

# Risk and Return

## Chapter 9

Mikael Rånes, 2010-09-28

### Case 1

You and your friends have been lucky on the horse track a few days ago and just now are you celebrating. One of the friends does not want to spend the money and has a proposal,

- I think we can do better with our trotting profit than to spend it on luxury things, let us be rich on the stock market. I don't want to work anymore, at least not more than to my 50th birthday.
- I'm going to explain, if we can find safe investment that give us a good return every year with minimal risk then our horse trotting profit will grow by at least 10 % every year – what do you say guys?
- Hello, Roger cry, my sister works at an investment bank, I can phone her. After a while Roger came back and told them what she said.
- It's a perfect idea she said and highlighted the effect of the risk and returns. My recommendation is the car company BMW. They always have stable profit and also small deviation, they almost always follow the stock market index.

The required risk premium on a market portfolio is currently 5 percent above the risk free rate. The risk free rate is currently 4 percent. The BMW share has a Beta of 1.0.

### Question 1:1

What return should an investor demand for the BMW share?

Answer:

$$r-r_f = b(r_m - r_f)$$

$$r-4=1(9-4)$$

$$r = 5+4$$

$$r = 9$$

Return 9%

Stock price= 10 EUR

Since we know that returns are 0.9 EUR

### Question 1:2

But the horse trotting guys want at least 10 % return and they have been lucky again because the risk free interest like, USA treasury bills, drops 1 percent. And what happens to their market portfolio with only BMW stocks in it too?  
What should the stock of BMW then cost?

### Answer

$$r - r_f = b(r_m - r_f)$$

$$r - 3 = 1(8 - 3)$$

$$r = 5 + 3$$

$$r = 8$$

Company profit/stock's new price=8%

9/stock's new price=8%

9/8%=stock's new price

Stock's new price=11.25 EUR

## Case 2

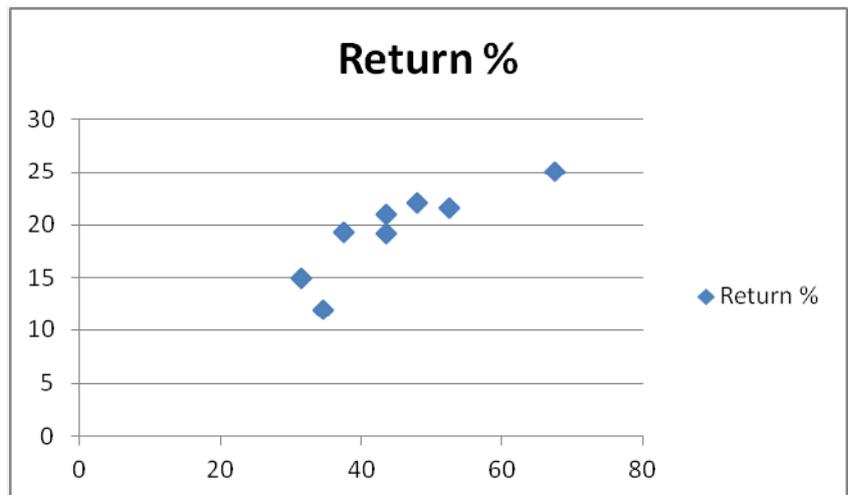
The board of Akelius has received eight investment proposals, and they want you to choose five of them. Which five of the investments in figure 1 would you recommend?

Investment	Standard deviation	Return %
A-Pål A	43.5	19.2
B-Nicole	34.5	12
C-Daniel G	31.5	15
D-Jörg	37.5	19.3
E- Patricio	43.5	21
F-Pär H	48	22
G-Marc	52.5	21.6
H-Natascha	67.5	25

Figure 1: Investment Proposals

### Answer

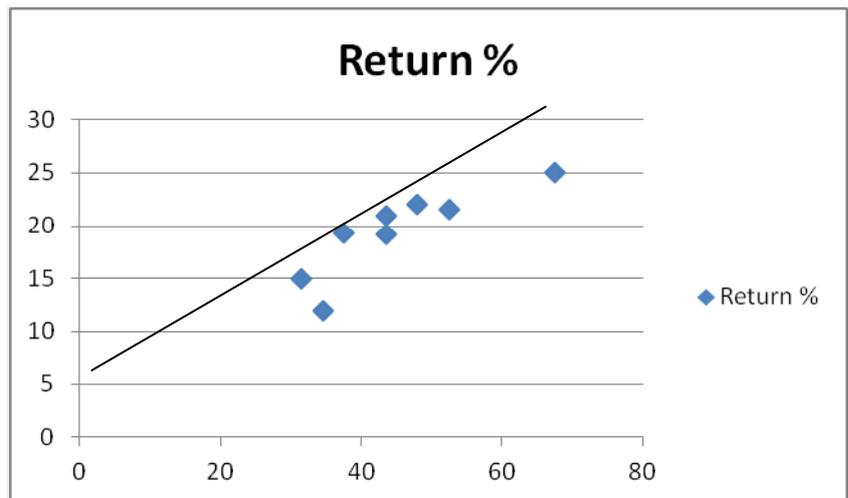
Plot the investment and choose the five on the effective front.



The board of Akelius has received news from the Finance department. The company can only afford to choose one investment and the companies need to borrow money for the investment. The risk free rate is currently at 5 percent. Which one of the investments is the best one?

Answer

Draw a line, called Market Security Line from the risk free rate to a portfolio.



# Risk and Return, Group work

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## Task,

Fredrik Lindgren has good news. Akelius has received 1,000 million Euro in deposits through Akelius Spar. The board of Akelius now wants to take a corner in a listed real estate company. Which company in figure 2 gives the best risk/reward? The risk free interest rate is five percent.

Company	Beta	Return	stock price
Heba AB	0.5	22.5	300
Wallenstam AB	1	28.9	340
Deutsche Wohnen	1.5	48.4	440
Berlin Apartments	2	57.6	480

Figure 2: Listed real estate companies

## Answer

Add your shares in a graph with return (Return/stock price) and beta. Select portfolio with a maximum yield in proportion to the risk-free rate.

