S&P DOW JONES INDICES
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Understanding the S&P 500® Daily RC2 8% Index

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SUMMARY

The S&P Risk Control 2 Indices (S&P RC 2 Indices) represent the next generation of risk control indices. These indices replace a portion of the cash component of the index that is part of the standard risk control strategy with a liquid bond index. In the S&P 500 Daily RC2 8% Index, the allocation to U.S. government bond futures allows the potential for enhanced returns (see Exhibit 1). The S&P Risk Control 2 Indices assign positive weights to either the underlying equity index, the S&P 500, or the underlying bond index, the S&P 10-Year U.S. Treasury Note Futures Index, based on the target volatility. This approach takes into consideration the volatility of both indices and the correlation between them.

THE S&P 500 DAILY RC2 8% INDEX COMPONENTS

The S&P 500 Daily RC2 8% Index allocates between three components:

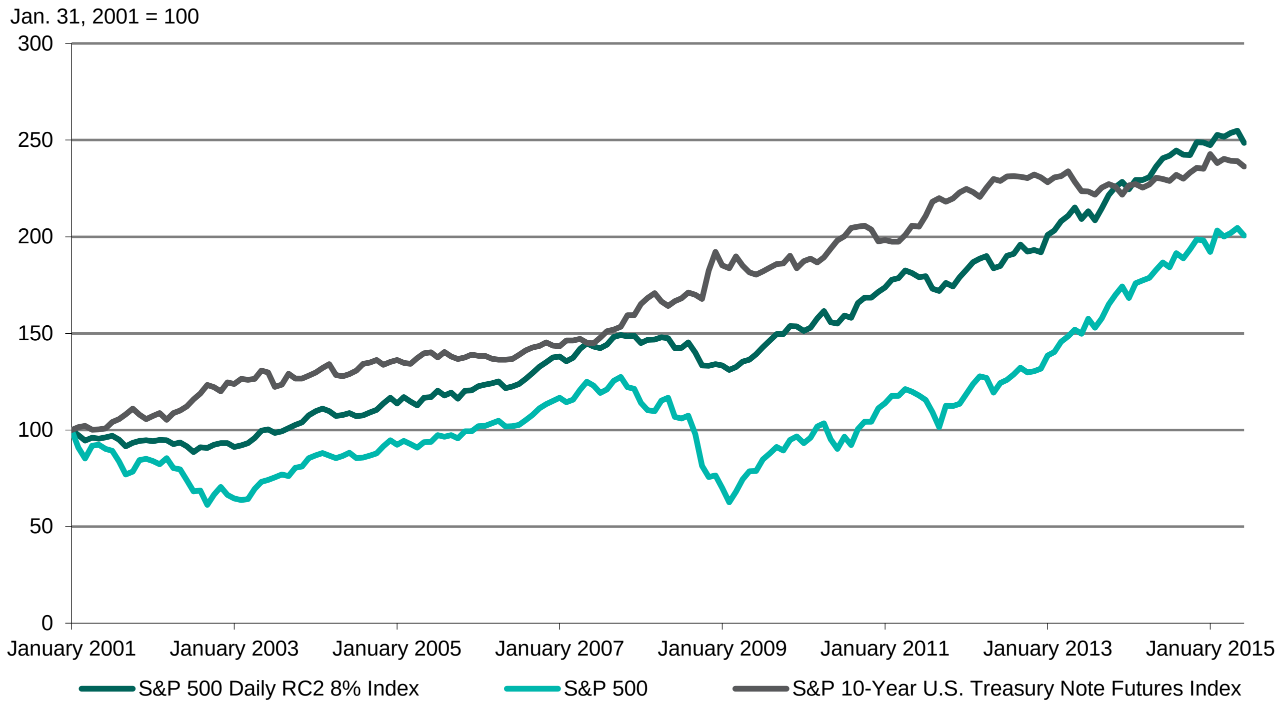
- The targeted equity component—S&P 500 Total Return;
- The bond component—S&P 10-Year U.S. Treasury Note Futures Total Return Index (ticker: SPUSTTTR); and
- A cash constituent.

Combining these components, the index is designed to provide dynamic exposure to a hypothetical blended portfolio. The S&P 500 seeks to track the returns of large-cap U.S. equities. For the bond component, the index uses the S&P 10-Year U.S. Treasury Note Futures Index, which is designed to track the performance of a single futures contract: the 10-Year U.S. Treasury Note futures contract, which is traded on the Chicago Board of Trade. On a quarterly basis, the Treasury note futures in the S&P 10-Year U.S Treasury Note Futures Index "rolls" its long position from the near-month futures contract. The cash constituent of the index reflects interest daily at a blended rate, which is a composite rate of interest based on the three-month and two-month LIBOR rates that are intended to track the overnight rate of return of a notional position in a three-month time deposit in the U.S. dollar.

HOW THE INDEX WORKS

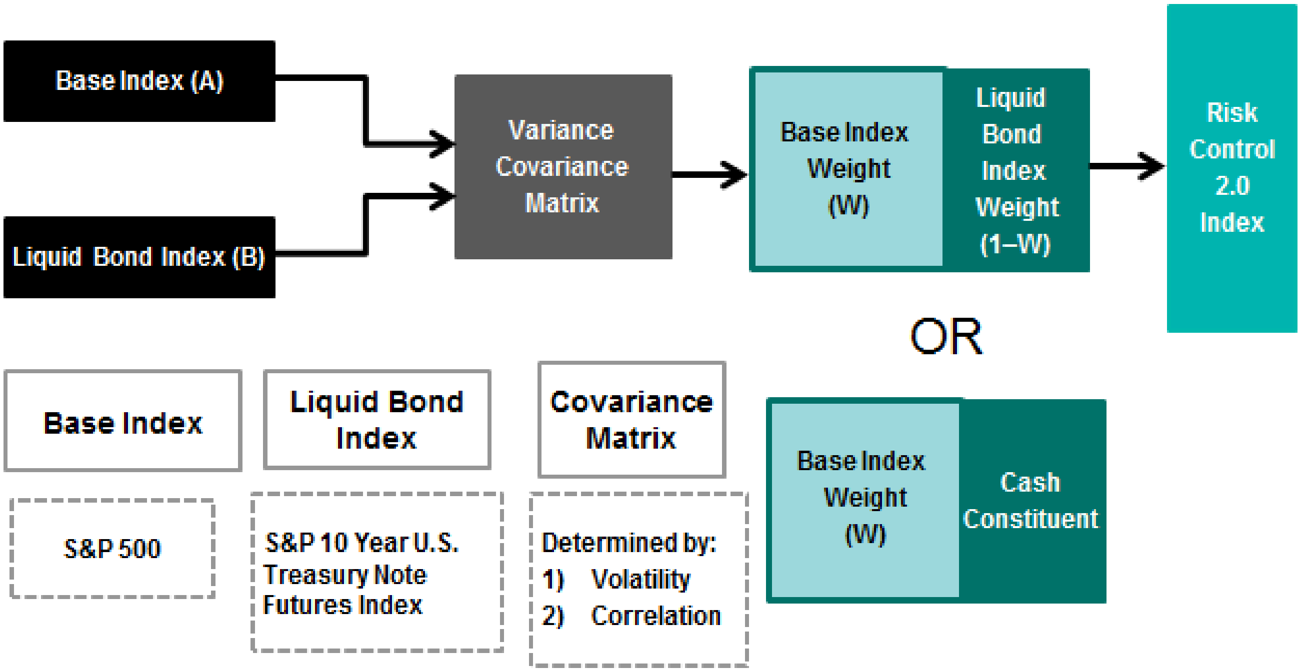
The S&P 500 Daily RC2 8% Index is not a static basket; rather, the equity and bond exposures are adjusted on a daily basis based on historical realized volatilities and the correlation of the underlying indices, targeting a volatility level of 8%. Exhibit 2 illustrates how the S&P 500 Daily RC2 8% Index uses dynamic asset allocation to target a stable level of volatility in all market environments by taking advantage of the negative relationship between stock and bond market performance. This asset allocation strategy should thus exhibit a smoother path of asset returns. The allocation between the underlying indices is derived from the overall volatility of a portfolio of two assets determined by three components: individual volatilities of the assets, correlation between the assets, and the weights allocated to each asset (see Exhibit 3). The index works by blending the stock and bond components targeting an 8% volatility, subject to a minimum exposure of 0% and a maximum exposure of 100% for each constituent.

Exhibit 1: Comparing Wealth Curves



Source: S&P Dow Jones Indices LLC. Data as of June 30, 2015. Index performance based on total return in U.S. dollars. Parameters for the S&P RC 2 Indices: Exponentially weighted volatility. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosures at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Exhibit 2: S&P Risk Control 2 Indices Methodology

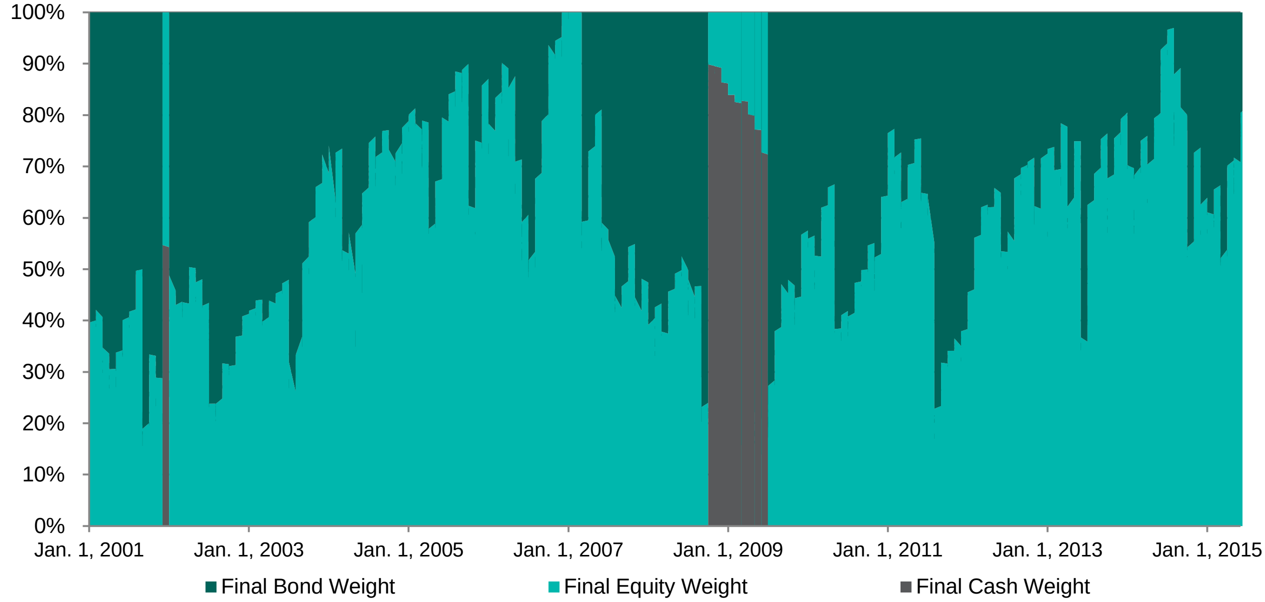


Source: S&P Dow Jones Indices LLC. Chart is provided for illustrative purposes. Parameters for the S&P RC 2 Indices: Exponentially weighted volatility.

The S&P 500 Daily RC2 8% Index uses the standard deviation of each underlying index's natural log returns to measure historical volatility with exponential weighting. As volatilities and correlations tend to vary over time, the older the returns are, the less relevant they are for revealing what the covariance structure was at that time; thus, exponential weighting is the preferred method, as it assigns higher weights to the natural log returns closer to the rebalancing date.

The index allocates equity exposure ranging from 0% to 100%, with the remaining exposure allocated to the bond index. Exhibit 3 shows how the exposure of the two components changes over time. The light teal section that represents the equity allocation tends to make up a fairly substantial portion of index exposure (final equity weight). The exhibit shows that the allocation has reached as high as 100% (in November 2006, which was a period of low market volatility) down to 10.13% (in October 2008, which was a period of relatively high market volatility). The dark teal area represents the bond index (final bond weight) and the gray is cash (final cash weight). Based on this graph, it is clear that cash only comes into play in extreme scenarios, such as during the financial crisis in 2008. Because a solution has usually been available historically, the index is typically "fully vested." The cash is designated as a "safety valve" for the index; that is, the sleeve where funds can be moved if no suitable combination of the equity and bond indices can be found. However, there are certain circumstances in which the bond exposure is set to zero, as it not always possible to find an allocation in which the portfolio historical volatility is equal to the target volatility of 8% based on the volatilities and correlation between the underlying indices.

Exhibit 3: S&P 500 Daily RC2 8% Index Allocation



Source: S&P Dow Jones Indices LLC. Data as of June 30, 2015. Index performance based on total return in U.S. dollars. Parameters for the S&P RC 2 Indices: Exponentially weighted volatility. Past performance is no guarantee of future results. Chart is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosures at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

For example, when each underlying index has a historical volatility that is greater than the target volatility of 8%, the correlation will determine whether or not a combination of the two indices can yield a historical volatility equal to the target volatility. In an extreme case in which the two underlying indices are perfectly correlated, the index would be unable to create a portfolio with a historical volatility equal to the target volatility of 8%. In such a case, the index would allocate an equity exposure that is less than 100%, which would leave the remaining unallocated, as the bond index exposure would be at zero.

Another scenario could involve both of the individual historical volatilities being lower than the target volatility of 8% but equal to each other. As each constituent has a volatility that is lower than the target volatility of 8%, and there is no leverage, any combination of the indices would result in a portfolio with a volatility that is lower than 8%, regardless of the correlation between the two indices. In this situation, the index would allocate 100% to the equity index.

PERFORMANCE CHARACTERISTICS–S&P RC 2 INDICES

Exhibit 4 provides detailed, comparative overviews of the S&P 500 Daily RC2 8% Index and the S&P 500 from Jan. 31, 2001, to June 30, 2015.

Exhibit 5 shows that drawdowns are significantly reduced in the second generation of risk control indices compared to the S&P 500. With the 8% volatility target, the maximum drawdown is cut by 75%, and it takes less time to recover for the S&P RC 2 Indices—it took 37 months for the S&P 500 to recover to the pre-financial crisis level, versus nine months for the S&P 500 Daily RC2 8% Index.

Exhibit 4: Full Period and 10-Year Statistical Summary of the S&P 500 and the S&P 500 Daily RC2 8% Index								
Summary stats	From Jan 31, 2001 to Jun 30, 2015		Past 10 Years		Past 5 Years		Past 3 Years	
	S&P 500 Daily RC2 8% Index	S&P 500	S&P 500 Daily RC2 8% Index	S&P 500	S&P 500 Daily RC2 8% Index	S&P 500	S&P 500 Daily RC2 8% Index	S&P 500
Annual Return (%)	6.53	4.95	7.91	7.89	10.03	17.34	10.02	17.31
Maximum Drawdown (%)	-12.8	-50.9	-12.8	-50.9	-6.7	-16.3	-2.3	-3.5
Annual Volatility (%)	6.32	15.01	6.28	14.74	6.22	12.00	5.80	8.55
Annual Skewness	-0.10	-0.19	-0.14	-0.24	-0.13	-0.01	-0.10	-0.07
Monthly Alpha against the S&P 500 (%)	0.37	-	0.39	-	0.16	-	-0.06	-
T-Stats Of Alpha	4.74	-	4.54	-	1.48	-	-0.59	-
Beta to the S&P 500	0.35	-	0.37	-	0.47	-	0.64	-
Correlation with the S&P 500	0.83	-	0.86	-	0.90	-	0.94	-
Sharpe Ratio	0.81	0.24	1.07	0.45	1.61	1.44	1.72	2.02

Source: S&P Dow Jones Indices LLC. Data from Jan. 31, 2001, to June 30, 2015. Index performance based on monthly total return in U.S. dollars. Parameters for the S&P RC 2 Indices: Exponentially weighted volatility. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosures at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

Exhibit 5: Drawdown History–January 31, 2001 to June 30, 2015		
Category	S&P 500 RC2 8%	S&P 500
No of 5% Drawdowns	3	3
Maximum Drawdown	-12.8	-50.9
Peak Date	October 2007	October 2007
Trough Date	February 2009	February 2009
No. of Months From Peak to Trough	16	16
Recovery Length (No. of Months)	9	37
Second Largest Drawdown	-10.8	-38.9
Peak Date	-	-
Trough Date	July 2002	September 2002
No. of Months From Peak to Trough	18	20
Recovery Length (No. of Months)	10	40
Third Largest Drawdown	-6.7	-6.6
Peak Date	April 2011	March 2012
Trough Date	September 2011	May 2012
No. of Months From Peak to Trough	5	2
Recovery Length (No. of Months)	4	3

Source: S&P Dow Jones Indices LLC. Data from Jan. 31, 2001, to June 30, 2015. Index performance based on monthly total return in U.S. dollars. Parameters for the S&P RC 2 Indices: Exponentially weighted volatility. Past performance is no guarantee of future results. Table is provided for illustrative purposes and reflects hypothetical historical performance. Please see the Performance Disclosures at the end of this document for more information regarding the inherent limitations associated with back-tested performance.

CONCLUSION

The S&P Risk Control 2 Indices seek to provide a means to measure volatility in underlying indices and limit volatility to a tailored level, while still allowing exposure to the index's returns. Historically, risk control indices have shown protection in bear markets, while reflecting participation in some of the upswings. Both academic research and these indices' historical performance have shown that this has been a result of the indices' predefined risk levels and their stock-bond correlation. The historical index performance has also shown that a low volatility exposure strategy can be effective in delivering the target volatilities and associated returns.

ABOUT S&P DOW JONES INDICES

S&P Dow Jones Indices LLC, a part of McGraw Hill Financial, Inc., is the world's largest, global resource for index-based concepts, data and research. Home to iconic financial market indicators, such as the S&P 500® and the Dow Jones Industrial Average™, S&P Dow Jones Indices LLC has over 115 years of experience constructing innovative and transparent solutions that fulfill the needs of institutional and retail investors. More assets are invested in products based upon our indices than any other provider in the world. With over 1,000,000 indices covering a wide range of assets classes across the globe, S&P Dow Jones Indices LLC defines the way investors measure and trade the markets. To learn more about our company, please visit www.spdji.com.

PERFORMANCE DISCLOSURES

The S&P 500 Daily RC2 8% Index (the "Index") was launched on June 3, 2011. The S&P 10-Year U.S. Treasury Note Futures Index (the "Index") was launched on March 28, 2011.

All information presented prior to the launch date is back-tested. Back-tested performance is not actual performance, but is hypothetical. The back-test calculations are based on the same methodology that was in effect when the index was officially launched. Complete index methodology details are available at www.spdji.com. It is not possible to invest directly in an index.

S&P Dow Jones Indices defines various dates to assist our clients in providing transparency on their products. The First Value Date is the first day for which there is a calculated value (either live or back-tested) for a given index. The Base Date is the date at which the Index is set at a fixed value for calculation purposes. The Launch Date designates the date upon which the values of an index are first considered live; index values provided for any date or time period prior to the index's Launch Date are considered back-tested. S&P Dow Jones Indices defines the Launch Date as the date by which the values of an index are known to have been released to the public, for example via the company's public Web site or its datafeed to external parties. For Dow Jones-branded indices introduced prior to May 31, 2013, the Launch Date (which prior to May 31, 2013, was termed "Date of Introduction") is set at a date upon which no further changes were permitted to be made to the index methodology, but that may have been prior to the Index's public release date.

Past performance of the Index is not an indication of future results. Prospective application of the methodology used to construct the Index may not result in performance commensurate with the back-test returns shown. The back-test period does not necessarily correspond to the entire available history of the Index. Please refer to the methodology paper for the Index, available at www.spdji.com for more details about the index, including the manner in which it is rebalanced, the timing of such rebalancing, criteria for additions and deletions, as well as all index calculations.

Another limitation of using back-tested information is that the back-tested calculation is generally prepared with the benefit of hindsight. Back-tested information reflects the application of the index methodology and selection of index constituents in hindsight. No hypothetical record can completely account for the impact of financial risk in actual trading. For example, there are numerous factors related to the equities (or fixed income, or commodities) markets in general which cannot be, and have not been accounted for in the preparation of the index information set forth, all of which can affect actual performance.

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