SESSION 1: Pre-requisites: a reminder

Time value of money, annuities

Q1: You wish to buy a new house but would need to borrow part of the required amount. In view of your revenues you have been able to determine that you and your partner would be able to repay 1500€ a month for a mortgage. The monthly rate required by your bank is 0.3% per month for a 30 years horizon. In this case how much would you be able to borrow?

Q2: Your brother has just heard of the rate the bank is ready to give you (0.3% per month). He has seen an ad for a yearly rate of 3.6% and advises you to change. Should you do so? What is the yearly equivalent rate of 0.3% per month? What is then the PV of the borrowing (and the difference with the previous rate)?

Q3: What is the quarterly equivalent of a continuous rate of 3%?

Bond and Equity Valuation

Q4: The Brussels Hotel company has decided to expend its activities in Tongolville a city loved by tourists. In order to so, the company plans to issue a bond to finance the construction of the new Hotel. The company has for the moment two bonds outstanding. One bond is a perpetuity, with a 5% coupon rate, and a 5 000 000$ face value. It is actually traded on the stock exchange at 95% of par, the next coupon is due in exactly a year. The second bond, a level bond, has been issued exactly three years ago and should be reimbursed in five years. It has a face value of 1 000 000$, pays a coupon of 4% and trades at par.

What are the yields to maturity for the perpetuity and for the five year bond? The company wishes to issue a five year bond with a face value of 3 000 000$. It wonders at which rate it could be issued (the rating agencies have told the company that this issue would not change the rating of the company). One year after the issue, the interest rates have moved and the company may now borrow at 3.5%. What is the new bond price?

Q5: Your mother has been invested in Total for a while now and share prices have been fluctuating lately. Your mother has heard you are taking this finance course and she wants to see some return on her investment in your education. She is mainly invested in this stock because it is supposed to be a safe household name with a nice dividend yield. She does not want to hear anything about your DCF theories and she wants a quick answer from you.

To please your mother you decide to use a DDM framework: it is fast, easy and the only cash your mother is getting is the dividend. Here are some data

Period	**Share price**
2007	58
2010 & 2011	46
July 2011	**32**
Jan 12	42

Core figures	2011	2012	2013
EPS	4,64	5,17	5,34
DPS	2,310	2,300	2,360
Ev/Ebitda	3,91	3,3	3,24
Adj P/E	8,35	7,49	7,25
Divi yield	5,96	5,94	6,09

5.1 What was the DDM value in 2007?

Use as input

- The next expected dividend was 2.1 (year 2008)
- ROE was 16%
- Payout 50%
- Expected return was 9% for levered Total shares

5.2 Is this DDM value realistic?

You seem to be off to a bad start. Your mother reminds you of the historical dividend growth rate of 4%, and she trusts this more than any implied projections. She also thinks the expected returns were more likely to be worth 8%.

5.3 What is your DDM value now for 2007? How does this compare to the actual price of 2007?

5.4 For the recent period (2011-2013), can the dividend be paid out of earnings?

CAPM and Beta

Q6: As part of your new job, you are supposed to analyze the stock exchange and provide insights about investment decisions. One of your clients has decided to invest in a few securities and he is currently hesitating between the following ones:

	Vinamelk	Vinawine	Vinacoff	VinaT
Expected return (r_e)	8%	12%	13%	14%
σ_e	20%	27%	26%	35%

a) If he decides to invest is only one security, the investor feels that one of these companies should never be chosen. Which one would that be? And why?

b) The investor has heard that the best approach would be to diversify his portfolio. He has decided he would do so by investing part of his assets in a risk free state bond which yields 6% per year. In this case, what stock should he consider? Explain why.

c) The investor has decided to follow your advice and invest 50% in the risk free asset and 50% in the other stock. In this case, what is the expected return of his portfolio? What would the proportion invested in each asset be if he wants to have a 14% expected return?

d) In view of your advices so far, the investor has begun to trust your competence. He is now ready to consider investing in a diversified portfolio, the market portfolio. Intuitively, why would he want to do so? The market portfolio has the following features: expected return: 15%, σ_m = 30%. Show that it is possible to obtain the same expected returns as above but for a lower risk.

e) The investor has also heard of something called Beta. What does it represent? What is the Beta of the market portfolio? What are the Betas of the different companies? What is the beta of the portfolio previously made?