

## RIO Fixed Income System

The market's leading software for valuation and risk measurement of Danish mortgage backed bonds as well as interest rate and bond derivatives.

# RIO Fixed Income System

RIO Fixed Income System is the market's leading software for valuation and risk management of Danish bonds and interest rate derivatives. It is the only system that gives you the full range of benchmark models for all types of Danish mortgage backed bonds.

With RIO, you have a high degree of flexibility to configure your calculations. Both in terms of model setup and output presentation. This allows for smooth interaction with other software systems.

## RIO provides

- ✓ User friendly access to all available models
- ✓ Ad hoc sensitivity analysis on any model parameter
- ✓ Calibration of interest rate models to market volatility information
- ✓ Comparison of selected scenarios and securities
- ✓ Overview of risk and performance
- ✓ Easy computing of holding period returns for large portfolios
- ✓ Integration with external databases
- ✓ Performance boosting minimal calculation logic
- ✓ Automation interfaces for production batch jobs

The dynamic user interface facilitates analyses of results across bonds, scenarios, model assumptions, dates etc. with full support of a flexible graphing tool. You can save the full project setup as well as individual charts and share them with other users.

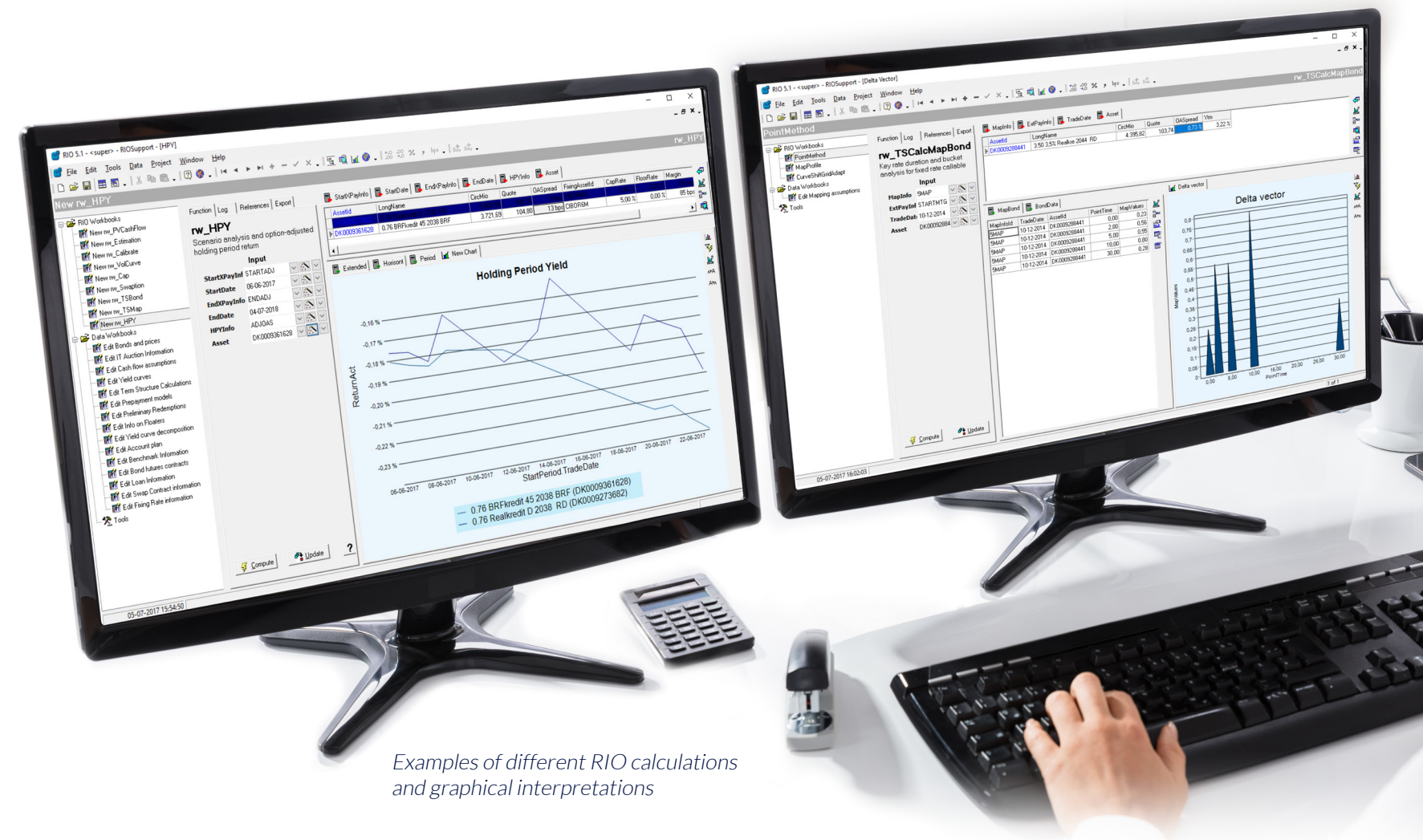
Save time and automate any task in the RIO system using standard programming tools.

## Access all models directly from Excel

Every RIO license includes RIO Function Library for Excel, a user-friendly add-in for Excel, which allows you to combine RIO's advanced models with Excel's flexibility and manage risk efficiently. You can even access proprietary data and real time input.

## A complete solution for the Danish bond market

No output without data. In addition to the RIO Fixed Income system, we offer you the data and models needed to cover all aspects of the Danish bond market. A subscription to the **Danish Bond Data service** gives you a daily feed of basic bond data, market prices, debtor compositions, prepayments plus unique datasets collected by our experienced team of analysts. The **Scanrate Prepayment and Valuation service** offers an updated and rigorously tested set of valuation models for Danish mortgage backed bonds. With a **hosted solution**, the daily maintenance will be managed by the Scanrate operation team.



## Program Facilities

- ✓ Client/Server based system
  - Microsoft SQL database
- ✓ Advanced user interface
  - Dynamic charts
- ✓ Programming interface
  - Microsoft .NET interface and several scripting languages
- ✓ Import/Export
  - User defined import formats
  - Export data to any database
- ✓ Third party Integration
  - Unlimited Excel integration through the RIO Function Library



# Coverage

## ✓ Fixed Income Products

- Bonds (treasury, corporate, inflation-linked, covered, extendable)
- Mortgage backed bonds (fixed rate callable, annuity, interest only)
- Interest rate and currency swaps
- Capped floaters
- Ratchet floaters
- Caps/Floors/Collars
- Swaptions
- Amortizing Bermudan Swaptions

## ✓ Yield Curve Estimation

- Parametric models (Extended Nelson-Siegel, CIR, Vasicek)
- Linear splines, non-parametric cubic splines

## ✓ Term Structure Models

- Extended CIR, Vasicek and CEV
- LIBOR Market models
- Calibration of volatility structure using caps, floors and swaptions quotes
- Fast valuation using state-of-art Monte Carlo and finite difference techniques

## ✓ Mortgage Prepayment Models

- Models utilising all available mortgage data
- Required Gain Model
- Mixture Distribution Model
- Burn-out measures
- Preliminary prepayment model

## ✓ Risk and Return

- A full selection of standard bond statistics
- Option-adjusted measures
- Historical returns – performance attribution
- Benchmark calculations
- Detailed future returns based on user defined interest rate scenarios
- Key rate durations/gamma vectors
- Value-at-risk
- Solvency II, FRTB

## ✓ Liability Management

- Mortgage loans, leasing and bank loans
- Refinance and scenario analysis





## RIO – The first of its kind

We developed RIO Fixed Income System in 1986. At that time, RIO was the first – and for several years the only – system able to estimate zero coupon curves for the Danish bond market. In 1992 we released the first MBS valuation model based on borrower prepayment behavior. Today, RIO is used by some of the largest banks, pensions funds, and mortgage providers in Denmark as well as foreign investment funds. Through RIO you have access to cutting edge expertise as well as 30 years of experience in the Danish bond market



**“The flexibility of RIO is very valuable to us.**  
*We are able to adjust all parameters of the models and there-by analyze exactly what we need.*”

Claus Juhl, Head of Fixed Income Research at Sydbank



Sydbank

**“Out-sourcing fixed income infrastructure.**  
*The RIO system enables us to monitor all essential key figures for both single instruments and portfolios on a daily basis.*”

Janne Bjerregaard, Chief Portfolio Manager at Sparinvest



Sparinvest

## About Scanrate Financial Systems

Scanrate Financial Systems A/S is the leading independent specialist in Danish Mortgage backed bonds. Since 1986, we have developed advanced financial software and delivered data of the highest quality on Danish bonds to clients across banking and financial sectors. Our aim is to provide a solid foundation when making strategic, financial decisions.



# Interested in more?



## View our factsheets about:

### **RIO Function Library**

The complete set of RIO functions at your command. With our user-friendly add-in for Excel, you can combine RIO's advanced models with Excel's flexibility.

### **RIO.net**

RIO.NET allows programmers to customize their calculations to the fullest extent.

### **Danish Bond Data**

The service delivers basic data, market quotes, and value added data on fixed income instruments in any format you desire.

### **Scanrate Pricing Service**

A daily feed with evaluated prices on the full range of liquid and illiquid bonds in the Danish market.

