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PRØVE

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1 Question 1.1

Which form of market efficiency is tested in this study?
Select one alternative:

- Weak form market efficiency
- Semi-strong form market efficiency
- Strong form market efficiency
- Does not test market efficiency

2 Question 1.2

Does the average return of the momentum portfolio (of 1.01) contradict the efficient market hypothesis (EMH)?
Select one alternative:

- Yes, this contradicts the EMH
- No, this does not contradict the EMH
- This does not test market efficiency

3 Question 1.3

Do the alphas of the momentum portfolio (of 1.08 and 1.22) contradict the efficient market hypothesis (EMH)?
Select one alternative:

- Yes, they contradict the EMH
- No, they do not contradict the EMH
- They do not test market efficiency

4 Question 1.4

Do the alphas of the loser portfolio (of -0.51 and -0.69) contradict the efficient market hypothesis (EMH)?
Select one alternative:

- Yes, they contradict the EMH
- No, they do not contradict the EMH
- They do not test market efficiency

5 Question 1.5

Do the alphas of the winner portfolio (of 0.56 and 0.53) contradict the efficient market hypothesis (EMH)?
Select one alternative:

- Yes, they contradict the EMH
- No, they do not contradict the EMH
- They do not test market efficiency

6 Question 2

Should General Stores take on the GoWest project or not? Show calculations to support your answer and make additional assumptions if necessary.

Fill in your answer here

First we find the Cost of Equity by the beta and market rates in CAPM:

$$r_E = r_f + \beta\left(r_m - r_f\right) \;=\; 5 \;+\; 1.5\left(17.5 - 5\right) = 23.75$$

As the Modigliani-Miller assumption applies we can unlever to find the opportunity cost of capital:

$$r \;=\; r_a = r_d \cdot (1 - T_c) \cdot \frac{D}{V - T_c D} + r_e \cdot \frac{E}{V - T_c D} = 0.075 \cdot 0.7 \cdot \frac{0.75}{1 - 0.3 \cdot 0.75} + 0.2375 \cdot \frac{0.25}{1 - 0.3 \cdot 0.75} = 0.1274$$

We have now found the opportunity cost of capital to be 12.74%

We can now use the projects cost of debt and its debt-equity ratio to calculate the projects cost of Equity, simplified by the Modigliani-Miller assumption:

$r_e = r + (1 - T_c)\left(r - r_d\right)\frac{D}{E} \;=\; 0.1274 + 0.7 \cdot (0.1274 - 0.085) \cdot \frac{0.5}{0.5} = 0.15708$

Now we can find the WACC by relevering:

$WACC \;=\; r_e \frac{E}{V} + r_d\left(1 - T_c\right)\frac{D}{V} = 0.15708 \cdot \frac{1}{2} + 0.085 \cdot (1 - 0.3) \cdot \frac{1}{2} = 0.10829$

As we have now found the WACC, we can now find the NPV:

$NPV \;=\; -C \;+\; \frac{R}{WACC} = -100 + \frac{10}{0.10829} = -7.655$

As the NPV is negative, General Stores should not take on the project.

7 Question 3

Design an option position that profits from both positive and negative results of DSM's clinical test and calculate how much it costs to set up the position. Use calculations to support your answer and make additional assumptions if necessary.

Fill in your answer here

Setting up a long straddle by buying a call and a b´put at the same strike price and expiration date is an effective way to bet on large unpredictable moves in the underlying asset. Therefore we will purchase a put option and a call option at-the-money. The problem description is unclear as to whether the 3 month option expires before or after the result is published. A option expiring before the publishing of the results will be a big bet on a large swing before the results are published. Not knowing the sequence of expiration and publishing, i will choose a 4 month maturity to be secure that the results are priced into the market on expiration.

$$d_1 = \frac{\ln\left(\frac{60}{60}\right)+\left(0.05+\frac{0.4^2}{2}\right)\cdot\frac{1}{3}}{0.4\cdot\sqrt{\frac{1}{3}}} = 0.18764$$

$$d_2 = \frac{\ln\left(\frac{60}{60}\right)+\left(0.05-\frac{0.4^2}{2}\right)\cdot\frac{1}{3}}{0.4\cdot\sqrt{\frac{1}{3}}} = -0.04330$$

By Black&Scholes, the cost of call will then be:

$$O_c = N\left(0.18764\right)\cdot 60 - N\left(-0.04330\right)\cdot 60\cdot e^{-0.05\cdot\frac{1}{3}} = 5.9807$$
$$O_p = -N\left(-0.18764\right)\cdot 60 + N\left(0.04330\right)\cdot 60\cdot e^{-0.05\cdot\frac{1}{3}} = 4.9890$$

It would cost €10.97 to set up the long straddle position of a single put and a single call at-the-money with a 4 month maturity.

Although a long strangle is also a valid strategy for such a situation, a long straddle will result in more gains on large swings, as well as the long strangle is more commonly used to protect downside.

On reflection, I could have used the put-call parity for calculating the price, which would have been easier, but this would not yield a different result.

8 Question 4.1

With which theory or theories of capital structure is the estimation result with respect to the ratio Depreciation/Total costs in line?
Select one alternative:

- (•) Trade-off theory
- ( ) Pecking order theory
- ( ) Both
- ( ) Neither

9 Question 4.2

With which theory or theories of capital structure is the estimation result with respect to Sales growth in line?
Select one alternative:

- ( ) Trade-off theory
- ( ) Pecking order theory
- ( ) Both
- (•) Neither

10 Question 4.3

With which theory or theories of capital structure is the estimation result with respect to the ratio Current assets/Total assets in line?

Select one alternative:

- Trade-off theory
- Pecking order theory
- Both
- Neither

11 Question 4.4

With which theory or theories of capital structure is the estimation result with respect to ln(total assets) in line?

Select one alternative:

- Trade-off theory
- Pecking order theory
- Both
- Neither