ECON6300/7320/8300
Advanced Microeconometrics
Non-Parametric methods

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Practical 10
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Introduction

- This class will review:
  - Histograms
  - Kernel density
  - Non-parametric regression - Lowess/K-nearest neighbours
- We begin with a demonstration from Chapter 9 of Microeconometrics: Methods and Applications.
- We move on to a practical in which we estimate non-parametric Engel curves.

Practical (1)

- We have the same World Bank data as last week
- Thus far we have assumed log-linear Engel curves
- Now we look more closely at the functional form
- We focus on regressions of log-medical expenditure on log-total expenditure with no controls.

Practical (2)

1. Load, describe and summarise the data.
2. Estimate a histogram and kernel density of log-medical expenditure using Silberman's optimal bandwidth and the Epanechnikov kernel.
3. Estimate a linear Engel curve for log-medical expenditure on log-total expenditure
4. Use a parametric approach to estimate a non-linear Engel curve.
5. Perform a hypothesis test of non-linearity in your parametric specification. What do you conclude?
6. Estimate a non-parametric Engel curve.
7. Plot the linear, parametric non-linear, and non-parametric Engel curves on the same graph.
8. Based on your analysis so far, is linearity a reasonable assumption?