SØK 2005 V18 (LF)

Snorre Lindset

1 a) $E[R_A] = 0{,}02 + (0{,}07 - 0{,}02)\beta_A = 0{,}12 \iff$

$$\beta_A = \frac{0{,}12 - 0{,}02}{0{,}07 - 0{,}02} = \underline{\underline{2}}$$

$$\beta_A = \frac{\sigma_{A,M}}{\sigma_M^2} = \frac{\rho_{A,M}\sigma_A\sigma_M}{\sigma_M^2} = \frac{\rho_{A,M}\sigma_A}{\sigma_M} = \frac{\rho_{A,M}\cdot 0{,}6}{0{,}2} = 2$$

$$\iff$$

$$\rho_{A,M} = \frac{0{,}2\cdot 2}{0{,}6} = \underline{\underline{\frac{2}{3}}}$$

b) $E[R_B] = 0{,}02 + (0{,}07 - 0{,}02)\beta_B = 0{,}07 \iff \underline{\underline{\beta_B = 1}}$

$$\beta_B = \frac{\sigma_{B,M}}{\sigma_M^2} = \frac{\rho_{B,M}\cdot\sigma_B}{\sigma_M} = \frac{\rho_{B,M}\cdot 0{,}1}{0{,}2} = 1 \iff \underline{\underline{\rho_{B,M} = 2}}$$

Observasjon 1: $-1 \leq \rho \leq 1$, mens her har vi $\rho_{B,M} = 2$!

Observasjon 2: Aksje B har en bedre trade-off mellom risiko og forventet avkastning enn markedsporteføljen $\Rightarrow$ markedsporteføljen er ikke effisient.

↳ Selskapet kan ikke ha så høy forventet avkastning når risikoen er så lav.

↳ Tyder på at CAPM ikke holder.

c) $$\beta_B \overset{\text{fra b)}}{=} 1 = \frac{\rho_{B,M}\cdot\sigma_B}{\underbrace{0{,}2}_{\sigma_M}} \iff \sigma_B = \frac{0{,}2}{\rho} \geq 0{,}2 \iff \sigma_B \geq 0{,}2$$

($\rho > 0$ siden $\beta_B > 0$)

d) $$\beta_B = \frac{\rho_{B,M}\cdot\sigma_B}{0{,}2} = 1 \iff \underline{\underline{\rho_{B,M}\cdot\sigma_B = 0{,}2}}$$

Kandidatene 10029 og 10075 har valgt en mer matematisk tilnærming til 2c.

De utnytter at

$$P_0 = C\,\frac{(1+r)^T - 1}{(1+r)^T \cdot r} + \frac{P_T}{(1+r)^T}$$

Da får vi

$$P_0 > P_T \iff C\,\frac{(1+r)^T - 1}{(1+r)^T \cdot r} + \frac{P_T}{(1+r)^T} > P_T \iff$$

$$C\,\frac{(1+r)^T - 1}{(1+r)^T \cdot r} > P_T\left(1 - \frac{1}{(1+r)^T}\right) \iff$$

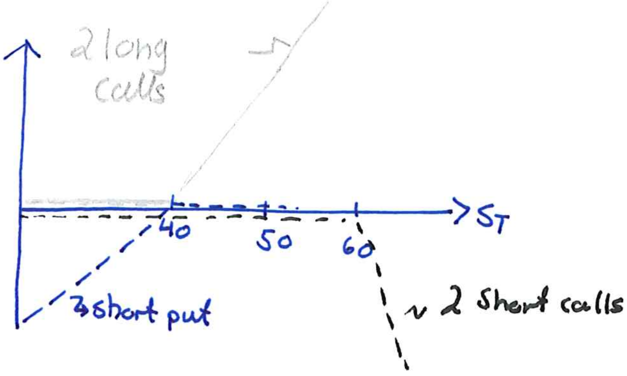
$$\frac{C}{r}\left((1+r)^T - 1\right) > P_T\left((1+r)^T - 1\right) \iff$$

$$\frac{C}{r} > P_T \qquad (\text{når } r > 0).$$

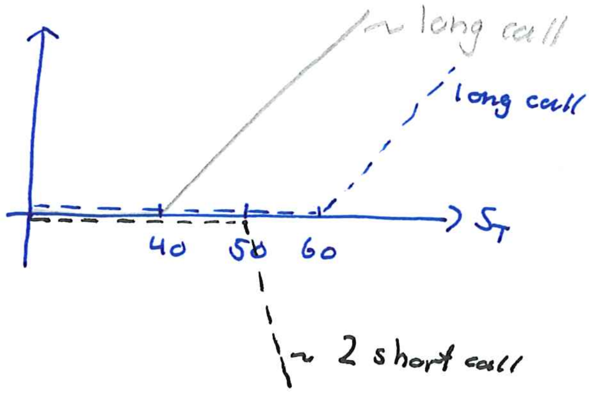
Forklaringen er altså at $P_0 > P_T$ fordi $C > r$ (hvis vi normaliserer C slik at $P_T = 1$).

3

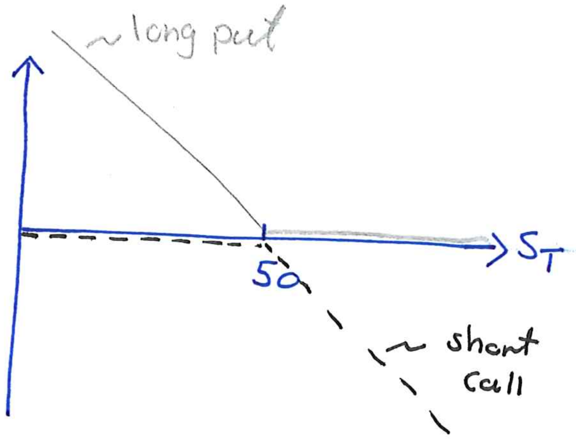
a)



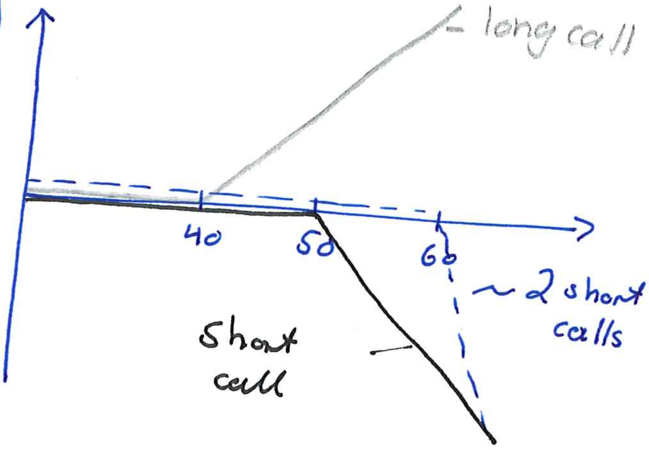
b)



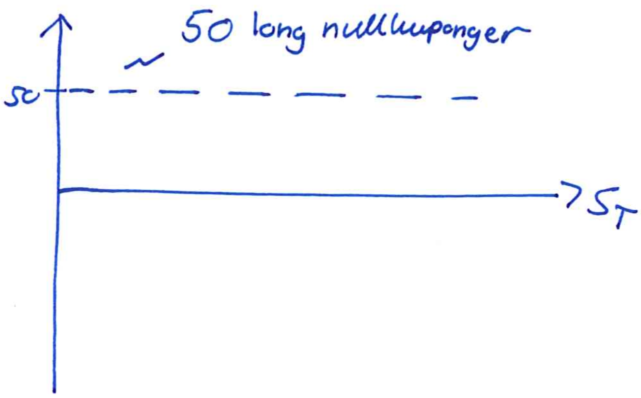
c)



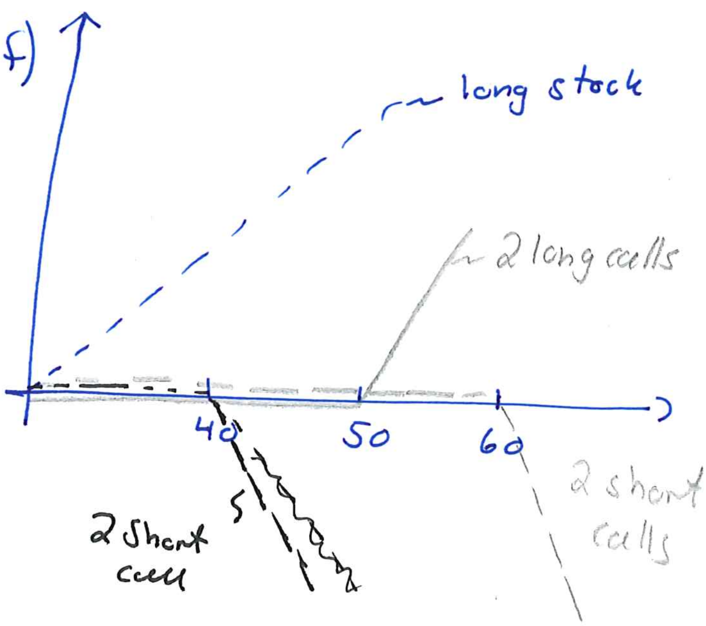
d)



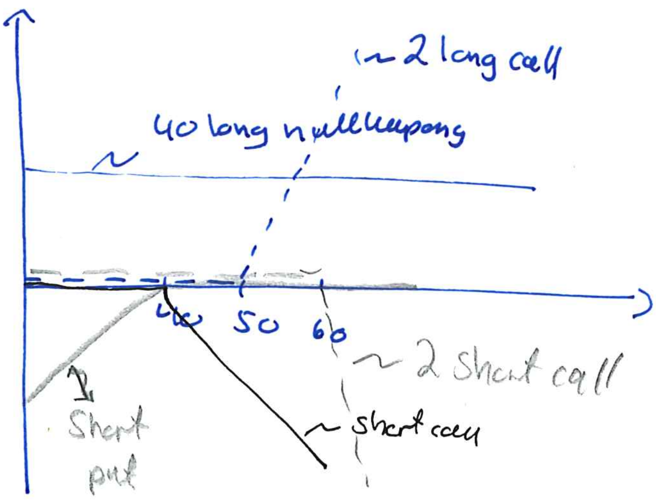
e)



f)



f)



(To likeverdige løsninger på f).)

4)

a) $P_0 = \sum_{t=1}^{\infty} \frac{10}{(1,1)^t} = \frac{10}{0,1} = \underline{\underline{100}}$

b) $ROE = 0,15$ og $b = 0,6.$

Vi vet at $g = ROE \cdot b = 0,15 \cdot 0,6 = \underline{\underline{0,09\text{)}: 9\%}}$

c) $D_1 = 10 \cdot (1-0,6) = 4.$

$$P_0 = \sum_{t=1}^{\infty} \frac{D_1 \cdot (1+g)^{t-1}}{(1+k)^t} = \frac{4}{0,1-0,09} = \underline{\underline{400}}$$

d) $PVGO = \underbrace{400}_{\text{fra c)}} - \underbrace{100}_{\text{fra a)}} = \underline{\underline{300}}$

e) $P_1 = \frac{D_2}{k-g} = \frac{4 \cdot 1,09}{0,1-0,09} = \underline{\underline{436}}$

f) $r = \underbrace{\frac{436-400}{400}}_{\text{Capital gain}} + \underbrace{\frac{4}{400}}_{\text{Dividend}} = 0,09 + 0,01$

$= 0,1$

eller k om dere vil

Avkastningen består av:

Kursstigning	9%
Dividende	1%
Total avkastning	10%

Noen har brukt sammenhengen

$$P = \frac{E(1-b)}{k-g} \iff$$

$$k = \underbrace{\frac{E(1-b)}{P}}_{\text{Dividend yield}} + \underbrace{g}_{\text{growth/ capital gains}}$$