



MARKET LIQUIDITY RISK

Market Liquidity Risk refers to the risk of losing money when you suddenly liquidate one or more positions in your portfolio. The loss comes from selling the positions at a lower price than the one at which those positions are marked-to-market.

The StatPro Approach

StatPro has designed an innovative approach to measuring market liquidity risk that does not rely on observed bid, ask and volumes. The approach breaks down liquidity risk into five components:

- ◀ Fair Value Bid and Fair Value Ask. In this component we try to replicate the process that a market-maker uses for creating bids and asks for fixed income products and derivative instruments. We collect the information on bid and asks for the underlying derivative instruments used by the market-makers to hedge their risks and compute a fair value bid and a fair value ask by inserting the respective bid and ask of the underlying derivatives into our pricing functions. This process takes into account the exposure of each instrument to each risk factor. Therefore when creating a bid for a convertible bond, the function will use the bid of the underlying implied volatility. Instead, for the bid of a reverse convertible, the pricing functions will receive as input the ask of the implied volatility.
- ◀ Pricing Function Type. Certain instruments have more liquidity risk than others simply because of their nature. For example ABSs will be less liquid than other bonds by definition.
- ◀ Outstanding Nominal. The size of an issue is most relevant for the liquidity of a fixed income instrument. Two identical bonds issued by the same issuer can have more or less liquidity, depending on the size of the issue. A \$50m issue will be less liquid than a \$1bn issue by definition.
- ◀ Market Cap (Equity Component). In stocks the liquidity is intimately linked to the dimensions of a company and to its market capitalization.
- ◀ Percentage of Ownership (Equity Component). Given the idiosyncratic nature of individual stocks, the percentage of the market capitalization of a stock owned by a certain portfolio will be an essential driver of liquidity risk. Owning 0.0001% of a stock will not generate additional liquidity risk, but owning 10% of the market cap will create a remarkable additional liquidity risk to the owner.

The Benefits

Universal Approach. The StatPro approach is extended to any instrument, from simple equities to liquid and illiquid fixed income instruments, from certificates to complex OTC derivatives, touching all the 250+ pricing functions supported by our risk management operation.

Consistency. The approach is consistent among all asset classes, capturing all the relevant drivers of liquidity risk. For example, longer maturity will always determine higher liquidity risk. A worse credit merit will always determine more liquidity risk. The currency denomination will also be a driver of that risk and a THB bond will always present higher liquidity risk than an equivalent USD bond.

Empowering the Risk Manager. The model approach provides risk managers with a tool for spotting the main elements of liquidity risk with ease, enabling them to understand in detail the nature of liquidity risk in a portfolio without knowing the details of that portfolio.

Based on Scenarios. The system supports several scenarios of liquidity risk, giving the possibility of measuring this risk under Normal Market Conditions, Stressed Conditions and Highly Stressed Conditions.



- PERFORMANCE MEASUREMENT
- ATTRIBUTION ANALYSIS
- RISK MANAGEMENT**
- LIQUIDITY RISK
- COMPOSITES
- GOVERNANCE
- ANALYTICS REPORTING
- PORTFOLIO MANAGEMENT



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Liquidity Risk Functionalities

Global Liquidity Risk

This analysis facilitates the selection of the desired liquidity risk scenarios and the computation of the expected loss for liquidity risk. The view includes a break-down of the liquidity risk loss across the various components.

Liquidity Scenario	Cash Change	Percentage Change Based on Port. Exp.	Percentage Change Based on Port. VW	Contribution	Calculation Date
Test scenario (Total Loss)	€ 1.714.254,03	0,36654%	0,34931%		27/05/2010 17:09:25
Specific	€ 0,00	0,00000%	0,00000%	0,00000%	
IndRisk	€ 905.544,28	0,19773%	0,20082%	57,49110%	
Pricer	€ 104.237,50	0,02229%	0,02124%	6,08953%	
Market	€ 533.670,08	0,11411%	0,10874%	31,12833%	
MarketCap	€ 26.124,00	0,00559%	0,00552%	1,62076%	
% Owned	€ 64.678,18	0,01383%	0,01318%	3,77296%	

Liquidity Risk Decomposition

The user can select one scenario and build a tree of criteria for decomposing the liquidity risk contribution at each hierarchy level, down to single asset composition. The risk manager can drill down through every component of liquidity risk, discovering how much is coming and from where, without any previous knowledge of the portfolio. This tool enables the risk manager to 'x-ray' the liquidity risk of the portfolio, spotting any challenging situations.

Segments	Risk Exposure	% Risk Weight	P&L Contribution	P&L Conv.
11-EQUITY	344.961.632,90	35,28%	3.54338%	
11-DEBT	33.038.000,00	2,81%	0,47826%	
11-OVERALL	363.335.499,75	75,90%	46,4623%	
11-AAA	2.345.000,00	0,57%	0,5039%	
11-B	4.427.000,00	1,22%	1,9274%	
11-BB	10.718.000,00	2,95%	3,8701%	
11-BBB	10.718.000,00	2,95%	3,8418%	
11-BA	9.791.000,00	2,69%	0,5471%	
11-B	35.160.000,00	7,52%	15,1949%	
11-A	45.278.426,40	9,98%	20,1823%	
11-SPREADS	9.778.000,00	2,69%	2,1287%	
11-SUPERSUBS	6.443.426,40	1,77%	0,6711%	
11-ABS	9.387.000,00	2,58%	11,9994%	
11-OTHER	9.932.000,00	2,73%	1,4623%	
11-USD	9.710.000,00	2,68%	5,1464%	
11-OTHER	17.248.000,00	4,75%	11,2921%	
11-OTHER	99.744.210,05	27,18%	1,7821%	
11-A	16.283.330,00	4,48%	4,7897%	

Absolute Risk, Relative Risk, Aggregated Risk

As with all our risk analyses, liquidity risk can be run at single asset level, portfolio level, portfolio-vs-benchmark and as an aggregation of several portfolios. The latter option is critical to liquidity risk, as the percentage of ownership of one stock can be negligible when measured by portfolio, but can become relevant at 'firm' level.

