

# SEF Entropics Cat Bond Fund – Class I

## Performance<sup>1</sup>

|      | Jan | Feb | Mar | Apr   | May    | Jun   | Jul   | Aug   | Sep    | Oct | Nov | Dec | YTD    |
|------|-----|-----|-----|-------|--------|-------|-------|-------|--------|-----|-----|-----|--------|
| 2017 |     |     |     | 0.05% | -0.06% | 0.20% | 0.43% | 0.56% | -5.53% |     |     |     | -4.42% |

## Manager's Notes

Three large natural catastrophes in September affected the Fund's performance. Two land falling major hurricanes in USA and the Caribbean and an earthquake in Mexico are likely to have triggered cat bonds. Year 2017 is set to be one of the costliest years ever for the re/insurance industry and for the cat bond market, with Swiss Re Cat Bond Total Return Index delivering -6.57% during the month. The losses raise expectations of increasing risk premiums when insurance policies and cat bonds are renewed.

As a result of price adjustments in the secondary market regarding cat bonds expected to have losses and from expectations of increased future risk premiums, the yield to maturity increases this month. The increased yield to maturity is to some 60% caused by expected losses, and the uncertainty regarding these, to cat bonds still paying full coupons but are valued below par and to some 40% by the demand for higher risk premiums following losses.

One bond in the portfolio, sponsored by Heritage P&C, could face losses from hurricane Irma, and is currently being valued at 62.50. Pre-Irma, the position was 2.73% of the portfolio allocation.

Another bond in the portfolio, that also could face a loss, but from from Hurricane Maria, is sponsored by SCOR Global P&C, and is currently valued at 36.55. The bond's portfolio allocation was 3.12% Pre-Maria. However, there is considerable uncertainty regarding this bond, as AIR Worldwide has estimated insured losses at \$40 - \$85 billion, whereas the insured losses, according to RMS, are only estimated to \$15 - \$30 billion, which is not likely to trigger the bond. This uncertainty is reflected in secondary market pricing.

The Chiapas earthquake is highly likely to fully have triggered a bond issued by the World Bank. Mexico has formally filed for payments from the bond. In the secondary market the bond is priced as it should face total loss. The position was 0.89% of the portfolio prior to the event.

As risk premiums are set to increase we will make our best to capture the opportunities

## Portfolio Summary<sup>2</sup>

|                                    |        |
|------------------------------------|--------|
| Yield to Maturity                  | 8.42%  |
| NAV                                | 95.58  |
| YTD                                | -4.42% |
| Last 3 months                      | -4.60% |
| Last 12 months                     | -      |
| Since Inception 2/16/15            | -4.42% |
| Volatility                         | -      |
| Active Share                       | 58.3%  |
| AUM (SEK M)                        | 215    |
| Cash Allocation                    | 10.3%  |
| Number of Cat Bond positions       | 56     |
| Solvency Capital Requirement (SCR) | 12.25% |

## Maturity Profile

|                           |       |
|---------------------------|-------|
| 1) 0Mo - 6Mo Maturity     | 8.1%  |
| 2) 6Mo - 1.0Yr Maturity   | 18.9% |
| 3) 1.0Yr - 2.0Yr Maturity | 9.5%  |
| 4) 2.0Yr - 3.0Yr Maturity | 45.2% |
| 5) > 3.0Yr Maturity       | 18.3% |

## Annualized Risk Characteristics

|                         |        |
|-------------------------|--------|
| Portfolio Expected Loss | 1.96%  |
| VaR (90%)               | 4.79%  |
| VaR (95%)               | 11.17% |
| VaR (99%)               | 31.30% |
| TVaR (99%)              | 37.10% |
| Probability of 0% PL    | 55.97% |

## Historical Event Loss Analysis–

| Most severe impact on the portfolio <sup>4</sup> |       |
|--|-------|
| 1906 San Francisco CA                            | 23.9% |
| 1926 Great Miami                                 | 18.4% |
| 1812 New Madrid MO                               | 12.1% |
| 1700 Cascadia Subduction                         | 10.6% |
| Zone Offshore of BC                              |       |
| 1994 Northridge CA                               | 10.4% |

## Asset Class Financial Indicators<sup>5</sup>

|                           | Annualized Volatility | Sharpe Ratio |
|---------------------------|-----------------------|--------------|
| Swiss Re Cat Bond Total   | 6.73%                 | 1.01         |
| Return Index              |                       |              |
| Barclays BA US High Yield | 8.49%                 | 0.92         |
| TR index value unhedged   |                       |              |
| S&P 500                   | 18.35%                | 0.48         |

## Portfolio Risk Profile<sup>3</sup>

| Wind Exposure      |               | Earthquake Exposure |               |
|--------------------|---------------|---------------------|---------------|
| Australia          | 1.58%         | Australia           | 0.22%         |
| Canada             | 0.00%         | Canada              | 0.35%         |
| Europe             | 3.17%         | Europe              | 0.00%         |
| Japan              | 1.77%         | Japan               | 1.14%         |
| US Midwest         | 0.38%         | US Midwest          | 0.66%         |
| US Northeast       | 14.65%        | US Northeast        | 0.43%         |
| Florida            | 23.95%        | US Southeast        | 1.57%         |
| Other US Southeast | 12.46%        | US Southwest        | 0.00%         |
| US Southwest       | 8.34%         | California          | 17.54%        |
| US West            | 2.95%         | Other US West       | 2.79%         |
| Mexico             | 4.69%         | Mexico              | 0.20%         |
| Other              | 0.31%         | Other               | 0.86%         |
| <b>Total</b>       | <b>74.24%</b> | <b>Total</b>        | <b>25.76%</b> |

## Wind Distribution Overview



## Earthquake Distribution Overview



## Responsible investment key indicators<sup>6</sup>

| Purpose                | % of positions | Problematic Entities  | % of positions |
|------------------------|----------------|-----------------------|----------------|
| Disaster relief        | 2.3            | Sponsor               | 0.0            |
| General property       | 64.9           | SPV domicile          | 0.0            |
| Insurer of last resort | 20.0           | Collateral currency   | 0.0            |
| Public services        | 4.3            | Collateral instrument | 0.0            |
| Mutual Insurance       | 3.3            |                       |                |
| Problematic purposes   | 0.0            |                       |                |

## SEF Entropics Cat Bond Fund

SEF Entropics Cat Bond Fund is an actively managed fund that invests in global reinsurance risks covering natural catastrophes (Cat Bonds). The Fund aims for a good risk adjusted return with very low correlation to other asset classes and good diversification among the underlying insurance risks.

The web site [en.entropics.se](http://en.entropics.se) provides additional information on the SEF Entropics Cat Bond Fund, including the Key Investor Information Document (KIID) and the Fund's prospectus.

Historical return is not a guarantee for future returns. The money you invest in the Fund can increase as well as decrease and you cannot be certain to have the full investment returned.

|                               |                        |
|-------------------------------|------------------------|
| Share Class                   | I                      |
| Currency Class                | SEK                    |
| Base Currency                 | SEK                    |
| Inception                     | 4/10/17                |
| Performance Target            | 4-6%                   |
| Fund Domicile                 | Luxembourg             |
| Fund Structure                | SICAV                  |
| Fund Regulation               | UCITS                  |
| Liquidity                     | Fortnightly            |
| Minimum Initial Investment    | SEK 20 000 000         |
| Minimum Subsequent Investment | SEK 5 000 000          |
| Current Entry Charge          | 0%                     |
| Performance fee               | 10%                    |
| Hurdle Rate                   | SSVX90, High Watermark |
| Management Fee                | 0.70%                  |
| ISIN Number                   | LU1138351504           |

## Entropics Asset Management

Entropics Asset Management AB is the first Scandinavian asset manager specialised in Cat Bond investments.

The team has broad experience from asset management, underwriting, meteorology, underwriting, cat claims settlements and financial mathematics.

Entropics is licensed by and under the supervision of *Finansinspektionen*, the Swedish Financial Supervisory Authority.

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## Information on Risk Metrics

The risk measure for Cat Bonds and thus for Cat Bond portfolios is closely linked to reinsurance terminology. The following terms describe, briefly, the central portfolio risk metrics used by Entropics.

**PRINCIPAL ( $\Pi_0$ ):** The Principal of a Cat Bond is the amount deposited as collateral for the bond's reinsurance commitment. A portfolio's total principal ( $\Pi_0$ ) is the total amount exposed to damage events and, thus, generating returns.

**LOSS (L) AND LOSS RATIO ( $x=L/\Pi_0$ ):** The total loss (L) is a monetary value, and to the Loss Ratio  $x=L/\Pi_0$  is a relative measure of the loss size, with a range of 0–100%.

**PROBABILITY OF ATTACHMENT ( $P_{att}$ ):**  $P_{att}$  describes the probability that a portfolio will sustain any damage at all. This probability generally increases with the number of (uncorrelated) bonds in the portfolio.

**PROBABILITY OF 0% LOSS ( $P_0$ ):**  $P_0$  is simply the probability of no loss at all and its relation to  $P_{att}$  is thus  $P_0=1-P_{att}$ .

**PROBABILITY OF EXHAUSTION ( $P_{exh}$ ):** Indicates the probability that the portfolio sustains a damage equal to the entire principal  $\Pi_0$ .  $P_{exh}$  is only notable for portfolios with few bonds. For portfolios with many (uncorrelated) bonds, it is all but infinitesimal.

**EXPECTED LOSS (EL):** The mean loss of a Cat Bond or a portfolio of Cat Bonds. Actual losses will often be 0% (as described by  $P_{att}$ ), but losses, when occur-

ring, will often be considerably larger than EL. The loss thus in general shows considerable variation around the mean loss EL.

**STANDARD DEVIATION ( $\sigma$ ):** To express the volatility of loss around the mean EL, the standard deviation of the loss,  $\sigma$ , is used.

**VARIATION COEFFICIENT ( $\mu=\sigma/EL$ ):** The variation coefficient describes the volatility in relation to the mean loss, EL. The coefficient increases with the volatility of the portfolio.

**EXCEEDANCE PROBABILITY (EP):** Though the EL generally is low and the probability of no loss is high, actual losses have a wide spread.  $EP(x)$  is the probability that a loss is equal to or bigger than the loss ratio  $x$ . EP is usually on a yearly basis and is presented as a function of the loss ratio  $x$ .

**LOSS DISTRIBUTION ( $Q(x)$ ):**  $Q(x)$  is the probability distribution of the loss and is calculated as  $Q(x)=-EP'(x)$ .

**VALUE AT RISK (VaR):**  $VaR(Y)$  is the loss that with the probability  $Y$  is not exceeded on a yearly basis.

**TAIL VALUE AT RISK (TVaR):**  $TVaR(Y)$  is the mean of all losses exceeding  $VaR(Y)$ .

Mathematically, this means that  $TVaR(Y) = \frac{\int_{VaR(Y)}^{\infty} x \cdot Q(x) dx}{\int_{VaR(Y)}^{\infty} Q(x) dx}$

## Footnotes

1. Performance is reported by Swedbank AB and reflects the Fund's Net Asset Value after fees
2. Yield to Maturity is calculated before applicable fees. In accordance with the Solvency 2 directive, a cat bond investment is considered as an insurance risk on the asset side. The Solvency Capital Requirement, SCR (as a monetary amount) for this specific risk is calculated as a percentage of the Assets Under Management (AUM).
3. Risk distribution and profile are calculated by portfolio modelling in AIR

CATRADER, being the industry standard tool used by asset managers and re-insurers worldwide to model and analyse catastrophe bonds and other insurance linked securities.

4. The historical event loss analysis describes the loss as a percentage of the portfolio if these events were to occur today.
5. Financial key figures are based on ten years weekly data from Bloomberg.
6. A description of the RI indicators can be found at Entropics' blog: <http://en.entropics.se/blog/how-to-interpret-entropics-indicators-for-responsible-investments/>