

ECON 313- HW 2

Due: Monday, SEP 20

Starred questions are optional

- 1) Imagine that the Mini-Dow Average (MDA) is calculated by adding up the closing prices of five stocks and dividing that sum by a divisor. The divisor used in the calculation of the MDA is currently 0.775. The closing prices for each of the five stocks in the MDA today and exactly 1 year ago, when the divisor was 0.815, are given in the following table:

Stock	Today	1 Year Ago
Ace Computers	63.97	62.58
Coburn Motor Company	38.51	33.15
National Soap & Cosmetics	88.03	94.72
Ronto Foods	67.21	71.01
Wings Aircraft	83.25	85.03

- a. Calculate the percentage change in each stock. Based on this, is your sense that the market is bullish or bearish?
 - b. Calculate the MDA today and that of a year ago and calculate the percentage of change in the MDA. Based on this does the market appear to be bullish or bearish?
 - c. Compare your answers to parts (a) and (b) above. Did you reach the same conclusion about the direction of the overall market? What role did the divisor play in terms of the conclusion you reached in part b?
- 2) Imagine that you have placed a limit order to buy 100 shares of Sallisaw Tool at a price of \$68.00, although the stock is currently selling for \$70.41. In each of the following cases, determine if the order is executed or not.
- a. The stock price drops to \$69.18 per share two months before cancellation of the limit order.
 - b. The stock gradually drops to \$64.23 per share.
 - c. The minimum stock price achieved before cancellation of the limit order was \$68.64. When the limit order was canceled, the stock was selling for \$76.91 per share.
- 3) You sell 200 shares of a stock short for \$61 per share. You want to limit your loss on this transaction to no more than \$1,300. What order should you place?

- 4) Given a real rate of interest of 3.4%, an expected inflation premium of 4.8%, and risk premiums for investments A and B of 3.1% and 4.4% respectively, find the following:
- The risk-free rate of return, r_f
 - The required returns for investments A and B
- 5) You invest \$11,157 in stock and receive \$133, \$142, \$181, and \$198 in dividends over the following 4 years. At the end of the 4 years, you sell the stock for \$14,800. What was the IRR on this investment? You can use excel or a financial calculator to find IRR, but you first need to explain it using math.

Help: IRR for a stream of income

Example: Mila purchased an investment for \$1,000. It generated the following stream of cash flows. Her internal rate of return was?

End of year 1 \$500
 End of year 2 \$400
 End of year 3 \$300

First, let's do it manually:

$$1000 = \frac{500}{(1+r)^1} + \frac{400}{(1+r)^2} + \frac{300}{(1+r)^3}$$

. You need to solve this equation for r . It's complicated!

So you can use excel or a calculator to so.

Question: What's the intuition behind this equation?

Answer: Pay attention to definition of IRR: The discount rate that equates an investment's cost to the present value of the benefits that it provides for the investor. Also, keep in mind the concept of the time value of money.

Using excel: You can make use of the IRR function to find IRR. You can see the official description of the command on Microsoft [here](#). Also, you can find the answer to this question [here](#). Please be noted, we enter the initial investment as a negative number as it is a cash outflow.

Using TI Plus CE: Follow these steps

Press [APPS] [1] to select the "Finance" application.

Scroll down to find irr. Press [ENTER] to select the "irr".

Enter the numbers as follows: irr(-1000, {500,400,300}). Press [ENTER].

IRR for a single cash flow:

Example: What is the yield (IRR) on an investment costing \$1,000 today that you expect will be worth \$1,400 at the end of a 5-year holding period?

Math: $1000 = \frac{1400}{(1+r)^5}$, Solve this equation for r.

Excel: Here is the command you need: =RATE(5,0,-1000,1400). [Here](#), you find the official description on Microsoft

TI Plus CE:

Press [APPS] [1] to select the "Finance" application.

Press [ENTER] to select the "TVM Solver...".

Press [5] [ENTER] to store 5 to N.

Press [0] [ENTER] since this example is solving for I.

Press [-] [1] [0] [0] [0] [ENTER] to store the present value.

Press [0] to store zero to PMT.

Press [1] [4] [0] [0] [ENTER] to store 1400 to FV.

Press [1] [ENTER] to make sure both the P/Y and C/Y are equal to 1.

Textbook questions

***Q3.7** Describe how, if at all, a conservative and an aggressive investor might use each of the following types of orders as part of their investment programs. Contrast these two types of investors in view of these preferences.

- a. Market
- b. Limit
- c. Stop-loss

***P3.4** When a company conducts a stock split, it exchanges new shares for old ones according to some ratio. For example, in March 2018, Herbalife conducted a two-for-one stock split, so after the split each shareholder received two new shares in exchange for each share owned before the split. A stock split increases the number of shares outstanding but changes nothing else about the value of the company, so a split results in a proportionate decline in the per share stock price. In Herbalife's case, the price before the two-for-one split was \$111.17, and the day after the split the price was \$55, roughly (though not exactly) a 50% drop.

- a. Suppose a company that is part of the DJIA engages in a two-for-one stock split and immediately after the split its stock falls by 50%, leaving the total value of the company unchanged. Conceptually, what impact should this split have on the DJIA?
- b. When this split occurs, all else held constant, what happens to the numerator of Equation 3.1 (you can find the equation in PowerPoint slides)?
- c. When this split occurs, all else held constant, what do you think happens to the denominator of Equation 3.1?

d. How would your answers to all three questions above change if a company in the S&P 500 conducted a two-for-one stock split?

***P3.11** You have \$5,000 in a 50% margin account. You have been following a stock that you think you want to buy. The stock is priced at \$52. You decide that if the stock falls to \$50, you would like to buy it. You place a limit order to buy 300 shares at \$50. The stock falls to \$50. What happens?

***P4.3** Assume you purchased a share of stock in Verizon communications at the beginning of 2017 for \$54.58. A year later the stock was worth \$53.53, but during 2017 it paid a dividend of \$2.32. Calculate the following.

Income

Capital gain (or loss)

Total return a. In dollars b. As a percentage of the initial investment

***P4.5** For each of the investments shown in the following table, calculate the rate of return earned over the period.

Investment	Cash Flow During Period	Beginning-of- Period Value	End-of- Period Value
A	-\$ 800	\$ 1,100	\$ 100
B	\$15,000	\$120,000	\$118,000
C	\$ 7,000	\$ 45,000	\$ 48,000
D	\$ 80	\$ 600	\$ 500
E	\$ 1,500	\$ 12,500	\$ 12,400

P4.10 Calculate a one-year holding period return for the following two investment alternatives. Which investment would you prefer, assuming they are of equal risk? Explain.

	Investment	
	X	Y
Cash received		
1st quarter	\$ 1.20	\$ 2.00
2nd quarter	\$ 0.20	\$ 2.00
3rd quarter	\$ 0.40	\$ 2.00
4th quarter	\$ 3.80	\$ 2.00
Investment value		
Beginning of year	\$30.00	\$56.00
End of year	\$35.00	\$56.00

***P4.15** A local entrepreneur asks you to invest \$10,000 in a business venture. Based on your estimates, you would receive nothing for three years, at the end of year four you would receive \$4,900, and at the end of year five you would receive \$14,500. If your estimates are correct, what would be the IRR on this investment?

P4.19 Justin Lieberman must earn a minimum rate of return of 9.25% as compensation for the risk of the following investment.

Initial Investment	\$7,000
End of Year	Income
1	\$1,000
2	\$2,000
3	\$3,000
4	\$2,000
5	\$1,000

- Use present value techniques to estimate the IRR on this investment.
- On the basis of your finding in part a, should Justin make the proposed investment? Explain.

P4.20 Assume that an investment generates the following income stream and can be purchased at the beginning of 2020 for \$2,000 and sold at the end of 2026 for \$2,200. Estimate the IRR for this investment. If a minimum return of 5% is required, would you recommend this investment? Explain.

End of Year	Income Stream
2020	\$140
2021	\$120
2022	\$100
2023	\$ 80
2024	\$ 60
2025	\$ 40
2026	\$ 20

P2.22 The Minnesota-based industrial conglomerate 3M has been paying dividends and increasing them for a long time. In 1970 3M shareholders received dividends per share of \$1.10, and 47 years later in 2017 they received \$5.07. What is the compound annual dividend growth rate over this period?