Digitise, Optimise, Visualise: Digital Bootcamp

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Model

Humans want to make sense of the world an crave for structure.

- Model = simplification of the world
    - Focus on "relevant" part of word
- Model = restrictions to data
    - Feasability

So why models?

- Do something that we cannot do without them
    - Explain
    - Design/Optimize
    - Simulate
    - Predict

Model consistency

- Models can help to enforce consistency
  - Internal consistency
    in time and cross-section
  - With theory (no-arbitrage)
- Not always done

Why the linear model?

- Simplest model: "more $\longrightarrow$ more"
- Lots of phenomena *are* linear
- Others
    - Linearize by taking log
    - Linearity = local approximation (Taylor series)

Nomenclature

- Linear

$$y = \beta x + \varepsilon$$

- Affine

$$y = \alpha + \beta x + \varepsilon$$