

# Package ‘fBonds’

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**Title** Rmetrics - Pricing and Evaluating Bonds

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**Description** It implements the Nelson-Siegel and the Nelson-Siegel-Svensson term structures.

**Depends** R (>= 2.15.1), timeDate, timeSeries, fBasics

**Imports** graphics, stats

**Suggests** RUnit

**LazyData** yes

**License** GPL (>= 2)

**URL** <http://www.rmetrics.org>

**NeedsCompilation** no

**Repository** CRAN

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fBonds-package	<i>Pricing and Evaluating Bonds</i>
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### Description

The Rmetrics "fBonds" package is a collection of functions for pricing and evaluating bonds and to compute term structures.

### Details

```

Package:  \tab fBonds\cr
Type:    \tab Package\cr
Version: \tab R 3.0.1\cr
Date:    \tab 2014\cr
License: \tab GPL Version 2 or later\cr
Copyright: \tab (c) 1999-2014 Rmetrics Association\cr
URL:     \tab \url{https://www.rmetrics.org}

```

### 1 Introduction

This section provides functions to valuate Bonds and to calculate term structures.

### 2 Term Structure Calculation

This section provides two functions for term structure modelling based on the Nelson-Siegel, and on the Svensson approach.

```

NelsonSiegel  models Nelson-Siegel Term Structure
Svensson      models Nelson-Siegel-Svensson Term Structure

```

### About Rmetrics

The fBonds Rmetrics package is written for educational support in teaching "Computational Finance and Financial Engineering" and licensed under the GPL.

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TermStructure	<i>Term Structure Modelling</i>
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### Description

A collection and description of functions for term structure modelling.

The functions are:

NelsonSiegel Svensson Nelson-Siegel Term Structure,  
Nelson-Siegel-Svensson Term Structure.

### Usage

```
NelsonSiegel(rate, maturity, doplot = TRUE)
Svensson(rate, maturity, doplot = TRUE)
```

### Arguments

doplot            a logical. Should a plot be displayed?  
maturity        a numeric vector of maturities on an annual scale.  
rate             a numeric vector of forward rates.

### Value

a list object with entries returned from the optimization function `nllminb`.

### References

McCulloch J. H. (1990); *US Term Structure Data: 1946-87*, Handbook of Monetary Economics, Friedman B.M. and Hahn F.H. (eds.), Elsevier Science.

McCulloch J. H. and Kwon, H.C. (1993); *US Term Structure Data: 1947-1991*, Working Paper No. 93-6, Department of Economics, Ohio State University.

Zivot E., Wang J.; *Modeling Financial Time Series with S-Plus*.

### Examples

```
Yield = c(
0.04984, 0.05283, 0.05549, 0.05777, 0.05961, 0.06102, 0.06216, 0.06314,
0.06403,
0.06488, 0.06568, 0.06644, 0.06717, 0.06786, 0.06852, 0.06913, 0.06969,
0.07020,
0.07134, 0.07205, 0.07339, 0.07500, 0.07710, 0.07860, 0.08011, 0.08114,
0.08194,
0.08274, 0.08355, 0.08434, 0.08512, 0.08588, 0.08662, 0.08731, 0.08794,
0.08851,
0.08900, 0.08939, 0.08967, 0.08980, 0.08976, 0.08954, 0.08910, 0.08843,
0.08748,
0.08626, 0.08474, 0.08291)
```

```
Maturity = c(
0.083, 0.167, 0.250, 0.333, 0.417, 0.500, 0.583, 0.667,
0.750, 0.833,
0.917, 1.000, 1.083, 1.167, 1.250, 1.333, 1.417, 1.500,
1.750, 2.000,
2.500, 3.000, 4.000, 5.000, 6.000, 7.000, 8.000, 9.000, 10.000,
11.000,
12.000, 13.000, 14.000, 15.000, 16.000, 17.000, 18.000, 19.000, 20.000,
```

```
21.000,  
 22.000, 23.000, 24.000, 25.000, 26.000, 27.000, 28.000, 29.000)  
  
NelsonSiegel(Yield, Maturity)  
  
par(mfrow = c(2, 2))  
Svensson(Yield, Maturity)
```

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