Chapter 17
Labour: Outline

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17.1 Introduction

- Labour markets involve choices, dynamics, selection, and policy interventions.
- Empirical labour economics has drawn heavily on econometric tools often leading to new methods in econometrics (Moffitt, 1999).
- Objective: to provide a structured overview of the evolution of the key econometric approaches used in labour research, illustrating their purposes, assumptions, application contexts and providing a historical line.
- Not exhaustive; organised around conceptual themes focusing in methods that are important today in labour economics
- Key developments in the history of labour econometrics:
  - 1960s structural vs reduced-form estimation
  - availability of new types of data motivated the development of new methods (1970s emergence of household surveys – panel methods, mostly fixed effects; later admin data ...)
  - 1980s 'credibility revolution'

17.2 Selection and Participation Modelling

- Sample selection issues (participation, censoring, offer vs observed wages).
- Heckman correction mechanism (conceptual, not technical derivation).
- Methods: probit, logit, Tobit

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- This section lays the foundation for labour supply models?
- Historical developments:
  - 1986-1999: decline in the use of selection bias methods (Moffitt, 1999)

17.3 Duration and Transition Models

- Unemployment spells, welfare exit, reemployment hazards.
- Hazard models and unobserved heterogeneity issues.
- Key empirical uses and interpretation.
- This section lays the foundation for search and matching models. Early foundations include Job search theory (McCall, 1970) and equilibrium search models (Burdett & Mortensen, 1998; Mortensen, 1970), which provided behavioural frameworks linking wages, unemployment durations, and mobility.

17.4 Quasi-Experimental Identification in Labour Research

- 1980s 'credibility revolution': new approaches to ensure causal inference.
- Include seminal examples of natural experiments in schooling, immigration, wages, benefit reforms.
- Instrumental variables applications. Key developments:
  - Originally used for labour supply-demand estimation, scope has broadened.
  - Instrumental variable estimation have long been around before 1980s, e.g. Schultz, T W (1964), Transforming Traditional Agriculture, Yale University Press, but applications were more exceptions than the norm.
  - LATE (Angrist & Imbens, 1995) Imbens, G, and J D Angrist (1994), "Identification and Estimation of Local Average Treatment Effects", Econometrica 61(2): 467-76.
  - Seminal examples:
    - Angrist and Krueger (1991) use IV to estimate returns of an additional year in compulsory schooling
    - Mariel Boatlift IV, impact of immigrants on local labour market (Card, 1990)
- Difference-in-differences
  - Seminal examples:
    - Minimum wages and employment (Card & Krueger, 1993)
  - Methodological advances
    - staggered diff-in-diff (Callaway & Sant'Anna, 2021)
- Event study

  - (Jacobson, LaLonde & Sullivan, 1993)
- Regression discontinuity in eligibility settings.
  - Seminal examples:
  - Methodological advances
    - Robust data-driven inference (Calonico, Cattaneo & Titiunik, 2014)
- What labour research highlighted about strengths/limits of these tools. + examples.
- What aged well
  - event study thinking, admin data availability helps
- Outcome
  - quasi-experimental methods are mainstream today, although the exact use of methods have changed over time
  - a lot of methodological advances have happened regarding these methods, active and rich area for econometric research

17.5 Behavioural and Structural Modelling

- Why are some labour questions inherently behavioural (policy design, search, welfare)? Motivation: some labour-market questions involve forward-looking behaviour, dynamic incentives, and policy counterfactuals that are difficult to address using reduced-form methods alone.
- Dynamic discrete choice models applied to labour supply and job search.
- Equilibrium search and matching frameworks. (TBC)
- Situations where structural estimation is informative.
- Life-cycle labour supply and participation models developed to study welfare, taxation, fertility, and retirement decisions. Econometric implementation:
  - Dynamic discrete choice models estimated by maximum likelihood or simulation methods (Keane & Wolpin, 1997, Rust, 1987).
  - Structural estimation used to recover preference parameters, offer distributions, and policy-relevant primitives.
- Applications in labour economics: welfare reform, unemployment insurance, job search behaviour, retirement, and human capital accumulation.
- What aged well:
  - The ability of structural models to generate internally consistent counterfactuals and welfare analysis.
  - Integration of behavioural theory with policy evaluation.
- What aged less well:

  - Reliance on functional-form and distributional assumptions in early implementations.
  - Transparency and robustness in some highly parameterised models.
- Outcome: structural approaches remain central where policy design and behavioural mechanisms are the object of interest, often used alongside quasi-experimental variation.
- Key classical references (indicative): (Keane & Wolpin, 1997; Eckstein & Wolpin, 1989, Rust, 1987).

17.6 Earnings Dynamics and Heterogeneity Modelling (TBC)

- Motivation: labour economists have long been interested in earnings mobility, inequality, and persistence, requiring models that separate permanent heterogeneity from transitory shocks.
- Permanent/transitory decomposition.
- State-space estimation and heterogeneous life-cycle paths.
- Linked employer-employee data enabling decomposition of firm and worker components.
- Early contributions:
  - Panel data methods in the 1970s–1980s enabled decomposition of earnings variation using fixed effects and error-components models.
  - Recognition that cross-sectional inequality masks rich individual-level dynamics.
- Canonical developments and methodological advances:
  - Permanent–transitory earnings decompositions (MaCurdy, 1982, Abowd and Card, 1989).
  - Extensions incorporating measurement error, lifecycle effects, and serial correlation (Gottschalk, Moffitt, Katz & Dickens, 1994).
  - State-space and stochastic process models allowing flexible persistence and heterogeneity (Meghir & Pistaferri, 2004).
  - Use of long administrative panels to estimate earnings processes with minimal attrition.
  - Linked employer–employee data: Decomposition of worker and firm components (Abowd, Kramarz & Margolis, 1999). New insights into sorting, firm heterogeneity, and wage setting.
- What aged well:
  - The conceptual framework distinguishing permanent and transitory components.
  - Use of panel and administrative data to study earnings dynamics.

- What aged less well:
  - Simple error-components models that impose restrictive persistence structures.
  - Limited treatment of job mobility and firm dynamics in early specifications.
- Outcome: earnings dynamics modelling remains a core pillar of labour econometrics, evolving in response to richer data and more flexible stochastic specifications.

17.7 Administrative Data and Empirical Policy Evaluation (TBC)

- Emergence of whole-population longitudinal data.
- Opportunities for causal inference in staggered reforms.
- Econometric challenges raised by these data and research designs. + examples.

17.8 Concluding Themes

- Labour markets have repeatedly generated econometric problems with practical policy relevance.
- As a result, labour research has been an important application area for multiple econometric techniques.
- The coexistence of methods reflects the diversity of labour market questions.

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