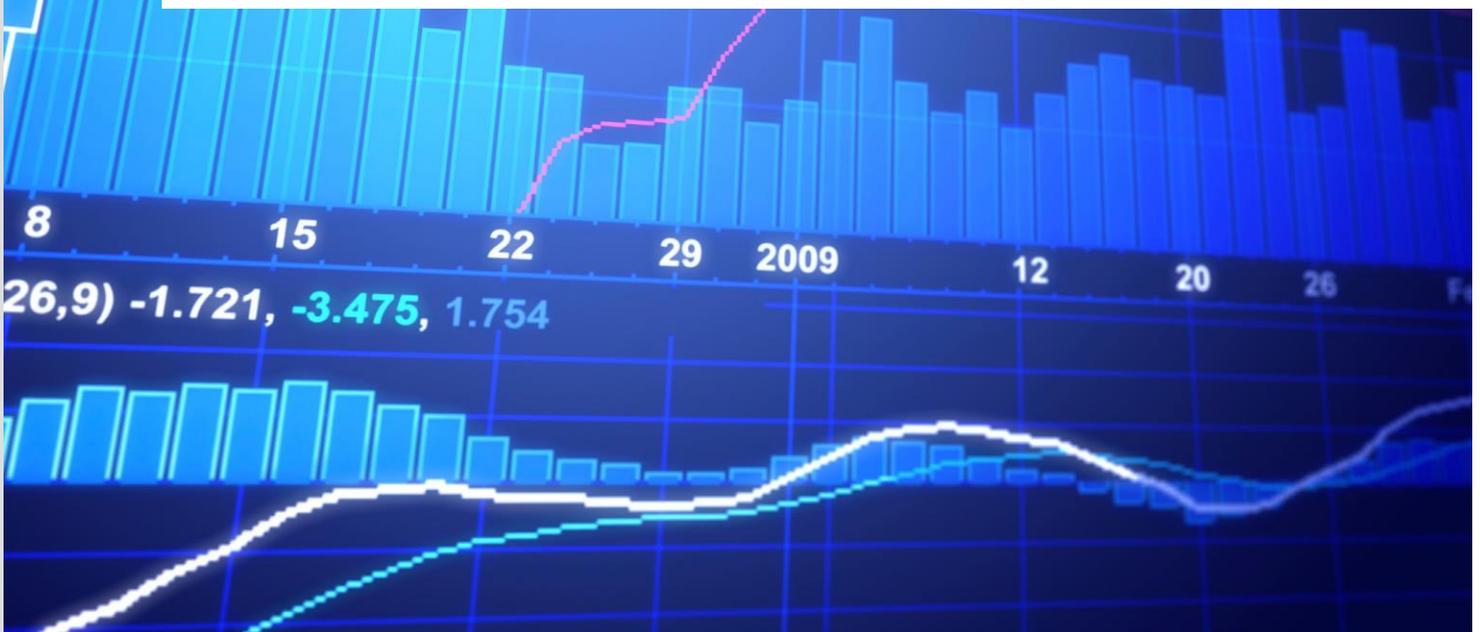


Index Methodology

As of December/2015

CBOE Strategy Benchmark Indexes

➤ The CBOE Russell 2000 30-Delta BuyWrite Index (BXRD)



THE CBOE Russell 2000 30-Delta BuyWrite Index (BXR^D)

Introduction:

The CBOE Russell 2000 30-Delta BuyWrite Index (BXR^D Index) is a benchmark index designed to track the performance of a hypothetical covered call strategy that establishes a long position indexed to the Russell 2000® Index and writes a monthly Out-of-the-Money (OTM) RUT Call option. The distinctive feature of this index is, when writing the OTM RUT Call option, the option with a delta closest to 0.30 is selected.

Index Design:

On January 19, 2001, the initial roll date of the BXR^D Index, a unit of an OTM monthly RUT Call option is written and a unit of the RUT Index is purchased to cover the liability. The Call option selected is the one with a delta closest to 0.30. All inputs used in the delta calculation using the Black formula should be the last available values before 11:00 am ET. The premium collected from writing the RUT Call option is the volume weighted average trade price between 11:30 am and 12:00 pm ET (VWAP). CBOE calculates the VWAP in two steps: first, CBOE excludes trades in the new RUT Call option between 11:30 am and 12:00 pm ET that are identified as having been executed as part of a “spread”; and second, CBOE calculates the weighted average of all remaining transaction prices of the new RUT Call option between 11:30 am and 12:00 pm ET, with weights equal to the fraction of total non-spread volume transacted at each price during this period. If there is no trade in the RUT Call option during the VWAP period, the last bid quote for the RUT Call option before 12:00 pm ET is used. As the long Russell 2000 Index position is assumed to be entered into simultaneously with the short RUT Call option position, the weighted average price of the Russell 2000 Index is calculated using disseminated values of the Russell 2000 Index based on the same time and weights used to calculate the RUT Call option VWAP. Similarly, if there is no trade of the RUT Call option during the VWAP period, the last disseminated value of the Russell 2000 Index before 12:00 pm ET is used. If the VWAP of the Russell 2000 Index and the last value before 12:00 pm ET are both not available, the last disseminated value of the Russell 2000 Index before 11:00 am ET is used.

Typically, on the third Friday (Roll Day) of every month since the initial roll date, the RUT Call option settles at 9:30 am ET against the Special Opening Quotation of the RUT Index (SOQ). The option settlement value is determined as $Call_{old\ settle} = \text{Max}(0, SOQ_t - K_{old})$. A new OTM monthly RUT Call option will be subsequently written. Following the same rule as the initial roll date, the RUT Call option selected is the one with a delta closest to 0.30 at 11:00 am ET. The premium collected from the RUT Call option would be the VWAP between 11:30 am and 12:00 pm ET, or the last bid quote for the RUT Call option before 12:00 pm ET, if there is no trade in the RUT Call option during the VWAP period. The long RUT Index position remains unchanged.

Index Calculation:

The BXR^D Index value is calculated by CBOE in real-time, every 15 seconds.

On each trading day excluding roll dates, the daily return of the index is calculated as:

$$R_t = (RUT_t + DIV_t - Call_t) / (RUT_{t-1} - Call_{t-1})$$

Where RUT_t is the Russell 2000 Index close price on day t , DIV_t is the RUT dividend, $Call_t$ is the average of the last bid-ask quote of the 30-delta OTM monthly RUT Call option before 4:00 pm ET. The terms with subscript $t-1$ stand for the values on the previous day.

On Roll Days, the return is calculated in three steps:

First, calculate the return from the previous day market close to morning settlement of the expiring option (9:30 am ET):

$$R_1 = (SOQ_t + DIV_t - Call_{old\ settle}) / (RUT_{t-1} - Call_{old\ t-1})$$

Where SOQ_t is the Special Opening Quotation of the Russell 2000 Index on the Roll Day, DIV_t is the dividend, and $Call_{old\ settle} = \text{Max}(0, SOQ_t - K_{old})$ is the settlement value of the old RUT Call option. $Call_{old\ t-1}$ is the average of the last bid-ask quote of the RUT Call option before 4:00 pm ET on the previous day.

THE CBOE RUSSELL 2000 30-Delta BuyWrite Index (BXR)

Second, calculate the return from morning settlement (9:30 am ET) to the moment when the new RUT Call option positions are deemed sold:

$$R_2 = SOQ_t / RUT_{vwap}$$

Where SOQ_t is the Special Opening Quotation of the Russell 2000 Index on the Roll Day, and RUT_{vwap} is the volume weighted average price of the Russell 2000 Index, calculated using disseminated values of the Russell 2000 Index based on the same time and weights used to calculate the RUT Call option VWAP. Note that if there are no trades in the RUT Call option during the VWAP period, the last disseminated value of the Russell 2000 Index before 12:00 pm ET is used. If the VWAP of the Russell 2000 Index and the last value before 12:00 pm ET are both not available, the last disseminated value of the Russell 2000 Index before 11:00 am ET is used.

Lastly, calculate the return from the time the new RUT Call option position is deemed sold to the market close:

$$R_3 = (RUT_t - Call_{30d_new\ t}) / (RUT_{vwap} - Call_{30d_new\ vwap})$$

Where RUT_t is the last disseminated value of the Russell 2000 Index on the Roll Day t , and RUT_{vwap} is the volume weighted average price of the Russell 2000 Index, calculated based on the same time and weights used to calculate the new RUT Call option VWAP. $Call_{30d_new\ vwap}$ is the volume weighted average trade price between 11:30 am and 12:00 pm ET of the new RUT Call option, and $Call_{30d_new\ t}$ is the average of the last bid-ask quotes for the RUT Call option before 4:00 pm ET on the Roll Day.

The product of the three parts is the total return of the Roll Day:

$$R_t = R_1 * R_2 * R_3$$

Once the daily return is calculated for every trading day, the daily index value is calculated as:

$$INDEX_t = INDEX_{t-1} * R_t$$

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, by calling 1-888-OPTIONS, or from The Options Clearing Corporation, One North Wacker Drive, Suite 500, Chicago, Illinois 60606 or www.theocc.com. The CBOE RUSSELL 2000 30-Delta BuyWrite Index (BXR) is designed to represent a proposed hypothetical yield enhancement strategy. Like many passive indexes, the BXR Index does not take into account significant factors such as transaction costs and taxes and, because of factors such as these, many or most investors should be expected to underperform passive indexes. In the construction of the hypothetical BXR index, the BXR options are assumed to be sold at a certain price on the third Friday of the month. However, there is no guarantee that all investors will be able to sell at this price, and investors attempting to replicate the BXR Index should discuss with their brokers possible timing and liquidity issues. Transaction costs and taxes for a strategy such as the BXR 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. This paper contains index performance data based on back-testing, i.e., calculations of how the index might have performed prior to launch. Back-tested performance information is purely hypothetical and is provided in this document solely for information purposes. Back-tested performance does not represent actual performance and should not be interpreted as an indication of actual performance. It is not possible to invest directly in an index. Chicago Board Options Exchange, Incorporated (CBOE) calculates and disseminates the BXR index.

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