

SIMON FRASER UNIVERSITY
Beedie School of Business

Midterm Examination

BUS 419-D100
Advanced Derivative Securities

19-3

Academic Honesty: This assignment is individual work. Students are required to follow requirements of S10.01 (see class webpage).

Rules for Submission: Answers to questions in Part I are to be typed, single spaced, of maximum length 1 page **each** for all questions (4 pages total), with 1" margins and type point not less than 12. (This assignment is typed in 12 point.) All answers in Part II are to fit on one page (one page total). Violations will be subject to deductions. Assignments are due in class Nov. 7, 2019. Be sure to answer all parts of each question.

PART I. ESSAY QUESTIONS. Answer each Question; 20 pts. per question -- 10 pts. for a) and 10 points for b).

1.a) Discuss the early history of contracting for future delivery, from Bronze Age Mesopotamia until the beginning of derivative security trading in joint stocks in England following the Glorious Revolution. Be sure to discuss: the mechanics of trading in ancient markets; the evolution of 'free standing derivatives' in 16th century Antwerp; and, the details of exchange traded derivative security contracts on the 17th century Amsterdam Exchange including the *rescontre* method of contract settlement.

b) Detail the evolution of derivative securities trading from 1719 until the collapse of stock and commodity markets during the Great Depression. Be sure to explain: the role of 'derivative' securities during the Mississippi scheme and the South Sea bubbles; the mechanics of early futures trading in Japan; the emergence of futures contracting on the Chicago Board of Trade in the 19th century and subsequent evolution of commodity markets in the US and Canada.

2.a) Describe the evolution of derivative security trading from the Great Depression until the present. Be sure to discuss: the creation of the Chicago Board Options Exchange and IMM; the subsequent emergence of contracts for financial and commodity derivatives; and, the exchange consolidation and demutualization process.

b) Discuss the details and lessons from two derivative debacles that have happened since 1990. In your answer be sure to describe the mechanics of the trades involved and the motivations of those engaged in the debacle.

3a) Derive the profit profile for a spread trade with equal position sizes. What factors determine the profitability of this trade? Derive the profit profile for a tailed spread and explain how this trade is different from one with one-to-one position sizes. Does your answer depend on the commodity under consideration?

b) What factors determine the profitability of: a butterfly in soybean oil; a soy crush spread; and, a currency tandem? (Hint: Use the profit profile for the trades to identify the factors and determine

the positions needed when factors change in a particular direction.) Assume that you are convinced that the spread between the implied carry return in silver futures will widen relative to the return implied in copper futures. How would you design a trade to profit on your predictive ability in this case?

4 a) Explain the arbitrage transactions underlying any two commodities (one financial, one agricultural) with traded CME contracts. What assumptions are being made about both the execution of the arbitrages and the underlying securities or commodities? (Hint: Discuss the implications of executing the both the short and long arbitrage trades).

b) From the information in the following table of forward rates and interest rates from the inter-bank FX market for Oct. 18, 2019 calculate all possible (annualized!) interest rates implied by the covered interest parity condition.

	US\$/unit
Britain Spot Pound	1.28705
1 month forward	1.28831
3 months forward	1.29104
6 months forward	1.29404
12 month forward	1.29933
	US\$/unit

(Annualized) International Interest Rates on 2019.10.18

Euro-Deposit Rates

US\$	1-month	1.87750 %
	3-month	2.00325
	6-month	1.98588
	12 month	1.99225

PART II: DEFINITION QUESTIONS: 5 points each (one page restriction -- all answers to fit within one page in total)

Provide a brief description for the following:

- a) CFTC b) Enterprise Risk Management
- c) coherent risk measure d) VaR e) VIX

BONUS QUESTION (5 points) (no page restriction)

Explain the unusual term structure of futures settlement prices for the Canadian \$ in the attached table.



Canadian Dollar Futures Settlements

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Trade Date: Wednesday, 25 Feb 2015 (Final)

Month	Open	High	Low	Last	Change	Settle	Estimated Volume
MAR 15	.8001	.8061	.7999	.8049	+.0050	.8044	
JUN 15	.7996	.8050	.7995	.8027	+.0048	.8035	
SEP 15	.7992	.8042B	.7992	-	+.0044	.8028	
DEC 15	.8020	.8029B	.8020	-	+.0042	.8025	
MAR 16	.8022	.8027B	.8022	-	+.0041	.8027	
JUN 16	-	.8007B	-	-	+.0039	.8035	
SEP 16	-	-	-	-	+.0036	.8043	
DEC 16	-	-	-	-	+.0034	.8051	
MAR 17	-	-	-	-	+.0033	.8060	
JUN 17	-	-	-	-	+.0034	.8076	
SEP 17	-	-	-	-	+.0035	.8091	
DEC 17	-	-	-	-	+.0036	.8106	
MAR 18	-	-	-	-	+.0037	.8121	
JUN 18	-	-	-	-	+.0037	.8136	
SEP 18	-	-	-	-	+.0038	.8151	