EXECUTIVE SUMMARY:

After global equity markets bottomed during the global financial crisis, the rebound rally was fairly consistent. With only a few brief exceptions, market volatility levels stayed well below historical levels. During the recovery, market participants’ memories of the carnage of 2009 were even starting to fade—until the latter part of 2015, that is. In the present rocky market environment, some investors now find themselves holding more risk than they can tolerate. Others are looking to enhance traditional static allocation with more dynamic behaviour so as to protect previous gains.

Sudden market losses can leave a lasting scar on the track record of a portfolio. While market volatility can make the investor’s journey less comfortable, this volatility is a symptom rather than the problem. The real culprit is a fall in portfolio value, as it can take considerable time to recover the losses from a major correction. Here are some considerations for investors navigating more volatile market environments, wherein more conventional measures (e.g., reducing equity exposure, seeking low-volatility equity exposures, increasing the diversity of the portfolio structure) may prove inadequate. The challenge of protecting against market corrections is not met by a “one size fits all” solution. This note focuses on a framework for assessing derivative-based solutions and considerations for establishing an effective drawdown-hedging programme.

Step 1) Determine which risks and potential events are most concerning

Multi-asset portfolios with a target horizon over 20 years have a very dominant exposure to equity market risk. While other holdings in a diversified portfolio can go down, public market equity has a greater impact on absolute portfolio risk than any other due to large portfolio allocations coupled with high volatility. While other risks in a portfolio can be material and may certainly be worthy of hedging, this discussion is framed in terms of equity risks and solutions. With very subtle adaptation, this framework can also be applied to hedging risks stemming from other asset classes (e.g. nominal duration, credit, commodities, etc.).

Even in the case of equity market volatility, the investor must determine the type of correction to protect against. Consider choosing between mild corrections and major tail events:

a. Protection for milder corrections is less expensive than for major ones. Considerable cost savings come from not protecting the entire left tail of the possible return distribution.
b. Protecting for more extreme tail-risk is not only expensive, but challenging. These hedges often have strong time-decay. In other words, the value of the hedge position tends to erode consistently until a big enough correction causes it to gain materially in value. This type of hedging is similar to an expensive insurance premium. It may be necessary to take the hedge off after a big gain or risk giving it back as the market normalises. A discretionary investment mandate is often required to implement such a solution properly.

Step 2) Determine time horizon for the hedge

A tactical hedge is one that has a short time horizon, but provides fairly solid protection. In addition to a correct view on market direction, the tactical hedge also requires insight on the timing of a correction.

A strategic hedging program is one that can be maintained on an ongoing basis. For this to be possible, the hedge cannot have an excessive time-value decay characteristic. If excessive time-value decay does exist, some sort of financing trade is usually necessary to offset this loss characteristic (e.g. a put-spread collar, which protects for a portion of the downside risk — but not the full tail — and finances that protection by selling a call option which caps the upside over the protection period). Strategic hedges can accomplish several goals, including:

- reducing volatility,
- offsetting draw-downs, and
- embedding asymmetry in the potential return distribution (value can go up more than it can go down).

Step 3) Find a provider that can help specify and manage solutions

An agent working on your behalf, without conflicts of interest, should be strongly considered, along with the following characteristics:\(^1\):

- Structuring advice from skilled portfolio managers with overlay management capability is required, whether the need is driven by lack of internal capability (see also Step 4) or a regulatory imperative to involve an agent.
- The agent can offer a broad array of derivative and physical trading capabilities, also critical in formulating the right solution.
- A specialised global trading capability with 24-hour market coverage is required.

A ‘set and forget’ option trade is rarely an adequate solution as the decision on when to close out a hedge is generally more difficult than putting it on. Russell Investments is among a short list of global experts in this evolving area, and stands ready to provide advice and help with implementation to solve hedging challenges.

Step 4) Choosing the right mandate structure

Advisory client-directed implementation
These are more tactical in nature and suited to a client with a detailed understanding of the specific risks requiring hedging. A client-directed implementation structure can include an ongoing futures-based exposure management overlay in addition to periodic option-based hedging. It should be noted that not all institutional investors have a nimble enough governance structure with required delegation of discretion to in-house investment staff to function in this way.

Downside protection overlay
This mandate is meant as complementary protection to an underlying portfolio holding. In this instance, performance of the sum of the underlying holding and the protective overlay is the appropriate focus. Such protection allows for the creation of a holistic

\(^1\) In some cases, institutional investors are able to transact directly with brokers. This is more the exception rather than the norm.
protection with set floors, more precise drawdown limitations or target volatility levels. Futures and index options are suitable instruments for this purpose.

Tail-risk hedge mandates
This mandate functions on a standalone basis similar to a traditional investment mandate. Capital in the account sets the maximum possible loss over the time horizon of concern. Unlike an overlay solution, performance of this mandate is evaluated in isolation (based on the capital in the account) rather than as a complement across all other portfolio holdings. Such solutions have a performance pattern that gradually declines over most periods, but benefits from a large gain when significant market corrections occur. In some cases, hedges within a strategy may need to be suspended after a big gain until markets return to more ‘normal’ conditions. Interestingly, these strategies are related to the tried-and-true concept of diversification as they are volatile and uncorrelated to other portfolio holdings. The major difference is that they are not an existing asset class exposure, but one that is created synthetically by dynamic trading in derivatives markets.

Step 5) Choosing required hedge precision

Asset class hedges
Using a derivative based directly on the underlying asset is an obvious starting point. For example, hedge equity risk with equity index derivatives, or hedge bond risks with interest rate and credit derivatives. Asset class hedges have a direct relationship and more consistent correlation to holdings being hedged. This can be important in some countries where regulations or tax laws require a minimum correlation test to allow for favourable hedge treatment.

Cross-asset hedges
When a precise hedge for each asset class is not available, a single strategy can be used to hedge a multi-asset portfolio more holistically. Two common examples to hedge against general market risk are volatility-based derivatives and government debt derivatives (particularly in markets of major reserve currencies). Both of these exposures typically increase in value when markets correct, so it is a negative correlation play. With cross-asset hedges, the relationship between the asset and the hedge is less precise and dependent on less stable interrelationships between markets.

Step 6) Choosing suitable hedging instruments

Listed futures
Very low transaction costs make listed futures an attractive choice, and deep markets make it a candidate for very large hedging needs. Available futures contracts can be blended in proper proportions to manage an ongoing hedge to match the benchmark index underlying the equity mandates. Initial margin requirements are fairly low, so this can be a very capital efficient solution.

Equity index options
Depending on the index, liquidity can vary for equity index options. Sensitivity to market declines or volatility increases can be useful, but upfront premium and time decay are major considerations in choosing this type of hedge. Managing a basket of index options is more challenging than using futures as the sensitivity of each contract varies as the underlying markets move and diverge in performance. Accessing several markets in listed options can be a challenge for documentation and operations. To mitigate these challenges, OTC options are often more manageable.

Volatility-based instruments
The most liquid markets for volatility-based instruments are in the US and Europe—so these instruments can result in an imperfect, cross-asset hedge. Still, these can be effective components of a tail-risk hedging solution for the total portfolio. These instruments are very volatile and move dramatically within the day or the week compared to futures or index options; therefore, they are more suited to discretionary strategies run by an investment manager.
Step 7) Choosing where the hedging account fits into the statement of accounts

Generally speaking, hedge accounting should reside closest to what it is meant to protect. Equity-centric hedging should roll up in the equity composite. Multi-asset exposure management overlay should roll up at the total fund level. In a traditional Defined Benefit portfolio, or other institutional portfolios without participant level accounting considerations, reflecting the impact of hedging at the total portfolio level often makes more sense. In specific cases involving unitised investments, for example US defined contribution or Australian superannuation plans, it often makes sense to add protection in the component (or sector) fund such that the same protection can be accessed by all available multi-asset funds (e.g. a target date fund series) that need protection via a single hedging mandate.

Exhibit 1: Strategies for managing portfolio risk

<table>
<thead>
<tr>
<th>Evolution</th>
<th>Strategetically reduce equity</th>
<th>Diversify portfolio</th>
<th>Change equity risk factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Derivative overlay solutions</td>
<td>Proportional volatility reduction</td>
<td>Less correlated assets</td>
<td>Proportional volatility reduction</td>
</tr>
<tr>
<td>Primary Benefit</td>
<td>Lower expected return</td>
<td>Residual tail risk</td>
<td>Lower expected return</td>
</tr>
</tbody>
</table>

Exhibit 2: Russell Investments Overlay Solutions for Hedging Market Risk

<table>
<thead>
<tr>
<th>SOLUTION</th>
<th>MANDATE TYPE</th>
<th>INSTRUMENTS USED</th>
<th>GOALS</th>
<th>ASSET CLASS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure Management</td>
<td>Overlay</td>
<td>Futures</td>
<td>1) Holistic view of exposures 2) Direct control of exposures</td>
<td>Multi-asset</td>
</tr>
<tr>
<td>Tactical Hedging</td>
<td>Overlay</td>
<td>Options</td>
<td>1) Offset losses 2) Occasional need</td>
<td>Primarily equity</td>
</tr>
<tr>
<td>Downside Protection</td>
<td>Overlay</td>
<td>Futures and/or options</td>
<td>1) Ongoing protection 2) Reduce drawdowns 3) Improve risk-adjusted return</td>
<td>Primarily equity Works well in multi-asset context</td>
</tr>
<tr>
<td>Tail-risk Hedging Mandate</td>
<td>Isolated mandate</td>
<td>Options and/or volatility instruments</td>
<td>1) Negative correlation 2) Offset to major correction</td>
<td>Cross-asset</td>
</tr>
</tbody>
</table>
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