

# Risk Management Toolbox™ Release Notes



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Phone: 508-647-7000



The MathWorks, Inc.  
3 Apple Hill Drive  
Natick, MA 01760-2098

## *Risk Management Toolbox™ Release Notes*

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## R2017b

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# R2017b

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**Version: 1.2**

**New Features**

**Bug Fixes**

**Compatibility Considerations**

## Corporate Credit Risk: Compute regulatory capital and value-at-risk using an asymptotic single risk factor (ASRF) model

The `asrf` function provides an ASRF model for credit risk analysis. `asrf` accepts the risk characteristics of a portfolio of credit-sensitive instruments as input and computes the necessary capital using an ASRF model.

## Corporate Credit Risk: Perform credit portfolio simulation with random loss given default (LGD)

Support is provided for specifying random LGD (loss given default) for `creditDefaultCopula` and `creditMigrationCopula` objects. You can now specify the LGD input argument as a `NumCounterparties-by-2` matrix, where the first column contains the LGD mean values and the second column contains the LGD standard deviations. In this case, LGD values are drawn randomly from a beta distribution with the parameters provided for the defaulting counterparty.

## Market Risk: Backtest expected shortfall models

The following tools support expected shortfall (ES) backtesting for table-based tests for the unconditional Acerbi-Szekely test.

- `esbacktest`
- `summary`
- `runtests`
- `unconditionalNormal`
- `unconditionalT`

The following tools support expected shortfall (ES) backtesting for distribution tests for normal and  $t$  distributions.

- `esbacktestbysim`
- `summary`
- `runtests`
- `conditional`
- `unconditional`

- `quantile`
- `simulate`

## Consumer Credit Risk: Specify weights in credit scorecards using Binning Explorer

Specify weights in a credit scorecard when using the Binning Explorer app. For more information on defining weights for a `creditscorecard` object, see the optional name-value pair argument `WeightsVar` for `creditscorecard`.

### creditCopula object renamed

The `creditCopula` object is renamed to the `creditDefaultCopula` object.

### Compatibility Considerations

Object Name	What Happens When You Use This Object	Use This Object Instead	Compatibility Considerations
<code>creditCopula</code>	Errors	<code>creditDefaultCopula</code>	<p>Replace all instances of <code>creditCopula</code> object with <code>creditDefaultCopula</code> object using <code>creditDefaultCopula</code>.</p> <hr/> <p><b>Note</b> The <code>CounterpartyLosses</code> property of the <code>creditCopula</code> object is removed in the <code>creditDefaultCopula</code> object. To obtain counterparty losses, use the <code>getScenarios</code> function.</p>





# R2017a

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**Version: 2.5**

**New Features**

**Bug Fixes**

**Compatibility Considerations**

## Corporate Credit Risk: Estimate the probability of credit rating migration based on multifactor copula model

The following tools support corporate credit portfolio analysis for credit migration simulation using a `creditMigrationCopula` object for copula-based simulations:

- `creditMigrationCopula`
- `simulate`
- `portfolioRisk`
- `riskContribution`
- `confidenceBands`
- `getScenarios`

## Corporate Credit Risk: Quantify credit concentration risk by Herfindahl index and other concentration measures

The `concentrationIndices` function supports the following concentration indices:

- CR — Concentration ratio
- Deciles — Deciles of the portfolio weights distribution
- Gini — Gini coefficient
- HH — Herfindahl-Hirschman index
- HK — Hannah-Kay index
- HT — Hall-Tideman index
- TE — Theil entropy index

## Corporate Credit Risk: Model corporate default risk using Merton model

The `mertonmodel` and `mertonByTimeSeries` functions estimate the default probability using Merton's model.

## creditCopula object renamed

The `creditCopula` object is renamed to the `creditDefaultCopula` object.

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## Compatibility Considerations

Object Name	What Happens When You Use This Object	Use This Object Instead	Compatibility Considerations
creditCopula	Warns	creditDefaultCopula	<p>Replace all instances of creditCopula object with creditDefaultCopula object using the creditDefaultCopula constructor.</p> <hr/> <p><b>Note</b> The CounterpartyLosses property of creditCopula object is removed in the creditDefaultCopula object. To obtain counterparty losses, use the getScenarios function.</p>



# R2016b

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Version: 2.4

New Features

## Consumer Credit Risk: Binning Explorer for Credit Scorecards

**Binning Explorer** is an app for developing and modifying binning assignments for a `creditscorecard` object. For more information, see [Binning Explorer](#).

## Corporate Credit Risk: Copula-based simulation framework

The following tools support corporate credit portfolio analysis using a `creditCopula` object for copula-based simulations:

- `creditCopula` — Creates a `creditCopula` object.
- `simulate` — Simulates credit defaults using a `creditCopula` object.
- `portfolioRisk` — Generates portfolio-level risk measurements for a `creditCopula` object.
- `confidenceBands` — Generates confidence interval bands for a `creditCopula` object.
- `riskContribution` — Generates risk contributions for each counterparty in the `creditCopula` object.

## Market Risk: Value-at-Risk Backtesting Tools

Value-at-risk (VaR) is an important measure of financial risk. VaR is an estimate of how much value a portfolio can lose in a given time period with a given confidence level. VaR backtesting tools assess the accuracy of VaR models. The following VaR backtesting tools are supported:

- `varbacktest` — Creates a `varbacktest` object using portfolio outcomes data and corresponding value-at-risk (VaR) data.
- `bin` — Binomial test.
- `cc` — Christoffersen's conditional coverage mixed test.
- `cci` — Christoffersen's conditional coverage independence test.
- `pof` — Kupiec's proportion of failures test.
- `tbf` — Haas's time between exceptions independence test.
- `tbf_i` — Haas's mixed time between exceptions (independence and frequency) test.
- `t1` — Traffic light test.

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- `tuff` — Kupiec's time until the first failure test.
  - `summary` — Summary report on the given `varbacktest` data.
  - `runtests` — Runs all tests and reports the final test results.

