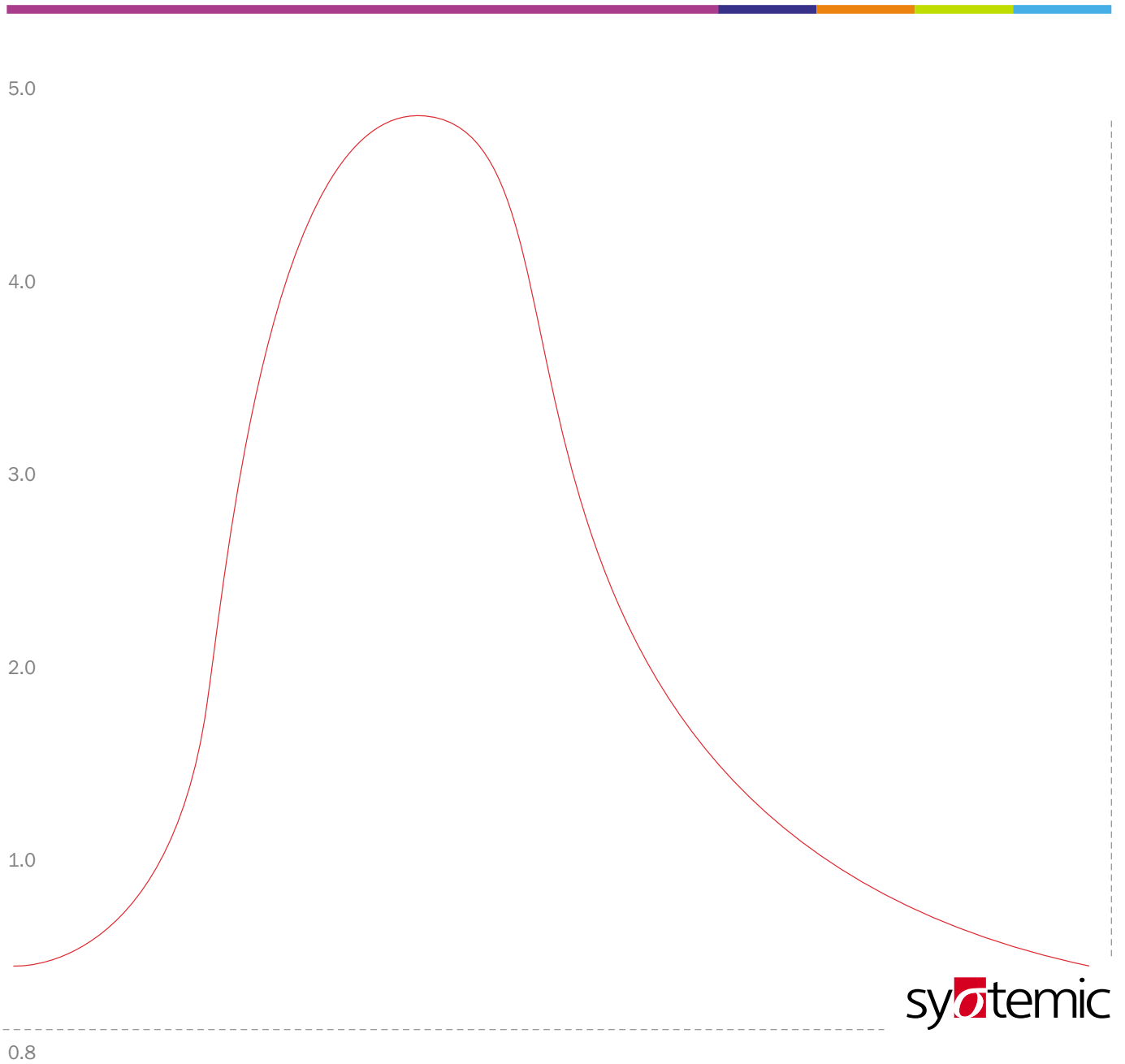


Market Risk



Market Risk

RV Market® provides advanced tools for market risk measurement and active management in Banking, Funds, Private Portfolio, Insurance, and other organisations exposed to market risks. These include:

- Foreign exchange risk
- Interest rate risk
- Credit Spread risk
- Equity risk
- Commodity risk

Highly modular, RV Market® can be configured for requirements ranging from modest individual installations to sophisticated treasury activities and high-volume operations. The system is easily integrated with third-party data vendors, deal capturing systems, corporate accounting applications, as well as back-office systems.

Integrated Portfolio Management

RV Market® is based on the RiskValue Platform®, which allows it to be fully integrated with a broader family of solutions addressing other areas in the risk management spectrum, including Obligor Risk Rating, Portfolio Credit Risk and others.

"...It (proprietary trading by banks) is not a casino, like a dog-track or the national lottery. It is an activity that involves risks, which ought to be properly controlled." George Eddie

Key features:

- Extensive instrument coverage (including Non-Standard/ Structured products and Derivatives)
- User-defined hierarchical portfolios with drill-down capabilities
- "What-if" trades
- Cash flow generation
- Gap analysis
- Estimation of Value-at-Risk based on Linear (Variance/Covariance) and Monte-Carlo methodologies
- Risk decomposition and attribution
- Risk Parameter calculations based on JP Morgan's – RiskMetrics methodology
- Market Risk Limits monitoring
- Back Testing
- Stress Testing

Extensive Instrument coverage

Based on RiskValue Platform® multi-currency, multi-instrument and multi-exchange configuration, RV Market® will capture all trades/ positions in Exchange traded or Over-the-counter instruments, including equities, bonds, futures and options, cross currency and interest rate swaps, forward rate agreements and many more.

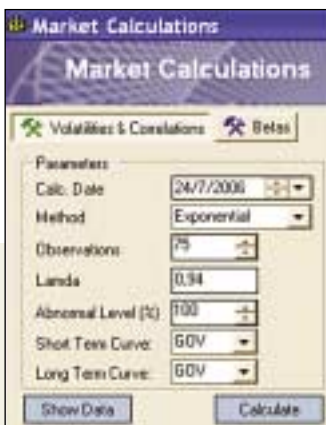
The cash flow structure of Bonds and Swaps may be customized to account for early amortizations, short/ long coupon periods and interest rate changes.

Independent Risk Parameter calculation

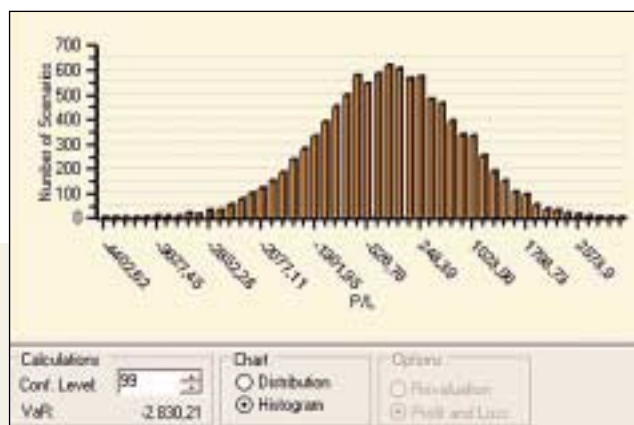
RV Market® calculates all required risk parameters, such as multi-factor Equity betas, Volatilities, and Correlations by applying equal or exponential weighting (RiskMetrics methodology) to the price observations. This gives you complete freedom in choosing the optimal risk factors for your own portfolios. (Screen 1)

Alternatively, the system may be fed with a generic risk data set recalculated daily by SYSTEMIC Risk Management.

Screen 1



Screen 2



Advanced Instrument revaluation algorithms

In order to quantify risk, the system needs to perform frequent revaluations of all positions, comparing actual to scenario-derived mark-to-market. The most efficient algorithms have been implemented, taking under account both accuracy and speed considerations:

- For Bonds, Swaps, and other Cash-Flow instruments the system evaluates future cash flows and calculates their net present values using zero discount factors derived from the appropriate nominal yield curve. Exponential interpolation of Zero Discount Factors is used for cash flows in non-standard periods.
- Instruments with embedded options are evaluated using extensions of the Black-Scholes or the Binomial models, using Analytical approximations where appropriate in order to optimize speed.

Value-at-Risk

RV Market® uses the Value-at-Risk (VaR) methodology in order to quantify risk within any portfolio. VaR can be defined as the potential loss that may be incurred by a portfolio, trading desk or organization unit as a result of adverse market movements over a certain time period. In order to derive the best from all worlds, two calculation methodologies are supported: Linear (Variance/ Covariance) and Monte Carlo simulation. Under the latter approach, the system accounts for potential fluctuations of all risk factors according to predefined statistical distributions. **(Screen 2)**

- Initially, the system calculates VaR for adverse movements of each risk factor independently, without taking under account any diversification effects. This may include changes to a particular equity market, currency, interest rate etc. Separate limits may be placed on each risk factor sensitivity. **(Screen 3)**
- The system also calculates VaR at the level of each and every

hierarchical portfolio, and compares it to the predefined limits. The diversification benefits are further analyzed on a sub-portfolio and currency level.

Volatility (VEGA) Risk

Many risk systems assume a constant volatility level, therefore failing to account properly for VEGA Risk, which is often a significant risk

IR Risk Report

RiskValue Reports

As of: 24/7/2006, Probability Level: 2.33 s.d. - 99%

Unit: Book2 (Book2) Last Reval Date: 22/4/2006 12

EUR							
Tenor	Change	MM	GDV	SWP	Total	Limit	Availability/ Excess
3m	0,20	0,00	4,33	0,00	4,33	0,00	-4,33
2m	0,34	0,00	12,94	0,00	12,94	0,00	-12,94
9m	2,16	0,00	-29,04	0,00	-29,04	0,00	-29,04

(Screen 3)

hidden behind options positions. **RV Market®** includes the effects of the volatility smile and term structure on Vega risk and their interaction with other risk factors.

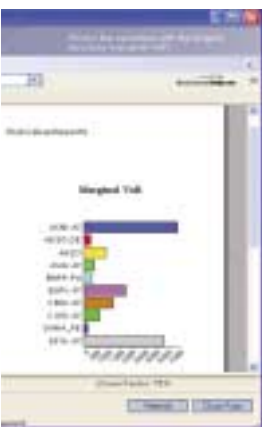
- **Smile:** Out-of-the money options often have higher implied volatilities than at-the-money options. Typically, the curvature (or "smile") is less for longer-term options than for short-term options, and may change over time.
- **Term structure:** The term structure of implied volatility describes the pattern of options with the same exercise price but different maturities, which generally have different implied volatilities. This may also change over time.

Risk attribution

In order to assist the professional risk managers in understanding the sources of risk, **RV Market®** decomposes total diversified portfolio risk in its basic constituents. This is done in three different dimensions:

- **Decomposition by Portfolio:** This allows understanding which sub-

Screen 4



Screen 5

Stress Testing Scenario

View/Edit Stress Testing Scenario: SCENARIO1

FX Rates | Interest Rates | Credit Spreads | Equity | Volatilities/Correlations

Curve	Change Type	1 month	2 months	3 months	6 months
GDV	Rel Change	1,2	1,3	1,35	1,4
MM	Abs Change	10	12	13,5	14
SWP	Abs Value	3,35	3,4	3,65	3,75
GDV	Ignore	0	0	0	0
Total	Excess	n	n	n	n

Buttons: Save, Get Historical Data, IR Graph, Delete, Cancel

Liability Report

Account: 09/04/2002

Choose Profile: GCD3 - Indexed - Div. Pa

Period: 100

Currency: EUR

TH	14,74
CR	14,74
SP	14,74
1 WEEK	91,62
2 WEEKS	104,97
3 WEEKS	107,71

portfolio contributes mostly to a group's total risk.

- **Decomposition by Risk Factor:** For example, in a complex Bond and Swap portfolio, you may realize that you are mostly exposed to the ten year USD interest rate.
- **Decomposition by Security:** This analysis allows identifying securities which contribute significantly to the overall risk, taking under account all risk factors related to this security. (Screen 4)

Stress testing

RV Market® allows measuring the impact to your portfolio of one or more market shocks. Any such "shock" may refer to an absolute or relative change of all market prices. In order to assist the risk manager, the system may generate automatically a scenario based on an actual "shock" which took place in the past.

After replacing the current prices with the new "shock" prices, the system will recalculate the new volatilities and correlations matrix based on the new information. Alternatively, it may use the information prevailing at the time of the shock, or use predetermined fixed values. (Screen 5)

Asset & Liability Management (ALM)

RV Market® analyzes all Cash Flows derived from Assets and Liabilities contained in each and every portfolio. Important Gaps are clearly identified, as well as the average funding/lending rate for each forward period. (Screen 6)

The system may also simulate a future Balance sheet, Income statement and Cash Flow report, based on parametric assumptions regarding future events.

RVMarket



For more information
about RV Market
or any of our other solutions,
please contact us at:

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Athens, Greece

risk@systemic-rm.com

Screen 6

Rate	Unit	Rate	Amount	Interest	
1.225,99	0.32	-0.332.998,68	3,05	3.418.226,91	-5,83
1.225,99	0.32	-0.332.998,68	3,09	3.418.226,91	-5,89
1.225,99	0.32	-0.332.998,68	3,09	3.418.226,91	-5,83
1.753,33	0.31	-52.008.921,04	3,92	39.611.432,49	-4,45
1.612,78	0.32	-58.426.629,17	3,08	45.544.993,81	-4,28
1.009,79	0.27	-57.520.461,93	3,03	55.197.427,86	-3,92

RISKVALUE
P L A T F O R M

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