



A microsimulation model can be used: what is it?

- Model that uses information at the level of microeconomic individual agents (individuals, households, firms).
- As such, it permits to evaluate effects of policy or other shocks on those individual agents
 - Often through ex-ante evaluations

A microsimulation model can be used: what is it? – cont.

- Typically it requires micro-data from a household survey covering:
 - socio-economic characteristics of individuals
 - labour-market status and labour incomes
 - household spending
- Changes in budget constraints are simulated
- Works at the partial equilibrium level
- It implies no simultaneous modelling of prices, wages, or macro processes

Top-down macro-micro approach

 CGE (macro) simulation results taken and applied to the full distribution as given by a micro data set (i.e., the household survey)

- Assumption: there are no further feedback effects

- Macro modelling: provides simulation results on employment, wages, non-labour factor income, etc.
- Micro modelling: permits to transform macro modelling results into results given by microdata, using the household survey







What if poverty is calculated based on consumption?

- ¿Use poverty incidence indicators based on income anyway?
- Alternative 1: in order to match base-year poverty incidence as measured from both income and consumption, there may be two options:
 - recalculate per capita income to match it with per capita consumption
 - recalculate the poverty lines
- Alternative 2: use consumption that changes when income changes (based on marginal propensity to consume by product).

Non-parametric microsimulations: where do we start?

- The method analyses effects of a change in the labour market structure on poverty and inequality.
- It is a counterfactual analysis: what would poverty and inequality indicators look like had the labour market structure be different from the observed one?
 - For example, one could use the labour market structure as recorded in MAMS instead of the observed labour market structure as recorded in a given household survey.

Non-parametric microsimulations: where do we start? – cont.

- The economically active population (EAP) is split up into j groups according to
 - sex (2; but not in MAMS)
 - level of skills (for example, 3 in MAMS)
 - (other individual's characteristics?)
- The occupied population is split up into k groups according to
 - sector of employment
 - occupational category
 - (individual's characteristics)
- The counterfactual structure of the labour market can be defined arbitrarily or as a result of a macrosimulation.

Classification of population in working age (j groups = 3)

| Active Employed Image: Complex state Image: Complex state <th>Participation</th> <th>Employment status</th> <th>Unskilled</th> <th>Semi-skilled</th> <th>Skilled</th> | Participation | Employment status | Unskilled | Semi-skilled | Skilled |
|--|---------------|----------------------|-----------|--------------|---------|
| Un-employed Imactive | Active | Employed | | | |
| Inactive | | Un-employed | | | |
| | Inactive | | | | |

Classification of employed population (EXAMPLE: j groups = 3; k groups = 3; 9 labour categories)

| Agriculture | | |
|---------------|--|--|
| | | |
| Manufacturing | | |
| Services | | |



How does it work?

- A random number is assigned to each person at working age
- Population at working age is ordered according to:
 - activity condition (active vs inactive),
 - employment condition (employed vs unemployed)
 - economic sector
 - occupational category
 - education level
 - random numbers





How does it work? - cont. Same randomized procedure applied for other shifts: active vs inactive (P) employed vs unemployed (U) employment by sector (S), occupational category (O), kills (M) Wages Changes in W₁: all YPs within each of the 9 labour categories are multiplied by an adjustment factor, maintaining the overall average wage/labour income level fixed Changes in W₂: all YPs are multiplied by an adjustment factor to reflect the change in the average wage/labour income Simulated YPs are used to compute household incomes per capita (YPC). New inequality indicators (Gini, Theil, etc.) and poverty indicators (for alternative poverty lines) are computed





Advantages vs disadvantages

Advantages:

- Enables to analyse the impact of a wide range of labour-market parameters, individually or sequentially
- Shows separate and combined effects of each type of labour market shift (e.g. unemployment change, wage change, etc.) on poverty and inequality outcomes
- It does not demand econometric estimation

Possible disadvantages:

- Behaviour is not modelled
- Results in sequential application may depend on the order in which the sequence of labour-market parameter changes is applied ("path dependence")



| | Total poverty | Extreme | Gini coefficient | Gini coefficient | |
|-------------------------------------|-----------------|----------------------------|------------------|-----------------------------|--|
| | incidence (% of | poverty incidence (% of | for labour | for per-capita household | |
| | population) | population) | income | income | |
| 2008 | | | | | |
| U | 20.7 | 4.3 | 0.461 | 0.497 | |
| U + S | 20.7 | 4.3 | 0.461 | 0.497 | |
| U + S + O | 20.7 | 4.3 | 0.461 | 0.497 | |
| $U + S + O + W_{I}$ | 20.7 | 4.3 | 0.461 | 0.497 | |
| $U + S + O + W_{1} + W_{2}$ | 20.7 | 4.3 | 0.461 | 0.497 | |
| $U + S + O + W_{1} + W_{2} + M$ | 20.7 | 4.3 | 0.461 | 0.497 | |
| 2010 | | | | | |
| U | 20.6 | 4.3 | 0.461 | 0.497 | |
| U + S | 20.6 | 4.3 | 0.461 | 0.497 | |
| U + S + O | 20.6 | 4.3 | 0.461 | 0.497 | |
| $U + S + O + W_{l}$ | 19.8 | 4.1 | 0.456 | 0.491 | |
| $U + S + O + W_{1} + W_{2}$ | 19.6 | 4.1 | 0.456 | 0.491 | |
| $U + S + O + W_{1} + W_{2} + M_{3}$ | 19.5 | 4.1 | 0.456 | 0.49 | |
| 2012 | - / | | | | |
| U | 20.5 | 4.2 | 0.461 | 0.497 | |
| U + S | 20.5 | 4.2 | 0.461 | 0.497 | |
| U + S + O | 20.4 | 4.2 | 0.461 | 0.496 | |
| $U + S + O + W_{i}$ | 18.1 | 3.8 | 0.447 | 0.479 | |
| $U + S + O + W + W_{2}$ | 16.6 | 3.6 | 0.447 | 0.479 | |
| U + S + O + W + W + M | 16.5 | 3.6 | 0.447 | 0.478 | |











Residual Effect – cont.

- Thus, the "Residual Effect" implicitly accounts for changes in all items not previously considered (i.e., non-labor and non-transfer incomes) such as natural resource and capital rents
 - those income sources enter the household budget constraint in MAMS and thus have an income effect on consumption