# Methodology of SSE Dividend Equity and Bond Risk Parity Index

SSE Dividend Equity and Bond Risk Parity Index selects high dividend stocks and high coupon bonds as underlying assets, and adopts a risk-parity model for equity and bond asset allocation, providing investors with a stable return asset allocation solution.

## 1. Index Name and Index Code

- Index Name: SSE Dividend Equity and Bond Risk Parity Index
- Shortened Name: SSE Dividend Equity and Bond RP
- Index Code: 950346

## 2. Base Date and Base Index

The base date is June 30, 2017. The base value is 1000.

## 3. Index Composition

The index is comprised of two assets. Each asset is represented by a corresponding index as the following table shows:

| Asset Class | Sub-Class Index | Index Code |
|---|---|---|
| Equity | SSE Dividend Total Return Index | H00015 |
| Bond | SSE 0-5 Year High Grade Credit Bond Coupon Strategy Index | 950317 |

## 4. Weights Calculations

The portfolio risk is defined as $\sigma_P = \sqrt{w^T \sum w}$, where $w$ represents the weight vector and $\sum$ is the covariance matrix of the portfolio over the past 6 months. The risk contribution of the $i^{th}$ asset can be expressed as:

$$TRC_i = w_i \frac{\partial \sigma_P}{\partial w_i} = w_i \frac{(\sum w)_i}{\sqrt{w^T \sum w}} = \frac{w_i . (\sum w)_i}{\sigma_p}$$

According to the risk parity strategy, the risk contribution of each asset is equal, that is, $TRC_i = TRC_j$, which is equivalent to solving the optimal solution

of the following objective function. Then the weights of sub-class assets can be obtained.

$$\mathrm{f(w)} = \mathrm{argmin} \sum_{\mathrm{i=1}}^{\mathrm{n}} \sum_{\mathrm{j=1}}^{\mathrm{n}} \left(\mathrm{w_i}.(\sum \mathrm{w})_{\mathrm{i}} - \mathrm{w_j}.(\sum \mathrm{w})_{\mathrm{j}}\right)^2$$

Where $\boldsymbol{w}^T \mathbf{1} \leq \mathbf{1}$, $w_i \geq 0$.

## 5. Index Calculations

The index is calculated as the following formula:

$$\mathrm{Index}_t = \mathrm{Index}_{t_0} \times \sum_{i=1}^{2} [W_{t_0}^i \times \left(1 + \mathrm{Sub-Class\ \ Asset\ \ Return\ \ Rate}_{[t_0,t]}^i\right)]$$

Where $W_{t_0}^i, \mathrm{i} = 1,2$ represent the initial weights of the assets at effective date of regular adjustment. $\mathrm{Sub-Class\ \ Asset\ \ Return\ \ Rate}_{[t_0,t]}^i, \mathrm{i} = 1,2$ represent cumulative return rates of the assets from effective date of regular adjustment to any future trading day t. Please refer to CSI Index Calculation and Maintenance Methodology for further details.

## 6. Constituents and Index Weights

### 6.1 Constituent's Periodical Review

The index is adjusted and rebalanced monthly and the adjustment will be effective as of the next trading day after the 2nd Friday of March, June, September and December.

### 6.2 Ongoing Review

When special events occur, CSI will review the index accordingly. Please refer to CSI Index Calculation and Maintenance Methodology for further details.