PART III

1. The Fleming Company, a food distributor, is considering replacing a filling line at its Oklahoma City warehouse. The existing line was purchased several years ago for $600,000. The line's book value is $200,000, and Fleming management feels it could be sold at this time for $150,000. A new, increased capacity line can be purchased for $1,200,000. Delivery and installation of the new line are expected to cost an additional $100,000. Assuming Fleming's marginal rate is 40 percent, calculate the net investment for the new line.

2. International Foods Corporation (IFC) currently processes seafood with a unit it purchased several years ago. The unit, which originally cost $500,000, currently has a book value of $250,000. IFC is considering replacing the existing unit with a newer, more efficient one. The new unit will cost $700,000 and will require an additional $50,000 for delivery and installation. The new unit also will require IFC to increase its investment in initial new working capital by $40,000. The new unit will be depreciated on a straight-line basis over 5years to a zero balance. IFC expects to sell the existing unit for $275,000. IFC's marginal tax rate is 40 percent.

If IFC purchase the new unit, annual revenues are expected to increase by $100,000 (due to increased processing capacity), and annual operating costs (exclusive of depreciation) ate expected to decrease by $20,000. Annual revenues and operating costs are expected to remain constant at this new level over the 5-year life of the project. IFC estimates that its net working capital investment will increase by $10,000 per year over the life of the project. After 5 years, the new unit will be completely depreciated and is expected to be sold for $70,000. (Assume that the existing unit is being depreciated at a rate of $50,000 per year.)

   a. Calculate the project's net investment.
   b. Calculate the annual net cash flows for the project.

3. Nguyen, Inc. is considering the purchase of a new computer system (ICX) for $130,000. The system will require an additional $30,000 for installation. If the new computer is purchased it will replace an old system that has been fully depreciated. The new system will be depreciated over a period of 10 years using straight-line depreciation. If the ICX is purchased, the old system will be sole for $20,000. The ICX system, which has a useful life of 10 years, is

expected to increase revenues by $32,000 per year over its useful life. Operating costs are expected to decrease by $2,000 per year over the life of the system. The firm is taxed at a 40 percent marginal rate.

a. What net investment is required to acquire the ICX system and replace the old system?
b. Compute the annual net cash flows associated with the purchase of the ICX system.

4. Benford, Inc. is planning to open a new sporting goods store in a suburban mall. Benford will lease the needed space in the mall. Equpment and fixture for the store will cost $200,000 and be depreciated over a 5-year period on a straight-line basis to $0. The new store will require Benford to increase its net working capital by $200,000 at time 0. First-year sales are expected to be $1 million and to increase at an annual rate of 8 percent over the expected 10-year life of the store. Operating expenses (including lease payments and excluding depreciation) are projected to be $700,000 during the first year and increase at a 7 percent annual rate. The salvage value of the store's equipment and fixture is anticipated to be $10,000 at the end of 10 Years. Benford's marginal tax rate is 40 percent.
   a. Compute the net investment required for Benford.
   b. Compute the annual net cash flows for the 10-year projected life of the store.

5. Calculate the net present value of a project with a net investment of $20,000 for equipment and an additional net working capital investment of $5,000 at time 0. The project is expected to generate net cash flows of $7,000 per year over a 10-year estimated economic life. In addition, the net working capital will be recovered at the end of the project. The required return on the project is 11 percent and the company has a marginal tax rate of 40 percent. What is the meaning of the computed net present value figure?

6. Calculate the internal rate of return and profitability index for a project that is expected to generate 8 years of annual net cash flows of $75,000. The project has a net investment of $360,000 and the required return on the project is 12 percent.

7. Two mutually exclusive projects have the following expected cash flow:

Year	G	H
0	-$10,000	-$10,000
1	5,000	0
2	5,000	0
3	5,000	17,000

a. Calculate the internal rate of return for each project.
b. Calculate the net present value for each project, assuming the firm's weighted cost of capital is 12 percent.
c. Which project should be adopted? Why?

8. Jefferson Products, Inc., is considering purchasing a new automatic press brake, which costs #300,000 including installation and shipping. The machine is expected to generate net cash inflows of $80,000 per year for 10 years. At the end of 10 years, the book value if the machine will be $0, and it is anticipated that the machine will be sole for $100,000. If the press brake project is undertaken, Jefferson will have to increase its net working capital by 75,000. When the project is terminated in 10 years, there no longer will be a need for this incremental working capital, and it can be liquidated and made available to Jefferson for other uses. Jefferson requires a 12 percent annual return on this type of project and its marginal tax rate is 40 percent.
   a. Calculate the press brake's net present value.
   b. Is the project acceptable?
   c. What is the meaning of the computed net present value figure?
   d. What is the project's internal rate of return?
   e. For the press brake project, at what annual rates of return do the net present value and internal rate of return methods assume that the net cash inflows are being reinvested?

9. Imperial Systems has $1 million available for capital investments during the current year. A list of possible investment projects, together with their net investments and net present values, is provided in the following table:

Project	Net Investment	Net Present Value

1	$200,000	$20,000
2	500,000	41,000
3	275,000	60,000
4	150,000	5,000
5	250,000	20,000
6	100,000	4,000
7	275,000	22,000
8	200,000	-18,000

a. Rank the various investment projects in terms of their profitability indexes (computed to three decimal places).
b. In the order of decreasing profitability index values and considering the capital constraints, which projects should be adopted? Are all capital funds expended?
c. Is there another combination that produces a higher aggregate net present value than the one developed in Part b?
d. If less than the entire amount of available funds is invested, what is the opportunity cost of the unused funds?

10. The Taylor Mountain Uranium Company currently has annual revenues of $1.2 million and annual expenses exclusive of depreciation of $700,000. Depreciation amounts to $200,000 per year. These figures are expected to remain constant for the foreseeable future (at least 15 years). The firm's marginal tax rate is 40 percent.

A new high-speed processing unit costing $1.2 million is being considered as a potential investment designed to increase the firm's output capacity. This new piece of equipment will have an estimated usable life of 10 years and a $0 estimated salvage value. If the processing unit is bought, Taylor's annual revenues are expected to increase to $1.6 million, and annual expenses exclusive of depreciation will increase to $900,000. Annual depreciation will increase to $320,000. Assume that mo increase in net working capital will be required as a result of this project.

a. Calculate the processing unit's net present value, using a 12 percent required return.
b. Should Taylor accept the project?
c. How many internal rates of return does the processing unit project have? Why?
d. Calculate the processing unit's internal rate of return.

11. Turbomachinery Parts, Inc. is considering two mutually exclusive equipment investments that would increase its production capacity. The firm uses a 14 percent required rate of return to evaluate capital expenditure projects, The two investments have the following costs and expected cash flow streams;

Year	Investment D	Investment E	Year	Investment D	Investment E
0	-$50,000	-$50,000	4	-	15,000
1	24,000	15,000	5	-	15,000
2	24,000	15,000	6	-	15,000
3	24,000	15,000			

a. Calculate the net present value for Investment D and E, using the above data.
b. Create a replacement chain for Investment D. Assume that the cost of replacing inflows of $24,000 for years 4 through 6. Using theses figures, recomputed the net present value for Investment D.
c. Which of the two investments should be chosen, D or E? Why?
d. Use the equivalent annual annuity method to solve the problem. How does your answer compare with the one obtained in Part b?

12. The Jacobs Company is financed entirely with equity. The beta for Jacobs has been estimated to be 1.0. The current risk-free rate is 10 percent and the expected market return is 15 percent.
a. What rate of return should Jacobs require on a project of average risk?
b. If a new venture is expected to have a beta of 1.6, what rate of return should Jacobs demand on this project?
c. The Project in question requires an initial outlay of $9 million and is expected to generate a 10-year stream of annual net cash flows of $1.9 million. Calculate the NPV of the project using Jacobs's required return for projects of average risk.
d. Calculate the NPV of the project using the risk-adjusted rate computed in Part b.

13. Homer Store is considering a new location that is expected to yield the following net cash flows following an initial (year 0), certain outlay (NINV) of $75,000:

Year	Net Cash Flows	Certainty Equivalent Factor

1	$30,000	0.90
2	30,000	0.80
3	30,000	0.65
4	30,000	0.50

a. Compute the NPV of this project at a 15 percent cost of capital.

b. If the risk-free rate is 8 percent, what is the certainty equivalent NPV for the new location?

14. Advanced Systems company is financed one-third with debt and two-thirds with equity. Its market beta has been estimated to be 1.5. The current risk-free rate is 8 percent, and the expected market return is 15 percent. Advanced Systems' tax rate is 40 percent. Advanced Systems is planning a major research and development (R&D) investment program. Advanced Systems' management believes that theses types of projects should be financed conservatively. Specifically, the company plans to finance all R&D investments with 90 percent equity and 10 percent debt.

    a. If the pure project beta for the R&D investment is the same as the pure project beta for Advanced Systems' other assets. What rate of return is required on the equity-financed portion of the R&D investment, assuming it is financed 90 percent with equity and 10 percent with debt?

    b. Advanced Systems' managers believe this project may have more risk than their other investments. Another firm that invests very heavily in R&D similar to the type proposed by Advanced has been identified. Its capital structure is 80 percent equity and 20 percent debt. Its tax rate is 35 percent, and its market beta is 1.6.Using this information, determine the required return on the equity –financed portion of Advanced Systems' R&D project, assuming it is financed 90 percent with equity and 10 percent with debt.

15. Colbyco Industries has a target capital structure of 60 percent common equity, 30 percent debt, and 10 percent preferred stock. The cost of retained earnings is 15 percent, and the cost of new equity (external) is 16 percent. Colbyco anticipates having $20 million of new retained earnings available over the coming year. Colbyco can sell $15 million of first-mortgage bonds with an after-tax cost of 9 percent. Its investment bankers feel the company could sell $10 million of debentures with a 9.5 percent after-tax cost. Additional debt would cost 10 percent

after tax and be in the form of subordinated debentures. The after-tax cost of preferred stock financing is estimated to be 14 percent.

Compute the marginal cost of capital schedule for Colbyco, and determine the break points in the schedule.

16. The following financial information is available on Fargo Fabrics Inc.:

Current per-share market price	$20.25
Current per-share dividend	$ 1.12
Current per-share earnings	$2.48
Beta	0.90
Expected market risk premium	8.3%
Risk-free rate (treasury bills)	5.2%

Past 10 years earnings per share:

19X1	$1.39	19X6	$1.95
19X2	1.48	19X7	2.12
19X3	1.60	19X8	2.26
19X4	1.68	19X9	2.40
19X5	1.79	19X0	2.48

This past earning growth trend is expected to continue for the foreseeable future. The dividend payout ratio has remained approximately constant over the past 9 years and is expected to remain at current levels for the foreseeable future.

Calculate the cost of equity capital using the following methods:

a. The dividend capitalization model approach.
b. The Capital Asset Pricing Model approach.

17. Owens Enterprises is in the process of determining its capital budget for the next fiscal year. The form's current capital structure, which it considers to be optimal, is contained in the following balance sheet:

Balance Sheet			
Current assets	$ 40,000,000 400,000,000	Accounts Payable Other current liabilities	$ 20,000,000 10,000,000

Fixed assets	$440,000,000	Long-term debt	123,000,000
Total assets		Common stock at par	15,500,000
		Paid in capital in excess of par	51,000,000
		Retained earnings	220,500,000
		Total liabilities and stockholder's equity	$440,000,000

Through discussions with the firm's investment bankers, lead bank, and financial officers, the following information has been obtained:

- The firm expects net income from this year to total $80 million. The firm intends to maintain its dividend policy of paying 42.25 percent of earnings to stockholders.
- The firm can borrow $18 million from its bank at a 13 percent annual rate.
- Any additional debt can be obtained through the issuance of debentures (at par) that carry a 15 percent coupon rate.
- The firm currently pays $4.40 per share in dividends (D_0). Dividends have grown at a 5 percent rate in the past. This growth is expected to continue.
- The firm's common stock currently trades at $44 per share. If the firm were to raise any external equity, the newly issued shares would net the company $40 per share.
- The firm is in the 40 percent marginal tax bracket.

Compute Owners' marginal cost of capital schedule.

18. Rolodex, Inc, is in the process of determining its capital budget for the next fiscal year. The firm's current capital structure, which it considers to be optimal, is contained in the following balance sheet:

Rolodex, Inc. Balance Sheet (in millions of dollars)			
Current	$ 110	Accounts Payable	$ 30
assets	260	Other current liabilities	20
Fixed assets	$ 370	Long-term debt	128
Total assets		Preferred stock	32
		Common stock(20 million shares at	20
		par)	30
		Contributed capital in excess of par	110

		Retained earnings Total liabilities and equity	$370

Discussions between the firm's financial officers and the firm's investment and commercial bankers have yielded the following information:

- Rolodex can borrow $40 million from its bank at a pretax cost of 13 percent.
- Rolodex can borrow $80 million by issuing bonds at a net price of $687 per bond. The bonds would carry a 10 percent coupon rate and mature in 20 years.
- Additional debt can be issued at a 16 percent pretax cost.
- Preferred stock can be issued at a pretax cost of 16.5% percent.
- Rolodex expects to generate $140 million in net income and pay $2 per share in dividends.
- The $2 per share dividend ($D_1$) represents a growth of 5.5 percent over the previous year's dividend. This growth rate is expected to continue for the foreseeable future. The firm's stock currently is trading at $16 per share.
- Rolodex can raise external equity by selling common stock at a net price of $15 per share.
- Rolodex's marginal tax rate is 40 percent.

a. Compute Rolodex's marginal cost of capital schedule.

b. Given the following investment opportunity schedule, determine Rol0dex's optimal capital budget.

Project	Required Investment	Expected Return on Project
A	$140,000,000	17.0%
B	130,000,000	16.0
C	100,000,000	15.0
D	80,000,000	14.2
E	24,000,000	13.0
F	16,000,000	10.9