

Problem 1. A financial asset that is traded in financial markets is specifically called

- (a) a liquid asset
- (b) a tradable asset
- (c) a security
- (d) a bond
- (e) none of the above

Answer 1: c. Not all financial assets can be traded in the market. e.g. your checking account. Assets that are traded are called securities and financial markets are also called securities markets.

Problem 2. The relationship between interest rates and bond prices is

- (a) positive
- (b) negative
- (c) neutral
- (d) getting serious but bond prices are afraid of commitment
- (e) none of the above

Answer 2: b. Suppose you buy a coupon bond that pays \$100 one year from now for \$80. Your confused friend buys the same bond for \$90. Then the respective interest rates are

$$\frac{100 - 80}{80} = 25\%,$$

$$\frac{100 - 90}{90} = 11.11\%.$$

Intuition: if you pay *less* today in order to receive \$100 a year from now, then you're getting a better deal.

Problem 3. The process through which the rates of return on identical assets are equalized is called

- (a) financial market transaction
- (b) arbitrage
- (c) securities market
- (d) investment
- (e) none of the above

Answer 3: b. If a rate of return is “too high,” then people will buy a lot of it. This will drive up the price, and therefore its interest rate will fall to its “normal” level. If the rate of return is “too low,” then people will sell a lot of it until the price goes down and therefore the interest rate will rise to its “normal” level.

Big picture is this: **two bonds with identical qualities must have identical rates of return.** If the bonds also have the same face value, then they will have the same price as well.

Problem 4. Asset A can be converted into cash faster than Asset B without any loss in value. We say that Asset A is

- (a) more tradeable
- (b) more liquid
- (c) more cashable
- (d) more fluid
- (e) none of the above

Answer 4: b. Liquidity refers to how quickly an asset can be converted into cash. In general, undesirable qualities will increase the interest rate of an asset (because otherwise no one would buy them), all else equal.

- a riskier asset, all else equal, will have a higher interest rate
- a less liquid asset, all else equal, will have a higher interest rate
- a more heavily-taxed asset, all else equal, will have a higher interest rate

Problem 5. What is the difference between company-specific and market-specific risk? How can you minimize each type of risk?

Answer 5. Company-specific risk is the risk you face from investing in a specific company. If you buy stock in Dunkin' Donuts and they face losses, then the value of your investment will go down. So the value of your investment is completely tied to how well Dunkin' Donuts is specifically doing. You can minimize company-specific risk by diversifying your portfolio—buy a bunch of different assets in a bunch of different companies in a bunch of different uncorrelated sectors of the economy. When one asset tanks, another may do well and overall you'd suffer no loss (and usually a gain).

Market-specific risk is the general risk you face from being in the investment market at all. You cannot diversify away market-specific risk because the performance of investments tend to go up and down at the same time depending on how well the economy as a whole is doing. (That is, sometimes the entire Dow Jones crashes instead of just an individual stock.)

Problem 6. Chris buys stock of Chevron for \$50. After a few weeks, he collects dividends of \$2 and sells it for \$52. Find Chris's rate of return from this investment.

Answer 6. The future payout is $52 + 2 = 54$. Thus the return is

$$\text{Return} = \text{Future Payout} - \text{Asset Price} \implies 54 - 50 = 4.$$

The rate of return is

$$\frac{\text{Return}}{\text{Asset Price}} = \frac{4}{50} = 8\%.$$

This is a capital gain because $52 > 50$.

Problem 7. A bond has a future value of \$140,000 and an interest rate of 12%. What is the price of this bond?

Answer 7. The future value of a bond is just how much the bond is worth one year from now after interest as accrued. If a bond has a future value of \$140,000 with an interest rate of 12%, then we need to solve

$$\frac{140,000 - P}{P} = 0.12 \implies P = 125,000.$$

Problem 8. A bond has a future value of \$136,800 and a price today of \$120,000. What is the interest rate on this bond?

Answer 8. We want to solve

$$R = \frac{136,800 - 120,000}{120,000} = 14\%.$$

Problem 9. A one-year corporate bond pays out \$10,000 next year and is selling for \$8,000 today in the bond market. A one-year US treasury discount bond pays \$1,325 next year and is selling for \$1,250 today. Find the risk premium on the corporate bond.

Answer 9. The interest rate on the safe US treasury bond is

$$R_s = \frac{1325 - 1250}{1250} = 6\%.$$

The interest rate on the risky corporate bond is

$$R_c = \frac{10,000 - 8,000}{8,000} = 25\%.$$

The risk premium is the difference between the risky interest rate and the riskless interest rate,

$$\text{risk premium} = 25 - 6 = 19\%.$$

Problem 10. A low-risk bond has a future value of \$140,000 and a price today of \$125,000. What is the future value of a high-risk bond with a risk premium of 5% and a price of \$100,000?

Answer 10. To find the risk-free interest rate, solve

$$R_s = \frac{140,000 - 125,000}{125,000} = 12\%.$$

Then the interest rate the risky bond faces is $12 + 5 = 17\%$. Therefore the future value of the high-risk bond satisfies

$$0.17 = \frac{FV - 100,000}{100,000} \implies FV = \$117,000.$$