10/02/21



EC5321: Investment & Portfolio Management

Solutions to problem set 2

1. When an investor borrows part of the investment cost it is known as
   c. a margin transaction
2. A block trade is one which involves a minimum of
   c. 10,000 shares
3. A pure auction market is one in which
   e. buyers and sellers submit bid and ask prices to a central location to be matched.

4. The basic distinction between a primary and a secondary market is
   c. only new securities are sold in the primary market; only outstanding securities are bought & sold in the secondary market.

5. Yvonne has a margin account with a balance of €150,000. The initial margin deposit is 60 per cent & Turtle Industries is currently selling at €50 per share. How many shares of Turtle can Yvonne purchase?
   a. 5,000

6. Refer to the previous questions. What is Yvonne's profit/loss if Turtle's price after one year is €40?
   b. −€50,000

Q5 Letting X = total investment, Yvonne's share will represent 60 per cent.

so, $0.60X = €150{,}000$ & $X = \frac{€150{,}000}{0.60} = €250{,}000$

At €50 per share, she can purchase (€250000 ÷ €50) = 5000 shares.

Q6

LOSS/Profit = $(40-50) \times 5000 = -€50\,000$

7. Myles short sells 100 shares of PRS, now selling at £120 per share. what is this maximum theoretical loss?
C. Huge; theoretically, infinite

9. saaria opens a brokerage account and purchase 300 shares of Holloway Dreams at £40 per share. she borrow £4,000 from her broker, to help pay for her purchase. she is not charged interest on the loan. what is the margin of her account if the price of the share falls to £30?

$\circledast$ $300 \times 40 = 12{,}000$

E. 0.556

- $\circledast$ Equity position is $300 \times £30 - £4{,}000$
$= £9000 - £4{,}000$
$= £5{,}000$

$\circledast$ Margin $= \frac{£5000}{£9000} = 0.55\underset{\sim}{6}$

$\times$ $5000 + 4000 = 9000$

Question 2:
You are bullish on Holloway stocks. The current price is £50 per share, and you have £5,000 to invest. you borrow and additional £5000 from your broker at an interest rate of 8%, to invest a total of £10,000 in the stock.

a) What will be your rate of return if the price of Holloway stock goes up to £55, and no dividends are paid?

$\frac{10000}{50} = 2000$
~~1000×50~~
=

with £10,000, 200 shares are bought. after the price rises to £55:
- stock position = $200 \times £55 = £11{,}000$
- loan repayment = $£5{,}000 \times (1 + 0.08) = £5{,}400$
- Equity position = $£11{,}000 - £5{,}400 = £5{,}600$

Returns on stock position $= \frac{£5600}{£5000} - 1 = 0.12$ or 12%

$$\boxed{\text{Returns} = \frac{P_1}{P_0} - 1}$$

b) If the price falls to a certain level, you will get a margin call from the broker if the maintenance margin is reached. Assume that maintenance margin is 30%. How far does the price have to plummet for the call to be triggered?

Let the price at which margin call is triggered be P

Equity position = 200P − 5400

Percentage margin is given by $\frac{(200P - 5{,}400)}{200P} = 0.3$

$200P - 60P = 54{,}00$

* loan repayment = £54,00

$P = \frac{5400}{140} = 38.57$

The price has to fall below £38.57 for the call to be triggered.

page 144 in the book #1

Question 3:

You have $40,000 to invest in Sophie Shoes, a stock selling for $80 a share. The initial margin requirement is 60 percent. Ignoring taxes & commissions, show in detail the impact on your rate of return if the stock rises to $100 a share & if it declines to $40 a share assuming:

a) you pay cash for the stock
b) you buy it using maximum leverage.

a) Assume you pay cash for the stock:

Number of shares you could purchase $= \frac{\$40{,}000}{\$80} = 500$ shares

* If the stock is later sold at $100 a share, the total shares proceeds would be

$\$100 \times 500 \text{ shares} = \$50{,}000$

Therefore, the rate of return from investing in the stock is

$= \frac{\$50{,}000 - \$40{,}000}{\$40{,}000} = 25.00\%$

proplem set 2

If stock is later sold at \$40 a share, the total shares proceeds would be

$\$40 \times 500 \text{ shares} = \$20,000$

Therefore, the rate of return from investing in the stock would be:

$$= \frac{\$20,000 - \$40,000}{\$40,000} = -50.00\%$$

b) Assuming you use the maximum amount of leverage in buying the stock, look at the concept of 'Leverage Factor'

the leverage factor for a 60 percent margin requirement $= \frac{1}{\text{Percentage margin requirement}} = \frac{1}{0.60} = \frac{5}{3}$

so, the rate of return on the stock if it is later sold at \$100 a share $= 25.00\% \times \frac{5}{3} = 41.67\%$

In contrast, the rate of return on the stock if it is sold for \$40 a share:

$$= -50.00\% \times \frac{5}{3} = -83.33\%$$

problem set 2.

From the book page 144 # 4

Question 4:

you decide to sell short 100 shares of Charlotte Horse Farms when it is selling at its yearly high of $56. your broker tells you that your margin requirement is 45 percent & that the commission on the purchase is $155. While you are short the stock, Charlotte pays a $2.50 per share dividend. At the end of one year, you buy 100 shares of Charlotte at $45 to close out your position & are charged a commission of $145 & 8 percent interest on the money borrowed.

What is your rate of return on the investment?

* Profit on a short Sale = Begin Value − Ending Value − Dividends − trans cost − interest
* Beginning Value of Investment = $56.00 x 100 shares = $5,600 (sold under a short sale arrangement)
* your investment = margin requirement = (0.45 x $5,600) = $2,520
* Ending Value of Investment = $45.00 x 100 = $4,500 (Cost of closing our position)
* Dividends = $2.50 x 100 shares = $250.00
* Transaction Costs = $155 + $145 = $300.00
* Interest = 0.08 x (0.55 x $5,600) = $246.40

Therefore:

Profit = $5,600 − $4,500 − $250 − $300 − $246.40 = $303.60

The rate of return on your investment of $2,520 is:

$$\frac{\$303.60}{\$2,520} = 12.05\%$$

Question 5:

"Young people with little wealth should not invest money in risky assets such as the stock market, because they can't afford to lose what little money they have."

— Do you agree or disagree with this statement why?

We need to consider the investor's life cycle here.

- One assumes that the young person has ~~a steady job~~,
  - a steady job
  - adequate insurance coverage &
  - sufficient cash reserves
- The young individual is in the accumulation phase of the investment life cycle.
  - During this phase,
    - an individual should consider moderately high-risk investment, such as common stock b/c he/she has
      → a long investment horizon &
      → much earnings ability over time.