



Cboe® S&P 500 Dividend Aristocrats Target Income Index Monthly Series



Cboe® S&P 500 Dividend Aristocrats Target Income Index Monthly Series

As of February 2018



Table of Contents

Introduction	1
Index Design	1
Index Series Value and Return	2
Index Calculation.....	2
Rebalancing.....	3
Rolls.....	3
Corporate Actions	4
Valuation.....	4
Index Maintenance	5
Index Construction.....	5
Valuation and Equations.....	5
Calculation and Dissemination.....	5
Index Dissemination	5
Disclaimer	5



Introduction

The Cboe S&P 500 Dividend Aristocrats Target Income Index Monthly Series (“SPATI” or “SPATI Index”) is a benchmark index designed to track the performance of a hypothetical buy-write strategy on constituents of the S&P 500 Dividend Aristocrats Index¹. The S&P 500 Dividend Aristocrats Index, constructed and maintained by S&P Dow Jones Indices LLC, targets companies that are currently members of the S&P 500®, have increased dividend payments each year for at least 25 years, and meet certain market capitalization and liquidity requirements.

The SPATI Index is designed with the primary goal of generating an annualized level of income that is approximately 3.0% over the annual dividend yield of the S&P 500 Index and a secondary goal of generating price returns that are proportional to the price appreciation of the S&P 500 Index. The SPATI Index investment strategy includes (1) buying the stocks contained in the S&P 500 Dividend Aristocrats Index, and (2) partially “writing” (or selling) monthly “covered” call options on each stock, generally on the third Friday of each month. The number of call options overwritten per unit of stock exposure is varied periodically with the goal of generating a total yield from dividends and call option premiums that is 3.0% per annum higher than the yield from dividends of the S&P 500 Index. The percentage of each stock that is overwritten with call options will by design be less than 20%.

Index Design

The SPATI Index measures the total rate of return of a hypothetical “partial covered call” strategy applied to stocks contained in the S&P 500 Dividend Aristocrats Index. The SPATI Index strategy consists of a hypothetical portfolio consisting of an equally weighted “long” position in stocks contained in the S&P 500 Dividend Aristocrats Index for which there exists a listed options market (i.e., has options that trade on a national options exchange). The dividend yields for each stock is determined by the equation below

$$Dividend\ Yield = \frac{E(Div)_{Recon}}{S_{Recon}}$$

Where $E(Div)_{Recon}$ is the expected dividend of the stock over the next year on the S&P 500 Dividend Aristocrats Index reconstitution date and S_{Recon} is the price of the stock on the reconstitution date¹. We refer to this hypothetical portfolio as the “covered S&P 500 Dividend Aristocrats Index portfolio”.

The hypothetical portfolio is rebalanced at each reconstitution date ‘Recon’ and on each rebalance date ‘Rebal’ such that the dividends paid on the component stocks and the dollar value of option premium deemed received from the sold call options are functionally “re-invested” in the covered S&P 500 Dividend Aristocrats Index portfolio. The SPATI Index is based on the cumulative gross rate of return of the covered S&P 500 Dividend Aristocrats Index portfolio.

¹ See methodology for the S&P 500 Dividend Aristocrats Index at <http://us.spindices.com/documents/methodologies/methodology-sp-500-dividend-aristocrats.pdf>

The SPATI partial covered call strategy requires that each equity call option in the hypothetical portfolio be held to maturity, generally the third Friday of the following month.

After the settlement of the expiring call option, a new at-the-money call option expiring in the next month is then deemed written, or sold, a transaction commonly referred to as a “roll.” The strike price of the new call option is the strike closest to the price of the underlying equity that it is written on at 4:00pm ET on roll date.

The SPATI Index employs a partial covered call strategy. That is, the long equity and the short call option positions are not held in equal notional amounts. The short position in the call option will be written on a notional value of less than 20% of the underlying equity such that it is “covered” by some subset of the long equity component.

Index Series Value and Return

Index Calculation

The SPATI Index is calculated by Cboe Exchange, Inc. every 15 seconds for the respective components of the Cboe S&P 500 Dividend Aristocrats Target Income Index Monthly Series portfolio. The SPATI Index is calculated as follows:

$$SPATI_t = SPATI_{t-1}(1 + R_t)$$

Where R_t is the rate of return at time t of the covered S&P 500 Dividend Aristocrats portfolio. This rate includes ordinary cash dividends paid on the subset of stocks in the covered S&P 500 Dividend Aristocrats Target portfolio that trade “ex-dividend” on that date.

On each trading day excluding reconstitution dates, the daily gross rate of return of the SPATI equals the weighted average change in the value of the components of the covered S&P 500 Dividend Aristocrats portfolio, including the value of ordinary cash dividends payable on component stocks underlying the S&P 500 Dividend Aristocrats Index portfolio that trade “ex-dividend” on that date, as measured from the close in trading on the preceding trading day.

$$R_t = \sum_{i=1}^n \omega_{it-1} R_{it}$$

Where, ω_{it-1} is the weight of the stock at time $t-1$, R_{it} is the return of the stock at time t , and n =number of stocks in the S&P 500 Dividend Aristocrats Index.

On each trading day excluding reconstitution dates, ω_{it} is calculated as

$$\omega_{it} = [\omega_{it-1} * (1 + R_{it})] / \sum_{i=1}^n \omega_{it-1}(1 + R_{it})$$

The gross daily rate of return for each stock is equal to:

$$1 + R_{it} = (S_t + Div_t - PO_i C_t) / (S_{t-1} - PO_i C_{t-1})$$

In this equation, S_t is the value of the stock at time t , Div_t represents the ordinary cash dividend payable on the stock if the stock has traded “ex-dividend” at date t , PO_i is the percentage of the portfolio overwritten set on the previous roll date, and C_t is the mid-price of the written call option. S_{t-1} is the closing mid-price of the stock on the preceding trading day and C_{t-1} is the closing mid-price of the written call option on the preceding trading day.

Rebalancing

Annual Reconstitution: The SPATI Index has a stock portfolio constituent membership that is reviewed once a year, with changes effective after the close of the last business day of January. The reference date for such additions and deletions is the Friday prior to the reconstitution date. On the reconstitution date the index’s option portfolio will be closed and reestablished at the next option roll date.

Quarterly Rebalancing: The constituents of the SPATI Index are re-weighted to equal weight quarterly, effective after the close of the last business day of January, April, July and October. The reference date for such re-weightings is five business days prior to the last business day of the re-weighting month.

On reconstitution and rebalance dates:

$$\omega_{it} = 1/n \text{ where } n = \text{number of stocks in the S\&P 500 Dividend Aristocrats Index.}$$

Rolls

Monthly Rolls: The SPATI Index has an option portfolio constituent membership that is rolled on the third Friday of each month at 4:00pm ET. On the last business day, the intrinsic value of the expiring option is realized as a loss offsetting gain in the underlying stock position and a new option is sold at the bid price at 4:00pm ET.

On roll dates, the return for each stock is equal to:

$$1 + R_{it} = (S_t + Div_t - PO_i C_t) / (S_{t-1} - PO_i C_{t-1})$$

Where t = roll

On roll dates PO_i is calculated as:

$$PO_i = \text{Min}[20\%, [3.0\% + E(Div_{SP}) - AD_T] / AP_t]$$

Where:

$E(Div_{SP})$ = the annualized expected dividend yield of the S&P 500 Index between the previous reconstitution date T and the next reconstitution date $T+1$

$$AD_T = 4 * \sum_{i=1}^n \omega_{it-1} Div_{iRoll}$$

$$Div_{Roll} = \frac{\text{Next expected Quarterly Dividend}}{S_{Roll}}$$

$$AP_{Roll} = 12 * \sum_{i=1}^n \omega_{it-1} CP_{Roll}$$

$$CP_{Roll} = \frac{\text{Premium received from written call option}}{S_{Roll}}$$

Corporate Actions

For constituent stocks where a delisting, acquisition or any other corporate action resulting in the deletion of the stock from the underlying S&P 500 Dividend Aristocrats Index, the stock will be deleted from the SPATI Index at the same time as it is deleted from the S&P 500 Dividend Aristocrats Index.

In case of a spin-off, both the parent and the spin-off entity will be removed from the SPATI Index after the first day of regular way trading.

In case of an existing index constituent being acquired by another index constituent, the existing constituent is deleted from the SPATI Index on the effective date of acquisition.

For corporate actions such as delisting, acquisition or any other corporate action, including spin-offs, resulting in the deletion of the stock from the underlying index, the index buys back the corresponding option position at the closing offer price the day prior to the index corporate action effective date.

For corporate actions where the shares of a constituent are reduced resulting in a reduction in the weight of that constituent, the index buys back the proportionate number of contracts at the closing offer price on the day prior to the corporate action effective date.

For corporate actions where the shares of a constituent are increased resulting in an increase in the weight of that constituent, the index sells the proportionate number of contracts at the closing offer price on the day prior to the corporate action effective date.

For all other corporate actions, no adjustment is made to the existing options position. This includes, but is not limited to, stock splits/consolidation, rights offerings, share updates and special dividends. For example, in the case of a split or consolidation of a constituent, the option shares, strike price and/or the option multiplier would be adjusted automatically in a corresponding manner by the OCC to account for the corporate action. No other adjustment would be necessary by the index.

Valuation

To value the component Options that comprise the SPATI Index, market prices are used. When market prices are not available a model based valuation service offered by Cboe Exchange, Inc. is used.

For model based valuations, Cboe Exchange, Inc. constructs an implied volatility surface from listed option prices by applying the SABR model. The SABR model is a stochastic volatility model, which attempts to capture the volatility smile in derivatives markets. The name stands for "stochastic alpha, beta, rho", referring to the parameters of the model, introduced by Hagan et. al., as an attempt to model the volatility surface and capture the empirically observed dynamic behavior of the smile. Valuations are calculated for the options on the roll dates and for the official close of Cboe Exchange, Inc. each trading date.

The Cboe Exchange, Inc. may utilize a third-party valuation service to value the options.

Index Construction

The Index Calculation Agent is responsible for gathering information for the option components and applying the methodology to the SPATI Index.

Valuation and Equations

The Index Calculation Agent is responsible for determining an evaluated value for each component option and associated equation in the SPATI Index.

Calculation and Dissemination

The Index Calculation Agent is responsible for compiling, calculating, maintaining and disseminating the values of the indexes. Calculation will occur once a day upon the official close of Cboe Exchange, Inc. trading hours.

Index Dissemination

Index levels are available through the Cboe Global Markets website www.cboe.com/Index, major quote vendors (see codes below), numerous investment-oriented websites, and various print and electronic media.

Index	Bloomberg	Reuters
Cboe S&P 500 Dividend Aristocrats Target Income Index Monthly Series	SPATI <Index>	.SPATI

Disclaimer

Options involve risk and are not suitable for all investors. Prior to buying or selling an option, a person must receive a copy of Characteristics and Risks of Standardized Options. Copies are available from your broker or from The Options Clearing Corporation at www.theocc.com. The information in these materials are provided for general education and information purposes only. No statement within these materials should be construed as a recommendation to buy or sell a security or to provide investment advice. Supporting documentation for any claims, comparisons, statistics or other technical data in these materials is available by contacting Cboe at www.cboe.com/Contact. The SPATI Index (the "Index") is designed to represent proposed hypothetical options strategies. The actual performance of investment vehicles such as mutual funds or managed accounts can have significant differences from the performance of the Index. Investors attempting to replicate the Index should discuss with their advisors possible timing and liquidity issues. Like many passive benchmarks, the Index do not take into account significant factors such as transaction costs and taxes. Transaction costs and taxes for strategies such as the Index could be significantly higher than transaction costs for a passive strategy of buying-and-holding stocks. Investors should consult their tax advisor as to how taxes affect the outcome of contemplated options transactions. Past performance does not guarantee future results. Parameters relating to past performance of strategies discussed are not capable of being duplicated. All information for the Index prior to its launch date is backtested to calculate how the Index might have performed based on the methodology that was in effect on the launch date. Backtested performance information is purely hypothetical and is provided solely for informational purposes. Back-tested performance does not represent actual performance and should not be interpreted as an indication of actual



Cboe® S&P 500 Dividend Aristocrats Target Income Index Monthly Series

performance. No representation is being made that any investment will or is likely to achieve a performance record similar to that shown. It is not possible to invest directly in an index. Cboe Exchange, Inc. calculates and disseminates the Index. The methodology of SPATISM is the property of Cboe Exchange, Inc. Cboe® is a registered trademark and Cboe Global MarketsSM and SPATISM are service marks of Cboe Exchange, Inc. S&P 500® is a registered trademark of Standard & Poor's Financial Services, LLC and has been licensed for use by Cboe Exchange, Inc. Financial products based on S&P indices are not sponsored, endorsed, sold or promoted by Standard & Poor's, and Standard & Poor's makes no representation regarding the advisability of investing in such products. All other trademarks and service marks are the property of their respective owners.

© 2018 Cboe Exchange, Inc. All rights reserved.