Private Equity Modelling Test – Project Dr. Evil

1. Objective and Format

A person with a finger in his mouth

Description automatically generatedThis exercise is intended to allow you to demonstrate your modelling skills.

This is a timed test. **Please save your work 1.5 hours (90 minutes) after receipt of these instructions.**

Whilst the objective is to complete the test please note that an incomplete test can still score well as long as it demonstrates modelling proficiency.

All the required assumptions should be contained in the following instructions. If you need to make an assumption or you feel the assumptions are unclear then please state the assumption made on the relevant sheet.

1. Instructions

We are performing preliminary analysis of a port.

You will be required to show your modelling proficiency through the use of modelling best practices (Use of the input sheet, calculations within the calculation tab, use of flags, etc…).

## Part 1

The first stage of the exercise is to model annual pre financing cash flows for a 20-year period.

Please build a basic financial model using the three sheets provided (assumptions, calculations, outputs).

The assumptions are set out below.

|  |  |
| --- | --- |
| **Acquisition date** | 31 December 2022 |
| **Period of projections** | 20 years ending 31 Dec 2035 |
| **Port Traffic** | 2022: 3,500,000 Tons per year.  1% annual growth in tons numbers every year thereafter. |
| **Price** | £5.00 per ton in 2022 (in real terms, 2022 prices).  Growing annually by 2% in real terms  To be indexed by RPI from year 1 onwards. |
| **Operating expenses** | £1.50 per ton in 2022 (in real terms, 2022 prices).  Declining annually by 2.0% in real terms  To be indexed by RPI from year 1 onwards |
| **Capex** | 5% of the revenues p.a. |
| **RPI**  **(used to index revenues, opex and capex)** | 2.50% p.a. |
| **Depreciation (accounting/tax)** | £200m of fixed assets to be depreciated over 15 years (straight line). No depreciation of new capex required |
| **Tax** | Flat rate of 20%. |

The outputs sheet should show annual nominal pre financing cash flows split into the major components and denominated in £ thousands.

## Part 2

You are now required to model the acquisition and financing in order to calculate the EV based on a target IRR as well as other key outputs.

Additional assumptions set out below:

|  |  |
| --- | --- |
| **Acquisition date** | 31 December 2022 |
| **Sources and Uses at acquisition date** | *Sources*   * Acquisition debt facility 4.5x EBITDA 2022 * Equity: to be calculated based on 11% target equity IRR * No Cash on BS at acquisition date   *Uses*   * Advisory fees: £4m * Consideration for 100% shareholding: to be calculated based on 11% target equity IRR * Debt arrangement fees: 1.5% of the acquisition debt quantum * Repayment of the existing debt (3.0x EBITDA 2022) |
| **Acquisition debt facility** | Date of drawdown: 31 December 2022  Quantum: Sized on 4.5x EBITDA 2022  Tenor: 5 years  Repayment profile: No fixed amortisation  Base rate: 1.25%  Margins:   * Year 1: 1.75% * Year 2: 1.75% * Year 3: 2.00% * Year 4: 2.00% * Year 5: 2.50%   Cash sweep profile:   * Year 1: 0% * Year 2: 0% * Year 3: 25% * Year 4: 50% * Year 5:100%   Debt arrangement fees: 1.5% of the quantum raised, depreciated in straight line over the life of the facility  Interest payment: Paid annually in arrears. |
| **Refinancing debt facility** | Quantum: Sized on 5.0x EBITDA 2020  Tenor: 15 years  Fixed amortisation profile:   * Year 1- 5: 0% * Year 6-10: 2.5% of the initial quantum p.a. * Year 11-14: 10% of the initial quantum p.a. * Year 15: 47.5% of the initial quantum   All in rate: 4.5% (base rate 2.00% + margin 2.50%)  Debt arrangement fees: 1.5% of the quantum raised, depreciated in straight line over the life of the facility  Interest payment: Paid annually in arrears. |
| **Capex** | No capex facility required (assume this is funded from operating cashflow) |
| **Interest income** | Nil (i.e. exclude from model). |
| **Distributions** | Assume all free cash is distributed at the end of each year. |
| **Terminal value** | Exit at 10x EBITDA 2035 |

## Outputs

Model the calculations required in the calculation sheet in order to calculate the implied EV of the business.

Set out the required outputs in the outputs sheet.

The output sheet should show:

* Basic cashflow statement
* EV to Equity Bridge
* Source and Uses

## Additional questions

Only if you have time left at the end – please also produce the following outputs in the Base Case model:

* Do a sensitivity table showing the output EV based on variable input IRR and Exit multiple
* Calculate the annual equity yield % by period (annual payment to equity divided by total equity injection)
* Calculate annual DSCRs for each period
* Graph annual DSCR
* Graph annual yield
* Graph debt profile (closing debt balance)