

# Counterparty Credit Exposure Module

Enabling institutions to generate exposure distributions and estimate statistics across user-defined horizon buckets for a wide range of assets.

**Credit exposure is a measure used to quantify risk concentrations at the counterparty level.** It represents the cost of replacing a transaction or a set of transactions with a counterparty if that counterparty defaults (today or at some time in the future) under the assumption of no recovery. One of the challenges in computing exposure is due to the way OTC markets are (dis)organized using bespoke or standardized agreements to define relationship terms in a common legal framework that includes close out netting and collateral arrangements for netting sets. Capturing these aspects is key.

Credit exposure is usually applied or used as input in the following ways:

- + Risk concentration management
- + Credit limit management for trade approvals
- + Regulatory and Economical Capital (in Exposure at Default)
- + Pricing, risk premium and hedging cost (Credit Valuation Adjustment)

The estimation of credit exposure to derivatives counterparties involves a broad range of issues:

- + Determination of the replacement cost of a particular transaction at any time throughout its lifetime involves risk factor modelling potentially over long horizons, and instrument pricing. In particular the treatment of path dependent products and aging and reinvestment strategies should be dealt with. The Credit Exposure module employs a Monte-Carlo simulation based engine to generate future market scenarios. From this, exposure distribution generation and estimation of statistics across user-defined horizon buckets for a wide range of assets is possible. Existing stochastic models rely on geometric Brownian motion with mean reversion for interest rates and CDS spreads.
- + Risk mitigation: Netting and margining arrangements described in bilateral agreements between counterparties need to be modelled. Within the framework one can represent and describe not only the transactions, but also legal entities (including rating, company affiliation, etc) and bilateral agreements (netting options and collateral arrangements) between counterparties. Netting sets and corresponding collateral provisions are created on the fly when needed for a particular statistic.
- + Consolidation of exposure at any level of the portfolio for limit and exposure management: Depending on the reporting level, exposures (above netting set level) or positions (within netting sets) are aggregated.

## RiskMetrics Group Addresses a Broad Spectrum of Risk



## Client Benefits:

- + Wide asset class coverage
- + Ability to define characteristics of legal entities and agreements between them and to link transactions to relevant agreements
- + Calculate credit exposure and apply limits at any aggregation level. This includes current or potential future exposure statistics (expected and maximum credit exposure) and PFE and time average Expected Peak Exposure (EPE) profiles.
- + Exposure calculation includes risk mitigation such as collateral and netting agreements through the agreement structure
- + Integrated with RiskManager and interacts with CreditManager
- + Ability to Stress Test Credit Exposure: either by defining market data scenarios or by stress testing netting and collateral options
- + Interactive report definition and predefined dashboard reports are available through RiskManager.

## Data

The Counterparty Credit Exposure functionality is built on various data types : market data (time series), legal entity descriptive information (rating, affiliate/parent, region, etc), transaction terms & conditions, limits, and bilateral agreements. The functionality includes a historical database of market prices and yields. The module is driven by an intuitive data model to store and link legal entity, transaction, and agreement information. In addition, limits may be set for any aggregation level.

## Interaction of Market and Credit Risks

The results of the Credit Exposure module in RiskManager can be exported and uploaded into RiskMetrics Group's CreditManager application in order to:

- + Explicitly model directly and indirectly concentrated credit risk.
- + Run portfolio credit simulations on the credit exposures to calculate portfolio credit risk and concentration risk.
- + Calculate economic capital required to support the counterparty risk plus the credit risk deriving from investments over the desired risk horizon. In many cases, limits are imposed such that exposures to a given obligor or to a derivative counterparty do not contribute more than some fixed amount to this economic capital.
- + Utilize the results of the simulation to optimize the risk/return based capital allocation.
- + Perform stress tests either isolating market and credit risk events or use the interaction between the two engines to combine credit and market stress events.

### The statistics available include:

#### Exposure:

- + Current exposure
- + Potential future exposure (expected values or any quantile on the exposure distributions)
- + Post processing operations like Peak, EPE, or the effective versions of all exposure stats

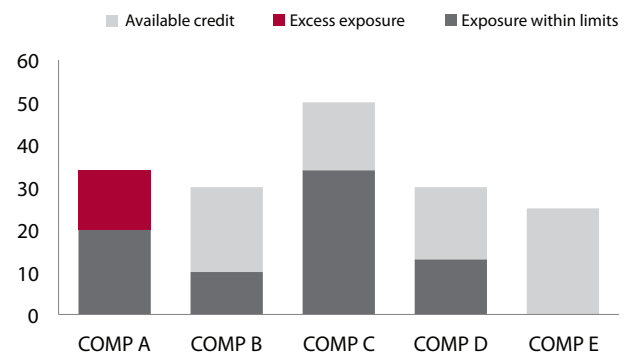
#### Stress testing:

- + Risk factor levels can be stressed before computing any of the above listed exposure statistics.
- + Stress netting options (all netted, no netting, or netted as specified in the agreements), and thresholds.

#### Collateral requirements:

- + Current credit support amount
- + Potential future credit support amounts

### Exposure vs Limits



For more information on this and other solutions from RiskMetrics Group, please email [marketing@riskmetrics.com](mailto:marketing@riskmetrics.com), visit [www.riskmetrics.com](http://www.riskmetrics.com), or call:

Chicago . . . . . +1 312.977.1707	Rockville . . . . . +1 301.556.0540
Frankfurt . . . . . +49 (0) 69.2729.8659	San Francisco +1 415.216.2900
London . . . . . +44 (0) 20.7063.5600	Singapore . . . . . +65 6826.9339
Melbourne . . . . . +61 3 9642.2062	Tokyo . . . . . +81 3 5275.7821
New York . . . . . +1 212.981.7475	Toronto . . . . . +1 416.364.9000
Paris . . . . . +33 1 42.68.51.42	

RiskMetrics Group's **Counterparty Credit Exposure** module provides institutions with a comprehensive solution to monitor and track Counterparty Credit Exposure.

### About RiskMetrics Group:

RiskMetrics Group (NYSE: RMG) is a leading provider of risk management and corporate governance products and services to financial market participants. By bringing transparency, expertise and access to the financial markets, RiskMetrics Group helps investors better understand and manage the risks inherent in their financial portfolios. Our solutions address a broad spectrum of risk across our clients' financial assets. Headquartered in New York with offices in major global financial centers, RiskMetrics Group serves some of the most prestigious institutions and corporations worldwide. For more information, please visit: [www.riskmetrics.com](http://www.riskmetrics.com).



RiskMetrics Group