Assignments

Financial Plan Assignments

Your assignment is to review the history of both short-term and long-term bonds over the past 5, 10, 25, 50, and 75 years. How have bonds performed overall? What do bonds add to a portfolio? What disadvantages do bonds have? How can you minimize the disadvantages of bonds, while at the same time enjoying the advantages bonds offer?

Benchmarks: What are the major benchmarks or indexes that correspond with bonds? (See **Learning Tool 15: Possible Benchmarks for Investment Plans**). It is likely you will include bonds in your diversified portfolio, so it is important you select the major benchmarks you will follow to help you understand how bonds perform.

Volatility: Generally, investors consider bonds less risky than stocks. To graphically see the volatility of bonds versus other asset classes, open **Learning Tool 23: Return Simulation for Asset Classes**. Go to the *Asset Class Data* tab and use the light-blue drop-down boxes to select your asset classes (or you can just use the asset classes listed). Use the dark-blue drop-down boxes to select your time period. Then go to the *Charts* tab. Push the *F9* button to see the impact of standard deviation.

This worksheet builds random portfolios with the expected return and standard deviation of the period and asset class chosen. It then assumes that each asset class builds 10 different portfolios and that those portfolios are run for 20 years. The differences between the 10 different portfolios are shown in the same colored lines. The more the lines move together, i.e., the more each of the random portfolios move together, the less risky or less volatile the asset class. The more the same colored lines diverge, the more risk or more volatile the asset class.

Returns: To see what the returns have been for various types of bonds, go to **Learning Tool 27: Expected Return Simulation and Benchmarks.** Go to the tab labeled *Returns and Risk*. Look for the 1-, 5-, 10-, 25-, 50-, 75- and 85-year returns for Treasury bonds (long-term government bonds with maturity of more than 10 years) and Treasury bills (short-term government bonds with maturities less than one year). How have these assets performed compared to equity or stock returns?

Learning Tools

The following Learning Tools may be helpful as you prepare your Personal Investment Plan:

15. Possible Benchmarks for Investment Plans

This document shows possible benchmarks for most of the major asset classes.

23. Return Simulation for Asset Classes

This spreadsheet shows the impact of various investment strategies and the volatility for different asset classes. This spreadsheet will also show you the historical impact of different asset allocation decisions for several asset classes.

26. After-Tax, Equivalent Taxable Yield, and After-Inflation Returns

This spreadsheet calculates the after-tax return, equivalent taxable yield, and after-inflation return on various assets.

27. Expected Return Simulation and Benchmarks

This spreadsheet shows a historical perspective on returns and standard deviation (risk) for the major asset classes over the last 1, 5, 10, 25, 50, 75, and 85 years. The spreadsheet also includes recommended benchmarks for some of the major asset classes.

Review Materials

Review Questions

1. How do bonds reduce the overall risk of a portfolio?
2. What seven risks are bonds susceptible to?
3. What is a bond rating? What does a high rating mean? What is Standard & Poor's highest bond rating? Lowest bond rating?
4. What are the six major categories of bonds?
5. How are bond values determined? What three things affect bond prices?

Case Studies

Case Study 1

Data

Bill is considering purchasing a bond with a 5 percent coupon interest rate, a par value of $1,000, and a market price of $990. The bond will mature in nine years.

Calculations

A. What is the bond's current yield?
B. Calculate the bond's yield to maturity using your financial calculator.

Case Study 1 Answer

A. The bond's current yield is the annual interest payments divided by the market price. The annual interest payments are the coupon interest multiplied by the par value—0.05 * 1,000, or $50. The price of the bond is $990, so the yield is $50 / $990, or 5.05%.

B. To calculate the yield to maturity, first clear the memories of the calculator and set it to annual payments. Set your present value as negative, what you would pay for the bond (PV = –990), your interest payments as your payment (PMT = 50), your future value as your par value (FV = 1,000), and your number of years as nine (N = 9). Then solve for your interest rate (I = 5.14%).

Note: Since Bill paid less for the bond than par, and his coupon interest rate was 5 percent, this would increase his YTM above your coupon interest rate.

Case Study 2

Data

Three friends—Kimberly, Natalie, and Clinton—are from Nevada, where there is no state income tax. They have asked you to determine the equivalent taxable yield on a municipal bond. This municipal bond is from the same state as your friends and is exempt from state and local taxes for interest. The bond's coupon yield is 3.75 percent with five years left until maturity, and it is selling at par. Kim is in the 15 percent tax bracket, Natalie is in the 28 percent tax bracket, and Clinton is in the 35 percent tax bracket. Calculate the equivalent taxable yield for your three friends.

Calculations

Assuming a similar AAA corporate bond yields 5.0 percent, which of your friends should purchase the municipal bond?

Case Study 2 Answers

Kimberly is in the 15% federal marginal tax bracket, so the equivalent taxable yield is 4.41%, or 3.75% / (1 – .15).
Natalie is in the 28% federal marginal tax bracket, so the equivalent taxable yield is 5.21%, or 3.75% / (1 – .28).
Clinton is in the 35% federal marginal tax bracket, so the equivalent taxable yield is 5.77%, or 3.75% / (1 – .35).
Assuming a corporate bond yields 5.0%, only Kimberly should purchase the corporate bond.

Case Study 3

Data

You paid $1,000 for a Boston Scientific bond at the end of the previous year. At the end of last year, the bond was worth $1,050. You are in the 25 percent federal marginal tax rate, and you live in a state that has no state income tax. Over the course of last year, you received $40 in coupon interest payments.

Calculations

A. What was your before-tax return for the bond?
B. What is your after-tax return, assuming you did not sell the bond?

Case Study 3 Answers

Calculations

A. You only pay taxes on realized income, not unrealized income. Your before-tax return is:
($1,050 – 1,000 + 40) / 1,000, or 9.0%
B. Your after-tax return would include the unrealized capital gains and the interest after you paid taxes. Since this is interest income, it is taxed at your marginal tax rate of 25% (there is no state tax). The after-tax return is:
(1,050 – 1,000 + [40 * (1 - .25)]) / 1,000 = 8.0%.
Of the $40 coupon, you pay $10 in taxes and keep the remaining amount.