

How to Value Counterparty Credit Risk, Price Volatility Derivatives and Reduce Operational Risk



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FINCAD[®]

Presenters



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Agenda

- ▶ FINCAD Analytics Suite 2009
- ▶ Counterparty Credit Risk Solutions
- ▶ Volatility Derivatives
- ▶ Data Connectors
- ▶ Operational Risk Issues and Solutions
- ▶ Q&A

Changing Financial Landscape

- ▶ Increased regulations
- ▶ Immediate results / use
- ▶ Comprehensive, cross-asset class coverage

What's new in FINCAD Suite 2009

- ▶ New Technology
- ▶ Analytics Coverage
- ▶ Usability
- ▶ Integration with FMD

FINCAD Analytics Suite 2009 Update Release

▶ Analytics Library

- 7 new functions
 - Trigger Swap
 - Snowrange
 - Brazilian calculation method
 - Altiplano full risk function

▶ Workbooks

- 5 new workbooks
 - ABS & LCDS workbook
 - Altiplano Option
 - European Swaptions using SABR
 - Auto calibration workbook updated to include FINCAD Market Data or Bloomberg swaption data

FINCAD Analytics Suite 2009

Analytics Finder

FINCAD Analytics Finder

Browse Search

Browse for: All

Recently Used
Favorites
Fixed Income (Bonds & Curves)
Fixed Income (Derivatives)
Floating Rate Notes
Commodity Derivatives
Credit Derivatives
Equity Derivatives
Foreign Exchange Derivatives
Inflation-Indexed Securities
Interest Rate Curves
Interest Rate Derivatives
Mortgage Backed Securities
Municipal / Tax Exempt Instruments

Callable Bonds
Convertible Bonds
Equity Index-linked Bonds
LIBOR Exotics (Callable & Non-Callable)

Capped Floater Notes
Inverse Floater Notes
Range Accrual Notes
SnowRange Notes
CMS Spread Notes
Snowballs
Snowblades
TARNs

aaCallSnowRange_LMM_fs
aaCallSnowRange_LMM_fs_cf
aaCallSnowRange_LMM_fs_tbl
CMS Range Accrual Notes (callable/puttable)
Range Accrual Notes (Callable/Putable)
Callable CMS Range Accrual Note
Callable CMS Spread Dual Range Accrual Note
Callable CMS Spread Range Accrual Note
Callable Range Accrual Note

Prices a callable Libor SnowRange note in the Libor Market Model using Monte Carlo simulation. A SnowRange note combines the feature of range accrual and snowball effect. The coupon in each period depends on the Libor range accrual and the coupon rate in the previous period.

Math Reference Function Reference

RANGE ACCRUAL NOTES (CALLABLE / PUTTABLE)

Overview

This document describes the functions that are provided for valuing range accrual notes that may be callable and/or puttable.

A range accrual note is similar to a fixed rate bond, except that interest only accrues on days when a reference rate falls within a specified range.

A range accrual note is valued by replicating the payoff in terms of a sum over daily floorlets. The floorlets are valued using a stationary one-factor short rate model (Hull-White or Black-Karasinski) or the Black model. Volatility smile structure is taken into account by calibrating the model parameters to the market prices of floorlets at the strike(s) and rate observation date(s) associated with the range accrual note.

Ideally, a callable range accrual note is valued using a model that is consistent with both the market prices of swaptions and floorlets. The approach adopted here is to use a simple model to match diagonal swaption prices, and then use "internal adjusters" to match the volatility

[View in New Window](#)

Paste Example Help

Functions

Math Ref.

Workbooks

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Credit Risk

- ▶ What is it?
 - risk of loss incurred in the event of default by counterparty. Default occurs when a counterparty fails to honor its contractual payments
- ▶ Why is it important?
 - Have you been reading the news?
 - Everyone is concerned with default risk of counterparties in deals and spreads in the marketplace show this

GM		
Spread / Year	2005	2009
1	6.07%	163.00%
3	6.07%	116.00%
5	6.07%	101.00%
10	6.07%	81.50%

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Credit Risk

- ▶ What can clients do to incorporate testing for or hedge credit risk?
 - Run scenario analysis
 - Add credit spreads to curve and re-value
 - Calculate credit exposure
 - Buy credit derivatives

Volatility Derivatives

- ▶ Instruments/Coverage
 - Variance Swaps
 - Volatility Swaps
 - Corridor swaps
 - Conditional Variance Swaps

- ▶ Models
 - Heston Model
 - Carr-Lee approximation method

FINCAD[®] Market Data

- ▶ End of day market data with historical data available from December 1999
- ▶ Excellent value at a fraction of the cost of alternative solutions.
- ▶ Pre-integrated with FINCAD Analytics Suite for Excel
- ▶ Multiple Jurisdictions including (but not limited to):
 - US, Canada, Europe (Euro and non-Euro), Australia and New Zealand
- ▶ Sample data includes:
 - Interest rate curves, volatilities, FX rates, commodities
- ▶ Additional data can be added on request

Reasons for using the Developers toolkit

- ▶ Spreadsheets are becoming too slow, too complex or too hard to manage.
- ▶ Extending your existing system.
- ▶ Need for independent benchmarks.
- ▶ Simplifying change control and audit processes.
- ▶ Building an internal system for managing market and credit risk

Brief Demo of the Developer's Toolkit

- ▶ Analytics Finder features
 - Browse function and math documents
 - Generate example code for functions
 - Access user guides, information on error handling and on how to distribute applications
- ▶ Visual Studio Integration
 - How to enable the add-in for VS 2005 or 2008
 - Context menu options

Prototyping using Excel VBA

- ▶ Why prototype in Excel?
- ▶ How do I generate an Excel VBA example?
- ▶ What is the CopyRangeToArray utility?

What to consider when Prototyping

- ▶ Plan for a three-tier design (database, business logic and user interface)
- ▶ Plan how to make your application available to users
- ▶ Plan how to integrate with existing systems or with desktop tools, like Microsoft Excel.
- ▶ Pick a computer language for implementing the application.

Conclusion

- ▶ The end goal of prototyping is a good design
- ▶ Prototyping drives the requirements process
- ▶ Early identification of the road-blocks

Resources

For more information on this topic you may contact today's speakers:

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Trial Evaluations:

www.fincad.com

Upcoming FINCAD Events:

London Training : March 9th & 10th

Toronto Training: May 12th & 13th

Sponsored Event:

Volatility Trading Summit: March 24th & 25th

For more information on events please visit www.fincad.com/events