

Private Banking WT 2009/10

Exam sample questions

Note: The sample questions below are taken from past exams. They are not necessarily representative for future exams, i.e. questions can be easier or more difficult and may cover different topics.

1. Indices

20 points

- (a) How is the DAX calculated? Please explain briefly all 11 variables in the following formula. (11 points)

index calculation:

$$Index_t = K_T \cdot \frac{\sum_{i=1}^n (p_{it} \cdot f_{it_1} \cdot q_{it_1} \cdot c_{it})}{\sum_{i=1}^n (p_{i0} \cdot q_{i0})} \cdot 1000$$

- (b) Please name and explain the two key criteria that are used for company selection by the Deutsche Börse Working Committee that supervises the DAX index. (5 points)
- (c) Recently, VW ordinary shares were close to be forced out of the DAX index. Explain, if it had been possible that VW ordinary shares would have been replaced by its preferred shares. (4 points)

2. CAPM

15 points

The risk-free rate of return in Utopia is 2%. The returns of the major utopian stock market M100 and the financial product B_{M100} that uses M100 as benchmark are risky and depend on four different future states of the world (1-4) that are all equally likely to occur:

	1	2	3	4
M100	12%	18%	13%	17%
B_{M100}	16%	24%	22%	18%

- (a) Please calculate the expected return for B_{M100} . (4 points)
- (b) Please calculate the variance for B_{M100} . (5 points)
- (c) Please calculate the covariance for B_{M100} and its underlying market. (6 points)

3. Portfolio Theory

15 points

On the capital market of Nomansland the stocks of the companies CUT Corp. and PAV Corp. are traded. The annual standard deviation of CUT Corp.'s stock returns is 0.03. The annual standard deviation of PAV Corp.'s stock returns is 0.11. The risk-free rate of return in Nomansland is 6% per year. The returns for both stocks are perfectly negatively correlated. Nomansland's regulators do not impose any short selling restrictions on investors.

- (a) Please name and discuss the two main assumptions of the Portfolio Theory. (5 points)
- (b) Determine the shares of the two stocks in the Minimum Variance Portfolio. (6 points)
- (c) Discuss the following statement using your knowledge from portfolio theory: *"The portfolio's risk always decreases with an increasing number of portfolio assets."* (4 points)

4. Financial Engineering

18 points

- (a) Please name and explain what determinants increase c.p. the value of a call option. (6 points)
- (b) Draw the profit diagram of a discount certificate with a 10% discount on the underlying asset and explain which factors mainly determine the risk buffer of a discount certificate. (4 points)
- (c) What are capital protected certificates? Is the invested capital at all times during the holding period protected against losses, or not – please explain your answer! (3 points)
- (d) Explain the risks and chances of ETFs that use swaps compared to full replication ETFs. (5 points)

5. Behavioral Finance

22 points

- (a) Describe and explain the 3-door game. (5 points)
- (b) Describe and explain beauty contest game. (5 points)
- (c) What is mental accounting? Explain the relation between mental accounting and loss aversion. (6 points)
- (d) Explain how particular plan features can help to overcome low employees' enrollment rates for retirement savings plans and what new problems might occur when they are implemented. (6 points)