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Investment viewpoint

Finding the value in tail hedges

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Need to know

- Tail protection in a portfolio offers clear advantages, though the downside is the cost. The key question is whether the protection benefits outweigh the expense
- Investors need to find the right balance between the cost during benign environments and returns in periods of tail. Here we discuss our findings and our approach to building tail protection
- At 1798, we are long-term believers in the value added of left tail hedging, and we have developed a range of convex solutions that aim to benefit from tail scenarios

The value of the left tail hedge

In financial markets, events that occur far outside of expectations are often characterised as tail events. They typically increase the level of volatility in the market.

These apparently unlikely scenarios can happen both on the upside and the downside; however, when the investment community is largely positioned for asset price appreciation, the downside risk (left tail) is feared more.

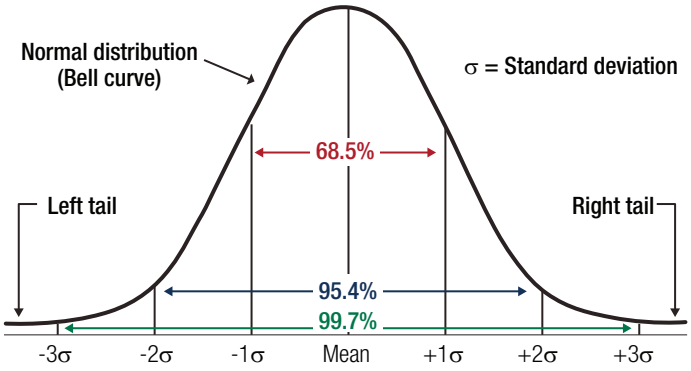
At 1798, we are long-term believers in the value added of left tail hedging, and we have developed a range of convex solutions that explicitly aim to benefit from these extreme scenarios.

Statistical definition of a tail event

When looking at a normal distribution, a tail event is typically defined as one that occurs above 3 standard deviations from the mean. They exist on the left and the right.

In a normal distribution, the probability of a tail event happening is ~0.3% (with an equal likelihood of 0.15% of it being positive or negative), which is about 1 chance out of 667 outcomes.

FIG 1. TAIL EVENTS



Source: LOIM.

The rationale for tail hedges

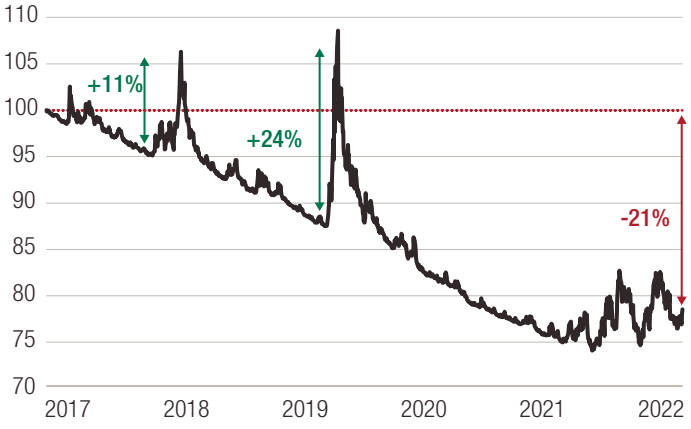
Like an insurance policy, tail protection in a portfolio offers clear advantages: diversification, risk reduction and drawdown mitigation. However, the main drawback of tail protecting strategies is their cost.

To illustrate, we can look at a very simple strategy of tail protection for a diversified portfolio that involves buying put options on equities. The graph below shows the performance of buying and rolling over a 1-year at the money (ATM) put on the S&P 500.

While the benefits in periods of market stress are clear, the negative expected return of the strategy during normal periods makes it a challenging option.

The key question is whether the protection benefits outweigh the negative expected return. In short, investors need to find the right balance between the cost in benign environments and returns in periods of tail.

FIG 2. ROLLING 1Y ATM PUT ON THE S&P 500



Source: BNP, Bloomberg, LOIM.

Case study: Compensating for the cost

To illustrate this balancing challenge, we can look at a hypothetical tail solution with different levels of monthly bleeds. How much does the tail hedge need to gain to compensate for the total insurance premium paid?

For this theoretical exercise, we look at the returns of the S&P 500 between 1999 and 2022. We define two types of environments: `benign periods' and `tail events'. We define tail events as periods with drawdowns deeper than -15% and a duration of less than 6 months. We observe 10 historical tail events, as shown in table 1.

TABLE 1: HISTORICAL S&P 500 TR DRAWDOWN DEEPER THAN -15% WITH A DURATION OF LESS THAN 6 MONTHS

Start date	End date	Number of days of the tail event	Return S&P 500 TR Index
01.09.00	21.03.01	138	-26%
17.05.02	23.07.02	46	-27%
10.10.07	10.03.08	103	-18%
05.06.08	09.03.09	190	-50%
23.04.10	02.07.10	50	-15%
31.05.11	03.10.11	88	-17%
03.10.18	24.12.18	57	-19%
19.02.20	23.03.20	24	-33%
04.01.22	16.06.22	114	-23%
16.08.22	30.09.22	33	-16%

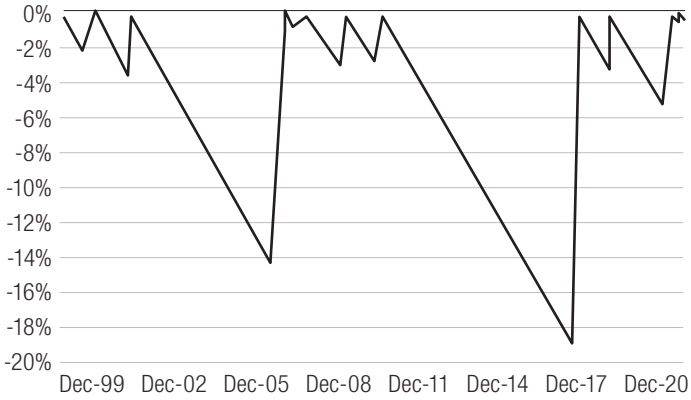
Source: Bloomberg, LOIM.

We then look at the following analysis:

For a given amount of monthly bleed during a benign period, what are the monthly returns the tail portfolio needs to deliver during the next tail period to fully offset this bleed? Results are shown in table 2.

The results of this analysis are therefore a function of the selected amount of bleed and the length of benign periods and tail events, rather than the depth of the equity market drawdown. What we aim to define is the amount that a tail portfolio needs to deliver to compensate for its cost. Note that this theoretical exercise does not account for the opportunity cost of the risk-free rate (arguably, a tail portfolio can be relatively cash-efficient).

FIG 3. THE TAIL PORTFOLIO COMPENSATES FOR ITS BLEED AFTER EACH INDIVIDUAL TAIL EVENT



Source: LOIM.

Table 2 shows the results of this analysis. We find that if investors spend 1% on protection every month, they need their tail hedge to gain ~5.8% per month, on average, during the drawdown periods.

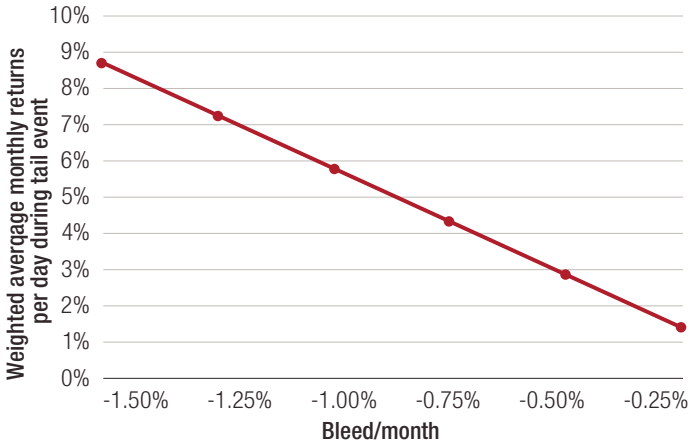
TABLE 2: AVERAGE MONTHLY RETURNS NEEDED IN TAIL EVENTS TO COMPENSATE FOR THE BLEED DURING BENIGN PERIODS

Tail events		Monthly returns needed given a monthly bleed of (%):					
Start date	End date	-0.25	-0.50	-0.75	-1.00	-1.25	-1.50
01.09.00	21.03.01	0.30	0.60	0.90	1.20	1.50	1.80
17.05.02	23.07.02	1.59	3.18	4.77	6.37	7.96	9.56
11.10.07	10.03.08	3.16	6.33	9.51	12.69	15.87	19.06
06.06.08	09.03.09	0.08	0.16	0.24	0.32	0.40	0.48
23.04.10	02.07.10	1.41	2.82	4.24	5.65	7.07	8.49
31.05.11	03.10.11	0.66	1.33	1.99	2.65	3.32	3.98
03.10.18	24.12.18	7.79	15.61	23.46	31.34	39.25	47.18
19.02.20	23.03.20	3.00	6.01	9.03	12.05	15.07	18.10
04.01.22	16.06.22	0.97	1.93	2.90	3.87	4.83	5.80
16.08.22	30.09.22	0.31	0.63	0.94	1.25	1.57	1.88
Weighted average monthly returns		1.45	2.90	4.35	5.81	7.27	8.74

Source: LOIM.

In Figure 4, we plot the results of this analysis. Tail solutions that can deliver results above the red line will more than make up for their cost. Any tail hedge delivering results below the red line will cost more than it will return. Arguably, when allocating to a tail strategy in the context of a global portfolio, investors may want to look at risk-adjusted results rather than assess on an absolute-return basis to include the diversification benefits of a tail portfolio. As such, some tail portfolios below the red line could still add value.

FIG 4. AVERAGE MONTHLY RETURN DURING TAIL EVENTS



Source: LOIM. For illustrative purposes only.

Leaving diversification benefits aside and focusing on returns, the red line establishes a level where investors should be almost indifferent to holding tail or not as the solution pays for itself. At 1798 we use different ways to design tail solutions that stand above the red line and add value to portfolios over the cycle. For example, we have been focusing on creating solutions with close to no bleed.

Allocations

Now that we have examined the cost/return balance, let us look at how to allocate to tail hedges. Investors can typically follow one of two methods:

a) **Structural allocation:** assuming tail events are extraordinary and extremely hard to predict

b) **Dynamic allocation:** assuming one can assess the best time to add protection to a portfolio

A structural allocation offers protection at all times, but can be costly. A dynamic allocation aims to reduce the cost by timing exposure, so the key risk lies in missing the event.

At 1798, we believe both strategies are meaningful and complementary, and we build solutions along both approaches. All of our strategies share a common objective to offer a risk/loss profile above the discussed red line, and a common focus: convexity.

We construct our convex strategies with the following approach:

a) **Structural allocation:** we build a portfolio of very diversified hedges and add uncorrelated carry to pay for the cost of hedges

b) **Dynamic allocation:** we screen the market for dislocations and build opportunistic “cheap hedges” with high convexity – these hedges are only available when dislocations exist

In our view, there are several ways to construct tail hedges and investors can benefit from holding a diversified basket of convex strategies to have exposure to different engines of performance. We currently articulate our tail solutions around the above-mentioned approaches.

Tail hedges at 1798

The first approach is to have a structural tail allocation in the portfolio. We believe that systematic strategies referencing liquid instruments can be an effective way to maintain some constant protection. We like the idea of coupling long tail strategies with defensive carry strategies.

In general, systematic tail strategies attempt to time the surge in volatility by identifying market patterns. In our opinion, most systematic tail hedges have two major shortcomings: 1) they tend to trigger too often based on false signals, which over the long term will bring negative performance; and 2) they fail to monetise gains after a tail event.

To address these issues, systematic strategies should aim to trade only when it matters; they should have a high trigger threshold and an embedded profit crystallisation mechanism. In practice, this approach means that these systematic hedges can be somewhat slow to react and can miss the first and last leg of the tail, but it is a trade-off worth making if it helps reduce the cost of the strategy in the long run.

Combining these long tail strategies with defensive carry strategies can help mitigate the negative cost of carry of long tail and the slow reaction described above. Defensive carry strategies need to have a positive expected return and be truly uncorrelated to traditional asset classes, even aiming to perform well in periods of stress. Such strategies exist due to dislocations in various asset classes created by flows.

The corollary to this is a solution that is well diversified across 10 to 15 sub-strategies within multiple asset classes.

The second approach, which is more tactical, is to build convex hedges using market dislocations where supply and demand imbalances offer the possibility to create cheap (almost free) protections. The trade-off is that hedges are not in place all the time, but rather used opportunistically when at their cheapest levels. The credit and derivatives markets can be very inefficient, offering fertile ground for this approach. Managers who are true specialists, who emphasise trade structuring and portfolio construction, are most likely to be successful in that space.

Both approaches are valid, in our opinion. The opportunistic solution can offer very asymmetric payoffs but is generally constrained in capacity and can be relatively illiquid. Protection in the portfolio can also vary greatly depending on market conditions. The structural allocation to systematic tail hedges can solve the liquidity and capacity issues but they have an opportunity cost. The ability to create unfunded solutions can help mitigate this drawback.

On the lookout for tail hedges

Having multiple convex strategies is attractive, as the opportunity set can evolve quickly. In the first three quarters of 2022, the MSCI World Index plummeted 26%, and US investment grade CDX credit spreads widened +58bp. That this move happened with relatively muted reaction of equity volatility seems puzzling but can be attributed to the fact that the market was expecting this correction. Therefore, investors were less invested (held more cash) and had some hedging strategies in place. Monetisation of these hedges compressed volatility.

In early 2023, our view is that while synthetic credit spreads have widened, some relative value trade in the credit space can offer asymmetric payoff. Looking at the basis between cash spreads and synthetic (CDX) spreads in US high yield suggests that we are still far from the stressed levels of 2020 and that there is still plenty of asymmetry.

FIG 5. US HIGH YIELD CASH VERSUS SYNTHETIC BASIS: STILL FAR FROM THE HIGHS OF 2020

Source: Bloomberg, LOIM.

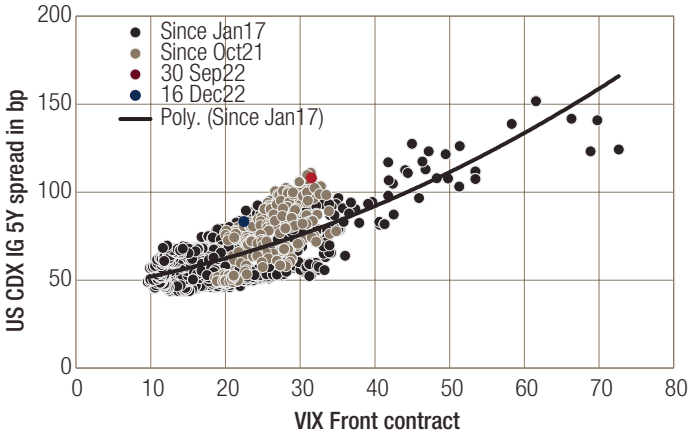
An area that we also find interesting is equity volatility, which has been lagging other asset classes and offers opportunities for hedges.

When comparing the present VIX levels against other asset classes, it looks like this measure of volatility remains low. Even if this phenomenon can be partially explained by market positioning, we think it can also be a sign of complacency and illustrates the consensus view that central banks will manage to curb inflation without destroying the economy.

Examining equity volatility on a cross-asset basis suggests that current levels are too low. For example, US investment grade spreads regression analysis indicated that when the level rises above 100bp, the VIX should be closer to 50. This dislocation has somewhat receded since September, but the VIX remains cheap relative to historical relationships with credit spreads.

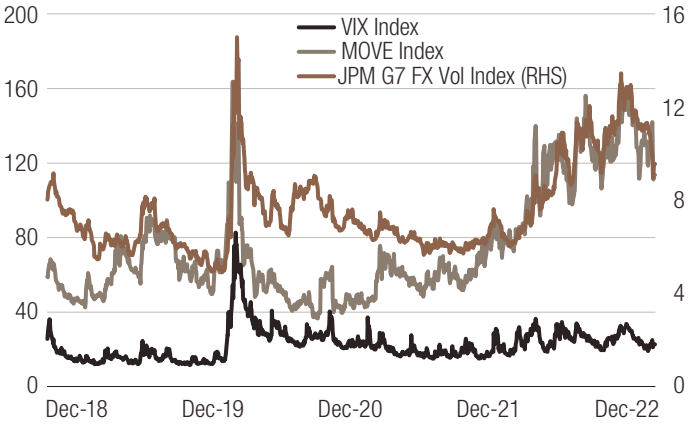
Rates volatility (measured by the Move Index) and FX Volatility (measured by the JPM G7 FX Vol Index) have both jumped since Q4 2021, while the VIX Index has struggled to break out from the 40 level.

FIG 6. CURRENT LEVELS OF CREDIT SPREADS SUGGEST THAT THE VIX IS TOO LOW



Source: LOIM, Bloomberg, as at 20 December 2022.

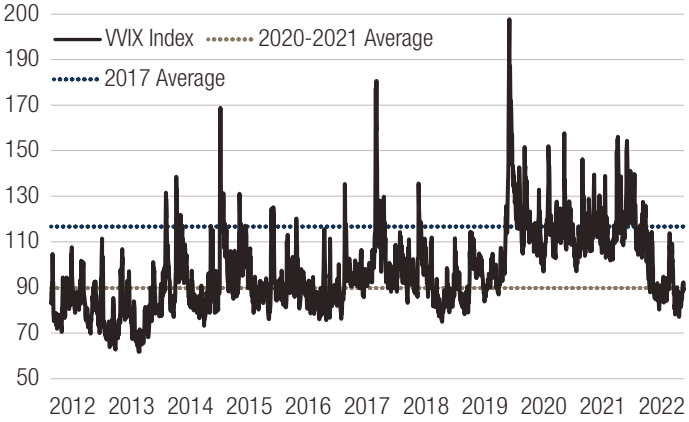
FIG 7. CURRENT LEVELS OF RATES AND FX VOLATILITY GETTING CLOSE TO 2020, WHILE THE VIX REMAINS FAR BELOW



Source: Bloomberg, LOIM.

Perhaps an even more worrying sign of complacency can be found in the VVIX Index. This measure of the expected volatility of volatility is currently trading close to its 2017 average, which seems too low given the level of uncertainty in the outlook.

FIG 8. VVIX INDEX



Source: Bloomberg, LOIM.

Conclusion

Building effective tail hedges requires compromises, but when living up to expectations tail hedges can make a huge difference to a portfolio. Holding a selection of convex strategies can increase the robustness of the overall portfolio protection. Looking for convexity across asset classes is key to finding asymmetric hedges.

At 1798, we believe we can build tail hedges with flat or very limited negative carry. We also believe current market conditions offer attractive opportunities to enter tail hedges.

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