

# Schroders TalkingPoint



## Effective downside risk management

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Since 2008, the desire to avoid significant portfolio losses has, more than ever, been at the front of investors' minds. The approach to managing downside risk, however, necessarily differs for every investor. We present some of the issues which should be considered, looking at different ways of managing downside risk, before putting these all together.

### We find that:

- Investors need to be clear about their risk tolerance for different outcomes
- Downside risk management is complex and involves understanding the nature of volatility and the costs involved
- Effective portfolio construction, as the key to improved diversification, is the first step in any risk management programme
- An approach that combines core protection with hedging tail risks can adapt to changing conditions
- Rules-based approaches to downside risk management can offer greater certainty of outcomes

### The demand for downside risk management

Since the market crisis in 2008, the demand for strategies that protect against significant negative returns has increased substantially. It is partly the fear that we are in a market environment that is unfamiliar to most market participants, with limited central bank policy options and with uncertain outcomes, that has led to this interest. Meanwhile, yields on 'safe haven' government bonds have fallen so low that there is no obvious diversifying asset. Traditional balanced portfolios have become better diversified over time through the addition of new asset classes, but increased globalisation, and the consequent interdependence of asset classes, has led to an increase in their correlation at times of crisis.

Institutional investors and pension funds are looking for new ways of limiting risks as they face greater pressure from stakeholders to be better protected in the event of a repeat of the 2008 crisis. This is evidenced by an exponential increase in the demand for volatility-based instruments such as options and volatility futures.

### Issues that investors should consider

Investors' approach to managing risk should be determined by a number of key decisions:

- Risk tolerance – it is important to be able to assess the investor's tolerance of failure to achieve his or her objectives, such as target return and the ability to cope with a large loss. This will help define how much downside protection an investor requires. Risk tolerance also needs to be continually reassessed in the light of market movements. An investor who can tolerate a 10% fall in markets may not retain the same tolerance after markets have already fallen 10%.
- Time horizon – downside risk management may not be appropriate if investors are comfortable with the short-term volatility from marking to market on a daily basis.
- Cost – investors need to assess how much they are willing to pay for protection against an event affecting their portfolio given the probability of that event occurring. Downside risk strategies have a cost that is either fixed or could, by capping upside returns, have an opportunity cost if the event does not occur. So investors need to



assess the trade-off between any potential gains and losses.

- The assets to be protected – while downside risk management is often thought to apply primarily to equity markets, in the recent liquidity crisis most asset classes became high correlated. We believe that it is more appropriate to apply such strategies at the overall portfolio level.

## Strategies for managing downside risk

### 1. Effective portfolio construction

The traditional 60% equity / 40% bond portfolio is still exposed to the systemic risk of a collapse in markets precipitated by a severe downturn. Increased globalisation and the interdependence of asset classes have led to an increase in their correlation at times of crisis, and in 2008 liquidity risk was not adequately diversified away for most investors.

Effective portfolio construction is essential in managing downside risk and the evolution of more sophisticated diversification methodologies has helped to reduce risk without materially compromising expected return. Some traditional balanced portfolios have become better diversified over time through the addition of new asset classes. This should improve the *quality* of the growth engine by mixing or replacing the equity portfolio with alternative assets that deliver equity-like returns but with lower volatility.

Many leading investors are now focusing on **risk weighting** rather than capital weighting, and on **risk premia** rather than asset classes. This should lead to better diversified portfolios that are less susceptible to drawdowns. Even risk premia, however, are subject to mispricing and a liquidity shock can cause a dramatic increase in their correlation.

We recommend that, in addition to effective portfolio construction using risk premia, investors who are sensitive to downside risk should also consider other strategies such as core downside risk protection strategies and tail risk hedges.

### 2. Core protection

Core protection is designed for normal market conditions and provides a positive pay-off in moderate corrections. Core strategies are low cost and are typically spread strategies which involve buying one instrument and selling another simultaneously to reduce the cost of the protection. Examples of core protection include:

- **Put spread** – buying a put option and simultaneously selling another put option with a lower strike price. This will provide protection for falls above the price at which protection was sold but will offer no additional support for much deeper corrections. Put spreads should be considered in situations where volatility has already spiked but where there is a risk that the market continues to sell off. This would offer investors the opportunity to add protection at a lower cost, while the already elevated levels of volatility suggest that the probability of a more pronounced downturn is limited. The risk is of a more severe correction, that would see the loss from the protection that has been sold overwhelming the gains from the protection that was purchased.
- **Collar** – buying a put option and selling a call option to fund the protection. The strategy is outright long protection and will outperform during a crisis, however the capped upside can cause severe underperformance if the market rallies sharply. Collars should be considered when equities appear expensive and large upside gains are believed to be limited. The strategy will do well at the beginning of a correction and when the trend to the downside is strong, although the upside cap makes collar strategies more sensitive to bear market rallies.
- **Rolling calendar collar** – in its simplest form the rolling calendar collar involves buying a long-dated put option and funding the purchase by selling a succession of short-dated call options. By selling short-dated call options the strategy benefits from the time decay on the call. Additionally, the probability that the call is exercised over the one-month time frame is low, reducing the risk of losses on the upside cap. Rolling calendar collars are useful in a normal market environment where the risk of a sharp rally is low.

### 3. Tail risk protection

Tail risk hedges are designed to provide significant absolute gains during extreme market corrections. Tail risk strategies exhibit a negative correlation to risk assets; consequently these assets have gained popularity amongst investors as an alternative source of diversification. However, the biggest drawback for tail risk strategies is the cost of maintaining the exposure. Put simply these strategies offer portfolio insurance but the upfront premium that must be paid can be significant. There are specific volatility-based instruments to provide tail risk protection.

- **Buying put options** – provides a large pay-off during a crisis. The disadvantage is the upfront premium which can lead to a meaningful performance drag for a buy and hold strategy. Moreover, put options are sensitive to the movements in the underlying equity index and the time to maturity. The value of the option erodes with the passage of time and a significant fall in the underlying index may be required to offset the losses incurred as the option approaches expiry.
- **Volatility (VIX) futures** – exchange-traded futures on implied volatility indices such as the VIX index are the most commonly traded volatility instrument. Periods of market stress are often associated with a spike in volatility and, as a result, buying volatility futures can hedge against a fall in markets. But there are also limitations to holding these instruments. In order to maintain a constant exposure to volatility, the futures contracts are rolled at expiration. During calm markets the volatility futures curve is upward sloping, where the price of long-dated volatility is higher than short-dated volatility and as a consequence the investor is exposed to a roll cost. This cost can be significant and damaging to returns. Additionally, volatility is mean reverting and high levels of volatility cannot be sustained for an extended period.
- **Volatility options (VIX Options)** – a long volatility position is established by buying a call option. The maximum loss is limited to the premium outlay; however, this outlay can be high and reflects the slope of the volatility futures curve as well as the supply and demand dynamics for the options.
- **Third party indices** – to overcome the high costs of holding volatility instruments a number of third party indices have been developed to provide exposure to volatility at much lower costs. These indices are based on a set of rules that determine the allocation to volatility futures. They can provide a way to mitigate the disadvantages of volatility futures although no single approach holds the answer.
- **Variance swaps** – provide exposure to future realised variance and, like volatility futures, they exhibit a negative correlation with risk assets. In addition, variance swaps can magnify the returns during periods of market stress.

Because the systematic purchase of tail risk protection can be costly, a tactical approach is inherently appealing. The time available to make a profit through the tactical management of options or volatility futures can be very short since, by its very nature, a crisis does not tend to endure and may reverse quickly. Therefore tail strategies must be opportunistically applied. A framework for when to apply tail protection is essential.

### 4. Rules-based approaches

We have discussed taking a dynamic approach, but there are also systematic approaches that can be applied to portfolios. Rules-based strategies offer protection that is permanently embedded and that can insure against severe market falls. These strategies involve trading decisions that are not based on active judgment but on the signal from a rule that is triggered by the prior performance of the asset. They can be suitable for investors who prefer approaches in which cause and effect can be easily identified. They contain elements of both core and tail strategies.

- **Volatility cap strategies** – set a maximum 'acceptable' level of volatility and reduce market exposure when the volatility of the portfolio exceeds this level. Volatility caps are often used as a tool to reduce, or give more certainty to, the hedging costs associated with guaranteed products.

Volatility cap strategies have typically been successful in meeting their objective of limiting volatility and may result in reduced drawdowns in the case of a sustained market sell off. Although market exposure is unlikely to be fully restored during any rebound, the volatility-capped portfolio will typically start from a higher valuation base than a portfolio that lacks this mechanism for derisking.

- **Constant Proportion Portfolio Insurance (CPPI)** – dynamically allocates between a growth portfolio and risk-free assets in order to target a guaranteed minimum level of return. CPPI can deliver some exposure to a growth strategy as well as capital protection. However, the cost of this insurance can be that participation in any capital growth is limited. The outcome of a CPPI strategy can be affected by several factors including: 1) the degree of leverage to the growth asset 2) the time to maturity 3) changes in interest rates 4) a deterioration in the quality of the safe asset. Costs are associated with rebalancing, managing the gap risk and the quality of the bond portfolio used to construct the floor.

## 5. Tactical asset allocation (TAA)

This is a market timing strategy that allocates actively between different asset classes. This means increasing or decreasing exposure to various asset classes in response to changes in economic and financial conditions. TAA is usually based on a combination of quantitative and fundamental inputs but ultimately depends on the skill of the manager, and on the efficacy of his or her process, so as to enable a quick and accurate response to changing conditions.

TAA can add flexibility to a strategic portfolio and can potentially limit some of the downside risk in a prolonged cyclical downturn and reduce the risk of being exposed to elevated valuation levels.

## Putting it all together

We propose a rigorous and diversifying approach to downside risk management through effective portfolio construction in combination with core protection and tail risk strategies, rules-based strategies or TAA. This requires a clear understanding of many factors, such as the investor’s risk tolerance and time horizon, so as to be able to use the most appropriate and cost effective strategies available.

### Three levels of risk management



Source: Schroders

Investors need to decide what risks they are concerned about: whether it is the risk of moderate but persistent falls (and therefore a core protection strategy is required) or the risk of very large market falls (in which case tail risk protection is more appropriate).

Or perhaps an investor is sensitive to both risks, in which case they might consider allocating a portion of their risk budget to a basket of conditioned strategies to hedge tail-risks, thereby improving diversification, and allocating another part of their risk budget to core protection strategies.

The manager must be aware of the cost of running these strategies, how to access them and the hidden risks – and have in place robust risk management systems and an effective operational platform.

## Appendix: Glossary

**Collar:** a derivative strategy that may limit the profit potential if the underlying asset rises, but results in a limited loss if the underlying asset falls. It is a combination of holding the underlying asset, a put option and a call option. Buying a put option means that if the asset price falls below the agreed 'strike' price, the holder can sell at the strike price and thus limit the fall. A call is the reverse: selling the option to another party to buy the asset at a strike price above the current value. Selling the option earns a premium, but if the asset price rises above the strike the rest of the upside is lost.

**Constant Proportion Portfolio Insurance (CCPI):** a dynamic strategy which maintains an exposure to the potential upside of a risky asset (such as equities) while providing a capital guarantee against downside risk. A 'floor' value is set (the threshold which the investor does not want the value to fall below) and the portfolio manager maintains a position in a riskless asset (cash or government bonds), together with a leveraged position in the risky asset. The portfolio is continuously rebalanced by shifting between the risky and riskless assets depending on market behaviour. Ideally, the portfolio value will grow over time, allowing greater allocation to the risky basket, while if the value falls, the investor may need to sell a portion of the risky assets in order to safeguard the floor.

**Derivative:** a financial contract between two or more parties that derives its value from another asset.

**Downside risk:** the potential loss that could be sustained as a result of a market decline.

**Futures contract:** an exchange-traded agreement to buy or sell a financial instrument at a specified price on a stated date.

**Gap risk:** the risk that an investment's price will change from one level to another without trading between these levels. Usually such movements occur when there is bad news which causes a stock's price to drop from the previous day's closing price.

**Hedge:** a transaction that offsets the risks of an asset or portfolio. Hedging is usually implemented through a derivative.

**Marking to market:** settling or reconciling changes in the value of futures contracts on a daily basis.

**Option:** confers upon the holder the right but not the obligation to buy (call) or sell (put) an underlying asset, currency or commodity at an agreed price on or before a specified date.

**Risk premium:** the return in excess of the risk-free rate of return that an investment is expected to yield. An asset's risk premium is a form of compensation for investors who tolerate the extra risk.

**Swap:** a derivative in which counterparties exchange benefits of one party's financial instrument for those of the other's. The benefits in question depend on the type of financial instruments involved. The five most common types of swaps are: interest rate swaps, currency swaps, credit swaps, commodity swaps and equity swaps.

**Strike price:** the stated price per share for which underlying stock may be purchased (in the case of a call) or sold (in the case of a put) by the option holder upon exercise of the option contract.

**Tail risk:** a form of portfolio risk that arises when the possibility that an investment will move more from the mean than the normal pattern.

**VIX Index:** the Chicago Board of Options Exchange Market Volatility Index. It is a weighted blend of prices for a range of options on the S&P 500 index and provides a measure of investors' expectations of stockmarket volatility over the next 30 day period. By buying options on the VIX index, the portfolio manager can hedge against volatility.

**Volatility:** a measure of the uncertainty of an investment, usually calculated using standard deviation of returns on an annual basis.

**Volatility futures curve:** shows the difference between volatility futures prices at different maturities.

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