

Liability Driven Investing in Charles River IMS

Liability-Driven Investment (LDI) strategies help insurers and pensions manage assets based on the cash flows required to fund future liabilities. These strategies may include matching the cash flows of assets with the cash flows of liabilities, or matching the risk sensitivities of both assets and liabilities, so that assets can still fund liabilities if market conditions change. These capabilities help asset managers minimize a portfolio's liquidation risk by ensuring asset sales, interest, and dividend payments correspond with expected payments to beneficiaries.



Figure 1: LDI workflow overview

LDI Workflow Support

The Charles River Investment Management Solutions (Charles River IMS) uses a “Liability Instrument” to streamline modeling of cash flows. The following capabilities support LDI workflows:

Liability Benchmarks

Users assign a liability benchmark to their respective funds. These benchmarks contain the liabilities that correspond to the fund.

Liability Mapping

Users can define liabilities to be either nominal or inflation-adjusted. Inflation adjusted liabilities can be modeled based on an imported set of real and/or inflation adjusted cash flows.

Flexible Analytics

Liability valuations can be produced relative to a set of actuarial cash flows discounted relative to the appropriate curve (e.g., IRS curve) and spread. Users can specify tenor set sensitivities for the asset portfolio and the liabilities. The sets feature:

- Flexible tenor definitions
- Ability to generate interest rate and inflation sensitivities per tenor (i.e., KRDs, PV01 and IE01)*
- Ability to link interest rate to inflation sets (e.g., yield beta adjustments are used to construct inflation sensitivities for nominal bonds)

Portfolio Management

The Charles River Manager Workbench enables users to efficiently manage a portfolio of assets and liabilities. Portfolio managers can display liability securities, calculate and show funding ratios, and generate a range of analytics by tenor, including PV01, DV01 and IE01. This supports standard hedging and targeting workflows, for example, hedging a position and determining funding ratio impact.

Scenario Analysis

Charles River Scenario Analysis supports the ability to shift the market factors that are relevant to liabilities (e.g., interest rates, inflation and spreads). User-specified shifts are applied to all relevant curves, liability, and asset attributes in order to obtain a scenario specific set of valuations, analytics and cash flows.

From a fund management perspective this allows a portfolio manager to:

- View funding and hedge ratios subject to various economic environments
- Perform cash ladder analysis relative to their liabilities
- Analyze changes in valuations and sensitivities subject to regime changes

For stress testing, liabilities can be proxied or used in factor scenarios if factor exposures are available.

Compliance Monitoring

Compliance rules can be based on portfolio level analytics, tenors, and funding ratio.

*KRD (Key Rate Duration): measures how the value of a security or portfolio changes at a specific maturity point along the entirety of the yield curve. When keeping other maturities constant, the key rate duration can be used to measure the sensitivity in a security's price to a 1% change in yield for a specific maturity.

PV01: the change in present value of an asset or liability for a 1 basis point change in the nominal yield curve used to value the asset or liability (usually the swap curve)

IE01: the change in present value of an asset or liability for a 1 basis point change in the implied inflation curve used to value the asset or liability (usually the RPI zero-coupon curve).



Charles
River

A State Street
Company



crd.com

CHARLES RIVER DEVELOPMENT, A STATE STREET COMPANY

Charles River enables sound and efficient investing across all asset classes. Investment firms in more than 30 countries use Charles River IMS to manage more than US\$25 Trillion in assets, as of April 2019, in the institutional investment, wealth management and hedge fund industries. Our Software as a Service-based solution (SaaS) is designed to automate and simplify investment management on a single platform – from portfolio management and risk analytics through trading and post-trade settlement, with integrated compliance and managed data throughout. Headquartered in Burlington, Massachusetts, we support clients globally with more than 925 employees in 11 regional offices.

www.crd.com

Disclaimers and Important Risk Information

Charles River Development - A State Street Company is a wholly owned business of State Street Corporation (incorporated in Massachusetts).

This document and information herein (together, the “Content”) is subject to change without notice based on market and other conditions and may not reflect the views of State Street Corporation and its subsidiaries and affiliates (“State Street”). The Content is provided only for general informational, illustrative, and/or marketing purposes, or in connection with exploratory conversations; it does not take into account any client or prospects particular investment or other financial objectives or strategies, nor any client’s legal, regulatory, tax or accounting status, nor does it purport to be comprehensive or intended to replace the exercise of a client or prospects own careful independent review regarding any corresponding investment or other financial decision. The Content does not constitute investment research or legal, regulatory, investment, tax or accounting advice and is not an offer or solicitation to buy or sell securities or any other product, nor is it intended to constitute any binding contractual arrangement or commitment by State Street of any kind. The Content provided was prepared and obtained from sources believed to be reliable at the time of preparation, however it is provided “as-is” and State Street makes no guarantee, representation, or warranty of any kind including, without limitation, as to its accuracy, suitability, timeliness, merchantability, fitness for a particular purpose, non-infringement of third-party rights, or otherwise. State Street disclaims all liability, whether arising in contract, tort or otherwise, for any claims, losses, liabilities, damages (including direct, indirect, special or consequential), expenses or costs arising from or connected with the Content. The Content is not intended for retail clients or for distribution to, and may not be relied upon by, any person or entity in any jurisdiction or country where such distribution or use would be contrary to applicable law or regulation. The Content provided may contain certain statements that could be deemed forward-looking statements; any such statements or forecasted information are not guarantees or reliable indicators for future performance and actual results or developments may differ materially from those depicted or projected. Past performance is no guarantee of future results. No permission is granted to reprint, sell, copy, distribute, or modify the Content in any form or by any means without the prior written consent of State Street.

The offer or sale of any of these products and services in your jurisdiction is subject to the receipt by State Street of such internal and external approvals as it deems necessary in its sole discretion. Please contact your sales representative for further information.

© 2019 STATE STREET CORPORATION 2763195.1.1.GBL.