

RISK/RETURN TRADE-OFF

INTEGRATING RISK ANALYSIS INTO THE OVERALL PROCESS

Successful fixed income investing requires placing risk analysis at the heart of portfolio management

The introduction of an expanding range of more complex fixed income instruments, each with its own individual risk characteristics, is challenging the traditional asset allocation and risk management strategies employed by fund managers. Developing successful strategies to invest in 'enhanced' asset classes such as emerging markets, convertibles and high yield, as well as more traditional fixed income securities, requires both an in-depth knowledge of these new instruments and, crucially, the expertise to understand and control the risks therein.

» PROVEN PROCESS

One example of such a strategy would be a fixed income asset allocation vehicle. In managing it, approximately two-thirds of the added value should come from the top-down asset allocation process. Allocations to different strategies are undertaken on a modular basis, allowing specialist asset class teams to manage the underlying assets, and deliver the remainder of added value. (See Chart 1).

Volatility is the most commonly used measure of risk in fixed income markets and, historically, value-at-risk (VaR) has proved to be an effective tool for understanding and controlling volatility in traditional fixed income instruments, such as G7 government bonds. Use of VaR has been widely adopted by leading financial institutions and central banks, becoming an established benchmark for risk management. The use of VaR methodology provides a solid basis for risk management of fixed income portfolios that invest predominantly in liquid, highly rated global government bonds.

Managing risk within the fixed income asset allocation vehicle requires a team of risk analysts within the portfolio management team to identify the fundamental and structural differences between the various asset classes. As one would expect, capturing all the risk embodied in a complex portfolio is impossible using only one parameter.

As described, VaR is a solid concept that provides good results for the G7 government bond component of the product, as it gives a confidence level around an expected return.

However, reliance on a traditional VaR model such as Gaussian VaR as the sole risk management tool used within a portfolio containing higher risk securities such as emerging markets, high yield bonds and convertibles, is likely to result in a sub-optimal risk/return profile. This is due to the failure of the Gaussian VaR model to consistently capture the downside risk of these instruments, as it significantly underestimates the probability of large losses in such securities. Therefore, more refined risk measures are needed.

» RISK ESTIMATION

As a first step, fixed income risk analysts should scrutinise the individual risk characteristics of different non-government asset classes. This can be done by using the Cornish Fisher model to analyse the risk characteristics of non-government securities, as its methodology correctly addresses the issue of more significant risk that cannot be modelled by the Gaussian VaR model (see Chart 2). The Cornish Fisher model

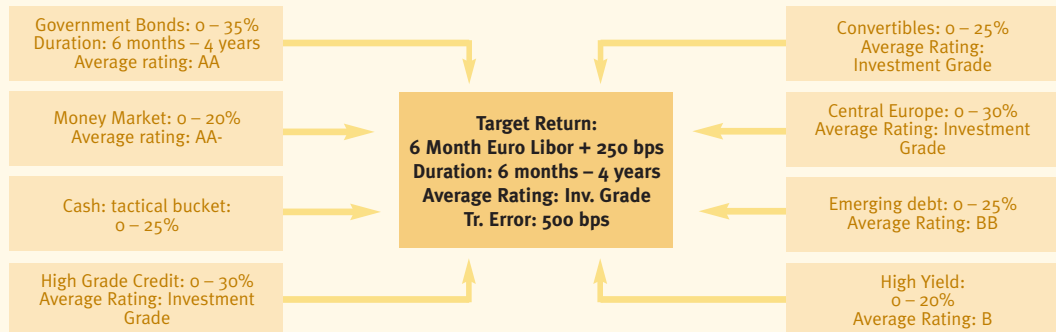


'Allocations to different strategies are undertaken on a modular basis, allowing specialist asset class teams to manage the underlying assets, and deliver the remainder of added value'

Ahmed Talhaoui, CSAM

1

A fixed income asset allocation vehicle should seek to optimally blend together fixed income assets to provide a targeted positive return, for a commensurately modest level of risk (model portfolio)



Source: CSAM

provides a numerically robust estimation of VaR, enabling the creation of an optimal risk/return profile for these non-government asset classes within the portfolio.

As well as using the benchmark volatility, two additional factors are considered by the model. The first of these is skewness, which reflects the asymmetry of return distributions. The second is kurtosis, which measures the probability of events such as unusual market movements.

» ANALYSIS

In addition to assessing the risk attributes of individual fixed income securities, the risk analysts should also analyse the ability of different asset classes to offset downside risk within the portfolio as a whole. Two such relevant instruments are, for example, cash and convertibles.

Cash, which is often wrongly considered as a ‘non-asset class’ is, in fact, an integral part of an actively managed asset allocation process. It is able to generate positive returns (even if these are currently at historically low levels), reduce duration, provide liquidity and, above all, maintain a stable volatility.

Convertibles, on the other hand, present some interesting positive convexity features (this is where the gain for an upward movement in a stock market is larger than the loss for the same downward movement in the market). Theoretically, the upside in convertible bonds is higher than the downside, simply because the equity exposure is gained through the option market. By combining the different risk characteristics of convertibles, emerging market debt and other bonds, the risk analysts are able to assess the distribution of returns in the portfolio, thereby creating an enhanced risk control system.

The asset allocation process should then revolve around the use of an optimiser based on the risk framework described above. By inputting forecasts and relative views of markets into the risk model, the risk analysts can generate efficient frontiers and model portfolios, which are then reviewed on a more subjective

and qualitative basis by the portfolio managers, before the asset allocation is implemented. Based on the results of the optimiser the management team can then determine profit and loss taking levels for each fixed income asset class, which are set monthly.

Termed an asset class ‘envelope’, both upside and downside scenarios are measured against the actual performance of the relevant asset class on a daily basis. Triggers are set should the upside envelope limit be broken where profit taking may occur. Similarly, if the downside envelope limit is broken, the position is re-evaluated and re-allocation may occur (see Chart 3).

When constructing a successful asset allocation product, fund managers need to focus not just on traditional risk metrics such as volatility, but also on different approaches to counterbalance the more complex risk features inherent in ‘enhanced’ fixed income instruments such as emerging markets, high yield bonds and convertibles. Provided there is a robust system in place that can consistently capture the risk profile of these securities, investors can benefit from a strategic allocation to this type of higher risk asset

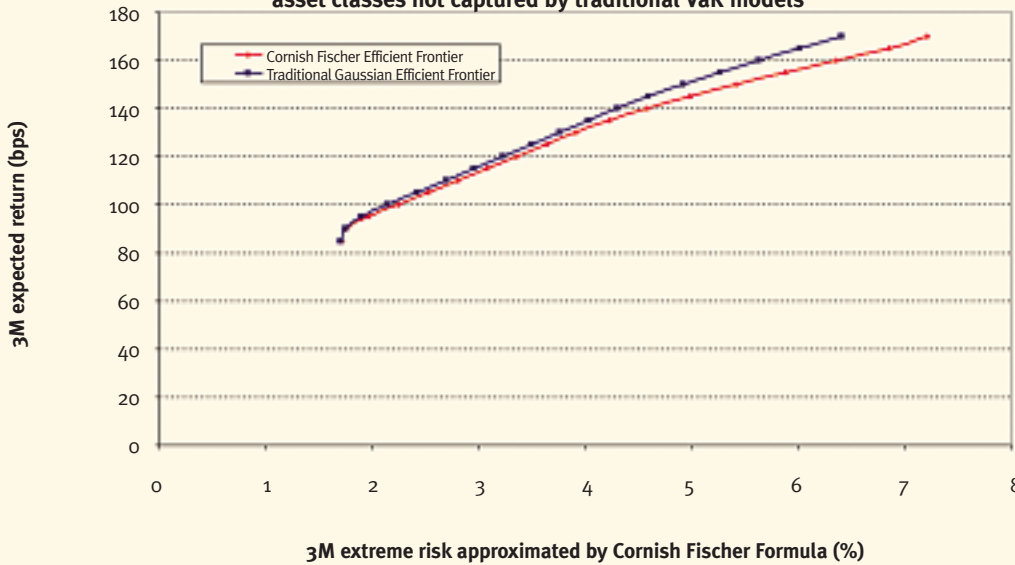
The system’s main benefits

Key benefits of the risk management system underpinning a fixed income asset allocation vehicle:

- **Dedicated risk analysts are integral members of the investment team and have specialist knowledge of fixed income and portfolio management.**
- **The investment team has in-depth knowledge of a wide range of complex fixed income instruments and, crucially, the know-how to understand and control the risks therein.**
- **Integration of the risk management function within the investment process is key to the successful implementation of a strategy that blends together this diverse range of fixed income asset classes.**
- **Understanding the different risk characteristics of multi-asset classes, as well as their ability to offset risk within a portfolio, is key to an optimal asset allocation mix.**

2

The Cornish Fisher formula identifies the risks inherent within non-government asset classes not captured by traditional VaR models



Source: CSAM

class, even within a modest risk budget.

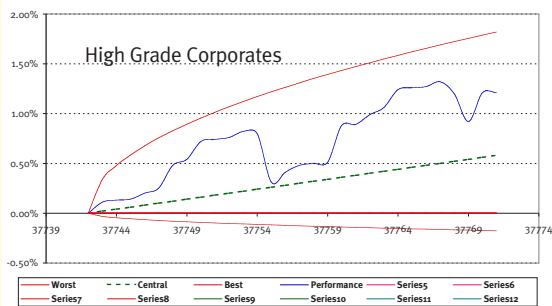
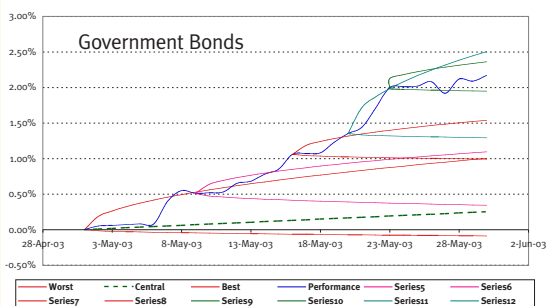
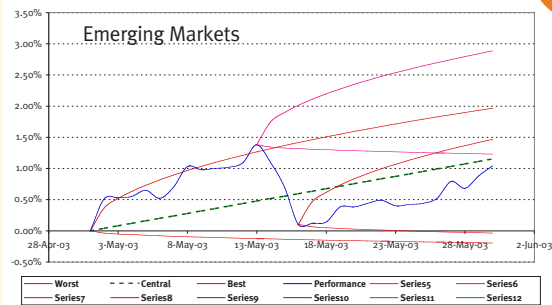
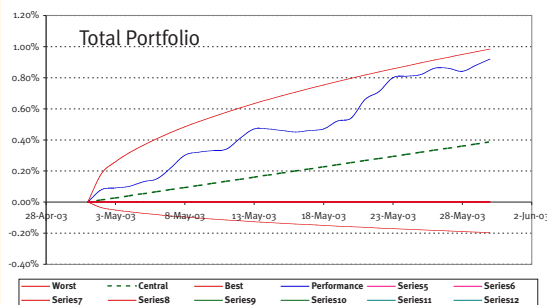
The Cornish Fisher VaR model addresses this issue by including other risk metrics such as skewness and kurtosis, as well as volatility, in its methodology. This allows asset allocation strategies to select asset classes

not only for their risk premium, but also their ability to offset downside risk in the portfolio as a whole, thereby maximising performance generation.

Ahmed Talhaoui, fixed income manager,
Credit Suisse Asset Management

3

An overarching risk management tool helps ensure the portfolio maintains its optimal asset allocation



CORPORATE STATEMENT

Credit Suisse Asset Management (CSAM) is a leading global asset manager focusing on institutional, mutual fund and private client investors, providing investment products and portfolio advice in three regions (Americas, Asia-Pacific and Europe) around the world. CSAM has \$308.2bn of global assets under management and employs 1861 people worldwide as of 30 September 2004. CSAM is part of Credit Suisse First Boston, a leading global investment bank serving institutional, corporate, government and individual clients.



Contact:
● Stephen Wander, head of European marketing
Email: stephen.wander@csam.com