CVX®
Risk Analysis Automation
for Institutional Investors

Product overview
IN-A-NUTSHELL

Automates and empowers
Risk analysis for internal decision making and compliance.

CVX®

Optimizes
User productivity, analysis transparency and cost effectiveness.
CVX® allows risk and investment areas to automate the application of risk analysis, security selection and ALM models, from the capture and integration of data to the generation of reports for decision making and regulatory compliance.

More than 30 specialized modules, including...

- Data integration
- Simulation
- Optimization
- Forecasting
- Valuation
- ALM
- Back-testing

Full valuation VaR/CVaR | Risk decomposition | Investment limits | Stress testing | Performance Attribution | Hedging effectiveness | Credit transition | Tracking Error …
CVX® FEATURES

KEY MODULES:

- Data capture from Bloomberg®, PMS®, PiP®, SQL Server®, Oracle®, Excel®
- Calculation of VaR and CVaR indicators using full valuation.
- VaR / CVaR decompositions.
- Back-testing
- Estimation of impacts and sensitivities.
- Investment limits, VaR limits and alerts.
- ALM models for liquidity gaps, exchange rate risk and interest rate risks.
- What-if simulation and stress-testing.
- Performance attribution.
- Portfolios cash flows forecasting.
- Estimation of expected losses using credit transition matrices.
- Valuation of derivative instruments.
- Hedging effectiveness (prospective and retrospective).
- Markowitz and tracking error optimization models.
- Dynamic decomposition of value variations.
- Dynamic analysis of VaR variations.
- Automatic validation of data quality using consistency tests.
- Log of intermediate results for auditing purposes.
The Data Manager is able to import all market and portfolio information from multiple sources automatically.

- Compatible with suppliers such as PMS®, PiP® and Bloomberg®.
- Manages connections with Oracle®, MS SQL Server®, MS Excel®, MS Access®.
- CVX macros automate capture, consistency checking and pre-cleaning of imported data.
- The system works offline, it only connects to the database when the user wants to update the data.
- It allows to save all imported information into a single encrypted .i3 file.
Navigate through all relevant investment objects

- The Navigator provides a consistent and intuitive interface to access and work with all the information about investment objects.
- It allows managing an arbitrary number of portfolios, assets, ALM entities, curves, currencies, groups of assets, limits, stress scenarios, samples, etc.
- It is possible to simultaneously open as many windows of objects as the user requires.
- The system offers each user an independent workspace, so that he can make "what-if ..." changes of any kind without affecting the work of other users.
Portfolio overview – Summary, detailed and drill-down reports

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Risk Analysis – Summary, detailed and drill-down reports

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ALM models for liquidity, exchange rate and interest rate risks

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CVX® allows risk indicators to be decomposed by asset, group of assets or risk factors.

- The calculated decompositions include diversified and non-diversified VaR, marginal VaR and CVaR, incremental VaR and Contribution VaR.
- All tables and graphs can be exported with a click to add them in presentations or spreadsheets.
- Each report has a brief reference text that helps users to correctly interpret the results.
CVX® evaluates the predictive capacity of the VaR results automatically.

- You can use both the historical NAV method and the current position method.
- The results include the LR test of Kupiec.
Fixed-Income Analysis

- CVX® automatically integrates the cash flows of the fixed income component of any portfolio.
- It calculates durations, actual rates of return (IRR), key-rate sensitivities, convexities, etc.
- It can generate credit risk reports considering default probabilities and credit transition matrices.
Assets valuation

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Optimization models

- CVX® can apply a Markowitz-Sharpe optimization model including restrictions provided by the user.
- The optimizer identifies the portfolio of minimum variance and maximum Sharpe ratio and makes it possible to visually examine the strategic position of the portfolio in the universe of possible positions.
- Additionally, it is possible to optimize the Tracking-Error of the portfolio relative to any benchmark.
Performance-Attribution Models

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Hedging-Effectiveness Analysis

Hedging strategies
Hedging operations are typically associated to portfolio sub-components that contain assets that mutually compensate their market risk. The hedging equation is calculated as follows: Delta value = Alpha + Beta * Delta Value. An effective hedging strategy will generate very low net losses with a negative Beta close to -1 and a high Variance Reduction Factor (VRF, the R Squared of the regression).

Gamma Fund - Security selection analysis

Hedging effectiveness - Summary

<table>
<thead>
<tr>
<th>Hedging strategy</th>
<th>A Count</th>
<th>B Count</th>
<th>Valid obs</th>
<th>Beta Value</th>
<th>Alpha value</th>
<th>VRF value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cobertura con derivados Gamma</td>
<td>1</td>
<td>1</td>
<td>280</td>
<td>-1.2616</td>
<td>16,769.903</td>
<td>72.68%</td>
</tr>
</tbody>
</table>
Flexible Report Generation

- CVX’s report generation module allows you to create sophisticated reports in seconds.
- Report templates can be configured directly in MS Excel, including tables, graphs, images, etc.
- This component is in charge of filling the user's templates with the updated information produced by CVX’s calculation engine.