

Why macro needs microdata?

Torben M. Andersen
Department of Economics
Aarhus University

IARIW Conference
Copenhagen
August 2018

What is macro?

- Macro is about general equilibrium
 - Interactions and interdependencies between households, firms ... across product, labour, capital markets
- What are the aggregate outcomes?
- Heterogeneity/distribution may be of interest in its own right
- But does it matter for aggregate developments?
 - Business cycle: production, consumption, ...
 - Structural: unemployment...
 - Growth: inequality \longleftrightarrow growth

The representative agent

- Traditional macro: Behaviour can be modelled based on the representative agent assumption (household, firm...)
- Aggregation: what matters to the "average" agent is what matters for the aggregate outcome
 - Individual dynamics coincide with aggregate dynamics
- Implicit assumption: the distribution "around" the representative agent is stationary and unaffected by shocks and policy changes!
 - Distributional aspects do not matter for aggregate outcomes

Critique of the representative agent

Theory:

- Implicit aggregation assumption is very restrictive
- Giving up the representative agent
 - Heterogeneity: preferences, endowments, initial position
 - Market structure (incomplete markets)

Empirical:

- Does the "representative agent" assumption have empirical support?
- How to assess this without microdata?
- Model development depends on data availability!

Shift in policy focus

- Traditional models: aggregate demand management (fiscal and monetary policy)
- During 1980s and 1990s increasing focus on structural policies
- Need for more precise modelling of behavioural responses, market structures, e.g. labour markets, immediately brings in heterogeneity
- New questions, new models, new data!

Theoretical developments

- 1970s: Microeconomic foundation of macroeconomics
 - Need to derive behaviour from micromodels (consistency – understand how behaviour depends on policy)
 - Explicit about objectives, markets, information etc.
- 2000s: Heterogeneous agent models
 - Taking heterogeneity seriously
 - Incomplete market structures
 - Behavioural assumptions (rationality?)

Models and data – why macro needs microdata?

- Fundamental assumptions can be tested
- Better empirical foundation of models
- Richer models can be developed
- Improvement of applied models – policy advice

Use of microdata in macro

Calibration:

- Determination of deep parameters, e.g. time preferences from microeconomic studies
- Choice of parameters to match key stylized facts
- Critique: Consistency across parameter choices?

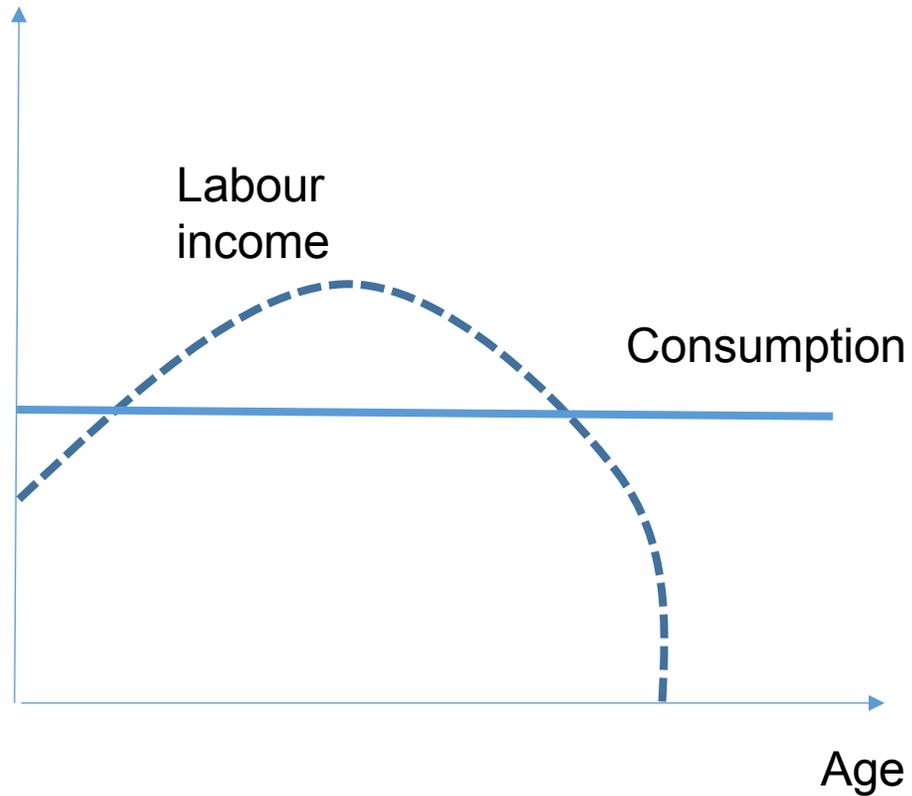
Effect studies:

- Quasi-experimental situation – possibility to make statements on causality
- Captures the “partial” but not the general equilibrium effect
- Useful inputs – but cannot be applied unconditionally

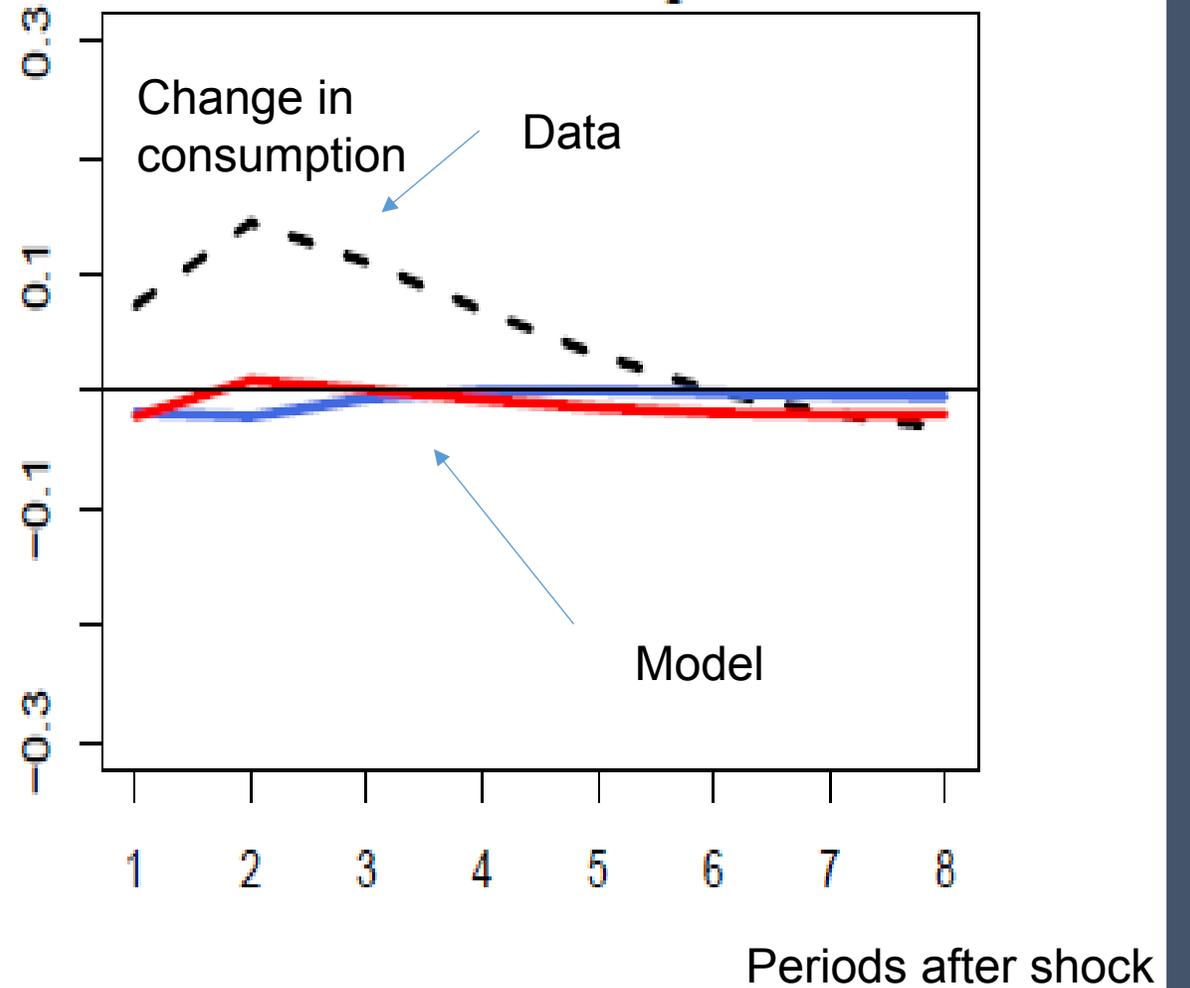
Savings and consumption – A classical macro question

- Theory – standard model
 - Current income should have a small effect on consumption (consumption smoothing)
 - No role for e.g. mandated pension saving; voluntary saving is crowded out
- Empirics
 - Consumption highly sensitive to income
 - “Undersaving”
 - Mandated savings affected total savings

Theory – income and consumption smoothing



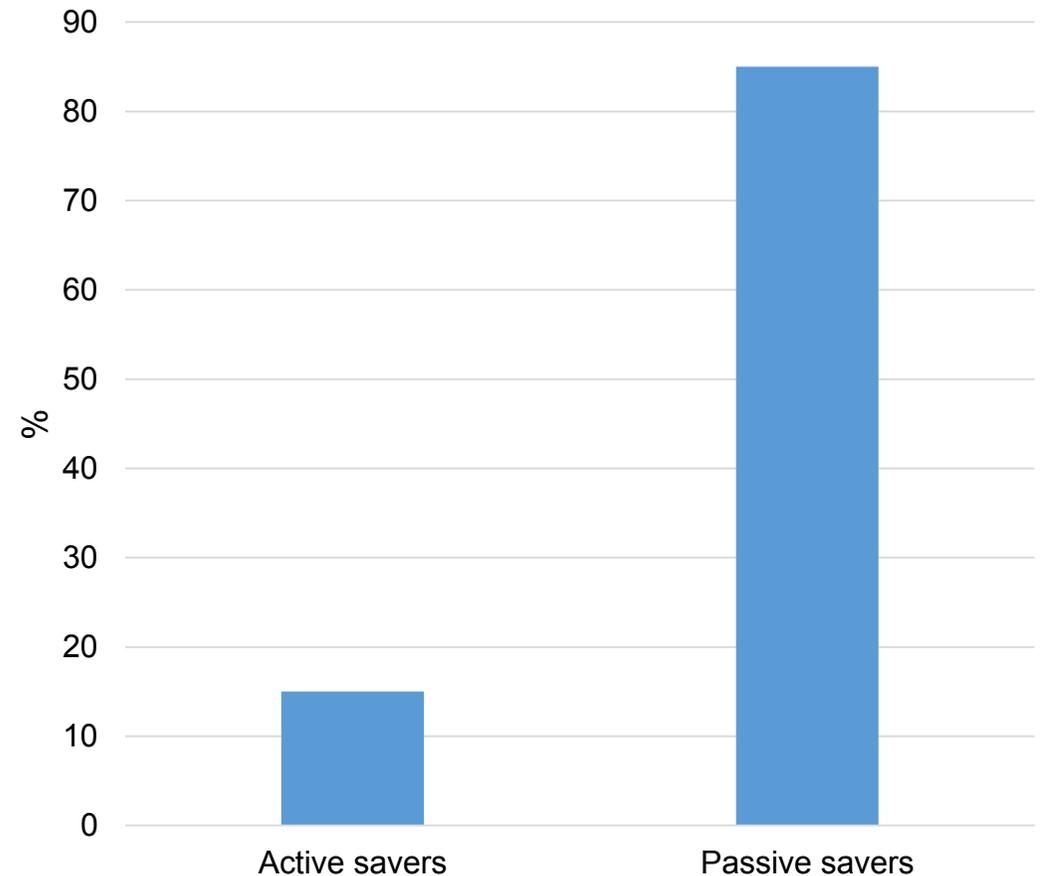
Private consumption – response to temporary fiscal expansion



Empirics

- Large fraction of households have consumption determined by current income
 - Credit constraints
 - Myopia
 - Inattention
- Response depends on type of shock
- The representative agent captures the behaviour of nobody!

Savings response to job change = change in permanent income

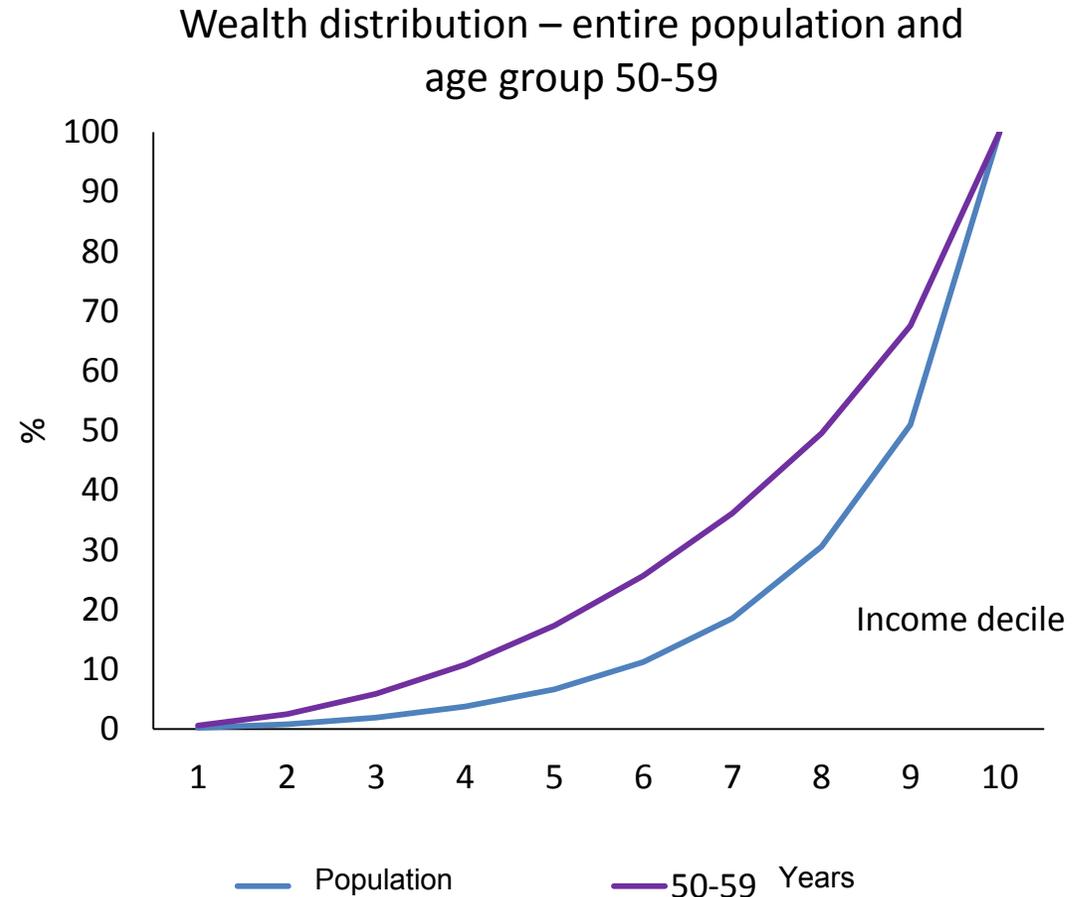


Theoretical challenge – how to explain these facts?

- Modelling intertemporal choices
 - Capital markets: can (all) agents borrow against future income?
 - Behavioural – too much rationality/foresight in standard models?
- Market structures
 - Available markets – market form
 - Information
- Models of bounded rationality
 - Myopia
 - Self-control
 - Information

Pension savings and wealth

- Individualized wealth data (including pension wealth)
- More precise studies of how e.g. mandated savings affect net savings – crowding out – strong heterogeneity
- Life-cycle – not meaningful to assess wealth distribution for the entire population – (wealth increases with age)
- Distributional implications of mandated pension savings – wage earners become capital owners!



Labour markets:

Labour economics - wide use of microdata

Structural unemployment:

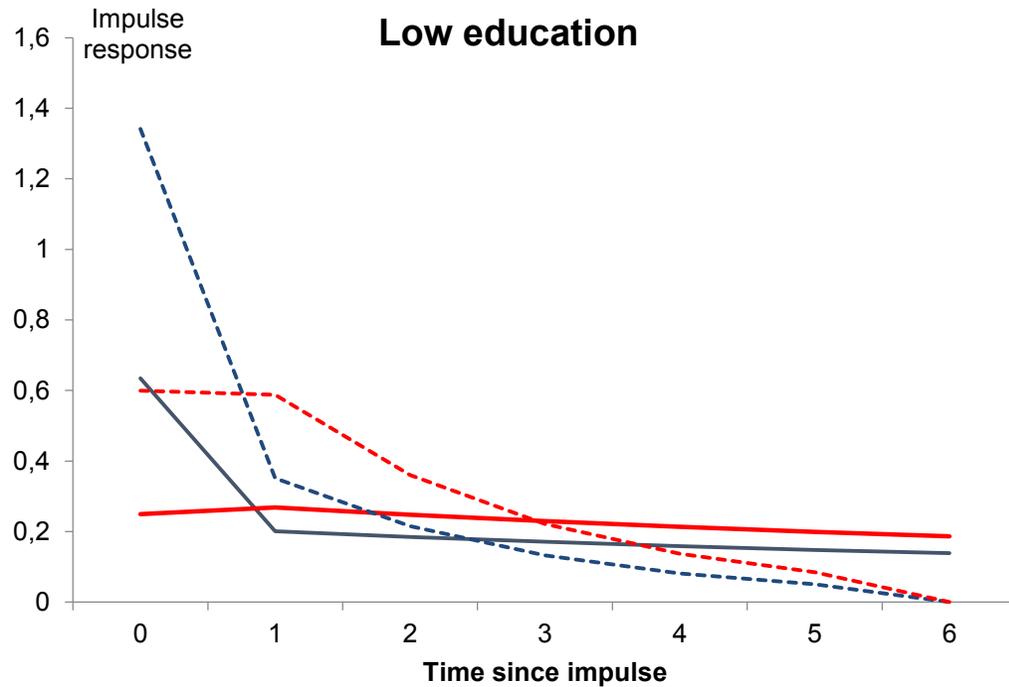
- Unemployment insurance
 - Benefit levels, duration...
- Active labour market policies
 - Type of programme, timing...
- Effect studies have become standard
 - Even controlled experiments
- Building macromodels consistent with these findings

Dynamics:

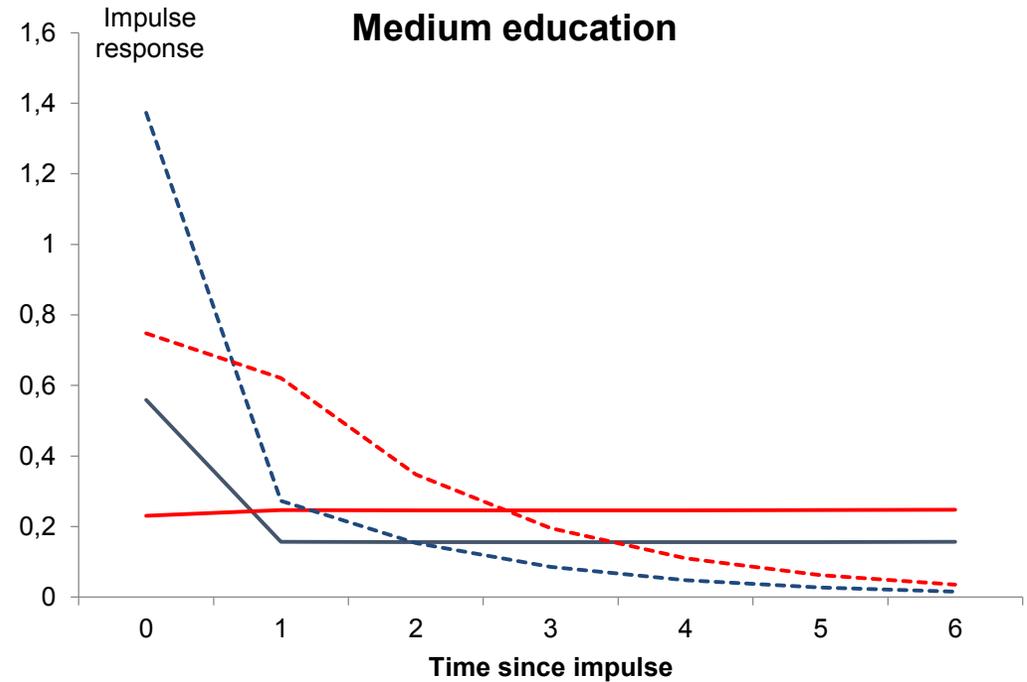
- Unemployment persistence
 - "Scarring" at the level of individuals (depreciation of human capital)
 - Lost generations
- Cohorts entering the labour market when unemployment is high will subsequently experience higher unemployment
- Path dependence

Unemployment effect to a fall in aggregate demand

Evidence from Denmark



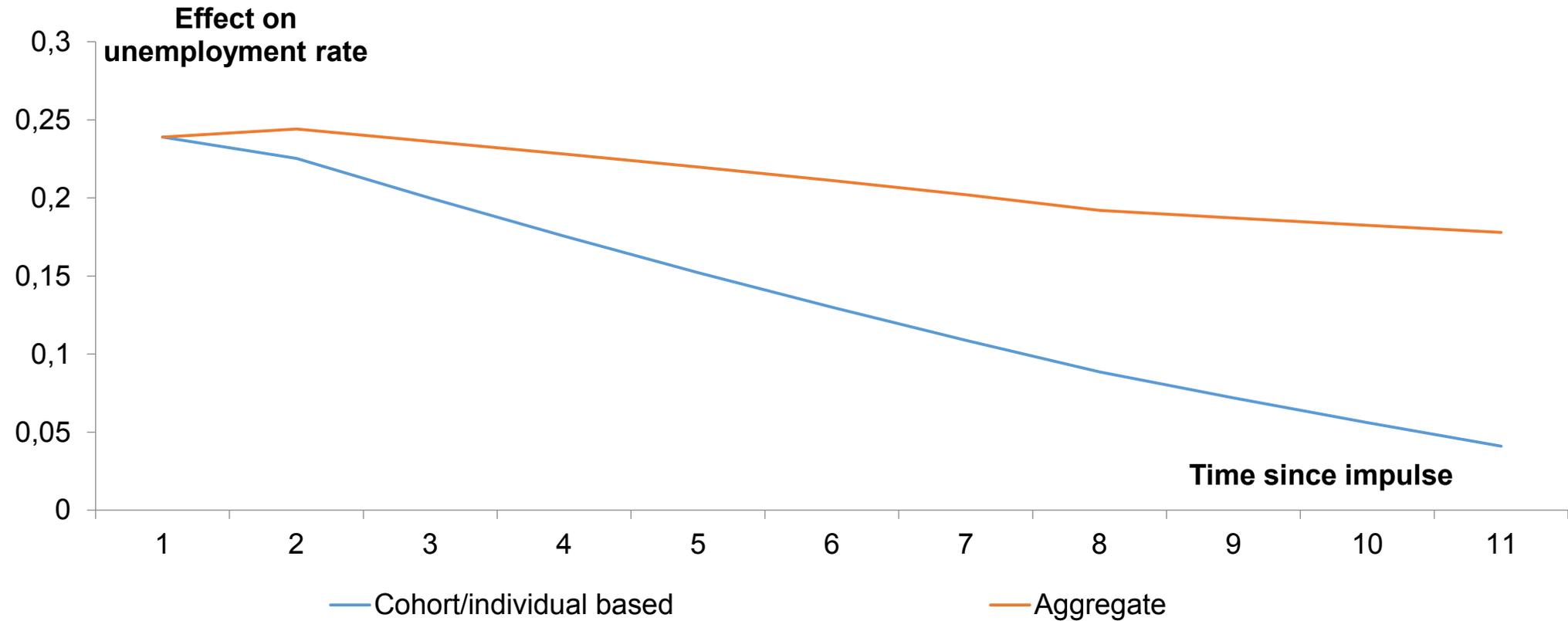
— Old men — Old women - - - Young men - - - Young women



— Old men — Old women - - - Young men - - - Young women

Impulse response to activity shock

Unemployment for elderly workers



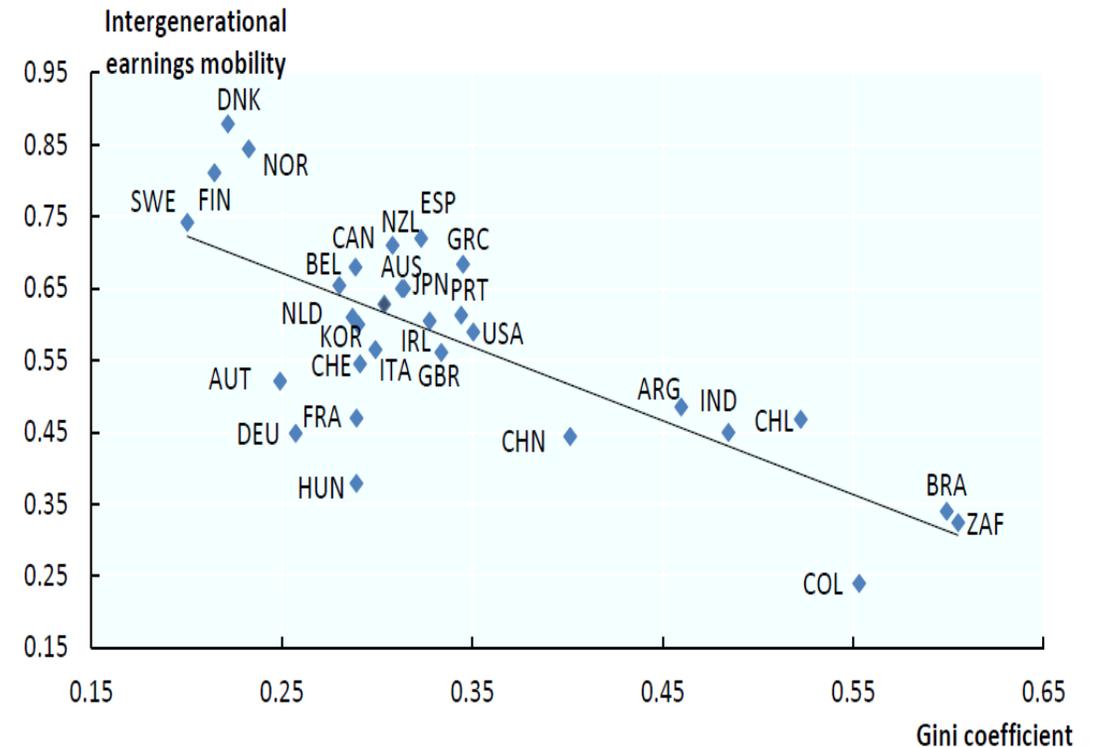
Inequality and growth

- Inequality  growth
- Inequality may have positive or negative effects on growth
 - Positive: incentives, savings
 - Negative: human capital
- Distribution matters for aggregate outcomes – but how?
 - Need for microdata!

Inequality and human capital

- Human capital – depends on
 - parents' income (ability/willingness to pay)
 - social background
- (Un)equal opportunities
- Inequality may imply less equality of opportunity – effect on human capital – effect on growth
- Persistence over time/generations

Inequality and intergenerational earnings mobility



Microdata are essential for modern macro

- Model developments
- Empirical validation
- Policy insights/recommendations

