WRITTEN TEST 2nd CALL FEBRUARY 14th, 2022

Question 1a (3 points)

A financial analyst is evaluating, from the outside, the performance of Company X. The following data are available about the year 2021:

- ROA = 5%
- Net financial costs (financial expenses – financial income) = 8.8 Mln €
- Third-party liabilities/Equity = 2
- r = 0.012 (calculated considering Third-party liabilities)
- s = 0.7

Based on the available data, which answer is CORRECT?

A. EBT is around 55 Mln €
B. ROE is around 12.6%
C. Net income is around 32.3 Mln €
D. Effective tax rate is around 42.8%

SOLUTION:

Third-Party Liabilities = Net financial Expense / r = 733.33 Mln €

Total Assets = Third Part Liabilities *3/2 = 1,100 Mln €

ROA = EBIT/ Tot Assets = 5%

EBIT = 5% *1,100 = 55 Mln

ROE (leverage formula) = s*(ROA+TPL/E*(ROA-r)) = 8.82%

E = Tot Assets / 3= 366.67 Mln €

Net Income = ROE*E= 32.34 Mln €

EBT = EBIT - NET FINANCIAL COSTS = 55 - 8.8 = 46.2 Mln€

Effective tax rate = Taxes / EBT = (46.2-32.34)/46.2 = 30%

Question 1b (3 points)

With reference to Company X, additional information is available:

- EBIT margin (2021) = 10%
- Revenues (2020) = Revenues (2021)
- DSO decreased from 12 (2020) to 10 (2021)
- Inventory Turnover Ratio decreased from 4 (2020) to 3.75 (2021)
- ΔNOWC (final - initial) = + 7,500 k€

How much is the Δ Trade Payables (final-initial) between 2021 and 2020?

A. + 13,653 k€ approximately
B. – 1,347 k€ approximately
C. + 4,680 k€ approximately
D. None of the other answers

SOLUTION

Revenues (2021) = EBIT / 10% = Revenues (2020) = 55 / 0,1 = 550 Mln

Receivables 2020 = (Revenues 2020 * DSO 2020)/365 = 18,082 k€

Receivables 2021 = (Revenues 2021 * DSO 2021)/365 = 15,068 k€

ΔReceivables (f-i) = – 3,014 k€

Inventories 2020 = Revenues 2020 / Inventory Turnover ratio 2020 = 137,500 k€

Receivables 2021 = Revenues 2021 / Inventory Turnover ratio 2021 = 146,667 k€

ΔInventories (f-i) = 9,167 k€

ΔNOWC(f-i) = ΔReceivables (f-i) + ΔInventories (f-i) – ΔPayables (f-i)

ΔPayables (f-i) = ΔReceivables (f-i) + ΔInventories (f-i) – ΔNOWC(f-i) = -3,014 + 9,167 – 7,500 = - 1,347 k€

Question 2a (2 points)

You are analysing some figures about the Mavericks Company, and you have some data available in the Table below.

Maverick's data as of December 31st, 2021	
Trade receivables	100 k€
Trade payables	200 k€
Inventories	200 k€
Current loans	100 k€
Non-current loans	1,800 k€
Non-current bonds	400 k€

Maverick's forecasted data for the end of the year 2022	
Shareholders' equity	4,000 k€
Trade receivables	150 k€
Trade payables	300 k€
Inventories	200 k€

Non-current loans	1,800 k€
Non-current bonds	400 k€
Non-current financial assets	500 k€
EBITDA margin	30%
Current loans	200 k€
Financial expenses	200 k€
Trademark	500 k€
Property, plant and equipment	1,000 k€
Revenues	3,000 k€
Revenues and costs from discontinued operations	0 k€
EBIT	700 k€
Income Taxes	200 k€
EBT	650 k€
There are no further financial liabilities	

You are asked to estimate the impact of an investment in a new production technology that could be realized on January 1st, 2022 (data in the Table do not include the effects of the investment).

The investment amounts to 2,400,000 € and it would be depreciated on a straight-line basis over an 8-year useful life (starting from January 1st, 2022). The full amount of the investment would be paid in 2022 and the company would finance the full investment by issuing new capital that will be entirely paid by the shareholders.

The investment would not determine any change in the effective tax rate in year 2022. Moreover, no further investments or dismission of assets are expected in 2022. Given its peculiarities, the investment is not supposed to impact on revenues and operating costs (other than depreciation) in 2022 (but just in the following years).

Knowing that:

- Beta unlevered of the industry: 0.94
- r_m: 4.5%
- r_f: 0.4%

Which is Maverick's cost of equity in 2022 if the company invests in the new production technology? Please, use two significant digits after the comma.

A. + 4.25%

B. + 5.24%

C. + 5.85%

D. None of the other answers.

SOLUTION:

Ke: based on the CAPM formula: $ke=rf + b_{levered} * (rm-rf)$, the beta levered should be calculated.

$b_{levered} = b_{unlevered} * [1+(1-t) \times (D/E)]$,

D = financial debt = 1,800 + 400 + 200 = 2,400 k€,

E = 4,000 + 2,400 (new issued capital) = 6,400 k€,

t = income taxes / EBT = 200/650 = 30.77%

Hence, beta levered = 1.18

Ke = 0.4 + 1.18 * (4.5 - 0.4) = 5.24 %

Question 2b (4 points)

Based on the available data, reported in Question 2a, which is the FCFE of the Mavericks Company in the year 2022, in the case the Company would invest in the new production technology?

A. Around + 892 k€
B. Around + 800 k€
C. Around + 1,100 k€
D. Around + 788 k€

SOLUTION:

EBIT – taxes on EBIT - Delta NOWC - Delta Capex + D&A +/- Delta Debt - Net financial expenses (1-t) +/- Increase/decrease in share capital

EBIT = forecasted EBIT 2022 - D&A investment = 700-300=400k€

Taxes = t x EBIT = 30,76% * 400 = 123 k€

Delta NOWC = NOWC 2022 – NOWC 2021 = (150-100) + (200-200) – (300-200) = -50 k€

Delta Capex = 2,400 k€

D&A = EBITDA Margin x (Revenues) – EBIT + D&A Investment = 900 – 700 + 300 = 500 k€

Delta Debt = Current loans 2022 - Current loans 2021 = +100 k€ (Non-Current loans remain constant)

Net financial expenses = (Financial expenses – Financial revenues) * (1-t) = (EBIT – EBT) * (1-t) = 50 * (1-0,308) = 34.6 k€

Increase in share capital = 2,400 k€

2022 FCFE = (700 – 300) – 123 + 50 + 500 – 2,400 + 100 – 34.6 + 2,400 = 892.36 k€

Question 3 (6 points)

Earth is a non-listed company composed by two completely independent business units: North and South. You want to estimate the Enterprise Value (EV) of Earth through relative valuation, by summing the EV of its two BUs. In the Table below, there are some data about North and South as well as about potential comparable listed companies.

	Revenues (€)	EBITDA (€)	D/E	Cash Flow from operating activities (€)	Competitive advantage	Market Capitalization (€)	Net Financial Debt (€)
NORTH	20,000	8,500	2.5	12,000	Cost leadership		8,000
Alpha	18,000	7,100	2.3	10,000	Productivity	100,000	6,500
Beta	4,000	1,200	2.4	7,000	Plant saturation	30,000	800
Gamma	21,000	8,900	2.6	14,000	Cost leadership	125,000	8,500

	EBIT (€)	D/E	Net Profit (€)	Competitive advantage	# Shares	Nominal Value of shares (€/share)	Market price (€/share)	Net Financial Debt (€)
SOUTH	2,000	3.0	1,200	Reputation				6,000
Delta	-500	2.8	1,400	Image	40,000	0.18	7.00	5,000
Epsilon	-1,000	2.9	1,200	Brand	44,000	0.23	6.00	7,000
Zeta	300	4	600	Economy of scale	90,000	0.16	2.00	6,000

Using the available data, what is the EV of Earth?

A. EV is about + 357,775€
B. EV is about + 141,640€
C. EV is about + 385,500
D. None of the other answers

SOLUTION:

The EV of Earth can be estimated by summing the EV of North and South, being them independent. Considering North, Alpha and Gamma can be taken as comparable. Beta cannot be taken as comparable because the values of both revenues and EBITDA are significantly lower.

North is competing on cost leadership through an efficient use of assets or the reduction of operational costs. This suggests that asset-side multiples should be preferred. Considering available data (revenues, EBITDA, CFFO) the preferred performance parameter is EBITDA. This means that the multiple to be used is EV / EBITDA.

EV of listed comparable companies can be calculated adjusting Market Capitalization (i.e., Equity Value) with the Net Financial Debt: EV = E + NFD.

EV (Alpha) = 100,000 + 6,500 = 106,500€

EV (Gamma) = 125,000 + 8,500 = 133,500€

EV / EBITDA (Alpha) = 106,500 / 7,100 = 15

EV / EBITDA (Gamma) = 133,500 / 8,900 = 15

In case you calculate this multiple for Beta, the value is 25.7 (another clue that Beta is not comparable)

Average of EV / EBITDA = (15 + 15) / 2 = 15

EV (North) = 15 * 8,500 = 127,500€

Considering South, Delta and Epsilon can be taken as comparable. Zeta cannot be taken as comparable because the competitive advantage is very different (economy of scale vs image and reputation) and also the risk profile of the company, represented by D/E is different.

South is competing on reputation. This suggests that tangible assets are not the source of competitive advantage. Considering available data, the only multiple that is meaningful and can be calculated is E / Net Profit = P/E (EV/ EBIT cannot be computed since some comparable companies have negative EBIT; EV/Sales cannot be computed since data about revenues in this case are not available).

Market capitalization can be calculated considering #shares * market value of the shares

Market capitalization (Delta) = 40,000 * 7€/share = 280,000 €

Market capitalization (Epsilon) = 44,000*6 €/share = 264,000 €

E / NP (Delta) = 280,000 / 1,400 = 200

E / NP (Epsilon) = 264,000 / 1,200 = 220

In case you calculate this multiple for Zeta, the value is 300 (another clue that Zeta is not comparable)

Average of E / NP = (220+200) / 2 = 210

E (South) = 210 * 1,200 = 252,000

EV can be calculated adjusting E with the Net Financial debt. EV = E + NFD.

EV (South) = 252,000 + 6,000 = 258,000€

EV (Earth) = EV (North) + EV (South) = 127,500 + 258,000 = 385,500€

Question 4 (2 points)

The controller of the research center Omega wants to allocate the costs of the corporate research facilities, which are jointly used by three departments: the chemistry department (C), the neuroscience department (N), and the robotic department (R). The corporate research facilities offer the most advanced instruments, such as advanced microscopes or robots, to perform experiments in the research field of each department.

The company controller is allocating the actual costs of the robotic corporate research facility concerning December 2021. These are the available data:

- The monthly capacity of the robotic corporate research facility is 120 hours and the overall monthly cost is 390,000€.
- During December 2021, the robotic corporate research facility has been used by departments C, N, and R for 20h, 50h, and 30h respectively.

Based on this information, which of the following statement is CORRECT:

A. Using a complete proportional allocation approach, 65.000€ would be allocated to department C
B. Using a fee allocation approach, 195.000€ would be allocated to department N
C. If department C uses 10 hours more, all other conditions being equal, the costs allocated to department C would be higher using the fee allocation method rather than a complete proportional allocation
D. If department N uses 10 hours less, all other conditions being equal, the costs allocated to department N would be higher using the allocation method based on complete proportional allocation rather than the fee allocation method

SOLUTION:

Fee allocation method

- 390,000€/120h = 3250€/h
- Cost allocated to C = 3250*20h = 65,000€
- Cost allocated to N = 3250*50 = 162,500€
- Cost allocated to R = 3250*30 = 97,500€

Proportional allocation

- 390,000€/100h = 3900€/h
- Cost allocated to C = 3900*20h = 78,000€
- Cost allocated to N = 3900*50 = 195,000€
- Cost allocated to R = 3900*30 = 117,000€

Question 5 (2 points)

Which of the following statements about management reporting is CORRECT?

A. In relative terms, completeness of the management reporting system is more relevant at the operational level than at the corporate level

B. In relative terms, timeliness of the management reporting system is more relevant at the corporate level than at the operational level

C. The inclusion of value drivers in the management reporting system reduces the capability of acknowledging the specific responsibilities

D. None of the other answers

SOLUTION:

A. Wrong: In relative terms, completeness of the management reporting system is more relevant at the corporate level

B. Wrong: In relative terms, timeliness of the management reporting system is more relevant at the operational level

C. Wrong: value drivers improve the identification of specific responsibilities

D. Correct

Question 6 (2 points)

Cristal Company has a Glass division that produces and sells molten (i.e., liquified) glasses to the European market. As follows, you can find a summary of the division's activities in the last year:

- Sales of molten glass to external customers: 40,000 tons
- Selling price: 120 €/ton
- Variable cost: 65 €/ton
- Fixed cost: 7,200,000 €/year

Cristal also has a Bottles Division, which needs 10,000 tons of molten glass per year to manufacture its bottles. At present, however, the Bottles Division buys all its molten glass from an external supplier at a price of €105 per ton.

If the Bottles Division buys the molten glass internally (from the Glass Division), which of the following sentences about transfer price is TRUE (assume for simplicity that there would NOT be savings in terms of transactional costs)?

A. If the Glass Division has no spare capacity, the minimum transfer price at which the Glass Division would sell its product to the Bottles Division is 120 €/ton

B. If the Glass division has spare capacity, the minimum transfer price at which the Glass division might sell its product to the Bottles Division is 105 €/ton

C. If the Glass division has spare capacity and a transfer price of 75€/ton is set, the Glass division's profit will increase by 900,000 €

D. None of the others

SOLUTION:

A is correct. As the Molten Glass Division has no spare capacity, it cannot increase its output above the level of 40,000 tons per year which it is already producing (and selling to external customers). Therefore, if any tons of molten glass are sold to the Glass Bottles Division, then there will have to be a corresponding reduction in the quantity sold to external customers. In order to keep the same profitability, the minimum transfer price is 120€/ton.

B is wrong since if the Glass Division has spare capacity, the minimum price at which it will sell its product will be 65€/ton (equal to its variable cost).

C is wrong since if the Glass division has spare capacity and a transfer price of 75€/ton is set, then the Glass division's profit would be determined as

- (transfer price – variable cost) = 75€/ton – 65€/ton = 10€/ton
- Total increase of profit = 10€/ton* 10,000t = 100,000€

D is wrong

Question 7 (2 points)

Considering all the terms equal if not specified, which of the following statements is WRONG?

A. Factoring is an excellent way of easing a liquidity crunch by selling and prefinancing customer receivables in the pandemic time and persistent uncertainties
B. Selling of receivables and loans could be the best way to recognise the impairment loss, i.e., a company starts accounting for possible future credit losses in the very first reporting period
C. Factoring leads to possible volatility of income statement of a company
D. Being one of the financial possibilities in the short-term period, factoring is the best way to increase the liquidity and influence on the financial leverage, specifically for the companies characterised by D/E ratio over 1

SOLUTION

A. Is correct, as during the pandemic time and uncertainties it is easier to sell receivables than to get another loan or open a line of credit.
B. When company decides to sell receivable or a loan, it is trying to avoid it obsolescence i.e., necessity of impairment test.
C. Factoring with or without recourse, as the sale of a receivable leads to certain level of uncertainty in terms income received by the company and interest to be paid, as well as necessity to return money in case of recourse.

D. There is no direct connection between financial leverage meaning of 1 and factoring, so the best way to increase liquidity could be any of the financial planning.

Question 8 (2 points)

Under what circumstances it is possible to consolidate the financial statements of a parent with those of a subsidiary with a different reporting date (without providing additional information about the subsidiary as of the same date of the parent – i.e., without rebuilding the financial statements of the subsidiary with the same reporting date of the parent company)?

Which of the following statements is TRUE?

A. If it is impracticable for the subsidiary to provide additional financial information as of the same date as the financial statements of the parent and the difference between the reporting dates for the parent and the subsidiary is greater than 3 months.
B. If the difference in the length of the reporting period for the parent and the subsidiary is less than 9 months.
C. If it is impracticable for the subsidiary to provide additional financial information as of the same date as the financial statements of the parent and the difference in the reporting period is up to 3 months
D. None of the other answers is correct

SOLUTION

IFRS 10.B93 states that the parent company should consolidate the statements with the same reporting date, or when it is impracticable, the difference should be no more than 3 months.

Question 9 (2 points)

Company XY manufactures and sells two products, A and B, that require the same equipment that is working at full capacity nowadays. The controller is thinking about what the company should do in case of additional orders and which of the two products should be sacrificed to save machine hours to be allocated to the other product. The choice between the two products should be based on:

A. ROA
B. ROS (EBIT margin)
C. Contribution margin
D. Segment margin

SOLUTION

ROA and ROS are calculated on EBIT. EBIT includes both variable and fixed costs. Segment margin also considers fixed costs even if only direct fixed costs. Contribution margin considers only variable costs. This choice must consider only variable costs because fixed costs are sunk and do not differ between different scenarios.