

## PRICE DERIVATIVE & FIXED INCOME INSTRUMENTS IN MICROSOFT EXCEL

### FINCAD Analytics Suite from Numerix, makes pricing derivatives and fixed income products easier than ever.

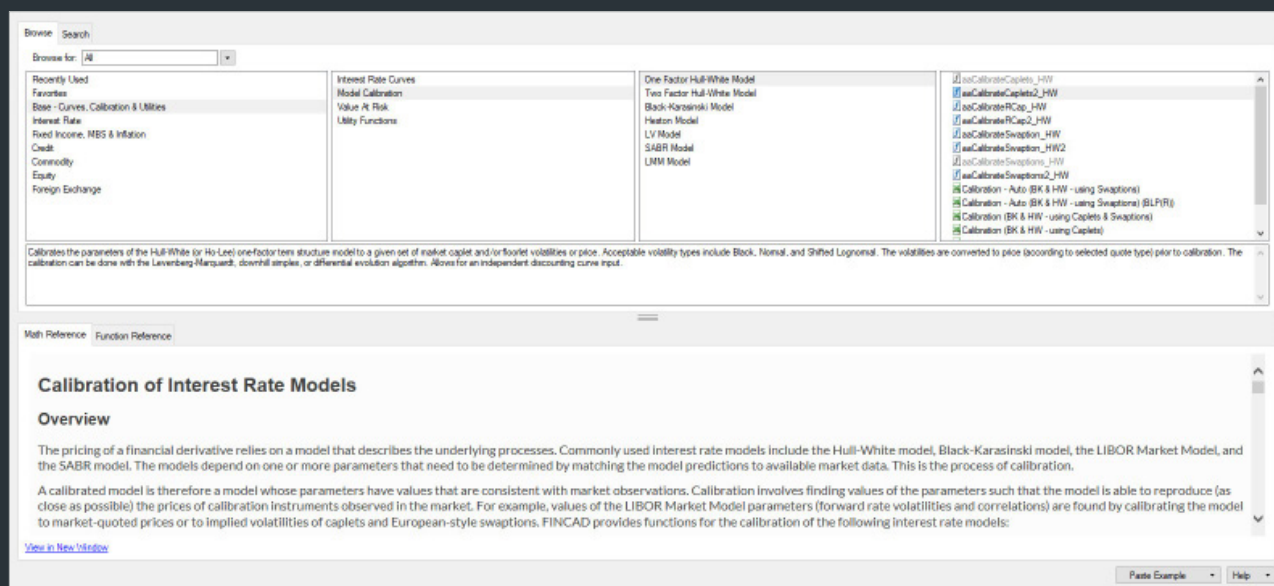
With over 2,000 pre-configured functions and over 200 workbooks at your fingertips, FINCAD's functional analytics library empowers you to calculate pricing, risk, and cash flows within minutes for any vanilla derivative or fixed income security.

- Get mark-to-market values of positions and portfolios
- Do risk analysis and reporting
- Validate curves and models
- Perform scenario analysis, stress testing and cash flow analysis
- Apply advanced approaches to evaluating fixed income

**Get started right away, valuing your portfolio with confidence.**

### FINCAD OFFERS AN UNMATCHED USER EXPERIENCE

Find models, workbook solutions and documentation quickly with an Analytics Finder. Review and understand function inputs and get help with error debugging with an Input Assistant. Easy-to-use Excel tools enable calculation and array management.



Raw Rate Bumps Analysis											
Select	Bucket	Roll	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	
			Overnight Deposits	FRAs	Overnight Futures	Overnight Swaps	Overnight FRAs	Fixed Rate Bonds	Overnight Copy/Floors	Overnight Swaps	Net Exposure
TRUE	parallel shift - deposit rates	-11.86	18.97	-55.52	250.59	-220.19	-191.40	342.03	-0.38	199.16	402.30
TRUE	parallel shift - future rates	-3.57	211.01	326.46	-220.19	-191.40	342.03	-0.90	-2,670.04	-2,134.65	
TRUE	parallel shift - swap rates	0.00	-8.47	-0.83	-335.85	4.77	-375.30	4.13	0.00	-1,211.64	
TRUE	All FX	-11.86	-18.97	-68.82	250.59	-16.51	26.17	-0.38	199.16	402.30	
TRUE	11.01.2020	11.86	-11.81	-19.33	250.59	18.51	26.29	2.85	81.24	313.30	
TRUE	11.01.2019	0.00	-15.03	-40.31	252.25	4.77	24.06	1.34	125.45	352.73	
TRUE	01.01.2021	0.00	-8.47	-0.83	252.25	4.77	24.94	3.86	50.20	306.76	
TRUE	All FX rates	-3.57	211.01	326.46	-220.19	-191.40	342.03	-0.90	-2,670.04	-2,134.65	
TRUE	V20 futures	3.57	2.86	54.29	101.47	-24.87	81.88	-4.32	-164.52	23.22	
TRUE	F21 futures	0.00	17.91	136.99	108.25	-26.30	62.30	1.02	-252.12	2.49	
TRUE	J21 futures	0.00	20.89	222.99	82.49	-28.80	62.30	11.96	-315.59	-128.25	
TRUE	N21 futures	0.00	2693.57	27.51	234.14	-28.25	62.00	2.23	-304.28	262.92	
TRUE	V21 futures	0.00	2863.57	27.51	234.14	-28.25	62.00	2.23	-304.28	262.92	
TRUE	F22 futures	0.00	-19.58	0.26	252.00	-1.43	62.27	3.99	-297.07	8.44	
TRUE	J22 futures	0.00	-3.12	1.83	251.86	7.28	61.64	6.53	-291.75	22.09	
TRUE	N22 futures	0.00	-8.47	-0.83	252.42	18.89	61.38	5.09	-289.53	58.95	
TRUE	V22 futures	0.00	-8.47	-0.83	251.84	17.33	45.10	-3.02	-287.84	14.11	
TRUE	F23 futures	0.00	-8.47	-0.83	251.76	9.59	26.71	-1.01	-34.42	237.33	
TRUE	J23 futures	0.00	-8.47	-0.83	251.99	3.81	23.97	-1.04	6.42	276.56	
TRUE	N23 futures	0.00	-8.47	-0.83	252.70	4.77	24.40	10.07	3.96	296.06	
TRUE	All FX swaps	0.00	-8.47	-0.83	-335.85	4.77	-375.30	4.13	0.00	-1,211.64	
TRUE	By swap	0.00	-8.47	-0.83	259.09	4.77	-293.73	4.13	0.00	-34.24	
TRUE	By swap	0.00	-8.47	-0.83	412.99	4.77	-159.53	4.13	0.00	303.07	
TRUE	By swap	0.00	-8.47	-0.83	-291.58	4.77	19.43	4.13	0.00	-574.69	
TRUE	By swap	0.00	-8.47	-0.83	-233.83	4.77	97.69	4.13	0.00	-136.34	
TRUE	By swap	0.00	-8.47	-0.83	296.44	4.77	16.29	4.13	0.00	314.34	
TRUE	By swap	0.00	-8.47	-0.83	252.25	4.77	24.48	4.13	0.00	276.31	
TRUE	By swap	0.00	-8.47	-0.83	697.26	4.77	23.07	4.13	0.00	749.73	
TRUE	By swap	0.00	-8.47	-0.83	1,004.91	4.77	17.42	4.13	0.00	1,021.04	
TRUE	By swap	0.00	-8.47	-0.83	1,310.77	4.77	16.97	4.13	0.00	1,321.34	
TRUE	By swap	0.00	-8.47	-0.83	1,617.52	4.77	4.53	4.13	0.00	1,621.66	
TRUE	By swap	0.00	-8.47	-0.83	1,924.28	4.77	-1.92	4.13	0.00	1,921.36	
TRUE	All FX rate swaps	0.00	-8.47	-0.83	2,251.93	4.77	-8.37	4.13	0.00	2,222.27	

## STRAIGHTFORWARD, TRANSPARENT, AND EASY-TO-USE

Get out-of-the-box coverage for vanilla and fixed income instruments across all major asset classes using industry standard models, supported by comprehensive curve-building and model calibration. Calculate risk and implied equivalent metrics.

**Calibration of Interest Rate Models**

**Overview**

The pricing of a financial derivative relies on a model that describes the underlying process. Commonly used interest rate models include the Multi-Factor Model, Markov-Chain Model, and the SABR model. The model depends on one or more parameters that need to be determined by matching the model predictions to available market data. This is the process of calibration.

It is essential to know if a model is a good fit for the data. The model should be able to explain the data and not overfit. The model should be able to explain the data and not overfit. The model should be able to explain the data and not overfit.

For all of these interest rate models, the calibration instruments (the market data) are interest rate caps/floors and European rate swaptions.

A rate cap can be specified as a series of caps. For this reason, we developed the rate cap calibration functions and implemented that users use the caplet calibration functions.

The 3rd level of the model parameters, and the parameter values are listed with each model in the table below. The 1st Factor Model, the 2nd Factor Model, and the 3rd Factor Model are listed in the table below. The 1st Factor Model, the 2nd Factor Model, and the 3rd Factor Model are listed in the table below.

Model	Formula	Calibration	Comments
1st Factor Model	$r_t = \theta + \alpha(r_t - \theta) + \sigma \epsilon_t$	Mean and variance	Also calibrated from the total term structure
2nd Factor Model	$r_t = \theta + \alpha(r_t - \theta) + \sigma \epsilon_t + \beta \epsilon_t^2$	Mean and variance	Also calibrated from the total term structure
3rd Factor Model	$r_t = \theta + \alpha(r_t - \theta) + \sigma \epsilon_t + \beta \epsilon_t^2 + \gamma \epsilon_t^3$	Mean and variance	Also calibrated from the total term structure
4th Factor Model	$r_t = \theta + \alpha(r_t - \theta) + \sigma \epsilon_t + \beta \epsilon_t^2 + \gamma \epsilon_t^3 + \delta \epsilon_t^4$	Mean and variance	Also calibrated from the total term structure

## COMPREHENSIVE DOCUMENTATION

Access comprehensive documentation explaining what each instrument is, all the way down to the mathematical formulas used in each calculation. With FINCAD, you will have utmost confidence in the math and models underlying your valuation and risk.

Get the answers you need fast with FINCAD Analytics Suite from Numerix.



Effortless Precision



Fast Answers, Fast Decisions



Comprehensive Asset Class Coverage



Confidence in Every Decision

Getting started is simple. Visit our website to start your 14-day free trial.

<https://fincad.com/start-your-free-trial-today> | [sales@fincad.com](mailto:sales@fincad.com)

