Professor Elie Tamer
Problem Set 1

ECON 2140: ECONOMETRIC METHODS

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Problem 1

$$\theta_p = \frac{\mathbb{E}[X|X < \xi_p]}{\mathbb{E}[X]}$$

(a)

Let

$$N = \frac{1}{np} \sum_i X_i \mathbb{1}\{X_i < \xi_p\}$$

$$D = \frac{1}{n} \sum_i X_i$$

Then,

$$\hat{\theta}_p = \frac{\frac{1}{np} \sum_i X_i \mathbb{1}\{X_i < \xi_p\}}{\frac{1}{n} \sum_i X_i} = \frac{N}{D}$$

(b)

$$\hat{\theta}_{N_p} = \frac{\frac{1}{np} \sum_i X_i \mathbb{1}\{X_i < \hat{\xi}_p\}}{\frac{1}{n} \sum_i X_i}$$

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