

國立臺北商業技術學院 95 學年度研究所碩士班考試入學試題

准考證號碼：□□□□□□ (請考生自行填寫)

財務金融研究所 筆試科目：財務管理 共 5 頁，第 1 頁

注意事項	1. 本科目合計 100 分，答錯不倒扣。 2. 請於答案卷上依序作答，並標註清楚題號 (含小題)。 3. 考完請將答案卷及試題一併繳回。
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一、已知歐式的股票買權評價模型為： $c_t = S_t N(d_1) - X e^{-r(T-t)} N(d_2)$ ，其中

$$d_1 = \frac{\ln(\frac{S_t}{X}) + (r + \frac{1}{2}\sigma^2)(T-t)}{\sigma\sqrt{T-t}} ; d_2 = \frac{\ln(\frac{S_t}{X}) + (r - \frac{1}{2}\sigma^2)(T-t)}{\sigma\sqrt{T-t}}$$
 。 c_t 為時間 t 時的買權價格， S_t 為時間 t 時的股價， X 為執行價格， σ 為波動性(報酬率的標準差)， T 為到期日， r 為無風險利率。請回答下列問題：(本題每小題 2 分，共 10 分)

- (一)、為何 X 要乘 $e^{-r(T-t)}$ ，而 S_t 不用乘 $e^{-r(T-t)}$ ？
- (二)、 $N(0)=?$
- (三)、若 S_t 越高，則 c_t 越高或越低或不變或不一定？
- (四)、若 X 越高，則 c_t 越高或越低或不變或不一定？
- (五)、若 $(T-t)$ 越大，則 c_t 越高或越低或不變或不一定？

二、請將下表複製於答案紙上，並填充下表之空格，每一空格的答案可能為：增加、減少、不變、不一定。(每 1 格 2 分，共 10 分)

行使權利時的影響	可轉換公司債	附認股權公司債
對公司流通在外普通股數的影響		增加
對公司負債金額的影響		
對公司新增資金的影響		

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- 三、假設下表為台灣股市近 4 年的市場報酬率及三種上市公司的報酬率。請您依據市場模型(Market model)： $R_{i,t} = \alpha_i + \beta_i R_{M,t}$ ，求算 β_i 。模型中的 $R_{i,t}$ 表示第 i 種股票第 t 年的報酬率， α_i 與 β_i 分別為第 i 種股票之迴歸係數， $R_{M,t}$ 表示市場第 t 年的報酬率。(注意：下表為樣本資料，有小數值的答案取到小數第 2 位)(本題共 20 分)

年別(民國)	91	92	93	94
市場報酬率 $R_{M,t}$ (%)	-10	8	8	-2
台積電股票報酬率 $R_{1,t}$ (%)	-16	6	10	8
台塑股票報酬率 $R_{2,t}$ (%)	-5	5	6	2
台泥股票報酬率 $R_{3,t}$ (%)	-8	6	4	6

- (一)、若以 β 係數衡量風險，則哪一股票的風險最高？其 β 值為何？(4 分)
- (二)、若以報酬率的標準差衡量風險，則哪一股票的風險最高？其報酬率的標準差的值為何？(4 分)
- (三)、若以變異係數衡量風險，則哪一股票的風險最高？其變異係數的值為何？(4 分)
- (四)、若一投資組合(p)包括的股票及權重分別為：台積電股票的比重為 50%；台塑股票的比重為 25%；台泥股票比重為 25%，請問此一投資組合的：
 1. $\beta_p = ?$ (4 分)
 2. $\sigma_p = ?$ (4 分)

- 四、假設智慧公司的資本結構設定為：70%股東權益，30%負債。當年的資本預算(預計投資金額)為 20,000,000，稅後淨利為 12,000,000。若該公司股利政策是依據剩餘股利模型(residual dividend model)決定。請問該公司當年：(本題每小題 2 分共 10 分)

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- (一)、可發放多少現金股利？
- (二)、需保留多少盈餘以支應投資所需？
- (三)、需籌措多少債務資金以支應投資所需？
- (四)、需發行多少新股以支應投資所需？
- (五)、投資機會越多時，依據剩餘股利模型決定的現金股利會越多或越少或不變或不一定？

五、The AAA Airlines Corporation is considering two alternative planes. Plane A costs \$500,000 but will produce expected after-tax cash inflows of \$300,000 at the end of each of the next 2 years. Plane B also costs \$500,000 but will produce expected after-tax cash inflows of \$165,000 at the end of each of the next 4 years. Both projects have a 10 percent cost of capital.

- (一) Assume that these are mutually exclusive projects that are not repeatable. Which project should the company accept? Why? (5 分)
- (二) Assume that these are mutually exclusive projects that can be repeated indefinitely over time with the same expected cash flows. Which project should the company accept? Why? (5 分)

六、A call option on the stock of WWW has a market price of \$7. The stock sells for \$30 a share, and the option has an exercise price of \$25 a share.

- (一) What is the premium on the option? (5 分)
- (二) Which of the following events are likely to increase the market value of a call option on a common stock? (5 分)
 1. An decrease in the stock's price
 2. An increase in the volatility of the stock price.
 3. An increase in the risk-free rate.
 4. A decrease in the time until the option expires.

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七、The following table shows estimates of risks of two stocks during the five years ending December 2005.

Stock	Standard Deviation	R-squared	Beta
X	50%	0.36	1.2
Y	25%	0.64	0.8

- (一) What is the firm-specific standard deviation of stock X and Y? (5 分)
- (二) Suppose we form an equally weighted portfolio of stock X and Y. What will be the standard deviation of that portfolio? (5 分)

八、The NTCB Company has the following financial information:

EBIT=\$4.7 million; Tax rate, $T=35\%$; Cost of debt, $r_d=10\%$;
Cost of equity, $r_s=15\%$; Shares of stock outstanding, $n_0=600,000$;
Value of Debt=\$2,000,000; Stock price, $P_0=\$30$.

Since NTCB's product market is stable and the company expects no growth, all earnings are paid out as dividends. The debt consists of perpetual bonds.

- (一) What is NTCB's weighted average cost of capital (WACC)? (5 分)
- (二) Suppose the NTCB can increase its debt so that its capital structure has 50 percent debt, based on market values (it will issue debt and buy back stock). At this level of debt, its cost of equity rises to 18.5 percent. Its interest rate on all debt will rise to 12 percent (it will have to call and refund the old debt), and its cost of equity will rise to 17 percent. What is the stock price after the repurchase? (5 分)

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九、XYZ Inc. has never paid a dividend, and when it might begin paying dividends is unknown. Its current free cash flow is \$100,000, which is expected to grow at a constant 8 percent rate. The weighted average cost of capital is 10 percent. XYZ currently holds \$600,000 of nonoperating marketable securities. Its long-term debt is \$1,000,000, but it has never issued preferred stock.

(一)、Calculate XYZ's value of operations. (5 分)

(二)、Calculate the value of its common equity. (5 分)