

UnRisk

Release Notes Version 6.0

(May 2012)

1. Introduction

This document gives an overview of the changes in UnRisk from Version 5.0 to Version 6.0

See the following sections for a detailed overview.

For installing the software (new installation or update from an older version), follow the steps in the installation instructions.

2. New Inflation Linked Instruments

2.1. Inflation Linked Digital Bond

In version 6.0 of UnRisk we introduce the new instrument type “Inflation Linked Digital Bond”. The valuation of instruments of this type is performed under a Hull & White 1 factor model in combination with a 1 factor inflation model.

2.2. Inflation Spread

In version 6.0 of UnRisk we introduce the new instrument type “Inflation Spread”. The valuation of instruments of this type is performed under a Hull & White 1 factor model in combination with two 1 factor inflation models.

3. New Interest Rate Instrument

3.1. Callable / Puttable Quanto Steepener

In version 6.0 of UnRisk we introduce the new instrument type “Callable / Puttable Quanto Steepener”. The valuation of instruments of this type is performed under a Hull & White 1 factor model modeling the domestic interest rates and a Hull & White 2 factor model modeling the foreign interest rates.

4. New Equity / FX Derivatives

4.1. Option on an Equity Future

In version 6.0 of UnRisk we introduce the new instrument type “Equity Future Option”. The valuation of instruments of this type is performed under Black76 model.

4.2. Vanilla FX Quanto Option

In version 6.0 of UnRisk we introduce the new instrument type “FX Quanto Option”. The valuation of instruments of this type is performed under a local volatility surface for the underlying fx rate and interest rate curves for all involved currencies.

5. New Credit Linked Instruments

5.1. Credit Linked Note on General CM Floater

In version 6.0 of UnRisk we introduce the new instrument type “Credit Linked Note on General CM Floater”. The valuation of instruments of this type is performed under an interest rate curve and a CDS curve for the calculation of default probabilities.

5.2. Credit Linked Note on Inflation Floater

In version 6.0 of UnRisk we introduce the new instrument type “Credit Linked Note on Inflation Floater”. The valuation of instruments of this type is performed under a 1 factor Hull & White model, a 1 factor inflation model and a CDS curve for the calculation of default probabilities.

5.3. Total Return Swap

In version 6.0 of UnRisk we introduce the new instrument type “Total Return Swap”. The valuation of instruments of this type is performed under an interest rate curve and a CDS curve for the calculation of default probabilities.

6. Stochastic Models for Commodities

In version 6.0 of UnRisk we introduce two stochastic models (a one factor and a two factor model), by the use of which commodity derivatives may be priced. The calibration of these models is performed by the use of time series of the spot prices of the underlying commodity and by the use of time series of futures on this commodity.

7. Commodity Derivatives

7.1. Commodity Future

In version 6.0 of UnRisk we introduce the new instrument type “Commodity Future”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.2. Vanilla Commodity Option

In version 6.0 of UnRisk we introduce the new instrument type “Vanilla Commodity Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.3. Vanilla Commodity Quanto Option

In version 6.0 of UnRisk we introduce the new instrument type “Vanilla Commodity Quanto Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.4. Commodity Barrier Option

In version 6.0 of UnRisk we introduce the new instrument type “Commodity Barrier Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.5. Commodity Quanto Barrier Option

In version 6.0 of UnRisk we introduce the new instrument type “Commodity Quanto Barrier Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.6. Commodity Double Barrier Option

In version 6.0 of UnRisk we introduce the new instrument type “Commodity Double Barrier Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.7. Commodity Quanto Double Barrier Option

In version 6.0 of UnRisk we introduce the new instrument type “Commodity Quanto Double Barrier Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.8. Digital Commodity Option

In version 6.0 of UnRisk we introduce the new instrument type “Digital Commodity Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.9. Digital Commodity Quanto Option

In version 6.0 of UnRisk we introduce the new instrument type “Digital Commodity Quanto Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.10. Digital Commodity Barrier Option

In version 6.0 of UnRisk we introduce the new instrument type “Digital Commodity Barrier Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.11. Digital Commodity Quanto Barrier Option

In version 6.0 of UnRisk we introduce the new instrument type “Digital Commodity Quanto Barrier Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.12. Digital Commodity Double Barrier Option

In version 6.0 of UnRisk we introduce the new instrument type “Digital Commodity Double Barrier Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.13. Digital Commodity Quanto Double Barrier Option

In version 6.0 of UnRisk we introduce the new instrument type “Digital Commodity Quanto Double Barrier Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.14. Asian Commodity Option

In version 6.0 of UnRisk we introduce the new instrument type “Asian Commodity Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.15. Asian Commodity Quanto Option

In version 6.0 of UnRisk we introduce the new instrument type “Asian Commodity Quanto Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.16. Forward Start Commodity Option

In version 6.0 of UnRisk we introduce the new instrument type “Forward Start Commodity Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.17. Forward Start Commodity Quanto Option

In version 6.0 of UnRisk we introduce the new instrument type “Forward Start Commodity Quanto Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.18. Lookback Commodity Option

In version 6.0 of UnRisk we introduce the new instrument type “Lookback Commodity Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

7.19. Lookback Commodity Quanto Option

In version 6.0 of UnRisk we introduce the new instrument type “Lookback Commodity Quanto Option”. The valuation of instruments of this type is performed under an interest rate curve and a (one or two factor) commodity model.

8. New Features

8.1. General Hull & White 1 Factor Model: Calibration of Constant Speed and Constant Volatility

In version 6.0 of UnRisk we introduce a new calibration routine, which determines the optimal constant reversion speed and constant volatility of a generalized Hull & White 1 factor model.

8.2. Hull & White 2 Factor Model: Calibration from Swaptions only

In version 6.0 of UnRisk we introduce a new calibration routine, which uses only swaption date to determine the parameters of a Hull & White 2 factor model.

8.3. New Curve Fitting Functions

In version 6.0 of UnRisk the user has the possibility to generate an (interest / inflation) model object from an existing (interest / inflation) model object and a new interest / inflation curve. This feature is only available in the *Mathematica* Front End.

8.4. Redemption Schedules for Fixed Rate Bonds

In version 6.0 of UnRisk we introduce a new fixed rate bond feature: the user has the possibility to pass a redemption schedule.

8.5. Known Rate Adjustment

In version 6.0 of UnRisk the user has the possibility to readjust the known rate array of an interest rate instrument according to a given schedule of dates and known coupon rates. This feature is only available in the *Mathematica* Front End (in Excel the user already had this possibility).

8.6. Curve Scenarios

In version 6.0 of UnRisk we introduce curve scenarios. These scenarios which may be applied to yield curves, swaps curves, inflation swap curves and credit curves are: parallel shift, twist, twist+parallel shift and manual shift. This feature is only available in the *Mathematica* Front End.

8.7. Valuation of Interest Rate Instruments on the GPU

In version 6.0 of UnRisk we introduced the possibility to value interest rate instruments under a generalized Hull & White 1 factor model on the GPU. This feature is only available for users with a valid UnRisk GPU license.

9. UnRisk also available for Linux

Version 6.0 of UnRisk is the first version which also runs on Linux 64-bit (AMD64) machines.