Lecture 13: Method of Moments

- To estimate p parameters solve

$$\begin{aligned} \bar{X} &= \mathrm{E}_\theta(X) \\ \bar{X^2} &= \mathrm{E}_\theta(X^2) \\ &\vdots \quad \vdots \\ \bar{X^p} &= \mathrm{E}_\theta(X^p) \end{aligned}$$

- Essentially always consistent.
- Did Gamma(α, β) example.
- Used as starting points for Newton-Raphson.
- To solve $g(\theta) = 0$ begin with initial value θ_0 and iteratively define

$$\theta^{(k+1)} = \theta^{(k)} - \left(Dg(\theta^{(k)}) \right)^{-1} g(\theta^{(k)}).$$

Here Dg is the $p \times p$ matrix with i, jth

$$\frac{\partial g_i(\theta)}{\partial \theta_j}.$$

Coverage in the text

- Method of moments in Chapter 9.