Course Logistics

EC 339

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Motivation

Why is this course important for you?

Being able to make **sense** of (economic) data is one of the most important **skills** you may develop in your Major field.

- **Job market** (`Stata/R/Python` are highly valued!)
- Further **academic** studies

When you can estimate with your own fingers (**???**) and see with your own eyes a **downward-sloping demand curve**, for example

- **Empowerment**
- A more comprehensive learning

Is this course hard?

What does an Economist always have as a **standard answer**?

- It **depends**!

Learning Econometrics is quite a **journey**

- But well worth it!
- Will not be exhausted with this course
- Here, a nicer challenge (theory and practice)
- The instructor is here to ***help*** you

Is this course hard?

- In summary:
  - Take this course ***seriously***
  - Come to class **in time** and with an **open mind**
  - Ask **questions**
  - Do the **assignments**
  - **Exams** will reflect what assignments (esp. *Problem Sets*) have asked you

- About `Stata`
  - It may take some **time** to feel comfortable with it
  - But after a few weeks, it will become a **good friend**
  - Feed it well and it will be fine!

Some practical tips

A friend's **advice**:

- Create a **folder** in your computer for this course.
  - **Please**.
- We will use **hundreds** of different files throughout the semester.
  - **Organization** is key!
  - Even better: create folders for **each week**. It will make your life easier.

The nature of Econometrics

Defining Econometrics

Literally interpreted, Econometrics means "**economic measurement**."

The methodology of Econometrics

The **"classical" workflow** of an econometrician goes along the following lines:

1. Statement of **theory** or hypothesis;

2. Specification of the **mathematical model** of the theory;

3. Specification of the statistical, or **econometric model**;

4. Obtaining the **data**;

5. Estimation of the **parameters** of the econometric model;

6. **Hypothesis testing**;

7. **Forecasting** or prediction;

8. Using the model for control or **policy** purposes.

A practical example

Engel's Law

As one's income **rises**, what happens to the **proportion** of income spent on food?

- In other words, how does the **income elasticity** of demand for food behave with respect to food?

Ernst Engel (1821—1896) argued that food expenditures grow **less** than people's increases in income, *in percentage terms*.

Mathematical model

$$Foodexp_i = b_0 + b_1 Income_i$$

Econometric model

$$Foodexp_i = \beta_0 + \beta_1 Income_i + u_i$$

In ***elasticity*** terms:

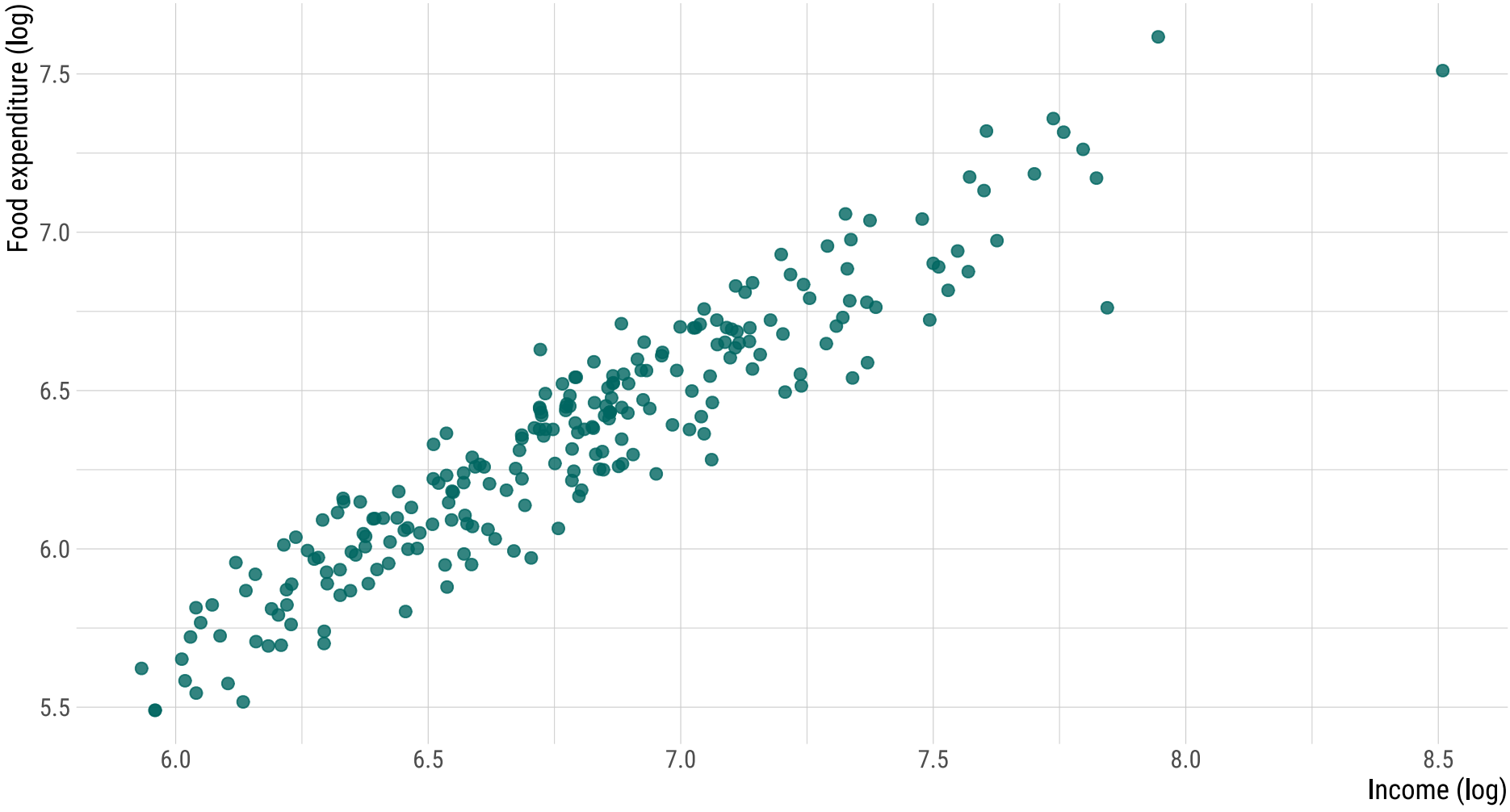
$$log(Foodexp_i) = \beta_0 + \beta_1 log(Income_i) + u_i$$

Engel's ***hypothesis***: $0 < \beta_1 < 1$

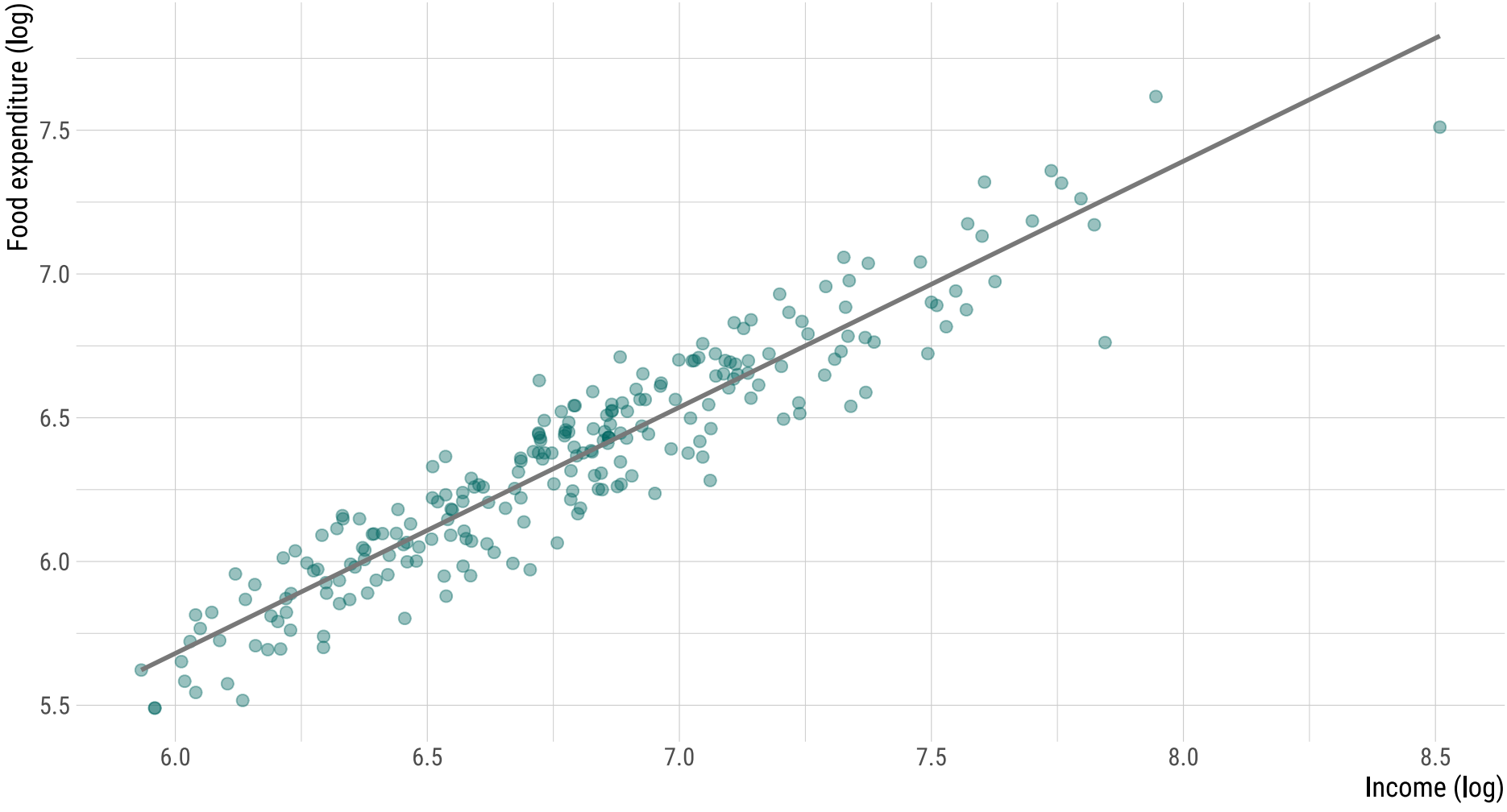
Obtaining data

`Koenker and Bassett (1982)` collected data on food expenditure and income for 235 Belgian working class households.

Fitting a linear model



Fitting a linear model (cont.)



Parameter estimation

$$\widehat{log(Foodexp_i)}^* = 0.55 + 0.86 \log(Income_i)$$

*: the "^" symbol means **estimated**.

Econometric inference

	log(foodexp)		
Predictors	*Estimates*	*CI*	*p*
(Intercept)	0.55	0.27 – 0.82	**<0.001**
income [log]	0.86	0.82 – 0.90	**<0.001**
Observations	235		
R^2 / R^2 adjusted	0.884 / 0.883		

The role of the computer

The role of the computer

> "Regression analysis, the bread-and-butter tool of econometrics, these days is ***unthinkable*** without the computer and some access to statistical software"

(Gujarati, 2004, p. 13, emphasis added).

Next time: Simple Linear Regression