

Corporate Finance: HW 4

Your submitted work should be in an Excel file. Use Excel formulas to do all the calculations, that is, do not calculate anything on a calculator and just input the answer in your file.

Crabby Patty Inc. has developed a powerful new fryer that would be sold to its franchises all over the country. (That is, it is not one fryer. CP Inc. is going to mass-produce this equipment to sell to its chain of restaurants owners.) It would cost \$50 million at Year 0 to buy the equipment necessary to manufacture the fryers. The project would require net working capital at the beginning of each year in an amount equal to 12% of the year's projected sales; for example, $NWC_0 = 12\%(\text{Sales}_1)$. The fryers would sell for \$36,000 per unit, and Crabby Patty Inc. believes that variable costs would amount to \$25,000 per unit. After Year 1, the sales price and variable costs will increase at the inflation rate of 2.5%. The company's non-variable costs would be \$1.25 million at Year 1 and would increase with inflation.

The fryer-making project would have a life of 8 years. If the project is undertaken, it must be continued for the entire 8 years. Also, the project's returns are expected to be highly correlated with returns on the firm's other assets. The firm believes it could sell 1,200 units per year.

The equipment would be depreciated over a 6-year period, using these MACRS rates. (That is, there will be no depreciation expense in years 7 and 8 because the equipment has already been depreciated all the way to zero ending-book-value after year 6.)

Year	1	2	3	4	5	6
Dep. Rate	20%	32%	19%	12%	11%	6%

The estimated market value of the equipment at the end of the project's 8-year life is \$5 million. Crabby Patty Inc.' federal-plus-state tax rate is 40%. Its cost of capital is 10% for average-risk projects, defined as projects with a coefficient of variation of NPV between 0.8 and 1.2. Low-risk projects are evaluated with a WACC of 8%, and high-risk projects at 13%.

- Develop a spreadsheet model, and use it to find the project's NPV, IRR, and payback.
- Conduct a sensitivity analysis to determine the sensitivity of NPV to changes in the sales price, variable costs per unit, and number of units sold. Set these variables' values at 10% and 20% above and below their base-case values. Include a graph in your analysis.
- Conduct a scenario analysis. Assume that there is a 25% probability that best-case conditions, with each of the variables discussed in Part b being 20% better than its base-case value, will occur. There is a 25% probability of worst-case conditions, with the variables 20% worse than base, and a 50% probability of base-case conditions.
- If the project appears to be more or less risky than an average project, find its risk-adjusted NPV, IRR, and payback.