# Tail-Risk Strategies

**A Two-Minute Guide**

A timely primer for putting the right mechanisms in place to seek protection against surges in volatility, expected and not.

## Higher Probability of Big Losses

Tail events are exceedingly infrequent in a normal curve but market tail curves are much “fatter” than normal curves meaning that tail events are much more frequent than many investors realise.

### Beware of Fat Tails and Banks of Black Swans

<table>
<thead>
<tr>
<th>EQUITY BASED</th>
<th>ASSET ALLOCATION/DYNAMIC TIMING</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MANAGED VOLATILITY</strong></td>
<td><strong>MARKET-REGIME-AWARE INVESTING</strong></td>
</tr>
<tr>
<td>Targets the purchase of low-volatility equities. These strategies offer similar returns to the equity market with significantly less drawdown risk.</td>
<td>Using a proprietary regime-timing model the market regime is identified and the asset-allocation mix adjusted to match—allocating less risky assets in higher-risk market regimes and more risky assets in safer times.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>UPSIDE PARTICIPATION</th>
<th>YES</th>
<th>YES</th>
<th>DEPENDENT ON THE CLIENT’S SELECTED VOLATILITY TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>USES DERIVATIVES</td>
<td>NO</td>
<td>COULD BE IMPLEMENTED WITH DERIVATIVES IF DESIRED</td>
<td>COULD BE IMPLEMENTED WITH DERIVATIVES IF DESIRED</td>
</tr>
<tr>
<td>STRENGTH</td>
<td>EQUITY-LIKE RETURNS OVER TIME WITH LESS VOLATILITY</td>
<td>RISK TOOL WITH ALPHA POTENTIAL</td>
<td>CLIENT CAN SET A TARGETED VOLATILITY LEVEL</td>
</tr>
<tr>
<td>DRAWBACK</td>
<td>LAGS IN HIGH BETA RALLIES; DOES NOT PROTECT IN EXTREME CASES</td>
<td>RISK OF MISTIMING THE MARKET REGIME</td>
<td>WILL NOT PROTECT AGAINST “GAP DOWNS”, WHERE STOCKS OPEN LOWER THAN THEY CLOSED THE PREVIOUS DAY</td>
</tr>
</tbody>
</table>

**Target Volatility Triggers**

Rules-based strategy that dynamically adjusts the exposure of assets within a portfolio to target a consistent level of portfolio risk. When volatility is high, exposure to equity is reduced.

---

Higher probability of big losses
**WHAT IS TAIL RISK?**

The “tail” in tail risk refers to the end sections of the bell-shaped curve that illustrates the probability distribution of events. In the context of investments, the extreme left-hand side of the bell-shaped distribution represents the lowest returns, whereas the right-hand side represents the highest returns.

The art of tail-risk protection is to asymmetrically protect against left-hand events (those which are loss making) while maintaining participation in those events on the right (which are profit making). There are a number of ways that investors can limit tail risk—including using derivatives or simply choosing sectors that are less volatile.

**TAIL RISK OR DOWNSIDE PROTECTION?**

You can think of the first and second standard deviations on the left-hand side of the tail as downside protection. By the point that you are three standard deviations beyond the mean, you are firmly in tail-risk event territory.

---

**OVERLAY MANAGEMENT THROUGH DERIVATIVES**

**OPTIMIZED BETA**

These risk parity-like approaches seek to allocate risk, rather than capital, across a portfolio. So, for example, instead of a traditional 60/40 stock/bond mix, you might target a specific risk level.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>Limited</th>
<th>Yes</th>
<th>Limited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diversifies asset risk concentration</td>
<td>Yes</td>
<td>An efficient way to own volatility as a hedge</td>
<td>Explicit downside protection</td>
<td></td>
</tr>
<tr>
<td>Leverage and duration risk</td>
<td>Reely on asset returns being negatively correlated to the VIX, which is not always the case</td>
<td>Selling the call option reduces potential upside participation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**VOLATILITY EXPOSURE MANAGEMENT**

Selective exposure to volatility can constitute an effective hedge. These strategies opportunistically invest in VIX futures when the timing makes sense.

**ZERO-PREMIUM PUT-SPREAD COLLAR**

Downside protection is provided by buying puts (limiting downside). Then the cost of this protection is offset by the cash generated from selling a call on the same trade.

---

**PROFITING FROM TAIL-RISK HEDGING?**

A dynamic volatility trading strategy using VIX futures is one tail-risk solution that potentially can. The graph below shows why a long-volatility investment is a natural tail-risk hedge. When the MSCI All-Country World Index declines sharply, as it did in 2002 and 2008, volatility, as measured by the CBOE VIX index, often tends to rise dramatically. Volatility is also mean-reverting, which adds to the appeal of owning it as a protective strategy.

Global Equity Returns and VIX Levels (Jan 1999—Nov 2013)

---

**WHAT IS TAIL RISK?**

The “tail” in tail risk refers to the end sections of the bell-shaped curve that illustrates the probability distribution of events. In the context of investments, the extreme left-hand side of the bell-shaped distribution represents the lowest returns, whereas the right-hand side represents the highest returns.

The art of tail-risk protection is to asymmetrically protect against left-hand events (those which are loss making) while maintaining participation in those events on the right (which are profit making). There are a number of ways that investors can limit tail risk—including using derivatives or simply choosing sectors that are less volatile.

**TAIL RISK OR DOWNSIDE PROTECTION?**

You can think of the first and second standard deviations on the left-hand side of the tail as downside protection. By the point that you are three standard deviations beyond the mean, you are firmly in tail-risk event territory.

---

**OVERLAY MANAGEMENT THROUGH DERIVATIVES**

**OPTIMIZED BETA**

These risk parity-like approaches seek to allocate risk, rather than capital, across a portfolio. So, for example, instead of a traditional 60/40 stock/bond mix, you might target a specific risk level.

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>Limited</th>
<th>Yes</th>
<th>Limited</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diversifies asset risk concentration</td>
<td>Yes</td>
<td>An efficient way to own volatility as a hedge</td>
<td>Explicit downside protection</td>
<td></td>
</tr>
<tr>
<td>Leverage and duration risk</td>
<td>Relies on asset returns being negatively correlated to the VIX, which is not always the case</td>
<td>Selling the call option reduces potential upside participation</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**VOLATILITY EXPOSURE MANAGEMENT**

Selective exposure to volatility can constitute an effective hedge. These strategies opportunistically invest in VIX futures when the timing makes sense.

**ZERO-PREMIUM PUT-SPREAD COLLAR**

Downside protection is provided by buying puts (limiting downside). Then the cost of this protection is offset by the cash generated from selling a call on the same trade.

---

**PROFITING FROM TAIL-RISK HEDGING?**

A dynamic volatility trading strategy using VIX futures is one tail-risk solution that potentially can. The graph below shows why a long-volatility investment is a natural tail-risk hedge. When the MSCI All-Country World Index declines sharply, as it did in 2002 and 2008, volatility, as measured by the CBOE VIX index, often tends to rise dramatically. Volatility is also mean-reverting, which adds to the appeal of owning it as a protective strategy.

Global Equity Returns and VIX Levels (Jan 1999—Nov 2013)
Past performance is not a guarantee of future results. Index returns are unmanaged and do not reflect the deduction of any fees or expenses. Index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income.

FOR INSTITUTIONAL USE ONLY. Not for use with the public.

Investing involves risk including the risk of loss of principal. The whole or any part of this work may not be reproduced, copied or transmitted or any of its contents disclosed to third parties without SSgA’s express written consent.

The information provided does not constitute investment advice and it should not be relied on as such. It should not be considered a solicitation to buy or an offer to sell a security. It does not take into account any investor’s particular investment objectives, strategies, tax status or investment horizon. You should consult your tax and financial advisor. All material has been obtained from sources believed to be reliable. There is no representation or warranty as to the accuracy of the information and State Street shall have no liability for decisions based on such information.

The views expressed in this material are the views of SSGA’s Investment Solutions Group through the period October 31, 2014 and are subject to change based on market and other conditions. This document contains certain statements that may be deemed forward-looking statements. Please note that any such statements are not guarantees of any future performance and actual results or developments may differ materially from those projected.

All the index performance results referred to are provided exclusively for comparison purposes only. It should not be assumed that they represent the performance of any particular investment.

Risk associated with equity investing include stock values which may fluctuate in response to the activities of individual companies and general market and economic conditions.

Derivative investments may involve risks such as potential illiquidity of the markets and additional risk of loss of principal. Bonds generally present less short-term risk and volatility than stocks, but contain interest rate risk (as interest rates rise bond values and yields usually fall); issuer default risk; issuer credit risk; liquidity risk; and inflation risk. These effects are usually pronounced for longer-term securities. Any fixed income security sold or redeemed prior to maturity may be subject to a substantial gain or loss. Diversification does not ensure a profit or guarantee against loss.