MBA 51
Financial Management & Accounting

2η Γραπτή Εργασία 2022 - 2023

Ανάλυση Εργασίας

Subject 1 (40%)

XYZ Ferries recently gained a slot in the Cyclades islands itineraries for the next 5 years and considers three alternatives to exploit the contract:

A. Buy a relatively old ship with large car garages that has been running these routes for several years and will continue to do so for another 5 years without major refurbishment. The cost of the ship is €13m and is expected to leave a scrap value of 1m, 5 years from now. The CFO estimates a revenue of €10.8m with total costs of €6.5m every year. To set the working capital, an initial amount of 1m is deemed as necessary, with another €100,000 to be added to it every year. At the end of the 5-year contract, the working capital is to be recovered by the company.

B. Buy the same liner as A and proceed to a major refurbishment and engine upgrade, before the start of the first season, that will allow better passenger accommodation and faster travel times. The refurbishment/ upgrade will cost another €3.5m and the ship is expected to leave the same residual scrap of 1m after 5 years. However, in this case, the CFO estimates a higher revenue of €12m with projected total costs of €6.4m every year. To set the working capital, an initial amount of 1m is again deemed as necessary from year 1, with another €120,000 to be added to it every year. At the end of the 5-year contract, the working capital is to be recovered by the company.

C. Buy a much newer vessel with very fast travel times but with limited capacity for passengers and cars. This ship will be able to make twice as many voyages as the ship in alternatives A and B. The cost of this ship is €22m and is expected to leave a residual value of €8m after 5 years. According to this scenario, the CFO estimates a revenue of €15m with projected total costs of €8.9m every year. To set the working capital, an initial amount of €2m is deemed as necessary, with another €200,000 to be added to it every year. At the end of the 5-year contract, the working capital is to be recovered by the company.

Before gaining the contract XYZ paid for research using multiple surveys among passengers to get a better grasp about their preferences and how they make their travelling decisions. The cost of this research was €100,000. To finance the project the CFO will issue €14m worth of preferred stock. The stock will pay an annual dividend of €0.50 forever and will be offered to potential buyers at €5.0 each. Issuance and distribution fees paid to the primary market dealers are estimated at the 1.5% of the offered price. To cover any additional need for funding, the firm will then issue a 5-year bond with annual coupons and 10% coupon rate. The bond will be issued at par, but the primary market dealers will receive 1.5% fees for issuance and distribution costs. The tax rate of the company is 35% and fixed assets are fully depreciated for tax purposes using the straight-line depreciation method.

Questions:

1. Calculate the Net Cashflows of each of the three projects. (20%)
2. Calculate the WACC for each of the three projects. (10%)
3. Calculate the NPV, IRR and Profitability Index of the three projects. (10%)
4. Which of the 3 projects should be rejected, and which one is the optimal alternative? (10%)

Alternative A

Working Capital Schedule

Όταν αποτιμούμε μία επένδυση μας ενδιαφέρουν τα ΕΠΙΠΛΕΟΝ (incremental) ταμειακές ροές (relevant cash flows) της αυτή την επένδυση

for tax purposes

$$\text{Depreciation}_{\text{annual}} = \frac{\text{Cost} - \text{Residual value}}{\text{Useful life}} =$$

(Residual value → tax residual value)

$$= \frac{13.000.000€ - 0€}{5 \text{ years}} = 2.600.000€$$

↓ depreciation for tax calculations

$$\text{Profit on sale of asset (for tax purposes)} = \text{Selling price} - \text{(Tax) Book value @ year 5}$$

$$= 1.000.000€ - 0€ = 1.000.000€$$

→ Incremental Income Statement for tax purposes (για τις ;) +

INCOME STATEMENT	YEAR END 0	1	2	3	4	5
SALES → cash item		10.800.000 €	10.800.000 €	10.800.000 €	10.800.000 €	10.800.000 €
COSTS → cash item		(6.500.000 €)	(6.500.000 €)	(6.500.000 €)	(6.500.000 €)	(6.500.000 €)
PROFIT / LOSS ON SALE OF ASSETS × Non-cash items						1.000.000 €
DEPRECIATION × Non-cash item		(2.600.000 €)	(2.600.000 €)	(2.600.000 €)	(2.600.000 €)	(2.600.000 €)
EBIT		*1.700.000 €*	*1.700.000 €*	*1.700.000 €*	*1.700.000 €*	*2.700.000 €*
INCOME TAX @ 35% → cash item		(595.000 €)	(595.000 €)	(595.000 €)	(595.000 €)	(945.000 €)
NET OPERATING INCOME AFTER TAX		1.105.000 €	1.105.000 €	1.105.000 €	1.105.000 €	1.755.000 €

→ Γιατί γίνεται όλη η διαδικασία σε αυτό το βήμα

(*) Incremental γιατί όπως είπαμε μας ενδιαφέρουν τα ΕΠΙΠΛΕΟΝ ποσά (και τελικά cash flows) που εισφέρει η επένδυση

For tax purposes γιατί μας ενδιαφέρουν μόνο τα Cash Flows και η μόνη πληροφόρηση ενός Income Statement είναι ο υπολογισμός των φόρων (που είναι cash flows)

→ Relevant Incremental Cash Flows

RELEVANT CASH FLOWS	YEAR END 0	1	2	3	4	5
INITIAL INVESTMENT IN OLD SHIP	(13.000.000 €)					
SALE OF PURCHASED SHIP						1.000.000 €
NET WORKING CAPITAL INVESTMENT / DISINVESTMENT	(1.000.000 €)	(100.000 €)	(100.000 €)	(100.000 €)	(100.000 €)	1.400.000 €
PROJECT CASH FLOWS		3.705.000 € (1)	3.705.000 € (1)	3.705.000 € (1)	3.705.000 € (1)	3.355.000 € (2)
TOTAL CASH FLOWS	*(14.000.000 €)*	*3.605.000 €*	*3.605.000 €*	*3.605.000 €*	*3.605.000 €*	*5.755.000 €*
PRESENT VALUES	(14.000.000 €)	3.274.327 €	2.973.985 €	2.701.193 €	2.453.423 €	3.557.371 €

Προϋποθέσεις για WACC δηλ. για 10,16

CF_0 = 14.000.000 €

(1) = Sales − Costs − Tax

= 10.800.000 − 6.500.000 − 595.000

= 3.705.000

(2) = Sales − Costs − Tax

= 10.800.000 − 6500.000 − 945.000

= 3.355.000

NPV	960.299 €
PV	14.960.299 €
IRR	12,58%
PAYBACK PERIOD (YEARS)	3,88
PROFITABILITY INDEX	1,07

$$PV_t = \frac{CF_t}{(1+WACC)^t} \quad \text{για } t = 1 \text{ έως } 5$$

$$NPV = PV + CF_0 = 14.960.299 - 14.000.000 €$$

$$= 960.299 €$$

$$PI = \frac{PV}{|CF_0|}$$

$$NPV = PV + CF_0$$

$$= \sum_{t=1}^{5} \frac{CF_t}{(1+WACC)^t} + CF_0$$

Για $NPV = 0$:

$$0 = \sum_{t=1}^{5} \frac{CF_t}{(1+IRR)^t} + CF_0$$

ΑΥΤΟ ΒΡΙΣΚΕΤΑΙ ΜΟΝΟ ΜΕ TRIAL & ERROR

Preferred Stock

Ενδόσεις 14.000.000 € } ⇒

Issuance costs 1,50%

⇒ Έξοδα έκδοσης = 14.000.000 € × 1,50%

= 210.000 €

Άρα από την έκδοση εισπράξαμε

14.000.000 € − 210.000 € = 13.790.000 €

$$K_{ps} = \frac{\text{Preferred dividend per share}}{\text{Issue price per share} \times (1 - \text{float cost})} =$$

$$= \frac{0{,}50€}{5€ \times (1 - 1{,}5\%)} = 10{,}15\%$$

Bond

Αναμένουμε καθαρά 210.000 €

Θέλω ονομαστική αξία (FV) X

$X \cdot (1 - 1{,}5\%) = 210.000\text{€} \Rightarrow$

$\Rightarrow X = \frac{210.000\text{€}}{98{,}5\%} = 213.198\text{€}$

Coupon = FV × coupon rate = 213.198€ × 10%

= 21.319,80€

Συνεπώς

$$\text{Real coupon rate} = \frac{\text{Coupon}}{\text{Net Value of Bond}} =$$

↓

K_B (real pre-tax cost of bond)

$$= \frac{21.319{,}80€}{210.000€} = 10{,}15\%$$

Εναλλακτικά:

$$\text{Real coupon rate} = \text{Coupon rate} \times (1 + \text{float cost}) =$$

$$= 10\% \times (1 + 1{,}5\%) = 10{,}15\%$$

↓

K_B

Weighting for preferred stock ↑ | Weighting for bond ↑ | Pre-tax cost of debt ↑

$$WACC_A = w_{PS} * k_{PS} + w_B * \underbrace{k_B * (1 - \text{tax rate})}_{\text{after-tax cost of debt}}$$

$$= \frac{13.790.000€}{14.000.000€} * 10,15\% + \frac{210.000€}{14.000.000€} * 10,15\% * (1-35\%)$$

$$= 10,10\%$$

Οποιος ΔΟΥΛΕΥΟΥΜΕ και

για τα Alternatives B και C

Alternative B

	YEAR END					
INCOME STATEMENT	**0**	**1**	**2**	**3**	**4**	**5**
SALES		12.000.000 €	12.000.000 €	12.000.000 €	12.000.000 €	12.000.000 €
COSTS		(6.400.000 €)	(6.400.000 €)	(6.400.000 €)	(6.400.000 €)	(6.400.000 €)
PROFIT / LOSS ON SALE OF ASSETS						1.000.000 €
DEPRECIATION		(3.300.000 €)	(3.300.000 €)	(3.300.000 €)	(3.300.000 €)	(3.300.000 €)
EBIT		***2.300.000 €***	***2.300.000 €***	***2.300.000 €***	***2.300.000 €***	***3.300.000 €***
INCOME TAX @ 35%		(805.000 €)	(805.000 €)	(805.000 €)	(805.000 €)	(1.155.000 €)
NET OPERATING INCOME AFTER TAX		**1.495.000 €**	**1.495.000 €**	**1.495.000 €**	**1.495.000 €**	**2.145.000 €**

	YEAR END					
RELEVANT CASH FLOWS	**0**	**1**	**2**	**3**	**4**	**5**
INITIAL INVESTMENT IN OLD SHIP	(13.000.000 €)					
UPGRADE COST	(3.500.000 €)					
SALE OF PURCHASED SHIP						1.000.000 €
NET WORKING CAPITAL INVESTMENT / DISINVESTMENT	(1.000.000 €)	(120.000 €)	(120.000 €)	(120.000 €)	(120.000 €)	1.480.000 €
PROJECT CASH FLOWS		4.795.000 €	4.795.000 €	4.795.000 €	4.795.000 €	4.445.000 €
TOTAL CASH FLOWS	***(17.500.000 €)***	***4.675.000 €***	***4.675.000 €***	***4.675.000 €***	***4.675.000 €***	***6.925.000 €***
PRESENT VALUES	(17.500.000 €)	4.273.361 €	3.906.227 €	3.570.635 €	3.263.874 €	4.419.362 €

NPV	**1.933.460 €**
PV	**19.433.460 €**
IRR	**13,36%**
PAYBACK PERIOD (YEARS)	**3,74**
PROFITABILITY INDEX	**1,11**

Alternative C

	YEAR END					
INCOME STATEMENT	**0**	**1**	**2**	**3**	**4**	**5**
SALES		15.000.000 €	15.000.000 €	15.000.000 €	15.000.000 €	15.000.000 €
COSTS		(8.900.000 €)	(8.900.000 €)	(8.900.000 €)	(8.900.000 €)	(8.900.000 €)
PROFIT / LOSS ON SALE OF ASSETS						8.000.000 €
DEPRECIATION		(4.400.000 €)	(4.400.000 €)	(4.400.000 €)	(4.400.000 €)	(4.400.000 €)
EBIT		***1.700.000 €***	***1.700.000 €***	***1.700.000 €***	***1.700.000 €***	***9.700.000 €***
INCOME TAX @ 35%		(595.000 €)	(595.000 €)	(595.000 €)	(595.000 €)	(3.395.000 €)
NET OPERATING INCOME AFTER TAX		**1.105.000 €**	**1.105.000 €**	**1.105.000 €**	**1.105.000 €**	**6.305.000 €**

	YEAR END					
RELEVANT CASH FLOWS	**0**	**1**	**2**	**3**	**4**	**5**
INITIAL INVESTMENT IN NEW SHIP	(22.000.000 €)					
SALE OF PURCHASED SHIP						8.000.000 €
NET WORKING CAPITAL INVESTMENT / DISINVESTMENT	(2.000.000 €)	(200.000 €)	(200.000 €)	(200.000 €)	(200.000 €)	2.800.000 €
PROJECT CASH FLOWS		5.505.000 €	5.505.000 €	5.505.000 €	5.505.000 €	2.705.000 €
TOTAL CASH FLOWS	***(24.000.000 €)***	***5.305.000 €***	***5.305.000 €***	***5.305.000 €***	***5.305.000 €***	***13.505.000 €***
PRESENT VALUES	(24.000.000 €)	4.883.099 €	4.494.752 €	4.137.289 €	3.808.255 €	8.923.709 €

NPV	2.247.105 €
PV	26.247.105 €
IRR	11,67%
PAYBACK PERIOD (YEARS)	4,21
PROFITABILITY INDEX	1,09

ΑΡΝΟΣ Online Education

Πολύ Alternative προτείνουν:

	A	B	C
NPV	960.299€	1.933.460€	2.247.105€
IRR	12,58%	13,36%	11,67%
P.I.	1,07	1,11	1,09

Στα mutually exclusive projects πηγαίνουμε πάντα με τον κανόνα του NPV. Αυτό γιατί το NPV μας δείχνει τον μεγαλύτερο σε αξία προς τους επενδυτές.

Subject 2 (30%)

A bottle company ALPHA, is considering creating a new bottle of 0.25 lt. To decide whether to invest in this project or not, they performed market research that costed €5,000. The results indicated two possible scenarios that depend on the competitor's reaction to create a similar product and on the percentage of the faithful customers of ALPHA. Scenario A has a 45% chance to be realized, while scenario B has a probability of 55%. For the project's realization the company must purchase special machinery that cost €80,000, while transportation and installation costs amount to €2,000. The useful life of the project is two years, and the machinery can be sold at the end of the useful life for €30,000. Table 1 presents the pertinent economic data. At the end of the second year the working capital is going to be recaptured. The tax rate is 25%, the weighted average cost of capital is 10% and the company fully depreciates fixed assets for tax purposes, using the straight-line depreciation method.

Table 1: Pertinent economic data

	Year 1		Year 2	
	Scenario A	Scenario B	Scenario A	Scenario B
Sales in pieces	150,000	200,000	200,000	250,000
Variable cost per unit of products	0.8	1	1	1.2
Sale price per unit of products	1.5	1.7	1.8	2
Administrative & marketing expenses	20,000	25,000	25,000	30,000
Working Capital	15,000	15,000	17,000	17,000

→ would be also the working capital

Questions:

1. Calculate the expected net cash flows for each one of the two years. (10%)
2. Calculate and comment the standard deviations and the coefficient of variations of the NCFs of each year. What do they mean and what do they imply? (10%)
3. Should ALPHA proceed with the new bottle project based on the NPV evaluation approach? (5%)
4. Would the above decision change if they applied the IRR method? When do the two methods give conflicting results? (5%)

SCENARIO A: PROBABILITY OF OCCURRENCE =	**45,00%**		
INITIAL INVESTMENT IN MACHINERY	82.000 €		
SALVAGE VALUE (for tax purposes)	0 €		
EXPECTED SELLING PRICE @ YEAR 2	30.000 €		
ECONOMIC LIFE	2		
	0	**1**	**2**
INVESTMENT IN WORKING CAPITAL	15.000 €	2.000 €	(17.000 €)
DEPRECIATION EXPENSE (*)	41.000 €		
	0	**1**	**2**
ANNUAL SALES (UNITS)		150.000	200.000
SALE PRICE PER UNIT		1,5 €	1,8 €
VARIABLE COSTS PER UNIT		(0,8 €)	(1,0 €)
FIXED COSTS (admin & marketing expenses)		(20.000 €)	(25.000 €)
TAX RATE	25,00%		

$$(*) = \frac{82.000€ - 0€}{2 \text{ years}}$$

YEAR END			
INCOME STATEMENT	**0**	**1**	**2**
SALES units x price per unit		225.000 €	360.000 €
VARIABLE COSTS units x cost per unit		(120.000 €)	(200.000 €)
FIXED COSTS		(20.000 €)	(25.000 €)
PROFIT / LOSS ON SALE OF ASSETS			30.000 €
DEPRECIATION		(41.000 €)	(41.000 €)
EBIT		***44.000 €***	***124.000 €***
INCOME TAX @ 25%		(11.000 €)	(31.000 €)
NET OPERATING INCOME AFTER TAX		**33.000 €**	**93.000 €**

YEAR END			
RELEVANT CASH FLOWS	**0**	**1**	**2**
INITIAL INVESTMENT IN NEW MACHINERY	(82.000 €)		
SALE OF NEW MACHINERY			30.000 €
NET WORKING CAPITAL INVESTMENT / DISINVESTMENT	(15.000 €)	(2.000 €)	17.000 €
PROJECT CASH FLOWS		74.000 €	104.000 €
TOTAL CASH FLOWS	***(97.000 €)***	***72.000 €***	***151.000 €***

SCENARIO B: PROBABILITY OF OCCURRENCE =	**55,00%**		
INITIAL INVESTMENT IN MACHINERY	82.000 €		
SALVAGE VALUE	0 €		
EXPECTED SELLING PRICE @ YEAR 2	30.000 €		
ECONOMIC LIFE	2		
	0	**1**	**2**
INVESTMENT IN WORKING CAPITAL	15.000 €	2.000 €	(17.000 €)
DEPRECIATION EXPENSE	41.000 €		
	0	**1**	**2**
ANNUAL SALES (UNITS)		200.000	250.000
SALE PRICE PER UNIT		1,7 €	2,0 €
VARIABLE COSTS PER UNIT		(1,0 €)	(1,2 €)
FIXED COSTS		(25.000 €)	(30.000 €)
TAX RATE	25,00%		

YEAR END			
INCOME STATEMENT	**0**	**1**	**2**
SALES		340.000 €	500.000 €
VARIABLE COSTS		(200.000 €)	(300.000 €)
FIXED COSTS		(25.000 €)	(30.000 €)
PROFIT / LOSS ON SALE OF ASSETS			30.000 €
DEPRECIATION		(41.000 €)	(41.000 €)
EBIT		***74.000 €***	***159.000 €***
INCOME TAX @ 25%		(18.500 €)	(39.750 €)
NET OPERATING INCOME AFTER TAX		**55.500 €**	**119.250 €**

YEAR END			
RELEVANT CASH FLOWS	**0**	**1**	**2**
INITIAL INVESTMENT IN NEW MACHINERY	(82.000 €)		
SALE OF NEW MACHINERY			30.000 €
NET WORKING CAPITAL INVESTMENT / DISINVESTMENT	(15.000 €)	(2.000 €)	17.000 €
PROJECT CASH FLOWS		96.500 €	130.250 €
TOTAL CASH FLOWS	***(97.000 €)***	***94.500 €***	***177.250 €***

EXPECTED RESULTS			
TAX RATE	25,00%		
WACC	10,00%		
	YEAR END		
	0	**1**	**2**
Scenario A's Total Cash Flows	(97.000 €)	72.000 €	151.000 €
Probability of Scenario A	45,00%	45,00%	45,00%
Scenario B's Total Cash Flows	(97.000 €)	94.500 €	177.250 €
Probability of Scenario B	55,00%	55,00%	55,00%
EXPECTED TOTAL CASH FLOWS	***(97.000 €)***	***84.375 €***	***165.438 €***
STANDARD DEVIATION	***0 €***	***11.194 €***	***13.059 €***
C.V.	***0,00%***	***13,27%***	***7,89%***
PRESENT VALUES	(97.000 €)	76.705 €	136.725 €
NPV	**116.430 €**		
PV	**213.430 €**		
IRR	**81,14%**		
PAYBACK PERIOD (YEARS)	**1,08**		1,08
PROFITABILITY INDEX	**2,20**		

$$\text{Expected cash flows}_t = \text{Prob}_A \times CF_{A,t} + \text{Prob}_B \times CF_{B,t}$$

Ω.Κ. $\text{Expected cash flows}_2 = 45\% \times 151.000€ + 55\% \times 177.250€$

$= 165.438€$

$$\sigma_{CF_t} = \sqrt{\text{Prob}_A \times [CF_{A,t} - E(CF_t)]^2 + \text{Prob}_B \times [CF_{B,t} - E(CF_t)]^2}$$

Τ.Χ

$$\sigma_{CF_2} = \sqrt{45\% \times [151.000€ - 165.438]^2 + 55\% \times [177.250 - 165.438]^2}$$

$\approx 13.059€$

Coefficient of Variation

$$CV_t = \frac{\sigma_{CF_t}}{E(CF_t)}$$

Το κίνδυνο (κόστος) αναλαμβάνω ανά μονάδα αναμενόμενου οφέλους

Δεν μπορεί, όλο το καλοκαίρι

Ένα project είναι αποδεκτό εάν:

$NPV \geq 0$

$IRR \geq WACC$

$P.I. \geq 1$

	WACC	9,00%
	Cash Flows	
Years	Project Y	Project Z
0	(120.000,00 €)	(120.000,00 €)
1	80.000,00 €	5.000,00 €
2	50.000,00 €	5.000,00 €
3	10.000,00 €	10.000,00 €
4		20.000,00 €
5		25.000,00 €
6		25.000,00 €
7		30.000,00 €
8		30.000,00 €
9		35.000,00 €
10		35.000,00 €

	Project Y	Project Z
Payback period	1,80	7,00
Discounted payback period	2,59	9,72
NPV	3.200,33 €	4.207,23 € ✓
PI	1,03	1,04
IRR	10,98%	9,59%

Subject 3 (30%)

Part A (20%)

Orion Corporation is discussing a new capital expenditure project that requires an investment of €100 million. In line with the target capital structure of Orion, the management of the company has prepared the following funding plan:

- A 5-year zero-coupon bond with face value of €32 million, priced at 80% of its face value.
- A 5-year coupon bond, with 4% annual coupons, face value of €26 million, priced at 95% of its face value.
- Preferred shares with a total €18 million face value. The issue price is at €40 with a preferred coupon of 12%. The flotation expenses are 2% on the issue price.
- The remaining financing needs will be covered from retained earnings. Currently, the stock of the company trades at €50, the last dividend payment was €2.5 per share, and the expected growth rate for dividends is 8 percent. In addition, the beta of the stock is 1.4, the risk-free rate is 4 percent, and the expected market risk premium is 8 percent.

this is equity
So its cost is
the cost of
common equity

Questions:

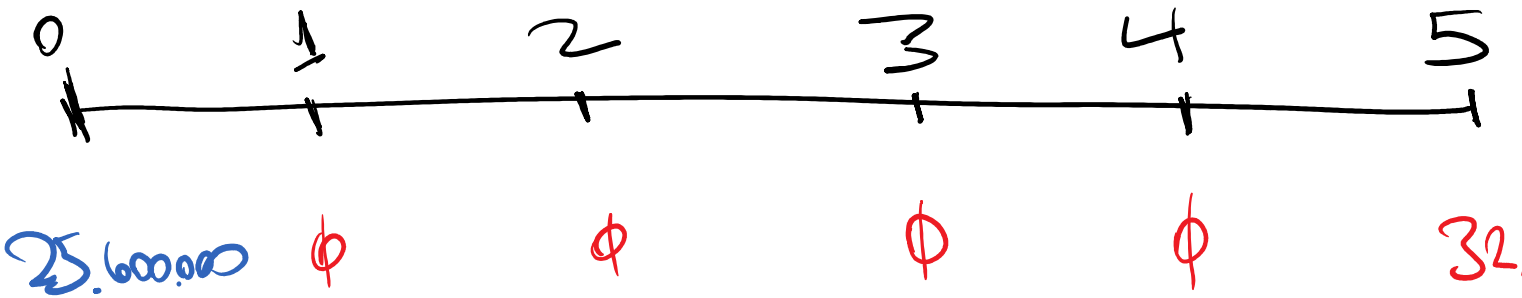
1. Estimate the WACC of Orion under the CAPM and DDM models, considering that the corporate tax rate is 35 percent. (10%)
2. Are the two estimates the same? In case that the two methodologies result to different estimates, how you would explain this? (5%)
3. Assuming that the management of Orion is conservative, which estimate you would propose to them to apply in this investment project? (5%)

Part B (10%)

Explain briefly how WACC is related to the level of leverage (debt/equity ratio) of a firm. What are the key differences between the main capital structure theories?

zero-coupon bond		
	coupon rate	0,00%
	coupons per annum	1
	maturity	5
	face value	32.000.000,00 €
	market value	25.600.000,00 €
	yield to maturity (cost of debt)	**4,56%**
	after tax cost of debt	**2,97%**

$= 4{,}56\% \times (1 - 35\%)$



$(= 32.000.000 \times 80\%)$

Face value

$$k_{\text{zero-coupon}} = \sqrt[5]{\frac{32.000.000}{25.600.000}} - 1 = 4{,}56\%$$

$C = \text{Coupon} = FV \times \frac{\text{Coupon rate}}{\text{Coupons per annum}} = 26.000.000 \times \frac{4\%}{1} = 1.040.000€$

bond	coupon rate	4,00%
	coupons per annum	1
	maturity	5
	face value	26.000.000,00 €
	market value	24.700.000,00 €
	yield to maturity (cost of debt)	**5,16%**
	after tax cost of debt	**3,35%**

$= 26.000.000 \times 95\%$

$= 5,16\% \times (1 - 35\%)$

$$P_0 = \sum_{t=1}^{5} \frac{C}{(1+r)^t} + \frac{FV}{(1+r)^5} = \sum_{t=1}^{5} \frac{1.040.000€}{(1+r)^t} + \frac{26.000.000€}{(1+r)^5}$$

Ινσ trial & error $\Rightarrow$ $r = K_b = 5,16\%$

Dividend = Dividend yield × face value per share = 12% × 40€ = 4,8€

preferred stock	issue price	40,00 €
	face value	18.000.000,00 €
	number of shares	450.000
	dividend yield on par	12,00%
	dividends per annum	1
	flotation costs	360.000,00 €
	flotation costs (%)	2,00%
	preferred dividend	**2.160.000,00 €**
	cost of preferred shares	**12,24%**

$$k_{ps} = \frac{\text{preferred dividend}}{\text{issue price} \times (1 - \text{flotation cost})} = \frac{4,8€}{40€ \times (1-2\%)}$$

$$= 12,24\%$$

common stock	market price	50,00 €
	current dividend	2,50 €
	growth rate (g)	8,00%
	beta	1,4
	risk free rate	4,00%
	market risk premium	8,00%
	market portfolio expected return	12,00%
	cost of common equity (ddm)	**13,40%**
	cost of common equity (capm)	**15,20%**
	cost of common equity (average	**14,30%**

DDM → το επόμενο έτος

$$P_0 = \frac{D_1}{k_{cs} - g} \Rightarrow$$

k_{cs} → απαιτούμενη απόδοση μετοχής

g → growth rate (αναμενόμενη)

$$\Rightarrow k_{cs} = \frac{D_1}{P_0} + g = \frac{D_0 \times (1+g)}{P_0} + g$$

$$= \frac{2,5€ \times (1+8\%)}{50€} + 8\% = 13,40\%$$

CAPM

$$k_{cs} = r_f + \underbrace{[E(r_m) - r_f]}_{\text{market risk premium}} \times \beta$$

- r_f → risk-free rate
- $E(r_m)$ → expected market return

$$= 4\% + 8\% \times 1,4 =$$

$$= 15,20\%$$

		Market values	Weights	Costs
targeted capital structure	zero coupon bond	25.600.000,00 €	25,60%	2,97%
	bond	24.700.000,00 €	24,70%	3,35%
	preferred stock	17.640.000,00 €	17,64%	12,24%
	common stock (DDM)	32.060.000,00 €	32,06%	13,40%
	Totals	*100.000.000,00 €*	*100,00%*	
	WACC (with DDM)			**7,28%**

targeted capital structure	Market values	Weights	Costs
zero coupon bond	25.600.000,00 €	25,60%	2,97%
bond	24.700.000,00 €	24,70%	3,35%
preferred stock	17.640.000,00 €	17,64%	12,24%
common stock (CAPM)	32.060.000,00 €	32,06%	15,20%
Totals	*100.000.000,00 €*	*100,00%*	
WACC (with CAPM)			**7,86%**

ΤΕΛΟΣ ΠΑΡΟΥΣΙΑΣΗΣ

i.christakis@penguincity.gr