

SIMON FRASER UNIVERSITY
Faculty of Business Administration

FINAL EXAM

BUS 417 Security Analysis
Prof. Geoffrey Poitras

19-2

EXAM INSTRUCTIONS: Please record all answers in the examination book provided. Calculators with enhanced capabilities such as the ability to input executable programs or attach external drives, whether such drives are attached or not, are prohibited. Any use of devices with communications abilities, such as cell phones, is prohibited. The exam is closed book, no books or other supplementary materials are permitted to be used during the examination.

EXAM DURATION: TWO HOURS

DO ALL PARTS OF ALL QUESTIONS: Each question is worth 25 total points – for questions with two parts 10 points for part i) and 15 points for part ii)

1. The relative value or ‘Wall Street’ approach to security analysis ignores the importance of calculating an *intrinsic value* and comparing this value to the observed market price to identify if the security is eligible for purchase. Instead, relative value security selection aims to determine the ‘best’ stock to purchase in a given sector, without evaluating whether securities in the sector are fairly priced. Using this approach, identify the ‘best’ security in each of the four different sectors that were examined during the in-class presentations. (Hint: Be sure to explain the relative value rationale for each of the four stocks selected.)

2.i) Describe the evolution of security analysis from **1920** to the present. In your answer be sure to identify seminal contributions to the different approaches to the subject and to provide an overview of the essential elements of these possible approaches.

ii) Describe the **discounted dividend** cash flow valuation models conventionally used to analyse common stocks. How do these models differ from valuation models that discount cash flows other than dividends? What are some important limitations of using accounting data to implement discounted cash flow valuation?

3. CHOICE QUESTION: DO EITHER A) or B)

3A) Warren Buffett has observed:

“Academics ... like to define investment ‘risk’ differently, averring that it is the relative volatility of a stock or portfolio of stocks – that is, their volatility as compared to a large universe of stocks. Employing data bases and statistical skills, these academics compute with precision the ‘beta’ of a stock, its relative volatility in the past – and then build arcane investment and capital-allocation theories around this calculation. In their hunger for a single statistic to measure risk, however, they forget a fundamental

principle: It is better to be approximately right than precisely wrong.”

Comment on the implications of this statement for the analysis and valuation of equity securities. In your answer be sure to provide an assessment of the validity of the statement as well as a discussion of how investment strategy would have to be formulated if the statement were correct.

3B) Do both parts i) and ii). Show relevant calculations and derivations.

i) You are an Australian with money to invest for 10 years and are trying to determine whether to buy and hold a 10 year Australian par bond with yield of 0.94% or to purchase a **duration equal** portfolio of 5 year par bond with yield of 0.67% and a 15 year par bond with yield of 1.15%. Calculate; a) the duration equal weights for the barbell portfolio; and, b) the ‘cost of convexity’.

ii) a) **Derive** the Macaulay duration for a term annuity and a par bond, both with annual payments.
b) Assuming a maximum possible life of 95 years, what is the approximate implied interest rate for a ‘life income’ of \$70,000/yr. priced at \$1 million for a person retiring at age 65? Again assuming a maximum possible life of 95 years, what is the approximate implied interest rate for a ‘life income’ of \$65,000/yr. priced at \$1.75 million for a person retiring at age 60?

4.i) "Whether the bond market moves up or down, high-convexity portfolios will always outperform low-convexity portfolios of equal duration and yield." Explain the argument supporting this statement and the connection to the classical immunization strategy. What factors would tend to undermine the validity of the statement?

ii) Contrast the solutions to the life annuity valuation problem developed by Jan de Witt and Abraham de Moivre. Be sure to: identify relevant assumptions used to obtain the solutions; explain the connection of each life annuity pricing formula to pricing using discounted expected value; and, identify the limitations for each of the solutions.

BONUS QUESTION: (5 points)

You are in the market for a house. Your effective all-in market borrowing rate for a second mortgage with a 5 year term from a bank is 5.35%. The vendor of one of the houses you are considering purchasing is willing to undertake a \$500,000 second mortgage, with a 5 year term at 2.75%, and a 22 year amortization period. The asking price on the house is \$900,000. What adjustment to the sales price of the house is warranted if, as part of the purchase, you take up the vendor’s second mortgage offer?