

III call – written test – June 23rd, 2021

QUESTION 1 – (4 points)

Consider the following data about company A

	Actual data (2020)	Budgeted data (2021)
Volume of sales [units]	2,500	3,000
Price/unit [€/unit]	44	40
Inventory of finished goods (beginning of the year) [€]	7,000	4,000
Direct manufacturing labour [€]	25,000	27,000
Manufacturing overhead [€]	11,000	11,500
Cost for direct material usage [€]	31,000	34,000
Other operating revenues [€]	0	0
Financial Expenses [€]	3,000	4,000
Repayment of debt [€]	1,000	1,200

You also know that:

- the budget of the company indicates a 15% increase in the 2021 EBIT
- 2020 EBIT = 15,000 €
- inventories left on the December 31st, 2021 = 0
- the company adopts an incremental approach to calculate the budgeted period costs. This means that the increase of the budgeted period costs of the year (t+1) is calculated by multiplying the period costs of the year (t) by a coefficient (1+ α).

Based on this information, what is the value of alfa α for budgeting the 2021 period costs?

- A. 25%
- B. 8.45%
- C. 5%**
- D. 15% as the EBIT

SOLUTION

[2020]

$$\text{Revenues 2020} = (2,500 \times 44) = 110,000$$

Cost of goods sold = cost of good manufactured + inventory used

$$\text{Cost of good manufactured} = 31,000 \text{ (material usage)} + 25,000 \text{ (labor)} + 11,000 \text{ (overhead)} = 67,000$$

$$\text{Inventory used} = 7,000 - 4,000 = 3,000$$

$$\text{Cost of goods sold} = 70,000$$

$$\text{Gross margin} = 110,000 - 70,000 = 40,000$$

$$\text{Period cost budget} = 40,000 \text{ (Gross margin)} - 15,000 \text{ (Ebit)} = 25,000$$

[2021]

$$\text{Revenues 2020} = (3,000 \times 40) = 120,000$$

$$\text{Cost of good manufactured} = 34,000 \text{ (material usage)} + 27,000 \text{ (labor)} + 11,500 \text{ (overhead)} = 72,500$$

$$\text{Inventory used} = 4,000 - 0 = 4,000$$

$$\text{Cost of goods sold} = 76,500$$

Gross margin = 120,000 - 76,500 = 43,500

Ebit = 15,000 x 1,15 = 17,250

Period cost budget = 43,500 (gross margin) – 17,250 (Ebit) = 26,250

$$\alpha = (26,250/25,000) - 1 = 5\%$$

QUESTION 2 – (2 points)

Company D is preparing the budgeted cash flow statement for 2022 according to the indirect approach. The first release of the budget shows a liquidity issue. The CFO is analyzing some possible solutions. Which of the following answers is **FALSE**?

- A. The reduction in the purchase of raw materials (with payment by the end of 2022), with a corresponding reduction in the value of final inventory, improves cash but does not change EBIT.
- B. The reduction in DSO by 1 month improves cash but does not change EBIT
- C. The reduction of CAPEX improves cash but does not change EBIT**
- D. The increase in DPO time by 1 month improves cash but does not change EBIT

SOLUTION

The increase of long-term assets changes depreciation per year and this changes EBIT

QUESTION 3 – (4 points)

Company A is a multinational company that competes in the transportation sector, producing and selling cars, trucks, and construction equipment. Company A is preparing the Annual Report as of December 31st, 2020. The following data are available (all data are in million €):

- R&D Expenses: 1,835 M€
- Selling and Administrative Expenses: 3,900 M€
- Other operating expenses: 25 M€
- Other operating income: 60 M€
- Income taxes: 1,020 M€
- Cost of Goods Sold: 32,230 M€
- EBIT: 4,830 M€

Company A is also evaluating the effect of the impairment test of a production line, following an event happening at the very end of 2020. More specifically, this information is available:

- At the end of 2020, the production line has a book value of 3 M€, a fair value of 1 M€ and a value in use of 4 M€
- At the beginning of 2020, this production line had a book value of 4 M€, a residual useful life of 4 years;
- The production line is amortized with a straight line and constant method;
- The list of available data above is prepared before the impairment of this production line and already considers the regular depreciation of the production line (i.e., before the impairment test).

Which of the following sentences is **TRUE**?

- A. Gross Profit = 10,530 M€, Revenues = 42,760 M€**
- B. Gross Profit = 10,530 M€, Revenues = 42,757 M€
- C. Gross Profit = 9,510 M€, Revenues = 41,740 M€
- D. Gross Profit = 10,590 M€, Revenues = 42,818 M€

SOLUTION

Since the value of Revenues is not provided, the Gross Profit has to be calculated starting from the EBIT:

Gross Profit = EBIT – Other operating income + R&D expenses + Selling and Administrative Expenses + Other operating expenses = 4.830 M€- 60 M€+ 1,835 M€+ 3,900 M€+ 25 M€= **10,530 M€**

Revenues = Gross Profit + Cost of Goods Sold = 10,530 M€+ 32,230 M€= **42,760 M€**

The production line is NOT impaired, thus it has NO EFFECT on the above (on Gross Profit nor on net sales)

- Recoverable amount = Max (Fair Value; Value in Use) = 4 M€

- Min (Recoverable amount; Book Value) = Book Value (no impairment)

Question 4 – (2 points)

Which of the following statements about reporting at the Business Unit (BU) level is **FALSE**:

- A. To isolate the performance of BUs within the company, two specific problems must be addressed: the existence of intercompany exchanges and the presence of resources used by the BUs that are managed at the corporate level
- B. To meet the “specific responsibility” requirement for reporting at the BU level, companies must allocate all corporate costs to the BUs**
- C. The existence of intercompany exchanges has fiscal implications when the BUs, belonging to the same group, are autonomous juridical entities located in different countries.
- D. When using non-financial indicators at the BU level, it is convenient to identify indicators that isolate specific responsibilities of each BU

SOLUTION

Wrong, because part of the corporate costs (i.e., part of the costs incurred by some corporate units) cannot be allocated according to a causal principle (i.e., proportionally to the real usage of corporate resources made by BUs)

QUESTION 5 – (4 points)

You are calculating the cost of equity of company Alpha that is not listed. This company manufactures high-quality lotions for skin treatment that are sold in specialized pharmacies and drug stores only with a doctor's prescription. The production plant is in Rome, where the headquarter is located. At present, the company sells all lotions in the French market because the mark-up is significantly higher than in Italy. The shareholder of company Alpha is a French family located in Paris whose financial investments are mainly located in France.

Looking at the last available financial reports, you know that:

- Assets = 4,000 k€
- Equity = 2,000 k€
- Non-financial liabilities = 1,700 k€
- Corporate tax rate = 50%

Additionally, you know that:

- Italy's 2-year government bond yield = 1.35%
- Italy's 10-year government bond yield = 2.45%
- France's 2-year government bond yield = 0.74%
- France's 10-year government bond yield = 1.16%
- Germany's 2-year government bond yield = 0.48%
- Germany's 10-year government bond yield = 0.78%

Additionally, you know that:

- FTSE MIB (Italy) is forecasted at 20%
- CAC 40 (France) is forecasted at 26%
- DAX (Germany) is forecasted at 28%

Looking at the pharmaceutical industry, data show that:

- Average equity Beta = 1.08
- Average D/E = 14.8%
- Average tax rate = 48%

Looking at the biotechnology industry, data show that:

- Average equity Beta = 1.23
- Average D/E = 39.9%
- Average tax rate = 35%

Finally, you have data about two potential comparable companies that sell their products in the French market using pharmacies as their preferred channel.

- Company Gamma manufactures and sells all-purpose bandages. Assets are 1,000 k€, Equity is 300 k€, non-financial liabilities are 200k€, corporate tax rate is 50%
- Company Delta manufactures and sells safe toys for newborns. Assets are 800 k€, Equity is 240 k€, non-financial liabilities are 80k€, corporate tax rate is 50%

In the light of the available data and reasonable assumptions, which of the following sentences is **TRUE**?

- A. The cost of equity of company alpha is about 28% and the risk-free rate is 1.16%
- B. The cost of equity of company alpha is about 28% and the risk-free rate is 0.78%**
- C. The cost of equity of company alpha is about 11% and the risk-free rate is 0.78%
- D. None of the other answers is correct

SOLUTION

The cost of equity can be calculated using the CAPM method, i.e., $k_e = r_f + \beta_L \cdot (r_m - r_f)$

$r_f = 0.78\%$ because you must select the return of the least risky 10-year government bond of the currency area where the company is operating, meaning Germany for the Euro-zone

$r_m = 26\%$ because you must select the market index that is representative of the market in which the company operates, meaning France where all products are sold

Being company Alpha not listed, β_L cannot be estimated through a regression of the stock returns against the market returns. In case of an unlisted company there are two strategies to infer β_U : comparable companies or industry.

Companies Gamma and Delta cannot be argued as comparable ones because of (i) the very different product they sell and (ii) the different size and leverage. While for both companies, D/E is 2, D/E of company Alpha is 0.15, being aligned to the average D/E of the pharmaceutical industry ($D/E = 0.148$)

The product sold by company Alpha might be assumed comparable to products sold by the pharmaceutical industry. The biotechnology industry sells very different products, many of whom are not about healthcare but other industry like as agriculture, food production, recycling etc.

Considering the available data about the pharmaceutical industry,

$$\beta_{U_industry} = \beta_{L_industry} / (1 + (1 - \text{tax}_{industry}) \cdot (D/E)_{industry}) = 1.08 / (1 + (1 - 48\%) \cdot (0.148)) = 1$$

Assuming that $\beta_{U_company\ Alpha} = \beta_{U_industry}$

$$\beta_{L_company\ Alpha} = \beta_{U_industry} \cdot (1 + (1 - \text{tax}_{company\ Alpha}) \cdot (D/E)_{company\ Alpha}) = 1 \cdot (1 + (1 - 50\%) \cdot 0.15) = 1.075$$

$$\text{Cost of equity} = 0.78\% + 1.075 \cdot (26\% - 0.78\%) = 27.89\% \text{ meaning about } 28\%$$

The correct answer is: **The cost of equity of company alpha is about 28% and the risk-free rate is 0.78%**

QUESTION 6 – (2 points)

When a target company is not listed, you can calculate its levered beta through comparable companies by adjusting for differences in capital structure between the target company and comparable companies. If the comparable companies are significantly leveraged in their capital structure, what can you say about the unlevered beta of the comparable companies about their levered beta?

- A. The unlevered beta is lower than the levered beta**
- B. The unlevered beta is higher than the levered beta
- C. The unlevered beta is identical to the levered beta
- D. The answer depends on the level of leverage and unlevered beta might be either higher or lower than levered beta

SOLUTION

$$\beta_U = \beta_L / (1 + (1 - \text{tax}) * (D/E))$$

$\beta_U < \beta_L$ regardless of the level of leverage if we assume that tax rate is not negative

QUESTION 7 – (4 points)

Gamma is a multinational company that operates in the beachwear industry. The company has recently approved its 2020 annual report, which shows the data reported below:

- Current + non current liabilities = 135 M€
- Property plant and equipment = 85 M€
- Intangible assets = 45 M€
- Non current financial assets = 25 M€
- Other non current assets = 65 M€
- Current assets = 65 M€
- Assets classified as held for sales = 0
- Asset Turnover Ratio (ATR) = 2,85
- Effective tax rate = 35%
- Dividends distributed = 3 M€
- ROS (or “EBIT margin”) = 12%
- Financial Incomes = 1.5 M€
- Financial Expenses = 9 M€
- Liabilities related to assets classified as held for sales = 0

Based on this information, the ROE of the company is equal to:

- A. **38.99 %**
- B. 39.78 %
- C. 46.79 %
- D. 68.80 %

SOLUTION

E = total assets – (current + non-current liabilities+ liabilities related to assets classified as held for sale):
150 M€

Revenues = (total assets) * (asset turnover ratio): 812.5 M€

EBIT = (Revenues) * (ROS): 97.47 M€

EBT = (EBIT) + (Financial Incomes) – (Financial Expenses): 89.97 M€

Net Profit = (EBT) – [(EBT) * (Effective Tax Rate)]: 58.48 M€

ROE = net profit/E: 38.99 %

QUESTION 8 – (2 points)

You are analysing the Dashboard of Company A. Which one of the following **CANNOT** be classified as a “value driver”?

- A. Number of training hours per employee
- B. Number of complaints received from customers
- C. Return on Investments**
- D. Throughput time

SOLUTION

ROI is an accounting-based indicator

QUESTION 9 – (4 points)

You have the following data extracted from Company A 2020 financial statements (data in €):

Net Profit	+77,000
EBIT	+125,000
Financial revenues	18,000
Financial expenses	33,000
Revenues	1,200,000
Operating Expenses (depreciation and amortisation excluded)	905,000
Starting Non Current Assets	2,400,000
Final NCA Assets	2,370,000
Assets dismissed/sold during the year (book value)	100,000
Starting Inventories	80,000
Final Inventories	90,000
FCFF	- 12,500

You also know that:

- Revenues are equally spread over the different months
- Days Sales Outstanding (DSO) = 3 months
- Revenues (2019) = €1,000,000
- Depreciation and amortization are not included in the above value of Operating Expenses, but they are **NOT** negligible (their value is not null!)

Based on this information, what was the change in the value of Account Payables (Ending – Starting value) in 2020?

- A. +30,000.00
- B. - 74,500.00 (minus)
- C. + 70,000.00
- D. - 70,000.00 (minus)**

SOLUTION

Net Profit	77.000,00
EBIT	125.000,00
Fin rev	18.000,00
Fin exp	33.000,00
Revenues	1.200.000,00
Op. Ex. (depr and amort. excluded)	905.000,00
Starting NCA Assets	2.400.000,00
Final NCA Assets	2.370.000,00
Assets dismissed/sold during the year (book value)	100.000,00
Starting Inventories	80.000,00
Final Inventories	90.000,00
FCFF	- 12.500,00

Revenues and purchases equally spread over the year

DSO	3 months
REvenues (2019)	1.000.000,00

Solution:

Revenues	1.200.000,00		
+ Delta Inv (f-i)	10.000,00		
-OpEx	905.000,00		
D&A	180.000,00		
EBIT	125.000,00		
+ Fin rev	18.000,00		
- Fin exp	33.000,00		
EBT	110.000,00		
Taxes on Profit	33.000,00	da cui p:	30%
Net Profit	77.000,00		

Starting Acc Receiv (2020)	250.000,00
Final Acc Receiv (2020)	300.000,00

	corretta	including assets dismissed	taxes on EBT
EBIT	125.000,00	125.000,00	125.000,00
- Taxes on EBIT	37.500,00	37.500,00	33.000,00
+ D&A:	180.000,00	180.000,00	180.000,00
+ Delta OWC (i-f):			
+ Acc receiv (i-f)	- 50.000,00	- 50.000,00	- 50.000,00
+ Inv (i-f)	- 10.000,00	- 10.000,00	- 10.000,00
+ Acc payable (f-i)	- 70.000,00	30.000,00	- 74.500,00
- CAP. EX.	150.000,00	250.000,00	150.000,00
FCFF	- 12.500,00	- 12.500,00	- 12.500,00

QUESTION 10 – (2 Points)

Working as a financial auditor, you came across the 2022 budgeted cash flow statement of one of your clients (company Gamma). In particular, the expected Total Net Cash Flow (i.e., the sum of cash flows from operating activities, investing activities, and financing activities) for 2022 is negative and equal to €- 1,000,000. You also know that the company is expected to end the current year (2021) with about €300,000 of liquidity (i.e., cash and equivalents). Based on this information, which one of the following statements is **TRUE**?

- A) The company is going to face a liquidity issue in 2022, and the CFO should definitely ask for a long term loan (or, alternatively, for new capital from shareholders) to fix this issue
- B) The company is going to face a liquidity issue in 2022, and the CFO should ask for a short term loan
- C) The company is going to face a liquidity issue in 2022, but there is not enough information to choose between the potential funding alternatives**
- D) There will be no liquidity issue in 2022

SOLUTION

Since Total NCF is negative and its absolute value (1,000,000) is by far higher than the starting amount of liquidity (300,000), the company for sure is going to face a liquidity issue in 2022. In order to evaluate the possible financing alternatives, the CFO should have visibility over budgeted financial statements concerning the subsequent years (2023, 2024, etc), as from strategic plans and correlated business plans, in order to understand whether it is a short-term or long-term issue. Then the CFO should analyse feasibility and pros and cons of possible short (or long) term alternatives.