

**Achievement of Market-Friendly Initiatives and Results Program
(AMIR 2.0 Program)**

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Equity Analysis, Portfolio Management, and Real Estate

Practice Exam 2 and Solutions

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EQUITY ANALYSIS, PORTFOLIO MANAGEMENT & REAL ESTATE

1. As the analyst of Copley Manufacturing Company, you have projected Copley's income statement and balance sheet for the end of 1994 as shown in Tables 1 and 2. You have just learned that Copley will restructure by issuing \$100,000 of debt at 12 percent and simultaneously purchasing \$100,000 of its common stock on the open market. Copley's current stock price is \$20, the firm has the policy of paying out all earnings as dividends, and is in the 40% tax bracket. You wish to estimate how the restructure plan will affect the firm's projected balance sheet and income statement as well as the impact on the firm's stock price.

- A) **Recalculate** Copley's net income allowing for restructuring assuming that the plan occurs at the beginning of 1994. **Show** calculations.
- B) **Discuss** the impact of the restructure plan on Copley's projected earnings per share (EPS). **Show** calculations for both pre-restructure EPS and post-restructure EPS.
- C) **Discuss** the impact of the restructure plan on Copley's projected dividends per share (DPS). **Show** calculations for both pre-restructure DPS and post-restructure DPS.
- D) Before the announcement of the restructure plan, you had estimated Copley's beta at 1.50. After the announcement, you estimate the firm's beta at 2.30 due to the increased risk to the stockholders of the additional debt. Assuming that the risk-free rate of return is 6 percent and that the required return on the average stock in the market is 10 percent, **calculate** and **graph** the required rate of return for Copley's stockholders both before and after the restructuring announcement using the Capital Asset Pricing Model. **Show** calculations.
- E) Using the announcement information in part D above, **calculate** and **discuss** the impact of the restructuring plan on Copley's stock price (use the Dividend Discount Model). **Show** calculations.
- F) Using the estimated price of Copley Stock from part E above, **calculate** and **graph** alpha before and after the announcement (assume a constant current price of \$20).
- G) **List** and briefly **discuss** 3 other valuation models you could use to estimate the value of Copley's stock.
- H) Briefly **discuss** what additional information you would need to employ the models you listed in part G above.

2. You are the portfolio manager of a large pension fund and are considering the purchase of a specific real estate investment for inclusion into the portfolio. You expect the investment to generate net operating income of \$11,000 next year. You wish to determine a reasonable price to pay for the property. In conducting your analysis, you observe three recently sold properties that are similar to the one you wish to value (see data in Table 3).

- A) Using the capitalization rate approach, **compute** a reasonable price you can expect to pay for the property. **Show** calculations.
- B) **Discuss** 3 factors that affect your choice of capitalization rate.

3. As the assistant portfolio manager to a growing pension fund, you wish to explain the merits of diversifying into international securities to the fund's investment committee. The portfolio currently contains only U.S. stocks and bonds.

- A) Using a graph, **show** the benefits of diversifying into international securities.
- B) **Discuss** the main reason for your suggestion along with 3 potential problems.

4. Given the following projections of free cash flow for the company you are analyzing:

	Free Cash Flow
1995	\$70,000
1996	\$110,000
1997	\$140,000

The company has 100,000 shares outstanding.

- A) **Explain** how you would arrive at these projected free cash flows
 - B) Assuming a discount rate of 12 percent and an 8 percent growth rate in free cash flow for 1998 and beyond, **calculate** the present value of this company.
 - C) **Briefly discuss** the conditions under which you would be willing to pay more for this company than the present value you calculated above.
 - D) Assuming that the total liabilities of this company equal \$400,000, **estimate** the fair market value per share of the equity.
 - E) **Briefly explain** how you would estimate the discount rate of 12 percent.
5. If the market places the same value on \$1 of dividends as on \$1 of capital gains, then firms with different payout ratios will appeal to different clienteles of investors. Because one investor is as good as another, a firm cannot increase its value by changing its dividend policy. Yet empirical evidence reveals a strong correlation between dividend payout ratios and small firms that pay little or no dividends. These firms reinvest all earnings in the business. **Explain** this evidence on dividend policy if dividend policy is irrelevant.
6. Assuming that the market is semistrong-form efficient, explain whether you can expect to earn excess returns if you make stock transactions based on:
- a) Your broker's information about record earnings for a stock
 - b) Rumors about a merger of a firm
 - c) Yesterday's announcement of a successful test of a new product
7. Below are the equity account for Jones International. **Calculate** the number of shares outstanding, the average price at which the shares were sold, and the book value of Jones stock (**show** calculations).

Common stock, \$2 par	\$135,430
Capital Surplus	203,145
Retained earnings	<u>2,370,025</u>
Total	\$2,708,600

8. **List** and **briefly explain** 3 assumptions that lie behind the Modigliani-Miller theory of capital structure, and **briefly discuss** the effect of each upon the conclusions of the theory for the real world.
9. A firm is experiencing a period of rapid growth. You expect earnings and dividends to grow at a rate of 18 percent during the next two years, 15 percent in the third year, and then at a constant rate of 6 percent thereafter. The firm's last dividend was \$1.15. If you require a 12 percent return, **calculate** the intrinsic value of the stock today.
10. Suppose an income property is offered on the market for \$100,000 with projected NOI is \$10,000. If other properties of this type in the market are selling at a cap rate of 10.4 percent, **explain** whether this property is overpriced or underpriced (**show** calculations).

TABLE 1
Copley Manufacturing Company
Projected Balance Sheet 12/31/94

Total current assets	\$100,000
Net fixed assets	\$100,000

Total assets	\$200,000
	=====
Total debt	\$0
Common stock (10,000 shares)	\$200,000

Total liabilities & equity	\$200,000
	=====

TABLE 2
Copley Manufacturing Company
Projected Income Statement
12/31/94

Sales	\$200,000
Operating Expenses	160,000

Earnings before taxes (EBT)	\$40,000
Taxes (40%)	16,000

Net Income	\$24,000
	=====

TABLE 3
Comparable Sales

	<u>Sale 1</u>	<u>Sale 2</u>	<u>Sale 3</u>
NOI	\$10,000	\$12,400	\$8,600
Sale price	\$85,000	\$105,000	\$72,500

Suggested Solutions

1 A.

TABLE 1
Copley Manufacturing Company
Projected Balance Sheet 12/31/94

	<u>Pre-restructure</u>	<u>Post-restructure</u>
Total current assets	\$100,000	\$100,000
Net fixed assets	\$100,000	\$100,000
	-----	-----
Total assets	\$200,000	\$200,000
	=====	=====
Total debt	\$0	\$100,000
Common stock (10,000 shares)	\$200,000	
Common stock (5,000 shares)	-----	\$100,000

Total liabilities and equity	\$200,000	\$200,000
	=====	=====

TABLE 2
Copley Manufacturing Company
Projected Income Statement 12/31/94

	<u>Pre-restructure</u>	<u>Post-restructure</u>
Sales	\$200,000	\$200,000
Operating Expenses	160,000	160,000
	-----	-----
Earnings before interest and taxes (EBIT)	\$40,000	\$40,000
Interest expense (@12%)	0	12,000
	-----	-----
Taxable income	\$40,000	\$28,000
Taxes (40%)	16,000	11,200
	-----	-----
Net Income	\$24,000	\$16,800
	=====	=====

1 B & C.

EPS	\$2.40	\$3.36
DPS	\$2.40	\$3.36

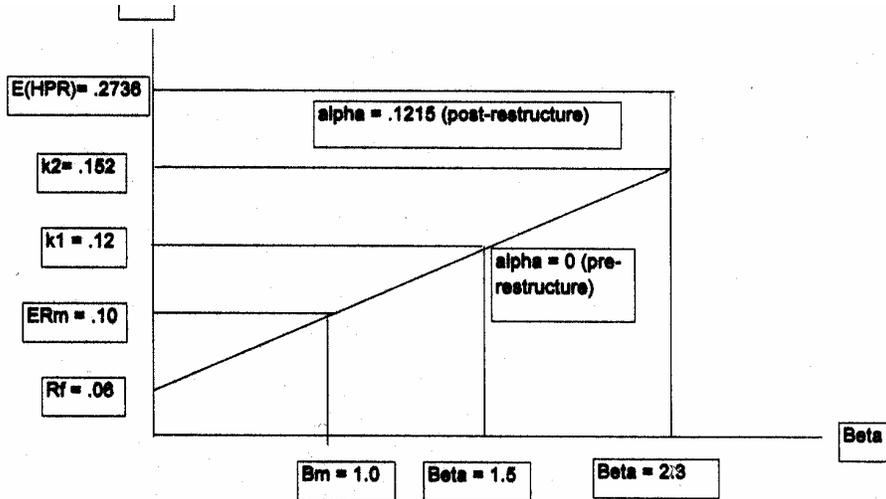
Discussion

1. EPS increase after restructure because of deductibility of interest and fewer shares outstanding.
2. DPS increase after restructure because payout ratio stays constant, which implies no growth.

1 D, E & F.

Capital Asset Pricing Model Calculations

Risk-free	6%	6%
Required Rate of Return to Average Stock in Market	10%	10%
Beta	1.50	2.30
Required Rate of Return to Copley Stockholders	0.12	0.152
Estimated Price of Copley's Stock (Using DDM)		
(D1/Required Rate of Return to Copley Stockholders)	\$20.00 (=2.4/.12)	\$22.11 (3.36/.152)



$$.12 = .06 + 1.5(.10 - .06)$$

$$.2736 = (22.11 - 20)/20 + 3.36/20$$

$$\text{alpha} = .2736 - .152$$

Discussion

1. The projected price of Copley's stock increases even though risk to stockholders increases.
2. At some point if Copley were to further increase leverage, the price of the stock would

probably decline. This would happen because increased risk to the stockholders would more than offset benefits of cheaper debt.

1 G & H.

Other valuation models include:

1. P/E--projected price = projected P/E ratio times projected EPS
2. P/Book--projected price = projected P/B ratio times projected book value per share
3. P/Cash Flow--projected price = projected P/cf ratio times projected cf per share
4. P/Sales--projected price = projected P/Sales ratio times projected sales per share

Discussion: You would need data on comparable firms or historical time-series data on Copley

2A.

TABLE 3

Comparable Sales

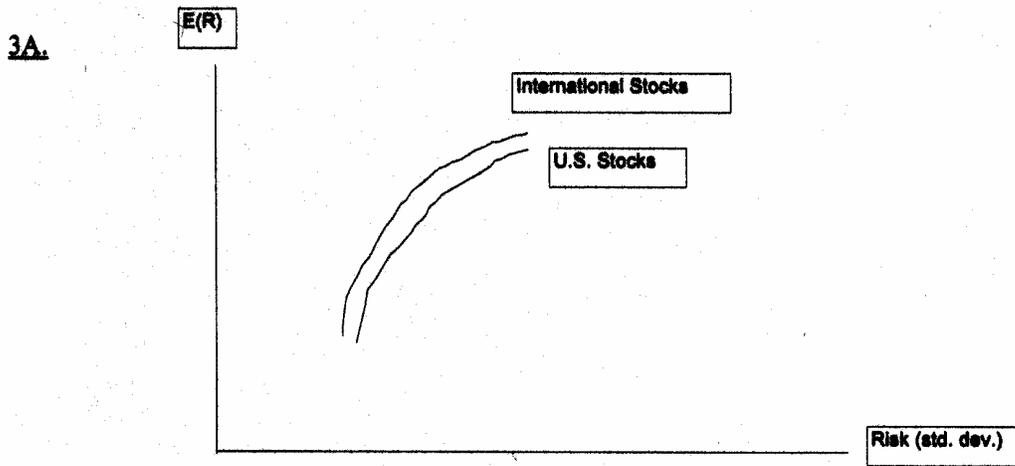
	<u>Sale 1</u>	<u>Sale 2</u>	<u>Sale 3</u>
NOI	\$10,000	\$12,400	\$8,600
Sale price	\$85,000	\$105,000	\$72,500
Indicated Cap Rate	11.76%	11.81%	11.86%
Estimated Value of Property	\$93,500	\$93,145	\$92,733

A reasonable price is between \$92,733 and \$93,500. You could use the average.

2B.

Factors that affect your choice of capitalization rate:

1. Similarity of recent sales in terms of age, condition, quality and overall condition.
2. Similarity of market and financing conditions largely in terms of time of sales.
3. Risk of NOI due to creditworthiness of lessee.
4. Impact of inflation--higher inflation expectations increase cap rate.
5. Cap rate equals mortgage rate plus risk premium plus inflation expectations.



Note: you should practice drawing this graph. Notice the increased efficiency from including internationals.

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3B.

The main reason for your suggestion is diversification, which is driven by the less than +1.0 correlation between international securities and the existing portfolio of U.S. stocks and bonds.

Three potential problems are:

1. Higher costs
2. Lack of reliable data
3. Political risk
4. Currency risk
5. Understanding local accounting conventions.

4A. Free cash flow equals cash flow less cash necessary to maintain the business, and is calculated as $EBIT \times (1-t) + \text{Depreciation} - \text{Investment}$.

4B.

	1995	1996	1997	1998
Free cash flow (FCF)	\$70,000	\$110,000	\$140,000	\$151,200
Discount rate	0.12	0.12	0.12	
Present Value of FCF	\$62,500	\$87,691	\$99,649	
Price at time (t=3)			\$1,260,000 (=FCF4/.12 - .08)	
Present value			\$896,843	

of P3

Total present value of company	\$1,146,684
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4C. If you were buying a controlling interest in the company that gives you the right to change corporate policies.

4D.

Total Value of Firm	\$1,146,684
Less: Market value of Debt	\$400,000
Equals: Fair Market Value of Equity	\$746,684

Number of shares outstanding	100,000
Fair Market Value per Share	\$7.47

4E. The .12 discount rate is the weighted average cost of capital. Because the cash flow accrues to the firm and not just the equity holders, the appropriate risk-adjusted discount rate is the weighted average cost of capital and not just the cost of equity. Be careful here because this is a confusing point. The weighted average cost of capital combines the costs associated with each source of capital, which is usually debt and equity but may include preferred stock, according to the proportion of each source in the firm's total capital structure. Included in the structure are permanent long-term sources of capital

5. It has been observed that an increase in the dividend is often accompanied by an increase in the price of the stock, while a dividend cut generally leads to a stock price decline. This could suggest that investors, in the aggregate, prefer dividends to capital gains. However, MM argue differently. They note the well-established fact that corporations are always reluctant to cut dividends, and hence do not raise dividends unless they anticipate equal or higher earnings in the future. Thus, MM argue that a higher-than-normal dividend increase is a “signal” to investors that the firm’s management forecasts good future earnings. Conversely, a dividend reduction, or a smaller-than-normal increase, is a signal that management is forecasting poor earnings in the future. Thus MM claim that investors reaction to changes in dividend policy do not necessarily show that investors prefer dividends to retained earnings. Rather, the fact that price changes follow dividend actions simply indicates that there is an important information or *signaling*, content in dividend announcements.

6a. No, since that information is already reflected in the current price of the stock. b. Possibly, since the merger rumor may or may not be true. Until it is confirmed one way or the other, the price of the stock will vary depending on speculation as to what investors believe will happen. c. Yesterday’s announcement is already reflected in the price of the stock.

7. Number of shares outstanding = $\$135,430/2 = 67,715$. The average price at which the shares were sold = $(135,430 + 203,145)/67,715 = \5 . Book value per share = $2,708,600/67,715 = 40$.

8. MM argue for no optimal capital structure assuming: 1. No taxes; 2. The cost of equity increases exactly enough to offset the benefit of the lower cost of debt; 3. No bankruptcy costs; and 4. Constant cost of debt. These assumptions are not present in the real world implying that an optimal capital structure most likely exists. The problem is that we do not know how to precisely identify it.

9.

Year	Growth	Dividends	Price	PV @ 12%
0		1.15		
1	18%	1.36		1.21
2	18%	1.60		1.28
3	15%	1.84	32.53	24.47
4 and beyond	6%	1.95		
Intrinsic Value =				\$26.96

10. According to the cap rate approach to valuation, this property is overvalued by \$3,846.

NOI =	\$10,000
cap rate =	0.104
Value =	\$96,154