility when call option prices are high, the strategy targeting a specific amount of income can reduce the portion of the stock position that is overwritten, resulting in a higher participation in the appreciation of the stock above the strike price. Conversely, when the prices of call options are low, reflecting more subdued volatility, the strategy overwrites a higher portion of the

stockholding to achieve the income target, thus limiting the growth potential to a greater degree. The SPAI and SPATI indexes vary the size of the stock position overwritten each week or month in response to the price of the new call option sold to replace expiring or exercised options from the prior period. In doing so dynamically, the indexes continuously strive to achieve their income target while allowing the balance of the stock portfolio to deliver growth.

To gain insight into how a target income goal such as 3.0% per year translates into varying the portion of overwriting on a stock holding, depending on volatility conditions, consider hypothetical call options with one month to maturity, assuming a range of volatility conditions. Figure 9 shows the percentage of the portfolio overwritten with a target income of 3.0% per year (0.25% per month) with hypothetical “at the money” (ATM) call options, one month to expiration, assuming annualized volatility levels typically found in stock options—15%, 20% and 25%—a 1.0% risk-free rate and a 2.5% dividend yield.

FIGURE 9: PERCENTAGE OF PORTFOLIO OVERWRITTEN: 1-MONTH ATM CALL OPTION TO REACH A 3.0% ANNUAL YIELD



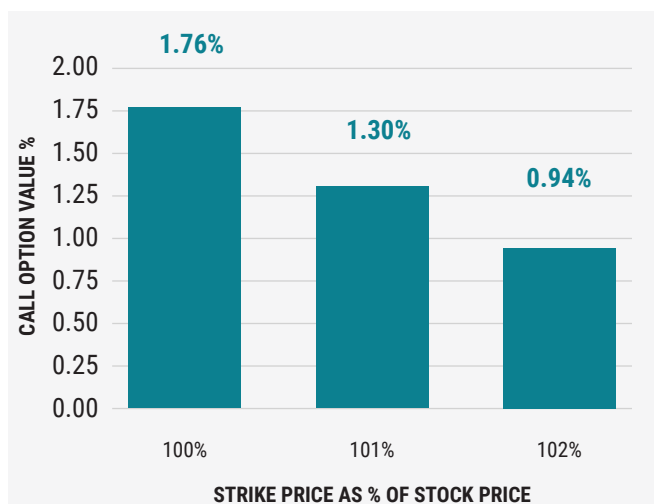
Notice how the percentage overwritten is lowest (8.63%) in the higher-volatility regime when option premiums have expanded with volatility expectations, and is highest (14.25%) in the lower-volatility regime example.

SELECTION OF STRIKE PRICE

The lower the strike price is relative to the stock price at the time the stock position is overwritten, the higher the call option premium. The selection of the strike price is a trade-off between maximizing the upfront premium by selling away all of the potential upside or allowing for some upside appreciation before the strike price is hit. When an option's strike price is the same as the stock price, the call option is said to be "at the money" (ATM). When it is higher than the stock price, it is called "out of the money" (OTM). The time premium or income available for limiting upside is highest for ATM call options. In the SPAI and SPATI index design, all call options sold are ATM, which provides sufficient income to reach the target while allowing for only a small portion of each stock position to be overwritten.

Figure 10 shows the difference in call option value between an option with one month to expiration that is ATM (strike price is 100% of the stock price) versus a

FIGURE 10: MONTHLY ATM CALL OPTION VALUES BY STRIKE PRICE AS A PERCENTAGE OF THE UNDERLYING PRICE



Hypothetical value of European call option with one month to expiration, assuming a 2.5% annual dividend yield, 1% annual risk-free rate and 15% annualized volatility.

call option that is OTM (strike price is 101% and 102% of the stock price). In exchange for allowing for 2% return before limiting upside, the OTM call option premium is reduced by almost half from 1.76% to 0.94%. Therefore, for the OTM call option to generate the same amount of target income as an ATM option, the portion of the stock position covered with 2% OTM calls would need to be almost twice as large as it would be with an ATM option. A similar effect occurs for ATM call options with one week to expiration, where the premium drops from 0.84% for an ATM option to 0.43% for an option that is 1% OTM.

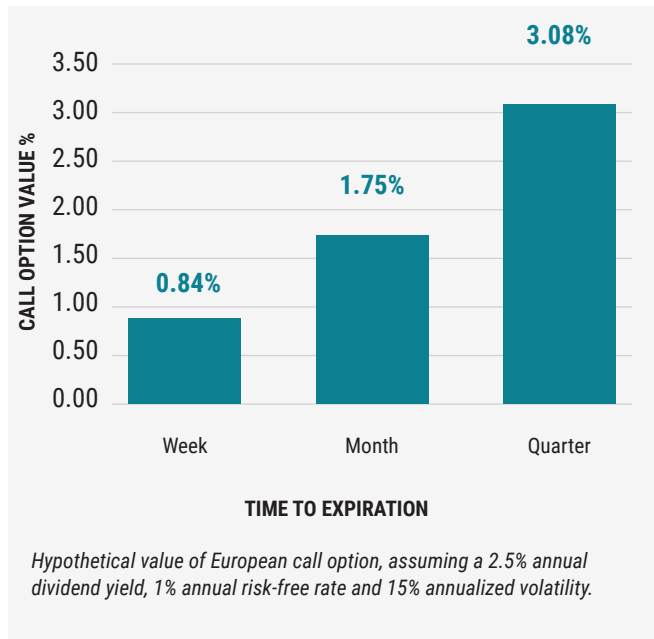
SHORT-TERM VS. LONG-TERM CALL OPTIONS

The choice of the term (time to expiration) of the option used for overwriting is also very important. An investor selling weekly options against a stockholding will be compensated 52 times a year for the risk that the stock moves above the strike price at the end of each week, compared with four times a year for an investor selling quarterly call options. So, using short-term options such as weekly options or monthly options can lead to a greater income opportunity, because the investor is agreeing to forego upside on the overwritten stocks far more frequently.

Figure 11 shows values for hypothetical quarterly, monthly and weekly options using a Black Scholes⁹ calculation that assumes a 2.5% annual dividend yield, 1% annual risk-free rate and 15% annualized volatility. Notice that the weekly call options, which can be sold four times a month, have roughly half the value of an option with one month to expiration. Also, selling ATM monthly call options three months in a row can potentially generate 5.25% of income with the assumptions used in the example, compared with 3.08% for an ATM option sold once a quarter.

It's important to note that while the compensation for selling short-term options may be higher than it is for longer-term options, this compensation reflects two key factors. First, with short-term options there are more opportunities for the investor to give up potential upside. Second, the risk that the option will be exercised is moderated somewhat by the fact that a move above the strike price is less likely within a shorter period.

FIGURE 11: ATM CALL OPTIONS WITH DIFFERENT TIMES TO EXPIRATION

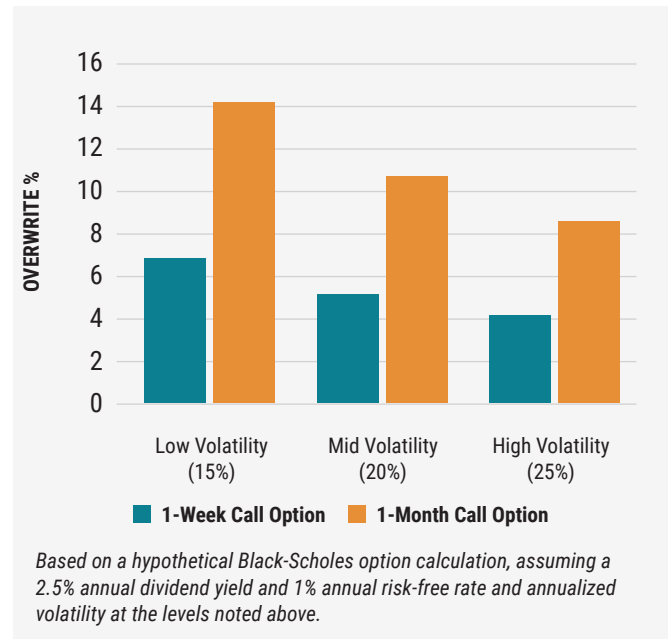


It is important to note that the path of prices for the stock during the period will also determine its return features if short-term call options are sold against it. For example, an option with a monthly expiration may end the month worthless, but if it has had upside moves during the month, one or more of the weekly options may have been exercised.

In deliberating whether to sell weekly or monthly options, as in the SPAI and SPATI Indexes, one of the considerations is that with weekly options, investors can participate in greater upside in the stockholdings if they have a fixed target for annual income. As an example, Figure 12 compares the proportion of a portfolio that would need to be overwritten with weekly or monthly options to generate 3% annualized income, based on the premiums collected, using a hypothetical Black Scholes option calculation and three different volatility assumptions.

Notice that for this 3.0% income target and 20% expected volatility, only 5.18% of the portfolio would need to be covered when writing weekly options, compared to almost 10.75% for monthly options. Although upside potential might be capped out more

FIGURE 12: PERCENTAGE OF PORTFOLIO OVERWRITTEN: 1-WEEK VS. 1-MONTH ATM CALL OPTIONS TO REACH 3.0% ANNUAL YIELD

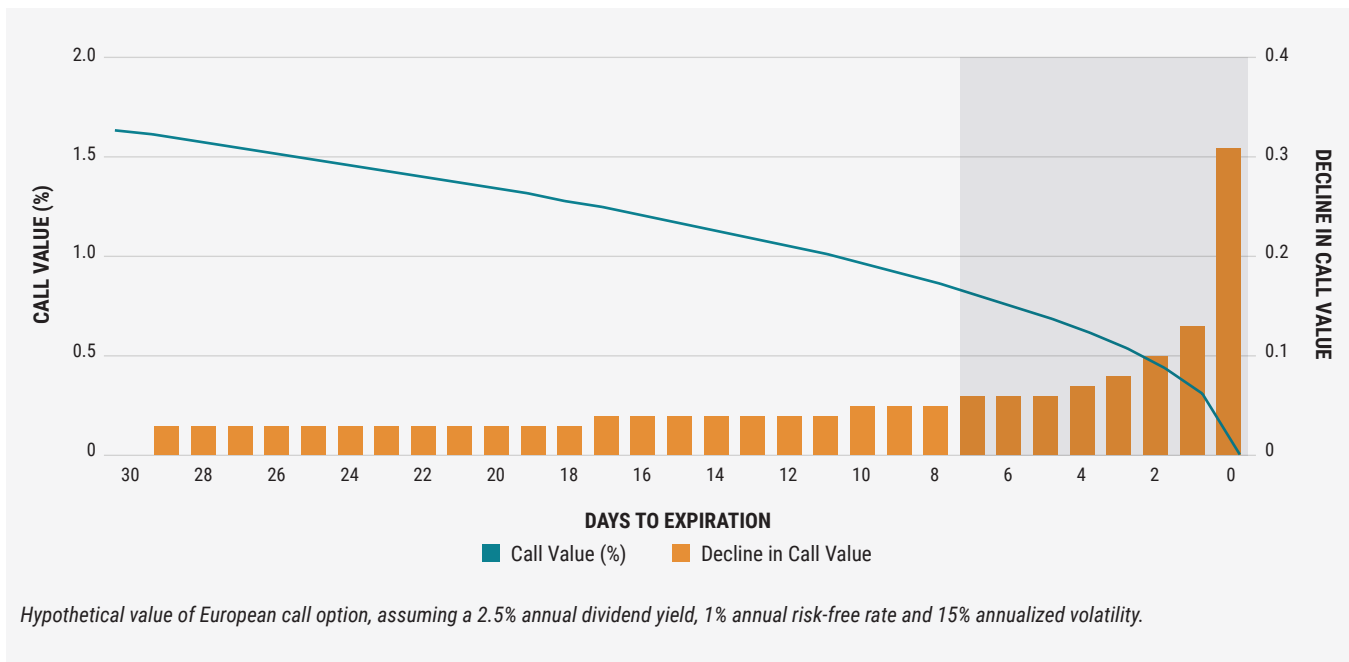


frequently with weekly options, this impact would be felt on a very small portion of the portfolio. Monthly options, on the other hand, for a given volatility level, would require a larger portion of the portfolio to be covered, generating less total option premium for the strategy on an annual basis.

IMPACT OF TIME DECAY

One of the reasons for the different values for weekly, monthly or longer expiration options is the extent to which the investor benefits from time decay as an option moves closer to expiration. Time decay accelerates as options get closer to their date of expiry because, as this date approaches, the chance of the investor foregoing potential upside goes down more rapidly. This is not too different from the value that may be lost by event tickets in the time period leading up to an event. Consider a musical event that features a rock star at a venue with limited seating. The rock star's popularity means that all seats are sold out a few months in advance of the event. At such a time, a ticket holder can sell his or her ticket at a high premium to take advantage of the high demand. However, as time passes, the demand may wane as

FIGURE 13: VALUE OF ATM CALL OPTION AS IT APPROACHES EXPIRATION



potential attendees make other plans. This will result in a drop in the secondary market price of the ticket a few days before the event. The ticket could have little to no value a few hours before the event if few people are prepared to attend the event at a moment's notice.

Figure 13 shows the loss in option value over time for an ATM call option with one month to expiration, assuming a 2.5% annual dividend yield, 15% annualized volatility and a 1% annual risk-free rate. You can see that roughly half of the option time value is lost in the first three weeks of the month, and the other half in the final week, assuming the option remains at the money for the entire period.

A covered-call writing strategy that sells weekly options captures half the time value of monthly options four times as frequently. This feature allows an index like SPAI, which sells options weekly, to generate more frequent benefits of time decay than an index like SPATI, which sells options monthly. This means SPAI can have a higher annual income target than SPATI and have a smaller portion of the portfolio covered with options, allowing for more upside potential.

CONCLUSION

An interest rate environment that is challenging to fixed-coupon bonds can leave a gaping hole in the income-with-growth portion of investment portfolios. Finding investments that can bridge the gap left by low-yielding fixed-income instruments in a rising-rate and rising-inflation environment becomes a high priority for investors in such an environment. Investors looking for an alternative source of income that also seeks to provide growth that outpaces inflation may turn to high-dividend-yielding stocks, which come with certain drawbacks, such as potential for lower total returns with higher volatility, high concentration in certain sectors and potential quality issues associated with high debt levels. The Cboe S&P 500 Dividend Aristocrats Target Income Index Series (SPAI and SPATI) offers something more compelling: an investment that can provide both income and growth without compromising on total returns, volatility, quality or sector diversification.

The stock-selection methodology of the SPAI/SPATI Index Series is the primary driver of strategy returns, based on the S&P 500 Dividend Aristocrats Index, an equal-weighted portfolio of at least 40 high-quality stocks that have grown dividends consistently for at

least 25 years. This group of companies, which is widely diversified across sectors, provides the ideal underlying universe for an income-with-growth strategy.

The SPAI/SPATI Index Series also uses an innovative option strategy design to achieve its income-with-growth objective. To seek to generate price returns that are comparable to those of the S&P 500, these indexes use short-term options and vary the overwrite amount dynamically to continuously strike the balance between income and growth. By utilizing a covered-call strategy on a small portion (less than 20%) of the holdings of dividend growth stocks, the SPAI and SPATI indexes target income that is approximately 3.0% to 3.5% above the annual dividend yield of the S&P 500—well above what can be achieved by investing in stocks with high dividend yields.

By implementing the partial-covered-call strategy with weekly or monthly options on the S&P 500 Dividend Aristocrats Index universe, the SPAI and SPATI indexes are able to "remodel" the S&P 500 Dividend Aristocrats Index into a higher income strategy, without meaningfully compromising the growth prospects. The SPAI/SPATI Index Series thus allows investors to generate income with growth without taking on the sector risk that often accompanies high-dividend-yield strategies or the credit risk of high-yield bond strategies. The strategy in the index series strikes the dynamic balance between income and growth to deliver an optimal income-with-growth solution. ■

NOTES

¹ Duration is a measure of the sensitivity of the price of a fixed-income investment to a change in interest rates. The higher the duration, the more sensitive the investment is to changes in interest rates.

² Volatility is a statistical measure of the dispersion of returns for a given security or market index. Commonly, the higher the volatility, the riskier the security.

³ Cash flow is the net amount of cash and cash-equivalents being transferred into and out of a business.

⁴ Smart beta strategies attempt to deliver a better risk and return trade-off than conventional market-cap-weighted indexes by using alternative weighting schemes based on measures such as volatility or dividends.

⁵ Smita Chiraputkar and Aye M. Soe, S&P Dow Jones Indexes provided updated quality rankings for the S&P 500 Dividend Aristocrats, S&P 500, and Dow Jones U.S. Select Dividend Indexes using the same methodology published in "S&P 500 Dividend Aristocrats," S&P Dow Jones Indices, August 2016, p. 7.

⁶ Dividend yield is calculated by dividing the annual dividend paid per share of stock by the current stock price.

⁷ Smita Chiraputkar and Aye M. Soe, "S&P 500 Dividend Aristocrats," S&P Dow Jones Indices, August 2016, p. 7, updated as of Dec. 29, 2017.

⁸ A basis point is (a difference of) one hundredth of a percent. Basis points are used in contexts where percentage differences of less than 1% are discussed.

⁹ The Black-Scholes formula (also called Black-Scholes-Merton) is a widely used mathematical model for option pricing.

The Cboe S&P 500 BuyWrite Index (BXM) is a benchmark designed to track the performance of a hypothetical buy-write strategy on the S&P 500 Index. The Dow Jones U.S. Select Dividend Index aims to represent the U.S.'s leading stocks by dividend yield. The S&P 500 Index is a market-capitalization-weighted index of the 500 largest U.S. publicly traded companies by market value. It is widely regarded as the best single gauge of large-cap U.S. equities, capturing approximately 80% coverage of available market capitalization.