Forecasting – 7.3 Indicators

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Practice quiz

Derive the formulas for the

1. aggregate direct arc elasticity with respect to the average value of x_{ik} ($E^{\widehat{W}(i)}_{x_{ik}}$);
2. aggregate cross point elasticity with respect to the average value of x_{jk} ($E^{\widehat{W}(i)}_{x_{jk}}$).

Hints

- Consider the estimator of the market share of alternative i in the population
$$\widehat{W}(i) = \frac{1}{S}\sum_{n=1}^{S} \omega_n P_n(i|x_n;\theta). \tag{1}$$
- For continuous variables, we assume that the relative (infinitesimal) change of the variable is the same for every individual in the population, that is
$$\frac{\Delta x_{ink}}{x_{ink}} = \frac{\Delta x_{ipk}}{x_{ipk}} = \frac{\Delta x_{ik}}{x_{ik}}, \tag{2}$$
$$\frac{\partial x_{ink}}{x_{ink}} = \frac{\partial x_{ipk}}{x_{ipk}} = \frac{\partial x_{ik}}{x_{ik}}, \tag{3}$$
where
$$x_{ik} = \frac{1}{S}\sum_{n=1}^{S} x_{ink}. \tag{4}$$
- Consider the definitions of the disaggregate direct arc elasticity and the disaggregate cross point elasticity, respectively.