2017 EXAMINATIONS

Lancaster University

PART II (SECOND AND FINAL YEAR)

ACCOUNTING AND FINANCE

AcF 305 INTERNATIONAL FINANCIAL AND RISK MANAGEMENT

(2 hours + 15 minutes reading time)

This examination paper consists of two sections.

Section A
Section A includes ten multiple choice questions. Each question carries 3 marks and the total number of marks for this section is 30. You must use the special answer sheet for multiple choice questions.

Section B
Section B includes two questions (questions 11 and 12), of which you should answer EITHER one. Each of these questions contains several parts. Show your workings when a question requires this. Failure to show your workings may result in a loss of marks. The total number of marks for this section B is 70.

Please turn over

SECTION A

MCQ Test: all MCQ questions are worth 3 marks: Total 30 marks. Answer all MCQ questions. There is only ONE right answer for all MCQ questions.

1. Identify the true statement about options:

a. The immediate payoff of an option can be negative if the option is deep out-of-the money.
b. The market value of an option at inception is zero, therefore investors do not pay for the options.
c. The payoff of a future contract cannot be replicated by the combination of options
d. The intrinsic value is greater than the option value.
e. None of the above.

2. Identify the one false statement about purchasing power parity:

a. Purchasing power parity would only hold if commodity price parity held for every individual good.
b. The real exchange rate measures how far the nominal rate differs from the purchasing power parity rate.
c. Absolute purchasing power parity is said to hold if the real exchange rate equals unity.
d. When analysing prices of a Big Mac across the world, one can observe that developed countries tend to have higher real exchange rates.
e. Relative purchasing power parity is said to hold if the real exchange rate is constant.

3. Which of the following is false?

a. Futures contracts are more liquid than forward contracts.
b. Futures contracts are marked to market.
c. Futures contracts trade on a financial exchange.
d. Futures contracts can help to remove incentives to default.
e. None of the above.

4. In the absence of arbitrage, which of the following causes the expected future exchange rate to increase, everything else held constant? Identify the right answer.

a. Higher spot price for the underlying foreign currency (FC).
b. Lower effective interest rate in the home country.
c. Higher effective interest rate in the foreign country.
d. A spot devaluation of the foreign currency in home currency terms.
e. None of the above is true.

5. Suppose you sell a call and buy one unit of FC in the spot market. What is your payoff at maturity? (Ignore the initial costs and assume X is the strike price).

a. Receive X if ST ≤ X and receive ST if ST > X.
b. Receive ST if ST ≤ X and receive X if ST > X.
c. Receive ST if ST ≤ X and receive –(ST –X) if ST > X.
d. Receive (ST – X) if ST ≤ X and receive X if ST > X.
e. None of the above.

6. Which one of the following actions will offset a forward purchase that expires in June?

a. Hold the forward contract until it expires.
b. Sell forward, regardless of its expiration date.
c. Buy a forward contract, regardless of its expiration date.
d. Sell forward with expiration in June.
e. Buy forward with expiration in June.

7. Which one of the following sentences related to forward contracts and corporate hedging is right?

a. Forward contracts at inception do not add immediate value to a company because their NPV is zero.
b. Forward contracts at inception can be problematic as they can be quite costly.
c. Forward contracts at inception can create agency problems and therefore should be ignored.
d. Forward contract at inception can solve agency problems if you pay a premium for them, and therefore, should be bought.
e. None of the above.

8. Identify the one **false** statement about the international CAPM (InCAPM):

a. InCAPM is used to derive an expected cost of capital.
b. If the terms which measure the exposure to foreign currencies are omitted from the InCAPM, it becomes the standard CAPM.
c. InCAPM should be used for valuing domestic investments if the home country is part of an integrated and larger financial market.
d. InCAPM should not be used for valuing domestic investments if the home country is totally isolated.
e. There is support for the InCAPM in empirical research.

9. Which one of the following sentences related to currency risk exposure is right?

a. Accounting exposure can affect company's cash-flows.
b. Accounting exposure only deals with contractual exposures whose book values are determined by the exchange rate at the valuation date.
c. Accounting exposure is not related to currency exposure.
d. Accounting exposure can arise when firms need to translate accounting numbers of foreign subsidiaries.
e. None of the above.

10. Consider you have a company that has frequent trades in different currencies. What would you do in order to completely remove currency exposure?

a. Buy forward.
b. Sell forward.
c. Buy or sell forward, depending on the cash-flows.
d. Buy options that are underpriced in relation to the market value of equivalent forward contracts.
e. There cannot be anything to completely remove currency exposure.

(Total of: 30 marks)

SECTION B

Section B includes two (2) questions (questions 11 and 12), <u>of which you should answer EITHER one</u>.

Each question contains several parts. Show your workings when a question requires this. Failure to show your workings may result in a loss of marks. **The total number of marks for this section is 70.**

You should choose one of the two options (either question 11 or question 12), and write down very clearly at the beginning of your booklet which option you have chosen to do.

Approximate your numerical results to 4 decimals.

11. Answer all parts:

a. Answer to the following questions on currency options:

i. Draw the payoff of strategy that buys a call option with strike price X, and a put option with strike price Y<X. **[5 marks]**

ii. What would be the name of this strategy and what is the objective of combining two different options with different strike prices? **[10 marks]**

iii. How can an investor mitigate the exposure to one unit of FC received in 90 days? Identify the strategy and draw the payoff function of the strategy. **[5 marks]**

b. Vodaphone UK has expanded its business to Europe, and therefore Vodaphone UK is facing currency risk exposure from the revenues collected by its subsidiary in Germany. The table below shows that there are two possible exchange rate scenarios – 1.2 and 0.8. In addition, the cash-flows received by the subsidiary also depend on the state of the economy – boom and bust. If the state of the economy is boom, Vodaphone's subsidiary receives 150 units of the foreign currency, whereas if the state is bust, it will receive 100 units. Probabilities are given by small p in the table.

	boom: $CF^* = 150$	bust : $CF^* = 100$
$S_T = 1.2$	$150 \times 1.2 = 180$ $p = 0.15$	$100 \times 1.2 = 120$ $p = 0.35$
$S_T = 0.8$	$150 \times 0.8 = 120$ $p = 0.35$	$100 \times 0.8 = 80$ $p = 0.15$

Then, answer to the following questions related to Vodaphone's exposure:

i. What is Vodaphone's exposure to currency risk? **[7 marks]**

ii. How could Vodaphone UK hedge its currency risk exposure? Can it actually remove completely the exposure? Why? **[8 marks]**

c. Cubs Ltd, an American company, has to make a payment of GBP 100m in 120 days to one of its main UK providers. Additionally, Cubs LTD will receive GBP 50m in 120 days from one of its UK clients, and has a tax refund from its UK subsidiary that amounts to GBP 50m, also in 120 days.

i. Draw and explain the exposure faced by Cubs LTD. **[5 marks]**

ii. Could Cubs Ltd improve the outcome of the exposure by buying options? Here, assume that options have zero premium/cost and draw and explain the resulting exposure of the firm. **[5 marks]**

iii. Imagine that for the option bought in part c.ii, Cubs Ltd has to pay a premium equal to half of the strike price. Draw and explain the exposure faced by Cubs LTD. **[5 marks]**

d. Warren Griffin is an avid MBA student who recently studied international finance. He and his friend, Cliff Scholes, have found that their bank, The American Bank, offers an effective interest rate for a 6-month deposit of 7%. On the other hand, they know that the British bank HSGC is offering a 6-month deposit with 10% effective interest rate. The current spot rate is USD/GBP 1.4, and the 6-month forward rate offered by The American Bank is USD/GBP 1.4. Discuss whether Warren and Cliff can use all this information to put it into one equation that relates all these quantities. Discuss whether there is any opportunity for Warren and Cliff to make money given the information above. If that's the case, how could they perform that strategy? **[20 marks]**

(Total of: 70 Marks)

12. Answer all parts:

a. On October 10th, you buy FC 10,000 in futures at a rate of HC/FC 0.62. The future rates in the next days are given in the table below. As you know, future contracts would require some daily cash-flows. On the other hand, your bank asks you to deposit HC 1,000, and will give you a margin call when this deposit falls below zero after discounting the futures daily cash-flows:

October	11	12	13	14	15	16	17	18	19
Future rate	0.60	0.62	0.65	0.58	0.60	0.50	0.55	0.57	0.62

Answer to the following questions:

i. What are the daily cash-flows from marking to market? **[5 marks]**

ii. What is the cumulative total cash flow from marking to market (ignoring discounting)? **[5 marks]**

iii. When will you receive a margin call? **[10 marks]**

b. Ralph Griffin has recently accepted a job offer from Silverman Sachs, a large institutional investor specializing in financial derivatives. He is in charge of developing the company's speculative strategy with forward contracts. On the one hand, he believes that the forward rate of a 180 days contract, for a given exchange HC/FC, will go up by time t+90, where t is today. Therefore, what would be Ralph's strategy? **[10 marks]**

On the other hand, he believes that the swap rates will also go up by time t+90. What would then be the speculative strategy to be developed by Ralph? **[10 marks].**

c. Your home country is Spain, and the foreign country is USA. Then, consider the following information: The spot exchange rate is EUR/USD 1.4; the effective 6 month interest rates are 7% in Madrid and 10% in Washington. Note: t is today and T is the end of the investment period. Use 4 decimals in your computations. **[15 marks – 3 marks each part]**
Compute:

i. The time-t EUR value of a time-T EUR 1 loan.
ii. The time-T USD value of a time-t USD 12 investment.
iii. The time-t USD value of a time-t EUR 70.5 spot sale.
iv. The time-t EUR value of the proceeds of a time-T USD 2,000 loan.
v. The USD/EUR forward rate for a 6-month forward contract.

d. Warren Scholes has been lately trying to find free lunches in financial markets where he could profit from transactions that provide positive payoffs but do not involve any risk. Warren has spent about 2 years trying to find mispriced currencies and has failed on his endeavour. He is frankly depressed. Please, give Warren a convincing explanation on why he couldn't find such "free lunches" in the foreign exchange markets. **[15 marks]**

(Total of: 70 Marks)

END OF PAPER