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*Investment*

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*Management*

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*Reflections*

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**OPTIONS AND OTHER  
PROTECTIVE STRATEGIES**

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## **OPTIONS AND OTHER PROTECTIVE STRATEGIES**

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## OPTIONS AND OTHER PROTECTIVE STRATEGIES

Market returns in the past 22½ years have been truly extraordinary, over 10% above inflation *per annum* for 2¼ decades. After these wonderful gains, it is natural to ask: what can we do to protect this new-found wealth? A natural candidate is plain-vanilla portfolio insurance, on which my views are reasonably well known. In thinking about any protective strategy or, more broadly, any investment strategy whatsoever, it is useful to ask the questions:

1. What eventualities do we want to avoid? What risks matter?
2. For whatever strategies are considered, what are the “disaster scenarios” that the client or Board might find unacceptable?
3. What impact does this strategy have on our effective asset allocation?
4. Subject to avoiding unacceptable risks and minimizing exposure to “disaster scenarios,” what are our best strategies for improving returns?

What follows is an array of reflections on ways to protect institutional portfolios against adversity and an exploration of the pros and cons of the various alternatives. I hope you find these reflections provocative and useful. Feel free to call if you have any questions.

### CHANGE THE POLICY ASSET MIX

The simplest way to protect a portfolio is to become less aggressive. The most significant way to do so is to change the overall asset allocation policy of the fund. This suggestion may seem radical to some, but it is important to note that asset allocation policy is not written in stone and should be subject to reevaluation from time to time.

The policy asset mix should be based on a balancing of the *prospective* returns available in various asset classes, weighed against the array of risks that must be considered in the institutional portfolio. It would be naïve to think that the policy asset mix should be static and immutable for all time. One reason that it is often perceived as more-or-less static is that the risks faced by a fund typically change little and slowly over time

*and the prospective long-term returns on the various asset classes also change little and slowly over time.* The enormous run-up in US stocks over the last 30 months has cut the dividend yield from 2.9% to 1.8% and the earnings yield (based on consensus outlook for *next year's* earnings) from 6.3% to 4.7%. This means that the most spectacular 30-month run-up in most investors' careers has only changed the long-term expected return on US stocks by 1% to 2%, a surprising impact in so short a span.

The life of a typical pension portfolio is justified by the *duration* of the liabilities, typically around 15 years, except in very young or very mature companies. Over this horizon, a 1% to 2% change in the outlook for stock market returns, *relative to international and domestic investment alternatives*, should compel a rethink of the asset allocation policy. The advantage that equities have over bonds, over international investments, and over illiquid categories such as real estate or private placements is not what it once was. We can use those three questions cited at the beginning to gauge the merits of a potential change in *policy asset mix* away from US equities.

*What eventualities do we want to avoid? What risks matter?* Clearly, we want to avoid investing in an asset class with poor or negative real returns. Equally clearly, we want to avoid missing any major market rally that could permit our competitors to “leave us in the dust.” A shift in the policy asset mix probably passes the former test but not necessarily the latter test. Suppose the US market is facing a fundamental reevaluation, much as the Japanese market did in the 1970's and 1980's. Suppose the dividend yield is headed to 0.5% (equivalent to around 25,000(!) on the Dow). Premature moves toward the more defensive posture have cost a number of pension officers their jobs and perhaps their careers in the past two years. Who's to say that the market can't go higher?

*What are the “disaster scenarios” that the client or Board might find unacceptable?* For a shift to a more cautious policy asset mix, one “disaster scenario” could be a continued explosive bull market. However, this would *not* be a disaster so long as the policy asset mix is no more aggressive than one's peers in the sponsor community. In other words, paring back US equities in the asset allocation *policy* does not trigger this particular “disaster scenario” unless one pares back the policy to well under the policy allocations of one's peers.

Conversely, a *failure* to adjust the asset allocation policy in response to an unprecedented bull market could lead to the converse “disaster scenario”: a major bear market with a fund more heavily exposed to equities than its peers.

The “disaster scenarios” that can cause problems for a pension officer or Board of Directors would tend to involve (1) an asset mix that strays far from one’s peers and (2) a market movement in the opposite direction. I am not advocating that funds should move towards some consensus norm, leading to a “tyranny of mediocrity.” I am suggesting that allocations far removed from one’s peer group lead to asymmetric risk, which an investment officer should weigh in evaluating the appropriate policy asset allocation.

*What impact does this strategy have on our effective asset allocation?* A change in asset allocation policy has a simpler impact on the effective asset mix than any other protective strategy. Quite simply, less is invested in volatile markets and more is invested in the lower-risk (and *historically* less profitable) markets. What you see is what you get.

## ADOPT PORTFOLIO INSURANCE OR SURPLUS INSURANCE?

Portfolio insurance and surplus insurance exists in many guises. They exist in the form of rolling put options to protect against catastrophe, month by month, synthetic option strategies designed to replicate a put over a specified horizon (typically a year) and “surplus insurance,” or protective strategies designed to “insure” against a sharp decline in funding surplus (which means stocks sharply underperforming bonds).

*What eventualities do we want to avoid? What risks matter?* This sort of strategy is well suited if the goal is to participate, to a reduced extent, in continued market strength, while protecting against an *imminent* market decline. The costs mount inexorably if the market decline does not come quickly. For this strategy, the risks that matter are (1) the risk of a trending market which will make this strategy terribly costly, (2) a “discontinuous market” (à la 1987) where option and futures pricing becomes “unglued” relative to *stock and bond prices*.

*What are the “disaster scenarios” that the client or Board might find unacceptable?* For insurance strategies, the “disaster scenarios” are a bit surprising. A steady trending market means that the option extracts its premium cost again and again and again, without any intervening gains to soften the blow. A one-year portfolio insurance costs about 5% for any given year. Rolling monthly options cost about 1% per month. This is the often-ignored “disaster scenario” for portfolio insurance products. In a steadily rising market of the sort that we have seen in the past 30 months, most forms of portfolio insurance would have cost at least 1,000 basis points during this span.

The second “disaster scenario” for portfolio insurance strategies is a discontinuous market. In 1987, portfolio insurance strategies cost considerably more than the anticipated costs. *Notably, they did work.* But they worked at a cost which prompted almost all portfolio insurance customers to “pull the plug” very quickly following the crash.

*What impact does this strategy have on our effective asset allocation?* Portfolio insurance, in most of its many guises, has a surprisingly subtle impact on the effective asset mix. Stocks, with at-the-money puts, behave approximately like a 50/50 blend of stocks and cash, with that blend changing with every market movement and with the passage of time. After any market rally, the blend shifts towards stocks and after any market drop the blend shifts further towards cash.

Portfolio insurance strategies have the same impact on the *effective* asset mix as an *asset allocation policy* move out of stocks and into cash and a concurrent *policy* move in favor of selling with each market drop and buying with each market rally. For example, consider moving from 60/40 stocks and bonds to a like mix with half of the stocks covered by portfolio insurance. This is roughly the same as moving to a 45/40/15 stock/bond/cash *policy* mix, with a *policy* of buying (or selling) 5% more stocks any time the market rallies (or declines) by 5%. Is this what the buyers of portfolio insurance intend their asset allocation to do? If so, fine. If not, worth a rethink.

When long-term expectations are diminished, as they are today, the likelihood is that a protective strategy may be needed for several years to come. The “Central Limit Theorem” in mathematics tells us that if you string together a series of asymmetric put-option-based distributions, you will converge on long-term returns that are back to a roughly log-normal distribution. What would that long-term distribution look like? It would look like a blend of stocks and cash, with far more cash than is a good fit with the liabilities of the fund.

Finally, many portfolio insurance vendors recommend (1) accompanying the adoption of portfolio insurance in the aggressiveness of the *policy* asset mix, (2) choosing a strategy which is designed to prevent disaster rather than protect against modest declines, (3) ratcheting the “protected floor” up with market rallies, (4) protecting longer investment horizons and/or (5) protecting the funding ratio or pension surplus rather than protecting the nominal value of the portfolio. The impact each of these ideas has on the cost of the protection or on the effective asset mix is relatively straightforward.

- Combining a more aggressive normal policy mix with portfolio insurance makes sense. If, for example the fund is 60/40, and you want to “insure” half of the equities, you have effectively moved to a 45/40/15 stock/bond/cash normal policy mix (plus or minus, depending on market movements). By shifting the “normal” mix to 80/20, with half of the stocks insured, you are back to a 60/20/20 *effective* policy mix (plus or minus). And, you still have the same tendency to have much more exposure after a rally and less after a decline.
- “Lowering the floor,” or protecting against severe market declines while absorbing the lesser drops, also lowers the cost of portfolio insurance. It does so (a) because out-of-the-money options are less expensive and (b) because your initial effective cash exposure is lower (two ways of saying the same thing, once you wade through the math). Instead of moving the *effective* policy mix from 60/40 to 45/40/15, you might be moving to 55/40/5. And, again, your mix moves with market movements, up as markets rise and down as markets fall.

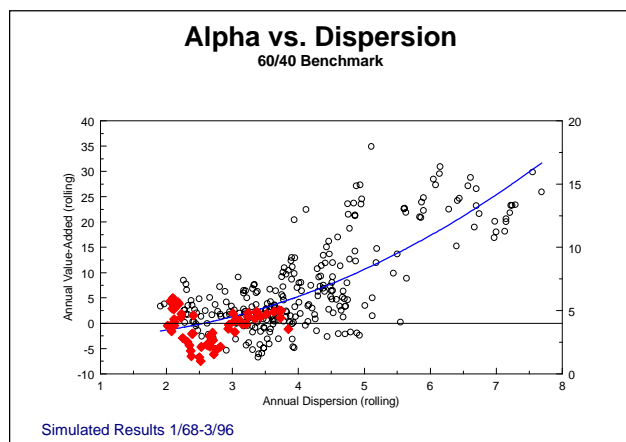
- “Ratcheting up the floor” as markets rally means that you have moved from an *effective* policy mix, in our example, of 60/40 to 45/40/15, but with an interesting twist. By ratcheting up the floor in rising markets, the effective stock mix is backed off to 45% every time you reset the floor, but in falling markets your exposure to stocks tumbles without this resetting mechanism. This does strange and perhaps even nonsensical things to the effective policy mix.
- Protecting for a longer horizon also lowers the cost of protection, since an “at the money” put option with a three- or five-year horizon isn’t really “at the money” when you consider the time value of money. You have a built-in 15%-25% cushion (or, another way to say the same thing, you are 15%-20% out-of-the-money), which, like lowering the floor, means that you have moved less of your *effective* asset mix out of stocks and into cash.
- Protecting the surplus or the funding ratio is basically the same thing as regular portfolio insurance, except that the “risk free” asset is no longer cash, but long-duration bonds which resemble the liabilities of the fund. In our example, in protecting half of the equities in a 60/40 portfolio, instead of the effective asset mix becoming 45/40/15, it becomes something like 45/55, with the bond duration longer than before. As with the other forms of portfolio insurance, the mix moves up in rising markets and down in falling markets.

One of my biggest concerns about insurance strategies is that they introduce a certain arbitrary element to the *effective* asset allocation policy which bears little resemblance to the obligations that most institutional accounts serve. There is a time horizon which is tied to the calendar, not to the duration of the liabilities. There is a tendency towards greater risk at market tops (or after market rallies) and less risk at market bottoms (or after declines). None of this makes sense to me for the typical long-term-oriented institutional account. There can be exogenous factors that could make the seemingly-nonsensical rational. If large lump-sum payouts are expected in nine months, then a nine-month protective strategy can make sense.

If the Board is obsessed with calendar year returns and does not tolerate large losses regardless what the market does in that year, then calendar year portfolio insurance with as low a “floor” as is tolerable makes sense (or, better still, an aggressive effort to educate the Board on the essence of long-term investing!).

## TACTICAL ASSET ALLOCATION

With tactical asset allocation, an investor is “betting” that the TAA strategy will get them out of stocks *before the stocks fall*. If one believes that markets are efficient, then no active strategy makes sense and tactical asset allocation is no exception. Given that caveat, TAA does have a wonderful record. At times when markets have been turbulent in the past, TAA has *never failed to deliver the goods*. This is illustrated in Exhibit 1 below, in which we look at a scatter plot of TAA “alpha” against market volatility (measured as the average of stock volatility, bond volatility and stock/bond relative returns volatility). Here, we can see that the alpha has been quite substantial and quite reliable during periods of turbulent markets and much more mixed in quiet markets. The black diamonds represent the latest five years and highlight the problems that TAA has had in the past five years: no opportunity for TAA to add value means no value added for TAA!



*What eventualities do we want to avoid? What risks matter?* With tactical asset allocation, the risk of a large *opportunity cost* is avoided if the TAA program correctly anticipates a rising market. The risk of a sharp bear market is mitigated if the TAA program correctly anticipates the market decline.

*What are the “disaster scenarios” that the client or Board might find unacceptable?* For tactical asset allocation, the “disaster scenarios” are quite simply the risks that the TAA program is wrong. Tactical asset allocation is an active management approach that is predicated on the belief that markets become mispriced and that a rigorous discipline can identify mispricing opportunities, allowing the investor to profit as markets return to equilibrium fair value. If that assumption is false, we run the risk of getting out too soon and watching the market march ever higher with us underinvested, getting in too early and watching the market tumble downward while we are fully invested, or variance on this theme. Basically, tactical asset allocation is an active discipline and the “disaster scenarios” are much as with any active discipline. They involve negative alpha which exceeds a Board’s risk tolerance or alternatively a lack of positive alpha in environments like a major bear market where gains are expected.

*What impact does this strategy have on our effective asset allocation?* Tactical asset allocation, whether domestic or global, typically has little impact on the effective long-term average asset allocation policy. Unlike portfolio insurance, a well-crafted program does not introduce any biases increasing the normal exposure to one market and lowering exposure to another. What it does is to change the *current* asset mix away from the policy mix, ostensibly to opportunistically take advantage of markets which are priced to provide superior returns. What TAA typically (but not always) does is to also introduce a tendency to sell a market as it rises and buy as it declines. This is arguably a better fit with the needs of the true long-term investor than portfolio insurance, which has the opposite pattern. But, for those who believe that markets are efficient, no active management strategy, including TAA, makes sense.

## OPTION WRITING STRATEGIES

In many ways option writing strategies are the flip side of portfolio insurance. Where portfolio insurance involves, in effect, buying a put option on the portfolio, option writing can involve selling a call or, more typically, selling both puts and calls. If we sell both a put and a call on the portfolio (by selling stock index options and bond options in a size commensurate with the portfolio size), we are basically betting that the market won't move much; we profit if market volatility over the life of the option is less than the "price implied volatility."

*What eventualities do we want to avoid? What risks matter?* In an option writing strategy, we are more-or-less doing the opposite of portfolio insurance, and therefore are, in a very real sense, avoiding the opposite risks. Adopting portfolio insurance implies a conscious decision to pay an "insurance premium" in most months, and accept a persistent moderately lower return as long as the market continues to rally, in exchange for sharply lower risks if the market plunges. In contrast, with option writing, we are seeking modest gains month by month, in an effort to build upon an already-successful portfolio in exchange for a willingness to tolerate lower returns when market turbulence hits. *In effect, we are seeking to build up a reservoir of good will, from persistent, steady gains, which will allow us to tolerate portfolio risks when disappointment strikes.*

*What are the "disaster scenarios" that the client or Board might find unacceptable?* The "disaster scenarios" for option writing strategies depend upon whether the strategy is symmetric or not. An asymmetric strategy typically involves selling calls, which caps our returns when the market soars and only softens our losses modestly when the market plunges. So, a persistent and lasting bull market gives us an ongoing "Chinese water torture" of steady small returns and ongoing opportunity costs. Conversely, a plunging market exacts a slightly diminished cost on the portfolio, so an investor expecting protection from a call-selling program is likely to be disappointed. Asymmetric programs have been disappointing for so long that they are not used much in the institutional investing community anymore; indeed, several large managers of call writing strategies have actually closed down operations (a clear sign that the strategy may be a timely addition to a portfolio today?!).

A symmetric option writing program involves selling both puts and calls. The increment to returns in quiet months is larger than with a call-selling program. The "disaster scenarios" include sustained trending markets and/or sudden market turbulence (although the latter can be mitigated by buying long-dated out-of-the-money puts and calls to protect against extreme market moves). A market like 1995 hurts any options writing program, since the market rose 2%-4% in all but two months during the year. Volatility was low, so the premium income received from selling options was less than historical norms, and yet the trending market produced losses in more months than not. A market like 1987 hurt option writing programs by delivering some gains during the prelude to the crash and then inflicting pain (on top of the losses in the underlying portfolio) during the crash. Buying long-dated out-of-the-money puts and calls to limit the losses in extreme market movements is, in our view, a necessary complement to a put/call writing strategy.

*What impact does this strategy have on our effective asset allocation?* Symmetric option writing strategies, involving selling of both puts and calls, have no impact on the policy asset mix, but they do have an impact on the response of the asset mix to market movements. Returning again to our example of a 60/40 portfolio, with options written on half of the equities, the calls that are sold bring the mix down to 45/40/15, much the same as portfolio insurance, while the puts that are sold bring the mix back up to 60/40. However, as with TAA, and opposite to portfolio insurance, the sale of puts and calls both have the effect of reducing market exposure during market rallies and increasing market exposure after the market has fallen.

The fact that option-writing strategies tend to work best in quiet markets while TAA has historically tended to work best in turbulent markets makes them well-suited to one another. The combination can add value in quiet, in turbulent, and in weak markets. The one place that the combination is likely to hurt us is in steadily trending bull markets, at a time when the underlying portfolio is producing solid gains. A shortfall, if modest, in a roaring bull market is preferred by most investors and Boards to a shortfall in a bear market.

### ***So what's our recommendation for portfolio protection?***

The obvious candidates, put options and portfolio insurance, have hidden consequences that merit careful consideration.

- They are expensive. An “at-the-money” program, intended to avert 12-month losses, costs 5%-10% *per annum* in rising markets. One must change one’s “threshold for pain,” accepting 20% losses, to bring this cost down to a more palatable 1% per year cost.
- They can lock an investor into an arbitrary and artificial calendar time horizon by protecting fund wealth over a specific horizon. This makes sense if there is some underlying reason for that particular calendar focus (e.g., a large early retirement program triggering large lump sum distributions, a university building program which breaks ground at some specific future date, or a Board with an undue obsession with calendar year returns), but for most long-term investors a calendar time horizon does not make sense.
- They involve a tacit (and hidden) change in asset allocation policy away from equities and into cash. This is an often-unintended effect.
- They involve *de facto* buying after market rallies and selling after market declines, which is the opposite of what most investors would tend to favor.
- If an investor “tinkers with” the protected floor (for example, by ratcheting up the floor with market rallies), the fund has an effective asset mix which decreases equity exposure after a market drop and yet keeps substantial synthetic cash reserves whenever the market rallies. This approach also carries with it a certain arbitrary element in adjusting the *effective* policy allocation in an unpredictable and capricious fashion.

Caveats identified, we still think that portfolio insurance is well-suited to some institutional investors, notably those with near-term large withdrawals, and those with “Nervous Nellie” Boards which might blame the investment officer for a bear market.

Our preferred approach is different. We would favor (1) consider whether the asset allocation policy is still “on target,” (2) consider policy-neutral strategies, such as Tactical Asset Allocation for seeking incremental returns and/or a disciplined buy-low, sell-high mechanism around that policy mix, and (3) consider overlaying the portfolio with a risk-controlled market neutral options program to capture additional returns in quiet markets.

The first of these is actually the more radical suggestion. What we are suggesting is that *long-term* returns available in equities are not what they once were and that the change may be sufficient to merit a rethink of the asset allocation policy. In comparing prospective *long-term* asset class returns with prospective liabilities or fund obligations, the mix that has worked over the past thirty years may not be especially appropriate over the next thirty years!

The second and third suggestions hinge on one’s belief that (1) markets are not entirely efficient, so that a well-crafted active asset allocation approach may add value, (2) options which have historically been consistently overpriced (price-implied volatilities higher than subsequent actual volatilities), may continue to be similarly mispriced, offering improved returns for the *sellers* of options and hurting returns for the risk-averse *buyers* of those same options, *and* (3) the historical tendency for markets to exhibit “regression to the mean” will continue to reward those who buy after market drops and sell after market rallies and punish those who do the opposite. A belief in all three of these points would suggest that a combination of TAA and option writing strategies may have considerable merit. But, this set of strategies will not always work (what strategies do, for that matter?), and investor patience is needed *regardless of which avenues for investing we might choose*.

As an aside, it is no coincidence that the avenues that we favor are the avenues in which we manage assets. A cynic might therefore say that this advice is self-serving. I don’t agree. I think it would be far more cynical for us to manage strategies that we felt were ill-suited to the needs of our long-term-oriented institutional clients!

I hope these reflections are useful as you weigh your options (no pun intended).



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