Strathmore
UNIVERSITY

STRATHMORE INSTITUTE OF MATHEMATICAL SCIENCES
BBS FINANCIAL ECONOMICS
SPECIAL EXAMINATION
BSE 4122 BEHAVIORAL FINANCE

DATE: 25th March 2025 Time: 2 Hours

Instructions

1. This examination consists of **FIVE** questions.
2. Answer **Question ONE (COMPULSORY)** and any other **TWO** questions.

Question 1

a) Discuss Prospect theory given by Kahneman and Tversky. What are its implications regarding the financial behaviour of investors? **(10 marks)**

b) An investor (Vincent) is given an opportunity to invest in one of two Prospects. The first Prospect A offers a 75% chance of earning Ksh2,000 and 25% chance of earning Ksh9,000. The second Prospect B offers a 60% chance of earning Ksh6,000 and a 40% chance of earning Ksh8,000.Vincent's utility function is that of the natural log function where U(w) = ln(w). Describe Vincent's risk attitude and show how Vincent would evaluate the two Prospects (A and B) above and choose between them. **(5 marks)**

c) Now assume that Vincent has the following value function and probability decision weighting function under Prospect Theory.

$$\alpha = 0.75, \quad \lambda = 2, \quad \gamma = 0.65$$

$$v(z) = \begin{cases} z^{\alpha}, if\ z \geq 0\ (for\ gains) \\ -\lambda(-z)^{\alpha} if\ z < 0\ (for\ losses) \end{cases}$$

$$\pi(p) = \frac{p^{\gamma}}{(p^{\gamma} + (1-p)^{\gamma})^{\frac{1}{\gamma}}}$$

Which of the two Prospects would he prefer? Assume a reference point of zero.

(9 marks)

d) Critics of behavioural finance argue that any effect an irrational investor might have on stock price behaviour will be eliminated by the activities of rational arbitrageurs. Is this actually the case? **(6 marks)**

(TOTAL: 30 MARKS)

Question 2

a) You obtain data on the portfolio holdings and trades of two retail investors, Vincent and Susan. The investors can only trade at times t_1 and t_2. The prices of all stocks at these two points in time are shown below.

Investor	Initial Portfolio holdings	Average Purchase Price	t_1 Buy/Sell	Price @ t_1	t_2 Buy/Sell	Price @ t_2
Vincent	A	16	Sell	20	-	17
Vincent	B	25	-	30	-	35
Vincent	C	30	-	30	Sell	32
Vincent	D	-	Buy	15	Sell	10
Vincent	E	-	Buy	30	Sell	35
Susan	B	40	-	30	Sell	35
Susan	C	35	Sell	30	-	32
Susan	D	20	-	15	-	10
Susan	E	-	Buy	30	Sell	35
Susan	A	-	Buy	20	-	17

Calculate the disposition effect for Vincent and Susan as at the end of t_2. Use the same method as Odean (1998) in his main analysis and the average purchase price as the reference point. Which investor is more inclined to the disposition effect? **(16 marks)**

b) Shefrin and Statman (1999) uses Prospect Theory [along with other behavioral phenomena] to explain the disposition effect, the higher propensity of investors to realize winner stocks than loser stocks. Provide two of these behavioral explanations for disposition effect **(4 marks)**

(TOTAL: 20 MARKS)

Question 3

a) Explain the three supports on which market efficiency rests. Why is it that only one of them is required? **(6 marks)**

b) Behavioural finance recognises that investors are subject to biases and heuristics when making investment decisions. Define and discuss the concepts used in the models proposed by Daniel, Hirshleifer & Subrahmanyam (DHS, 1998) and Barberis, Shleifer & Vishny (BSV, 1998). **(14 marks)**

(TOTAL: 20 MARKS)

Question 4

a) Vincent and Sheila have been offered today [t=0] to make an additional investment of $2,000 in their savings plan at t=1 that will lead to an extra payoff of $2,500 at t=3. Vincent is a quasi-hyperbolic discounter, whereas Sheila discounts exponentially. Both their intertemporal preferences can be represented by the Beta-Delta model with a delta of 0.9. In addition, Vincent's preferences represent a beta of 0.6, while Sheila's preferences represent a beta of 1.0. What will Sheila and Vincent decide today? [Show calculations] **(6 marks)**

The Beta-Delta model is defined as: $D(t) = \begin{cases} 1 & if\ t=0 \\ \beta\delta^t & if\ t>0 \end{cases}$

b) What would Sheila and Vincent decide today if the investment has to be made today? [that is: invest €2,000 at t=0, with a payoff of +2,500 at t=2]. Show calculations. **(6 marks)**

c) Ben, a fourth-year finance student, has recently studied the concept of home bias and wants to understand how it affects his investment portfolio. Ben is considering two investment options:

1. Domestic Fund: Expected return of 8% per year with a standard deviation of 15%.
2. International Fund: Expected return of 10% per year with a standard deviation of 20%.

Ben has the following correlations between the returns of these funds and his current domestic-focused portfolio:

- Correlation between the Domestic Fund and his portfolio: 0.8
- Correlation between the International Fund and his portfolio: 0.4

Assume Ben's current portfolio has an expected return of 7% per year and a standard deviation of 10%.

i) Calculate the expected return and standard deviation of a new portfolio if Ben decides to invest 50% in the Domestic Fund and 50% in the International Fund. **(3 marks)**

ii) Discuss the impact of home bias on Ben's portfolio, considering the calculated expected return and risk. **(5 marks)**

(TOTAL: 20 MARKS)

Question 5

a) According to corporate finance theory an ongoing capital investment project should be terminated as soon as the net present value of the project's continuation becomes negative. However, in practice managers can be reluctant to terminate a losing project. Behavioral Corporate Finance provides an explanation for this reluctance. Describe this behavioral explanation.. **(10 marks)**

b) In behavioural corporate finance researchers are investigating the potential impact of irrationality in financial markets on corporate decisions. Discuss how managers might exploit irrational markets when making investment and financing decisions. Assume that the rational manager acts within non-rational markets. **(10 marks)**

(TOTAL: 20 MARKS)