

## SETTING THE STANDARD FOR LIQUIDITY ANALYTICS

LiquidityMetrics is a multi-asset class liquidity risk measurement framework that extends market impact models from trading floors to risk departments.

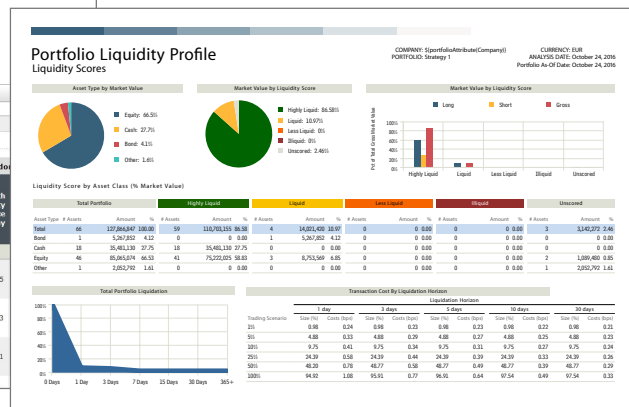
LiquidityMetrics is currently delivered through MSCI RiskManager and enables users to benefit from a single liquidity platform and methodology to:

- Support liquidity risk management and regulatory risk reporting requirements
- Perform portfolio liquidity capacity-checks and assess the underlying time horizon required for liquidation
- Stress test the liquidity of the portfolio under alternative trading scenarios and market impact conditions

### Benefits and features

- **Standard language for market liquidity** that can be applied throughout an organisation to support investment management, risk control and risk management functions.
- **Supports regulatory risk reporting** requirements for ESMA AIFMD, UCITS including liquidity stress test requirements, SEC 22e-4 and Form PF directives while improving the quality of the liquidity risk management processes.
- **Global multi-asset class coverage** supported by IHS Markit quote and trade data for Fixed Income, Virtu's Cost Curves for Equities and data-driven calibrations for Derivatives.
- **Complete methodology** that jointly models the multiple facets of liquidity risk – time, cost, size – and is universally consistent across asset classes.
- **Intuitive asset, position and portfolio level analytics** for multi-asset class, multi-currency strategies.
- **Monetary based measures** that provide economic effects and actionable information in addition to enhanced liquidity scoring grades.
- **Interactive access** through the RiskMetrics RiskManager risk platform to define analysis settings, run reports on demand, and view results.
- **Automated workflow** with industrial scale throughput for batch processing.

Home	positionType	PV_stress_1yr	Stress PV_stress_1yr	Delta PV_stress_1yr	TC with Liquidity Surface 1day	Stress TC with Liquidity Surface 1day	Delta TC with Liquidity Surface 1day	TC with Liquidity Surface 1day
Total		1,661,934,007	1,644,371,747	-17,562,260	999,934,033	967,076,968	-32,857,065	
ADVANCED MICRO DEVICES INC (USD 7,500, 15-Aug-2022)	Generic Bond	18,391,061	17,643,225	-747,836	9,125	9,125	0	9,125
AFRICAN METALS CORP (USD 13,200, 8-Aug-2019)	Generic Bond	697,667	680,721	-16,945	3,563	3,563	0	3,563
AGILE PROPERTY HOLDINGS LTD (USD 8,875, 28-Apr-2017)	Generic Bond	1,333,102	1,333,739	637	7,061	7,245	184	7,061
ALBANI HOLDCO								



## Analytics - from asset to portfolio level

- **Liquidation horizon** – the time to liquidation of a portfolio given a transaction cost threshold.
- **Liquidation amount** – the maximum size that can be liquidated given transaction cost and liquidation horizon constraints.
- **Liquidation value** – the proceeds expected to be realized from an order.
- **Transaction cost** – expected difference between realized price of an order and the prevailing price.
- **Liquidity bucketing** – ready-to-use regulatory (SEC Liquidity Rule 22e-4 and AIFMD) and custom scoring rules.
- **Regulatory bucket threshold** - the maximum position size for a security and a given liquidity bucket (e.g. 'Highly Liquid').

## Methodology - liquidity surface

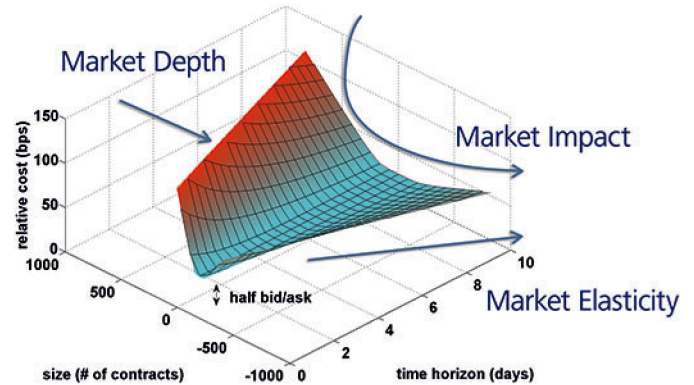
LiquidityMetrics methodology is based on constructing asset-specific liquidity surfaces to capture the time, cost, and size dimensions of market trades. Through the use of liquidity surfaces a complete description of asset liquidity is possible.

### Anatomy of a liquidity surface

Four main features of an asset's liquidity can be directly observed from its liquidity surface.

- **Market impact** – the dependence of price impact on order size; larger orders usually demand larger transaction costs.
- **Market elasticity** – the speed, and to what extent, a market regenerates the liquidity removed by a trade and reverts back to its previous state. This determines how much transaction costs decrease with longer time horizons.

- **Market depth** – the maximum (buy and sell) size thresholds above which trades are expected to meet either no sufficient supply/demand or otherwise distressed, unpredictable prices.
- **Bid-ask spread** – half bid/ask spread is the expected transaction cost for small orders traded on whatever time horizon.



## LiquidityMetrics in practice

LiquidityMetrics provides one liquidity analytics standard throughout the organization.

### Investment management

- Stress testing via alternative liquidation scenarios
- Pre-trade, expected transaction cost analysis
- Liquidity based investment decisions

### Risk management and control

- Firm-wide liquidity risk measurement
- Quantification of hidden costs in liquidation/redemption commitments
- Supports regulatory risk reporting (ESMA AIFMD, UCITS including liquidity stress test requirements, SEC 22e-4 and Form PF)

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