DC lifecycle models: avoiding a bond market bias

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Lifecycle models within defined contribution (DC) pension schemes have typically been based around the idea of reducing investment risk as one gets older, by reducing exposure to equities and increasing exposures to bonds. This simplistic approach may have been appropriate during the 20 - 30 year period from the 1980s to the financial crisis, when bond yields were consistently heading downwards, but in the current environment of low bond yields when the most likely move may be upwards, it is not clear that the bond markets alone can be seen as a stable low risk haven for the majority of retirement assets. Supposedly low risk lifecycle DC investment strategies should move away from the doctrinaire mindset that bond portfolios will inevitably be safer portfolios when the underlying causes of the debt fuelled global financial crisis have not yet been resolved. Asset bubbles are appearing in many asset classes and investors are likely to see periods of tranquil markets in the coming years punctuated by periods of significant volatility across both debt and equity markets.

Whilst the debt markets alone, cannot be seen as safe havens, it is possible to structure portfolios that have high levels of downside protection assured with very high levels of confidence. These are typically based on harvesting equity and bond risk premia whilst adopting option like pay-off profiles to control downside risk. Constant proportion portfolio insurance (CPPI) is one tried and tested technique which relies on setting a defined floor at say 90% of a portfolio value and then splitting assets between essentially risk-free cash and risky assets. If portfolio increases in value, the proportion of risky assets is increased, whilst the proportion of risky assets is reduced if the portfolio value falls, and tends to zero as the portfolio value approaches its floor. The well known disadvantage of the CPPI approach is that once the portfolio hits its floor, it is “cash-locked” with a 100% cash position, giving no further opportunity for harvesting risk premiums.

It is possible to structure better approaches for DC schemes than CPPI that virtually eliminate the risk of a cash-lock position whilst still giving similar levels of downside protection. Metzler Asset Management’s successful portfolio insurance strategy has been in existence since 2001 and is based on gaining exposure to the better performing of separate portfolios of equities and of bonds through replicating options. It thereby combines the benefits of the CPPI approach with a defined floor, with a very low probability of hitting the floor and a cash-lock position by dynamically reducing the exposure to the poorer performing asset class that leads to a loss of the risk budget. Setting the risk budget defines the maximum exposure to equity markets. For example, equity market annualised volatilities are typically closer to around 20%-25% whilst bonds markets may be 6%-7%. If the portfolio risk budget is constrained to be 2%-3%, the equity component could be capped at 30% so its contribution to the volatility of the total portfolio is limited.

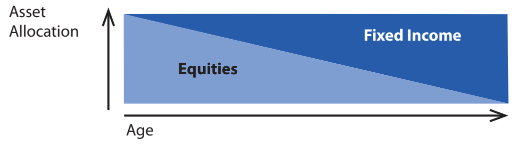
Using a “best of two” option approach results in better returns with lower volatility than structuring two independent call options. If one market does well whilst the other does not, the strategy will do very well; if both assets do well, the strategy will produce reasonable results; whilst if both assets do badly, the strategy will move towards its floor. To enhance the risk-return trade-off, the option profile includes some collar-like features.

The strategy invests in a portfolio of European, US, Japanese and Emerging Market equities, together with a portfolio of US, European, UK, Canadian and Australian bonds. Equities within the strategy are weighted on a risk parity basis evenly between the US, Europe, Japan and Emerging Markets. A multi-dimensional approach to risk control incorporates ideas of shortfall probability, value at risk and control of overnight risk exposures as well as utilisation of highest liquidity instruments and securities with the best credit ratings.

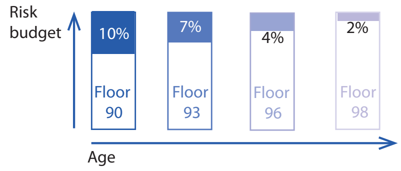
The ability to generate the better performing asset class returns is achieved through replicating a complex option pay-off profile using highly liquid futures contracts. This makes the overall strategy highly liquid and minimises transactions costs compared to the ongoing purchase of physical options. The overall portfolio risk level can be tightly controlled to produce a range of desired trade-offs between return targets and risk levels that can be designed to produce a set of DC lifestyle fund choices ranging from a low risk cash alternative with a portfolio floor set at 98% of the initial value each year, to one designed with a floor of 90% of the initial value each year, which over time, would match returns of global multi-asset portfolios but with lower volatility (Fig. 1 and 2).

Given Metzler’s German heritage, it is perhaps not surprising that Metzler Asset Management’s strategy relies on precise engineering of the portfolio construction and trading framework to ensure a robust and repeatable set of results. A key issue for strategies based on replicating the better of two asset class returns is that close to the expiry date of the option, if both equities and bonds are still close to their initial values, their weightings are very sensitive to small movements in the market levels. Conversely, at the inception of a one year option, weightings are much less sensitive to market changes. Metzler Asset Management overcome this issue by having a very rigorous approach with 12 month option replication strategies implemented every month on 1/12th of the portfolio. This produces a portfolio that has a much more stable sensitivity of weightings to market movements as the net change would be a function of the average weightings of 12 different options.

Classical DC scheme



Risk adjusted DC scheme (Metzler)



Metzler Asset Management’s portfolio insurance strategies have so far proved their worth with almost €8bn invested predominantly by German institutional investors. The strategies provide a rule based and repeatable approach to extract equity and bond risk premia whilst rigorously controlling downside risk. They can be structured to produce cash-substitutes with very high liquidity and low risk, to alternatives to equity portfolios that produce higher returns but with higher volatility yet still having some downside protection. As a result, they appeal to a wide range of investor types including pension funds, insurance companies and corporates. For DC pension schemes, it is possible to tailor-make a set of funds that have well defined downside risk characteristics suitable for a set of lifecycle choices as individuals age and their risk tolerances changes. These strategies moreover, will be able to maintain their risk characteristics independent of the behaviour of bond market and equity markets. In uncertain environments, replacing preconceptions of the likely behaviour of equity and bond markets by a rigorous engineering approach to investment will enable the recipients of DC pensions to enjoy their retirement without worrying about their pension pots.

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