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CIFA PART III SECTION 6

ADVANCED PORTFOLIO MANAGEMENT

THURSDAY: 23 May 2019. **Time Allowed: 3 hours.**

Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.

QUESTION ONE

(a) Explain the term "sector rotation" as used in portfolio asset allocation. (2 marks)

(b) Explain the following terms as used in portfolio performance evaluation:

(i) Performance attribution. (1 mark)

(ii) Allocation effect. (1 mark)

(iii) Selection effect. (1 mark)

(iv) Interaction effect. (1 mark)

(c) Discuss three reasons why an indexed bond portfolio is more expensive than an indexed equity portfolio. (6 marks)

(d) A portfolio manager of Zuhura Investments Group, manages a Sh.280 million investment portfolio. Zuhura's investment committee has recently become risk averse in anticipation of a major announcement regarding monetary policy to be issued by the Central Bank. To reflect this view, the portfolio manager, wishes to temporarily make the following changes in the portfolio:

1. Decrease the equity portfolio allocation and decrease its equity beta.
2. Increase the bond portfolio allocation and decrease its modified duration.

The portfolio manager plans to use the following futures contract to achieve the over mentioned portfolio targets.

Equity futures
Currently priced at Sh.129,000 per contract (after accounting for the multiplier) with an equity beta of 0.97.

Bond futures
Currently priced at Sh.103,000 per contract, with a modified duration of 7.70 and a yield beta of 1.00.

The portfolio's current and target characteristics are as shown below:

Investment portfolio characteristics

Current portfolio

Asset class	Modified duration	Equity beta	Allocation Sh."million"
Equities	-	1.08	182
Bonds	7.2	-	98

Target portfolio

Asset class	Modified duration	Equity beta	Allocation Sh."million"
Equities	-	0.90	154
Bonds	6.0	-	126

Required:
Determine the action (buy or sell) and the number of futures contract required to achieve the following:

(i) Equity targets. (4 marks)

(ii) Bond targets. (4 marks)
(Total: 20 marks)

QUESTION TWO

(a) James Kivuva, a recent graduate of the Certified Investment and Financial Analyst examinations, has been employed at his county's social provident fund as an assistant portfolio manager responsible for monitoring the fund portfolio.

Required:

In light of the above statement, discuss three areas that James Kivuva should cover in his portfolio monitoring assignment. (6 marks)

(b) Evaluate three risks that are associated with active investment management of equity portfolio. (6 marks)

(c) A United States (U.S) portfolio manager holds a portfolio of Spain equities currently worth 10 million Euros (€). He is concerned that austerity measures being put in place by the newly elected government will lead to a potential depreciation of the Euro. The portfolio manager decides to hedge by selling September futures contract on the Euro that currently trade at \$1/€ and expire in two months.

The spot exchange rate is \$1/€. A month later, the value of the Spain portfolio is worth €10,050,000 and the spot exchange rate is \$1.05€ while the futures exchange rate is \$0.95/€.

Required:

The return on the hedged portfolio in dollar terms. (4 marks)

(d) An investor has approached you for advice on where to invest his savings. He is considering to invest in a collective investment scheme (CIS). The following information relates to three mutual funds and their required rates of returns for the last three years:

Period	**Annual returns (%)**		
	Mutual fund		
Year	**A**	**B**	**C**
1	2	5	–8.3
2	9.5	8.2	7.5
3	–4.7	–6.4	7.6

Required:

(i) The annualised rate of return of the three mutual funds for the period under review. (3 marks)

(ii) Advise the investor based on your results in (d) (i) above. (1 mark)

(Total: 20 marks)

QUESTION THREE

(a) Kopa Fund generated a return of 11.2% over the past 12 months, while the benchmark portfolio return was 11.8% for the same period. The following information is provided:

	Factor sensitivity (betas)		**Factor**
Factor	**Portfolio**	**Benchmark**	**Risk premium (λ)**
Price-earnings (P/E)	1.10	1.00	–5.00%
Size	0.69	1.02	2.00%

Required:

(i) Attribute the cause of difference in returns using a fundamental factor model with the two factors provided above. (4 marks)

(ii) Describe the manager's apparent skill in factor betas. (2 marks)

(b) Discuss three phases of an individual's investment life cycle. (3 marks)

(c) A portfolio is composed of domestic equity portfolio and international equity portfolio. The expected return for domestic equity portfolio is 11.8% and has a standard deviation of 20.3% while the expected return for international equity portfolio is 9.2% and has a standard deviation of 18.4%. The correlation between domestic equity portfolio and international equity portfolio is 0.66.

Required:

(i) Determine the allocation for the global minimum-variance portfolio. (3 marks)

(ii) The standard deviation of the combined portfolio. (3 marks)

(iii) The expected return of the combined portfolio. (1 mark)

(d) A portfolio statistics for the company's liabilities and three proposed portfolios; A, B and C are shown in the following table:

Statistics	Company liabilities	Proposed portfolios		
		A	B	C
Market value (Sh.)	457,780,900	460,000,000	460,000,000	460,000,000
Modified duration	7.52	7.51	7.53	7.37
Convexity	45.12	35.14	46.29	65.97
Basis point value (BPV)	344,250	343,100	345,400	339,120

Additional information:

1. All calculations are annualised and based on aggregate portfolio cash flows.
2. Each portfolio is considered sufficient to pay the liabilities.
3. The company also expects high volatility and potential for very large parallel shift in the yield curve.

Required:

(i) Determine with reasons the most appropriate portfolio to immunise the liabilities. (2 marks)

(ii) Assuming that the company's expectations are correct, select with reasons the other portfolio most likely to be considered. (2 marks)

(Total: 20 marks)

QUESTION FOUR

(a) Evan Walibora, aged 35 years , just retired from a successful career as a professional football player. He is meeting with his financial advisor to update his investment policy statement (IPS).

The following information is provided:

1. **Income**
   Evan receives pension from the professional football association during retirement. This annual payment will total Sh.375,000 pre-tax in the coming year. In future years, this amount will be indexed for inflation, which is expected to be 1.25% per annum. The pension is taxed at the rate of 30%.
2. **Expenses**
   Evan living expenses over the previous twelve months were Sh.400,000. He anticipates these expenses will grow at the expected rate of inflation this year and in each future year.
3. **Assets**
   In addition to his pension payments, Evan has an advisor managed investment portfolio currently valued at Sh.5,200,000. Next week, he intends to make a direct equity real estate investment of Sh.450,000 in a sports training facility. The real estate holding will be excluded from his advisor managed investment portfolio. Further, in the coming days, he will receive a performance cash bonus of Sh.1,100,000 and it will be immediately invested in his portfolio. This bonus is subject to a tax at a rate of 30%.
4. **Goals**
   Evan expects his portfolio to fund any expenses not covered by his pension, while maintaining its real value over time. He is eager to consider investments in more risky asset classes. He is not concerned about volatility in the value of his portfolio as long as it continues to support his living expenses. He does not intend to seek further employment in retirement.

   The advisor concludes Evan's risk tolerance is above average. It is assumed that pension payments and ongoing expenses are end of year cash flows.

Required:

(i) Determine Evan's nominal after tax required rate of return for the coming year. (6 marks)

(ii) Identify two factors that indicate Evan has a high ability to take risk. (2 marks)

(iii) Formulate the time horizon and unique circumstances constraints section of Evan's investment policy statement (IPS). (4 marks)

(b) Hassan Ali, a junior financial analyst has been tasked by the portfolio manager to develop an investment strategy for private equity investment.

In light of the above statement, advise Hassan on three issues that must be addressed when formulating a strategy for private equity investment. (3 marks)

(c) An endowment fund has an annual return objective of 9% which is sufficient to cover its spending rate, expected inflation and cost of earning investment returns. Its risk objective is to minimise risk as measured by standard deviation of returns while meeting its minimum expected return objective. The table below provides the output from a mean-variance optimisation with a budget constraint and a non-negative constraint:

	Expected return (%)	Standard deviation of returns (%)
Allocation AA	15	24
Allocation BB	18	27
Allocation CC	12	20
Allocation DD	10	14

The risk-free rate is 3%. The fund believes a true risk-free asset exists and could be used to construct a strategic asset allocation (SAA).

Required:
The risk of the optimal allocation. (5 marks)
(Total: 20 marks)

QUESTION FIVE

(a) In the context of portfolio execution decision, analyse four types of traders based on motivation to trade. (4 marks)

(b) An investor executed the following series of trade on 10 May 2019:

Number of shares	Market price per share (Sh.)
500	10.00
300	10.05
200	10.10

Required:
(i) The average price of the three trades. (1 mark)

(ii) The volume weighted average price (VWAP) of the trade. (2 marks)

(c) Explain three types of costs associated with portfolio rebalancing decision. (3 marks)

(d) The following information was obtained from the records of George Hesabu, a professional investment manager at Inubuka Investment Fund Manager (IIFM):

- Strategic portfolio allocations

Asset class	Target allocation (%)	Average returns (%)	Portfolio rebalancing costs as a % change in mix Sh."000"
Kenyan Equities	30	15	500
Non Kenyan Equities	20	18	600
Kenyan Government Bonds	20	11	200
Non Kenyan Government Bonds	20	12.5	250
Commodities	10	10	100

- George Hesabu is considering rebalancing the asset mix of his portfolio and the following two cases have been proposed which are all within the rebalancing threshold as per the investment policy document:

Asset class	Rebalanced target (%) Case A	Allocations (%) Case B
Kenyan Equities	20	35
Non Kenyan Equities	25	30
Kenyan Government bonds	15	10
Non Kenyan Government bonds	25	15
Commodities	15	10

Required:
(i) Expected average return on the portfolio of the current asset allocation. (2 marks)

(ii) Expected average return on the portfolio after rebalancing for both Case A and Case B. (4 marks)

(iii) Assuming that the investor's objective is to minimise costs and maximise returns. Advise George Hesabu on the rebalancing option that he should consider. (4 marks)
(Total: 20 marks)

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