

CBOE Research Notes

May 7, 2010



Introducing S&P 500 Dividend Index Options

Beginning May 25, 2010, CBOE will offer two different ways to trade S&P 500 Index dividends: options on the S&P 500[®] Annual Dividend Index and options on the S&P 500[®] (Quarterly) Dividend Index. Both S&P 500 Dividend Indexes reflect ordinary cash dividends paid by the companies in the S&P 500 Index (SPX[™]). Options on these indexes are cash-settled and European-style contracts.

- **S&P 500 Annual Dividend Index** options (Ticker: **DIVD**) are based on the level of the S&P 500 Annual Dividend Index.
- **S&P 500 (Quarterly) Dividend Index** options (Ticker: **DVS**) are based on *ten (10)* times the level of the S&P 500 (Quarterly) Dividend Index.

Following are answers to some frequently asked questions about options on CBOE's family of S&P 500 Dividend Index Options.

1. What are the S&P 500 Dividend Indexes?

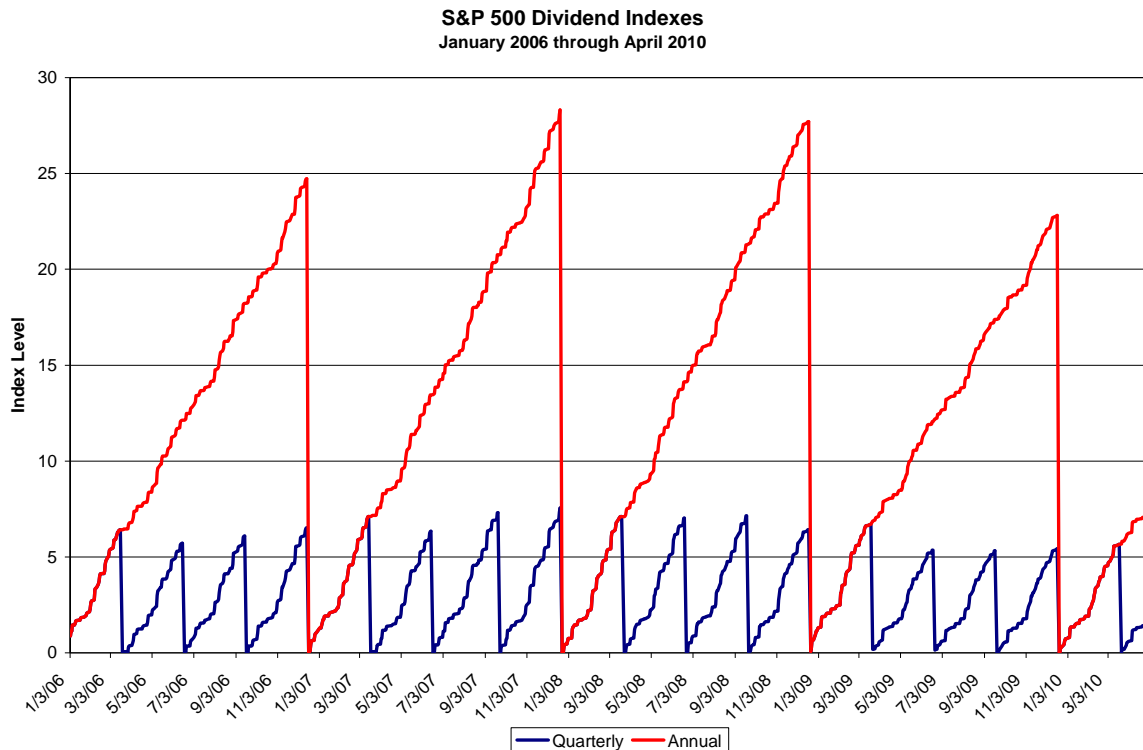
The S&P 500 Annual Dividend Index and S&P 500 (Quarterly) Dividend Index are each measures of the ordinary cash dividends¹ paid by corporations comprising the S&P 500 Index, accumulated over different "accrual" periods.

The accrual period for the Annual Dividend Index runs from the business day after the third Friday in December through the third Friday of December in the following year.

The accrual period for the Quarterly Dividend Index runs from the business day after the third Friday of a quarterly expiration month (i.e.; March, June, September or December) through the third Friday of the next quarterly expiration month.

The S&P 500 Dividend Indexes are expressed in S&P 500 Index points and are reset to zero following the end of each period. As shown in the following chart, this reset feature results in a distinctive "sawtooth" pattern quite unlike historical prices for traditional stock indexes.

¹ Ordinary cash dividends are dividends that are declared as part of a policy or practice involving payments on a quarterly or some other regular basis. Most dividends declared outside of a company's regular practices are considered "special" and are not included in the S&P 500 Dividend Index. Also, if a company decides to replace any part or all of a cash dividend with an equivalent stock dividend, the S&P 500 Dividend Index would only include the cash portion. Standard & Poor's determines on a case-by-case basis whether a particular dividend is ordinary or special, and is solely responsible for its inclusion in, or exclusion from, the S&P 500 Dividend Indexes.



Source: Bloomberg

2. How are the S&P 500 Dividend Indexes calculated?

A traditional stock index such as the S&P 500 Index is a weighted average of stock prices. The S&P 500 Dividend Indexes are weighted averages of stock price changes of S&P 500 Index companies attributable to ordinary cash dividends on ex-dividend days. The Indexes are calculated in 3 steps:

1. Standard & Poor's calculates a "dividend value" for each stock trading ex-dividend on any day during a given accrual period. The dividend value, the "per share" dividend amount multiplied by the float-adjusted shares outstanding², represents the amount by which the market capitalization of a stock drops solely as a result of its dividend.
2. S&P adds the individual dividend values and divides the total by the S&P 500 Index divisor, thereby expressing the daily aggregate dividend value in terms of S&P 500 Index points.
3. The level of the S&P 500 Dividend Indexes on any given day is the sum of the daily aggregate dividend values (in S&P 500 Index points) from the beginning of the current quarterly or annual accrual period to the present date.

² "Float-Adjusted" shares reflect only the shares available to investors, excluding shares held by a control group, founding family, another corporation, or government.

3. What am I trading when I use S&P 500 Dividend Index Options?

Let's start by explaining what you're not trading. The S&P 500 Dividend Indexes are not comprised of S&P 500 stocks with the highest dividend yields; and Dividend Index Options do not provide a way to collect the ordinary cash dividends paid by companies in the S&P 500 Index.

Importantly, S&P 500 Dividend Index Options are based on the *forward implied* level of the S&P 500 Dividend Index underlying those options, and not on the current, or "spot," index value. The forward implied level of an S&P 500 Dividend Index can be thought of as the market's best estimate of the total dividends that will accrue over a given quarterly or annual period.

CBOE plans to list 2 annual DIVD expirations (initially, December 2010 & December 2011). Near-term DIVD option prices are driven by a combination of realized dividends (the current DIVD value) and the expected dividends yet to be accrued in the annual period drive. At expiration, all of the dividends for the year have been realized and near-term DIVD option prices converge to the DIVD index value on that day.

Longer dated DIVD options are based entirely on the market's estimate of forward implied dividends; that is, the expected value of DIVD on various expiration dates in the future.

CBOE currently lists 4 quarterly DVS expirations (March, June, September and December). Like DIVD options, a combination of realized dividends (the DVS value) and the dividends that are expected over the time remaining in the quarter drive near-term DVS option prices. Longer-dated DVS option prices are based entirely on forward implied dividends, the expected value of DVS on future expiration dates.

FLEX options on both S&P 500 Dividend Indexes will be available with expirations extending 15 years.

4. How do I interpret S&P 500 Dividend Index Option prices?

Recall that the S&P 500 Dividend Indexes reset to zero and gradually increase over each quarterly or annual accrual period, yet Dividend Index Option prices reflect the forward implied levels of the indexes. At expiration, the "spot" and forward implied values converge. Early in the accrual period, however, there may be a substantial difference between these two values, resulting in option prices that could appear odd to some investors.

For example, on May 5, 2010, about five months into the annual period ending in December, the closing price for DIVD was 7.80. The following are hypothetical closing quotes for DIVD options³ expiring in December 2010:

DIVD (S&P 500 ANNUAL DIVIDEND INDEX)			7.80	
Projected Option Prices				
	Calls		Puts	
	Bid	Ask	Bid	Ask
DEC 20	2.50	2.90	0.05	0.15
DEC 21	1.70	2.10	0.20	0.40
DEC 22	1.00	1.40	0.40	0.80
DEC 23	0.55	0.85	0.90	1.30
DEC 24	0.25	0.45	1.55	1.95
DEC 25	0.10	0.30	2.40	2.80

³ DIVD Options begin trading Tuesday, May 25, 2010

At first glance, relative to the spot value of 7.80, the DIVD calls may appear expensive and DIVD puts appear to be trading well below intrinsic value. However as noted earlier, Dividend Index Options are based on forward implied index values, based on the market's estimate of dividends that are *expected* during a given accrual period.

Traders can gauge the implied forward levels of DIVD and DVS in different ways. One way involves using the option prices themselves: find the at-the-money strike price (the strike price where the put and call prices are closest) and then use the following simple formula:

$$\text{Dividend Index}_{\text{Forward Implied}} = \text{Call Price} - \text{Put Price} + \text{Strike Price}$$

Using mid-quote prices for the DEC 23 call and put, the forward implied DIVD value was 22.60 (0.70 – 1.10 + 23). Based on this underlying value, the DIVD option prices now make more sense.

Also, CBOE disseminates a series of "Indicative Values," which are *estimates* of forward expected dividends derived from SPX option prices. These values, each tied to a particular DIVD or DVS option expiration, are intended for informational purposes only:

DIVD Indicative Values:

- DVANA** - Implied Forward DIVD Indicator – 2010
- DVANB** - Implied Forward DIVD Indicator – 2011

DVS Indicative Values:

- DVMR** - Implied Forward DVS Indicator – March
- DVJN** - Implied Forward DVS Indicator – June
- DVST** - Implied Forward DVS Indicator - September
- DVDE** - Implied Forward DVS Indicator - December

The following example uses DVS options to further illustrate the difference between using spot and the implied forward level as a reference for options trading:

DVS (S&P 500 DIVIDEND INDEX - 10X)				21.50	
May 05 2010 @ 17:50 ET					
		Calls		Puts	
		<u>Bid</u>	<u>Ask</u>	<u>Bid</u>	<u>Ask</u>
JUN	50	4.40	4.80	0.0	0.2
JUN	52	2.40	2.80	0.0	0.2
JUN	54	0.45	1.00	0.0	0.2
JUN	56	0.00	0.25	1.3	1.6
JUN	58	0.00	0.15	3.2	3.6
JUN	60	0.00	0.10	5.1	5.6

Example: A trader believes that the market's estimate of SPX dividends accruing in the quarterly period ending in June 2010, as reflected in DVS option prices, is too high, and tries to capitalize on this view by selling a DVS JUN 54 call option at 0.45 (\$45). Even though the spot index value is 21.50, the forward implied value on which the options are based is 54.63 (0.73 – 0.10 + 54). Suppose the trader is correct and the value of DVS on December 18, the expiration date, is 53.80, less than a point lower than the market estimate of actual dividends. The JUN 54 call would expire out-of-the money and the trader would realize a gain of \$45 less transaction costs, despite the fact that spot DVS actually increased 150%, from 21.50 to 53.80.

5. What are some potential uses for Dividend Index Options?

S&P 500 Dividend Index Options allow investors to capture the difference between *implied* dividends, the market's best guess of future dividend payments over a certain period, and *realized* dividends – the dividends that actually are paid over that period.

Portfolio managers can use DIVD and DVS options to hedge against potential declines in dividend income from long positions in U.S. equities, which can be significant over long holding periods. According to Standard & Poor's, dividends accounted for over *one-third* of total U.S. equity returns since 1926. Just in the past 20 years, dividend income has grown 600%, totaling just under \$800 billion in 2008 and comprising about 6% of U.S. personal income⁴.

S&P 500 Index derivatives traders can use Dividend Index Options to hedge the dividend risk implicit in options and futures prices. Issuers of total-return index-linked structured products can use DIVD and DVS options to hedge the dividend exposure in their offerings.

Dividend Index Options may be used to execute dividend arbitrage strategies. In the over-the-counter market, implied dividends have historically traded at a discount to realized dividends. This so-called "dividend risk premium," which is driven by supply and demand as much as perceived risk in dividend flows, tends to compound as time to expiration increases. Investors can capitalize on the implied dividend term structure by trading DVS option calendar spreads (e.g.; buy longer dated; sell shorter dated contracts).

Dividends have also been linked with macroeconomic factors such as GDP growth, inflation and timing in the business cycle⁵. As such, investors may be able to use DIVD and DVS options to trade their views of economic recovery or continued recession, changes in the dividend policies of U.S. companies, or an expectation of future inflation.

Investors can use DIVD and DVS options to trade forward implied dividends, which might offer a compelling alternative to basic equity exposure. Between Q1 2003 and Q1 2009, implied dividends exhibited a strong correlation with equity index returns, but with lower volatility⁶. Investors need only to be concerned with the drivers of dividend growth rather than all of the risks impacting stock prices.

6. Where can I find more information on S&P 500 Dividend Index Options?

Additional information, including detailed contract specifications and historical data, may be found on the CBOE website at the following link:

www.cboe.com/DIVD

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 (the "ODD"). Copies of the ODD 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. Supporting documentation for any claims, comparisons, statistics or other technical data in this document is available by calling 1-888-OPTIONS, or contacting CBOE at www.cboe.com/Contact. Past performance is not indicative of future results. The information in this document is provided solely for general education and information purposes. No statement within this document should be

⁴ *Trading Index Dividends*, Standard & Poor's Index Research, June 2009. www.indexresearch.standardandpoors.com.

⁵ *Dividend Swaps*, J.P. Morgan: Europe Equity Derivatives & Delta One Strategy Product Note, May 18, 2008.

⁶ Based on rolling 1-year Euro Stoxx dividend swaps and Euro Stoxx index returns, see J.P. Morgan Product Note (Footnote 4).

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