

DEBUNKING THE “TAIL RISK” HEDGING SALES PITCH

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Mark Twain: “It ain’t what you don’t know that gets you into trouble. It’s what you know for sure that just ain’t so.”

Introduction

At a recent Board meeting for a \$400 million public fund, an asset manager pitched the idea for a “Tail Risk Hedge” that would cost the public fund 0.5% to 0.75% of total fund returns. Further probing by the consultant led to the revelation that this product was being offered in a fund structure and it was not clear if the cost quoted included management fees or not, but our guess is that it did not. However, on talking to more pension funds and consultants, it seems that the pitch seems to have been made more broadly to clients and even shows up in articles in the Financial Times, The Economist and CNBC sound bites. Having seen a similar “scare tactic” product being pitched to pension funds by another asset manager in the 1990s (who warned of dramatic left tail risks in currencies to great success with public funds), we feel compelled, as former plan sponsor and asset manager, to debunk some of the snake oil. When even Nassim Taleb (of the Black Swan fame) starts criticizing this product, you know things have hit rock bottom. In short, the “Tail Risk” hedge is being sold as a “Cover Your Asset” Hedge, which sadly could have appeal among public fund trustees scared of being pilloried in newspapers if 2008 is repeated. The rub is that pension funds already have the ability to manage tail risk, but do not use this latitude, are not going to get tail risk hedging through a commingled fund structure as each fund is unique, and smart pension funds can actually get paid to hedge the risk of their tails as some funds learned in 2008.

What is Tail Risk Hedging?

The basic idea is that portfolios are positioned strategically to generate 8% annualized returns for say 10% annualized risk, but when markets go belly up, even a diversified portfolio can lose 20-25% in a single year. In other words, extremely bad performance events which were thought to be relatively unlikely, assuming normal distributions, occur rather frequently if the distribution is fat tailed. Tail risk is also the equivalent of experiencing a big drawdown or what we term “Yield To Fire” (or how much and for

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how long can one lose before they are fired). When this event occurs, all hell breaks loose as solvency declines, liquidity dries up, CIOs and Boards are fired and funds have to take more risk in order to achieve higher future returns. Tail risk hedging is a strategy that is meant to eliminate or minimize the occurrence of bad extreme performance events using any number of strategies, whereby the tail risk hedge will pay off when the portfolio underperforms.

The attached chart is an example of tail risk, shown most clearly by the decline of an actual pension fund's assets in the 2008 period (red line measured in billions on the left axis). The line in green, (measured in millions in green on the right axis) is the cash generated by a strategy, not called a tail risk hedge but acting like one, that produced cash inflows to the pension plan. What the chart shows is that when the pension fund assets hit the nadir, the strategy was generating the maximum amount of cash, which the client was comfortable returning when the assets recovered into 2009. The best part was the client did not pay for such a hedge, but utilized Board approved policies, standard to all plans, and good process with full transparency and daily valuations and liquidity to achieve this customized outcome.

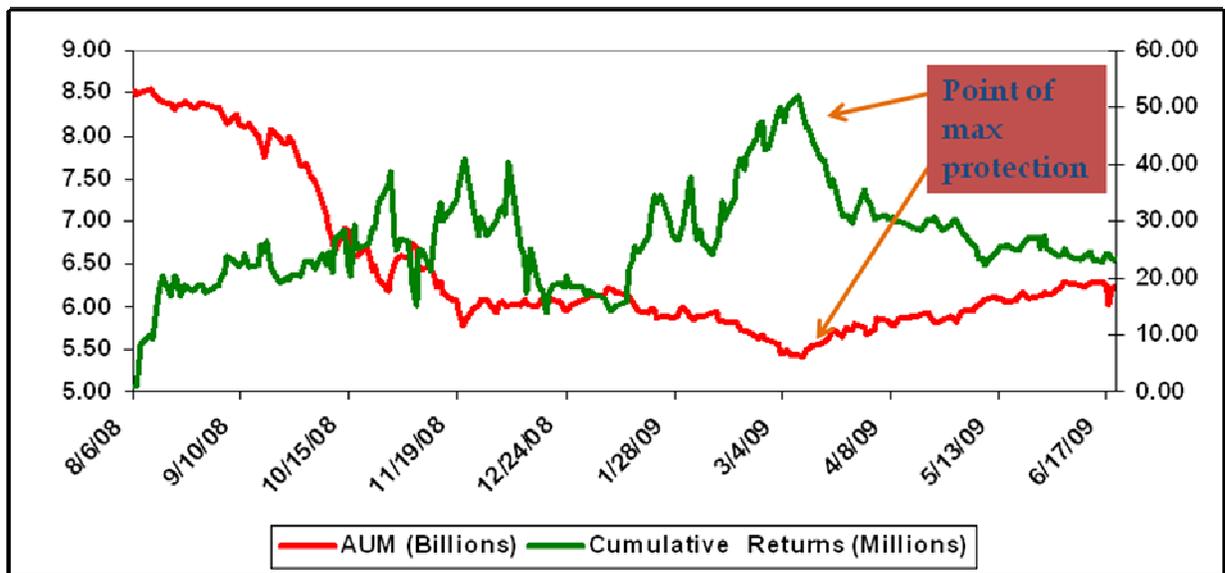


Chart 1 – Example of Tail Risk and Performance of a Strategy that Hedged This Risk

How To Implement Tail Risk Hedging – the Naïve Approach and the SMART Approach

The Naïve Approach

In a naïve tail risk hedge, one buys put options (i.e., insurance protection) for outlier events. For example, to hedge against a 15% decline of the US Equities over the long cycle relative to today's level, one can buy a put option for the entire period and pay an upfront premium or buy a shorter maturity option and keep rolling the contract

when it matures. The benefit to buying an option is that it is a single transaction and the pension fund can go about its job knowing exactly what the cost is. *But the hedge is not guaranteed.* An alternative to this structure is to buy option on the VIX as that allows for greater impact when the bad event happens but is limited to just a trade on the VIX. Depending upon the exact structure of the option hedge, it is possible for the market to sell off and the option still end up out-of-the-money, in which case the hedge essentially disappears – along with the upfront premium! For over-the-counter options, counterparty risk could also potentially be an issue. However, a simple reverse engineering of the option finds that all the option provider is doing to hedge its own risk is dynamically changing the allocation of equities and the risk free asset (cash) or what is called managing the delta. Many vendors tried to replicate this strategy in the 1980s through “Portfolio Insurance” products which blew up as the market gapped. The primary factor that determines the optimal allocation of the hedge is the price of the risky asset and so delta hedging is nothing more than a momentum/trend strategy. One can also think of the changing allocation of risky assets and risk-free assets as a form of **Rebalancing** to dynamic weights with a very specific momentum based **Rule** applied to it. **Herein lies the key to allow pension funds a simpler, customized, lower cost way to hedge tail risk for their funds.**

The pension fund problem is more complex because in addition to investing in the US Equities, pension funds allocate a portion of assets to International Equities, Fixed Income (short or long duration), Commodities and Alternatives. Now the complexity of the option increases as the hedge provider is not hedging against a single asset declining, but rather multiple assets, weighted by the policy weight of client, declining to a significant degree. Now the optimal **Rebalancing** of the allocations to provide the tail risk hedge depends on a complex **Rule** based on the relative momentum of the various assets and the correlation of assets. Therefore, it should be obvious that two funds with different strategic allocations cannot buy into the same fund for tail risk hedging. The more interesting question is whether they get the tail risk hedge by being smarter about how they **Rebalance** their assets as that is an activity that every CIO is authorized and expected to perform. Is there a better set of Rules than just momentum-based rules to create this hedge as shown in Chart 1? What specific condition must the rebalancing program achieve to ensure the “tail risk hedging” outcome?

The SMART Approach

We advocate a SMART approach (Systematic Management of Assets using a Rules-based Technique) to managing pension funds, especially within the Rebalancing bands authorized by the Board and delegated to the investment staff. In short, rather than naively going back to the SAA when a trigger is met (which is a bet), SMART Rebalancing moves the portfolio to a point within the rebalancing ranges so it is within

policy guidelines. The reason we recommend a **Rules-based** approach to picking the allocation within the rebalancing range is that it provides the discipline and process of managing pension assets in exactly the same way as expected of their various external managers and removes emotion from decision-making (particularly in times of crisis). However, rather than focusing on which equity manager or bond manager to hire, a SMART pension fund would use this technique to manage the beta risk of the fund within the rebalancing bands and so is a more intelligent form of rebalancing. And to distinguish from the naïve tail risk hedge which is nothing more than a momentum strategy that goes more into cash when markets decline, a truly SMART approach would use other factors to determine the optimal allocation of US Equities, International Equities, Fixed Income, Commodities (with private equities proxied through possibly the Russell 2000) and Cash. These factors could include economic data (e.g., unemployment, GDP growth, Baltic Dry Index), valuation measures (Price/Earnings ratios, dividend yields), sentiment (VIX) and momentum (trend analysis). Ultimately, each of these factors is well documented in the academic literature and can tell a SMART investor whether to be overweight or underweight a particular asset within the rebalancing bands. In other words, the results in Chart 1 were achieved by tilting a pension fund with a 30% Domestic Equity, 30% International Equity; 40% Fixed Income allocation with +/-5% bands to being underweight domestic equity and international equity for a total of 5% and being overweight fixed income +5% (though the weights were more dynamic). The recommendation made here is identical to the recommendation made by Jim Montier in a recent GMO publication; namely, clients would be smart to make valuation-based allocation decisions, except that the SMART approach has a slightly higher goal of trying to minimize total fund level drawdowns.

The previous paragraph answered the first two questions posed earlier namely that the results achieved in Chart 1 were achieved just with Board authorized responsibility delegated to the CIO to optimally rebalance the portfolio and using a broader set of factors than just momentum implied in naïve tail-risk hedges. The quick criticism to this approach is going to be that this is "market timing". The sad part is that pension funds have been brain washed into believing that market timing is terrible and impossible to do. **First, all investing is market timing**, especially the implementation of the strategic benchmark, but more so when a fund does nothing and lets its portfolio drift. Second, implementing naïve range or calendar-based rebalancing policies or implementing tail-risk hedges are also market timing strategies – but poor ones at that because they are driven by just yesterday's returns. And finally, one need not be a genius to be a good market timer as all one needs to be is correct on 52-55% of the days (with naïve rebalancing being a 50% bet at best) – this is the depressing part of this business. So rather than belittle market timing, we need to embrace it as all investing is about timing the market, and if we realize that the hurdle to add value is a measly 55%, it is not half as challenging and the benefits to getting it right far outweigh the criticism.

However, the pension fund needs to go one step further. One cannot just dump a naïve GTAA strategy into a portfolio as a replacement for SMART Rebalancing. The one special feature that is needed from the SMART Rebalancing program is that the excess returns from the SMART Rebalancing program **must be negatively correlated** with the returns of the strategic policy as shown in Chart 2. In short, the daily excess returns from a basic SMART Rebalancing program are correlated on a 1-year rolling basis with the daily returns of a public pension plan's SAA and plotted in blue on the right axis and plotted against an indexed value of the SAA in red on the left axis.

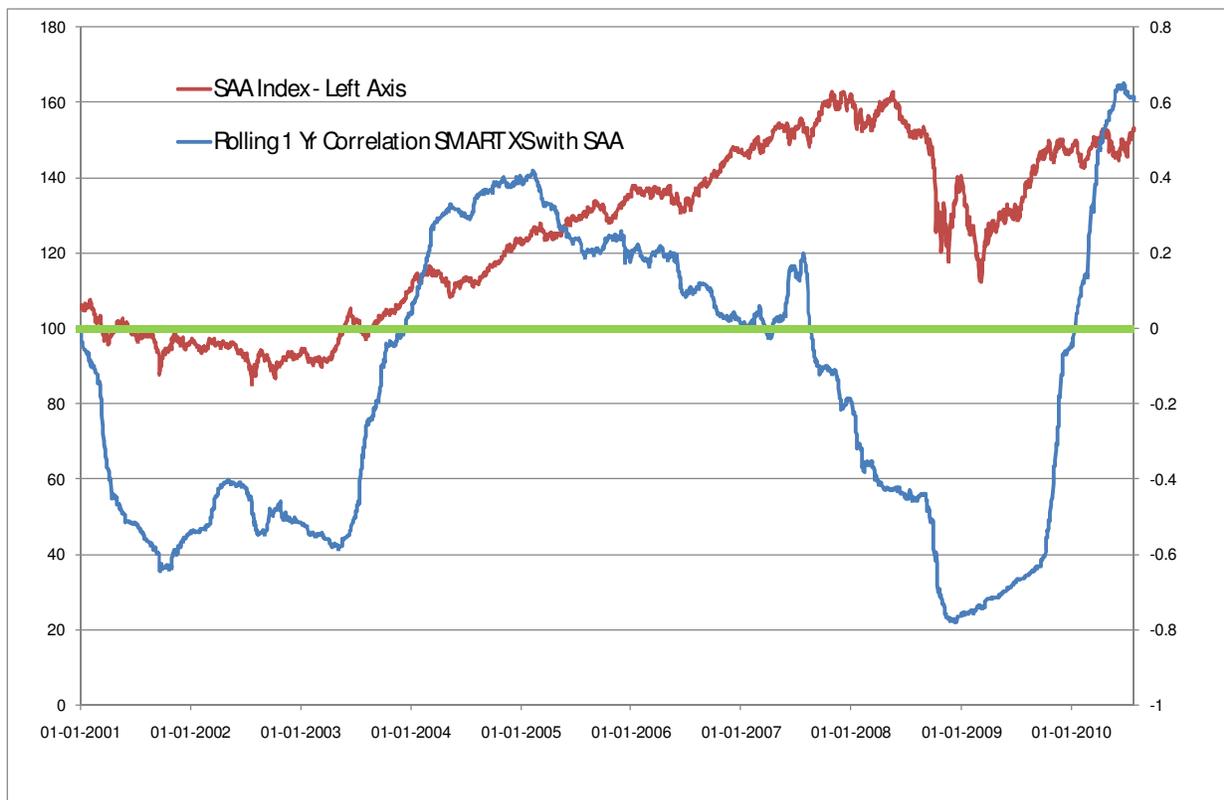


Chart 2 – Ensure Dynamic Correlation of SMART Rebalancing with the SAA of Your Fund

What the chart shows is that when the SAA declines (the red line declines dramatically), the correlation is negative (blue line below the green) or that SMART Rebalancing is generating positive returns and hedging the drawdown. This happens twice in the chart in the 2001-2003 period, and again in the 2008-2009 period. However, when the SAA is rising in the middle part of the chart, then the correlation of the SMART Rebalancing is positive indicating that SMART Rebalancing is adding to total returns but not dramatically so. When one looks at the drawdown statistics of the SAA, naïve rebalancing and the SMART approach, the result that SMART Rebalancing is hedging the tail risk is evident. The one counter-intuitive result from this chart is that while in the old days we were all trying to shrink our rebalancing ranges to lower tracking error, with

a SMART Rebalancing program you want to widen your ranges so that you provide greater insurance when the SAA performs poorly.

How is this negative correlation achieved? It is achieved quite simply by choosing factors that when applied in rules to tilt across assets in the SAA give a negative correlation. This is very different from a GTAA program where you want to use every possible factor to increase the return-risk ratio. For example, if a client applies a SMART Rebalancing rule such that if the Leading Economic Indicator (LEI) rises, they will overweight US equities and underweight fixed income (given the positive prospects for stocks) and vice-versa, then the excess returns of such a tilt is -0.221 correlated with the stock-bond SAA. Recall, that the tail risk hedge is similar in that it is also a rule: if equities fall, underweight equities and overweight fixed income and vice-versa. This LEI rule can be combined many others that focus on economic data, momentum, sentiment and valuation. To summarize, using a specific set of factors to develop SMART asset allocation rules to ensure that CIOs make decisions within their Board delegated rebalancing ranges can provide a low cost, customized and liquid tail hedge, and improve governance of the fund. So take the good aspects of tail risk hedging products and use it for your internal process.

Implementing The SMART Approach

Many funds already have futures overlay programs, either for cash equitization, LDI swaps, portable alpha strategies or for managing liquidity and traditional rebalancing programs. These programs are essential to managing pension funds and many vendors provide this service at low cost. All that is required is to develop a customized set of SMART rules for the pension fund's specific assets, SAA, ranges and risk objectives. Once such a set of SMART rules is set up, they can be tracked daily, weekly or monthly as most of this data is easily available and the aggregate recommendations of these rules (e.g., overweight equities by 1%/underweight fixed income by 1%) is conveyed to the futures platform who then implements these trades at low cost. Futures are the most efficient way to implement these changes as (a) it is the most liquid contract so cost is low; (b) they are exchange-traded so minimal credit risk; (c) spans the key assets in portfolios; (d) very transparent pricing; and (e) the client can liquidate positions at short notice as opposed to placing money in a fund and waiting for redemptions. Moreover, they are cash settled, so gains when the SAA is falling translates into cash inflows.

Conclusions

Sadly, our industry is more focused on selling products than selling solutions and high fees for generic products imply a reduction in future pensions as assets are depleted. The recent trend towards pitching "tail risk" hedging plays into this tendency. There is a benefit to purchasing an outright option for investors who want a guaranteed cost and a guaranteed outcome but this is not achieved easily for a total pension fund given the

complex asset structure and is definitely not achieved through a commingled fund product. This note shows that pension funds can achieve the benefits of tail risk hedging through just a minor change in the process of how they rebalance their portfolios within Board-authorized ranges. By utilizing the investment principles used by their external asset managers to evaluate the relative attractiveness of the beta assets in their pension SAA and tilting within the rebalancing bands based on SMART rules, pension funds improve governance, performance and risk management and do so at very low cost. Moreover, this approach gives them a customized solution to their specific SAA and objectives, is transparent and allows pension funds to benefit from liquid futures. At a minimum, adopting such practices, while not a total replacement for buying an outright put on SAA underperformance because the cost and benefits are not guaranteed, may at least reduce the amount of such insurance to be purchased as SMART Rebalancing gets you half-way there. When one hears the pitch for tail risk hedging, they should be reminded of the comment by noted physicist Wolfgang Pauli: **“Not only it's not right, it's not even wrong.”**