Package: finRiskPractical (via r-universe)

July 3, 2026

Type Package

Title Teaching Scripts for Financial Risk Analytics Practicals

Version 0.1.0

Description A collection of ten worked practical scripts covering R fundamentals, term structure modelling, market risk (VaR), credit risk (Markov chains), operational risk (frequency-severity models), volatility (GARCH), portfolio optimisation, Monte Carlo risk simulation, and a Shiny risk dashboard. Each Practical*() function prints the annotated R code for that topic so it can be copied, run, and studied interactively. This package intentionally ships the material as printable teaching code rather than as executed computations, so it has no hard dependency on the packages used inside the printed examples (minpack.lm, evd, rugarch, quadprog, shiny); install those separately if you want to run the printed code yourself.

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Encoding UTF-8

LazyData true

RoxygenNote 7.3.2

URL https://github.com/phanthomx/finRiskPractical

BugReports https://github.com/phanthomx/finRiskPractical/issues

Repository https://phanthomx.r-universe.dev

Date/Publication 2026-07-03 20:20:49 UTC

RemoteUrl https://github.com/phanthomx/finRiskPractical

RemoteRef HEAD

RemoteSha deedd4552a7349b9413a1a30472d6a12995c38ee

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`Practical1_R_for_Finance`

Practical 1: R for Finance

Description

Prints annotated R code covering basic R computations, data structures, a future value calculation, simple return simulation, and plots.

Usage

```
Practical1_R_for_Finance()
```

Value

Invisibly returns `NULL`; called for its printed side effect.

Examples

```
Practical1_R_for_Finance()
```

Practical10_Shiny_App *Practical 10: Build a Shiny Risk App*

Description

Prints annotated R code for a full Shiny application (analytics, UI, and server layers) implementing an interactive Monte Carlo risk dashboard.

Usage

```
Practical10_Shiny_App()
```

Value

Invisibly returns `NULL`; called for its printed side effect.

Examples

```
Practical10_Shiny_App()
```

Practical2_R_Warmups *Practical 2: More R Warm-Ups*

Description

Prints annotated R code covering functions, control flow, loops, bootstrapping a confidence interval, and a random walk simulation.

Usage

```
Practical2_R_Warmups()
```

Value

Invisibly returns `NULL`; called for its printed side effect.

Examples

```
Practical2_R_Warmups()
```

Practical3_Term_Structure_Splines

Practical 3: Term Structure and Splines

Description

Prints annotated R code fitting a Nelson-Siegel model and a cubic smoothing spline to a synthetic yield curve, and comparing RMSE.

Usage

```
Practical3_Term_Structure_Splines()
```

Value

Invisibly returns `NULL`; called for its printed side effect.

Examples

```
Practical3_Term_Structure_Splines()
```

Practical4_Market_Risk

Practical 4: Market Risk

Description

Prints annotated R code computing parametric and historical Value-at-Risk (VaR) on a simulated daily return series.

Usage

```
Practical4_Market_Risk()
```

Value

Invisibly returns `NULL`; called for its printed side effect.

Examples

```
Practical4_Market_Risk()
```

`Practical5_Credit_Risk` *Practical 5: Credit Risk*

Description

Prints annotated R code simulating rating migration with a Markov chain transition matrix, Monte Carlo default probabilities, and a hazard rate calculation.

Usage

```
Practical5_Credit_Risk()
```

Value

Invisibly returns `NULL`; called for its printed side effect.

Examples

```
Practical5_Credit_Risk()
```

`Practical6_Operational_Risk` *Practical 6: Operational Risk*

Description

Prints annotated R code for a frequency-severity operational loss model, fire loss severity, and a peaks-over-threshold (GPD) fit.

Usage

```
Practical6_Operational_Risk()
```

Value

Invisibly returns `NULL`; called for its printed side effect.

Examples

```
Practical6_Operational_Risk()
```

Practical7_Volatility_GARCH

Practical 7: Measuring Volatility (GARCH)

Description

Prints annotated R code fitting an AR(1)-GARCH(1,1) model, simulating a future volatility path, and computing a GARCH-based VaR.

Usage

```
Practical7_Volatility_GARCH()
```

Value

Invisibly returns `NULL`; called for its printed side effect.

Examples

```
Practical7_Volatility_GARCH()
```

Practical8_Portfolio_Analytics

Practical 8: Portfolio Analytics

Description

Prints annotated R code solving a minimum-variance, long-only portfolio via quadratic programming and computing portfolio VaR.

Usage

```
Practical8_Portfolio_Analytics()
```

Value

Invisibly returns `NULL`; called for its printed side effect.

Examples

```
Practical8_Portfolio_Analytics()
```

Practical9_Monte_Carlo_Risk

Practical 9: Monte Carlo Risk Simulation

Description

Prints annotated R code simulating terminal asset values via Geometric Brownian Motion and computing Monte Carlo VaR and Expected Shortfall.

Usage

```
Practical9_Monte_Carlo_Risk()
```

Value

Invisibly returns `NULL`; called for its printed side effect.

Examples

```
Practical9_Monte_Carlo_Risk()
```

print_all_practicals *Print Every Practical in Order*

Description

Convenience wrapper that calls all ten `Practical*_*()` functions in sequence, printing their annotated code one after another.

Usage

```
print_all_practicals()
```

Value

Invisibly returns `NULL`; called for its printed side effect.

Examples

```
print_all_practicals()
```

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