CHAPTER 4

Appendix

$\hookrightarrow$ f : Forecast of excess returns

h_P : portfolio holdings h_{PR} : residual holdings

σ_P^2 : portfolio variance

$$h_P = \beta_P \cdot h + h_{PR} \qquad (4A\cdot1)$$

$$f_P = \beta_P \cdot f_B + \alpha_P \qquad (4A\cdot2)$$

$$\sigma_P^2 = \beta_P^2 \cdot \sigma_B^2 + \omega_P^2 \qquad (4A\cdot3)$$

decompose f_P into several components . $\beta_P = 1 + \beta_{PA}$

$$f_P = f_B + \beta_{PA} \cdot f_B + \alpha_P \qquad (4A\cdot4)$$

$$f_P = f_B + \beta_{PA} \cdot \mu_B + \beta_{PA} \cdot \Delta f_B + \alpha_P \qquad (4A\cdot5)$$

can also decompose σ_P^2

$$\sigma_P^2 = (1 + \beta_{PA})^2 \cdot \sigma_B^2 + \omega_P^2 \qquad (4A\cdot6)$$

$$\sigma_P^2 = \sigma_B^2 + 2 \cdot \beta_{PA} \cdot \sigma_B^2 + \beta_{PA}^2 \cdot \sigma_B^2 + \omega_P^2 \qquad (4A\cdot7)$$

$\hookrightarrow$

Expected excess returns	Variance	Description
① f_B	⑤ σ_B^2	Benchmark excess returns and variance
② $\beta_{PA} \cdot \mu_B$	⑥ $2 \cdot \beta_{PA} \cdot \sigma_B^2$	Return due to active beta and consensus forecast ; covariance due to active beta
③ $\beta_{PA} \cdot \Delta f_B$	⑦ $\beta_{PA}^2 \cdot \sigma_B^2$	" " " " " " " exceptional " . variance " " " "
④ α_P	⑧ ω_{PA}^2	Return due to stock alphas and selection ; variance due to stock selection

General utility function : $U = f - \lambda \cdot \sigma^2$

items ⑤ and ⑥ $\rightarrow \lambda_T$

item ⑦ $\rightarrow \lambda_{BT}$

item ⑧ $\rightarrow \lambda_R$

Ⓐ $f_B - \lambda_T \cdot \sigma_B^2$ benchmark component , no effect on optimal portfolio

Ⓑ $\beta_{PA} \cdot \{\mu_B - 2 \cdot \lambda_T \cdot \sigma_B^2\}$ cross effects , includes action , no forecast

Ⓒ $\beta_{PA} \cdot \Delta f_B - \lambda_{BT} \cdot \beta_{PA}^2 \cdot \sigma_B^2$ benchmark timing

Ⓓ $\alpha_P - \lambda_R \cdot \omega_P^2$ stock selection

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