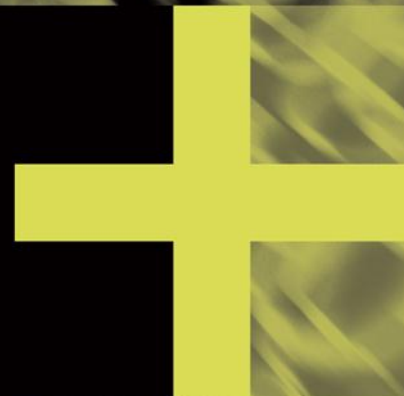


Fact Sheet

Pension Fund Risk Model (dBALM)

barrie+hibbert

Powering objectivity in the global financial services industry



dBALM at a Glance

+General model functions

- Unlimited simulations
- All model parameters editable
- Alternative parameters views
- Bulk import
- Multi-economy, multi currency

+Interest rates & bonds

- Nominal & real yield curves that can be calibrated to initial market values
- Stochastic credit spreads and defaults
- Bond portfolios (government & corporate)
- Vanilla swaps & swaptions

+Equity & Alternatives

- Equity indices
- Real estate indices
- Private Equity
- Hedge Funds
- Commodities
- Equity Options

+Portfolio modelling

- Create specific portfolios
- Apply alternative rebalancing rules

+Calibration

- Multi-economy real-world calibration service provides regular documented global calibration updates.

+Scheme Features

- Benchmark liability portfolios
- Value liabilities on a number of different bases, for example IAS19 and gilts + x%
- Allow for planned contributions and assess potential volatility in required amount.
- Allow for future pension accruals

Defined Benefit Pension Fund Risk Modelling

Defined benefit pension funds have faced significant challenges over the last decade due to factors such as volatile equity returns, low bond yields, the exposure to alternative asset classes and pensioner longevity improving faster than expected.

This has led to the introduction of more sophisticated techniques for managing the risks inherent within a pension fund and a growing trend towards market-based measures of economic valuation.

The demands of stakeholders such as sponsors, trustees and members have resulted in a more active approach to managing their respective interests within pension funds.

Without a robust measurement of risk and potential reward, it is difficult to assess the merits of a fund's current strategy and any prospective risk management strategy, especially as the potential investment solutions available to pension funds are numerous and complex.

The Defined Benefit Asset-Liability Model (dBALM) from Barrie + Hibbert gives our clients access to a proven tool that will help them measure and manage the risks facing their pension funds.

Our solution is a sophisticated asset-liability model takes a holistic approach to analysing the risks underlying pension funds.

Key Features

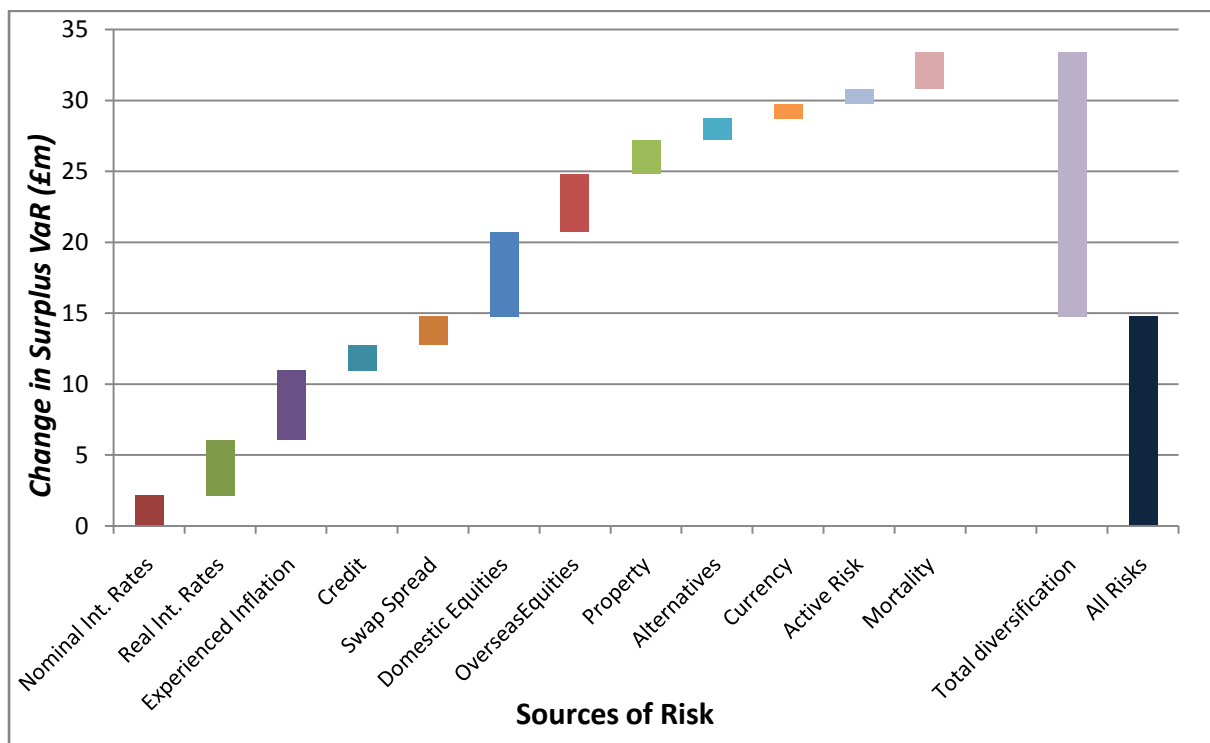
- Integrated stochastic asset-liability modelling tool that covers interest rates, multiple equity and property indices, credit risk and alternative asset classes.
- Ability to model a variety of equity and interest rate derivatives.
- Aids the understanding of key risk drivers and their significance, using our risk decomposition and Greeks analysis.
- Investigate the expected impact on the risk and return of a pension fund under different investment strategies.
- Understand the significance of individual risk and their contribution to the aggregate risk.
- Assess how investment strategy can influence the level of contributions.

Example Output

Pension fund stakeholders can be surprised to see where their key risks emanate, and can sometimes be taken aback to find that the risks they worry about most are not always the significant ones they are exposed to.

Our risk analysis model offers a distinguished view of measuring risk and return, which is not only comprehensive in its approach but delivered in a manner that aids the communication of the results to key stakeholders.

Shown below is an example of one of the outputs of the model, which highlights our approach to risk measurement. It shows the disaggregation of the total value at risk of the fund's surplus (the black bar on the right) into its constituent parts (the coloured bars, except the purple one) and the diversification of these risks (the purple bar). This approach provides an intuitive way to manage risks and can illustrate how tackling a risk in isolation can result in little effect due to a reduction in the diversification benefits.

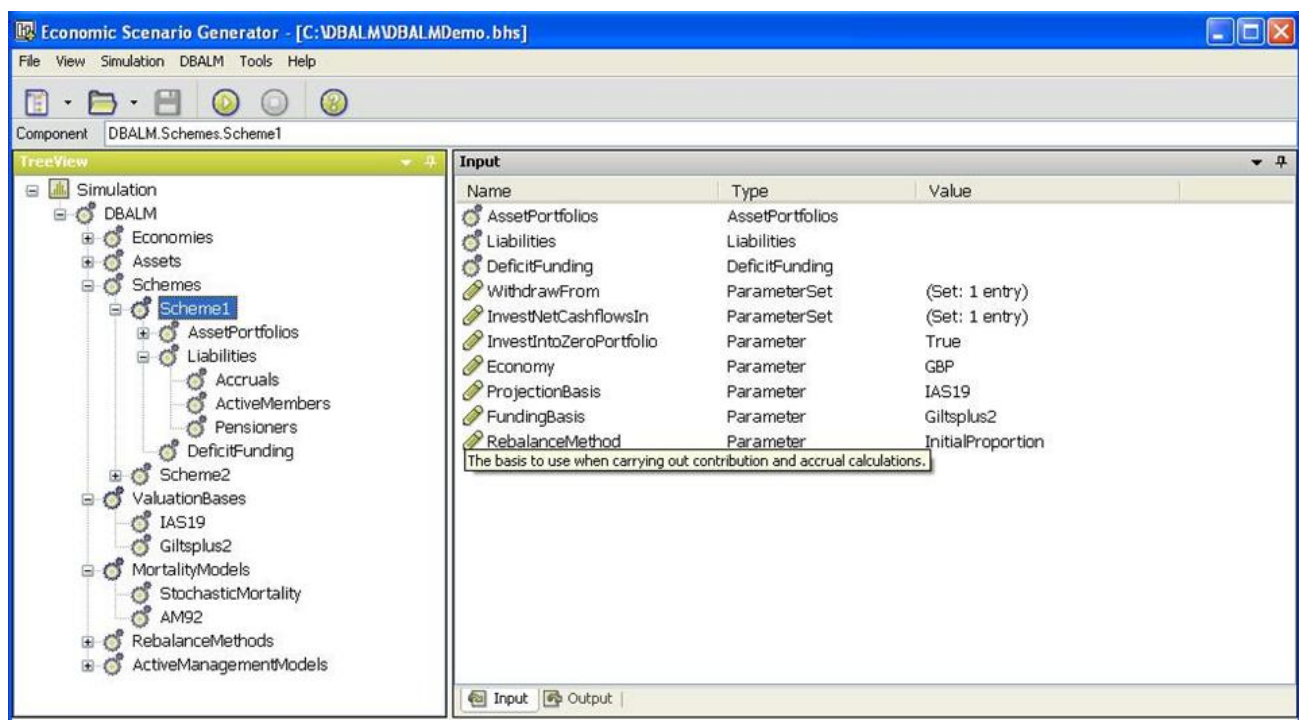


Calibration tools and services

Our Real-world calibration service provides regular calibration updates for all subscribed asset classes, indices and economies. Calibrations are available in over 20 global economies.

Software

- Software provided in Microsoft .Net in professional development and testing environment.
- Software is grid-enabled. API available.
- User friendly interface, embedded Help System.



Support, training and consultancy

- Training and ongoing (technical and actuarial) support embedded in product service.
- Consultancy services available relating to customisations and product design.

About Barrie & Hibbert

Barrie & Hibbert was established in 1995 by John Hibbert and Andrew Barrie. Our primary focus is the identification, quantification and management of financial risk in savings and investment products, institutional investment portfolios and complex financial liabilities.

Collectively our staff of leading academics, quantitative analysts, actuaries and software engineers offer a depth and breadth of expertise combined with an unrivalled track record of experience in implementing risk solution for financial institutions around the world.

Our asset and product modelling capability has been developed over the last 14 years resulting in Barrie & Hibbert becoming a global leader in stochastic asset modelling services.

The understanding of market risk is central to objective financial management. Our market-leading stochastic modelling framework allows our clients to model economic and asset scenarios to help to improve their understanding of financial market risk – and to make any appropriate adjustments within their business.

Our modelling framework, the Economic Scenario Generator (ESG), is the engine that powers our range of products and services. Rather than attempt to create a single model and calibration for every application, Barrie & Hibbert has developed a toolbox of academically robust models within a consistent framework that can be adapted to meet our clients' requirements.

Experience has taught us that different clients have different ways of working to suit their capabilities, organisational structure and geographic presence. As a consequence, our modelling solutions are deployed in a number of ways to suit each client's individual needs.

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