

8
a) Total value of portfolio P:

$$20,000 + 20,000 + 10,000 = 50,000$$

- weights : $w_A = \frac{2}{5} = 40\%$

$$w_B = \frac{2}{5} = 40\%$$

$$w_C = \frac{1}{5} = 20\%$$

$$r_P = \frac{2}{5} (0.13 + 6F_1 + 4F_2 + \varepsilon_A) +$$

$$\frac{2}{5} (0.15 + 2F_1 + 2F_2 + \varepsilon_B) +$$

$$\frac{1}{5} (0.07 + 5F_1 - F_2 + \varepsilon_C)$$

collect terms and write factor equation!

b) Total value of portfolio Q:

$$\underbrace{50,000}_{\text{long position}} - \underbrace{3,000}_{\text{short position}} = 47,000$$

weights : $w_P = \frac{50}{47}$

$$w_C = -\frac{3}{47}$$

\Rightarrow find factor equation for Q (as in (a))