EUROMOD: an integrated European tax-benefit model and indicators of work incentives

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Background and acknowledgements

- **MICRESA (Micro-level Analysis of the European Social Agenda):** combating poverty and social exclusion through changes in social and fiscal policy [FP5 Key Action Improving the Socio-economic Knowledge Base]
- **Drawn from work of Herwig Immervoll + colleagues**
  - Immervoll, Kleven, Kreiner, Saez, “Welfare Reform in European Countries: a micro-simulation analysis”, EM1/04

www.econ.cam.ac.uk/dae/mu/emod.htm
Outline

• Using microsimulation to calculate indicators of work incentives
• Why EUROMOD?
• Examples of some indicators and what they show
  – Marginal effective tax rates (METRs)
  – “Participation tax rates”
  – Replacement rates
• What else could be done?
Tax-benefit models

• Calculate cash benefits and taxes and contributions for a (large) sample of households, representative of the population
• Focus on policies that can be straightforwardly assigned a monetary value.
• The main output from the model is household income.
• Consistent results for:
  – aggregates (budgetary effects)
  – distributions (poverty and inequality indicators)
  – individual cases (real and hypothetical)
  – indicators of incentives (NRRs METRs)
• and *changes* in these for alternative scenarios
EUROMOD - what is it for?

• Built with **comparability** as the main objective
• Cross-country comparisons
  – distributive impact of existing systems
  – “system swapping”
• Impact of common changes or changes with common objectives
• Analysis of national changes with an EU perspective
• National analysis for countries without national models
  – Austria, Greece, Luxembourg, Portugal
• What if questions about
  – existing policy instruments and sub-components
  – changes and reforms (actual, proposed, hypothetical scenarios)
EUROMOD - an integrated model

- Based on representative micro-datasets for each country (various types, various years)
- Original incomes taken from micro-data and updated to common policy year (1998, 2001 or 2003); tax liabilities and benefit entitlements are simulated using policy year rules ... and re-simulated for each new scenario
- Aiming to maximise comparability while maintaining transparency about real differences
- Flexibility and choice in many dimensions
EUROMOD – calculating indicators of work incentives

• Having established the infrastructure, we have a lot of choice:
• What incentive are we interested in?
  – Tiny, small or large changes in activity? Money or time?
• Whose incentives and in what context?
• The incentive effects of policy changes (alongside distributional effects)
• Examples are all for 1998 policies, most of EU15, assuming full take-up of benefits and no tax evasion.
Marginal effective tax rates

\[
\text{METR} = 1 - \frac{((y_1 + d)(1-t_2)-y_1(1-t_1))}{d} \\
= 1 - \frac{\Delta Y_{\text{net}}}{\Delta Y_{\text{gross}}}
\]

- 1998, EU14 (not Sweden), population aged 18-64 in employment or self-employment
- Effect on household income (after income taxes, social contributions and benefits); taking each individual in turn
- An increase in gross earned income of 3%
Average METRs faced by working population

Source: EUROMOD (Immervoll, 2004)
Distribution of METRs 1998

Source: EUROMOD (Immervoll, 2004)
Median METRs by earnings decile

High Tax Countries

Source: EUROMOD (Immervoll, 2004)
Median METRs by earnings decile

Source: EUROMOD (Immervoll, 2004)
Median METRs by hhold income decile

Source: EUROMOD (Immervoll, 2004)
Median METRs by hhold income decile

Source: EUROMOD (Immervoll, 2004)
Adults in paid work with high (> 50%) marginal effective tax rates 1998

% with METR > 50%

Source: EUROMOD (Immervoll, 2004)
Median METR by gender
(men & women in same earnings decile group)

Source: EUROMOD (Immervoll, 2004)
“Participation” tax rates ("Average Effective Tax Rates")

$$\text{PTR} = 1 - \frac{\Delta Y_{\text{net}}}{\Delta Y_{\text{gross}}}$$

Where $\Delta Y_{\text{net}}$ = net increase in household disposable income when individual enters work and $\Delta Y_{\text{gross}}$ = gross earnings in work

- 1998, EU14
- In this example disposable income is net of employer contributions and imputed consumption taxes
Mean PTRs by earnings decile (1)

High-Tax Countries

Source: EUROMOD (Immervoll, Kleven et al, 2004)
Mean PTRs by earnings decile (2)

Source: EUROMOD (Immervoll, Kleven et al, 2004)
Net replacement rates

\[ \text{NRR} = \frac{Y_{\text{out}}}{Y_{\text{out}} + \Delta Y_{\text{net}}} \]

- Depends on other household income as well as operation of the tax-benefit system
- 1998, EU13 (not Sweden, Finland), transitions from unemployment and inactivity to employment (using estimated earnings); transitions from employment to unemployment
- Effect on household income (after incomes taxes, social contributions and benefits); taking each individual in turn
- Here, shown for employment » unemployment (in initial period)
Distribution of NRRs 1998

Source: EUROMOD (Immervoll, O’Donoghue, 2003)
What else can be done?

- Decomposition by driving factors
- Account for work-related costs (childcare)
- METRS – other margins
- Within household differences
- Update to 2001 and 2003 and beyond…
- EU25+
- Incentive effects of policy changes
- Modelling changes in behaviour (Bargain, Orsini, EM4/04)
Contacts

• Find out more:
  www.econ.cam.ac.uk/dae/mu/emod.htm

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