SIMON FRASER UNIVERSITY
Faculty of Business Administration

FINAL EXAM

BUS 417   Security Analysis   18-3
Prof. Geoffrey Poitras

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. 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 five different sectors that were examined during the in-class presentations. (Hint: Be sure to explain the relative value rationale for each of the five stocks selected.)

2.i) Describe the evolution of security analysis from **1929** 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) In Chapter 12 of the *General Theory* J.M. Keynes observes:

> It might have been supposed that competition between expert professionals, possessing judgment and knowledge beyond that of the average private investor, would correct the vagaries of the ignorant individual left to himself. It happens, however, that the energies and skill of the professional investor and speculator are mainly occupied otherwise. For most of these persons are, in fact, largely concerned, not with making superior long-term forecasts of the probable yield of an investment over its whole life, but with foreseeing changes in the

conventional basis of valuation a short time ahead of the general public. They are concerned, not with what an investment is really worth to a man who buys it "for keeps", but with what the market will value it at, under the influence of mass psychology, three months or a year hence. Moreover, this behaviour is not the outcome of a wrong-headed propensity ... For it is not sensible to pay 25 for an investment of which you believe the prospective yield to justify a value of 30, if you also believe that the market will value it at 20 three months hence.

Comment on the implications of this statement for the analysis and valuation of securities. In your answer be sure to provide an assessment of the validity of the statement as well as a discussion of how security selection 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 5 years and are trying to determine whether to buy and hold a 5 year Australian par bond with yield of 2.03% or to purchase a **duration equal** portfolio of 2 year par bond with yield of 1.91% and a 15 year par bond with yield of 2.60%. Calculate; a) the duration equal weights for the barbell portfolio; and, b) the 'cost of convexity'.

ii) a) Derive the Macaulay duration for a par bond with semi-annual payments.
b) Assuming a maximum possible life of 95 years, what is the approximate implied interest rate for a 'life income' of $60,000/yr. priced at $1.55 million for a person retiring at age 60?

4.i) 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.

ii) Explain this statement: "...the larger the convexity on a portfolio, the less the value of the portfolio rises over time if the interest rate remains unchanged." (Hint: Using a multivariate Taylor series expansion of the bond price function $P[y, t]$, derive an expression for the tradeoff between time value and convexity.) Is it true that "the cost of a higher convexity is a lower yield"? What are the limitations of this solution?

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 seven year term from a bank is 6.45%. The vendor of one of the houses you are considering purchasing is willing to undertake a $400,000 second mortgage, with a 7 year term at 3.55%, and a 25 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?