

Corporate Finance

Problem Set 3

Question 1

You are preparing to produce some goods for sale. You will sell them in one year and you will incur costs of \$90,000 immediately. If your cost of capital is 6.8%, what is the minimum dollar amount you need to sell the goods for this to be a non-negative NPV project?

Question 2

You are CEO of AMD, maker of high-performance graphic cards for gaming computers. You are considering whether to launch a new product. The new graphic card will cost \$895,000 to develop upfront (year 0), and you expect revenues the first year of \$801,000, growing to \$1.57 million the second year, and then declining by 35% per year for the next 3 years before the product is fully obsolete. In years 1 through 5, you will have fixed costs associated with the product of \$99,000 per year, and variable costs equal to 55% of revenues.

- What are the cash flows for the project in years 0 through 5?
- What is the project's NPV if the project's cost of capital is 9.4%?
[Hint: You can manually calculate certain numbers without relying on formula if that seems more convenient.]

Question 3

AllCity, Inc., is financed 40% with debt, 8% with preferred stock, and 52% with common stock. Its cost of debt is 5.7%, its preferred stock pays an annual dividend of \$2.49 and is priced at \$30. It pays dividend of \$2 to common stock owners and it is expected to rise by 5%. AllCity's tax rate is 35%.

What is its after-tax WACC?

[Note: Assume that the firm will always be able to utilize its full interest tax shield.]

Question 4

RiverRocks, whose WACC is 12.3%, is considering an acquisition of Raft Adventures (whose WACC is 14.3%). The purchase will cost \$101.4 million and will generate cash flows that start at \$15.1 million in one year and then grow at 4.3% per year forever. What is the NPV of the acquisition?

Question 5

Suppose a firm uses its company cost of capital to evaluate all of its projects. Will it underestimate or overestimate the NPV of new projects that are riskier than the firm's average projects?

Question 6

An oil company is drilling a series of new wells on the perimeter of a producing oil field. About 20 % of the new wells will be dry holes. Even if a new well strikes oil, there is still uncertainty about the amount of oil produced: 40 % of new wells which strike oil produce only 1,000 barrels a day; 60 % produce 5,000 barrels a day.

- a. Forecast the annual cash revenues from a new perimeter well. Use a future oil price of \$100 per barrel.
- b. A geologist proposes to discount the cash flows of the new wells at 30 % to offset the risk of dry holes. The oil company's normal cost of capital is 10 %. Does this proposal make sense? Explain briefly why or why not.

Question 7

Samsung Electronics America, Inc. has \$1 billion allocated for capital expenditures. Which of the following projects should the company accept to stay within the \$1 billion budget? How much does the budget limit cost the company in terms of forgone NPV? The opportunity cost of capital for each project is 11 %.

[Hint: You need to rank projects by their profitability (NPV/Investment).]

Project	Investment (in million USD)	NPV (in million USD)
1	300	66
2	200	-4
3	250	43
4	100	14
5	100	7
6	350	63
7	400	48