

Modelling for the Financial Markets with Excel

Overview

This course is all about converting financial theory to reality using Excel. This course is very hands on! Delegates will use live data to put together a host of different Excel solutions relating exclusively to the financial markets.

Please note that this course assumes that delegates are already familiar with Excel at an intermediate level and are familiar with financial jargon and financial math. The good news is that all prerequisites are available as animation/ videos / elearning to registered delegates before the course.



Although the presenter will recap the core financial concepts, the focus of the course is to learn how Excel can be used to model reality. Delegates will learn how to use Excel to solve many of the traditional financial modelling problems.

Included in the course is:

- The problem with Excel's interest rate functions that no-one tells you about.
- Using the Financial functions for pricing money markets and bonds.
- Financial charting on multiple axes.
- Getting Excel to Calculate BETA, Alpha and R^2 of a stock using charts.
- Trending, regressions and polynomial fits.
- Array functions.
- Generating a piecewise linear and cubic interpolation for a yield curve.
- Goal seek and Solver.
- Portfolio optimisation under constraints for long only and long short portfolios.
- Scenario analysis and data tables.
- Probability distributions.
- Modelling a random walk.
- Excel Tool packs.
- Balancing the Balance sheet, dealing with circular references and "the plug".
- Using the cash flow method and the balance sheet method.
- Forecasting the income statement and balance sheet.

Please refer to the detailed agenda for more information.

Geometric Progression is accredited as a provider of education and training by BANKSETA. Accreditation number: 557066. Geometric Progression is also an authorised financial Services Provider (License Number:43224).

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Level: Intermediate to Advanced.

Duration: 3 days.

Pre-Requisites:

*******Good News*******

We realise that delegates come from different backgrounds and have different strengths and weaknesses, therefore to make sure everyone is on the same page, the prerequisites below are made available as video \ animation and Elearning when you register for the course.

This allows us to focus our time exclusively on converting theory to reality.

Delegates are required to have:

- Intermediate Knowledge of Excel. Delegates should know how to use Excel and the basics of Excel functions. For example you should know:
 - ◇ The IF, INDEX, VLOOKUP, MATCH, INDIRECT functions etc.
 - ◇ Formatting, sorts and filters.
 - ◇ Tables and the basics of charting etc.
- A basic understanding of the financial markets e.g. the "Understanding the Financial Markets Course"
- A basic understanding of financial math e.g. simple versus compound interest, PV, FV, IRR, NPV etc.
- An understanding of the basics of financial statements i.e. The Income Statement, Balance Sheet and Cash Flow statement.

Suitable for:

- Anybody in finance, accounts and the financial markets who wants to apply theoretical tools to reality and model data.
- Anyone who knows Excel **at the intermediate level** and wants to learn more about Excel functionality for modelling.

Who is this course not for?

- Anyone who does not understand the basic jargon of finance and the financial markets.
- Anyone who does not know how to perform basic functions in Excel.
- Anyone who does not understand basic Financial Math.
- Anyone who cannot read a set of financial statements.

Please note that you are required to bring a laptop / desktop with Excel 2013 or 2016 loaded onto it.

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Agenda

1. Using Excel to perform “Traditional” Financial Calculations and Project analysis.

- The problem with Excel’s interest rate functions that no-one tells you about.
- Getting to grips with the Present Value and Future Value with Excel functions with their variations.
- The implied assumptions of the “annuity” formula.
- The anomaly of dealing with simple interest and discount instruments in Excel.
- Pricing SA Money Markets with Excel.
- Pricing SA Vanilla Bonds from first principles incorporating duration and convexity with live examples.
- Amortisation schedules for vanilla and non-vanilla bonds.
- Net Present Value & Internal Rate of Return (including XNPV, and XIRR and all the variations).

Delegates will undertake a series of exercises using Excel.

2. Presenting data for financial modelling

- Recap chart terminology.
- Fine Tuning Charts.
- Common financial chart types including Stock charts, Waterfall Charts and Scatterplots.
- The do’s and don’ts of displaying financial data.
- Creating multiple axes.
- Inverting data (e.g revenue versus expenses convergence and divergence)
- Trending methods incorporating Linear Regression, Polynomial equations, Exponential functions, Moving Averages etc.
- Scatterplot charts.
- **Getting Excel to Calculate BETA, Alpha and R^2 of a stock using charts.**
- Excel Heat Maps.
- Sparklines

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3. *Financial Toolpacks, Array functions & Portfolio tools.*

- Array functions.
- Matrix functions - Getting Excel to solve Equations!
- Generating piecewise linear interpolation equations for a yield curve.
- Generating a piecewise cubic interpolation interpolations for a yield curve.
- The analysis "Toolpacks": Getting Excel to do the hard work.
- Generating Correlation and covariance matrices for portfolio's.
- Generating some portfolio performance measures including, Sortino, Omega, downside risk etc.

4. *Optimisation and User Defined Functions*

- Excel Scenario analysis and Data Tables.
- Using Goal Seek in financial models.
- Using solver to **optimise portfolios** to maximise return and minimise risk with constraints for long only and long short portfolios.
- User defined functions.
 - ◇ Understanding the VBA environment
 - ◇ Modules
 - ◇ Create your own function.
 - ◇ Create your own add-ins.

5. *Incorporating Probability and simulations using Excel*

- Getting Excel to generate a Probability distribution
- Using the Excel functions to analyse the distribution.
- Using Excel to simulate randomness and develop a random walk.
- Using Excel to develop a Monte Carlo Simulation.
- Applying probability to stock prices.
- Using the Distribution to calculate VAR and establish the expected tail loss.
- Other Excel distributions and statistics functions

The presenter will recap all of the above concepts before delegates are tasked with performing the calculations themselves.

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6. Building an Equity Fundamental Forecast

- Forecasting entries on the Income Statement;
- Forecasting entries on the Cash flow Statement;
- Forecasting entries on the Balance Sheet;
- Relationship between the entries of the financial statements;
- Establishing trends and growth;
- Modelling growth.
- Balancing the Balance sheet, dealing with circular references and **“the plug”**.
- Using the **cash flow method** and the **balance sheet method** to “balance the balance sheet”.
- A breakdown of “Operating Working Capital”.
- The depreciation triangle.
- The circularity of interest plugs.
- Modelling live data using both the discounted cash flow analysis and multiples.
- Performing and equity valuation as well as the enterprise/firm valuation.

Live data will be used throughout the course. Delegates will learn by doing!

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Some clients who have attended our Public Training



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Tutor: Mark Raffaelli CFA,FRM

Mark is a practising CFA Charterholder and fellow member of the Global Association of Risk Professionals (FRM). Mark's extensive experience includes:



- Trading in Spot & Derivative Products professionally.
- Fund & Bank consulting regarding valuations, curves, Var, surveillance automation for Mifid II and local legislation etc.
- Development of quantitative financial models for surveillance, performance attribution, price validation, price models, risk (in particular Var) and automation.
- Developments of Apps for the investment and insurance industry.
- Mark programs in: Python, Javascript (including Angular and Ionic), Php, Excel VBA, R and ".net".

Those who have attended Mark's courses will know about his passion and ability to cut through jargon, simplify technical issues and provide real life examples.

What makes Geometric Progression different from other providers:

- We don't regurgitate traditional textbooks; instead we share real life experiences.
- We explain all the products as they relate to your own lives in plain English.
- We practice what we preach i.e. We are an authorised Financial Services Provider (License no:43244).
- We love multimedia and include video and film in all our courses.
- We are one of the few providers that offer advanced courses relating to the financial markets, modelling and implementation.

Things delegates have said about this course:

- "I have been on a few modelling courses. This is the best."
- "Wow, I did not realise how powerful Excel was!"
- "For the first time in my life, I finally understand how to use Excel to plug the balance sheet. Thanks Mark."
- "I found the section on goal seek, solver and probability particularly useful. It has added a whole new dimension to my analysis."
- "Portfolio diversification is something everyone talks about but is difficult to do. The tricks I learnt in this course to find optimal solutions using live data will help me immensely."
- "Thanks Mark. You make the hard things sound so easy."
- "I will send my team on this course."
- "If you are in finance or financial analysis, you will benefit from this course."
- "I am exhausted after this course. I was concentrating for every second so that I did not miss a thing. Mark, keep up the passion."
- "Thanks Mark. It was a lot of fun."