

## Exercise Set: Valuation

### *ECOGLASS project*

ECOGLASS is a company that operates in the recycling industry and is considering investing in a new project. The investment requires the acquisition of two machines that will produce glass bottles to sell them to wine producers. One machine will be acquired right now for 150,000€ and another machine will be acquired in one year time for 50,000€. These machines are expected to start operating in the second year of the project until year four. Both machines will completely depreciate throughout 10 years, both starting depreciating in the first year of operations (straight line method of depreciation). At the end of the project, company's management expects to sell these machines for 60,000€ in total.

In the second year of the project (first year of production) the company is expected to produce and sell 100,000 bottles, with a unit selling price of 0.75€. The price is expected to remain constant, but production is expected to double in year three and double again in year four.

The unit cost of production (raw materials) is 0.3€ for the three years of production. Additionally, the company will spend 25,000€ per year in fixed costs. No other operating costs will exist. The company also needs to have three months of raw materials in inventories to sustain production.

The discount rate of the project is 10% and the income tax rate is 30%.

- 1) Compute the unlevered free cash-flows of this project.
- 2) Compute the NPV of the project assuming it is fully financed with equity.
- 3) Project analysis is dependent on many drivers/estimates. Identify what further analyses you could perform to assess the robustness of the decision. What other managerial implications could those analyses bring?
- 4) "With this project the company is able to grow both in assets, revenues and profits, therefore it should do the project for sure, regardless of the NPV". Is this sentence true? Explain.

### *Eanos*

Imagine that Eanos intends to pursue a 3-year expansion project in the retail sector.

The project requires an immediate initial investment of 3,000,000€ in CAPEX to be depreciated over the 3 years through the straight-line method.

Currently Eanos sales are expected to be 25,000,000€ every year but with this project and during the next three years sales are expected to be 10% higher than what was expected otherwise.

The gross margin of this company is 30%, but this project will bring some synergies and efficiency will be higher for the entire company. The gross margin is going to be 32% during the next three years for the whole revenues and due to this project.

Fixed costs are expected to be kept constant at 10,000,000€ per year. Net working capital is currently 10% of following year sales and this ratio is going to be kept constant. The tax rate for this company is 20%.

- 5) What is a synergy? Provide a practical example for a synergy that can have the effect of increasing the gross margin of 30% to 32% due to an expansion project.
- 6) Calculate the free cash-flows of this project.
- 7) Once an analyst finishes the calculations, he/she should perform a sensitivity analysis on the main drivers. Identify and explain two major reasons on why a sensitivity analysis should be performed.

## *CarcavelluSurf project*

A young surfer wants to launch a business: CarcavelluSurf, a company that will provide surfing lessons over the next 4 years. In the first year of operations it is expected to sell 1,000 hours of surfing lessons, with an average selling price per hour of 30€. In the following 3 years the surfing lessons will increase by 15% per year and the average selling price will increase by 10% per year.

To setup the company, the entrepreneur needs to acquire surfing material, totaling an initial investment of 10,000€. This material will fully depreciate over the life of the project (straight-line method of depreciation).

During the 4 years, there will be several operating expenses: (1) the instructor fees are going to be 20€ per hour throughout the entire period; (2) the school rent and license will cost 5,000€ per year; (3) the wax for the surfboards costs 5€ per kg and for each 100 hours of surf lessons.

The cost of the wax is the only cost that is not immediately paid. On average, the company will take 4 months to pay to its supplier. The income tax rate is 30%.

- 8) Compute the unlevered free cash-flows of this project.
- 9) Compute the NPV of the project knowing that the discount rate is 15%.
- 10) What other metrics could you use to evaluate the project besides the Net Present Value? Identify two additional metrics and explain their usefulness and interpretation.

## *Magnus SRL*

Magnus SRL is a company that produces chess boards and is considering a new project. This project will be operating during the next 4 years and requires an initial capital expenditure of 400,000€ in assets that will fully depreciate across 4 years (straight line method of depreciation). These assets can be resold at the end by 20,000€. Net Working Capital will be always 15% of following year sales.

The project will generate Sales of 600,000€ per year with an EBITDA margin of 25%.

The risk-free rate is 5% and the market risk premium is 6%. The corporate tax rate is 20%.

- 11) Calculate the free cash-flows of the project.
- 12) The analysis of this project should be complemented with a sensitivity analysis. Identify and explain two major benefits of conducting a sensitivity analysis in project valuation.

## *Wonky*

Wonky wants to launch a new product within the Surfing industry. The project requires an immediate investment of 1,000,000€ in machinery that would depreciate over 10 years (with the straight-line method). The company would run this project for 3 years, then it will sell the machinery for 500,000€ by the end of that period.

This project allows Wonky to sell 10,000 boards in the first year, 20,000 boards in the second year and 25,000 boards in the third year. Each board is expected to be sold for 200€. The company is expected to increase efficiency throughout the 3 years: the gross margin will start at 20% of sales and then it will go up to 30% in the second year and to 50% in the third year. To run this business, the company needs to spend 200,000€ in fixed costs every year.

The company will not hold inventories or account payables in this project, but it will collect its revenues from customers only 3 months after selling the products, on average.

The corporate tax rate is 20%, the market risk-premium is 6% and the risk-free rate is 2%.

Even though the company is not listed, there is a listed company in the Surfing industry that serves as a perfect comparable: Carcavelos Surfing Ltd. Carcavelos Surfing Ltd. Shares are being traded at 26.7€ per share, its current equity beta is 1.4, its market value debt-to-equity is 0.25, its bonds are being traded at 98% of face value and its cost of debt is 2%.

- 13) Calculate the unlevered cash-flows of the project.

## *Maria*

Maria is starting a company to sell bikinis. She will use her mother's apartment as an office for free, even though she could rent the space for 10,000€ per year (after taxes). Maria will need a cloth-printing machine which she would buy immediately for 5,000€. This machine is expected to lose 5% of its value each year. The machine useful life is 20 years. She will operate the machine during 3 years and then she expects to resell the machine for 3,000€.

Maria is a student, so her production capacity is limited to 1.200 bikinis per year and she will be able to sell everything. She expects to sell each bikini for 90€, with raw materials costing her 10€ per unit. Also, she will have other fixed costs of 500€ per month. To start the business Maria will require an immediate investment of 2,000€ in inventory. In the following periods, NWC is expected to represent 50% of raw material costs of the following year. Consider an income tax rate of 30%.

14) Determine the NPV of the project given a discount rate of 10%.

## *Other*

15) Odranreb is a company that is analyzing selling one of its fixed assets. That asset was bought 4 years ago by 300,000€ and it started with an economic life of 6 years, carrying annual depreciation using the straight-line method. The company might sell that asset for 50,000€ right now. The tax rate on capital gain is 20%. What is the salvage value after taxes of this asset sale?

16) Which of the following is considered a synergy effect while analyzing the project?

- a. The higher bargaining power with suppliers given the expansion in sales and in stores and that will translate into lower costs of goods sold
- b. The reduction in sales in the old stores due to the shift of existing customers to the new store
- c. The saved amount in investment given the fact that the company owns the land already
- d. The corporate income taxes paid based on the profits of the new store
- e. The research investment that was made in the past to develop the best layout for all the company's stores