Market Risk Management

Scenario Based Portfolio Risk Management

Theta Suite is an all-in-one solution for scenario-based portfolio risk management. It provides a solid and extensible framework that covers all asset classes. Its wide support for risk types and performance measures allows the solution to be deployed in many situations. Uses range from single desktops to enterprise risk management systems.

Theta Suite risk management delivers important insights into the portfolio's risk exposure. Analyzing the impact of a specific market situation on a portfolio can be performed with ease.

The Theta Suite maintains a list of useful predefined scenarios, including

- historical scenarios and
- named synthetic scenarios (different interest rate curve, higher spreads, higher volatility).

Stochastic scenarios provide additional insights into the portfolio's robustness. Typical risk and performance measures can be derived with the Theta Suite's Monte-Carlo engine. Value at Risk, Potential Future Exposure and Sharpe Omega can be based on various simulations schemes, such as

- Historical simulation,
- Factor models or
- Copulae and other advanced models.

Transparency and Flexibility for the Model Design Process

The Theta Suite solution allows financial engineers to structure their product universe, enabling them to cope with large portfolios as well as exotic payoff profiles. Evaluating financial impacts is now faster and more accurate than ever before.

Thetaris creates standard software following the Computer Aided Finance methodology. Best of breed solutions for recurring tasks are combined to provide the most flexible solution. The users profit from both, the proven solution and modularization.

Your Benefits

1. **Coverage** of the full process of Value at Risk computation from Input data to reporting.
2. **Proven solution** with deployments from single desktops to large cooperation-wide risk management systems managing single instruments to millions of contracts.
3. **Easy access** to state-of the art numerics providing a solid foundation for comprehensive risk reporting.

THETARIS
Engineering in Finance

Modeling and Numerics

Separation of Product Description and Valuation Model

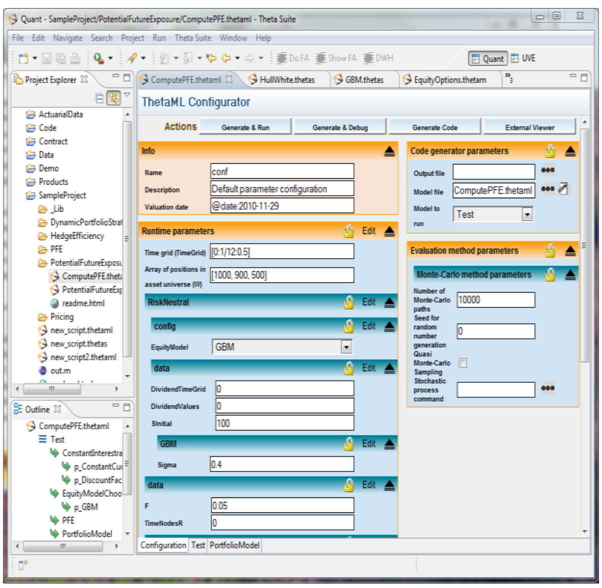
The Theta Suite model building process consists of a formal description of the products payoff structure, the stochastic models and the numerical implementations. All aspects are modularized and are thus reusable throughout the system.

Sets of small, interlinked model components are easier to understand and verify than traditional algorithms that mingle all three aspects in one large piece of computer code. Also, the ability to combine different stochastic models with the same product structure reduces model risk while keeping the code base small.

Integrated Development Environment

An integrated development environment allows for efficient model creation for products and stochastic processes.

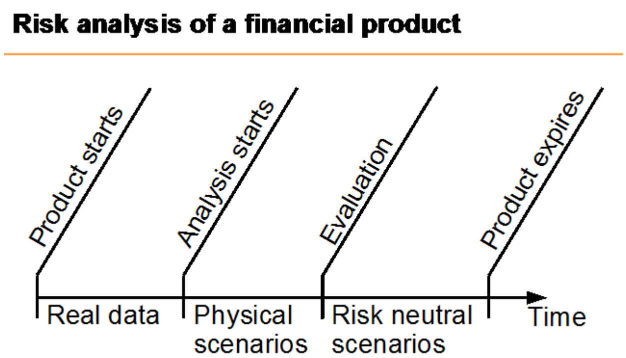
Easy to understand descriptions of products and evaluation models allow for full traceability of every step in the calculation process. The full path from initial input data mappings up to the final result presentation remains entirely transparent in your analysis process.



Theta Suite Screen Shot: This Integrated Development Environment is used for defining the market model, pricing models, instruments, input data mappings as well as workflows for aggregating results of several simulations into Value at Risk numbers.

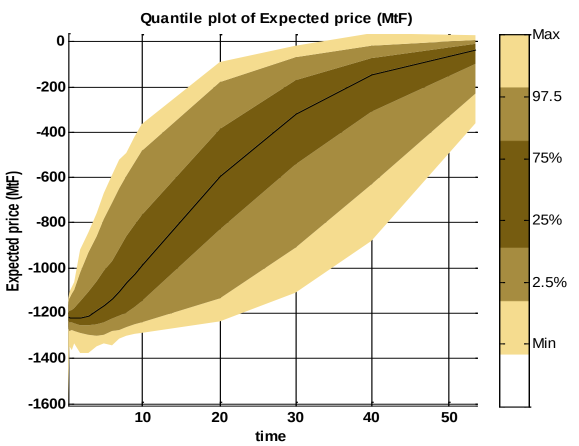
Steps in the Risk Analysis of a Financial Product

The Portfolio Market Risk Management Solution includes the high performance computation via Theta Proxy RM. This unique solution on the market ensures extreme computational speed, even for highly structured financial products. Further details can be found in the Theta Proxy RM solution brochure.



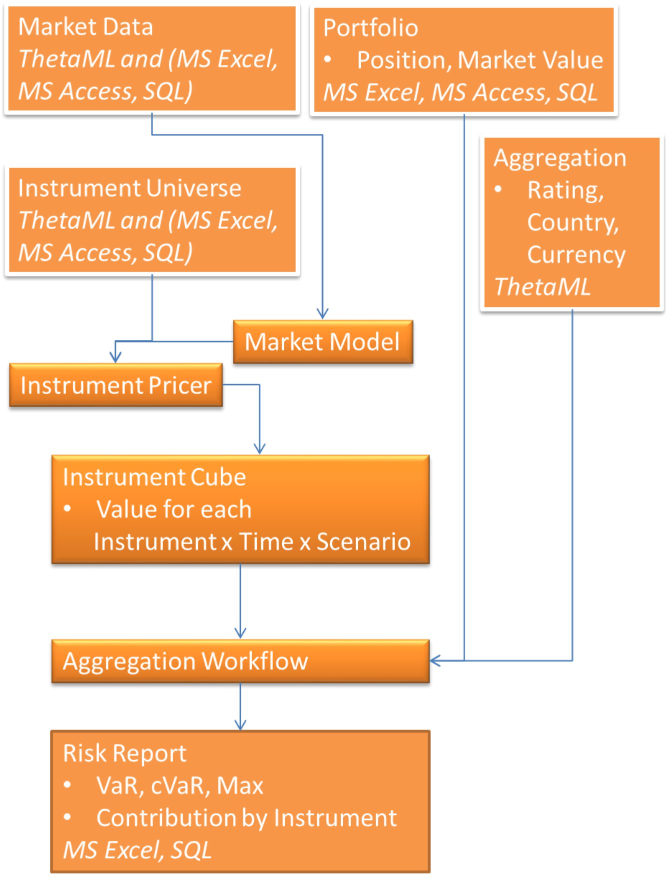
Numerical Algorithms

The numerics in the Theta Suite provides fast and reliable extraction of the required statistics for all aggregations of the portfolio. Graphical outputs support the advanced user in the professional assessment of a financial product as well as the complete portfolio.



Sample graphic of the Result Explorer. Quantiles of the market risk of an inflation swap, resp. Potential Future Exposure over product life time.

Architecture



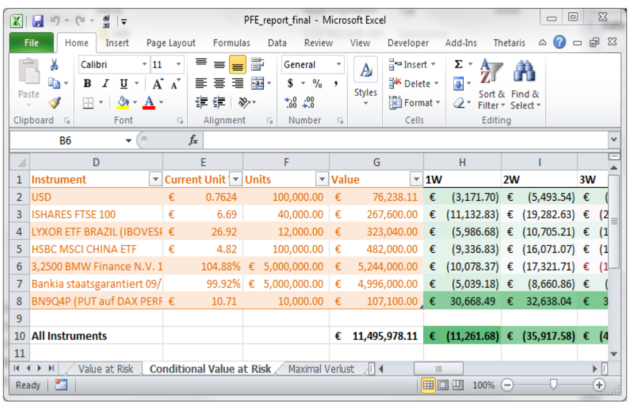
Architecture Overview

The Theta Suite provides the right solution for your portfolio and your reporting needs. It integrates well with existing infrastructure or can be used standalone.

The reports for the final risk assessment can be based on MS Excel, for which the Theta Suite includes preconfigured report templates. Larger deployments can easily link up result data to databases, such as MS Access, and enterprise risk management systems, such as Calypso, SAS or Algorithmics RiskWatch.

Reporting in Excel

Reporting in Excel is supported with the Theta Excel Exporter component. Full access to all computational results is provided. Computed risk measures can be reported for each individual instrument. Additionally, all levels of portfolio aggregation can be exported to MS Excel using standard Excel templates.

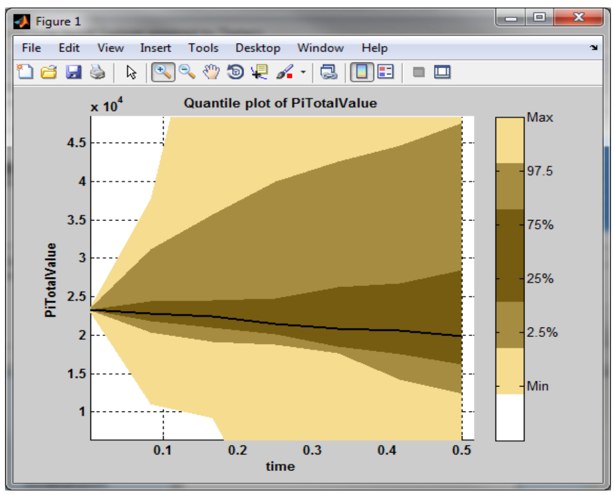


	Instrument	Current Unit	Units	Value	1W	2W	3W
2	USD	€ 0.7624	100,000.00	€ 76,238.11	€ (3,171.70)	€ (5,493.54)	€ (
3	ISHARES FTSE 100	€ 6.69	40,000.00	€ 267,600.00	€ (11,132.83)	€ (19,282.63)	€ (2
4	LYXOR ETF BRAZIL (IBOVESF	€ 26.92	12,000.00	€ 323,040.00	€ (5,986.68)	€ (10,705.21)	€ (1
5	HSBC MSCI CHINA ETF	€ 4.82	100,000.00	€ 482,000.00	€ (9,336.83)	€ (16,071.07)	€ (1
6	3,2500 BMW Finance N.V. 1	104.88%	€ 5,000,000.00	€ 5,244,000.00	€ (10,078.37)	€ (17,321.71)	€ (1
7	Bankia staatsgarantiert 09/	99.92%	€ 5,000,000.00	€ 4,996,000.00	€ (5,039.18)	€ (8,660.86)	€ (
8	BN9Q4P (PUT auf DAX PERF	€ 10.71	10,000.00	€ 107,100.00	€ 30,668.49	€ 32,638.04	€ 3
9							
10	**All Instruments**			€ 11,495,978.11	€ (11,261.68)	€ (35,917.58)	€ (4

MS Excel Template: Conditional Value at Risk Evaluation with instrument level risk contribution.

Reporting within Theta Suite

The availability of standard workflows provides access to common reporting functionality out-of-the-box. Interactive report components as well as static and ready-to-print formats are included. Of course all workflows can be adapted by the user to satisfy even the most unusual needs.



Theta Suite Screenshot: Interactive Analysis with Theta Result Explorer: This plot presents different levels for Value at Risk resp. Potential Future Exposure.

System Requirements

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The system requirements mainly depend on the size of the portfolio and the required time for a report.

For a pure desktop solution we recommend:
- 4 Core CPU
- 8 GB RAM

The required software
- MS Windows : (XP, Vista or 7)
- Theta Suite 2.2 or later

Furthermore, we recommend the following software
- Matlab 2007b or later
- MS Excel 2007 or later
- MS Access 2007 or later

ThetaSuite

What can Theta Suite do for you? Contact Thetaris today for a presentation.

Thetaris is a solution provider for the financial industry. Combining state-of-the art financial mathematics with modern informatics, we serve the community by providing tools to enable Computer Aided Finance.

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