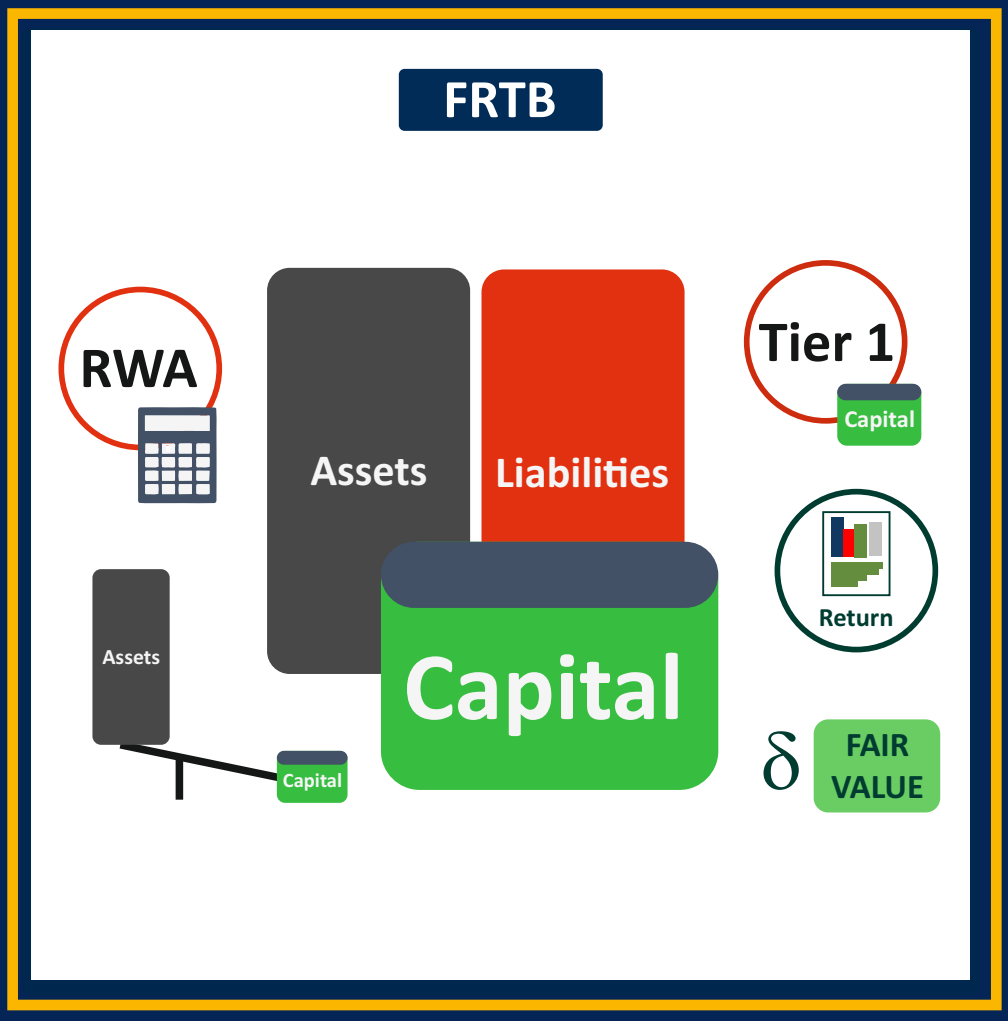
MARKET RISK MODELLING

using Excel

50+ hours

Case Study and Project- driven Methodology

Blended Learning Methodology



PEAKS2TAILS

DETAILED CURRICULUM

MONTE CARLO SIMULATION IN EXCEL

- Concepts of Probability Distributions
- Generating Random Numbers of different distributions using Excel functions:
  a.RAND, RANDBETWEEN
  b.NORMINV, NORMSIN
  c.NORMDIST, NORMSDIST
- Simulating Geometric Brownian Motion in Excel
- Simulating Ornstein Uhlenbeck Model in excel
- Generating Correlated Random Numbers in excel using Copulas
- Choloskey Decomposition using Excel

FIXED INCOME ANALYTICS IN EXCEL

- Yield Curve Construction in Excel
  a. Bootstrap methods
  b. Linear Interpolation
  c. Cubic Spline Interpolation
- Risk Measures
  a. Durations and Convexity, PV01
  b Asset Liability Management using Excel

EQUITY ANALYTICS IN EXCEL

- Option Pricing using Monte Carlo Simulations
- Option Pricing using Blackscholes and Binomial
- Option pricing in Indian Markets using Regression & VIX
- Exotic Options using Monte Carlo Simulations

INTEREST RATE ANALYTICS IN EXCEL

- Term Structure of Interest Rates
  a. Vasicek Model
  b. CIR Model
- Valuation of Int Rate swap
- Valuation of FRA
- Valuation of FX forward
- Valuation of Swaption

DETAILED CURRICULUM

MARKET RISK ANALYTICS

VOLATILITY ESTIMATION TECHNIQUES

- Simple Moving Average approach
- Exponential Weighted Moving Average approach
- GARCH Model
  Volatility adjusted for Fat tails and time weighting

CALCULATION OF VAR & EXPECTED SHORTFALL

- Delta Normal
- Historical Simulation
- Monte Carlo Simulation
- VaR for Stock, Bonds & Derivatives
- Explore ways to compensate for Fat tailed volatility & timeweighting to calculate VaR

BASEL FRTB

- Overview, FRTB Building Blocks, Computation requirements
  Standardised approach: Interest Rate Risk, Credit Spread Risk,
- Equity Risk, FX Risk, Commodity Risk, Default Risk Charge, Model Add-On
- Advanced Measurement Approach - Expected Shortfall, Default Risk Charge
- P/L Attribution & Backtesting

STRESS TESTING

- Design stress scenarios based on risk factor volatility and correlation across different asset classes
- Measuring portfolio stress risk exposure
- Adjust stress scenarios for fat tails, time weighting & liquidity

BACKGROUND | OBJECTIVE | ATTENDEES | PEDADOGY

BACKGROUND

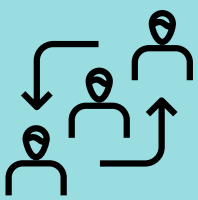
With the creation of global financial networks, banking systems around the world are undoubtedly inter-connected. At the same time, changes in equity prices, interest rates, commodity prices and currencies, i.e. market risk, began to play an increasingly important role in overall risk exposure of financial institutions. Recent global financial crisis forcefully demonstrated the importance of effectively measuring and managing risk and, in particular, market risk markets, it is not possible to accurately predictthe future value of a portfolio. Every financial institution with a portfolio exposed to market risk should have a model in place which is designed to measure that risk..

OBJECTIVE

Understanding of Equity, Interest rate & Foreign Exchange DerivativesImplement Complex Monte Carlo Simulations in ExcelBuild Derivatives Pricing Models in Excel Build Excel models to quantify Value-at-Risk & expected Shortfall Practical implementation of FRTB Standardised Approach and Internal Model Approach Understanding Backtesting & Stress Testing

WHO CAN ATTEND

Academics/students – Students can substantially improve their recruiting chances if they are knowledgeable in this mportant and current topic. Banks are currently looking for talents who want to join banks on their Market Risk domain – journey.

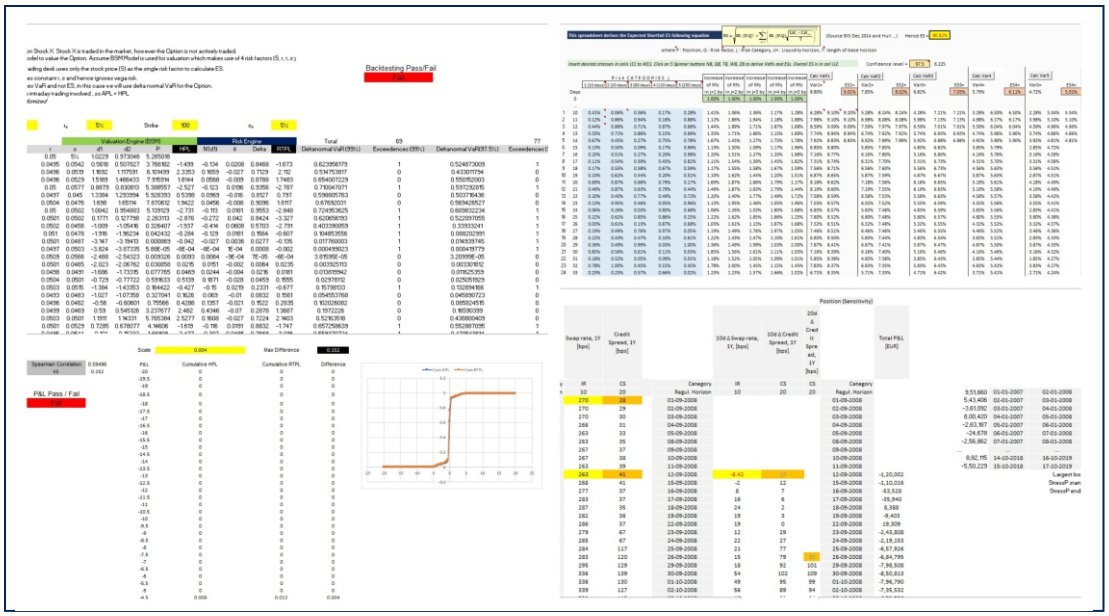


PEDADOGY

Professionals working in analytics field or students interested to make a career in analytics.

DEMO MODELS

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



(A) < 2019 CRR-MR	(B)≥ 2019 B.1 FRTB - SA	FRTB- IMA 1 (parametric ES)	B2. FRTB - IMA (Hist. Simul.)
2,73,02,15,810	13,33,53,76,294	1,71,22,86,468	1,30,31,54,173
	6,34,67,18,286		
	0		
	3,68,68,196		
	3,74,14,681		
	0		
	13,32,20,817	13,32,20,817	13,32,20,817
	0	0	0
	1,52,13,23,123		
2,73,02,15,810	21,47,63,21,398	1,85,15,07,285	2,04,23,74,390
1.00	7.87	0.68	0.75

Capital charges!
Unexpected loss [bn PES], as of Month, 4th, 2015,
Exclude strategic EQ from BB.

(A) Today CRR- IM	(B) FRTB - SA	FRTB- IMA 1 (param. ES)	(C) FRTB-IMA (sensi ES)
2.7	13.34	1.71	1.30
	6.35		
	0.00		
	0.10		
	0.04		

FREQUENTLY ASKED QUESTIONS

PREREQUISITE

Knowledge of Basic Excel , Basic Statistics , Stochastic Calculus and Financial Products is must

CERTIFICATE

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

FEES

Rs.20000

DURATION

50+ 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 Calcutta 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