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| 考 試 科 目 | 財務管理 | 所 別 | 財管系 | 考試時間 | 2 月 26 日(日) 第一節 |
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Please answer the following question in sequence. They are related to each other.

Please show your calculation.

1.

Chiayi Inc. is considering two mutually exclusive projects, A and B. Cash flows of project A and project B are shown below:

| Year      | 0      | 1     | 2     | 3     | 4     | 5     | 6     |
|-----------|--------|-------|-------|-------|-------|-------|-------|
| Project A | -7,600 | 1,400 | 2,000 | 2,000 | 2,200 | 2,200 | 2,400 |
| Project B | -4,200 | 1,200 | 2,300 | 2,500 |       |       |       |

At this moment, Chiayi Inc. uses 8% as the discount rate to evaluate these two projects.

- (1) (5 points) Evaluate these two projects with NPV and IRR? (Use linear interpolation to find the approximate IRR value.)
- (2) (5 points) Do NPV approach and IRR approach have the same conclusion? Why?
- (3) (5 points) Use Replacement Chain Method and Equivalent Annual Annuity (EAA) method to evaluate these two projects. Do these two approaches have the same conclusion as the NPV approach has?
- (4) (5 points) Please elaborate on your answers for (2) and (3). Why do sometimes different capital budgeting criteria have different conclusions?

2.

Following the previous question, now Chiayi Inc. will take the project with the highest NPV based on 8% of discount rate. The next question for the company is how to get the money.

Chiayi Inc. has a dividend practice of residual dividend policy. The company's optimal capital structure calls for 40% debt and 60 % common equity. Chiayi Inc. expects to have net income of \$12,800.

- (1) (5 points) What will be the payout ratio for Chiayi Inc.? How much equity will Chiayi Inc. pay for the project and how much will Chiayi Inc. borrow?
- (2) (5 points) What will be the payout ratio for Chiayi Inc., if its expected net income is \$4,200?
- (3) (5 points) Why does a firm adopt the residual dividend policy? Why is not issuing new common stock to raise capital? What is the premise behind that?
- (4) (5 points) Please introduce at least two dividend practices other than the residual dividend policy. Describe their advantages and disadvantages.

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3.

Following the previous questions, Chiayi Inc. needs to borrow some debt. It decides to ask Fuban Bank for a loan. The loan amount is the number you get from question 2 (1). The interest rate is fixed at 8%, and the maturity is 6 years. It will be fully amortized in 6 years. Chiayi Inc. will pay interest and principal at the end of each year. Fuban charges 2% of financing cost. It means that Chiayi Inc. needs to pay 2% of the loan amount to Fuban Bank as the origination fee.

- (1) (5 points) What is the annual payment? What are the second year's interest payment and principal payment?
- (2) (5 points) What is the effective borrowing cost for Chiayi Inc.?

4.

Please follow previous questions to answer the following question. Chiayi Inc. has a tax rate of 40%. The risk free rate is 5%, and the market risk premium is 6%. Using the CAPM, Chiayi Inc. estimates its cost of equity is currently 12.5%.

- (1) (5 points) What is the weighted average cost of capital (WACC) for Chiayi Inc.?
- (2) (5 points) Using the WACC you get from 4(1) as the discount rate to evaluate project A and project B in question 1, which project will you choose? Is this the same as your answer in 1 (1)?
- (3) (5 points) Is it reasonable that Chiayi Inc. uses 8% as the discount rate in question 1(1)? Why?
- (4) (5 points) What is the current beta on Chiayi's common stock? What would be Chiayi's beta be if there is no debt in its capital structure?

5. (20 points) Jeremy Wang, a MBA, wonders why Chiayi Inc. maintains 40% debt and 60 % common equity. He wonders which theory is behind this.

Please describe the following capital structure theories: trade-off, pecking order, signaling and market timing.

6.

- (1) (5 points) Why is equity a call option on a firm's asset?
- (2) (5 points) Why is a risky debt equivalent to a portfolio which is (a) long a default risk free bond paying D at time T, and (b) short a put option on the firms' assets with strike D and maturity T?