ECON 313- HW 1 Solutions

Due: Monday, SEP 20

Short Answer Questions

1) An investor believes that the U.S. dollar will rise in value relative to the Japanese yen. The same investor is considering two investments with identical risk and return characteristics. One stock is trading in yen in Japan and the other stock is a stock trading in dollars in the United States. Should the investor purchase the Japanese stock? Briefly explain.

   No. If the value of the dollar goes up, then the investor will receive fewer dollars for the yen received from the sale of the investment. Therefore, the investor should purchase the U.S. dollar investment.

Numerical Question.

2) Stefani German, a 40-year-old woman, plans to retire at age 65, and she wants to accumulate $500,000 over the next 25 years to supplement the retirement programs provided by the federal government and her employer. She expects to earn an average annual return of about 4% by investing in a low-risk portfolio containing about 20% short-term securities, 30% common stock, and 50% bonds.
   Stefani currently has $60,019 that at an annual rate of return of 4% will grow to about $160,000 by her 65th birthday. Stefani consults a financial advisor to determine how much money she should save each year to meet her retirement savings objective. The advisor tells Stefani that if she saves about $24.01 each year, she will accumulate $1,000 by age 65. Saving 5 times that amount each year, $120.05 , allows Stefani to accumulate roughly $5,000 by age 65.

   a. How much additional money does Stefani need to accumulate over time to reach her goal of 500,000$?

      Additional amount needed = Goal – Total amount in saving after 25 years

      The problem statement indicates that her current savings of $60,019 will grow to
      $160,00 at the end of 25 years.
      Additional amount needed=$500,000–$160,000=$340,000

Stefani needs to accumulate $340,000 to reach her goal of $550,000.

b. How much must Stefani save to accumulate the sum calculated in part **a** over the next 25 years?
To calculate the amount Stefani must save annually, divide the amount in part **a** by $1,000 and then multiply by the annual investment per thousand of $24.01, as in the following equation:

$$\text{Annual deposit} = \frac{\text{Additional requirement}}{\$1{,}000} \times \text{Annual investment needed for additional } \$1{,}000$$

$$\text{Annual deposit} = \frac{340{,}000}{1{,}000} * 24.01 = 8{,}163.4$$

3) Mike and Julie Bedard are a working couple. They will file a joint income tax return. This year they have the following taxable income:
1. $126,000 from salary and wages (ordinary income).
2. $4,000 in interest income.
3. $1,000 in dividend income.
4. $3,000 in profit from sale of a stock they purchased two years ago.
5. $4,000 in profit from a stock they purchased this year and sold this year.

Use the federal income tax rates given in the following Table for 2021 to work this problem.

Tax Rates and Income Brackets for Joint Returns (2021)

Tax Rates	Taxable Income Joint Returns
10%	$0 to $19,900
12%	$19,901 to $81,050
22%	$81,051 to $172,750
24%	$172,751 to $329,850
32%	$329,851 to $418,850
35%	$418,851 to $628,300
37%	Over $628,300

a. How much will Mike and Julie pay in federal income taxes on 2 above?

To calculate the tax on interest income, use the rates given in the table. Take the sum of Mike and Julie's salary and wages and their interest income and find the corresponding rate in the table. Then multiply the rate by the interest income.
Since salary and wages are $126,000 and interest income is $4,000 , the sum is $130,000, which puts them in the 22% tax bracket.
$Tax_{\text{interest income}} = 4{,}000 * 0.22 = \$880$

b. How much will Mike and Julie pay in federal income taxes on 3 above? (Note: Remember that dividend income is taxed differently than ordinary income. Also, you can assume that the tax rates are the same as 2019)

Dividend income is taxed at the same rate as long-term capital gains, or 15%. Therefore,
$Tax_{\text{dividend income}} = 0.15 * 1000 = \$150$

c. How much will Mike and Julie pay in federal income taxes on 4 above?

Since Mike and Julie held the stock for two years, it is taxed at a long-term capital gains rate, or 15%.

$Tax_{\text{long-term gain}} = 3000 * 0.15 = \$450$

d. How much will Mike and Julie pay in federal income taxes on 5 above?
Stock held for less than a year is considered a short-term capital gain and is taxed as ordinary income. Take the sum of Mike and Julie's salary and wages, interest income, and short-term gains and find the corresponding rate in the table. Then multiply the rate by the short-term gain.

$Tax_{\text{short-term gain}} = 4000 * 0.22 = \$880$

4) An investor recently sold some stock in a European company that was worth 22,000 euros. The US$/euro exchange rate is currently 1.352 , meaning that 1 euro buys 1.352 dollars. How many U.S. dollars will the investor receive?

$$\text{Dollars received} = \text{euros} \times (\text{US\$} / \text{euro exchange rate})$$

Dollars received = 22,000 * 1.352 = $29,744

For the next two questions, you need to submit the *excel commands* along with your answers.

5) Find the Tesla stock **highest** price on June 15, 2021. For each of the following situations (ignoring brokerage commissions), calculate the gain or loss that Olivia Crowe realizes if she makes a 100-share transaction.
   a. She sells short and repurchases the borrowed shares at the lowest price on June 25.

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=GOOGLEFINANCE("TSLA", "high", DATE(2021,6,15)) = $616.79
=GOOGLEFINANCE("TSLA", "low", DATE(2021,6,25)) = $668.7
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$$\text{Profit (or loss)} = (\text{Selling price} - \text{Purchase price}) \times \text{Number of shares}$$

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Profit (loss) = (616.79 - 668.7) *100 = - $5194
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   b. She takes a long position and sells the stock at the closing price on June 28.

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=GOOGLEFINANCE("TSLA", "close", DATE(2021,6,28))= $688.72
Profit = (688.72 - 616.79) *100 = $7193
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6) Assume that an investor buys 50 shares of the Coinbase stock on July 15 at the lowest price, putting up a 60% margin.
   a. What is the value of the position?

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=GOOGLEFINANCE("COIN", "low", DATE(2021,7,15)) = $220.37
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$$\text{Value of the position} = \text{Number of shares} \times \text{Per share price}$$

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Value of the position = 50 * 220.37 = $11,018.5
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   b. How much equity capital must the investor provide to make this margin transaction?

$$\text{Equity portion} = \text{Market value of securities} - \text{Debit balance}$$

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Equity portion = 11,018.5 - 4407.4 = $6611.1

Alternatively,
11018.5 * 0.6 = $6611.1
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   c. What is the debit balance in this transaction?

$$\text{Debit balance} = \text{Market value of securities} \times (1 - \text{Margin})$$

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Debit balance = 11,018.5 * (1-0.6) = $4407.4
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7) Assume that an investor buys 100 shares of stock at $48 per share, putting up a 56% margin. If the stock rises to $62 per share, what is the investor's new margin and new margin position?

$$\text{Margin} = (\text{New stock price} \times \text{Number of shares}) - \text{Debit balance}$$

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Margin = (62 * 100) - 2112 = $4088
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$$\text{Margin} = \frac{\text{Value of securities} - \text{Debit balance}}{\text{Value of securities}}$$

$\text{Margin} = \frac{6200-2112}{6200} = 65.93\%$

8) An investor buys 300 shares of stock selling at $57 per share using a margin of 71%. The stock pays annual dividends of 1 per share. A margin loan can be obtained at an annual interest cost of 3.4%. Determine what return on invested capital the investor will realize if the price of the stock increases to $88 within six months. What is the annualized rate of return on this transaction?

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Value of securities = 300 * 57 = $17100
Equity position = 17100 * 0.71 = $12141
Debit balance = 17100 * (1- 0.71) = $4959

After 6 months:

Value of securities = 300 * 88 = $26400
Dividends = Dividends per share * Number of shares * (Number of
month/12)
= 1*300*1/2= $150
Interest = Debit balance* Annual interest rate * (Number of
month/12)
=4959* .034 * ½ = $84.3
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$$\text{Return on investment} = \frac{\text{Total current income received} - \text{Total interest paid on margin loan} + \text{Market value of securities at sale} - \text{Market value of securities at purchas}}{\text{Amount of equity invested}}$$

$\text{Return} = \frac{150-84.3+26400-17100}{12141} = 77.14\%$

Annualized rate of return = 77.14 *2 = 154.28%

Textbook Questions

Case problem 1.1 Joshua Read and Emily Todd, senior accounting majors at a large Midwestern university, have been good friends since high school. Each has already found a job that will begin after graduation. Joshua has accepted a position as an internal auditor in a medium-size manufacturing firm. Emily will be working for one of the major public accounting firms. Each is looking forward to the challenge of a new career and to the prospect of achieving success both professionally and financially.

Joshua and Emily are preparing to register for their final semester. Each has one free elective to select. Joshua is considering taking a golf course offered by the physical

education department, which he says will help him socialize in his business career. Emily is planning to take a basic investments course and has been trying to convince Joshua to take investments instead of golf. Joshua believes he doesn't need to take investments because he already knows what common stock is. He believes that whenever he has accumulated excess funds, he can invest in the stock of a company that is doing well. Emily argues that there is much more to it than simply choosing common stock. She thinks that exposure to the field of investments would be more beneficial than learning to play golf. Explain to Joshua the structure of the investment process and the economic importance of investing.

a. List and discuss the other types of investments with which Joshua is apparently unfamiliar.
b. Assuming that Joshua already gets plenty of exercise, what arguments would you give to convince him to take investments rather than golf?

a. The term *investments* refers to the process of identifying, evaluating, selecting, and monitoring the placement of funds with a view toward preserving or increasing value and/or earning a positive return. Joshua has simply identified one investment (stock). He will not know how to evaluate, select, or monitor other investments nor will he know how to adjust his investments in appropriate ways at various stages in the life cycle without a course in investing. In addition to looking at his own investments, a course in investing will give Joshua a new perspective on the role of investments in the economy. He will learn that as an investor, he is actually supplying funds to government and business, which will enable the continued strength and growth of the general economy.
b. Clearly, Joshua has ignored short-term securities, bonds, options, commodities and financial futures, mutual funds, real estate, tangibles, tax shelters, and limited partnerships. Each one of these choices offers another risk-reward relationship that may meet certain unique investment requirements that cannot be met by common stock alone.

P2.3 A Brazilian company called Netshoes completed its IPO on April 12, 2017, and listed on the NYSE. Netshoes sold 8,250,000 shares of stock to primary market investors at an IPO offer price of $18. Secondary market investors, however, were paying only $16.10 per share for Netshoes's stock.

a. Calculate the gross proceeds for Netshoes's IPO.
b. Calculate the underpricing for Netshoes's IPO.
c. Explain the IPO underpricing for Netshoes.
d. How much money was left on the table in Netshoes's IPO

Shares sold	Offer Price
8,250,000.00	$ 18.00
First day closing price	$ 16.10
a. Total Proceeds	$ 148,500,000
b. Over pricing	$ 1.90

c. The shares were actually overpriced, and the subscribers paid too much. This might have been due to the underwriter's misevaluation, new information, or simply shifts in the market.

d. No money was left on the table by the company, which actually realized a surplus of 8,250,000 × $1.90 = $15,675,000.

P2.5 You would like to purchase one Class A share of Berkshire Hathaway through your Scottrade brokerage account. Scottrade charges a $7 commission for online trades. You log into your account, check the real-time quotes for Berkshire Hathaway (you see a bid price of $262,850 and an ask price of $263,770), and submit your order.

a. What is the current bid/ask spread for Berkshire Hathaway Class A shares?
b. If Scottrade routes your buy order to the NYSE, where Berkshire Hathaway is listed, what's the potential minimum your total transaction costs will be?
c. If, instead, Scottrade routes your buy order to the Nasdaq, where Berkshire Hathaway is not listed, what's the potential maximum your total transaction costs will be?
d. Regardless of how your trade is executed, based on the bid/ask spread, what is the market value of your trade?

a. Bid ask spread =$263,770 – $262,850 = $920

b. NYSE: The brokerage cost of $7.00 is the potential minimum.

c. Nasdaq: maximum transaction cost = (# of shares × ½ bid/ask spread + commission = 1 × 920/2 + 7.00 = $467)

d. Using the midpoint convention, market value would be (263,770 + $262,850)/2 = $263,310.

P2.27 Sharnel Bitker expected the price of PharmaScripts shares to drop in the near future in response to the expected failure of its new drug to pass FDA tests. As a result, she sold short 1,000 shares of PharmaScripts at $9.75 per share. How much would Sharnel earn or lose on this transaction if she repurchased the 1,000 shares eight months later at each of the following prices per share?

a. $12.5
b. $9

Number of PharmaScripts shares short sold by Sharnel Bitker: 1,000 short-selling
price/share = $9.75.

Intuition: If the stock price falls below $9.75 in eight months, the transaction results in a profit. If the stock price rises above $9.75 in eight months, the transaction results in a loss. Transaction costs are ignored.

Transaction	Stock Sold Short at Price/Share	Stock Purchased to Cover Short at Price/Shares	Profit/Loss per Share on Each Transaction (per share in $)	Total Profit/Loss on Each Transaction (total in $)
A	9.75	12.50	= 9.75 − 12.50 = −2.75	= −2.75 × 1000 = −2,750
B	9.75	9.00	= 9.75 − 9.00 = 0.75	= 0.75 × 1000 = 750

Case Problem 2.1 Darren Simmons, a financial analyst, considers himself a savvy investor. He has increased his investment portfolio considerably over the past five years. Although he has been fairly conservative with his investments, he now feels more confident in his investment knowledge and would like to branch out into some new areas that could bring higher returns. He has between $20,000 and $25,000 to invest. Attracted to technology stocks, Darren is interested in purchasing a tech IPO stock and identified NewestHighTech.com, a company that makes sophisticated computer chips for wireless Internet connections, as a likely prospect. The one-year-old company had received some favorable press when it got early-stage financing and again when its chip was accepted by a major cell phone manufacturer. Darren also is considering an investment in 400 shares of Casinos International common stock, currently selling for $54 per share. After a discussion with a friend who is an economist with a major commercial bank, Darren believes that the long-running bull market is due to cool off and that economic activity will slow down. With the aid of his stockbroker, Darren researches Casinos International's current financial situation and finds that the future success of the company may hinge on the outcome of pending court proceedings on the firm's application to open a new floating casino on a nearby river. If the permit is granted, it seems likely that the firm's stock will experience a rapid increase in value, regardless of economic conditions. On the other hand, if the company fails to get the permit, the falling stock price will make it a good candidate for a short sale. Darren feels that the following alternatives are available to him:
Alternative 1: Invest $20,000 in NewestHighTech.com, when it goes public.

Alternative 2: Buy Casinos International now at $54 per share and follow the company closely.
Alternative 3: Sell Casinos short at $54 in anticipation that the company's fortunes will change for the worse.
Alternative 4: Wait to see what happens with the casino permit and then decide whether to buy or short sell the Casinos International stock.
Evaluate each of these alternatives. On the basis of the limited information presented, recommend the one you feel is best.

In evaluating the four alternatives, one must consider: the volatility of the stock price (large swings in the price); Darren's attitude toward risk, and how the new purchases would affect the diversification of her portfolio; we know that she has invested previously, but nothing about the extent or nature of those investments except that they are relatively conservative. Since a case can be made for any alternative, each is listed below with its advantages and disadvantages.

Alternative 1– It appears that Darren is willing to tolerate more risk in an effort to increase the returns on his fairly conservative portfolio. The NewestHighTech IPO will certainly accomplish this goal. The stock, by definition, has no track record and the company is only 1 year old. It could turn out to be the next Apple or Google, or the next Research in Motion, maker of the once successful, but now largely obsolete Blackberry phones. By leveraging the risk of an IPO with the risk of a startup tech, the investment could be hugely profitable or result in major losses. It is worth noting, however, that the most he could lose would be his $20,000 investment.

Alternative 2– Buying say 400 shares of Casino International now at $54 and monitoring closely is a lower risk alternative than the tech IPO purchase. Darren might decide now how much loss he is willing to tolerate (10% or 20%) before he sells. He might also try to track the progress of the company's application to open a floating casino and sell if it appears that the bid will be unsuccessful. Later chapters will discuss some excellent strategies using options and stop loss orders to limit risk or leverage gains.

Alternative 3– Short selling Casinos provides a profitable opportunity if things start to look bad for the company and its floating casino project. Darren really needs to decide which outcome he considers more likely. If he cannot decide, then perhaps he should avoid this company altogether. The short selling option is perhaps the riskiest alternative of all because losses are potentially unlimited. If the floating casino project is approved against expectations, he would need to react very quickly to avoid major losses.

Alternative 4– If Darren waits to see what happens with the casino permit, it will probably be too late to earn exceptional profits from

either a long or short position because the stock price will have already moved up or down based on the news. Again, there are ways to exploit the uncertainty with options, but they will be studied later.

Alternative 1may be the best choice if Darren really wants to accept more risk in exchange for the possibility of higher returns. If he monitors the investment closely, he might be able to avoid catastrophic losses and the company just may turn out to be the next Google or Apple. If he can purchase the IPO at the offer price, underpricing could lead to a quick gain. The Casino alternatives might be more attractive if there were any indication which outcome Darren considered more likely.