FIXED INCOME INSTRUMENTS
THE RISK/RETURN TRADE-OFF

In order to efficiently manage risk in a fixed income market, one must first understand how to measure it

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 more "specialist" 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.

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 a top-down asset allocation process. Allocations to different strategies should be 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.)

» VALUE-AT-RISK

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

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Ahmed Talhaoui, CSAM

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

Government Bonds: 0 – 35%
Duration: 6 months – 4 years
Average rating: AA

Money Market: 0 – 20%
Average rating: AA-

Cash: tactical bucket:
0 – 25%

High Grade Credit: 0 – 30%
Average Rating: Investment Grade

**Target Return:
6 Month Euro Libor + 250 bps
Duration: 0 months – 4 years
Average Rating: Inv. Grade
Max. Tr. Error: 400 – 500 bps**

Convertibles: 0 – 25%
Average Rating:
Investment Grade

Central Europe: 0 – 30%
Average Rating: Investment Grade

Emerging debt: 0 – 25%
Average Rating: BB

High Yield:
0 – 20%
Average Rating: B

Source: CSAM

predominantly in liquid, highly rated global government bonds.

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

》SOLID CONCEPT

For our asset allocation vehicle, VaR is a solid concept that would provide good results for the G7 government bond component of the product. 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.

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 Fischer model to analyse the risk attributes of non-government securities.

The model's methodology correctly addresses the issue of more significant risk that cannot be modelled by the Gaussian VaR model. (See Chart 2.)

The Cornish Fischer model also 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.

In addition to assessing the risk attributes of individual fixed income securities, the risk analysts should also study 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.

》CONVEXITY

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 very 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


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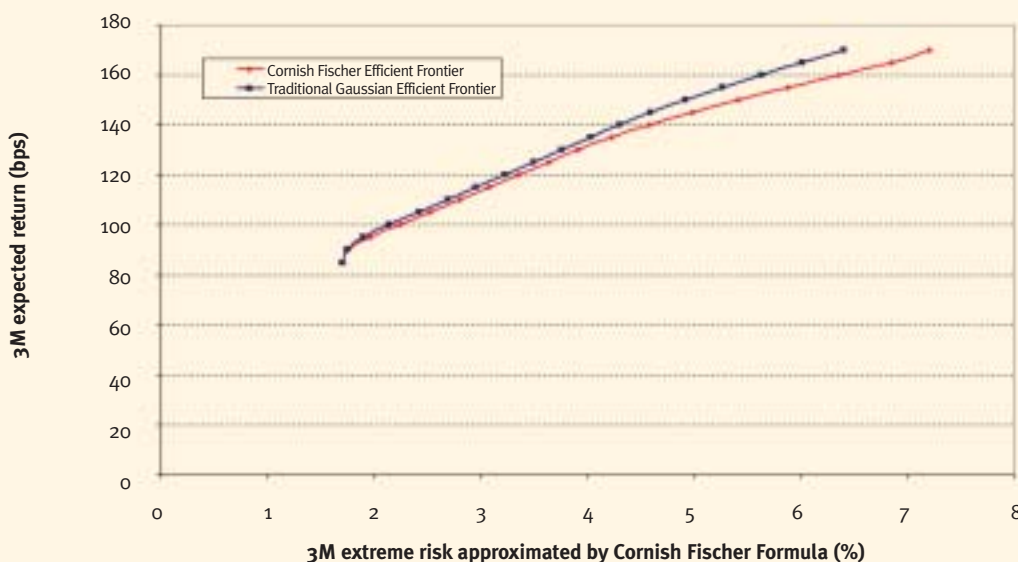
The Cornish Fisher formula identifies the risks inherent within non-government asset classes not captured by traditional VaR models

Source: CSAM

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

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Total Portfolio

Emerging Markets

Government Bonds

High Grade Corporates
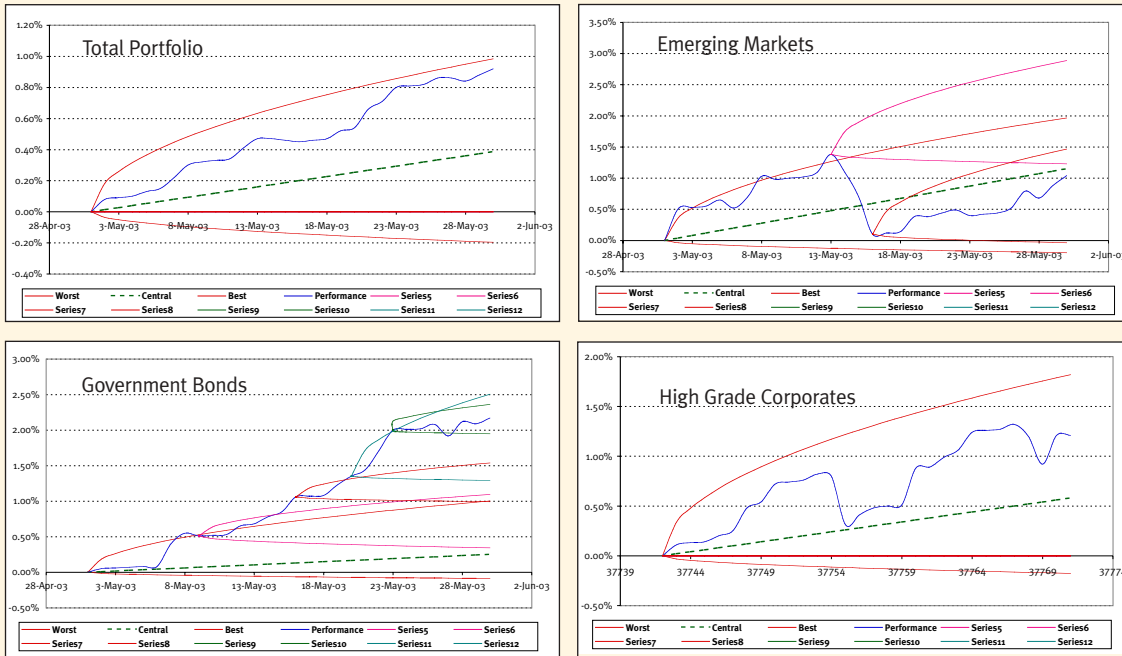
Source: CSAM

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 whole of the distributions of returns in the portfolio, thereby creating an enhanced risk control system.

❯❯ OPTIMISER

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.

These initial models can then be reviewed on a more subjective and qualitative basis by the portfolio managers, before the asset allocation is implemented. The optimiser creates predetermined profit and loss taking levels for each fixed income asset class, which can be set monthly.

Termed an asset class "envelope", both upside and downside scenarios can be measured against the actual performance of the relevant asset class on a daily basis. Triggers can be set, should the upside envelope limit be broken, where profit taking may occur.

Similarly, if the downside envelope limit is broken, the position can be 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 specialist fixed income instruments.

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 class, even within a modest risk budget.

The Cornish Fischer 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 alpha generation.

Ahmed Talhaoui, fixed income portfolio manager, CSAM

❯❯ CORPORATE STATEMENT

CREDIT SUISSE | ASSET MANAGEMENT

Credit Suisse Asset Management (CSAM) is one of the world's largest asset managers and one of the few with a truly global platform. CSAM has 1985 employees in 22 offices across three regions worldwide, clients in more than 50 countries and total assets under management of US$312.7bn as at 30 September 2003. We offer a full range of financial investment products and services to institutional, retail and private clients.

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