

SIMON FRASER UNIVERSITY
Faculty of Business Administration

Midterm Examination

BUS 419-D100

23-2

Advanced Derivative Securities

Academic Honesty: This assignment is individual work. Students are required to follow rules set out in S10.01, esp. Schedule A 2.3.6 (see link on class web page).

Rules for Submission: Answers to questions in Part I are to be typed with maximum length of **300 words** for each question. Answer in Part II and Part III to fit on one page each (two pages total). There is no page constraint for Part IV or bonus question. Violations will be subject to deductions. Assignments are due to be submitted to poitras9@sfu.ca by the start of class session Tuesday, June 27, 2023. Be sure to answer all parts of each question.

PART I. ESSAY QUESTIONS. Answer each Question; 20 pts. per question.

1. Discuss the early history of contracting for future delivery, from Bronze Age Mesopotamia until the emergence of the commodity derivative markets in the US and Canada during the 19th 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; the role of ‘derivative’ securities during the Mississippi scheme and the South Sea bubbles; the mechanics of early futures trading in Tokugawa-period Japan.
2. Detail the evolution of derivative securities trading from the emergence of futures contracting on the Chicago Board of Trade in the 19th century to the present. Be sure to discuss the evolution of commodity derivative markets in the US and Canada up to the collapse of stock and commodity markets during the Great Depression. Also be sure to discuss: the regulatory developments for derivative securities markets arising from and following the Great Depression; 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.
3. Discuss the details and lessons from at least one derivative debacle prior to the 21st century and two 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.

PART II: TRADING STRATEGIES (15 points)

Derive the profit profile for an ‘Intra’ calendar spread trade with equal position sizes. What factors determine the profitability of this trade? Derive the profit profile for a tailed ‘Intra’ calendar spread and explain how this trade is different from one with one-to-one position sizes. (Hint: Do not use snapshots.) What factors determine the profitability of: a butterfly in natural

gas; 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 returns in silver futures and copper futures will narrow. How would you design a trade to profit on your predictive ability in this case?

PART III: DEFINITION QUESTIONS: 3 points each (one page restriction -- all answers to fit within one page in total). Provide a brief description for the following:

a) CFTC b) cash and carry arbitrage c) coherent risk measure d) VaR e) SPAN

PART IV: COVERED INTEREST PARITY (10 points) (no page restriction)

Calculate all possible (**annualized**) CIP-implied interest rates for June 14, 2023 mid-market FX quotes obtained from <https://www.fxempire.com/currencies/>

	US\$/£	C\$/US\$
Britain Spot Pound	1.26198	1.32956
1 month forward	1.26268	1.32867
3 months forward	1.26366	1.32756
6 months forward	1.26539	1.32635
	¥/US\$	US\$/€
Japan Spot Yen	139.970	1.07880
1 month forward	139.963	1.08064
3 months forward	139.949	1.08428
6 months forward	139.929	1.08924

FT.com annualized interest rate quotes; 2023.06.14

US\$ 1-month 5.12%
 3-month 5.26%
 6-month 5.37%

BONUS: (5 points)

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



Canadian Dollar Futures Settlements

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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	