

Question: Corporate Finance / Equity Valuation and Analysis**(70 points)**

Vegan Foods SE is a pan-European producer of vegan convenience food. Vegan Foods' shares are cross-listed and actively traded on the major European stock exchanges. As large-scale livestock farming is recognized to be responsible for worldwide greenhouse gas emissions consumers are expected to fall back on vegan nutrition more and more in the future. This trend generates a stable growth path for Vegan Foods' operating business.

Adam Reece, Vegan Foods' chief financial officer, projected income statements for the next five fiscal years in euro (EUR). These year-end estimates (in million EUR) are summarized in exhibit 1.

Exhibit 1.

Income statement	2018	2019	2020	2021	2022
Revenues	740	880	1,030	1,375	1,720
Cost of goods sold	480	540	600	840	1,080
Depreciation	60	80	110	135	160
EBIT	200	260	320	400	480
Interest	40	40	40	40	40
EBT	160	220	280	360	440
Taxes	40	55	70	90	110
Net income (NI)	120	165	210	270	330

Furthermore, Adam Reece plans Vegan Foods to have capital expenditures and needs for additional working capital (Δ NWC) in the coming five fiscal years (in million EUR, year-end estimates) as given in exhibit 2.

Exhibit 2.

	2018	2019	2020	2021	2022
Capital expenditures (CE)	40	60	70	100	105
Δ NWC	30	40	50	60	50

The beta of Vegan Foods' shares equals 1.2. Vegan Foods' current leverage (= debt/equity; both in market values) amounts to 0.25. Currently, Vegan Foods' outstanding corporate debt has an average cost of 3% p.a., a 2.0% premium to the risk-free rate of return. The beta of Vegan Food's debt is assumed to be zero. Vegan Foods has issued 150 million shares of stock.

In the European money market, the nominally risk-free rate of return equals 1% p.a. The European stock market is expected to earn a 6.5% return p.a. Let Vegan Foods' relevant corporate tax rate in Europe be 25%. In the years after 2022, Vegan Foods is assumed to grow at a rate of 2% p.a.

- a) Provide the solution to the following problems and show your calculations.
- a1) Determine Vegan Foods' expected free cash flow to the firm (FCFF) in the fiscal years 2018 to 2022. (6 points)
 - a2) Determine Vegan Foods' weighted average cost of capital (WACC). (6 points)
 - a3) Determine Vegan Foods' firm value as of January 1, 2018. (5 points)
 - a4) Determine the value of Vegan Foods' outstanding corporate debt and the theoretical share price of Vegan Foods' equity as of January 1, 2018. [Note: If you failed calculating the firm value in problem a3) use 6,945 million EUR instead.] (4 points)
- b) Recognizing the promising trend and favorable growth opportunities in vegan nutrition, a group of financial investors is challenging the existing management of Vegan Foods with a management buy-in. The group of financial investors is certain that it will be able to implement the following changes to Vegan Foods' operating business and capital structure:
- Reduction of the cost of goods sold by 10%, compared to the figures given in Exhibit 1; and reduction in needs for additional working capital by 20%, compared to the figures given in Exhibit 2.
 - Increase of the growth in the years after 2022 to 3% p.a.
 - Increase of debt financing with a leverage (= debt/equity) equal to one. [Note: For simplicity, assume that the change in leverage happens immediately and that Vegan Food's cost of debt does not change due to the higher leverage.]
- b1) Determine Vegan Foods' FCFF after the above mentioned changes have been implemented. (8 points)
 - b2) Determine Vegan Foods' weighted average cost of capital under the implemented changes. (10 points)
 - b3) Determine the value of control on firm level (Value of control = Value of firm with restructuring – value of firm without restructuring) to be generated by the group of financial investors through the management buy-in by implementing these joint restructuring efforts. [Note: If you failed to determine the firm value in problem a3) use 6,945 million EUR instead.] (7 points)
- c) Vegan Foods SE is currently evaluating an investment proposal to expand its businesses into the production, distribution and selling of freshly squeezed organic fruit and vegetables juices. The proposal comprises the set-up of 10 production sites on the outskirts of a few selected major European cities.

The initial investment for the purchase and installation of 10 fruit juice presses and 10 automated filling lines amounts to EUR 30 million. The purchased equipment will be subject to straight-line depreciation over its estimated economic life of 5 years. No terminal value or machinery scrap value is expected at the end of 5 years. Vegan Food expects that the project does not require additional working capital.

For investment appraisal purposes, Vegan Foods SE uses a discount rate (WACC after tax) of 8.0% and a target return on capital employed of 20% per year. Vegan Foods' corporate tax rate is 25%.

In coordination with both the product development department as well as the market research department, Adam Reece, CFO of Vegan Foods SE, has collected all the relevant data needed for evaluation of the expansion project.

Table 1 Incremental revenues from the project

	Year 1	Year 2	Year 3	Year 4	Year 5
Selling price (in EUR/unit)	2.75	2.75	2.75	2.75	2.75
Demand (in m units)	4.50	5.50	6.00	6.25	6.00
Revenues (in EUR m/year)	12.38	15.13	16.50	17.19	16.50

Table 2: Cash operating expenses

	Year 1	Year 2	Year 3	Year 4	Year 5
Variable cash cost (in EUR/unit)	0.75	0.75	0.75	0.75	0.75
Demand (in m units)	4.50	5.50	6.00	6.25	6.00
Variable cash costs (in EUR m/year)	3.38	4.13	4.50	4.69	4.50
Fixed cash costs (in EUR m/year)	1.75	1.75	1.75	1.75	1.75
Total cash operating expenses (in EUR m/year)	5.13	5.88	6.25	6.44	6.25

c1) Calculate the following values for the investment proposal:

[Note: The following Table 3 respectively 4 may assist you in calculating the investment proposal's net cash flows per year and its net present value, respectively its Return on Capital Employed (ROCE).]

c1a) Net present value. (9 points)

c1b) Internal rate of return (IRR). (4 points)

c1c) Return on capital employed based on average investment. [Note: Use for your ROCE calculation the average of the net operating profits after tax (NOPAT) p.a. for the years 1 to 5 and the average of the average capital employed per year for the years 1 to 5, see Table 4.] (5 points)

Table 3: Auxiliary table for the computation of the investment project's net present value

(in EUR m)	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Capital expenditure	-30.00	.....	.....	.....	.....	.....
Incremental revenues from the project	.....	.....	.....	.....	.....	.....
Cash operating expenses	.....	.....	.....	.....	.....	.....
Depreciation	.....	.....	.....	.....	.....	.....
Taxes	.....	.....	.....	.....	.....	.....
.....
Net cash flow	.....	.....	.....	.....	.....	.....
Discount factor (= $1 / (1 + r)^n$) for $r = 8.0\%$	1.000	0.926	.....	.....	.....	.....
Present values	.....	.....	.....	.....	.....	.....

Table 4: Auxiliary table for the computation of the investment project's ROCE

(in EUR m)	Year 1	Year 2	Year 3	Year 4	Year 5	Average year 1-5
Net Operating Profit After Tax (NOPAT)	.....	.....	.....	.....	.....	.....
Capital Employed as of January 1	30.00	.....	.....	.....	.....
Capital Employed as of December 31	.....	.....	.....	.....	.....
Average Capital Employed per year	.....	.....	.....	.....	.....	.....

c2) Discuss briefly your findings in each section of c1) above and advise whether the investment proposal is financially acceptable. (6 points)