

SIMON FRASER UNIVERSITY
Faculty of Business Administration

Midterm Examination

BUS 419-D100

20-3

Advanced Derivative Securities

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

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 at start of class session October 30, 2020. 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 collapse of financial markets during the first quarter of the 18th century. Be sure to discuss: the mechanics of trading in ancient markets; the evolution of 'free standing derivatives' in 16th century Antwerp; the details of exchange traded derivative security contracts on the 17th century Amsterdam Exchange including the *rescontre* method of contract settlement; and, the the role of 'derivative' securities during the Mississippi scheme and the South Sea bubbles.

b) Detail the evolution of derivative securities trading from the middle of the 18th century up to and including the collapse of stock and commodity markets during the Great Depression. Be sure to explain: the mechanics of early futures trading in Tokugawa-period Japan; the emergence of futures contracting on the Chicago Board of Trade in the 19th century and subsequent evolution of commodity derivative markets in the US and Canada; and the regulatory developments for derivative securities markets following the collapse of stock and commodities markets during the Great Depression.

2.a) Describe the evolution of derivative security trading from the 1960's until the present. In your answer be sure to discuss: evolution of restrictions on trading derivative securities for both stocks and commodities; the creation of the Chicago Board Options Exchange and IMM and subsequent emergence of financial derivatives; the exchange consolidation and demutualization process; and, the role of derivative securities in the financial collapse of 2008-9.

b) Discuss the details and lessons from at least three derivative debacles that have happened since the beginning of the 21st century. 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? (Hint: Do not use snapshots.)

b) What factors determine the profitability of: a butterfly in crude 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 platinum futures will narrow 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 (financial, soft or hard) 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 Financial Post for Feb. 26, 2015 calculate all possible (annualized) interest rates implied by the covered interest parity condition.

	US\$/unit	CA\$/unit
Britain Spot Pound	1.5527	1.9300
1 month forward	1.5525	
3 months forward	1.5517	1.9290
6 months forward	1.5510	

London Interbank Offer Rate US\$ (annualized)

US\$ 1-month	0.17
3-month	0.26
6-month	0.38
C\$ 3-month	0.66

PART II: DEFINITION QUESTIONS: 4 points each (one page restriction -- all answers to fit within one page in total). Provide a brief description for the following:

a) Commodity Exchange Act b) VIX c) coherent risk measure d) VaR e) SPAN

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	