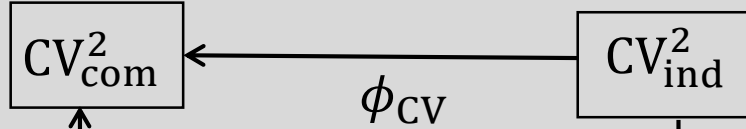
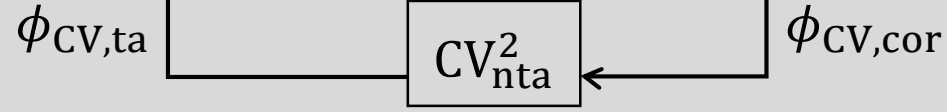
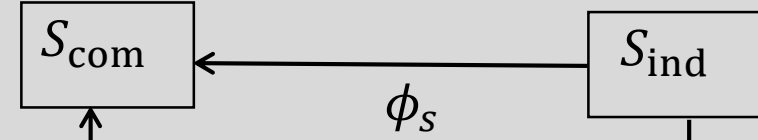


**A****Variance ratio approach**

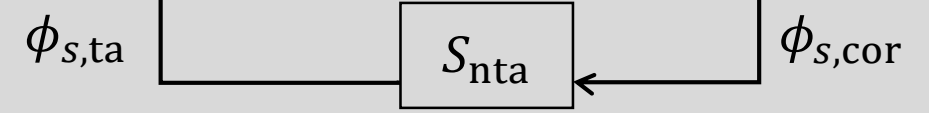
$$\phi_{CV} = \phi_{CV,ta} \times \phi_{CV,cor}$$



**C** Influence of tail-association  
on variance ratio approach

**B****Skewness ratio approach**

$$\phi_S = \phi_{S,ta} \times \phi_{S,cor}$$



**D** Influence of tail-association  
on skewness ratio approach

**E****Summary of definitions**

$x_i(t)$  = species abundances, locations  $i = 1, \dots, N$ , times  $1, \dots, T$ .

$\mu_i = \text{mean}(x_i)$ ;  $v_{ii} = \text{var}(x_i)$ ;  $v_{ij} = \text{cov}(x_i, x_j)$ ;  $m_{iii} = 3^{\text{rd}}$  moment of  $x_i$ ;  $x_{\text{tot}} = \sum_i x_i(t)$ .

$CV_{\text{com}}^2 = \text{var}(x_{\text{tot}}) / (\text{mean}(x_{\text{tot}}))^2$  = community instability measured using variance.

$CV_{\text{nta}}^2$  = what  $CV_{\text{com}}^2$  would be without tail associations.

$CV_{\text{ind}}^2 = (\sum_i v_{ii}) / (\sum_i \mu_i)^2$  = what  $CV_{\text{com}}^2$  would be without species interactions.

$S_{\text{com}} = \text{skew}(x_{\text{tot}})$  = community instability measured using skewness.

$S_{\text{nta}}$  = what  $S_{\text{com}}$  would be without tail associations.

$S_{\text{ind}} = (\sum_i m_{iii}) / (\sum_i v_i)^{3/2}$  = what  $S_{\text{com}}$  would be without species interactions.