

Essays:

1. (15%)

Security A has an expected return of 12.4 percent with a standard deviation of 15 percent, and a correlation with the market of 0.85. Security B has an expected return of -0.73 percent with a standard deviation of 20 percent, and a correlation with the market of -0.67. The standard deviation of k_M is 12 percent.

- a. To someone who acts in accordance with the CAPM, which security is more risky, A or B? Why? No calculations are necessary to answer this question; it is easy.
- b. What are the beta coefficients of A and B? Calculations are necessary.
- c. If the risk-free rate is 6 percent, what is the value of k_M ?

2. (15%)

The abbreviated balance sheet and income statement for The National Manufacturing Company (NAMFAC) are given below:

The National Manufacturing Company
Balance Sheet
as of December 31, 1995
(Thousands of Dollars)

Current assets	\$15,000	Debt (7%)	\$15,000
Net fixed assets	15,000	Common Stock (\$10 Par)	10,000
		Retained earnings	<u>5,000</u>
Total assets	<u>\$30,000</u>	Total liabilities and equity	<u>\$30,000</u>

Income Statement
for the Year Ending
December 31, 1995
(Thousands of Dollars)

Sales	\$45,000
Cost of goods sold and operating expenses	<u>36,950</u>
Earnings before interest and taxes (EBIT)	\$ 8,050
Interest expense	<u>1,050</u>
Taxable income	\$ 7,000
Taxes (40%)	<u>2,800</u>
Net income	<u>\$ 4,200</u>

It has been NAMFAC's policy to pay out approximately 40 percent of current earnings in dividends. The company has been growing at approximately 5 percent per year and is expected to do so in the future. The current market price of NAMFAC common stock is 10 times the 1991 earnings per share.

- a. What have investors set as their required rate of return?
- b. Because the current rate of interest on U.S. Treasury securities is 10 percent and National Manufacturing is relatively small and therefore risky, investors would need to earn a return of at least 14 percent. At what market price would you invest in National Manufacturing?
- c. Because of the development of a newly patented process, it is now expected that NAMFAC's earnings and dividend growth rate will be approximately 14 percent annually for the foreseeable future. If the market place now requires a 17 percent return on this investment, calculate the new price of the stock.

3.
(10%)

The Jackson Company has just paid a dividend of \$3.00 per share on its common stock, and it expects this dividend to grow by 10 percent per year, indefinitely. The firm has a beta of 1.50; the risk-free rate is 10 percent; and the expected return on the market is 14 percent. The firm's investment bankers believe that new issues of common stock would have a flotation cost equal to 5 percent of the current market price.

- (a) How much should an investor be willing to pay for this stock today?
- (b) What will be Jackson's cost of new common stock if it issues new stock in the marketplace today?

4.
(20%)

Tampa Canning Company must replace one of its fully depreciated canning machines. Two new models are available: Machine A, having a cost of \$100,000, an expected life of 3 years, and before-tax cash flow savings of \$55,000 per year, and Machine B, having a cost of \$200,000, an expected life of 5 years, and before-tax cash flow savings of \$80,000 per year. Machine A falls into the MACRS 3-year class, while Machine B falls into the MACRS 5-year class. Both machines will have an expected salvage value equal to their book value at the end of their expected lives. Technological improvements are expected so that any machine purchased after 3 years will provide after-tax profit plus depreciation cash flows that are 20 percent higher than present cash flows. However, machinery prices in 3 years are projected to rise by 20 percent, offsetting the increased cash flows. After that time, Tampa projects that machinery prices and cash flows will be constant. The firm's cost of capital is 15 percent and its federal-plus-state tax rate is 40 percent. If the replacement is to be made, it must be done now.

The MACRS recovery allowance percentages for 3- and 5-Year assets are as follows:

Year	Recovery Allowance	
	3-Year Asset	5-Year Asset
1	33%	20%
2	45	32
3	15	19
4	7	12
5		11
6		6
	<u>100%</u>	<u>100%</u>

Should Tampa replace the old machine with one of these two models? If so, with which alternative? (hint: using the equivalent annual annuity of each to find the Answer.)

5.
(10%)

You are the director of capital budgeting of an all-equity firm. The firm's current cost of equity is 16 percent; the risk-free rate is 10 percent; and the market risk premium is 5 percent. You are considering a new project that has 50 percent more beta risk than your firm's assets currently have. The expected return (IRR) on the new project is 18 percent. Should the project be accepted if beta risk is the appropriate risk measure?

6. (15%) The Rundle Container Company and the Ragland Can Corporation are each introducing a new biodegradable container. Relevant operating data for each firm are as follows:

	Rundle	Ragland
Units	100,000	100,000
New sales	\$500,000	\$500,000
Variable costs	\$100,000	\$250,000
Fixed costs	\$250,000	\$100,000
Maximum capacity	500,000	200,000
Sales price per unit	\$5.00	\$5.00
Variable cost per unit	\$1.00	\$2.50

- Calculate the breakeven point for both firms.
- What is the new profit, ignoring taxes, for each firm at 100,000 units of production?
- Intuitively, which firm would you expect to have the higher net profit at 200,000 units of production? Why? Check your answer.

7. (15%) Cannon Company has enjoyed a rapid increase in sales in recent years, following a decision to sell on credit. However, the firm has noticed a recent increase in its collection period. Last year, total sales were \$1 million, and \$250,000 of these sales were on credit. During the year, the accounts receivable account averaged \$41,664. It is expected that sales will increase in the forthcoming year by 50 percent, and, while credit sales should continue to be the same proportion of total sales, it is expected that the days sales outstanding will also increase by 50 percent. If the resulting increase in accounts receivable must be financed by external funds, how much will Cannon need? (Assuming $1yr = 360 days$)

附錄:

TABLE 1 Present Value of an Annuity of \$1 per Period for n Periods

$$PVIFA_{k,n} = \sum_{t=1}^n \frac{1}{(1+k)^t} = \frac{1 - \frac{1}{(1+k)^n}}{k} = \frac{1}{k} - \frac{1}{k(1+k)^n}$$

Number of Periods	10%	12%	14%	15%	16%	18%	20%	24%	28%	32%
1	0.9091	0.8929	0.8772	0.8696	0.8621	0.8475	0.8333	0.8065	0.7813	0.7576
2	1.7355	1.6901	1.6467	1.6257	1.6052	1.5656	1.5278	1.4568	1.3916	1.3315
3	2.4869	2.4018	2.3216	2.2832	2.2459	2.1743	2.1065	1.9813	1.8684	1.7663
4	3.1699	3.0373	2.9137	2.8550	2.7982	2.6901	2.5887	2.4043	2.2410	2.0957
5	3.7908	3.6048	3.4331	3.3522	3.2743	3.1272	2.9906	2.7454	2.5320	2.3452

TABLE 2 Future Value of an Annuity of \$1 per Period for n Periods

$$FVIFA_{k,n} = \sum_{t=1}^n (1+k)^{n-t} = \frac{(1+k)^n - 1}{k}$$

Number of Periods	12%	14%	15%	16%	18%	20%	24%	28%	32%	36%
1	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
2	2.1200	2.1400	2.1500	2.1600	2.1800	2.2000	2.2400	2.2800	2.3200	2.3600
3	3.3744	3.4396	3.4725	3.5056	3.5724	3.6400	3.7776	3.9184	4.0624	4.2096
4	4.7793	4.9211	4.9934	5.0665	5.2154	5.3680	5.6842	6.0156	6.3624	6.7251
5	6.3528	6.6101	6.7424	6.8771	7.1542	7.4416	8.0484	8.6999	9.3983	10.146