SIMON FRASER UNIVERSITY
Faculty of Business Administration

Midterm Examination

BUS 419-D100   17-2
Advanced Derivative Securities

Rules for Submission: Answers to questions 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.) Violations will be subject to deductions. Assignments are due in class July 4, 2017. Be sure to answer all parts of each question.

PART I. ESSAY QUESTIONS. Choose any 4 Questions; 25 pts. per question -- 10 pts. for a) and 15 points for b).

1.a) Discuss the early history of contracting for future delivery, from early Mesopotamia until the emergence of unbundled derivative security contracts on the 16th century Antwerp Exchange. Be sure to discuss: the mechanics of trading in ancient markets; and, the role of religion in determining the method of borrowing using bills of exchange.
b) Detail the time line from the emergence of exchange traded financial futures on the 17th century Amsterdam Exchange until the emergence of futures contract trading on the Chicago Board of Trade in the 19th century Be sure to explain: the *rescontre* method of contract settlement developed in Amsterdam; the role of 'derivative' securities during the Mississippi scheme and the South Sea bubbles; and, the mechanics of early futures trading in Japan.

2.a) Describe the evolution of derivative security trading from the Progressive era until the creation of the Chicago Board Options Exchange. In your answer be sure to identify arguments made by populists against trading of commodity derivatives, the role of derivative securities in the collapse of the stock market during the Great Depression; and, the subsequent restrictions that were place on trading derivative securities.
b) Discuss the evolution of derivative security markets from 1973 to the present. In your answer be sure to detail the emergence of financial derivatives and the subsequent exchange consolidation and demutualization process; and, to examine the details and lessons from some recent derivative debacles.

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: butterfly in heating oil; 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.)
c) Assume that you are convinced that the spread between the implied carry return in gold 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 (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 Mar. 4, 2010 calculate all possible interest rates implied by the covered interest parity condition.

	US$/unit	CA$/unit
Britain Spot Pound	1.5101	1.5572
1 month forward	1.5098	1.5568
3 months forward	1.5092	1.5563
6 months forward	1.5082	1.5559
	US$/unit	**CA$/unit**
Europe Spot Euro	1.3701	1.4126
1 month forward	1.3699	1.4126
3 months forward	1.3698	1.4125
6 months forward	1.3692	1.4126

International Interest Rates on 2010.03.04
Euro-Deposit Rates

US$	1-month	0.14
	3-month	0.23
	6-month	0.57
C$	3-month	0.33

5. a) Are forward prices unbiased predictors of future spot prices? [Hint: Assuming mean-variance agents, derive an expression for the optimal speculative position size.] What happens to this position as the sensitivity of the agent to risk diminishes? Based on this, what can you conclude about the equilibrium in a market dominated by risk-neutral speculators?

b) Derive a "closed-form" expression (i.e., a formula) for the risk-minimizing hedge ratio. In what sense is this ratio an optimal hedge ratio? How is your answer affected if the commodity being hedged is undetermined at the time the hedge is "put on", e.g., a wheat farmer hedging the expected income to be generated by a crop which has just been planted.

BONUS QUESTIONS: 5 points each (no page restriction)

1.) Provide a brief description for the following:
a) CFTC   b) ICE   c) coherent risk measure   d) VaR   e) SPAN

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

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Trade Date: Wednesday, 25 Feb 2015 (Final)

Month	Open	High	Low	Last	Change	Settle	Estimated Volu
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	