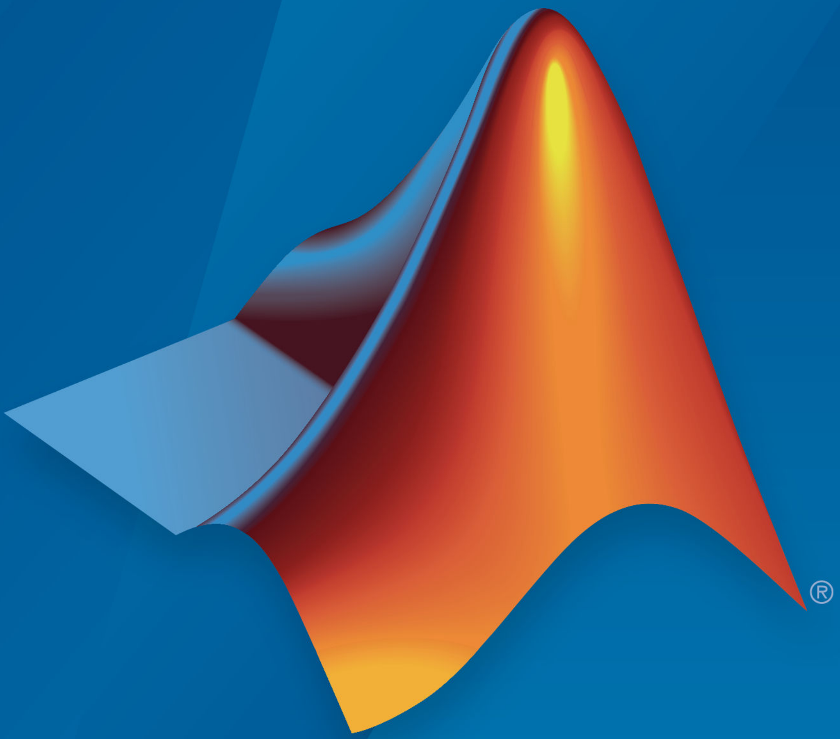
# Financial Instruments Toolbox™ Release Notes



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*Financial Instruments Toolbox™ Release Notes*

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# R2017b

Version: 2.6

New Features

Bug Fixes

## Interest-Rate Instruments: Price swaptions with resettable legs and different basis conventions using Black, Normal, and lattice (tree-based) models

The following functions support different swaption leg reset and basis conventions for lattice, Black, and Normal models:

- `instswaption`
- `swaptionbyblk`
- `swaptionbynormal`
- `swaptionbybdt`
- `swaptionbyhw`
- `swaptionbybk`
- `swaptionbyhjm`

## Interest-Rate Instruments: Use Hull-White calibration routines for Shifted Black and Normal models

Calibration routines for the following functions support the Shifted Black model and the Normal (Bachelier) model (which can handle negative interest rates):

- `hwcalbycap`
- `hwcalbyfloor`

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# R2017a

Version: 2.5

New Features

Bug Fixes

Compatibility Considerations

## Interest-Rate Instruments: Price interest rate options with negative rates using normal volatility model and shifted SABR model

The following functions support the normal volatility model (Bachelier model) for interest-rate options to handle negative rates:

- `swaptionbynormal`
- `capbynormal`
- `floorbynormal`

The following functions provide an optional `Shift` argument to support the shifted Black model and the shifted SABR model for interest-rate options to handle negative rates:

- `blackvolbysabr` (Shifted SABR)
- `optsensbysabr` (Shifted SABR)
- `swaptionbyblk` (Shifted Black)
- `capbyblk` (Shifted Black)
- `floorbyblk` (Shifted Black)
- `capvolstrip` (Shifted Black)
- `floorvolstrip` (Shifted Black)

## Equity Instruments: Price American vanilla options using Barone-Adesi and Whaley model

Support for American vanilla options using the Barone-Adesi and Whaley model:

- `optstockbybaw`
- `optstocksensbybaw`
- `impvbybaw`

## bkcaplet and bkfloorlet removal

`bkcaplet` and `bkfloorlet` will be removed in a future release. Use `capbyblk` and `floorbyblk` instead.

### Compatibility Considerations

| Function Name | What Happens When You Use This Function | Use This Function Instead | Compatibility Considerations |
|---|---|---|---|
| `bkcaplet` and `bkfloorlet` | Errors | `capbyblk` or `floorbyblk` | Replace all instances of `bkcaplet` and `bkfloorlet` with `capbyblk` or `floorbyblk`. |

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# R2016b

Version: 2.4

New Features

Bug Fixes

Compatibility Considerations

## Equity Instruments: Price barrier options with closed form, Crank-Nicolson method, and Monte Carlo simulation

The following functions support barrier options for equity or energy derivatives:

- `barrierbyfd` calculates barrier option prices using finite difference method.
- `barriersensbyfd` calculates barrier option prices and sensitivities using finite difference method.
- `barrierbybls` calculates prices for a European barrier option using Black-Scholes option pricing model.
- `barriersensbybls` calculates prices and sensitivities for a European barrier option using Black-Scholes option pricing model.
- `barrierbyls` calculates barrier option prices using Longstaff-Schwartz model.
- `barriersensbyls` calculates barrier option prices and sensitivities using Longstaff-Schwartz model.

## Equity Instruments: Price European options with finite differences method

The following functions support vanilla options for equity derivatives:

- `optstockbyfd` calculates vanilla option prices using finite differences method.
- `optstocksensbyfd` calculates vanilla option prices and sensitivities using finite differences method.

## Hybrid Instruments: Price convertible bonds with a default risk and recovery rate using standard and implied trinomial trees

Support for default for risk and recovery rate using `cbondbycrr`, `cbondbyeqp`, `cbondbystt`, and `cbondbyitt`. To specify a convertible bond risk and recovery rate, use the name-value pair arguments for `DefaultProbability` and `RecoveryRate`.

## Numerix CAIL Engine: Access the Numerix Engine directly from MATLAB using an updated API

Support for an updated Numerix® CAIL API, using the `numerixCrossAsset` object and the associated methods for: `applicationCall`, `applicationData`, `applicationMatrix`, `getdata`, and `close`.

## Functions moved from Financial Instruments Toolbox to Financial Toolbox

The following functions are moved from Financial Instruments Toolbox to Financial Toolbox™:

- `cdsbootstrap` calculates barrier option prices using finite difference method.
- `cdsprice` calculates barrier option prices and sensitivities using finite difference method.
- `cdsspread` calculates price for a European barrier options using Black-Scholes option pricing model.
- `cdsrpv01` calculates price and sensitivities for a European barrier options using Black-Scholes option pricing model.
- `creditexposures` computes credit exposures from contract values.
- `exposureprofiles` compute exposure profiles from credit exposures.

## help fininstdemos removal

The `help fininstdemos` command is removed in this release. Use the `demo` command instead.

### Compatibility Considerations

| Command Name | What Happens When You Use This Command | Use This Command Instead | Compatibility Considerations |
|---|---|---|---|
| `help fininstdemos` | Errors | `demo 'toolbox' 'financial instruments'` | Replace all instances of `help fininstdemos` with `demo 'toolbox' 'financial instruments'`. |

## bkcaplet and bkfloorlet removal

`bkcaplet` and `bkfloorlet` will be removed in a future release. Use `capbyblk` and `floorbyblk` instead.

### Compatibility Considerations

| Function Name | What Happens When You Use This Function | Use This Function Instead | Compatibility Considerations |
|---|---|---|---|
| `bkcaplet` and `bkfloorlet` | Warns | `capbyblk` or `floorbyblk` | Replace all instances of `bkcaplet` and `bkfloorlet` with `capbyblk` or `floorbyblk`. |

# 4

# R2016a

Version: 2.3

New Features

Bug Fixes

Compatibility Considerations

## Cap and Floor Instruments: Volatility stripping

The following functions support cap and volatility stripping for interest-rate instruments:

- `capvolstrip` strips caplet volatilities from flat cap volatilities.
- `floorvolstrip` strips floorlet volatilities from flat floor volatilities.

## Swap Instruments: Pricing cross-currency, fixed-fixed, and float-float swaps

Support for pricing cross-currency swaps using `swapbyzero`. Support for fixed-fixed and float-float swaps is added to `instswap`, `swapbybdt`, `swapbyhjm`, `swapbybdt`, `swapbybk`, `swapbyzero`.

## cbprice removal

`cbprice` is removed in this release. Use `cbondbycrr`, `cbondbyeqp`, `cbondbyitt`, or `cbondbystt` instead.

### Compatibility Considerations

| Function Name | What Happens When You Use This Function | Use This Function Instead | Compatibility Considerations |
|---|---|---|---|
| `cbprice` | Errors | `cbondbycrr`, `cbondbyeqp`, `cbondbyitt`, or `cbondbystt` | Replace all instances of `cbprice` with `cbondbycrr`, `cbondbyeqp`, `cbondbyitt`, or `cbondbystt`. |

# 5

# R2015b

Version: 2.2

New Features

Bug Fixes

Compatibility Considerations

## Hybrid Instruments: Price convertible bonds using standard and implied trinomial trees

The following functions support building a standard trinomial tree:

- `stttree`
- `stttimespec`

`cbondbystt` supports pricing a convertible bond using an `STTTree`.

`ITTree` now supports pricing convertible bonds with `cbondbyitt`.

## Equity Instruments: Price equity derivatives using a standard trinomial tree

`STTTree` supports pricing for equity derivatives.

The following modified functions support the following equity instruments:

- Asian options — `asianbystt`
- Lookback options — `lookbackbystt`
- Barrier options — `barrierbystt`
- Vanilla options — `optstockbystt`
- Compound options — `compoundbystt`
- `sttprice`
- `sttsens`

## Simple Interest Convention: Calculate zero curves, forward curves, discount curves, rates, and bootstrapping using simple interest

Simple interest support for the following functions.

- `rate2disc` — Support added for `Compounding` = `0` for simple interest where there is no compounding.
- `disc2rate` — Support added for `Compounding` = `0` for simple interest where there is no compounding.

- `ratetimes` — Support added for `Compounding` = `0` for simple interest where there is no compounding.
- `IRDataCurve` — Support added for `Compounding` = `0` for simple interest for “zero” and “discount” curve types only (not supported for “forward” curves) where there is no compounding.
- `getForwardRates` — Support added for `Compounding` = `0` for simple interest where there is no compounding.
- `getZeroRates` — Support added for `Compounding` = `0` for simple interest where there is no compounding.
- `bootstrap` — Support added for `Compounding` = `0` for simple interest for “zero” and “discount” curve types only (not supported for “forward” curves) where there is no compounding.
- `intenvset` — Support added for `Compounding` = `0` for simple interest where there is no compounding.

## cbprice removal

`cbprice` will be removed in a future release. Use `cbondbycrr`, `cbondbyeqp`, `cbondbyitt`, or `cbondbystt` instead.

### Compatibility Considerations

| Function Name | What Happens When You Use This Function | Use This Function Instead | Compatibility Considerations |
|---|---|---|---|
| `cbprice` | Warns | `cbondbycrr`, `cbondbyeqp`, `cbondbyitt`, or `cbondbystt` | Replace all instances of `cbprice` with `cbondbycrr`, `cbondbyeqp`, `cbondbyitt`, or `cbondbystt`. |

## 6

# R2015a

Version: 2.1

New Features

Bug Fixes

## Price convertible bonds using CRR and EQP lattice models

`cbondbycrr` and `cbondbyeqp` calculate the price of convertible bonds using the Tsiveriotis and Fernandes model. `instcbond` is the constructor for the `CBond` instrument type

The following modified functions support the new convertible bond (`CBond`) instrument:

- `instadd`
- `instdisp`
- `crrprice`
- `eqpprice`
- `crrsens`
- `eqpsens`

## Collateral-level computation from credit exposure simulations

`creditexposures` is enhanced to support computing exposures for counterparties under collateral agreements.

## Wrong-way risk example

The example for modeling wrong-way risk for counterparty credit risk using a Gaussian copula is available as `Example_WrongWayRisk.m` at `\finist\fininstdemos`. For more information, see Wrong Way Risk with Copulas.

# 7

# R2014b

Version: 2.0

New Features

Bug Fixes

## Pricing functionality for forward options

Support is provided for pricing forward options using a modified Black approximation model with `optstockbyblk` and `optstocksensbyblk` using a new name-value pair argument for `ForwardMaturity`, which is the maturity date of the forward contract.

## Amortizing caps and floors pricing using lattice models

Support is provided for name-value pair argument, `Principal`, to pass the schedule to compute the price for amortizing caps (`capbybdt`, `capbybk`, `capbyhjm`, and `capbyhw`) and floors (`floorbybdt`, `floorbybk`, `floorbyhjm`, and `floorbyhw`). In addition, `instcap` and `instfloor` are enhanced to support the creation of cap and floor instruments with amortizing caps and floors.

## Power price simulation example

The example for simulating power price and mean reverting jump diffusion is available as `SimulateElectricityPricesExample.m` at `\fininst\fininstdemos`. For more information, see Simulating Electricity Prices with Mean-Reversion and Jump-Diffusion.

## Hull-White single-factor model calibration using volatility surface

`hwcalbycap` and `hwcalbyfloor` support a new syntax.

```
[Alpha, Sigma, OptimOut] = hwcalbycap(RateSpec, MarketStike, MarketMaturity, MarketVola
```

```
[Alpha, Sigma, OptimOut] = hwcalbyfloor(RateSpec, MarketStike, MarketMaturity, MarketVo
```

The `Strike`, `Settle`, and `Maturity` input arguments are no longer required input arguments. By omitting these input arguments, you can use the `MarketStike`, `MarketMaturity`, and `MarketVolatility` input arguments calibrate the HW model using the entire cap or floor surface.

## SABR option greeks computation

Support is provided for `Delta`, `Vega`, `ModifiedDelta`, and `ModifiedVega` sensitivities for the SABR stochastic model using `optsensbysabr`.

## Amortizing caps and floors pricing using closed form solutions (Black or Linear Gaussian two-factor models)

For the Black model, support is available for an enhanced name-value pair argument, `Principal`, to pass the schedule to compute the price for amortizing caps (`capbyblk`) and floors (`floorbyblk`). For the Linear Gaussian two-factor model, support is available for an enhanced name-value pair argument, `Notional`, to pass the schedule to compute the price for amortizing caps (`capbylg2f`) and floors (`floorbylg2f`).

## Asian options pricing example

The example comparing multiple approaches to pricing Asian options is available as `AsianOptionExample.m` at `\fininst\fininstdemos`. For more information, see Pricing Asian Options.

## Numerix CrossAsset Integration Layer (CAIL) 11 example

The example for Numerix CAIL 11 support is available at `\fininst\fininstdemos\NumerixFileProcessor.m`.

# R2014a

Version: 1.3

New Features

Bug Fixes

## Dual curve construction

Support for bootstrapping an interest rate curve using a different curve for discounting the cash flows with the following enhancements:

- `bootstrap` accepts a new optional input argument for `DiscountCurve`.
- `bootstrap` accepts a new bootstrapping instrument type called `FRA` for a forward rate agreement instrument.

For more information on using `bootstrap` for dual curve construction, see the example: Dual Curve Bootstrapping.

## Dual curve pricing of caps, floors, and swaptions using the Black model

`capbyblk`, `floorbyblk`, and `swaptionbyblk` accept an optional input argument for `ProjectionCurve`.

## Dual curve pricing of swaps and floating-rate notes

`swapbyzero` and `floatbyzero` have new examples to demonstrate pricing a swap and a floating-rate note with two curves.

## Monte Carlo and analytical pricing of lookback options

Support for lookback options using closed-form solutions or Monte Carlo simulations.

| Function | Purpose |
|---|---|
| `lookbackbycvgsg` | Calculate prices of European lookback fixed- and floating-strike options using the Conze-Viswanathan and Goldman-Sosin-Gatto models. |
| `lookbacksensbycvgsg` | Calculate prices and sensitivities of European fixed- and floating-strike lookback options using the Conze-Viswanathan and Goldman-Sosin-Gatto models. |
| `lookbackbyls` | Calculate prices of lookback fixed- and floating-strike options using the Longstaff-Schwartz model. |
| `lookbacksensbyls` | Calculate prices and sensitivities of lookback fixed- and floating-strike options using the Longstaff-Schwartz model. |

## Implied Black volatility computation for the SABR stochastic volatility model

Support for `blackvolbysabr` to calibrate the SABR model parameters and to compute SABR implied Black volatilities.

## User-specified simulation paths for Longstaff-Schwartz pricing functions

Support for `optpricebysim` to calculate the price and sensitivities of European or American call or put options based on simulation results of the underlying asset. For American options, the Longstaff-Schwartz least squares method is used to calculate the early exercise premium.

## creditexposures function to compute credit exposures from mark-to-market OTC contract values

Support for computing credit exposures as a part of a counterparty credit risk workflow. For more information, see `creditexposures`.

## exposureprofiles function to derive credit exposure profiles from credit exposures

Support for computing various credit exposure profiles, including potential future exposure and expected exposure. For more information, see `exposureprofiles`.

## Enhanced pricing functions for instruments and portfolios with cash flows between tree levels

The pricing algorithms for vanilla stock options have been enhanced to support `ExerciseDates` between tree levels. While `ExerciseDates` previously allowed only values that coincided with tree dates, the new pricing algorithm allows arbitrary `ExerciseDates` between the tree valuation date and tree maturity. For more information see the Bermuda option examples in `optstockbycrr`, `optstockbyeqp`, and `optstockbyitt`.

## Swing option pricing example

New example for Pricing Swing Options using the Longstaff-Schwartz Method.

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# R2013b

Version: 1.2

New Features

Compatibility Considerations

## Support for Numerix CrossAsset Integration Layer (CAIL) API

Support for accessing Numerix instruments and risk models.

| Class | Purpose |
|---|---|
| `numerix` | Create a numerix object to set up the Numerix CrossAsset Integration Layer (CAIL) environment. |
| **Method** | **Purpose** |
| `numerix.parseResults` | Converts Numerix CAIL data to MATLAB® data types. |

## Kirk's approximation and Bjerksund-Stensland closed-form pricing models for spread options

Support pricing and sensitivity of spread options for the energy market using closed-form solutions.

| Function | Purpose |
|---|---|
| `spreadbykirk` | Price European spread options using the Kirk pricing model. |
| `spreadsensbykirk` | Calculate European spread option prices and sensitivities using the Kirk pricing model. |
| `spreadbybjs` | Price European spread options using the Bjerksund-Stensland pricing model. |
| `spreadsensbybjs` | Calculate European spread option prices and sensitivities using the Bjerksund-Stensland pricing model. |

## Finite difference and Monte Carlo simulation pricing for American spread options

Support pricing and sensitivity of spread options for the energy market using Monte Carlo simulation.

| Function | Purpose |
|---|---|
| `spreadbyfd` | Price European or American spread options using the Alternate Direction Implicit (ADI) finite difference method. |

| Function | Purpose |
|---|---|
| `spreadsensbyfd` | Calculate price and sensitivities of European or American spread options using the Alternate Direction Implicit (ADI) finite difference method. |
| `spreadbyls` | Price European or American spread options using Monte Carlo simulations. |
| `spreadsensbyls` | Calculate price and sensitivities for European or American spread options using Monte Carlo simulations. |

## Levy and Kemna-Vorst closed-form pricing and Monte Carlo simulation pricing for Asian options

Support pricing and sensitivity of Asian options for the energy market using Monte Carlo simulation and closed-form solutions.

| Function | Purpose |
|---|---|
| `asianbyls` | Price European or American Asian options using the Longstaff-Schwartz model. |
| `asiansensbyls` | Calculate prices and sensitivities of European or American Asian options using the Longstaff-Schwartz model. |
| `asianbykv` | Price European geometric Asian options using the Kemna-Vorst model. |
| `asiansensbykv` | Calculate prices and sensitivities of European geometric Asian options using the Kemna-Vorst model. |
| `asianbylevy` | Price European arithmetic Asian options using the Levy model. |
| `asiansensbylevy` | Calculate prices and sensitivities of European arithmetic Asian options using the Levy model. |

## Additional CDS option pricing functionality for index swaptions

New example for Pricing a CDS Index Option.

## Pricing functions for vanilla options using Monte Carlo simulation

Support pricing and sensitivity of vanilla options for the energy market using Monte Carlo simulation.

| Function | Purpose |
|---|---|
| `optstockbyls` | Price European, Bermudan, or American vanilla options using the Longstaff-Schwartz model. |
| `optstocksensbyls` | Calculate European, Bermudan, or American vanilla option prices and sensitivities using the Longstaff-Schwartz model. |

### Hedging strategies using spread options example

New example for Hedging Strategies Using Spread Options.

### Pricing European and American spread options example

New example for Pricing European and American Spread Options.

### First-to-default (FTD) swaps example

New example for First-to-Default Swaps.

### New function for risky present value of a basis point

`cdsrpv01` computes risky present value of a basis point (RPV01) for a credit default swap (CDS) and conforms to the industry standards (ISDA CDS Standard Model).

### Compatibility Considerations

Compared with the previous version of Financial Instruments Toolbox, there are minor changes in the values computed by `cdsbootstrap`, `cdsspread`, `cdsprice`, and `cdsoptprice` when the starting dates do not fall on a payment date. The affected output arguments are as follows:

- `cdsbootstrap`: `ProbData`, `HazData`
- `cdsspread`: `Spread`
- `cdsprice`: `Price`
- `cdsoptprice`: `Payer`, `Receiver`

While the magnitudes of the value changes are very small, they might affect users who depend on exact matches to previous values. These changes are caused by the modification of the way risky present value of a basis point (RPV01) is computed and these changes were made to better reflect the industry practice of paying CDS premiums only on specific payment dates.

## optimoptions support

`optimoptions` support for `IRFitOptions`, `fitFunction` method, `hwcalbycap`, and `hwcalbyfloor`.

## Functions moved from Financial Instruments Toolbox to Financial Toolbox

The following functions are moved from Financial Instruments Toolbox to Financial Toolbox:

- `cdai`
- `cdprice`
- `cdyield`
- `tbilldisc2yield`
- `tbillprice`
- `tbillrepo`
- `tbillval01`
- `tbillyield`
- `tbillyield2disc`

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# R2013a

Version: 1.1

New Features

## Pricing functions for options on floating-rate notes (FRNs)

Support for pricing a floating-rate note instrument with an option using tree models.

| Function | Purpose |
|---|---|
| `optfloatbybdt` | Price an option for a floating-rate note using a Black-Derman-Toy interest-rate tree. |
| `optfloatbyhjm` | Price an option for a floating-rate note using a Heath-Jarrow-Morton interest-rate tree. |
| `optfloatbyhw` | Price an option for a floating-rate note using a Hull-White interest-rate tree. |
| `optfloatbybk` | Price an option for a floating-rate note using a Black-Karasinski interest-rate tree. |
| `instoptfloat` | Define the option instrument for a floating-rate note. |

## Pricing functions for FRNs with embedded options

Support for pricing a floating-rate note instrument with an embedded option using tree models.

| Function | Purpose |
|---|---|
| `optemfloatbybdt` | Price an embedded option for a floating-rate note using a Black-Derman-Toy interest-rate tree. |
| `optemfloatbybk` | Price an embedded option for a floating-rate note using a Black-Karasinski interest-rate tree. |
| `optemfloatbyhjm` | Price an embedded option for a floating-rate note using a Heath-Jarrow-Morton interest-rate tree. |
| `optemfloatbyhw` | Price an embedded option for a floating-rate note using a Hull-White interest-rate tree. |
| `instoptemfloat` | Define the floating-rate note with an embedded option instrument. |

## Performance enhancements in implied volatility calculations

Improved performance for calculating implied volatility when using `impvbybjs` and `impvbyrgw`.

## Calibration and Monte Carlo simulation of single-factor and multifactor interest-rate models, including Hull-White, Linear Gaussian, and LIBOR Market Models

Support for pricing interest-rate instruments for caps, floors, and swaptions using Monte Carlo simulation with Hull-White, Shifted Gaussian, and LIBOR Market Models. There are three new classes, three new methods, and four new functions.

| Class | Purpose |
|---|---|
| `HullWhite1F` | Create a Hull-White one-factor model. |
| `LinearGaussian2F` | Create a two-factor additive Gaussian interest-rate model. |
| `LiborMarketModel` | Create a LIBOR Market Model. |
| **Method** | **Purpose** |
| `HullWhite1F.simTermStructs` | Simulate term structures for a Hull-White one-factor model. |
| `LinearGaussian2F.simTermStructs` | Simulate term structures for a two-factor additive Gaussian interest-rate model. |
| `LiborMarketModel.simTermStructs` | Simulate term structures for a LIBOR Market Model. |
| **Function** | **Purpose** |
| `capbylg2f` | Price caps using a Linear Gaussian two-factor model. |
| `floorbylg2f` | Price floors using a Linear Gaussian two-factor model. |
| `swaptionbylg2f` | Price European swaptions using a Linear Gaussian two-factor model. |
| `blackvolbyrebonato` | Compute the Black volatility for a LIBOR Market Model using the Rebonato formula. |

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# R2012b

Version: 1.0

New Features

Compatibility Considerations

## Merge of Fixed-Income Toolbox and Financial Derivatives Toolbox to Financial Instruments Toolbox

Fixed-Income Toolbox™ and Financial Derivatives Toolbox™ are merged into the new product Financial Instruments Toolbox.

### Cap and floor floating-rate note pricing using trees

Support for pricing capped, collared, and floored floating-rate notes using the `CapRate` and `FloorRate` arguments.

| Function | Purpose |
|---|---|
| `floatbybdt` | Price a capped floating-rate note using a Black-Derman-Toy interest-rate tree. |
| `floatbyhjm` | Price a capped floating-rate note using a Heath-Jarrow-Morton interest-rate tree. |
| `floatbyhw` | Price a capped floating-rate note using a Hull-White interest-rate tree. |
| `floatbybk` | Price a capped floating-rate note using a Black-Karasinski interest-rate tree. |
| `instfloat` | Create a capped floating-rate note instrument. |
| `instadd` | Add capped floating-rate note instruments to a portfolio. |

### Forward-swap pricing using trees or term structure

Support for interest-rate forward swaps using the new `StartDate` argument to define the future date for the swap instrument.

| Function | Purpose |
|---|---|
| `swapbyzero` | Price a bond using a set of zero curves. |
| `swapbybdt` | Price a forward swap using a Black-Derman-Toy interest-rate tree. |
| `swapbyhjm` | Price a forward swap using a Heath-Jarrow-Morton interest-rate tree. |
| `swapbyhw` | Price a forward swap using a Hull-White interest-rate tree. |

| Function | Purpose |
|---|---|
| `swapbybk` | Price a forward swap using a Black-Karasinski interest-rate tree. |
| `instswap` | Create a forward swap instrument. |
| `instadd` | Add forward swap instruments to a portfolio. |

## Functions for fitting and extracting calibrated parameters from IRFunctionCurve objects

New enhancements for `IRFunctionCurve` object, including the ability to get calibrated parameters, the ability to specify linear inequality parameter constraints, and support for curve type in `fitSmoothingSpline` to be forward, zero, and discount.

## LIBOR market model example

New example for mortgage prepayment that uses a LIBOR market model to generate interest-rate evolutions. For more information, see Prepayment Modeling with a Two Factor Hull White Model and a LIBOR Market Model.

## Counterparty credit risk example

New example for computing the unilateral Credit Value (Valuation) Adjustment (CVA) for a bank holding a portfolio of vanilla interest-rate swaps with several counterparties. For more information, see Counterparty Credit Risk and CVA.

## Conversion of error and warning message identifiers

For R2012b, error and warning message identifiers have changed in Financial Instruments Toolbox.

### Compatibility Considerations

If you have scripts or functions that use message identifiers that changed, you must update the code to use the new identifiers. Typically, message identifiers are used to turn off specific warning messages, or in code that uses a `try/catch` statement and performs an action based on a specific error identifier.

For example, because Fixed-Income Toolbox and Financial Derivatives Toolbox merged to become Financial Instruments Toolbox, the `finfixed` and `finderiv` message identifiers have changed to `fininst`. If your code checks for `finfixed` or `finderiv` message identifiers, you must update it to check for `finisnt` instead.

To determine the identifier for an error, run the following command just after you see the error:

```
exception = MException.last;
MSGID = exception.identifier;
```

To determine the identifier for a warning, run the following command just after you see the warning:

```
[MSG,MSGID] = lastwarn;
```

This command saves the message identifier to the variable `MSGID`.