NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY
FACULTY OF COMMERCE
DEPARTMENT OF FINANCE
BACHELOR OF COMMERCE HONOURS DEGREE IN FINANCE
PART IV – 2ND SEMESTER FINAL EXAMINATION – AUGUST 2009
RISK MANAGEMENT (CFI 4204]
TIME: 3 HOURS

Instructions to Candidates

1 **Answer ANY four questions**
2 **All questions carry equal marks (25)**
3. **Write legibly**

QUESTION 1 (25 marks)

Mr.M.Ncube has a \$100 000 portfolio which he wishes to protect from falling below this value, but he does not want to forego the chance of benefiting if the portfolio rises above this level. Suppose it is known that the portfolio value can rise to \$112 000 or fall to \$91 000 after six months. Furthermore, if it rises to \$112 000, then after another six months the portfolio value will be either \$125 000 or \$100 000. If the portfolio value had fallen to \$91 000, then after a year it could have risen to \$100 000 or fallen to \$78 000.
Assume the following:-

- transaction costs are zero,
- there are no futures markets,
- security price movements are continuous,
- the semi-annual risk free interest rate is 5%.

Required

(a) Illustrate how you would use dynamic asset allocation to insure this portfolio to meet Mr. Ncube's wishes.(Show **all** steps). **(20 marks)**

(b) Briefly explain which other strategy can replicate the outcome of the strategy in (a) above. **(5 marks)**

QUESTION 2 (25 marks)

(a) Bambazonke Bank has floating-rate deposits and fixed-rate loans on its balance sheet. Examine how the bank can manage the risk(s) that this specific scenario poses to its operations. **(10 marks)**

(b) Critically evaluate risk management lessons that can be drawn from the Metallgesellschaft debacle. **(10 marks)**

(c) 'The fact that we have a vibrant internal audit unit means that we do not need a separate risk management unit', said Ms L. Moyo, CFO at Risk-it Bank. Comment on Ms Moyo's statement. **(5 marks)**

<u>QUESTION 3</u> **(25 marks)**

(a) From the perspective of a Zimbabwean commercial bank, discuss why risk capital is important to financial institutions. **(16 marks)**

(b) Critically examine the use of duration gap analysis to measure balance sheet sensitivity to interest rate changes. **(9 marks)**

<u>QUESTION 4</u> **(25 marks)**

(a) A $1million corporate loan portfolio offers a headline return of 10 %. The bank has an operating direct cost of $8 000 per annum, and an effective tax rate of 30%. Assume that the portfolio is funded by $1 million of retail deposits with an interest charge of 6%. Economic capital of 7.5% of the loan amount has to be set against the loan portfolio. The risk free interest rate is 7% and the expected loss on this portfolio is 1% per annum. An amount equal to $1 000 is charged on the portfolio, being its share of head office costs (transfer costs).

Calculate the after- tax RAROC for this loan. **(8 marks)**

(b) Discuss how a firm that is intending to close down a business line can use RAROC and the hurdle rate to make its decision. **(8 marks)**

(c) As the new Risk Manager of Big Bank, Mr. Chikono's task was to check on the bank's performance measurement system, where he observed that there was no risk adjustment for the portfolio managers' performance. He decided to introduce risk adjustment for performance with effect from 01 August 2009. Justify Mr. Chikono's actions. **(9 marks)**

<u>QUESTION 5</u> **(25 marks)**

(a) Present the condition required in determining an optimal hedge ratio when hedging with short-term interest rate futures contracts. **(5 marks)**

(b) A cash security has a market value of $1million and the face value of short term interest rate futures contracts is $100 000. If the futures price is assumed to have moved exactly in line with the price of the underlying cash market security, calculate the value of the hedge portfolio. **(5 marks)**

(c) A fund manager wishes to use perturbation analysis to hedge a Treasury 13.5% 2004-08 bond, which has a price factor of 1.3914412 and was trading at £126.25 on 1 April. Suppose that when interest rates rise by half a percentage point the price of the CTD bond falls by £2 and the price of the bond to be hedged falls by £2.50. Calculate the perturbation hedge ratio and comment on what it means in relation to the bond's volatility. **(5 marks)**

(d) Discuss the criteria used by hedgers in deciding whether to use options or futures contracts in hedging their portfolios. **(10 marks)**

QUESTION 6 **(25 marks)**

(a) A UK fund manager has a portfolio in the USA that is valued at $1million on 1 April. The current exchange rate is $1.59/£ and the three month forward rate is $1.65/£. Suppose that he decides to hedge half the portfolio against a rise in sterling over the next three months using currency options contracts.

(i) What action should he take? **(4 marks)**

(ii) Calculate the number of contracts required to hedge the position. (NB Face value of option contract is £12 500 **(5 marks)**

(iii) If the option premium is 3.5 cents per pound, calculate the total cost of the contracts. **(6 marks)**

(b) Discuss funding liquidity risk in the context of the financial sector crisis that engulfed Zimbabwe between the three years from 2003 (December) to 2006. **(10 marks)**

END OF PAPER. GOOD LUCK