

What is UnRisk QUANT Python?

UnRisk QUANT Python is built on UnRisk LIBRARY. It is equipped with UnRisk Financial Language, a symbolic, domain-specific language designed to enable developers to rapidly develop solutions in quantitative finance. It combines optimized pricing and calibration routines, which are based on sophisticated numerical schemes,

with an extensive range of deal types and models. Therefore, UnRisk QUANT is the optimal tool for increasing the efficiency of quantitative analysts. It can be extended by the UnRisk VaR MODULE, the UnRisk SCENARIO MODULE and the UnRisk xVA MODULE.

Instrument Coverage

- **Interest Rate Instruments and Derivatives:** General Bonds, General Swaps including range accrual-, spreads-, target redemption-, step-up-, etc., features, Caps & Floors, Swaptions, Fixed Rate Bonds, Bond Options, FX Linked Bonds and Swaps, etc.
- **Equity Instruments:** Vanilla Options, Barrier Options, Digital Options, Path Dependent Options, etc.
- **Convertibles**
- **Inflation Linked Derivatives:** Inflation Linked Bonds, Inflation Linked Swaps, etc.
- **Credit Linked Derivatives:** CDS, TRS, CLN, N-th to Default, etc.
- **Commodity Derivatives:** Futures, Options, etc.
- **FX Derivatives:** Vanilla Options, Barrier Options, Digital Options, Path Dependent Options, etc.

Model Coverage

- **Interest Rate:** Bachelier, Black76, Generalized Hull & White, Multi Curve 1 Factor Model, etc.
- **Equity Models:** Generalized Black Scholes, Dupire, Heston, etc.
- **FX Models:** Garman-Kohlhagen, Local Volatility, etc.
- **Models for Inflation and Commodities**



Key Benefits

- ✓ Valuation of individual structures under different models, definition of stress tests, and extensive what-if analysis.
- ✓ Full implementation of hundreds of deal types and intricate details.
- ✓ Declarative, symbolic programming style, and technology integration tools.
- ✓ Combination of SDE and PDE solvers with advanced calibration techniques.
- ✓ Advanced calibration techniques featuring sophisticated regularization.
- ✓ Possibility to extend UnRisk QUANT with the UnRisk xVA MODULE (exposures, CVA, DVA, etc.).
- ✓ Possibility to extend UnRisk QUANT with the UnRisk VaR MODULE for VaR calculations (parametric, historical, and Monte Carlo), including marginal and contribution VaRs at both single-instrument and portfolio levels.
- ✓ Possibility to extend UnRisk QUANT with UnRisk SCENARIO MODULE for scenario analysis and stress testing.

UnRisk

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