SOC9052 Longitudinal Analysis

Session 1 (May 7th)

Eoin Flaherty

e.flaherty@qub.ac.uk

1

If you're so smart, why ain't you rich?

The axiom of modest greed

- We stoop to pick up €1 from the path, but jump on a €500 note
- If the axiom of modest greed holds, there are no paths in anyone's vicinity with €500 notes laying around

- *"If a man offers advice on how to find a five-hundred dollar bill on the sidewalk, for which he asks merely a nominal fee, the prudent adult declines the offer. If there really were a five-hundred dollar bill, then the confident man would pick it up himself"*

    - "Economists, for example, are routinely asked at cocktail parties what is going to happen to the interest rate or the price of housing, or the price of corn. People think that asking an economist about the future is like asking the doctor at the party about that chest pain to do his job for free…An economist who claims to know what is going to happen to the price of corn, however, is claiming to know how to pick up five hundred dollars. If he could predict the price of corn better than the futures market, he would be rich. Yet he does not put his money where his mouth is. He is not rich. It follows that he is not so smart"

2

If you're so smart, why ain't you rich?

Prediction vs. Explanation

> "…economic history is one of the few scientifically quantitative branches of economics. In economic history…the ***economists confront the evidence***. When you think about it, all evidence must be in the past. And as the British economic historian John H. Clapham said in 1922 – rather in the style of Austrian economists… - "the economist is, willy-nilly an historian. The world has moved on before his conclusions are ripe" (McCloskey, 2014)

3

http://www.gapminder.org/

4

Thinking about patterns and processes of social change

Annales school

- *Longue duree*, processes, epochs, events.

- How do we think about processes and mechanisms of social change today – i.e. institutional terms, or as path dependence?

5

Thinking about patterns and processes of social change

Why do dynamics arise in social systems?

- Individuals or groups may be slow to respond to changes or shock events (this also varies depending on the system parameters in question – consider rates of change in opinion polls vs. fertility rates).
- The effect of social policy is highly variable (divorce/welfare cuts vs policing/judicial cuts).
- Institutions may be slow to respond due to path-dependent behaviour or institutional lock-in.
- Structural costs of adaptation may be relatively high.
- Information may be sporadic and incomplete.

6

Thinking about processes of social change

Mahoney and Thelen's (2010) model of institutional change processes

Conceptual Model	Characteristics
Displacement	Removal of existing rules and introduction of new (rapid breakdown of revolutions, gradual competition between old and new)
Layering	Introduction of new rules on top of or alongside old (amendment, revision, addition – challengers lack capacity to remove old)
Drift	Changed impact of existing rules due to environmental change (changing composition of electoral districts)
Conversion	Changed enactment of existing rules due to redeployment (actors exploiting ambiguities in existing structures)

7

Thinking about long-term patterns of social change

Classical criteria for 'causation'

Association: modest degree of correlation between conditions

Time order: variation in dependent variable must occur after variation in independent variables

Nonspuriousness: outcome must not be influenced by other explanatory variables (classical example of mathematical ability and height)

Mechanism: identifiable process by which connection between variables is established – this is often the work of theory

Experimental control: researcher controls variables in study (not possible in observational research, instead uses statistical control)

How many criteria are met by cross-sectional regression?

8

Thinking about patterns and processes of social change

Goldthorpe (2001)

Causation as robust dependence

- Causation must imply association –causation present when association cannot be eliminated by introducing other control variables.
- Causation is affirmed on the elimination of spurious alternatives.
- Entirely statistical criteria: '…prices, investment, consumption, and money supply do not naturally move on their own untouched by human volition'.
- Can only show relations among variable sets, not how relations are produced.

Thinking about patterns and processes of social change

Goldthorpe (2001)

Causation as consequential manipulation

- Causation as consequences of acts in experimental context.
- If causal factor X is manipulated, given appropriate controls, a systematic effect is produced on Y.
- Causal effect is average difference between treatment and control units.

Causation as generative process

- Association is product of mechanism operating at level 'below' the manipulated data.
- Mechanisms establish a theoretical/explanatory link between causes and consequences.

10

Thinking about patterns and processes of social change

Esser(1996)

- Model diagnostics and output are insufficient to stand as explanations in themselves.
- Results vary from context to context (importance of comparative analysis), structural relations are complex aggregations of individual behaviour.
- Statistical model is merely a link between action-theoretic explanation, and empirical data.

Goldthorpe(2001)

An alternative model of causal reasoning

1. Establish the phenomena as regularity rather than singularity through measurement/intuition/deduction.
2. Hypothesise the generative process through a narrative of social action (establish generative mechanism) –establish its temporal ordering: one-directional, irreversible, lagged, threshold (i.e. social movement).
3. Test the hypothesis –the purpose of longitudinal analysis.

11

Thinking about patterns and processes of social change

Discuss!

Think about your research topic, and pick an important dependent variable related to your study.

Can you think of reasons why a sudden change in one of your independent variables might not result in an immediate change in your dependent?

Note: this is where we start to reason and theorise about mechanisms

12

What is time series analysis?

Static model: $Y_t = \alpha_0 + \beta_o X_t + \varepsilon_t$

year	gini (Y_t)	union (X_t)
2005	34.9	28.6
2006	35.4	28.4
2007	35.7	28.3
2008	35.8	27.6
2009	35.7	27.5

Basic dynamic model: $Y_t = \alpha_0 + \beta_0 X_{t-1} + \varepsilon_t$

year	gini (Y_t)	union (X_{t-1})
2005	34.9	29.5
2006	35.4	28.6
2007	35.7	28.4
2008	35.8	28.3
2009	35.7	27.6

13

Modelling dynamic systems

Modelling dynamic systems (deBoef and Keele, 2008)

> "Theories…typically tell us only generally how inputs relate to processes we care about. They are nearly always silent on which lags matter, whether levels or changes drive Y, what characterises equilibrium behaviour, or what effects are likely to be biggest in the long run"

Static model: $Y_t = \alpha_0 + \beta_o X_t + \varepsilon_t$

Finite distributed lag: $Y_t = \alpha_0 + \beta_o X_t + \beta_0 X_{t-1} + \varepsilon_t$

General model: $Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \beta_o X_t + \beta_0 X_{t-1} + \varepsilon_t$

A better (theoretical) question….? How does our model specification fit the underlying data-generation process?

14

Modelling dynamics systems – what specification?

Static model: $Y_t = \alpha_0 + \beta_o X_t + \varepsilon_t$

Impact of X on Y is instantaneous (assumes changes in X work through system instantaneously)

Finite distributed lag: $Y_t = \alpha_0 + \beta_o X_t + \beta_0 X_{t-1} + \varepsilon_t$

X impacts Y over a period of 1 (tax reform on net income)

General model: $Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \beta_o X_t + \beta_0 X_{t-1} + \varepsilon_t$

Past values of Y influence Yt, as well as current and past values of X (previous values of presidential support Y influence current, as well as level of confidence in economy)

15