

$$\text{Cov} \left( \frac{1}{n} \sum X_i, \frac{1}{m} \sum Y_j \right)$$

$$= \frac{1}{nm} \sum \text{Cov}(X_i, Y_j) \rightarrow \text{estimating this}$$

$$= \frac{1}{nm}$$

$$\text{Cov}(X, Y) = \frac{1}{n} \sum X - \bar{X}_T$$

$$\frac{1}{T}$$

using:

$$Z = \frac{1}{T} \sum_{t=1}^T \left( \left( \frac{1}{n} \sum X_i \right)_t - \bar{X}_T \right) \left( \left( \frac{1}{m} \sum Y_j \right)_t - \bar{Y}_T \right)$$

$$E[Z] = \frac{1}{T} \sum_{t=1}^T$$