Spotlight
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Tail Risk Management: Why Investors Should Be Chasing Their Tails

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One of the toughest lessons from the ongoing financial crisis is that there were relatively simple ways to prepare for the string of unthinkable developments that have roiled financial markets. Hedging against worst case scenarios – commonly known as hedging against “tail risks” – has become an extremely hot topic, since the degree to which many investors were hedged has literally determined the fate of their portfolios. It turns out that hedging against tail risk, if done correctly, is a small price to pay for large potential benefits. In the following interview, PIMCO managing director Vineer Bhansali defines tail risk and describes how investors can hedge for these worst-case scenarios.

Q: What is “tail risk?”

Bhansali: Tail risk can be defined as the risk posed by events that are relatively rare, but that can have substantial impact on a portfolio. These rare events can cause outsized gains or losses for investors. We are most concerned with the tail risks that can severely damage portfolios.

Tail risk refers to the risk of potential investment outcomes on the edges of statistical return distributions. In a typical bell curve, the tallest areas near the center represent the more likely outcomes. The “tails” are where the bell curve tapers down toward the edges. Of course, there are both left tails and right tails, but having a long-term view requires special attention to the avoidance of catastrophic losses, or left tails. Because real markets don’t neatly follow the bell curve, underestimating the likelihood and severity of events on the tails can result in extreme losses.

Traditional risk management and pricing tools often underestimate the frequency and severity of these left tail events and, by extension, their detrimental effect on returns. Investors who fail to account for tail risk will likely eventually suffer, as recent events have demonstrated, and long-term returns may fail to meet their investment objectives.

Q: Is it a good time to buy hedges in the current market environment, or are tail risk hedging strategies too expensive?

Bhansali: This goes straight to the heart of a major issue: timing. One big problem for a lot of investors is that they only think of tail risk when they need it, and that is always too late. For example, right now while everything is turbulent, everybody wants tail risk or hedges against the downdraft. Mohamed El-Erian and I refer to that as “just in time” risk management, which doesn’t work. Hedging against tail events should be considered “just in case” risk management.

Some types of tail risk hedges are particularly expensive right now, such as downside hedges on equities and credit, for example.

But, the question of cost cannot really be answered in a vacuum. Investors need to examine their portfolios and determine what risks could have a major impact. The question of cost can only be answered by considering the alternatives. If a portfolio is forced to liquidate because of events like deleveraging or a need for liquidity, then no amount of hedging may be possible. But, in less severe situations when buying explicit tail risk hedges is too expensive, a manager might be able to manage tail risk with changes in portfolio construction. This could be as simple as lowering exposure to assets, such as equities and corporate bonds that carry a higher level of risk in the current market environment. At the same time, it might be an attractive opportunity to pick up so-called “right tail” options, which could have a substantial payoff in the case of a low-probability upside event. For example, purchasing a small amount of distressed credit could potentially benefit the portfolio if the economy were to make an unexpectedly swift rebound.

Of course, changing its construction might move the portfolio temporarily off the “optimal” frontier, and there may be a cost in terms of sacrificing potential returns. But over the long term, we believe it is an extremely small price to pay to hedge against potentially catastrophic tail events.

Q: If tail risk hedges are expensive in the current environment, are investors effectively shut out for now?
Bhansali: It’s true that certain hedges – downside hedges in equities, for example – are expensive right now. But other asset classes can act as tail risk hedges, and they have reached an attractive point in the unfolding crisis.

The global crisis has evolved from a fairly limited credit squeeze into a liquidity crisis into a solvency crisis, and now threatens to become a sovereign-level crisis in some cases. In a sovereign crisis, we would expect interest rates globally to remain very low, and the eventual rise in inflation would pose a significant threat to portfolios. If this is your outlook, then you may be able to obtain relatively attractively priced instruments to hedge against the inflationary implications of these sovereign crises.

Some might say that a spike in inflation is an extremely low-probability event given the recession we are facing in global economies. But, instead of focusing too much on the probabilities, we need to focus on the consequences: if an inflationary episode were to develop, the fixed-income portion of investors’ portfolios would be negatively impacted. Hedges against this scenario involve curve-steepening plays such as entering into long-dated swaptions or buying puts on long-dated Treasuries or simply underweighting the long end of the yield curve. Similarly, Treasury Inflation-Protected Securities (TIPS) are very attractively priced today compared with nominal Treasuries due to massive liquidations. So, you could buy TIPS and take out the real rate by shorting nominal Treasuries, and you would have an inexpensive hedge against rising inflation. This is typical of tail hedge availability: market dynamics often create pockets of assets that are attractively priced at least for some left tail outcomes.

Of course, that is just one example of a tail risk hedge that can be implemented in the current cycle. In many cases, some less explicit strategies can be very effective. As we mentioned earlier, prudent portfolio construction, ramping down risk exposure or purchasing cheap exposure to right tails are all viable options.

Q: How can investors predict how much tail risk hedging they need?
Bhansali: Three elements may help determine how much of a tail risk hedge a particular investor needs.

The first is how much damage to the portfolio the investor is willing to suffer, expressed as a percentage of the total assets that the investor can tolerate losing.

The second element is how much the investor is willing to spend per year on tail risk hedging, which can be expressed as the portion of the expected long-term return that the investor is willing to sacrifice in exchange for hedging. For example, if the expected long-term return of the portfolio is 8%, an investor might be willing to spend 5% of that return (i.e., 40 basis points) on tail risk hedges.

The third element of the process is to break down the risk factor exposures in the portfolio: the equity factor, the bond factor and exposure to risks such as market momentum or geopolitical events. Once you determine these factor exposures, you can look at all the different instruments in the marketplace and figure out the best combination of strategies to hedge the portfolio.

Although this process is not an exact science, we can attain valuable insight by running simulations – stress tests that show how the hedges may act under a variety of scenarios.

Q: Do investors potentially give up returns when implementing tail risk strategies?
Bhansali: Yes, they do give up returns in the short term because there's a cost to implementing hedges. But, over the long term, thinking of this as "giving up returns" is short-sighted, because these hedges could end up covering their cost by many multiples during a market crisis. So, you give up returns in the short term, but, over the long term, you have a strategy that may potentially result in excess positive returns. In the view of PIMCO, having tail risk strategies is really a potential alpha-adding strategy for a long-term investor.

Q: If tail risks are hard to predict, how can investors identify what they should be hedging?
Bhansali: It is very hard to identify in advance what – and how severe – the tail risks will be. But a key characteristic of all tails is that they spur increased correlation between asset classes and deleveraging, as good assets get sold with bad assets.

So, we find that nearly all tail risks that matter for typical investment portfolios are systemic risks in which everyone desires liquidity, but nobody is willing to provide it. By their very nature, these are macro risks because they have a very high correlation with monetary policy. So, while tail risks can be very distinct in their origins, they all tend to share the same macro risk impact on investment portfolios. This concept is important when considering how to hedge against tail risks.

Using the analogy of homeowners' insurance: you don't separately insure your jewelry or appliances, you insure the entire house and all its contents. Trying to precisely hedge against specific risks can paralyze you.

Q: If macro risk is a common feature of all tail risk, what types of hedges can be used to help hedge against tail events?
Bhansali: Macro hedges basically fall into a few categories, including equities, interest rates, currency and momentum. Within each category, there are a number of ways to implement hedges: options on broad equity market indexes such as S&P 500 futures, interest rate swaps or swaptions, foreign currency options, credit default derivatives like the CDX, and options or futures on commodity indexes. In addition, there are momentum strategies, which are not exactly options, but trend-following systems that do well when the stock market tanks or when the VIX or other volatility measures rise.

There's a fairly broad variety of asset strategy types to choose from, and because of the flexibility and liquidity in derivatives markets, each one comes with different strikes and different maturities, so in all there is a pretty rich selection of hedging instruments. Moreover, these macro markets tend to be the only markets that trade with any depth in a crisis, which makes them most valuable exactly when you need them to be.

Q: What has PIMCO learned from the current financial crisis? Have your theories been proven true?
Bhansali: The big lesson over the past year is that this crisis has led to outcomes that are no different in many ways than what we've seen before. Of course, this crisis has been far worse than anything we've seen since the Great Depression, but our theory – that these risks spur deleveraging, increased correlations between asset classes and a lack of liquidity – has proven entirely valid during this crisis. It may have been significantly greater in magnitude, but its characteristics have not been fundamentally different.

At PIMCO, we've discussed deleveraging and widening of credit spreads and the advantage of hedging against these events for quite a while. Despite all the responses that have come from policy makers, this crisis kept getting worse, which tells you that the market was so highly leveraged that no amount of triage was actually going to help or resolve the crisis easily. If anything, this has shown that it's even more important to have a systematic strategy with tail risk hedges than to depend on the government to bail you out.

Q: What is unique about PIMCO's approach to hedging against tail risk?
Bhansali: The most important part of the PIMCO approach is our forward-looking investment process. It starts with a top-down view, which really points out which risk factors – not simply assets, but risk factors – are undervalued from a forward-looking perspective. That gives us the intuition about which risk factors are attractively priced and can be used as hedges, and which risk factors are expensive and require hedging to offset.

An example is the PIMCO identification of housing as a principal risk factor three or four years ago. We don't buy or sell houses, but we were able to identify risk factors that have positive and negative correlation with the housing risk factors. So, not only could we underweight exposure to housing risk factors, but we also put hedges in place by accumulating factors that are negatively correlated with housing, such as credit hedges, underweights in corporate bonds and super-senior tranches.

The real message here is when the possibility of damage exists, it really doesn't matter how good your estimates of probabilities are or even if you have a probability. If you know that you're going to be out of business or your house is going to burn down, it doesn't really matter what the probability of that event is. You just need to protect yourself because you cannot survive that event. At the very least you need to be ready to purchase insurance if it is attractively priced, even if your neighbor is telling you that you will never need it.

Q: What are the origins of tail risk hedging and why has it not been covered in classical portfolio theory?

Bhansali: The classic example – and this is not even related to investing – is Pascal's Wager. The 15th century French scientist noted that even though there is no direct physical evidence of the existence of God, one is better off having faith that God exists than suffering the potential consequences of being a non-believer.

These types of concepts are not new and the insurance industry is the prime example. People are willing to pay relatively small premiums over time to protect against catastrophic losses that may or may not happen. The difference with financial investing is that the very unpredictable nature of these events has made them difficult to consider in financial models. So many investors have paid attention only to statistically tangible factors – historic correlations and backward-looking returns – and ignored less predictable factors.

We believe investors have to realize that the talk of tail risk is not a "fairy tail," and do something about it for their portfolios.

Q: Thanks, Vineer.

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