B02030: BUSINESS FINANCE
CHAPTER 6: INTRODUCTION TO RISK AND RETURN

EX1: Stock A has the following returns for the past 4 years.

a) Calculate the expected rate of return of stock A

b) Calculate variance and standard deviation of stock A's rate of return

Year	Rate of return
2019	15%
2020	9.5%
2021	-3%
2022	6%

EX2: Calculate variance and standard deviation of stock B's rate of return. Knowing that the rate of return in three situations of the economy:

Situation	Probability	Rate of return
Boom	25%	21%
Normal	55%	15%
Recession	20%	-16%

EX3:

Measure the expected rate of return and risk of stock X and stock Y. Which stock does a rational investor choose?

Year	Rate of return (stock X)	Rate of return (stock Y)
1	20%	8%
2	-8%	10%
3	-15%	10%
4	9%	12%
5	25%	9%
6	46%	10%
7	6%	11%
8	-3%	10%

EX4: Suppose you invest 60% of your portfolio in Campbell Soup and 40% in Boeing. The expected dollar return on your Campbell Soup stock is 3.1% and on Boeing is 9.5%. The standard deviation of Campbell Soup and Boeing annualized daily returns are 15.8% and 23.7%, respectively. Assume a correlation coefficient of -0.6 and calculate the portfolio variance.

EX5: Suppose you invest 60% of your portfolio in Johnson & Johnson (JnJ) and 40% in Ford. The expected dollar return on your JnJ stock is 8% and on Ford is 18.8%. The standard deviation of their annualized daily returns are 13.2% and 31%, respectively. Calculate the expected return and standard deviation of the portfolio. If:

a) Correlation coefficient is -1
b) Correlation coefficient is -0.6
c) Correlation coefficient is 0
d) Correlation coefficient is +1

CHAPTER 7: PORTFOLIO THEORY AND THE CAPITAL ASSET PRICING MODEL

EX1: Knowing that the characteristics of 2 stocks as following:

	E(R)	**σ**	**Corr = 0.19**
Johnson & Johnson (J)	8%	14%	
Ford (F)	18.8%	21%	

Calculate the expected return and standard deviation of the portfolio of Johnson & Johnson and Ford. If:

a) Invest 20% in Ford
b) Invest 40% in Ford
c) Invest 90% in Ford

EX2: The annual return for three years of stock B comes out to be 0%, 10% and 26%. Annual returns for three years for the market portfolios are 6%, 18%, 24%. Calculate the beta for the stock.

EX3: Knowing that the expected return on the market is 11 percent, and the risk-free rate is 5 percent. What must the expected return on this stock be? If

a) Beta of the stock is 0
b) Beta of the stock is 1

c) Beta of the stock is 0.7

EX4: A stock has a beta of 1.15, the expected return on the market is 11 percent, and the risk-free rate is 5 percent. What must the expected return on this stock be?

EX5: A stock has an expected return of 10.2 percent, the risk-free rate is 4 percent, and the market risk premium is 7 percent. What must the beta of this stock be?

EX6: A stock has an expected return of 13.4 percent, its beta is 1.60, and the risk-free rate is 5.5 percent. What must the expected return on the market be?

CHAPTER 8: RISK AND THE COST OF CAPITAL

EX1: Corporation A has the D/V ratio of 2/5. The beta of the stock is 1.1, market rate of return is 10 percent, and the risk-free rate is 3 percent. The pre-tax cost of debt is 9 percent.

a) Calculate the cost of capital.

b) Calculate the weighted average cost of capital, knowing that the tax rate is 35 percent.

EX2: Calculate WACC, then choose the optimal capital structure. Tax rate is 20%

	D/V	R_D	E/V	R_E
a)	0%	0	100%	12%
b)	10%	9.6%	90%	12%
c)	30%	9.6%	70%	12%
d)	60%	12%	40%	15%

EX3: Corporation A has a beta of the stock of 1.1 and a debt-to-equity ratio of 0.3. The market rate of return is 13 percent, the tax rate is 35 percent, and the risk-free rate is 3 percent. The pre-tax cost of debt is 9 percent. What is the WACC?

EX4: Calculate WACC if the tax rate is 20%. Know that:

Capital Structure		
40%	Bond	The 10-year annual coupon bond that has a coupon rate of 9% with a face value of $1,000 and its current price is $1,308.
60%	Common stock	The risk-free rate is 2%, the expected market risk premium is 8%, and the beta of the company's common stock is 0.5.

EX5: The total market value of the common stock of the company B is 600 million VND, and the total value of its debt is 500 million VND. The beta of the stock is currently 1.3

and that the expected risk premium on the market is 8%. The Treasury Bill rate is 3% and the cost of debt after tax is 6.5%. What is the WACC? (Tax rate is 30%).

EX6: Corporation TNF went public by issuing 2,000,000 shares of common stock at 10,000 VND per share. The shares are currently trading at 55,000 VND per share. Current risk free rate is 6% and market risk premium is 8% and the company has a beta coefficient of 1.2. During last year, TNF issued 500,000 bonds, the face value of bonds is 1,000,000 VND per bond and the bonds are currently trading at 800,000 VND per bond. If the tax rate is 35%, the cost of debt is 12%. What is the WACC?

EX7: Calculate WACC. Tax rate is 20%. Know that:

Sources of fund	The amount of each source of fund	Figures
Long-term debt from bank	2 bil VND	Interest rate is 12%
Bond	3 bil VND	Consider to issue 10% coupon bond with a face value of 1,5 mil VND, price of bond is 1,2 mil VND, and 5 years to maturity.
Common stock	4 bil VND	The risk-free rate is 4%, the expected market rate of return is 8%, and the company's stock beta is 1.62.

EX8: Calculate WACC. Tax rate is 35%. Know that:

Sources of fund	The amount of each source of fund	Figures
Bond	$3 billion	Consider to issue 10% coupon bond with a face value of $1,500, price of bond is $1,200, and 5 years to maturity.
Common stock	$4 billion	The risk-free rate is 4%, the expected market rate of return is 8%, and the company's stock beta is 1.62.
Preferred stock	$0.5 billion	Expect to pay dividend $5 per share and current price is $80

EX9: A levered firm has a target capital structure of 20 percent debt and 80 percent equity. The aftertax cost of debt is 6 percent, the tax rate is 35 percent, and the cost of equity is 14 percent. The firm is considering a project that is equally as risky as the overall firm. The project has an initial cash outflow of 3 billion VND and annual cash inflows of 400 million VND at the end of each year for six years. What is the NPV of the project?

EX10:

a) Project A is expected to produce CF = $100 mil for each of three years. Given a risk free rate of 6%, a market premium of 8%, and beta of 0.75, what is the PV of the project?
b) Assume that the project B has the same present value for each period of the project A. The cash flows of project B are risk-free. Calculate the cash flows now.

CHAPTER 12: FINANCIAL ANALYSIS

EX1: Consider the following balance sheet of the Weston company:

Assets			Liabilities and Owners' Equity		
	2011	**2012**		**2011**	**2012**
Current assets	$936	$1,015	Current liabilities	$382	$416
Non-current assets	$4,176	$4,896	Long-term debt	$2,160	$2,477

a) What is owners' equity for 2011 and 2012?
b) What is the net working capital in 2011 and 2012?

EX2: Travis, Inc., has sales of $387,000, costs of $175,000, net fixed assets of $27,000, depreciation expense of $40,000, long-term debt of $12,900, interest expense of $21,000, and a tax rate of 35 percent. What is the net income for the firm? Suppose the company paid out $30,000 in cash dividends. What is the addition to retained earnings?

EX3: Complete the Income Statement

Income statement	2023
Sales	800 mil VND
Cost of good sold	290 mil VND
Selling, general, and administrative expenses	121 mil VND
Depreciation	80 mil VND
EBIT	?

Interest	25 mil VND
EBT	?
Tax rate	20%
Net income	?
Addition to retained earnings (60%)	?
Dividend paid (40%)	?

EX4:

a) Filling in the blank (?)

Income Statement	2023
Net sales	?
Cost of goods sold	31,729
Selling, general, and administrative expenses	11,158
Depreciation	1,539
Earning before interest and taxes (EBIT)	?
Interest expense	298
Earning before taxes (EBT)	?
Tax (20%)	?
Net Income	?
Dividends	841.44
Addition to retained earnings	1,963.36

b) What is the sale for 2023?

Income statement	2023
Cost of good sold	390 mil VND
Addition to retained earnings	152 mil VND
Interest	37 mil VND
Dividend paid	48 mil VND
Selling, general, and administrative expenses	121 mil VND
Tax rate	20%
Depreciation	80 mil VND
Sales	?

EX5:

Balance sheet		
ASSETS	**2023**	**2022**
Current assets		
Cash and marketable securities	661	530
Accounts receivable	166	247
Inventories	8,209	7,611
Other current assets	215	298
Total current assets	9,251	8,686
Non-current assets		
Tangible fixed assets		
Property, plant, and equipment	31,477	28,836
Less accumulated depreciation	8,755	7,475
Net tangible fixed assets	22,722	21,361
Long-term investments	253	509
Other long-term assets	460	313
Total non-current assets	23,435	22,183
Total assets	**32,686**	**30,869**
LIABILITIES AND SHAREHOLDERS' EQUITY	**2023**	**2022**
Current liabilities		
Debt due for repayment	1,021	1,104
Account payable	4,543	4,137
Other current liabilities	2,458	2,510
Total current liabilities	8,022	7,751
Long-term debt	5,039	5,576
Deferred income taxes	660	670
Other long-term liabilities	910	774
Total liabilities	14,631	14,771
Common stock	735	729
Retained earnings and capital surplus	17,320	15,369
Total shareholders' equity	18,055	16,098
Total liabilities and shareholders' equity	**32,686**	**30,869**

Income statement	**2023**
Net sales	90,000
Cost of goods sold	60,000

Selling, general, and administrative expenses	15,000
Depreciation	2,000
Earning before interest and taxes (EBIT)	?
Interest expense	500
Earning before taxes (EBT)	?
Tax (20%)	?
Net Income	?
Dividends (20%)	?
Addition to retained earnings (80%)	?

a) Fill in the blank (?) of the Income statement.
b) Calculate the following financial ratios:
- Return on asset (ROA), return on equity (ROE), profit margin
- Current ratio, quick ratio, cash ratio
- Debt ratio, Debt-to-equity ratio, Long-term debt ratio, times-interest-earned, cash coverage ratio

c) Calculate: Average inventory period, Average collection period, Average payment period, Cash cycle

CHAPTER 13: WORKING CAPITAL MANAGEMENT

EX1: High-Rise Building Company uses 400,000 tons of stone per year. The carrying costs are $100/ton. The cost per order is $500. Calculate the optimal order size.

EX2: ABC Company sells 6,760 machines per month. The carrying costs are $30/unit. The cost per order is $50. Calculate the optimal number of orders per year. Know that company operates 360 days a year.

a) Calculate EOQ
b) How many times does the company reorder?
c) How long does an order last?
d) Calculate total inventory cost

EX3:

On a $100 sale, with terms 5/10 net 60, what is the implied interest rate on the credit given?

EX4: The default rate of Don's new customers has been running at 8%. The average sale for each new customer amounts to $1,500, generating a profit of $350. What is the expected profit from each new customer?

EX5: The default rate of Don's new customers has been running at 8%. The average sale for each new customer amounts to $1,500, generating a profit of $350 and 50% chance of a repeat order next year. The default rate on repeat orders is only 3%. If interest rate is 6%, what is the expected profit from each new customer?

CHAPTER 14: FINANCIAL PLANNING

EX1: The financial statements in 2022 and 2023 of the company ABC included the following items. What was ABC's cash cycle? The unit currency is dollar million.

	2022	2023
Inventory	$15,547	$12,625
Receivables	$20,113	$18,729
Payables	$14,969	$14,417

	2023
Sales	$55,656
Cost of good sold	$41,454

EX2: A company has accounts receivable of $50,000, inventory of $65,000, sales of $450,000, and cost of goods sold of $330,000. How long does it take the company to sell its inventory and collect payment on the sale?

EX3: Construct a table sources of cash. Know that the sales in the last quarter of year 2022 were $150 million and receivables at the start of the 1st quarter in 2023 is $200 million. The sales (in millions) in 4 quarters of 2023 are expected to be $800; $900; $700; $500, respectively. Assume that 55% of sales are cashed in the immediate quarter and the remaining of sales are cashed in the following quarter.

EX4: A company has forecast sales in the first 3 months of the year as follows (figures in millions): January, $60; February, $80; March, $100. 60% of sales are usually paid for in the month that they take place and 40% in the following month. Receivables at the end of December were $24 million. What are the forecasted collections on accounts receivable in March?

EX5: A company has forecast sales in the first 3 months of the year as follows (figures in millions): January, $80; February, $60; March, $40. 70% of sales are usually paid for in the month that they take place, 20% in the following month, and the final 10% in the next 2 month. Receivables at the end of December were $23 million. What are the forecasted collections on accounts receivable in March?

EX6: Company A has forecast sales in the 3 months of the year as follows: June: 120 mil VND; July: 130 mil VND; August: 180 mil VND. 60% of sales are usually paid for in the month that they take place and 40% in the following month. Receivables at the end of May were 60 mil VND.

a) What are the forecasted collections on accounts receivable in August?

b) What are the receivables at the end of August?

EX7:

	1st quarter	2nd quarter	3rd quarter	4th quarter
Receivables at start of period (mil VND)	200			
Sales (mil VND)	500	900	700	400

We assume that sales in the last quarter of the previous year were 100 mil VND.

Assume that 65% of sales are cashed in in the immediate quarter and 35% are cashed in the following quarter.

- **Use of cash:**

	1st quarter	2nd quarter	3rd quarter	4th quarter
Payment on AP	250	280	320	260
Increase in inventory	150	150	170	180
Labor and other expenses	110	110	110	110
Capital expenditures	70	20	35	49
Taxes, interest and dividends	66	66	66	66
Total uses	**646**	**626**	**701**	**665**

a) Calculate receivables at the end of period?

b) Construct table showing cumulative financing requirement in this year.

We assume that minimum operating cash balance is 100 million VND and cash at start of the period is 110 million VND.

EX8: On Jun 1st, a firm had a beginning cash balance of $300. May sales were $780 and Jun sales were $610. During Jun the firm had cash expenses of $160 and payments on accounts payable of $320. The accounts receivable period is 30 days. What is the firm's beginning cash balance on July 1st?

EX9: A company has net cash inflow for the quarter of $1,500. Knowing that the beginning cash balance is $450 and the minimum cash in each quarter is $150. The company has a short-term debt of $1,000 with the quarter interest rate of 4%. How much does the firm borrow or repay on its loan to have a zero cumulative cash surplus for the quarter?

EX10: Complete the Cash Budgeting (Unit: dollar)

Sales			**Purchases**	
May	180		May	50
Credit	1 month		Credit	1 month
Sales policy: + For cash: 60% + For credit: 40%				
	June	July	August	
1. Total sales	300	320	280	
2. Purchases of materials				
+ For cash	70	80	60	
+ For credit	40	30	40	
3. Other expenses	30	30	30	
4. Taxes, interest…	10	10	10	
5. Capital investment	100	0	0	

Assume that minimum cash for each month is $100. The cash at start of June is $60.

EX11: Half the company's sales are for cash on the nail; the other half are paid for with a one-month delay. The company pays all its credit purchases with a one-month delay. Credit purchases in January were $30, and total sales in January were $180. Complete the cash budget.

Assume that minimum cash for each month is $100.

	Feb	**Mar**	**Apr**
Total sales	$200	$220	$180
Purchase of materials			
+ For cash	$70	$80	$60
+ For credit	$40	$30	$40

Other expenses	$30	$30	$30
Taxes, interest, and dividends	$10	$10	$10
Capital investment	$100	0	0

CHAPTER 09: PAYOUT POLICY

EX1: Corporate A has 30,000 shares of stock outstanding with a par value of $10 per share and a market price of $45 a share. The balance sheet shows $300,000 in the common stock account, $550,000 in the capital in excess of par value account, and $732,000 in the retained earnings account. The corporate will have a 5-for-3 stock split. What will the market price per share be after the split?

EX2: Corporate B has excess cash of 24 mil VND and other assets of 120 mil VND. Equity is worth 60 mil VND. The firm has 500 shares of stock outstanding and net income of 120 mil VND. The firm has decided to spend all of its excess cash on a share repurchase program. How many shares of stock will be outstanding after the stock repurchase is completed? Knowing that corporate B has a market value equal to its book value.