

STANDARD  
& POOR'S

# INDEX MATHEMATICS

INDEX METHODOLOGY

June 2009

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# Dividend Indices

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Standard & Poor's Dividend Indices are designed to track the total dividend payments from the constituents of an underlying index. The level of the index is based on a running total of dividends of the constituents of the underlying index. The index resets to zero on a periodic basis, generally quarterly or annually. Thus, the index measures the total dividends paid in the underlying index since the previous rebalancing date. For quarterly indices, the index resets to zero after the close on the third Friday of the last month of the quarter, to coincide with futures and options expiration.

The formula for calculating the dividend index on any date,  $t$ , for a given underlying index,  $x$ , is:

$$DividendIndex_{i,x} = \sum_{i=r+1}^t ID_{i,x} \quad (1)$$

where:

- $ID_{i,x}$  = The index dividend of the underlying index  $x$  on day  $i$ .
- $t$  = The current date.
- $r+1$  = The trading date immediately following the reset date of the index.

The index dividend ( $ID$ ) of the underlying index is calculated on any given day as the total dividend value for all constituents of the index divided by the index divisor. The total dividend value is calculated as the sum of dividends per share multiplied by index shares for all constituents of the index which have a dividend going ex on the date in question. For more detail concerning the calculation of index dividends please refer to the *Total Returns Calculation* section below.

# Total Return Calculations

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In total return indices changes in the index level reflect both movements in stock prices and the reinvestment of dividend income. A total return index represents the total return earned in a portfolio that tracks the underlying price index and reinvests dividend income in the overall index, not in the specific stock paying the dividend.

The total return construction differs from the price index and builds the index from the price index and daily total dividend returns. The first step is to calculate the total dividend paid on a given day and convert this figure into points of the price index:

$$TotalDailyDividend = \sum_i Dividend_i * Shares_i \quad (2)$$

Where *Dividend* is the dividend per share paid for stock *i* and *Shares* are the index shares. This is done for each trading day. *Dividend<sub>i</sub>* is generally zero except for four times a year when it goes ex-dividend for the quarterly dividend payment. Some stocks do not pay a dividend and *Dividend* is always zero. *TotalDailyDividend* is measured in dollars. This is converted to index points by dividing by the divisor for the underlying price index:

$$IndexDividend = \frac{TotalDailyDividend}{Divisor} \quad (3)$$

The next step is to apply the usual definition of a total return from a financial instrument to the price index. Equation (4) gives the definition; equation (5) applies it to the index:

$$Total\ Return = \left( \frac{P_t + D_t}{P_{t-1}} \right) - 1 \quad (4)$$

and

$$DTR_t = \left( \frac{IndexLevel_t + IndexDividend_t}{IndexLevel_{t-1}} - 1 \right) \quad (5)$$

where the *TotalReturn* and the daily total return for the index (*DTR*) is stated as a decimal. The *DTR* is used to update the total return index from one day to the next:

$$Total\ Return\ Index_t = (Total\ Return\ Index_{t-1}) * (1 + DTR_t) \quad (6)$$

# Index Dissemination

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Index values are available on most vendor platforms. Bloomberg and Reuters tickers are as follows:

## **Tickers**

|                        | <b>Bloomberg</b> | <b>Reuters</b> |
|------------------------|------------------|----------------|
| S&P 500 Dividend Index | SPXDIV           | .SPXDIV        |

*For further information, please refer to Standard & Poor's Web site at [www.indices.standardandpoors.com](http://www.indices.standardandpoors.com).*

# S&P Contact Information

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