Management V/Financial Management	Prof. Dr. rer. pol. Roland Kirstein
Summer Term 2013	Economics of Business and Law Faculty of Economics and Management Vilfredo-Pareto-Bldg. 22, D-003 Otto-von-Guericke-University Universitätsplatz 2 39106 Magdeburg, Germany
Final Exam – Retake – (11065)	

Solve **both problems** below. Each problem is worth up to 30 points.
The bold figures (in parentheses) indicate the maximum points per question.

You are allowed to use a non-programmable pocket calculator. The usage of textbooks, lecture notes, dictionaries, or programmable pocket calculators is **not** permitted. Notes on this exercise sheet will be disregarded during the grading. Give answers exclusively in your working sheets; leave a margin of 3cm.
Undecipherable scribbling will not be graded. Use the terminology and the mathematical tools presented in the lecture and the tutorial; **make clear how you calculate your results**!

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1) In an economy with no taxes, no transaction costs and no cost of financial distress there are three equally likely states of nature. In each year till infinity the company A will make the following operating income in each state of the economy:

	State of the Economy		
	Recession	**Normal**	**Boom**
Operating Income	10,000	60,000	80,000

The company has no debt and all its operating income is paid as dividends to the shareholders. There are currently 40,000 shares. The perpetual expected return on assets is 10%.

a) Calculate the expected present value of the firm. **(2)**
b) If the market value of the shares is 500,000.00€ what is the price of a share? **(2)**
c) Calculate the expected earnings and rate of return per share worth 12.50€. **(4)**
d) Calculate the variance and the standard deviation of the rate of returns per share. **(4)**
e) The CEO proposes a restructuring by issuing €150,000 of debt at an interest rate of 8 percent and using the proceeds to repurchase shares. Would the planned re-structuring of the firm's capital have an impact on its value? Explain your answer. **(2)**
f) How many shares are left after the restructuring? **(2)**
g) Assume that after restructuring, 28,000 shares are left. Considering the new debt liabilities, calculate the expected earnings per share and rate of return on shares! **(4)**
h) Calculate the variance and standard deviation of the returns per share of the levered firm. **(4)**
i) Compare and interpret the expected returns and risk of the firm with and without debt. **(2)**
j) Using the second Modigliani Miller theorem explain the leverage effect. What is the necessary condition for the leverage effect? **(4)**

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2) Consider a bond with a face value of $100, and annual interest rate payment of $20 (in July). The bond matures in 4 years (in July). The bond is rated AAA. The market offers you an interest rate for riskless corporate asset investments of 8%.
a) Calculate the fair price of the bond today? **(4)**
b) How would a decrease in the interest rate change the bond's price of today? Why? **(3)**
c) Using the insights of CAPM explain how a downgrade of the bond from AAA to AA is likely to affect the bond price? **(2)**
d) Alternatively to issuing bonds, the company can get a loan of 100 € at 8% p.a. interest rate from a bank to be repaid in 4 years as an annuity (payments made in the end of each year). Calculate the annually annuity payment. **(4)**
e) Assume that the annual payment amounts to 30 €. How much of the first year's payment can be considered as interest payments and how much of the payment is used for actual redemption? **(2)**
f) If you expect the interest rates to increase in future, do you prefer a loan with high redemption in the beginning or in the end? Why? Give an example! **(2)**

The following table shows the prices of a sample of strips of government bonds (riskless) in January 2013. Each strip makes a single payment of €100 at maturity.

Maturity	**Price (€)**
December 2015	92.37
December 2018	79.39
December 2019	75.24
December 2020	71.29
December 2043	10.06

g) Calculate the annually compounded spot interest rate for each year. **(5)**
h) Is the term structure upward- or downward-sloping? **(2)**
i) Explain why an investor could have a preference for liquidity and how this would explain an upward sloping term structure. **(4)**
j) Calculate the annually compounded, one-year forward rate of interest for December 2019. **(2)**