SIMON FRASER UNIVERSITY
Faculty of Business Administration

BUS 419
SAMPLE MIDTERM EXAM

Rules for Submitting Final Exam: Answers to questions are to be typed, single spaced, of length 1 page *each* for all questions, 8"x11" standard paper, with 1" margin and type point not less than 12. (This assignment is typed in 12 point.) For questions with a) and b) parts, answer both parts. Violations will be subject to deductions. Assignment is due on a date deemed agreeable to the class.
Do any 3 of 4 Questions; be sure to answer all parts of the question. (Total length 3 pages)

1. a) Explain the arbitrage underlying the covered interest parity theorem discussed in Sec. 4.2. What assumptions are being made about both the execution of the arbitrage and the underlying securities?

b) Will CIP hold for all types of money market instruments? Which money market security will produce the smallest deviations from the covered interest parity conditions? Why? What institutional characteristics of Bankers' Acceptance, commercial paper and treasury bills would make it difficult for CIP transactions to be instantaneously executed in those markets? Be as complete as possible in explaining your answer.

c) On March 1, 1990 the spot and 3 month forward rates for the Canadian dollar (per US dollar) were $1.1922 and $1.2072 respectively. What "risk-free" discount rate on U.S. dollar instruments would be consistent with the interest-rate-parity theorem if the 3 month (annualized) risk-free rate on Canadian dollar instruments was 13.10%?

d) On Aug. 8, 1994, the spot and 5 year forward rates for the Canadian dollar/US dollar exchange rate were $1.3797 and $1.4917. Using interest rate information provided in Tables 2.2.3 and 2.2.5 what "arbitrage free" interest rate on 5 year zero coupon US dollar instruments would be consistent with CIP?

2. a) 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 copper turtle trade; an oil butterfly; a NOB tandem? What trading strategy is most applicable to trading the TED spread?

c) Assume that you are convinced that the spread between the implied carry return in gold futures will narrow relative to the return implied in silver futures. How would you design a trade to profit on your predictive ability in this case?

3. a) Are forward prices unbiased predictors of future spot prices? Hint: Assuming mean-variance agents, <u>derive</u> 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) If futures prices are at full carry, is this inconsistent with the hypothesis the futures prices are unbiased predictors and the there are zero expected profits to speculation? If so, what type of trading strategy could be used to profit from this discrepancy?

c) Derive a "closed-form" expression 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 output for a crop which has just been planted.

4. a) Outline appropriate questions to be addressed by a commercial or chartered bank undertaking a financial futures hedging decision. Explain in detail the appropriate hedging strategies for the following:

i) In April, a bank wants to "lock-in" today's interest rate on a $1 million issue of 6-month negotiable CD's due to take place in three months.
ii) A Canadian bond dealer expects US interest rates to rise and wants to protect itself against Canadian dollar capital losses on its US Tbond inventory.
iii) In June, a metals refinery wants to "lock-in" today's price on a purchase of 50,000 lbs. of copper cathodes due to take place in September.

b) What is portfolio insurance and what role do stock index futures play in insuring portfolios? What role did stock index futures play in the October 1987 market break? Identify and explain some factors that restrict the execution of stock index futures arbitrages.