vrije Universiteit *amsterdam*

Faculty of Economics and Business Administration

Exam:

Code:

Coordinator:

Date:

Time:

Duration:	2 hours and 45 minutes
Calculator allowed:	Yes
Graphical calculator allowed:	**No**
Type of questions:	Open
Answer in:	English

Remarks:
1. Answer the questions in the designated area below the questions.
2. All answers need to be motivated. Short and to the point.

Credit score:	Maximum credits to be scored is 100 points. Each question has a maximum score of 8 - 10 points. Last question 11 – by exception – earns 20 points.
Grades:	
Inspection:	
Number of pages:	8
Number of questions	11

Good luck!

Question 1 (hint lectures)

What is driving the EDF score in the KMV model?

Question 2 (hint lectures, paper Graham and Harvey)

What is driving the decision to issue convertible debt?

Question 3 (hint chapter 4 ACF)
What is meant by a "pooling equilibrium?

Question 4 (hint lecture, paper leveraged loans 2007)
What is a CLO? What are the benefits for the issuer and investor?

Question 5 (hint lectures)

Why is the quality of non-financial corporate issuer ratings - from S&P and Moody's - relatively poor compared to credit scoring models?

Question 6 (hint paper "the role of private equity firms in merger and acquisition transactions)

What do financial sponsors (private equity funds) typically do?

Question 7 (hint lectures)
Why is bank debt mostly senior, and public debt mostly junior / subordinated?

Question 8 (hint lectures)
Companies put specific assets in SPVs (like the ships in Oceanteam). Mention most important advantages for this? Use the Structured Finance Model discussed in class.

Question 9 (hint chapter 2 ACF)

How does the volatility of equity relate to the volatility in assets in the BSOPM (Black and Scholes Option Pricing Model) framework?

Question 10 (hint lecture)

What is to your opinion the most important cause of the current Euro crisis?

Question 11 (hint chapter 3 ACF)

- Value of the firm V = 100
- Face value of debt X is 110 and still one year to go until maturity
- Firm value volatility is 22.3% per annum
- Risk free rate is 5%

Consider a one-period model. If any information is not available make assumptions.

a) What is the expected value at the end of one period? Calculate it in two different ways.

b) What is the value of equity and debt?

Management decides to reorganize it's assets. Annual volatility of firm's assets decreases to 10.5%. At the end of the period an amount of10 is given as an extra dividend to the equity holder.

c) What is the value transfer between equity holders and debt holders?

d) Is 10 a fair compensation for the equity holder because of the asset reorganization?

ANSWERS

Question 1 (hint lectures)

What is driving the EDF score in the KMV model?

Three variables (according to the official model)
- market value of equity
- volatility in market value of equity
- liabilities (debt)

Question 2 (hint lectures, paper Graham and Harvey)
What is driving the decision to issue convertible debt?

- slide #43

what factors affect your firm's decisions about issuing convertible debt?[a]

	%important or very important	Mean	Size Small	Size Large
a) convertibles are an inexpensive way to issue "delayed" common stock	58.11	2.49	2.54	2.43 -
f) our stock is currently undervalued	50.68	2.34	2.26	2.44 -
g) ability to "call" or force conversion of convertible debt if/when we need to	47.95	2.29	2.28	2.29 -
e) avoiding short-term equity dilution	45.83	2.18	2.03	2.35 -
h) to attract investors unsure about the riskiness of our company	43.84	2.07	2.35	1.73 **
c) convertibles are less expensive than straight debt	41.67	1.85	2.08	1.58 *
d) other firms in our industry successfully use convertibles	12.50	1.10	1.12	1.06 -
b) protecting bondholders against unfavorable actions by managers or stockholders	1.41	0.62	0.61	0.64 -

Source, Graham and Harvey

42

Question 3 (hint chapter 4 ACF)
What is meant by a "pooling equilibrium?

Page 102 (ACF)
- price reflecting average quality of all units. This is a temporary price.

Question 4 (hint lecture, paper leveraged loans 2007)
What is a CLO? What are the benefits for the issuer and investor?

- Collateralized Loan Obligation: securitization of mostly senior (LBO) loans.
- a better match between risk return profiles of assets offered and investor preferences. By offering more tranches with different risk return profiles a better match can be achieved.

Question 5 (hint lectures)

Why is the quality of non-financial corporate issuer ratings - from S&P and Moody's - relatively poor compared to credit scoring models?

- TTC methodology (focus on permanent component and prudent migration policy)

Question 6 (hint paper "the role of private equity firms in merger and acquisition transactions)

What do financial sponsors (private equity funds) typically do?

Page 151

Historically, almost all merger and acquisition activity has involved one operating firm acquiring another operating firm. In recent years, however, financial sponsors have been growing in importance in acquisition activity. Financial sponsors (which are also known as private equity funds) typically do the following:

1. Raise large pools of equity capital from investors.
2. Bid for and acquire operating firms using this equity capital, supplemented by borrowings equal to three or four times the equity capital they invest.
3. Change the operating company's management incentive scheme to give the management team a much larger than usual share of any shareholder wealth they successfully create.
4. Replace the operating company's board of directors with the general partners of the private equity firms who have a huge stake in the success of the business.
5. Manage the acquired firm for optimum cash flow generation.
6. Resell the acquired firm, in three to five years, hopefully for a large capital gain.

Question 7 (hint lectures)

Why is bank debt mostly senior, and public debt mostly junior / subordinated?

- Bank is in a better position to take a monitoring role and look after the collateral and more strict covenants for senior debt.
- On public markets investors are mostly dispersed with little negotiating power ("take it or leave it").

Question 8 (hint lectures)

Companies put specific assets in SPVs (like the ships in Oceanteam). Mention most important advantages for this? Use the Structured Finance Model discussed in class.

- better match between risk return profiles of assets and investors. By using an SPV companies are in a better positions to offer specific assets with specific risk return profiles to specific investors.

Question 9 (hint chapter 2 ACF)

How does the volatility of equity relate to the volatility in assets in the BSOPM (Black and Scholes Option Pricing Model) framework?

$\sigma(E) = [1 - N(d)](V(A)/V(E))\ \sigma(A)$

Question 10 (hint lecture)

What is to your opinion the most important cause of the current Euro crisis?

- imbalances in real economy
- high leveraging by banks
- high debt levels in all sectors (government, households)
- low interest (cheap money available)

Question 11 (hint chapter 3 ACF)

- Value of the firm V = 100
- Face value of debt X is 110 and still one year to go until maturity
- Firm value volatility is 22.3% per annum
- Risk free rate is 5%

Consider a one-period model. If any information is not available make assumptions.

a) What is the expected value at the end of one period? Calculate it in two different ways.

$V(1) = (1 + rf)V(0) = 1.05*100 = 105$

OR

$u = \exp(0.223) = 1.25$ and $d = \exp(-0.223) = 0.8$
$p = (r - d)/(u-d) = 0.56$

$V(1) = p*V(u) + (1-p)*V(d) + 0.56*(125) + 0.44*(80) = 105$

b) What is the value of equity and debt?

$\delta = V(u) - V(d)/(E(u) - E(d)) = (125 - 80)/(15 - 0) = 3$

$E = V(0)/\ \delta - (V(u)/\ \delta - E(u))/(1 + rf) = 100/3 - (125/3 - 15)/1.05 = 7.9$

$D = 100 - 7.9 = 92.1$

Management decides to reorganize it's assets. Annual volatility of firm's assets decreases to 10.5%. At the end of the period an amount of10 is given as an extra dividend to the equity holder.

c) What is the value transfer between equity holders and debt holders?

u = exp(0.105) = 1.11 and d = exp(-0.105) = 0.9

p = (r – d)/(u-d) = 0.71

E(u) = 0 and E(d) = 0, so E(0) = 0

D = 90 – 0 = 90

OR

D(1) = {0.71*101 + 0.29*(80)}/1.05 = 90

So the value transfer is 2.1 from debt holders to equity holders

d) Is 10 a fair compensation for the equity holder because of the asset reorganization?

No, if the no dividend was payed the equity price would have dropped to 0.7, so this is a loss of only 7.9 – 0.7 = 7.2. With 10 the equity holders get compensated more.

u = exp(0.105) = 1.11 and d = exp(-0.105) = 0.9

δ = V(u) – V(d)/(E(u) – E(d)) = (111 – 90)/(1 – 0) = 21

E = V(0)/ δ – (V(u)/ δ – E(u))/(1 + rf) = 100/21 – (111/21 – 1)/1.05 = 0.7