

## Three day financial modelling for project finance course

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### Course Objectives

The course is intended to provide techniques, ideas, structures and methodologies to help delegates;

- ~ *produce models which can be developed seamlessly from feasibility stage through to financial close*
- ~ *produce models which can run all cases needed during deal development and for sensitivity analysis*
- ~ *produce models without circular code*
- ~ *minimise the risk of errors in the model or in the running process*
- ~ *produce models which are easy to check, change and use*

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### Course Structure

The three day course is a mixture of theory and practical work, looking in detail at the process of writing, developing and running a project finance spreadsheet model. The course content is based on more than twenty-six years experience in this field, and is designed to give new and less-experienced modellers a short-cut to techniques which will make their lives easier and their models better.

The program covers optimal model layout and structure including detailed review of most sub-sections, the avoidance of circular code, the treatment of multiple currencies within the model, making timings flexible within the model, incorporating monthly or quarterly calculations neatly into a semi-annual model structure, methodologies for checking and debugging, and running the usual project finance sensitivities safely and easily.

The course agenda will be split over the three days on a flexible basis allowing the focus of the course to respond to the specific questions and interests of the delegate group.

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### Required Skills

Delegates must have good Excel skills in order to benefit from this course. The practical exercises form a large part of the course, and, although individual attention will be given to help delegates having problems with specific exercises, time will generally not permit the levels of assistance necessary to allow individuals unfamiliar with Excel to keep up with the group. This means that they may be unable to participate directly in the practical sessions, and will miss key parts of the benefits offered by this course.

Delegates who feel their Excel skill are not ready for this course, may wish to consider taking the preparatory course "Basic Excel skills for project finance modellers".

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## Agenda

### Day One

#### Introduction

*Why is project finance different?  
What does this mean for the model?*

#### Model Objectives

*Feasibility analysis  
Development of project structure  
Scenario analysis  
Sensitivity Analysis*

#### Model Requirements

*Flexibility  
Robustness*

#### Model Design

*Reflecting Objectives  
Anticipating Development  
Flexible control of timing and calculation options within the model  
One model runs all cases for the project  
Model calculates nominal figures  
Using 'Pinch points'  
Seeking simplest solution at each stage*

#### Model Layout

*Model sections divided into three types, data, calculation and report  
Which sections are needed?  
In what order?  
Detailed page layout  
Timeline*

#### Data Input

*Where?  
What?  
Interface between data and calculations  
Controlling timings using flexible inputs  
Using 'switches'  
Controlling calculation options  
Expanding data choices  
Review of illustrative data input sheet*

#### Handling Inflation in the model

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*Purpose of inflation in the model*  
*Value dates*  
*Calculation of inflation in the model*  
*Review of illustrative inflation calculations*

Construction Costs

*Inputs*  
*Timings*  
*Categories*  
*Review of illustrative construction cost sheet*

The Practical Modelling Process

*Customising the Excel environment*  
*Planning the model*  
*Setting up the model outline*  
*Populating the model*

*Practical Exercise 1*

Delegates provided with model skeleton including basic data and will work with course director to model construction cost calculations, controlling timings, applying inflation and using switches to control calculation options.

The Operations Section

*Calculating revenues*  
*Calculating fixed and variable operating costs*  
*Applying flexible timing inputs for start/build up of operations and end of analysis*  
*Calculating debtors and creditors*  
*Review of illustrative operations calculations*

Telling the Story with the Cash Flow Summary

*Start to finish, top to bottom, the story of the project*  
*Provides cross-check for model*

*Practical Exercise 2*

Using the model from *practical 1* delegates work with the course director to complete the operations sheet, using timing inputs to control timing and levels of operation, and demonstrating the flow of information from the data sheet through the model calculations. Calculated operating and capital cost values then used to begin populating the cash flow summary page.

Day Two

Circularity in the Model

*Are there circular calculations in project finance?*  
*How should we handle them?*

*Why no sophisticated project finance model should include circular code  
How can it be avoided?  
Use of re-calc macro to deal with unavoidable circularity*

### *Practical Exercise 3*

Delegates will work with course director to develop a simple re-calc macro and observe its operation with a simple test calculation.

Some Other uses for the re-calc macro

*Use of re-calc macro to automate target seeking*

Treatment of Currencies within the model

*Calculate figures in actual currency or in a consistent presentation currency?  
Modelling real and nominal exchange rate movements.  
Flexibly assigning currencies to costs, funding sources or deposits in the model.  
Pitfalls  
Review of illustrative currency calculations*

Funding Calculations

*Layout of funding section to make funding calculations easy to write and check  
Calculating funding to match funding needs  
Modelling multiple sources of funding  
Modelling alternative funding structures  
Modelling Equity  
Modelling Loans*

- *drawdowns*
- *interest*
- *interest roll up*
- *average balance*
- *repayments*

*Pro-rata funding drawdown  
Cash constraints on drawdown and repayment  
Funding sub totals  
Review of illustrative funding calculations*

### *Practical Exercise 4*

Delegates will work with course director on the addition of a simple finance section to the models developed in practical 1.

Project Finance Cover Factors

*The cover factors answer questions  
To model them we need to know what the questions are and what the answers mean  
Key Project Finance Cover Factors  
Loan Life NPV cover factor  
Project Life NPV cover factor*

*Debt Service cover factors*

*What is "available cash"?*

*Can we include deposits in cover factor calculations?*

*Modelling pitfalls*

*Review of illustrative cover factor calculations*

*Cover factor constraints on cash distribution*

- ADSCR
- LLCR

*Tax and Profit & Loss Calculations in the model*

*Basic elements of tax calculations*

*Basic elements of P&L calculations*

*Modelling tax to avoid circularity*

*Grouping semi annual figures for annual calculations*

*Calculating capital allowances and depreciation*

- Written down balance
- Straight line

*Input data specifying depreciation for different capital costs*

*Calculation of interest and fees capitalised for tax*

*Modelling accounting reserves*

*Dividends*

*Balance sheet*

*What's the point?*

*Making it balance*

*Equity Returns*

*Definition of IRR*

*Calculation of real and nominal IRR*

*Treatment of Equity Loans and sub debt*

## Day Three

*Developing the model*

*Adding monthly or quarterly data and calculations within a semi-annual timeline, without losing flexibility*

*Review of illustrative monthly and quarterly calculations*

*Practical Exercise 5*

Delegates will be provided with data and will incorporate quarterly capital cost data and calculations into their models

*Cash Balance Calculations*

*Basic elements of cash balance calculation*

*Specific issues for construction period escrow account*

*Specific issues for debt service reserve account*  
*Specific issues for Maintenance reserve fund*  
*Specific issues for surplus cash account*  
*Review of illustrative deposit calculations*

#### Summary Sheets

*One page summary sheet*  
*Total sources and uses for the investment period*  
*Use of 'strings' to give a textual description of the case being printed*  
*Production of results in annual format from semi annual calculations*  
*Review of illustrative summary sheets*

#### Scenario and Sensitivity analysis with the model

*Evaluating alternative base cases*  
*Purpose of sensitivity analysis*  
*Which sensitivities?*  
*Handling the common sensitivities in the model*  
*Managing the risk of error when running sensitivities*  
*Using case selection /sensitivity tables*

- *Defines set of scenario and sensitivity cases*
- *Cases easily re-run*
- *Case headings automatically identify case run and selected values*

*Review of illustrative sensitivity table*

#### Practical Exercise 6

The delegates will add a sensitivity table to their models

#### Checking the model

*During development*  
*Output check before releasing base case*  
*Cross check sensitivity results*  
*Identifying the model assumptions*  
*Documentation of the model code as a checking tool*  
*Seeking perfection, modelling approaches for minimising error risk*

#### Working with other people's models

*Finding your way around*  
*Finding and presenting the key information*  
*Checking the results*  
*Running your own cases*  
*Taking over the model for onward development (and when to start again)*

#### Storing Results and recording changes

*Keeping track of data changes*  
*Storing results and tracking model changes*

*Practical Exercise 7*

The delegates will add a 'stored results' library sheet to their models and work with the course director to record a simple macro to operate it.

Summary & Discussion