

Skandia Shield Fund – Optimisation and asset allocation philosophy

The Skandia Shield Fund’s objective is to maximise risk adjusted returns through a composite of investment asset classes, by targeting an 8% volatility measured over the previous 50 business days. This document aims to provide a brief insight into the theory that underpins the Fund’s proprietary asset allocation model, the Black-Litterman approach.

Black-Litterman approach

The Black-Litterman asset allocation model addresses investment managers’ practical issues when using the Markowitz framework of Modern Portfolio Theory (MPT) by allowing the portfolio manager to express views about individual assets, rather than just using expected return data for all assets.

A portfolio constructed according to MPT will appear on an ‘Efficient Frontier’ where for every level of risk there is a portfolio with the highest expected return and for every level of return there is a portfolio with the lowest anticipated risk. For further information please see the [skandia – optimised asset allocation sales aid](#).

The Black-Litterman approach was developed by Fisher Black and Bob Litterman in a number of academic papers.

Since publication in 1990, the Black-Litterman asset allocation model has been widely applied in many financial institutions. As developed in the original paper, the Black-Litterman model provides the flexibility to combine the market equilibrium with additional market views of the investor. In the Black-Litterman model, the user inputs any number of views or statements about the expected returns of arbitrary portfolios, and the model combines the views with equilibrium, producing both the set of

expected returns of assets as well as the optimal portfolio weights. In the traditional mean-variance approach the user inputs a complete set of expected returns, and the portfolio optimiser generates the optimal portfolio weights.

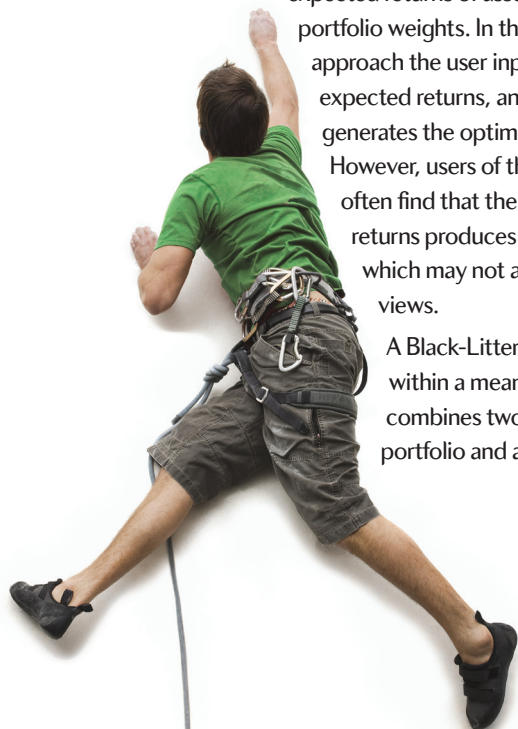
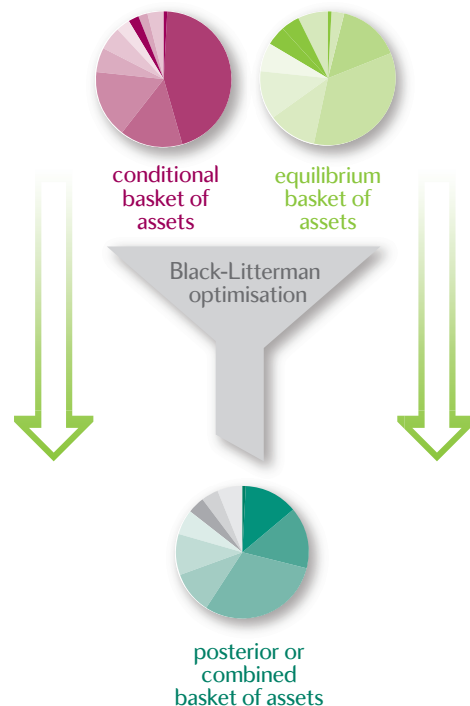
However, users of the mean-variance approach often find that their specification of expected returns produces output portfolio weights which may not agree with their market views.

A Black-Litterman optimisation operates within a mean variance framework but combines two portfolios, an equilibrium portfolio and a conditional portfolio, to

generate a new posterior or combined portfolio which has a higher certainty of outcome.

In respect of the Skandia Shield Fund, the equilibrium basket of assets has a weighting reflecting market participants’ views on the assets, therefore according to MPT, it is efficient.

The conditional basket of assets is driven by the investment managers’ discretionary views on assets, therefore its weighting reflects the managers vision on their expected performance.





In order to successfully implement a Black-Litterman approach, two sets of asset allocation inputs are required.

To define the equilibrium portfolio, an approach known as 'reverse optimisation' is used. Conventional optimisation determines an optimal portfolio based upon a range of risk, return and correlation inputs. Reverse optimisation works the other way around, by determining the risk, return and correlation inputs which would have been needed to generate a given portfolio. The strength of this process is that these inputs can be used to re-optimize to a different risk level or return target, with the result being consistent with the equilibrium portfolio.

For the Skandia Shield Fund, this equilibrium or baseline basket of assets is determined by looking at both the conditional or market basket of assets (which assumes that markets have efficient asset allocations) and a typical strategic asset allocation (which assumes that professional investors, on balance, have efficient asset allocations).

The second set of inputs required are a set of active asset allocation 'views' which are then combined with the equilibrium assumptions to create the optimal basket of assets. In order to ensure that the basket remains liquid, and to ensure it exhibits intended diversification characteristics, the following limits are used:

Whilst the minimum allocation to each asset class is zero, the basket of assets must always have at least 25% exposure to bonds and equities with a maximum exposure of 75%.

Type	Asset class	Minimum weight	Maximum weight
Equity	UK equities	0%	35%
Equity	US equities	0%	12%
Equity	Eurozone equities	0%	12%
Equity	Japan equities	0%	4%
Equity	Australia equities	0%	2%
Equity	China equities	0%	5%
Equity	India equities	0%	2%
Equity	Brazil equities	0%	4%
Equity	Russia equities	0%	4%

Type	Asset class	Minimum weight	Maximum weight
Bond	UK Govt Bonds	0%	20%
Bond	US Govt Bonds	0%	15%
Bond	German Govt Bonds	0%	15%
Bond	US Liquid Inv. Grade Bonds	0%	15%
Bond	US Aggregate Inv. Grade Bonds	0%	15%
Bond	US Liquid High Yield Bonds	0%	15%
Bond	Emerging Market Bonds	0%	10%

Determining the active asset allocation views

Skandia Investment Group derives its active asset allocation views based on a range of inputs including macro economic data, valuation, sentiment and technical inputs. These views are then used within the Skandia Shield Fund.

Importantly, the time horizon for these asset allocation views is aligned with the time horizon of the risk model used by the Fund. The assets which Skandia Investment Group (SIG) evaluates as having strong prospects are assigned positive expected relative return and those which SIG evaluates as having poor prospects are assigned negative relative expected return. The result is that the final portfolio reflects these prospects within the risk framework laid down by the requirements of the Skandia Shield Fund.

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