Chapter 9

Practice Problems

1. What is the NPV, and IRR of a project costing $5 million that produces FCFF of $0.75m every year forever (starting one year from today). Assume that the project's WACC is 10%.
2. A project is expected to produce FCFF of $500 every year for 5 years starting 3 years from today. If the project's initial cost is $1,000—raised entirely with equity—and the project's beta is 1.455, should the project be accepted according to MIRR? NPV? Assume that the risk-free rate is 7% and the MRP is 5.5%.
3. A project has an initial cost of $2,000 and produces a single FCFF of $4,000 in 10 years. What is the project's IRR? What is the project's MIRR? Why don't you need the WACC to figure out this project's MIRR?
4. A project produces FCFF of $1 million in its first year. Its FCFF is expected to grow at a constant 5% every year for the next 24 years. What is the most you would consider paying for the project, if the appropriate cost of capital is 10%?
5. You are considering developing a new Web browser. Startup costs are $18 million. You expect to produce FCFF of $1.15 million the first year (t=1) that will grow at a constant rate of 15% for the next 7 years. After that, FCFF is expected to grow at a constant 7% forever. What is the NPV of the project if the project WACC is 19%?
6. A project is expected to produce FCFF of $500 every year for 5 years starting in 3 years. If the project's initial cost is $1,000—raised entirely with equity—and the project's beta is 1.2, should the project be accepted (assume an 8% risk-free rate, and a 5.5% MRP)?
7. Phoenix Products requires a new machine. Two companies have submitted bids, and you are responsible for choosing which machine to buy. You believe the cost of capital is 5%, and cash flow analysis indicates the following:

Year	Machine A	Machine B
0	(2000)	(1000)
1	0	430
2	0	430
3	0	430
4	5000	430

What is the IRR for each machine? What is the NPV for each machine? Which machine should be chosen. Why?

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1. NPV = $2.5, IRR = 15%

2. MIRR = 18.96%, NPV = $267.13. NPV > 0 implies you should accept the project.

3. MIRR = IRR = 7.18%. MIRR = IRR when there are no intermediate cash flows to reinvest.

4. PV = $13.75

5. NPV = -$4.36

6. WACC = 14.6%, NPV = $288.40

7. IRR_A = 25.74%, IRR_B = 25.87, NPV_A = $2113.51, NPV_B = $524.76. Choose Project A because it generates greater value.