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國立清華大學 114 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(財務金融組)

科 目 代 碼 ：5203

考 試 科 目 ：財務管理

—作答注意事項—

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考試科目（代碼）：財務管理（5203）

 *請在【答案卷】作答

1. (20%) The TSEC Corporation currently has no debt outstanding. Catherine, the CFO, is considering restructuring the company by issuing debt and using the proceeds to repurchase outstanding equity. The company's assets are worth \$40 million, the stock price is \$25 per share, and there are 1,600,000 shares outstanding. In the expected state of the economy, EBIT is expected to be \$3 million. If there is a recession, EBIT would fall to \$1.8 million and in an expansion EBIT would increase to \$4.3 million. If the company issues debt, it will issue a combination of short-term debt and long-term debt. The ratio of short-term debt to long-term debt will be 0.20. The short-term debt will have an interest rate of 3 percent and the long-term debt will have an interest rate of 8 percent.

   A. Assume the proposed debt-equity ratio is equal 1, calculate the current and proposed EPS under three scenarios.

   B. Graph the EBIT and EPS for the TSEC Corporation on the same graph using a scatter plot.

   C. What is the breakeven EBIT between the current capital structure and the new capital structure?

   D. To illustrate the new capital structure, you would like to create a pie chart. Another pie chart that is available is the pie of pie chart. Using the pie of pie chart, graph the equity and total debt in the main pie chart and the short-term debt and long-term debt in the secondary pie chart.

2. (20%) You are in discussions to purchase an option on an office building with a strike price of \$67 million. The building is currently valued at \$60 million. The option will allow you to purchase the building either six months from today or one year from today. Six months from today, accrued rent payments from the building in the amount of \$1,000,000 will be made to the owners. If you exercise the option in six months, you will receive the accrued rent payment; otherwise, the payment will be made to the current owners. A second accrued rent payment of \$1,000,000 will be paid one year from today with the same payment terms. The standard deviation of the value of the building is 30 percent and the risk-free rate is an annual percentage rate of 6 percent. What is the price of the option today using 6-month steps?

   (Hint: The value of the building in six months will be reduced by the accrued rent payment if you do not exercise the option at that time.)

3. (20%) Seth Bullock, the owner of Bullock Gold Mining, is evaluating a new gold mine in South Dakota. Dan Dority, the company's geologist, has just finished his analysis of the mine site. He has estimated that the mine would be productive for eight years, after which the gold would be completely mined. Dan has taken an estimate of the gold deposits to Alma Garrett, the company's financial officer. Alma has been asked by Seth to perform an analysis of the new mine and present her recommendation on whether the company should open the new mine. Alma has

used the estimates provided by Dan to determine the revenues that could be expected from the mine. She also has projected the expense of opening the mine and the annual operating expenses. If the company opens the mine, it will cost $825 million today, and it will have a cash outflow of $75 million nine years from today in costs associated with closing the mine and reclaiming the area surrounding it. The expected cash flows each year from the mine are shown in the following table. Bullock Mining has a 12 percent required return on all of its gold mines.

Year	Cash Flow
0	-825,000,000
1	160,000,000
2	185,000,000
3	215,000,000
4	245,000,000
5	210,000,000
6	205,000,000
7	190,000,000
8	160,000,000
9	-75,000,000

A. Calculate the payback period, internal rate of return, modified internal rate of return, profitability index, and net present value of the proposed mine.

B. Based on your analysis, should the company open the mine?

4. (20%) According to Laura T. Starks article (Presidential Address: Sustainable Finance and ESG Issues—Value versus Values) in *Journal of Finance* (2023), the summary of introduction is as follows:

While sustainable finance has been drawing increased attention from institutional and retail investors, regulators, politicians, corporate leaders, and employees, alike, there is no clear consensus on the meaning of sustainable finance or the acronyms associated with it—ESG (environmental, social, and governance), SRI (socially or sustainably responsible investing), and CSR (corporate social responsibility). The lack of clarity on the meaning of these terms leads to misunderstandings about how they affect investors, corporations, and asset markets, which can make it difficult to interpret evidence on investment behavior and to design related regulations. In this address, I argue that the misunderstandings arise from differences in investors' and managers' motivations. In particular, I argue much of the confusion is due to differences in whether motivation arises from value or values, that is, from regarding the ESG qualities of an investment as important to its financial value or, as consistent with one's values.

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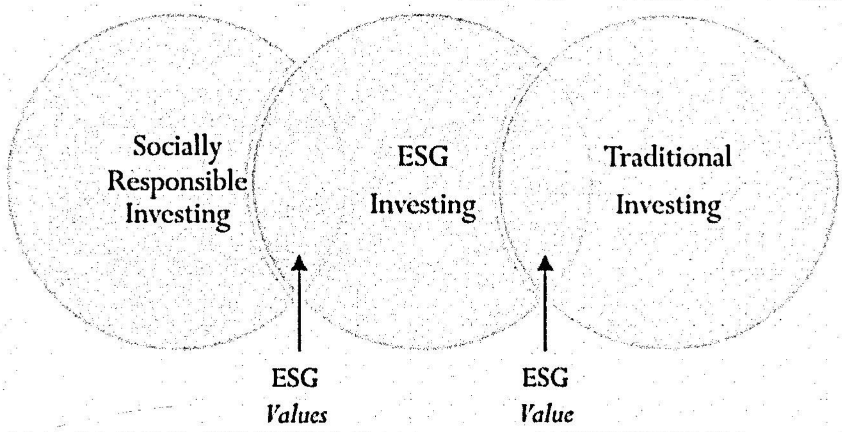
As academic researchers, we need to better account for the distinction between ESG values and value. Clear identification may be complicated by the fact that ESG investing can also be motivated by a combination of values and value. One can think of the range of ESG investment approaches as captured by a linear Venn diagram. As Figure 1 shows, ESG investing can be important to both investors focused on socially responsible investments and traditional (i.e., financially oriented) investors. On the one hand, SRI investors may consider ESG investment primarily from a values perspective. On the other hand, financially oriented investors who employ an ESG approach do so from an exclusively value perspective.

Figure 1



Compare and contrast the "values-driven" and "value-driven" motivations for ESG investing as outlined in the paper. What are the implications of these differing motivations for financial markets?

5. (20%)

   A. Describe the externality, the positive and negative sides of externality.

   B. Why is the company's value linked to the externality? Have you ever heard of the firm's externality measure?