RENDIMENTO PORTAFOGLIO :

vettore proporzioni × Rendimenti medi = 1×1

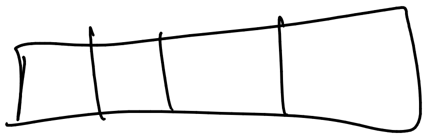
1×4 4×1

VARIANZA PORTAFOGLIO :

(vettore proporz)^T × Matrice var-cov × vettore proporzioni = 1×1

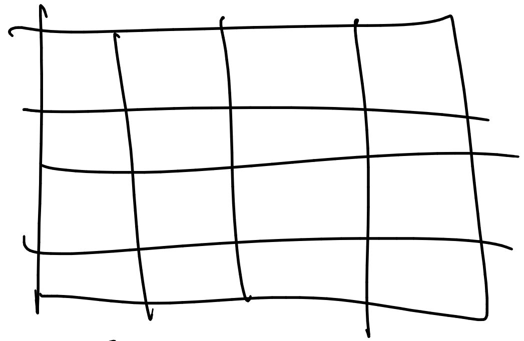
1×4 4×4 4×1

COVARIANZA TRA PORTAF 1 e 2 : = 1×1



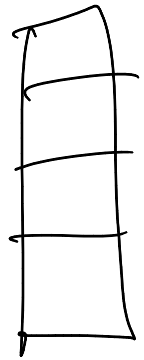
PROPORZIONI T
PORTAF 1

1 × 4



MATRICE
VAR-COV

4×4



vettore
prop
portaf 2

4 × 1

CTR + ⇧ + invio

Γ = vettore delle prop

R = vettore dei rendimenti

$$\alpha^T R \qquad \alpha = \begin{bmatrix} \alpha_i \\ \\ \end{bmatrix}$$

$$\sum_{i=1}^{n} \alpha_i \cdot R_i = \qquad R = \begin{bmatrix} R_i \\ \\ \end{bmatrix}$$ rendimenti medi

$$\alpha_1 \cdot R_1 + \alpha_2 \cdot R_2 + \dots + \alpha_n R_n$$

σ = MATR VAR COVAR

VARIANZA DI PORTAF =

$$\sigma_p^2 = \sum_i^{1} \sum_j^{1} \alpha_i \alpha_j \sigma_{ij}$$

$$= \alpha^T \sigma \cdot \alpha$$

$$\alpha = \begin{bmatrix} \alpha_1 \\ \vdots \\ \alpha_m \end{bmatrix}$$

α = PROPORZIONE PORTAF 1

Se ho 2 titoli $\alpha = \begin{pmatrix} \alpha \\ 1-\alpha \end{pmatrix}$

$$Var = \alpha^2 VAR(A) + (1-\alpha)^2 VAR(B) + 2\alpha(1-\alpha) COV(A,B)$$

$$\begin{bmatrix} \alpha & (1-\alpha) \end{bmatrix} \begin{pmatrix} VAR(A) & COV(A,B) \\ COV(A,B) & VAR(B) \end{pmatrix} \begin{pmatrix} \alpha \\ (1-\alpha) \end{pmatrix}$$

$$\mathrm{cov}(1,2) = \alpha^T \, \sigma \, \beta$$

PORTAF 1
investe α in A
e $(1-\alpha)$ in B

PORTAF 2
investe β in A
$(1-\beta)$ in B

A e B sono i 2 titoli

$$\begin{bmatrix} \alpha, & (1-\alpha) \end{bmatrix} \begin{pmatrix} \mathrm{VAR}(A) & \mathrm{cov}(A,B) \\ \mathrm{cov}(A,B) & \mathrm{VAR}(B) \end{pmatrix} \begin{pmatrix} \beta \\ 1-\beta \end{pmatrix}$$

1
PORTAF α in tit A
$(1-\alpha)$ in tit B

2
PORTAF
β in tit A
$1-\beta$ in tit B

$$\operatorname{cov}() = \sum_{i}^{I} \sum_{j} \alpha_i \beta_j \sigma_{ij}$$

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MATR. TRASPOSTA ( )