

Choice with multiple alternatives

Specification of the deterministic part

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Introduction to choice models



ÉCOLE POLYTECHNIQUE
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Nonlinear specifications: heterogeneity

Heterogeneity

Interaction

$$V_{in} = \beta_{in} z_{in} + \dots$$

Linear interaction

$$\beta_{in} = \beta \text{ income}_n$$

Nonlinear interaction

$$\beta_{in} = \beta \text{ income}_n^\lambda, \text{ where } \lambda = \frac{\partial \beta_{in}}{\partial \text{income}_n} \frac{\text{income}_n}{\beta_{in}}$$

Nonlinear interactions

Remarks

- ▶ λ must be estimated
- ▶ Utility is not linear-in-parameters anymore
- ▶ Use a reference value for the socio-economic characteristic:

$$\beta_{in} = \beta \left(\frac{\text{income}_n}{\text{refIncome}} \right)^\lambda$$

- ▶ Reference value is arbitrary
- ▶ Several (continuous) characteristics can be combined:

$$\beta_{in} = \beta \left(\frac{\text{income}_n}{\text{refIncome}} \right)^{\lambda_1} \left(\frac{\text{age}_n}{\text{refAge}} \right)^{\lambda_2}$$