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Target Volatility Asset Allocation Strategy

By Leong Chew

INTRODUCTION Volatility-managed funds, which focus the measurement of an investor’s risk appetite on the volatility of the portfolio, have grown popular in the Asian markets recently, particularly in Japan. Utilizing a complex rebalancing strategy to manage investment allocations, volatility-managed funds provide significant advantages to the investors and insurers offering variable annuity (VA) guarantees around these funds. This article discusses a typical volatility-managed strategy and presents performance comparisons between volatility-managed funds and other comparable market strategies. The advantages of target volatility-managed funds to investors and insurers are also included.

DESCRIPTION OF TARGET VOLATILITY ASSET ALLOCATION STRATEGY

Varieties of asset allocation models exist in the current VA market. This article will focus on fixed asset allocation, constant proportion portfolio insurance (CPPI) and target volatility asset allocation.

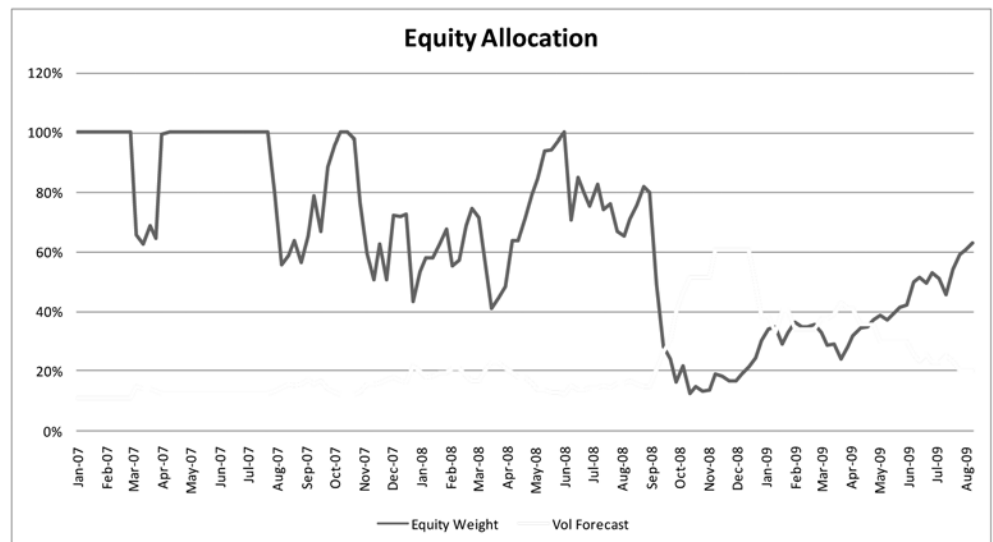
For the fixed asset allocation strategy, account value is allocated on a constant proportion basis between baskets of equity and bond funds. The account value automatically rebalances between these funds on a predefined interval, usually weekly, monthly or quarterly. With this strategy, funds with higher growth rates, on a relative basis, tend to subsidize funds with a lower growth rate. This strategy has provided a useful mechanism for financial institutions to define investors’ risk tolerance in terms of conservative, moderate or aggressive.

The CPPI strategy deploys a dynamic trading strategy between equity and bond funds that enables investors to capture market upside potential with targets to achieve the notional guarantee at the maturity of the investment horizon. Assets under this strategy are rebalanced according to a predefined set of rules. CPPI is popular in Asian and European countries.

The target volatility asset allocation strategy rebalances fund allocations to maintain a target portfolio volatility, dynamically rebalancing the fund allocations between equity and bond assets based on the predicted volatility of each asset class. This strategy has begun to gain strong momentum in Asian countries, particularly in Japan.

The chart in Figure 1 illustrates how the predicted equity volatility (and bond volatility, not illustrated in this chart) affects the allocation to

Figure 1:
Equity Allocation versus Predicted Volatility under the Target Volatility Allocation Strategy



The target volatility asset allocation strategy rebalances fund allocations to maintain a target portfolio volatility ...

the equity assets. This illustrative portfolio targets an overall 16 percent annualized volatility. In general as equity volatility increases, the equity allocation decreases to maintain the target volatility of 16 percent.

HISTORICAL COMPARISON OF STRATEGIES

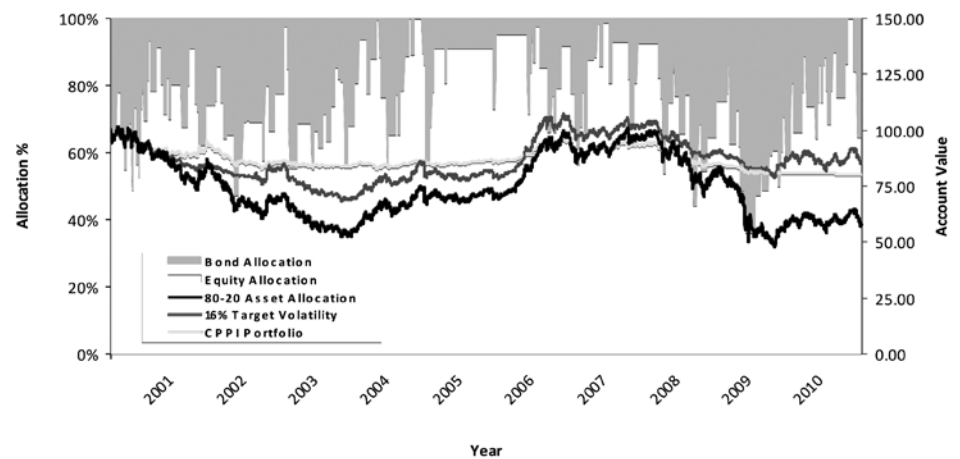
Putting these three strategies into practical perspectives, a hypothetical portfolio consisting of Japanese equity (TOPIX) and Japanese bond (Japanese 5-year swap) may be considered over the 10-year period from January 2000 to May 2010. The fixed asset allocation strategy assumes a constant 80 percent equity allocation and 20 percent bond allocation. The CPPI strategy assumes a notional protection of 80 percent of the invested capital. The target volatility asset allocation strategy targets an annualized portfolio volatility of 16 percent.

The chart in Figure 2 shows the illustrative performance of this hypothetical portfolio. The area in the background indicates the equity/bond allocations for the target volatility asset allocation strategy.

At the beginning of 2008, fund values under the three strategies all came in at approximately the same level. As the global market encountered its severe downturn late that year, accompanied by a decreasing interest rate level with a spiking of the volatility level, the fund value under the fixed asset allocation strategy took a 35 percent loss in value.

Fund values under the CPPI strategy experienced a less severe decline because, as bond allocation approaches 100 percent, a near cash-

Figure 2:
Illustrative Comparison of Portfolio Performance under Various Strategies



lock situation occurs (100 percent allocation in bond or cash assets). The fund value remained at this level and did not participate in the market recovery toward the second half of 2009 because a significant portion of the fund value remained in the bond allocation. Nevertheless, the notional protection value (80 percent of initial deposit) is protected under this strategy.

Under the target volatility asset allocation strategy, a significant portion of assets is transferred into bond funds because of the spike in the volatility level toward the end of 2008, shielding the fund value from the significant market decline. The decline in volatility level since the second half of 2009 increased the equity allocation and allowed the participation in the equity market movements, both upwards and downwards.

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ADVANTAGES OF TARGET VOLATILITY ASSET ALLOCATION STRATEGY TO INVESTORS AND VA WRITERS

The target volatility asset allocation strategy presents key advantages to investors:

- **A better representation of an investor's risk tolerance:** The conventional approach of using fixed percentages in equity allocations (e.g., 20 percent equity as conservative, 50 percent equity as moderate and 80 percent equity as aggressive) as a measurement of an investor's risk tolerance may not accurately represent an investor's risk appetite under current market conditions. An investor with moderate risk appetite would never expect a 30 percent loss of portfolio value in a severe market downturn. Rather, when considering investment choices, an investor will review the maximum loss tolerance level and the expected range of gain or loss. Volatility of the portfolio offers a better measure. By maintaining the target volatility of the portfolio, the portfolio returns will likely meet the risk tolerance of investors. Hence, this strategy targets the level of risk directly.
- **Prevention of cash-lock situation:** With the CPPI strategy, a severe market downturn (typically echoed with a high volatility level) may lead to 100 percent allocation in bond or cash assets, a situation commonly known as cash-lock. Cash-lock situations are triggered to protect the notional guarantee amount but they prevent further equity market participation should the market recover in the future. The target volatility asset allocation strategy enables future equity market participation when the equity volatility level decreases (a common observation in an upward-trending market) for potential upward movements.

The following represent several key advantages to VA writers who offer the target volatility asset allocation strategy in the fund selections:

- **Eliminate or limit exposure to volatility risk:** Because portfolio volatility is kept within the target volatility, the target volatility can be used directly in the monthly GAAP or IFRS reserve valuation. With volatility set at a target level, reserve movements that are due to volatility impact are practically eliminated. With volatility risk eliminated or limited, statutory reserves and capital requirements are more effectively stabilized.
- **Integration with VA hedging program:** Keeping volatility at target levels allows the Vega exposure of the portfolio (sensitivity to change of volatility) to be largely eliminated. Challenges faced by VA writers in hedging Vega risks include limited liquidity in hedge instruments, a high volatility level that leads to expensive volatility prices, and difficulties finding instruments that match the maturity of the underlying liability.
- **Reduction in cost of guarantees:** The containment of volatility risk will also lead to the reduction in cost of VA guarantees. This represents a win-win situation because the reduction in cost of guarantees can be translated into the reduction in guarantee fees, which may make the product much more appealing to customers.

CONCLUSION

Taking accurate measure of investors' risk tolerance remains crucial, especially in a volatile market environment, to prevent portfolio losses beyond expectations of investors. The target volatility asset allocation strategy provides an

efficient mechanism to address the risk management issues for both investors and VA writers under various conditions. However, it is important to note that this strategy does not guarantee outperformance against other strategies. Nevertheless, it allows an alternative perspective to define the risk classification of investors.

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