

2.3  $E(\bar{A})^2 - (E\bar{A})^2$

①  $E(\bar{A})^2 = E \left( \frac{\sum A_i}{M} \right)^2 = \frac{1}{M^2} \left( \sum A_i^2 + \sum A_i A_j \right) =$   
 $= \frac{1}{M^2} (a^2 + b^2) \cdot M + M(M-1) \rho \sigma^2 =$   
 $= \frac{1}{M} a^2 + \frac{1}{M} b^2 + \rho \sigma^2 - \frac{1}{M} \rho \sigma^2$   $a = E A_i$

②  $(E\bar{A})^2 = \left( E \left( \frac{\sum A}{M} \right) \right)^2 = \left( \frac{\sum EA}{M} \right)^2 = \frac{M \cdot a}{M} \frac{a^2}{M}$

Uknow:

$\frac{1}{M} a^2 + \frac{1}{M} b^2 + \rho \sigma^2 - \frac{1}{M} \rho \sigma^2 - \frac{1}{M} a^2 =$   
 $= \rho \sigma^2 + (1-\rho) \frac{\sigma^2}{M}, \text{ z.no.}$