

Chapter 5: Additional Problems

Note: Set up the calculations needed to solve the following problems.

1. Assume you want to determine the net present value of a project which will cost \$5 million today and which will generate its first semiannual cash flow of \$500,000 four months from today. Subsequent semiannual cash flows will shrink by 2% each and will continue through nine years and 10 months from today. The cost of capital on the project equals 7.8% per year.
2. Assume a security matures for \$10,000 five years and seven months from today. Assume also that the security makes semiannual payments with the final semiannual payment also occurring five years and seven months from today. The next payment will equal \$100 and subsequent payments will fall by 2% each. Finally, assume that the APR on investments with comparable risk equals 3.5% per year with monthly compounding. What is the most you should pay for this security today?
3. Assume that five months from today you plan to make the first of several quarterly deposits into an account that pays an APR of 5.5% with monthly compounding. Your first deposit will equal \$500, each of your subsequent quarterly deposits will grow by 1% each, and your final quarterly deposit will occur two years and eight months from today. From this account you plan to make semiannual withdrawals beginning three years and one month from today. Subsequent semiannual withdrawals will shrink by 2% each and your final withdrawal will occur five years and seven months from today.
 - a. What is the size your first withdrawal?
 - b. If your withdrawals were all the same size rather than shrinking, would your first withdrawal be larger or smaller than your answer in part a? Assume nothing else changes.
4. Assume that four years and one month from today you plan to make the first of several annual withdrawals from an account. Your first withdrawal will equal \$1000. You plan for these withdrawals to continue through ten years and one month from today and for each withdrawal to be 0.5% larger than the previous withdrawal. You plan to fund these withdrawals by making a series of equal semiannual deposits into an account earning an APR of 8% with semiannual compounding. Your first deposit will occur one year and four months from today and your final deposit will occur three years and ten months from today. How large must you make each deposit?