Modelling Minimum Wages in a CGE

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Jürgen Wiemers

Macroeconomic effects of a minimum wage

- Application: Macroeconomic effects of a general minimum wage in Germany
    - $\Rightarrow$ employment, unemployment, wages, fiscal effects, income distribution
- Method: Linked micro-macro model
- Work in progress: Right now, only labour supply effects are accounted for in the linked model.
- $\Rightarrow$ Modelling of the effect of minimum wages on wages and labour demand in the CGE model?

Minimum wages: Mixed empirical evidence

- Card/Kruger (1995), Neumark/Wascher (2000): USA, ambiguous effects
- Dolado et al. (1996): Europe, sign varies with worker type, overall positive employment effects
- Machin/Wilson (2004), Metcalf (2007): UK, no negative effects
- Abowd (2004): France, negative effects for young low skilled workers and married women

Minimum wages: Theory

- Efficiency wages (Rebitzer/Taylor 1995; Manning 1995)

- Segmented labour markets/search frictions (Burdett and Mortensen 1989; Manning 2003)

- Wage bargaining (Cahuc et al. 2001) $\Rightarrow$ **approach for modelling minimum wages in the CGE**

Wage bargaining

- PACE-L implementation: Trade unions and firms bargain over wages for each skill type simultaneously (for each sector):

$$\max_{w_{H,s}, w_{L,s}} \Omega_s = \pi_s^{(1-\rho_{H,s}-\rho_{L,s})} \Gamma_{H,s}^{\rho_{H,s}} \Gamma_{L,s}^{\rho_{L,s}}, \text{ with}$$

$$\Gamma_{i,s} = L_{i,s}^{\chi} \cdot (V_{i,s} - V_{U,i}), \; i = L, H$$

- Cahuc et al. 2001: identical approach, but trade unions represent the interest of skilled workers only:

$$\max_{w_{H,s}, w_{L,s}} \Omega_s = \pi_s^{(1-\rho_{H,s})} \Gamma_{H,s}^{\rho_{H,s}} \text{ with}$$

$$\Gamma_{H,s} = L_{H,s}^{\chi} \cdot (V_{H,s} - V_{U,H})$$

$$\text{s.t. } w_{L,s} \geq \overline{w_{L,s}}$$

Effects of a minimum wage

- Effect of a minimum wage depends on the elasticity of substitution between skilled and unskilled labour.
- Assumptions:
  - A1: The firms cost function is of the CES type *or*
  - A2: $\chi = 0$.
- Under A1 or A2:

$$\frac{\partial w_H}{\partial \overline{w_L}} < 0 \iff \sigma := \frac{\partial \ln (L_H/L_L)}{\partial \ln (\overline{w_L}/w_H)} > 1,$$

$$\frac{\partial L_i}{\partial \overline{w_L}} < 0 \iff \sigma < 1, \frac{\partial L_i}{\partial \overline{w_L}} \gtreqless 0 \iff \sigma > 1, i = H, L,$$

$$\frac{\partial (w_H/\overline{w_L})}{\partial \overline{w_L}} < 0.$$

Heterogeneity: Sectors and/or workers

- Problem: Representative household vs. wage distribution $\Rightarrow$ increase heterogeneity in CGE
- Approach 1: Deeper disaggregation of sectors, 59 instead of 7.
- Approach 2: Decomposing low skilled workers in
    - Low paid low skilled workers $\Rightarrow w_{LL}$
    - High paid low skilled workers $\Rightarrow w_{LH} > \overline{w_{LL}}$
    - Wage bargaining over w_H, w_{LH} and w_{LL} s. t. $w_{LL} \geq \overline{w_{LL}}$.

Discussion