CHAPTER 7

→ Appendix

↳ Factor Models

→ Factor model represents returns as

$$r = X \cdot b + u \qquad (7A.1)$$

X → $N \times K$ stock exposures to factors

b → K vector of factor returns

u → N vector of stock specific returns

→ Any portfolio P's factor exposures:

$$x_p = X^T \cdot h_p \qquad (7A.2)$$

→ Recall from Ch 2, expected excess return on each asset is proportional to that asset's beta w.r.t. portfolio Q.

→ $N \times N$ asset covariance matrix

$$V = X \cdot F \cdot X^T + \Delta \qquad (7A.3)$$

F → $K \times K$ covariance of factors

Δ → $N \times N$ covariance of specific returns

→ The model (X, F, Δ) explains expected excess returns if there is a K-element vector of factor forecasts m s.t

$$f = X \cdot m \qquad (7A.4)$$