

所別： 財務金融學系 碩士班 甲組(一般生)

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科目： 財務管理

*本科考試禁用計算器

以下全為計算問答證明題，請一併寫出計算過程及推理依據；可選擇以中文或英文作答。

1. (20%) Suppose Grace Inc. operates under a peaceful, stable, market economy which satisfies all the assumptions of Modigliani-Miller theorems. It has equity with a market value of \$12 million and debt with a market value of \$6 million. Suppose that treasury bills that mature in one year yield 3% per year and is a proper proxy for risk-free rate. The expected return on the market portfolio is 8%. The beta of the company's equity is 1.4. The company pays no taxes. Please answer the following questions.
 - i. (2%) What is the company's debt-equity ratio?
 - ii. (4%) What is the company's weighted average cost of capital?
 - iii. (4%) What is the cost of capital for an otherwise identical all-equity company?
 - iv. (5%) For iv. and v., please consider each scenario *independently*.
How will Grace. Inc's cost of capital change if the country where the company operates surprisingly goes to war with another country? Please briefly describe the changes in words, no calculation is needed.
 - v. (5%) How will Grace. Inc's cost of capital change if suddenly the managers of the company do not work for the shareholders' best interests? Please briefly describe the changes in words, no calculation is needed.

2. (15%) Suppose that you are the CEO of Designer Inc. and your personal wealth is closely tied to your compensation as the CEO. The company now has two mutually exclusive projects available. The first project has a large NPV and will reduce the total risk of the company. The second project has a small NPV and will increase the total risk of the company.
 - i. (3%) Suppose that your compensation from the company is entirely paid in cash, how will you select the mutually exclusive projects? Why?
 - ii. (4%) Supposed that Designer Inc. has some debt. It can be said that the shareholders of the Designer Inc. can be thought of as holding a call option on the company's assets. Explain what is meant by the statement.
 - iii. (4%) Suppose that your compensation from the company is entirely paid in employee stock option, how will your selection in i. change? Why?
 - iv. (4%) Suppose that your personal reputation and human capital are both highly related to the company, how will your selection in ii. change? Why?

注意：背面有試題

國立中央大學 113 學年度碩士班考試入學試題

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3. (10%) Please prove that if the capital asset pricing model (CAPM) holds for all individual securities in the market, it must hold for any portfolio as well.
4. (15%)
 - v. (5%) Please define Macaulay duration for a bond using the following notations: duration d , price p , coupon c , time to maturity T , and yield to maturity y .
 - vi. (5%) Please prove that the duration is negatively related to the price-yield sensitivity.
 - vii. (5%) Please derive the duration of a perpetual bond.
5. (10%) Please explain how the growth rate in a dividend discount model is determined.
6. (30%) Your College Student Research Scholarship (國科會大專生研究計畫) topic is: "The Impact of Corporate Social Responsibility on Corporate Financial Performance". You investigate this topic through the following ordinary least squares (OLS) regression model:

$$[(ROA)]_{(i,t)} = \beta_0 + \beta_1 [(CSR)]_{(i,t-1)} + u_{(i,t)}$$

where ROA is return on assets for firm i in year t and CSR is firm's corporate social responsibility activities.

The two competing hypotheses you developed are 1) based on Stakeholder theory, that companies benefit from caring for various stakeholders, implying a positive value for β_1 and 2) according to the Agency problem, the β_1 is expected to be negative.

The question is: What endogeneity issues exist in the regression model of the impact of corporate social responsibility on financial performance, causing bias in β_1 ? Please first address the three major causes of endogeneity within 50 words (15%) and then explain the sources of each of these three reasons using the relationship between corporate social responsibility and financial performance within 200 words (15%).

注意：背面有試題