

# Quick Start for Investment Project Analysis

How to use your Custom Excel Workbook

## Quick Start Instructions

Here are simple, step by step instructions to get your Investment Project Analysis working for you as quickly as possible. Just follow the steps below in order and you'll be on your way.<sup>1</sup>

**A Note about Input Cells:** Enter input data only in shaded blue cells. These input cells are found mostly on the 'Inputs' worksheet and also on the 'Labels' worksheet. Some blue input cells contain Excel formulas that copy data from adjacent input cells. (For example, if you enter data in the first period, the model will usually copy it to the other time periods to the right.) This feature is a convenience for those inputs that sometimes have repeated values. You can overwrite any formula in a blue input cell; they are just there to provide starting data to get you going quickly.

### Step 1: Enter Names of Sub-Projects, Expense Accounts, and Other Items

Select the Labels worksheet.

Edit the names of sub-projects<sup>2</sup>, products and services, product-related expense accounts, fixed and variable operating expense accounts, and working capital accounts in the bottom section starting around row 100. (These items may already be correct from the customization process. If you want to change the numbers of sub-projects or other items, you must return to the ModelSheet website and customize a new spreadsheet.)

Check the start date of the model at the top of worksheet 'Labels' and change it if necessary.

### Step 2: Enter Fixed Investment Input Data

Select the Inputs worksheet and go to the section 'Investment Input Data'.

1. For each fixed asset, enter
  - a descriptive name
  - date of purchase
  - depreciation method for accounting purposes
  - depreciation method for computing income taxes
  - depreciation life in years
  - useful physical life in years (This should be longer than the depreciation life. It tells the model how long to use the asset and when to recognize the salvage value as cash.)
  - investment tax credit as a percent of initial value
  - date on which the tax credit will be received

(You can remind yourself what each variable does by reading the Excel comment. Just hover the mouse over the cell containing the name of the table, that has a small red triangle in the upper right corner.)

2. Enter the value of each fixed asset.
  - Depreciable value

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<sup>1</sup> You can find more explanation of how the model works under the heading Investment Project Analysis Explained in a NutShell below.

<sup>2</sup> The main investment project is optionally segmented into sub-projects each of which has part of the investment, revenue and expense of the total project.

- initial value
- residual salvage value
- Non-depreciable value (usually land).
  - initial value
  - residual salvage value (This value defaults to the initial value, but you can also plan for an increase or decrease in the value of each non-depreciable asset.)

### Step3: Enter Working Capital Input Data

1. Enter the amount of initial working capital at the start of model time, for each working capital account and for each sub-project, in the section 'Working Capital'.
2. Enter the ongoing working capital requirements, expressed as a constant percent of revenue in each time period, for each working capital account and each sub-project.
3. Enter the residual value of working capital at the end of model time, expressed as a percentage of book value, for each working capital account and for each sub-project.

### Step 4: Enter Revenue Input Data

When you customized your Investment Project Analysis, you chose to specify revenue either as price times sales units, or as a number for each time period.

#### To specify revenue as price times sales units

1. Enter the average selling price per unit in each time period for each sub-project.

You can enter the sales units in one of two ways.

2. Either: Enter the sales units for each time period and each sub-project.
3. Or: Enter the sales units in the initial time period and the annualized growth rate of sales units (compared to the previous time period), for each time period and sub-project.

#### To specify revenue directly

Open the section 'Sales Input Data'.

1. Enter the revenue for each product in each sub-project for each time period.

### Step 5: Enter Expense Input Data

Go to the Inputs Worksheet and select the section 'Expense Input Data'.

1. Enter product-related expenses for each product, sub-project, product-related expense account, and time period. You can enter data in either of two ways.
  - Enter the product-related expense as a percent of revenue.
  - Enter the product-related expense as a specified amount in section 'Optional Direct Input '. If you do this, your entries will overwrite the growth formulas.

Alternatively, you can enter the product-related expense directly below in the section 'Optional Direct Input of Expense Data'. Your values will overwrite the formulas in that table that read the product-related expense as a percent of revenue.

Note: This is the only expense category that can differ for different products. The operating expense categories below can differ by investment sub-project but not by product.

2. Enter the variable operating expense, for each sub-project, product and time period.
  - Enter the variable operating expense as a percent of revenue.

Note: In this model, variable expense is expense that changes in direct proportion to revenue.

Alternatively, you can enter the variable operating expense directly below in the section 'Optional Direct Input of Expense Data'. Your values will overwrite the formulas in that table that read the variable expense as a percent of revenue.

3. Enter the fixed operating expense for each fixed expense type and each sub-project, in each time period. You can enter the data in either of two ways.
  - Enter fixed operating expense as an initial amount and an annualized growth rate.
  - Enter the fixed expense as a specified amount in section 'Optional Direct Input '. If you do this, your entries will overwrite the growth formulas.

Alternatively, you can enter the fixed operating expense directly below in the section 'Optional Direct Input of Expense Data'. Your values will overwrite the formulas in that table that read the fixed expense as a percent of revenue.

Note: In this model, fixed expense is expense that does not increase or decrease when sales change.

4. Enter the income tax rate for each time period. The tax rate is the same for all sub-projects.

## **Step 6: Enter Financing Input Data**

### Discount rate

1. Enter the method for setting the discount rate: either Direct (which means you directly input a discount rate) or 'CAPM' (which means the rate is computed from other financial parameters using the capital asset pricing model. 'Direct' is the simplest choice.

If you entered 'Direct' for the method of setting the discount rate, then

2. Enter the annualized discount rate for each sub-project for each time period. The discount can vary over time due to changing market interest rates, or changing riskiness of the project over time.

If you entered 'CAPM' for the method of setting the discount rate,

3. Enter the 'beta' parameter for each sub-project. Beta is a parameter that measures how much earnings and cash flow tends to correlate with stock market returns.
4. Enter the annualized riskless discount rate for each time period. This is approximately the interest rate on high-grade debt of very stable governments, such as the interest rate on U.S. government treasury bills.
5. Enter the annualized market risk premium rate for each time period. This is the extra earnings that investments in stocks are expected to make in excess of the interest rate on riskless debt.

### Financing Weights

1. Enter the percentages of equity, debt and lease financing for each sub-project. The sum of the equity, debt and lease financing weights should be 100% for each sub-project.

### Debt Parameters

1. Enter the annualized interest rate for borrowed funds for each time period for each sub-project. The borrowing rate can differ across sub-projects if loans are secured by different sub-projects, and the sub-projects have different levels of risk. The borrowing rate can change over time mainly because of changes in market interest rates for debt.
2. Enter any balloon payment due when the debt is retired.

The balloon payment is an interest payment in addition to the interest due from the specified borrowing rate. The balloon payment assumes that 100% a fixed asset is financed with debt. If less than 100% is financed with debt, then the balloon payment is reduced by the same percentage.

#### Lease Parameters

1. Enter the annualized effective lease financing rate for each sub-project, for each time period.

The annual lease payment equals the lease rate times the net investment. Net investment is used because the model assumes that the lessor (owner) of the asset gets the investment tax credit, and this reduces the market fee for a lease. See the Excel comment for the table "Lease Rate (Yr)" for more information.

2. Enter any balloon payment due when the debt is retired.

The balloon payment is an interest payment in addition to the payments due as a percentage of net investment. The balloon payment assumes that 100% of each fixed asset is leased. If less than 100% is leased, then the balloon payment is reduced by the same percentage.

#### Initial Guess for IRR

Advanced versions of the model compute IRR (internal rate of return) for each sub-project.

1. Enter an initial guess for the IRR for each sub-project.

#### Tail Parameters

The model computes the valuation of the investment project and each sub-project. The valuation includes an estimate of the cash flow from the project in times after the end of model time (after the end of the analysis).

1. Enter the discount rate to use in all time after the end of model time. The same rate is used for all sub-projects.
2. Enter the length of the early phase of the tail in years.

The time after model time is segmented into an early phase and a late phase. You specify the length of the early phase (in years), and the late phase continues indefinitely. The early phase can have any growth rate, and the later phase must have a growth rate that is less than the tail discount rate (otherwise the value of the cash flow becomes infinite).

3. Enter the annualized growth rates during the tail after model time.
  - Enter the annualized growth rate during the early phase for each sub-project.
  - Enter the annualized growth rate during the late phase for each sub-project. This growth rate must be less than the tail discount rate.
4. Enter the annualized growth rate in the later phase after the end of model time, for each sub-project.

### **Step 6: See Your Results!**

Now that you've entered your data, take a look at worksheet 'Investment', where you can see the fixed investment, working capital, and the financing mix. You should see that this reflects your inputs on the 'Inputs' worksheet. You can also see a statement of operating profits on worksheet 'Operations'. The key measures of financial performance of the project are the cash flow, valuation, and internal rate of return on worksheet 'Equity Fin'.

If you want to learn more what these quantities mean, read the comment on the table by hovering the mouse over the cell with the small red triangle (which is Excel's way of telling you that cell has a comment). There you'll also find a "formula name" that defines the table. You can look up that name on the 'Formulas' worksheet to see the human-readable formulas that are used to define the values in the table.

## Investment Project Analysis Explained in a NutShell

Your Investment Project Analysis model computes the valuation and internal rate of return for an investment project. You can segment the investment project into sub-projects that have different financial characteristics: different revenues and expenses, different levels of investment, different kinds of financing, and different levels of risk.

The model computes the cash flow from the project (and each sub-project), the net present value of the cash flow, and the internal rate of return of the project. Once we compute the cash flow and specify the discount rate, then the model reduces to a straightforward 'NPV' calculation.

The cash flow is revenue, less expenses, less investments in the business in each time period. The model expresses each of these accounting quantities in some detail, and most of these quantities are segmented by sub-projects, investments, and time.

- Revenue can be specified as price times sales units, or just as revenue.
- Expenses are divided into product-related expenses, fixed operating expense and variable operating expense, each of which is further divided into expense accounts that you specify. Investment tax credit and income tax expense and are also included.
- Investment is divided into fixed investment and working capital.
  - Fixed investment is divided into depreciable assets (with some detail about depreciation models), and non-depreciable assets (land).
  - Working capital is divided into capital accounts that you specify.
- The investment project can be segmented in several ways.
  - The project can be segmented into sub-projects, each of which has its own investments, operations and profitability. (Think of an airline running multiple routes or networks.)
  - You can specify several investments for each sub-project (or for the entire project if you don't have sub-projects). Each investment has its own name, amount, date and other parameters.
  - You can specify separate products, and product-related expenses (such as cost of goods).
- The cash flow can include an estimate of cash flow after the end of the time range of detailed project analysis.
- You can specify how you finance the project (and each sub-project), with a percent of equity, debt and lease financing. The model computes results for all-equity financing and for several different blends of equity, debt and leases that you specify.
- The discount rate used for the NPV computation is either a discount rate that you specify, or a rate determined by the capital asset pricing model and your specification of the required input data for the CAPM. (CAPM is an advanced feature that you can ignore.)

That is basically all there is to it.

Not all features mentioned here are present in the Light and Standard versions of the model.

## Where to Get More Information

Read the Excel comment on each table on every worksheet. Each comment contains important information about what the table contains or what it does in the model.

Worksheet 'Formulas' contains a list of the named variables in the model and formulas that define each variable in terms of other variables. This worksheet is often the best way to understand how the entire model fits together.

The user guide for this product contains more information. See

<http://templates.modelsheetsoft.com/modelsheettemplates/investment-project-templates-user-guide.aspx>

The introductory webpage for the Investment Project Analysis spreadsheet model is

<http://templates.modelsheetsoft.com/modelsheettemplates/investment-project-templates.aspx>

Please address queries to: [customerservice@modelsheetsoft.com](mailto:customerservice@modelsheetsoft.com) .

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