

A PARTICULAR ζ

$$\zeta(\mathbf{P}) = \max_{i,j} \frac{1}{2} \sum_{k=1}^n |p_{ik} - p_{jk}|$$

PROPERTIES

- $\zeta(\mathbf{P}_1 \mathbf{P}_2) \leq \zeta(\mathbf{P}_1) + \zeta(\mathbf{P}_2)$
- $0 \leq \zeta(\mathbf{P}) \leq 1$ (= 1 iff \exists pair of ≥ 2 rows)
- $\zeta(\mathbf{P}) = 0$ if and only if $\mathbf{P} = \mathbf{e} \mathbf{1}^T$
- $\zeta_2(\mathbf{P}) \leq \zeta(\mathbf{P})$ (Bauer, Deutch, Stoer, '69)
- $\|\mathbf{F}\mathbf{P}\|_1 \leq \|\mathbf{F}\|_1 \zeta(\mathbf{P})$ whenever $\mathbf{F}\mathbf{e} = 0$
- $\|\mathbf{I} - \mathbf{P}\|_1 \leq \frac{\|\mathbf{F}\|_1}{1 - \zeta(\mathbf{P})}$
- $\|\mathbf{I} - \mathbf{P}\|_1 \leq \frac{n}{\min_{i,j} |i-j|}$ (Seneta, '93)