UNIVERSITY OF COLOMBO, SRI LANKA

FACULTY OF MANAGEMENT AND FINANCE

Bachelor of Business Administration (Level II-Semester VII) Examination - July 2018

FIN 2204 – Derivatives & Alternative Investments

Two (02) Hours

Answer all Questions

Instructions

1. Use of calculator is permitted.

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1. A UK company, Coopers PLC, imports electronic components from the United States. Assume it is June and Coopers has just received a consignment from the United States valued at $5,200,000 payable in August. The spot rate today is $1.9050 = £1 and a September $/£ futures contract is quoted at $1.9000 (contract size = £62,500). Assume Cooper PLC selects the lowest possible number of futures contracts.

   i. To hedge against the risk of sterling weakening against the dollar, compute the appropriate number of $/£ futures contracts Coopers PLC would need to buy or sell? **(03 marks)**

   ii. Suppose in August, the futures contract price has changed to $1.9200 and the spot rate has also moved to $1.9200 = £1. Calculate the net amount due to US supplier in sterling pounds if Coopers will now close out its position in the futures contracts. **(05 marks)**

iii. Further Coopers PLC wants to find the due amount on the payment date in sterling under the segregation of hedged and unhedged exposure. Develop an alternative method to fulfill the above requirement. **(05 marks)**

iv. Find the effective exchange rate between $/£1. **(02 marks)**

v. Briefly explain three specific types of uses of derivatives to Cooper PLC while including the overall objective under each of the usages. **(06 marks)**

vi. Compare and contrast the main features of currency futures and forward contracts. **(04 marks)**

(Total 25 marks)

2. Expo PLC is an importer/exporter of textiles and textile machinery. It is based in the United Kingdom but trades extensively with countries throughout Europe. It has a small subsidiary based in Switzerland. The company is about to invoice a customer in Switzerland with Swiss franc (SFr) 750,000, payable in 3 months' time. Expo PLC's treasurer is considering two methods of hedging the exchange risk.

Method 1 - Borrow SFr 750,000 for 3 months, convert the loan into a sterling savings and repay the loan out of eventual receipts.

Method 2 - Enter into a 3-month forward exchange contract with the company's bank to sell SFr 750,000.

The spot rate of exchange is SFr 2.3834 = £1.

The 3-month forward rate of exchange is SFr 2.3688 = £1.

Annual interest rates for 3 months' borrowing and lending are – Switzerland: 3 %, UK: 6 %.

i. Advise the treasurer on which of the two methods is the most financially advantageous for Expo PLC. **(10 marks)**

ii. Briefly explain the factors that should be considered before deciding whether to hedge the risk using the foreign currency markets or through a borrow/deposit approach with examples. **(06 marks)**

iii. Calculate the maximum loss involved with regard to the above payment if the international trade director of Expo PLC estimates the SFr / £ volatility to be 0.2% for the future three months with 95% level of significance. **(04 marks)**

iv. Discuss two types of credit risk mitigating techniques the Expo PLC can use in this situation. You may use hypothetical information to develop your answer.

(05 marks)

(Total 25 marks)

3. Imagine USB PLC, a UK company, is due to receive $1mn from an American software house, in three months' time. It is now 1st of May 2018. Relevant data from the foreign currency market is given below.

American options market

Options Contract size = £250,000

Option premiums are quoted in $ cents per £1 and Spot rate on 31st of July is $/1£ 1.9200 and on 30th September is $/1£ 1. 8500.

	Call option		Put option	
Exercise Price	**June**	**September**	**June**	**September**
1.9000	2.88	3.55	0.15	0.28
1.9200	1.59	2.32	1.00	1.85
1.9400	0.96	1.15	2.05	2.95

i. Calculate the net pound receipt using options hedging technique based on the above information, if USB PLC exercises the contract at a price of 1.9000 $/1£.

(10 marks)

ii. State four assumptions under Black-Scholes model of options pricing.

(04 marks)

iii. The CFO of USB PLC wants to know whether obtaining options contracts is advantageous for them, if the currency market is assumed to be much volatile during next year. Provide your answer with reference to the relationship between value of options contracts and the market volatility.

(06 marks)

iv. USB PLC is due to receive a further receipt of Euro (€) 0.5 million from a French customer in next 3 months' time. Calculate the amount of receipt if the available forwards rates are £ 1 / $ 1.5234, € 1 = $ 1.1243. **(05 marks)**

(Total 25 marks)

4. Write short notes on the following with the help of appropriate examples.

i. Real Options

ii. Futures contracts' margin requirement

iii. Default Correlation

iv. Options contracts as financial Insurance

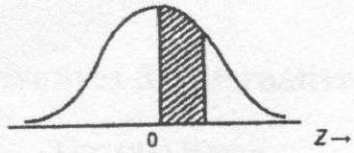
v. Ticks

(Total 25 marks)

****The End****

AREA UNDER THE NORMAL CURVE

This table gives the area under the normal curve between the mean and a point Z standard deviations above the mean. The corresponding area for deviations below the mean can be found by symmetry.



$Z = \frac{(x-\mu)}{\sigma}$	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09
0.0	.0000	.0040	.0080	.0120	.0159	.0199	.0239	.0279	.0319	.0359
0.1	.0398	.0438	.0478	.0517	.0557	.0596	.0636	.0675	.0714	.0753
0.2	.0793	.0832	.0871	.0910	.0948	.0987	.1026	.1064	.1103	.1141
0.3	.1179	.1217	.1255	.1293	.1331	.1368	.1406	.1443	.1480	.1517
0.4	.1554	.1591	.1628	.1664	.1700	.1736	.1772	.1808	.1844	.1879
0.5	.1915	.1950	.1985	.2019	.2054	.2088	.2123	.2157	.2190	.2224
0.6	.2257	.2291	.2324	.2357	.2389	.2422	.2454	.2486	.2518	.2549
0.7	.2580	.2611	.2642	.2673	.2704	.2734	.2764	.2794	.2823	.2852
0.8	.2881	.2910	.2939	.2967	.2995	.3023	.3051	.3078	.3106	.3133
0.9	.3159	.3186	.3212	.3238	.3264	.3289	.3315	.3340	.3365	.3389
1.0	.3413	.3438	.3461	.3485	.3508	.3531	.3554	.3577	.3599	.3621
1.1	.3643	.3665	.3686	.3708	.3729	.3749	.3770	.3790	.3810	.3830
1.2	.3849	.3869	.3888	.3907	.3925	.3944	.3962	.3980	.3997	.4015
1.3	.4032	.4049	.4066	.4082	.4099	.4115	.4131	.4147	.4162	.4177
1.4	.4192	.4207	.4222	.4236	.4251	.4265	.4279	.4292	.4306	.4319
1.5	.4332	.4345	.4357	.4370	.4382	.4394	.4406	.4418	.4430	.4441
1.6	.4452	.4463	.4474	.4485	.4495	.4505	.4515	.4525	.4535	.4545
1.7	.4554	.4564	.4573	.4582	.4591	.4599	.4608	.4616	.4625	.4633
1.8	.4641	.4649	.4656	.4664	.4671	.4678	.4686	.4693	.4699	.4706
1.9	.4713	.4719	.4726	.4732	.4738	.4744	.4750	.4756	.4762	.4767
2.0	.4772	.4778	.4783	.4788	.4793	.4798	.4803	.4808	.4812	.4817
2.1	.4821	.4826	.4830	.4834	.4838	.4842	.4846	.4850	.4854	.4857
2.2	.4861	.4865	.4868	.4871	.4875	.4878	.4881	.4884	.4887	.4890
2.3	.4893	.4896	.4898	.4901	.4904	.4906	.4909	.4911	.4913	.4916
2.4	.4918	.4920	.4922	.4925	.4927	.4929	.4931	.4932	.4934	.4936
2.5	.4938	.4940	.4941	.4943	.4945	.4946	.4948	.4949	.4951	.4952
2.6	.4953	.4955	.4956	.4957	.4959	.4960	.4961	.4962	.4963	.4964
2.7	.4965	.4966	.4967	.4968	.4969	.4970	.4971	.4972	.4973	.4974
2.8	.4974	.4975	.4976	.4977	.4977	.4978	.4979	.4980	.4980	.4981
2.9	.4981	.4982	.4983	.4983	.4984	.4984	.4985	.4985	.4986	.4986
3.0	.49865	.4987	.4987	.4988	.4988	.4989	.4989	.4989	.4990	.4990
3.1	.49903	.4991	.4991	.4991	.4992	.4992	.4992	.4992	.4993	.4993
3.2	.49931	.4993	.4994	.4994	.4994	.4994	.4994	.4995	.4995	.4995
3.3	.49952	.4995	.4995	.4996	.4996	.4996	.4996	.4996	.4996	.4997
3.4	.49966	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4997	.4998
3.5	.49977									