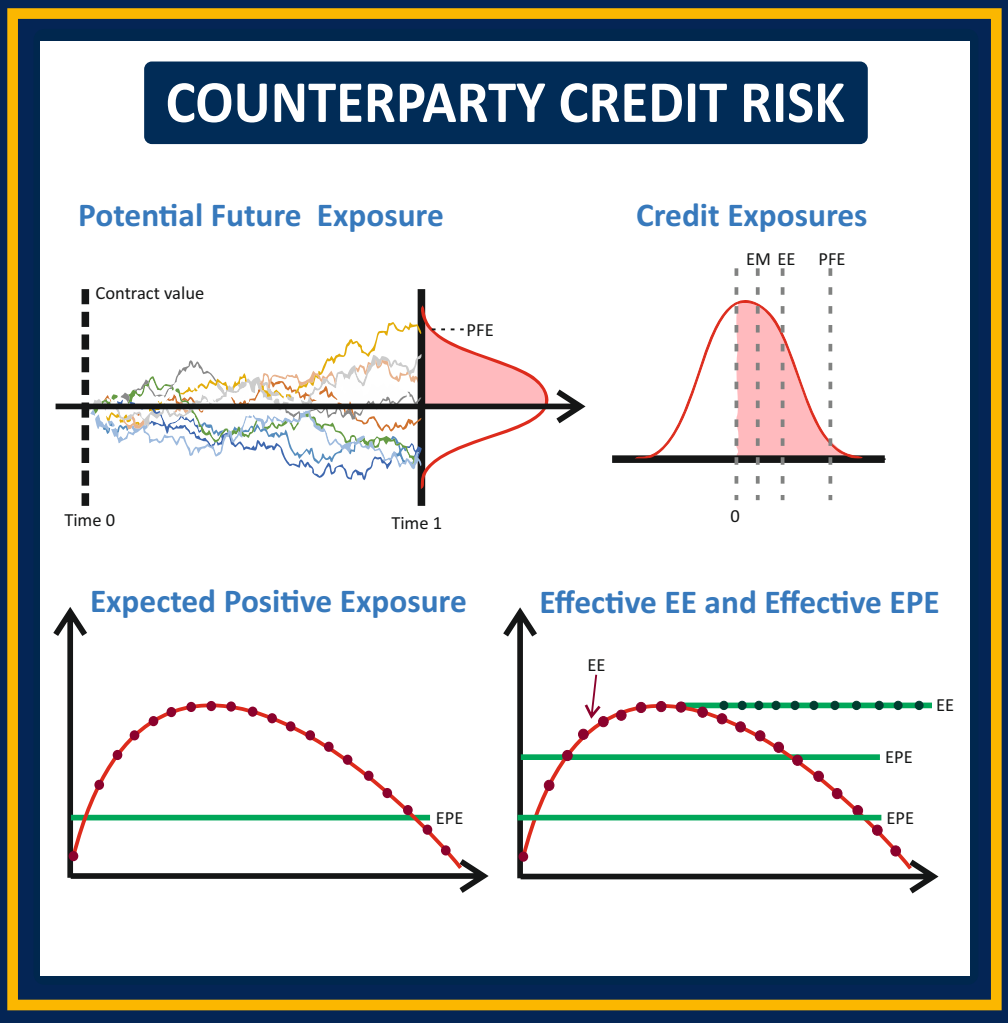
COUNTERPARTY CREDIT RISK MODELLING

using Excel

25+ hours

Case Study and Project- driven Methodology

Blended Learning Methodology



PEAKS2TAILS

DETAILED CURRICULUM

MODULE 1 - INTEREST RATE MODELS

VASICEK MODEL

- Monte simulation of Short Rates under Vasicek
- Expectation of Mean and Variance of Short Rates
- Bond Valutation Under Vasicek (Monte Carlo)
- Analytical form of Bond Price Under Vasicek

CIR

- Monte Carlo simulation of Short Rates under CIR
- Expectation of Mean and Variance of Short Rates
  bond Valuation Under CIR (Monte Carlo)
- Analytical form of Bond Price Under Vasicek

INTEREST RATE SWAP

- Introduction to IRS and Swap Rate
- Valution Methods for an IRS on a reset date
- Valuation if IRS in between reset dates
- Valuation of IRS under Vasicek / CIR Model and EE & PEE profiles

DETAILED CURRICULUM

MODULE 2 - COUNTERPARTY CREDIT RISK CALCULATIONS

MODELLING EXPOSURES

- Exposure Terminology
- Analytical Formulation of Exposures
- Monte Carlo Simulation of Exposures

EE & PFE

- Valuation of FRA
- EE & OEE of FRA
- Valuation of FX Forward
- EE & PEE of an Option
- CVA calculation of a long option
- FVA of a long option
- Collateral and Margin Terminology

CREDIT VALUATION ADJUSTMENTS

- CVA , DVA and BCVA
- Wrong Way Risk
- Cva Capital Charge

BACKGROUND | OBJECTIVE | ATTENDEES | PEDADOGY

BACKGROUND

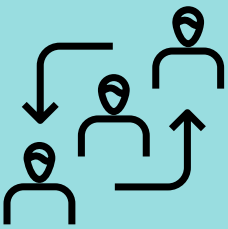
Counterparty credit risk /CVA continues to be one of the most important challenges in today's financial markets,and risk most large bank financial statements. This course is designed to empower individuals to understand what these calculations means ,interpret them for financial analysis, and identify ,quantify , understand and mitigate counterparty credit risk arising from derivatives across the major asset classes .

OBJECTIVE

Counter party Risk Assessment Models based on potential Future Exposure at Default , or as they are know in the industry :CVA/DVA/FVA Models. Understanding modelling are estimation of counterparty credit risk exposures for various Derivaties instruments . Identify impact of netting & collareral to reduce counterparty risks. Undertstand the calculation of capital charge for counterparty credit exposures.

WHO CAN ATTEND

Banker, Relationship Managers, Financial Advisors , and Product Specialists. An MBA in Finance or any Financial Professional pursuing CFA/FRM who is looking for opportunities in banks in the Counterparty credit risk term.

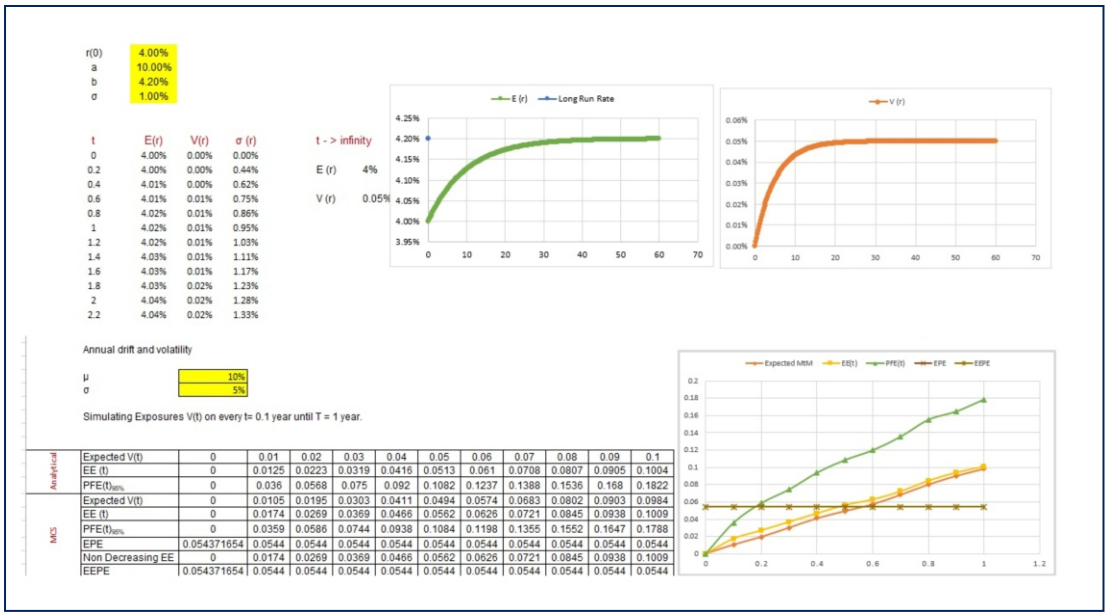


PEDADOGY

An intuitive non-quantitative approach will be employed throughout so that participants develop a feel for risk/reward tradeoffs without relying on complex mathematical formulas. Having said that , participants are encouraged to have laptops with Excel for a chance to manipulate simple but illustrative calculations.

DEMO MODELS

DURING THE PROGRAM YOU WILL LEARN TO CREATE EXCEL MODELS LIKE SHOWN BELOW



r(0)	4.00%
a	10.00%
b	4.20%
σ	1.00%

t	E(r)	V(r)	σ (r)
0	4.00%	0.00%	0.00%
0.2	4.00%	0.00%	0.44%
0.4	4.01%	0.00%	0.62%
0.6	4.01%	0.01%	0.75%
0.8	4.02%	0.01%	0.86%
1	4.02%	0.01%	0.95%
1.2	4.02%	0.01%	1.03%
1.4	4.03%	0.01%	1.11%
1.6	4.03%	0.01%	1.17%
1.8	4.03%	0.02%	1.23%
2	4.04%	0.02%	1.28%
2.2	4.04%	0.02%	1.33%

t - > infinity

E (r) 4%

V (r) 0.05%

Annual drift and volatility

μ	10%
σ	5%

Simulating Exposures V(t) on every t= 0.1 year until T = 1 year.

Analytical	Expected V(t)	0	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	0.1
	EE (t)	0	0.0125	0.0223	0.0319	0.0416	0.0513	0.061	0.0708	0.0807	0.0905	0.1004
	PFE(t)$_{95\%}$	0	0.036	0.0568	0.075	0.092	0.1082	0.1237	0.1388	0.1536	0.168	0.1822
MCS	Expected V(t)	0	0.0105	0.0195	0.0303	0.0411	0.0494	0.0574	0.0683	0.0802	0.0903	0.0984
	EE (t)	0	0.0174	0.0269	0.0369	0.0466	0.0562	0.0626	0.0721	0.0845	0.0938	0.1009
	PFE(t)$_{95\%}$	0	0.0359	0.0586	0.0744	0.0938	0.1084	0.1198	0.1355	0.1552	0.1647	0.1788
	EPE	0.054371654	0.0544	0.0544	0.0544	0.0544	0.0544	0.0544	0.0544	0.0544	0.0544	0.0544
	Non Decreasing EE	0	0.0174	0.0269	0.0369	0.0466	0.0562	0.0626	0.0721	0.0845	0.0938	0.1009
	EEPE	0.054371654	0.0544	0.0544	0.0544	0.0544	0.0544	0.0544	0.0544	0.0544	0.0544	0.0544

Run 500 simulations

EPE 0.00178117

EE	0	0.002829726	0.00268655	0.00160838	0
PFE	0	0.005803532	0.00534275	0.00330264	0

Run	MtM (t=0)	MtM (t=0.25)	MtM (t=0.5)	MtM (t=0.75)	MtM (t=1)
1	0	-0.000413628	-0.00264897	-0.00055856	0
2	0	0.001172394	0.00234169	-0.00020605	0
3	0	0.003481271	0.00346727	0.00131436	0
4	0	0.00671641	0.00129107	0.00084604	0
5	0	0.001306177	-0.00272528	-0.00195157	0
6	0	-0.000576876	-0.00091177	-0.00084209	0
7	0	0.00246864	0.00431451	-0.00057032	0
8	0	0.007140249	0.00308002	-0.00083192	0
9	0	0.002407373	0.00355209	0.00052482	0

The PFE curve peaks near 1/3rd

1	0.95163	0.99799	0.96071135	4.01%	4.01%
1.25	1.17503	0.99689	0.95111503	4.01%	4.02%
1.5	1.39292	0.99556	0.94161027	4.01%	4.02%
1.75	1.60543	0.99402	0.93219744	4.01%	4.02%
2	1.81269	0.99228	0.92287679	4.01%	4.02%
2.25	2.01484	0.99033	0.91364845	4.01%	4.02%
2.5	2.21199	0.98819	0.90451246	4.01%	4.02%
2.75	2.40428	0.98586	0.89546873	4.01%	4.02%
3	2.59182	0.98336	0.88651713	4.02%	4.02%
3.25	2.77473	0.98068	0.87765741	4.02%	4.02%
3.5	2.95312	0.97783	0.86888927	4.02%	4.02%
3.75	3.12711	0.97483	0.86021233	4.02%	4.01%
4	3.2968	0.97167	0.85162617	4.02%	4.01%

FREQUENTLY ASKED QUESTIONS

PREREQUISITE

Knowledge of Basic Excel , Simulations & interest rate concepts.

CERTIFICATE

Silver Certificate on successful completion of projects .
Gold Certification on passing a 2 hours MCQ based exam.

FEES

Rs.15000

DURATION

25+ hours

ABOUT THE TRAINER

Karan Aggarwal is one of India's leading trainers in Financial Modelling, Risk Modelling, Data Analytics and academic programs like Financial Risk Manager (FRM) & Actuarial Science. He has spearheaded several solution accelerators and spreadsheet-based prototypes in Risk and Analytics space. Karan has also authored a number of books on Advanced Excel, Statistical Modelling, Risk Modelling & Machine Learning. He is widely regarded for his problem-solving, thought leadership and intrapreneurship skills. His analytical mindset, solid fundamentals & the thirst to keep learning set him apart as a true authority in this field. Karan has also been awarded the Young Indian Entrepreneur Award by the Confederation Of Indian Industries in the year 2017.

PEAKS 2 TAILS

OUR TRAINEES WORK IN

DUPONT

LG
Life's Good

Manyavar
EARN YOUR RESPECT

XLRI
Xavier School of Management
For the greater good

TATA MOTORS

Uber

PRIONE
BUSINESS SERVICES PRIVATE LIMITED
A Catamaran & amazon Venture

LONE STAR COLLEGE
UNIVERSITY PARK
The Honors College

ST. XAVIER'S COLLEGE
NIHIL ULTRA

GPI
GODFREY PHILLIPS
INDIA LIMITED

SUN
PHARMA

moneytor

सेल SAIL
स्टील अथॉरिटी ऑफ इण्डिया लिमिटेड
STEEL AUTHORITY OF INDIA LIMITED

primarc

WNS
Extending Your Enterprise

OUR SERVICES

1 2 3 4

TRAINING

SOLUTIONING

CONSULTING

98 74 98 74 98