

Pin: Question 1

- C

Question 2

- D

Question 3

- B

Question 4

- D

Question 5

- B

Question 6

- D

Question 7

- A

Question 8

- C

Question 9

- D

Question 10

- D

Question 11

- D

Question 12

- A

Question 13

- C

Question 14

- A

Question 15

- D

Question 16

- A

Question 17

- A

Question 18

- A

Question 19

- D

Question 20

- D

Part 2

Question 1

a)

I start by calculating the market value of the two companies

MST market value $3.000.000 * 300 = \$900.000.000$

STM market value $2.000.000 * 50 = \$100.000.000$

Merger gain = $\$10.000.000$

Cost of merger to MST (premium paid)

$$(55 - 50) * 2.000.000 = \$10.000.000$$

NPV to MST is given as the economic merger gain minus the premium paid

$$NPV = 10.000.000 - 10.000.000 = 0$$

b)

MADE BEFORE CORRECTION WAS OFFERED 45 MIN BEFORE EXAM DEADLINE

As the questions states MST only plans to acquire STM for \$20 a share, this is very unlikely to happen, as it is a share bid way below the current price of STM. However, if we assume that STM for some reason accepts the offer, MST would be trading at:

$$(50 - 20) * 2.000.000 = -60.000.000$$

$$\frac{60.000.000}{3.000.000} + 300 = \$320$$

c)

STM will sell at the price offered by MST, \$20 per share.

d)

$$MST_{\%gain} = \frac{320 - 300}{300} = 6,667\%$$

$$STM_{\%gain} = \frac{20 - 50}{50} = -60\%$$

MADE BEFORE CORRECTION WAS OFFERED 45 MIN BEFORE EXAM DEADLINE

$$(55 - 50) * 2.000.000 = 10.000.000$$

$$\frac{10.000.000}{3.000.000} + 300 = \$303,33$$

a)

STM will sell at the price offered by MST, \$303,33 per share.

b)

$$MST_{\%gain} = \frac{303,33 - 300}{300} = 1,11\%$$

$$STM_{\%gain} = \frac{55 - 50}{50} = 10\%$$

c)

We first start by calculating how many shares MST issues to acquire STM:

$$0.2 * 2.000.000 = 400.000 \text{ shares}$$

We know from earlier what the value of the merged firm is:

$$900.000.000 + 100.000.000 + 10.000.000 = \$1.010.000.000$$

The new number of shares are:

$$3.000.000 + 400.000 = 3.400.000 \text{ shares}$$

The price of the merged firm will therefore be:

$$\frac{1.010.000.000}{3.400.000} = \$297,059$$

d)

The NPV is the gain/loss per share times the original amount of shares outstanding

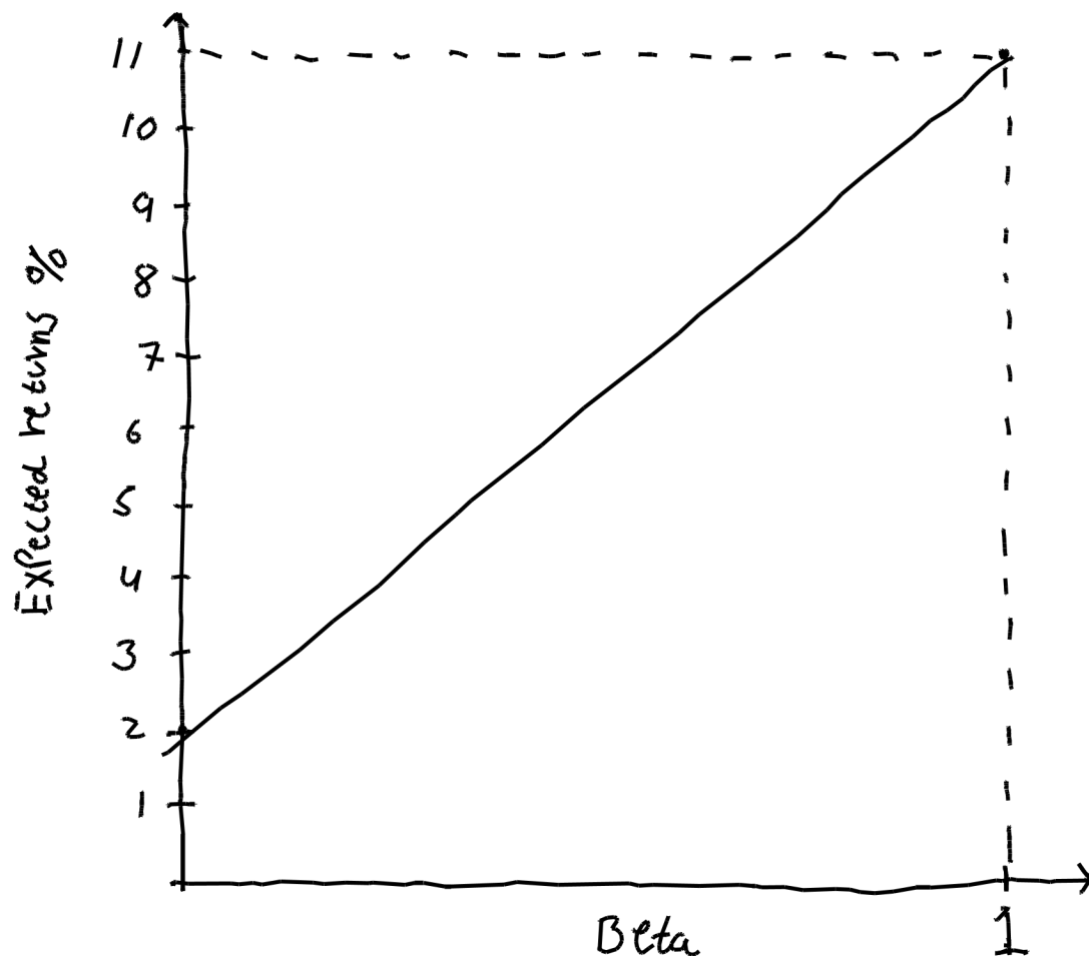
$$(297,059 - 300) * 3.000.000 = -8.8239.00$$

As the share price has dropped the NPV follows and becomes negative for this merger.

My answer differs from (a) because STM shareholders receive stock in MST, and the price of STM shares rises, therefore the STM shareholders capture all the gains.

Question 2

a)



On the graph above the security market line is seen connected from a point with $\beta=0$ and Expected return=2%. This is the risk free rate given from the question, that always has a beta of 0, as it is risk free. Furthermore, the second point is seen as the beta value of 1 and expected return of 11%. This is the market rate, which is given by the market risk premium + the risk free rate ($9+2=11$). A dot is then placed where these two values met. And lastly a straight line is drawn between these two dots to create the SML.

b)

If the expected return on a stock is 1,5%, CAPM suggests a beta of:

$$0,015 = 0,02 + \beta * 0,09$$

$$-0,005 = 0,09\beta$$

$$\beta = -0,055$$

There are none. If the risk free rate is 2% there would be no demand for a stock providing a lower return than what is risk free, unless there might be a specific demand to lower the accumulated risk in a portfolio, however doing this by adding stocks with lower than the risk free rate does not makes sense.

c)

We calculate their expected return by using CAPM:

$$r_B = 0,02 + 0,5 * 0,09 = 6,5\%$$

$$r_A = 0,02 + 2 * 0,09 = 20\%$$

With the risk levels (betas) provided the stock B should provide a 6,5% return, while stock A, should provide 20% return. Seeing that B provides more than expected return from CAPM $8 > 6,5\%$ and A provides less than expected returns from CAPM $18 < 20$, Stock B would be the most lucrative investment.

Question 3

a)

Face value = \$1000

Remaining life = 9

YTM = 8%

Coupon = 6%

I start by utilizing the PV annuity formula

$$C \left(\frac{1}{r} - \frac{1}{r * (1 + r)^t} \right) + \frac{face\ value}{(1 + r)^t}$$

$$C = 1000 * 0,06 = \$60$$

$$60 * \left(\frac{1}{0,08} - \frac{1}{0,08 * (1,08)^9} \right) + \frac{1000}{(1,08)^9} = \$875,06$$

b)

If investors now only demands 5% interest instead of the previous 8% the bond will be priced as follows. A further assumption is that a year has gone by, meaning that the bond will mature in 8 years.

$$60 * \left(\frac{1}{0,05} - \frac{1}{0,05 * (1,05)^8} \right) + \frac{1000}{(1,05)^8} = \$1064,63$$

This follows the notion that if the coupon rate of a bond exceeds that interest rate demanded by investors, the bond will trade at a premium and vice versa at a discount.

c)

To counter the risk of interest rates rising I could sell bond futures. This way if interest rate rises, the gain on the futures will offset the potential loss on the bond price.