# HURWICZ CRITERION

IN THIS CASE A PARAMETER $\alpha$ (INDICATING INDEX OF OPTIMISM) IS INTRODUCED TO OBTAIN A MEASURE (ON WHICH THE DECISION WILL BE TAKEN) WHICH CAN RANGE FROM BEING A PESSIMISTIC ($\alpha = 0$) VIEWPOINT TO AN OPTIMISTIC ($\alpha = 1$) VIEW POINT.

IF $O_{ij}$ REPRESENTS COST THEN FOR A GIVEN ACTION $a_i$ THE MOST OPTIMISTIC OUTCOME WILL BE $\underset{\theta_j}{MIN}\{O_{ij}\}$ AND THE MOST PESSIMISTIC OUTCOME WILL BE $\underset{\theta_j}{MAX}\{O_{ij}\}$. IF $O_{ij}$ REPRESENTS PROFIT THEN $\underset{\theta_j}{MAX}\{O_{ij}\}$ REPRESENTS THE MOST OPTIMISTIC VIEWPOINT AND $\underset{\theta_j}{MIN}\{O_{ij}\}$ REPRESENTS THE MOST PESSIMISTIC.

IF $O_{ij}$ IS COST THEN THAT ACTION IS CHOSEN WHICH MINIMIZES THE FOLLOWING:

$$Z_c = \alpha . \underset{\theta_j}{MIN}\{O_{ij}\} + (1-\alpha) \underset{\theta_j}{MAX}\{O_{ij}\}$$

IF $O_{ij}$ IS PROFIT THEN THAT ACTION IS CHOSEN WHICH MAXIMIZES THE FOLLOWING:

$$Z_p = (1-\alpha) \underset{\theta_j}{MIN}\{O_{ij}\} + \alpha . \underset{\theta_j}{MAX}\{O_{ij}\}$$

WHEN APPLIED TO PREVIOUS EXAMPLE WITH $\alpha = 0.5$

| | $\theta_1$ | $\theta_2$ | $\theta_3$ | $\theta_4$ | $MIN\{a_{ij}\}$ | $MAX\{O_{ij}\}$ | $Z_c$ | |
|---|---|---|---|---|---|---|---|---|
| $a_1$ | 2 | 10 | 18 | 25 | 2 | 25 | 13.5 | |
| $a_2$ | 8 | 7 | 8 | 23 | 7 | 23 | 15.0 | ← SUGGESTED ACTION |
| $a_3$ | 21 | 18 | 12 | 21 | 12 | 21 | 16.5 | |
| $a_4$ | 30 | 22 | 19 | 15 | 15 | 30 | 22.5 | |

DT-XI