Viewpoint

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Burnin' Down the House: Straight Talk on Tail Risk

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Executive Summary

With market volatility and uncertainty high, ISSG Senior Investment Strategist Ralph Goldsticker discusses the trade-offs involved in hedging tail risk. He argues that there is no portfolio equivalent of fire insurance that will protect all investors at the same time for a reasonable price. Instead, investors should expect to pay a high premium to incentivize others to take on a disproportionate share of tail risk. Building on that principle, he looks at other options open to investors to manage tail risk, including doing nothing.

Black swans and tail risk seem to be on every investor's lips these days. With macro uncertainty growing and memories of the global financial crisis still fresh, institutional investors are grappling with how best to hedge tail risk for a reasonable price. We think it is important to acknowledge there is no silver bullet allowing all investors to reduce tail risk, while maintaining the upside of investing in risky assets. Instead, we believe investors should understand how tail risk hedging works, the trade-offs involved, and how the costs are determined.

First, tail risk insurance is not like fire insurance. While there is always the risk of fire, not everyone's house burns down at the same time. As a result, the risks can be diversified, and the cost of fire insurance is based upon projected losses among a certain share of policyholders.

When it comes to markets, tail risk is systemic. If your stocks drop by 25% in a market crash, so will everyone else's. Because in this situation all houses burn down at once, the risk cannot be reduced by diversification. For investors to reduce their tail risk, they must transfer it to others. As a result, the price of tail risk insurance will include a premium reflecting the price that other investors charge for bearing more than their fair share of the aggregate risk. Since no one wants to suffer the effect of a market crash, it's reasonable to assume that the price will be high.

1 The Investment Strategy and Solutions Group is part of The Bank of New York Mellon, a principal banking subsidiary of BNY Mellon.

As a result, we believe that before committing to tail risk insurance, investors should first ask themselves: am I more averse to tail risk than my fellow investors? Am I willing to pay other investors to buy the tail risk from me? And why would they be willing to buy tail risk at a price I am willing to pay? If after that, investors decide they still want to pay a premium to diminish tail risk, here are some options they might consider.

We suspect that part of the reason Treasury yields are so low now is that many investors are viewing them as safety assets.

Hold assets that go up when equity markets are going down

U.S. Treasury bonds have historically been a safety asset that goes up when equities are falling. Apart from derivatives, there aren't many other obvious candidates. If there were other assets like that, they would likely have very low expected returns. Otherwise, everyone would buy them, driving up their price, and driving down their expected return. We suspect that part of the reason Treasury yields are so low now is that many investors are viewing them as safety assets. As a result, despite their low yields, investors still find them attractive.

Some investors consider instruments linked to measures of stock market volatility such as the VIX[2] to be negatively correlated with the stock market. Volatility is viewed as a tool to hedge tail risk, because generally as the market goes down, volatility goes up. However, we believe trading volatility to hedge a portfolio is problematic. Investors cannot invest in volatility directly. Instead they need to trade derivatives such as futures or swaps. As with all derivatives, the net supply is zero. That means that for investors to take a position, they need to induce others to sell it to them. Observing the risk premium in the pricing of VIX futures, we can see that even when we look at longer-term contracts, the volatilities at which they trade are much higher than where VIX has been on average historically.

Derisk the portfolio only when risk is high

While this may be everyone's goal, the problem is that if everyone sells stocks when risk is elevated, these environments may be characterized by high expected return as well as high risk. This strategy is likely to work only for investors who are better at forecasting risk than other market participants, and for investors who can identify periods of elevated risk that have unattractive expected returns. Reducing tail risk may be less expensive for those investors because of their relative skill. Skill at forecasting tail events changes all the rules. But we believe this is not something all investors can hope to achieve. Part of the equity risk premium consists of compensation for the risk that the market frequently goes down somewhat; part is for the risk that the market can occasionally fall a great deal. If investors are most worried at a particular point in time about the market falling a great deal, an investor hedging that risk will be left with a smaller risk premium associated with the market falling only somewhat. As a result, derisking the portfolio every time risk is elevated might turn out to be an expensive strategy.

2 VIX is the ticker symbol for the Chicago Board Options Exchange Market Volatility Index, a popular measure of the implied volatility of S&P 500 index options. Often referred to as the *fear index* or the *fear gauge*, it represents one measure of the market's expectation of stock market volatility over the next 30 day period.

If the priority for investors is to earn the equity risk premium, and they can tolerate the tail risk, however painful, staying the course might be the best alternative.

Use put options on market indices

Purchasing an index put option on the stock market is a logical candidate for reducing tail risk. The protection and cost can be tailored to fit the investor's situation. The problem is that most investors want to be long puts in order to protect their portfolios against tail events. As a result, the market will set the price of puts high enough to induce some investors to sell them. In other words, the put will be priced to include a significant risk premium. This premium is evidenced by the level and shape of the implied volatility surface.[3]

As of October 12, 2011, the implied volatility of a September 2010 S&P 500 put option that was 10% out of the money was 31%.[4] The market price of the option was 7.3% of the amount to be protected.[5] Stated another way, the market price of "guaranteeing" that a portfolio will not fall by more than 10% over the next 346 days was 7.3%. An indication that the put was pricing in a risk premium is that over the last year, the volatility of the S&P 500 was 20.74%.[6] That is not an unusual situation. Since 2001, the average difference between the implied volatility of one-year, 10% out of the money S&P 500 index puts and the realized volatility over the prior 12 months was almost 4%.[7]

Take less equity risk

The equity risk premium exists (stocks are expected to outperform cash in the long run) because stocks are risky. Tail risk comes with the package. Eliminating tail risk does not eliminate all potential downside. While we can't observe the portion of the equity risk premium that is compensation for tail risk versus what is compensation for non-tail risk, it is logical to assume it is significant. As a result, after hedging the tail risk, the compensation for the remaining non-tail risk (the equity risk premium minus the cost of tail insurance) might be unattractive.

Do nothing

At the end of the day, markets determine the compensation for bearing risk. Investors might wish that the equity risk premium were higher, or the cost of tail risk insurance lower. But they must make their asset allocation decisions based on the way things are, not what they wish they were. If the priority for investors is to earn the equity risk premium, and they can tolerate the tail risk, however painful, staying the course might be the best alternative.

In sum, for investors who believe that tail events will not affect their organizations more adversely than they do others, we believe the cost of tail insurance is probably too high. Heightened concern about tail events has caused the cost of insuring against them to rise. It might be that in the new environment, the better solution is to reduce allocations to equities. However, if investors do decide to buy tail risk insurance, we think they should consider buying the minimum amount necessary to match their needs as closely as possible — and not be surprised if it turns out to be quite expensive.

3 The implied volatility surface refers to a three-dimensional grid that can be calculated to describe options' implied volatilities as a function of their strike prices and times to expiration.
4 ISSG, Bloomberg.
5 *Ibid.*
6 ISSG, Datastream.
7 ISSG, JP Morgan.

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