Advanced Micro-Simulation Modelling for Fiscal Policy Analysis in Stata

Objective of the course

This advanced course builds directly on the introductory Course in Micro-Simulation Modelling, extending participants' capacity from basic static welfare analysis to behaviourally-consistent policy simulations using econometric labour market models. While the introductory course focuses on survey database construction and poverty measurement, this advanced training equips participants with practical skills to integrate Mincer earnings functions and occupational choice behavioural models into STATA-based micro-simulation frameworks. Participants will simulate growth, taxation, labour supply, and redistributive policy shocks—such as income growth, fiscal reforms, and gender-targeted labour participation policies—and analyse their transmission to poverty, inequality, and household welfare. In addition, the course introduces a structured framework for linking micro-simulation results to CGE model outputs (e.g., wage changes, employment shifts, and commodity price adjustments), enabling consistent macro–micro policy analysis aligned with macro-fiscal modelling architectures used in institutions such as Ministries of Finance. By the end of the course, participants will be able to operationalise behaviourally-consistent micro-simulation models and link them to CGE model outputs for robust analysis of macroeconomic policy transmission to household welfare, poverty, and inequality. The course is delivered through guided lectures, software demonstrations, and applied laboratory sessions using Stata.

- **Module 1: Advanced STATA Programming and Micro-Database Preparation**
  - Structuring project folders for simulation workflows
  - Master do-file set-up and automation of simulations
  - Importing and appending household survey datasets
  - Data exploration and general survey description
  - Conditional summarisation using if statements
  - Detection of missing observations and inconsistencies
  - Tabulation and labour variable classification
  - Correlation analysis and two-way scatter diagnostics
  - Categorisation of labour to modelling-ready groups
  - Computing baseline indicators using local macros
- **Module 2: Econometric Foundations – Mincer Earnings Equation**
  - Theoretical basis of the Mincer wage equation
  - Data preparation for labour income modelling
  - Estimation of earnings functions (log-linear OLS)
  - Indicator estimation and model diagnostics
  - Linking estimated earnings to poverty outcomes
  - Embedding Mincer estimates into simulation routines
  - Interpretation of labour income elasticities
- **Module 3: Growth, Taxation, and Arithmetic Micro-Simulations**
  - Theoretical computation of growth and redistribution effects
  - Simulation of income growth and tax policy shocks
  - Growth in per capita household consumption

- Fiscal incidence analysis under simulated reforms
- Estimation of poverty and inequality indicators
- Graphing poverty profiles and welfare outcomes
- Growth Incidence Curves (GICs)
- Distributional impact of taxation and transfers

- **Module 4: Behavioural Micro-Simulation – Occupational Choice Model**
  - Labour supply and occupational choice theory
  - Specification of occupational choice behavioural models
  - Programming simulation loops (forvalues, foreach)
  - Conditional routines (if, if-else)
  - Estimation of occupational choice models
  - Calibration of occupation choice error terms
  - Computing occupational probability distributions
  - Simulation of labour transitions under policy shocks
- **Module 5: Integrated Behavioural Micro-Simulation Framework**
  - Organising integrated Mincer–Occupational simulation codes
  - Estimating earnings and occupational models jointly
  - Policy simulations using master do-files
  - Simulating increased female labour participation
  - Labour reallocation under fiscal and growth scenarios
  - Welfare transmission to poverty and inequality
  - Sensitivity analysis and robustness checks
- **Module 6: (Special Module): Macro–Micro Linkages – Integrating CGE Results into Micro-Simulation Models**
  - Conceptual framework for CGE–Micro simulation linkages
  - Top-down transmission mechanisms (wages, employment, prices)
  - Mapping CGE sectoral results to household survey data
  - Linking labour demand and wage shocks from CGE outputs
  - Incorporating commodity price changes into consumption models
  - Adjusting household incomes under simulated macro shocks
  - Re-estimating poverty and inequality indicators post-CGE shocks
  - Consistency checks between CGE and micro-simulation outcomes
  - Policy analysis of macroeconomic reforms using integrated macro–micro frameworks

Mode of delivery

The course is delivered through an intensive, hands-on approach in which participants systematically build a Advanced Micro-simulation model, over the duration of the training. The programme is h ighly sequential, requiring full attendance at all sessions, as each step builds directly on the previous one. Participants work in teams to enhance peer learning and methodological coherence, while each participant is required to have an individual laptop and mouse for practical implementation. By the end of the course, each team presents policy simulation results generated from their model. For the online delivery option, participants are required to submit all assignments within the stipulated timelines to ensure completion within the scheduled period, as extensions may incur additional facilitation costs. To apply for this course, fill in the form below or send an email to apply@macrosolve.net or macrosolveinfo@gmail.com.