

國立清華大學 103 學年度碩士班考試入學試題

系所班組別：計量財務金融學系 甲組

考試科目（代碼）：財務管理（4504）

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一、單選題(30%)

1. Which of the following statements is correct?
 - A) When a company increases its debt ratio, the costs of equity and debt capital both increase. Therefore, the WACC also increase.
 - B) The capital structure that maximizes stock price is generally the capital structure that also maximizes earnings per share.
 - C) All else equal, an increase in the corporate tax rate would tend to encourage a company to increase its debt ratio.
 - D) Since debt financing raises the firm's financial risk, increasing a company's debt ratio will always increase the company's WACC.
 - E) Since debt financing is cheaper than equity financing, increasing a company's debt ratio will always reduce the company's WACC.

2. Bob has a \$50,000 stock portfolio with a beta of 1.2, an expected return of 10.8%, and a standard deviation of 25%. Becky has a \$50,000 portfolio with a beta of 0.8, an expected return of 9.2%, and her standard deviation is also 25%. The correlation coefficient, r , between Bob's and Becky's portfolios is zero. Bob and Becky are engaged to be married. Which of the following best describes their combined \$100,000 portfolio?
 - A) The combined portfolio's expected return will be greater than the simple weighted average of the expected returns of the two individual portfolios, 10.0%.
 - B) The combined portfolio's expected return will be less than the simple weighted average of the expected returns of the two individual portfolios, 10.0%.
 - C) The combined portfolio's beta will be equal to a simple average of the betas of the two individual portfolios; its expected return will be equal to a simple weighted average of the expected returns of the two individual portfolios; and its standard deviation will be less than the simple average of the two portfolios' standard deviations, 25%.
 - D) The combined portfolio's standard deviation will be equal to a simple average of the two portfolios' standard deviations, 25%.

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3. Which of the following statements is FALSE?
- A) When a firm faces financial distress, creditors can gain by making sufficiently risky investments, even if they have negative NPV.
 - B) When a firm has leverage, a conflict of interest exists if investment decisions have different consequences for the value of equity and the value of debt.
 - C) In some circumstances, managers may take actions that benefit shareholders but harm the firm's creditors and lower the total value of the firm.
 - D) Agency costs are costs that arise when there are conflicts of interest between stakeholders.
4. Which of the following statements is FALSE?
- A) Firms with high R&D costs and future growth opportunities typically maintain high debt levels.
 - B) The tradeoff theory explains how firms should choose their capital structures to maximize value to current shareholders.
 - C) With tangible assets, the financial distress costs of leverage are likely to be low, as the assets can be liquidated for close to their full value.
 - D) When a firm is highly levered, creditors themselves will closely monitor the actions of managers, providing an additional layer of management oversight.
5. Which of the following is not an assumption used in deriving the Capital Asset Pricing Model (CAPM)?
- A) Investors have homogeneous expectations regarding the volatilities, correlation, and expected returns of securities.
 - B) Investors have homogeneous risk adverse preferences toward taking on risk.
 - C) Investors hold only efficient portfolios of traded securities that are portfolios that yield the maximum expected return for the given level of volatility.
 - D) Investors can buy and sell all securities at competitive market prices without incurring taxes or transactions cost and can borrow and lend at the risk-free interest rate.

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6. Which of the following statements is FALSE?
- A) When an investor chooses her optimal portfolio, she will do so by finding the tangent line using the risk-free rate that corresponds to her investment horizon.
 - B) If the market portfolio is not efficient, savvy investors who recognize that the market portfolio is not optimal will push prices and expected returns back into equilibrium.
 - C) Even though different investors may research different stocks, their information will not impact the market portfolio since there is no way to share this information with other investors.
 - D) In the real world borrowers pay higher interest rates than savers receive.
7. Which of the following statements is correct?
- A) The CAPM is an ex ante model, which means that all of the variables should be historical values.
 - B) The beta coefficient used in the SML equation should reflect the expected volatility of a given stock's return versus the return on the market during some future period.
 - C) The general equation: $Y = a + bX + e$, is the standard form of a simple linear regression where $b = \text{beta}$, and X equals the independent return on an individual security being compared to Y , the return on the market, which is the dependent variable.
 - D) The rise-over-run method is not a legitimate method of estimating beta because it measures changes in an individual security's return regressed against time.

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8. Company D has a 50% debt ratio, whereas Company E has no debt financing. The two companies have the same level of sales, and the same degree of operating leverage. Which of the following statements is most correct?
- A) If sales increase 10% for both companies, then Company D will have a larger percentage increase in its operating income (EBIT).
 - B) If sales increase 10% for both companies, then Company D will have a larger percentage increase in its net income.
 - C) If EBIT increases 10% for both companies, then Company D's net income will rise by more than 10%, while Company E's net income will rise by less than 10%.
 - D) Company E has a higher degree of financial leverage.
 - E) The two companies have the same degree of total leverage.
9. Shearson PLC's stock sells for \$42 per share. The company wants to sell some 20-year, annual interest, \$1,000 par value bonds. Each bond will have attached 75 warrants, each exercisable into one share of stock at an exercise price of \$47. Shearson's straight bonds yield 10%. The warrants will have a market value of \$2 each when the stock sells for \$42. What coupon interest rate must the company set on the bonds-with-warrants if the bonds are to sell at par?
- A) 8.00% B) 8.24% C) 8.96% D) 9.25% E) 10.00%
10. In the one factor (APT) model, the characteristic line to estimate β_i passes through the origin, unlike the estimate used in the CAPM because:
- A) the relationship is between the actual return on a security and the market index.
 - B) the relationship measures the change in the security return over time versus the change in the market return.
 - C) the relationship measures the change in excess return on a security versus GNP.
 - D) the relationship measures the change in excess return on a security versus the return on the factor about its mean of zero.
 - E) Cannot be determined without actual data.

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二、問答題

1. (20%) 小夫是高度風險趨避，胖虎是輕度風險趨避，兩人都不是風險中立者。假設資本市場條件如Black-Scholes Option Pricing Model所設定，請問他們會用相同的BS理論價格買賣選擇權嗎？會或不會請說明原因。

2. (20%) 請問無套利定價法(No-arbitrage pricing method)適用於一些報酬無法被複製的證券評價上嗎？例如，實質投資計畫，氣候衍生性商品或具有選擇權性質的保險商品。若不適合，請說明你知道的評價方式。

3. (30%) U公司為無舉債公司，L公司為有舉債公司，兩家公司每年都一樣賺錢，EBIT皆為X元。請證明MM定理無稅的情況下，兩家公司價值相同 $V_U = V_L$ ，而L公司權益成本為 $R_{SL} = R_{SU} + \frac{D}{S}(R_{SU} - R_D)$ 。證明過程中請寫下你所使用的假設。請使用以下符號：

R_{SU} ：無舉債公司的權益成本

R_{SL} ：有舉債公司的權益成本

V_U ：Unleveraged firm value

V_L ：Leveraged firm value

S_U ：Equity of unleveraged firm

S_L ：Equity of leveraged firm

其中， $V_U = S_U$ ， $V_L = D + S_L$ 。