



EUROMOD: a EU-wide tool for economic analysis

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**Ninth Doctorate Winter School on
Inequality and Collective Welfare Theory**

15 January 2014



Background reading

- Sutherland, H. and F. Figari (2013) “EUROMOD: the European Union tax-benefit microsimulation model” *International Journal of Microsimulation* 6(1) 4-26.
- Figari, F., A. Paulus and H. Sutherland (2013) “Microsimulation and Policy Analysis”, in *Handbook of Income Distribution Volume 2*, edited by A. B. Atkinson and F. Bourguignon, Elsevier, forthcoming.
- ... and papers cited there



Microsimulation

- Microsimulation is a general term for modelling the behaviour and interactions of micro units (persons, households, firms etc)
- Microsimulation model is a set of rules operating on a representative sample of micro units
- Given the available information, microsimulation allows one to build a system that imitates the reality
- Microsimulation models provide customised data for analysis
- Many possible types of issue and micro-unit:
 - traffic flows, water supply...
- Here, focus on income and households (persons)



Tax-benefit models I

- Deal with household income, (re-)calculating income components, i.e. taxes and benefits
- To analyse the effects of tax-benefit reforms on income, welfare and behaviour of individuals
- Several types of model: “static”, “dynamic”, “behavioural”
 - But “static” models can incorporate elements of dynamic modelling and can be linked to behavioural models
- The main aim is to analyse the impact of policy changes on the distribution of target variables, rather than
 - on the mean, as happens using regression techniques
 - on individual cases, as happens using OECD-style standard family type calculations



Tax-benefit models II

- Tax-benefit models deal with income, re-calculating income components (taxes and benefits) for households from micro-datasets under different assumptions
 - Policy change
 - Exogenous economic change (e.g. earnings growth; unemployment)
 - Household characteristics
- Typically: income taxes, social contributions and cash benefits
 - + sometimes indirect taxes, non-cash incomes
- Main indicators/outputs
 - Risk-of-poverty and income inequality
 - Budgetary cost of changes
 - Gainers and losers from policy changes
 - Indicators of work incentives
- “Budget constraints”



Microdata versus family type calculations

- Microsimulation models generally are based on sample surveys, which provide detailed information about individual and family characteristics, labor force status, housing status, earnings.
 - It is also common to analyze tax-benefit effects using a range of representative households (e.g. OECD Model family calculations)
 - Atkinson and Sutherland (1983) found that some 4% of actual families were covered by the hypothetical family model used by the Department of Health and Social Security
 - This concern is even more relevant for some of the theoretical simulation models used to investigate the effects of government policy in a complex intertemporal setting.




Added value to survey/register microdata

- Information which is otherwise not (publicly) available
 - e.g. tax deductions, benefit eligibility, net/gross values
- Indicators which only exist as output from a MSM
 - e.g. METRs, RRs, budget constraint charts, child contingent payments, net social benefits
- More up-to-date results (as data collection and release takes time)
- Results under alternative scenarios/assumptions
 - policy changes (reforms or illustrative changes)
 - changes in personal/household characteristics



EUROMOD – a model

- Multi-country tax-benefit MSM for the EU countries: unique
- It was built because of difficulties in making national model calculations comparable
- National models exist in many of the countries covered
- A tool for comparative multi-country research and policy analysis: consistent results



EUROMOD - Introduction

- Typical features but unique for its multi-country dimension:
 - designed for comparative analysis of the effects of policies on household income
 - harmonised data and simulations
 - achieved through maximising user choice and model flexibility
 - tax-benefit modelling language: universal
 - library of policies

- Consistent results across countries allow:
 - Comparative analysis
 - EU-level outputs
 - Implications of common changes or changes with common objectives
 - Policy learning across countries



What is unique about EUROMOD?

- Many (27+) countries in a common framework
- Open access: “the most used microsimulation model in the world”
- National tax-benefit modelling capacity
- Highly flexible and transparent
 - Comparability
 - Easy to simulate major reforms to policy structures
 - Short cut to model building (non-EU)
- Core EUROMOD: effects of policy changes on income (+ effects of other changes on impact of policy)
 - First round budgetary, distributional and incentive effects
 - Cross country comparisons, EU-level analysis, “policy swaps”
- Up to the model user to (e.g.)
 - Link to labour supply or macro models
 - Extend policy scope (subject to data availability)
- Facilitates user-designed extensions and linkages (“talks” to Stata)



Policies simulated in EUROMOD

- Income taxes
- Employee, self-employed and employer Social Insurance Contributions
- Benefits that depend on current income and observed characteristics
- Plus unemployment benefits, with assumptions
- Remaining benefits (e.g. contributory pensions, disability benefits) taken from input data and updated to policy year where necessary
- (Selected countries): Indirect taxes, non cash incomes (imputed rent, public education, public health and child care services)
- Benefit non take-up and tax evasion are considered in some countries



EUROMOD: ways it can be used (I)

- Describing the effects of tax-benefit policies on income inequality and poverty
 - current policies: detail; timeliness
 - policy changes over time holding other things constant (decomposition: “understanding” as well as “monitoring”)
- Using “what if” functionality to construct additional indicators e.g.
 - child-contingent payments
 - work incentive measures
- Indicators and other outputs as ends in themselves or as inputs into other analysis (e.g. combined with other variables from EU-SILC such as deprivation indicators)



EUROMOD: ways it can be used (II)

- Effects of proposed policy changes
- New policy ideas at national or EU level
 - Implications of common changes (e.g. an EU-wide minimum income? Or an EMU unemployment insurance?) or changes with common objectives (e.g. a target reduction in a poverty indicator)
- Economic changes and the effectiveness of existing policies
- Consistent cross-country comparisons
 - Explicit comparisons
 - Policy swaps
- Scenarios for employment, income growth, household composition and policy reform (Europe 2020)



EUROMOD: work in progress

- Continuously being developed and improved
- EUROMOD *update* (2009-2012, 2012-2014) project:
 - funded by DG-EMPL
 - extend EUROMOD to EU27 + Croatia
 - re-base using (mainly) the EU-SILC (up to SILC 2012)
 - update policies to a very recent policy year (2005-2014)
 - establish a regular (annual) programme of updating (data and policies)
 - relies on a network of national experts in each country + core team of developers (researchers), led by U of Essex



EUROMOD work in progress

As well as regular policy and data updates:

SCOPE

- Indirect taxes
- Child-care policies
- “Nowcasting” and forecasting the income distribution
- Treatment of tax evasion and benefit non take-up
- State-of-the-art model family analysis

TECHNICAL IMPROVEMENTS

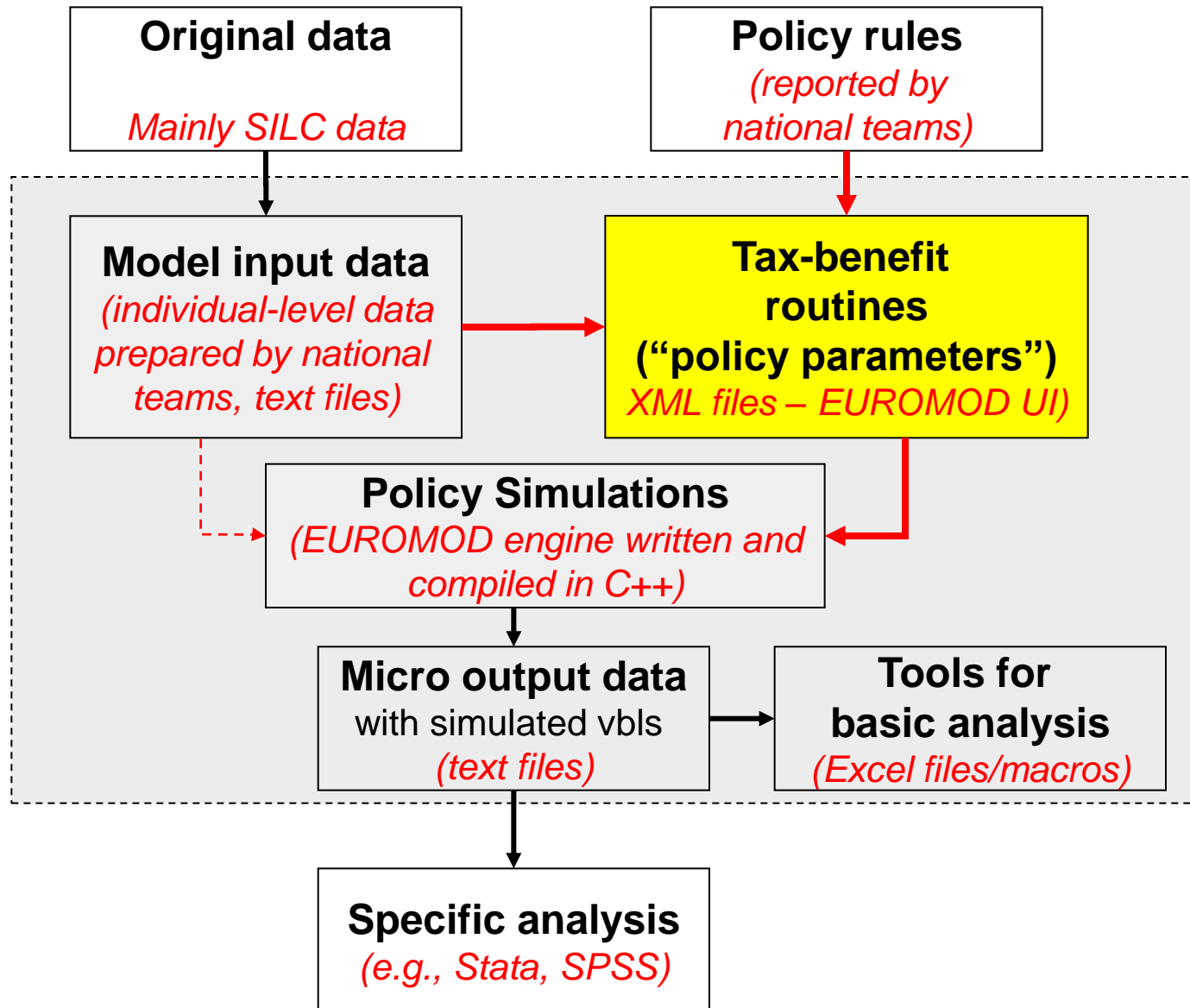
- Further developments to the user interface
- Web-accessible version(s)
- Remote training materials
- Facilitating use as an open platform for model development



EUROMOD – a software platform

- A programming language specific to (static) tax-benefit calculations
- ... yet generic to accommodate different countries
- Again, unique
- Typically much more flexible than national models
 - Flexibility vs complexity
- A framework for building new country models: a short cut
 - Library of tax-benefit routines (i.e. a combination of EM functions)
 - South-Africa, Serbia, Australia (+ Turkey, Russia)

EUROMOD structure





Tax-benefit routines (“parameters”)

- Contain all info about tax-benefit rules
- Stored in XML files read by the EUROMOD engine
- Two files per country
 - Data config file
 - Parameters file
- Common Variables file (VarConfig.xml)
- Manipulated via user interface (UI)
- UI-stand alone software based on .NET framework
- Implemented via EUROMOD functions grouped in policies
 - General settings
 - Defining elements to be used later on (tax units, income lists, constants etc.)
 - Simulation of policies
 - Controlling the output file



EUROMOD input database

- Variables: demographic, labour, income, assets, expenditure
- Observations at the individual level
- Harmonised data reference period
- Compulsory variables (e.g., id, age, weight, incomes)
- No missing values
- Gross income
- Monetary variables reported on (average) monthly basis
- Variables naming convention
- Documentation (do-files template and DRD)
- Currently-based on SILC



Access to model and data

- Web <http://www.iser.essex.ac.uk/euromod>
 - Summary statistics
 - Documentation: Country Reports, Working Papers
- Model is freely available for non-commercial use
 - Contact euromod@essex.ac.uk to obtain the link for downloading (incl. manuals)
- Data access conditions are set by the original data provider
 - EU-SILC (UDB): EUROMOD users need to have Eurostat permission to use EU-SILC for this purpose
 - Other data for some countries: relatively straightforward procedures
- Free training courses



EUROMOD

Review of previous research and potential uses



EUROMOD: some key features

- Primary tool for **policy analysis**
 - A series of recent studies related to the consequences of the crisis and their use in official EU publications
- Increasingly recognised in the **academic literature**
 - Recent papers appeared in top economic and social policy journals; well embedded in the income distribution literature
- Suitable for many **extensions** related to the content and the methodology of analysis
 - Coverage (current and potential policy scope)
 - Flexibility (input micro data, language)
 - Interactions with Stata and other statistical softwares
- Interactions and synergies among the above items



Research methodology & areas

A selection, non comprehensive!

a) Counterfactual scenarios

- Recent applications related to the "crisis" (Automatic Stabilisers, AMs, Stress Test)
- "What if"-type studies (policy swapping))

b) Behavioural reactions

- Mainly labour supply reactions
- Different type of links to macro models

c) Tax-benefit design and micro-level indicators

- Pros & cons of specific tax-benefit design issues: tax expenditures (mortgage interest tax relief); tax base (housing taxation); tax schedule (progressivity), ...
- Importance of appropriate and timely micro-level indicators (e.g. child contingent support, METRs, nowcasting ...)

d) Interactions of tax-benefit instruments

- Indirect taxes, in-kind benefits,

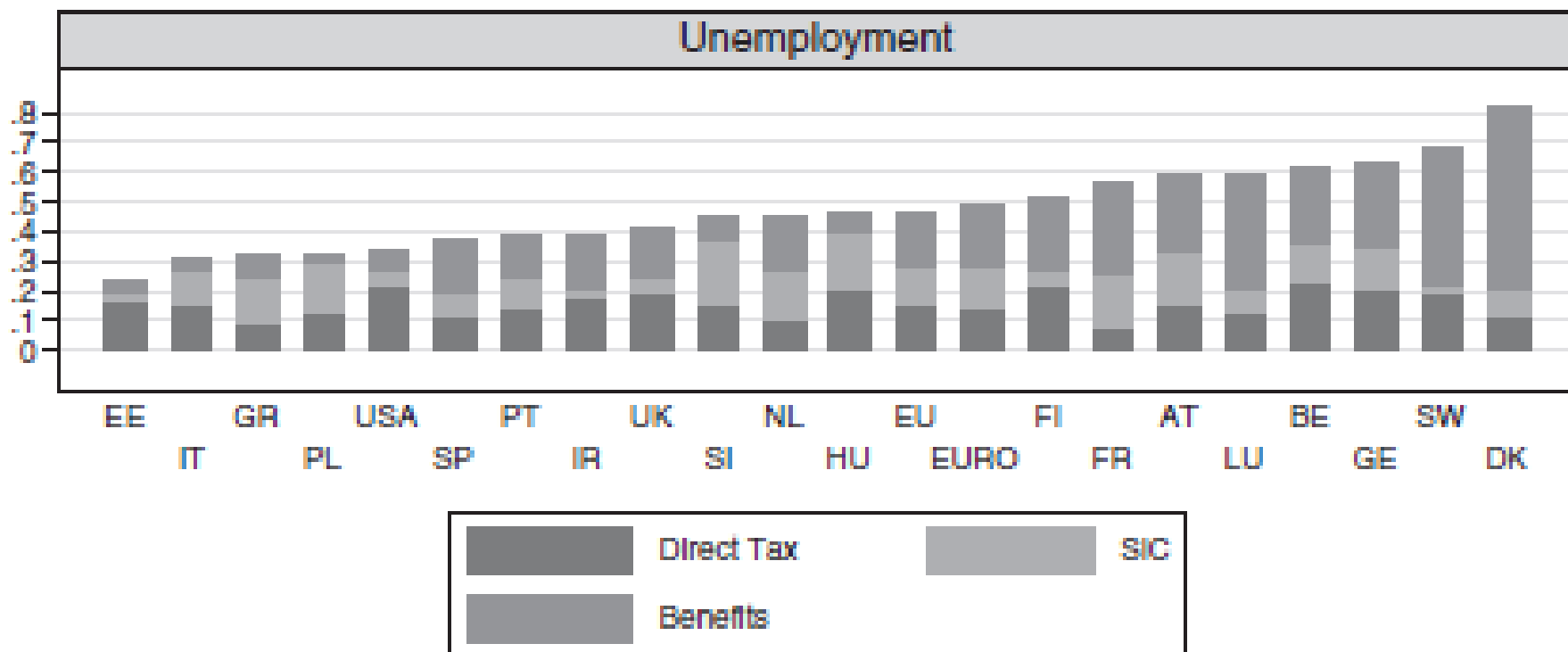


Counterfactual scenarios

- MSM approach → a “controlled experiment”
- Definition of an appropriate baseline and a counterfactual scenario
 - i.e. the state *after* policy changes (i.e. how the world would look after implementing new policies) in forward-looking analysis
 - i.e. the state *before* policy changes (i.e. how the world would have looked without new policies or what would happen if policy changes were rolled back) in the case of backward-looking analysis.
- Such counterfactuals are needed
 - for the “morning-after” evaluation of tax-benefit reforms
 - for behavioural models
 - for optimal tax analysis

Counterfactual scenarios - I

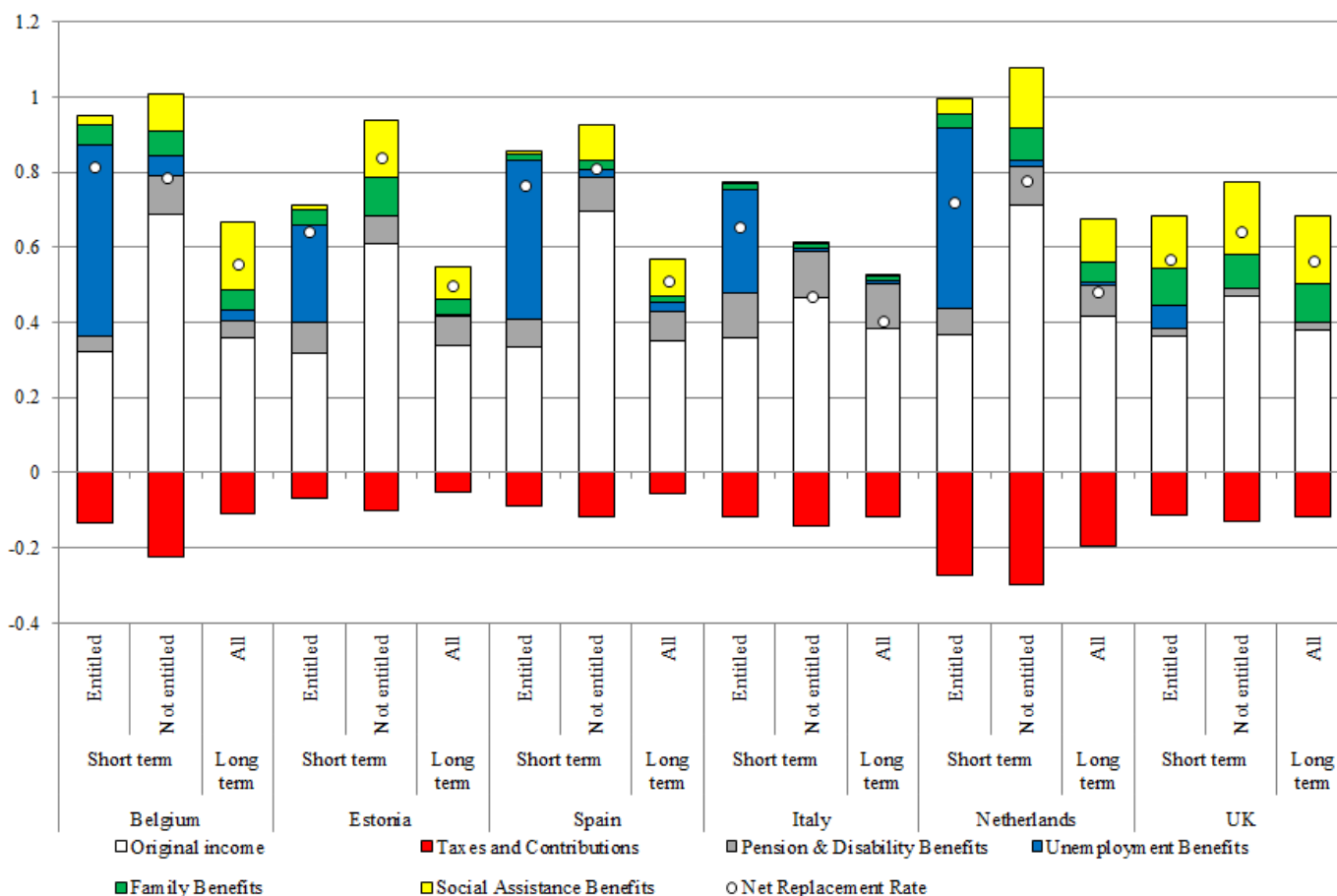
- To what extent income or output fluctuations are moderated by automatic stabilizers ?
 - income (- 5%) or **unemployment shocks** (such that the total household income decreases by 5%).
 - Stabilization coefficient



Source: Dolls et al. (2012) using EUROMOD and TAXSIM

Counterfactual scenarios - II

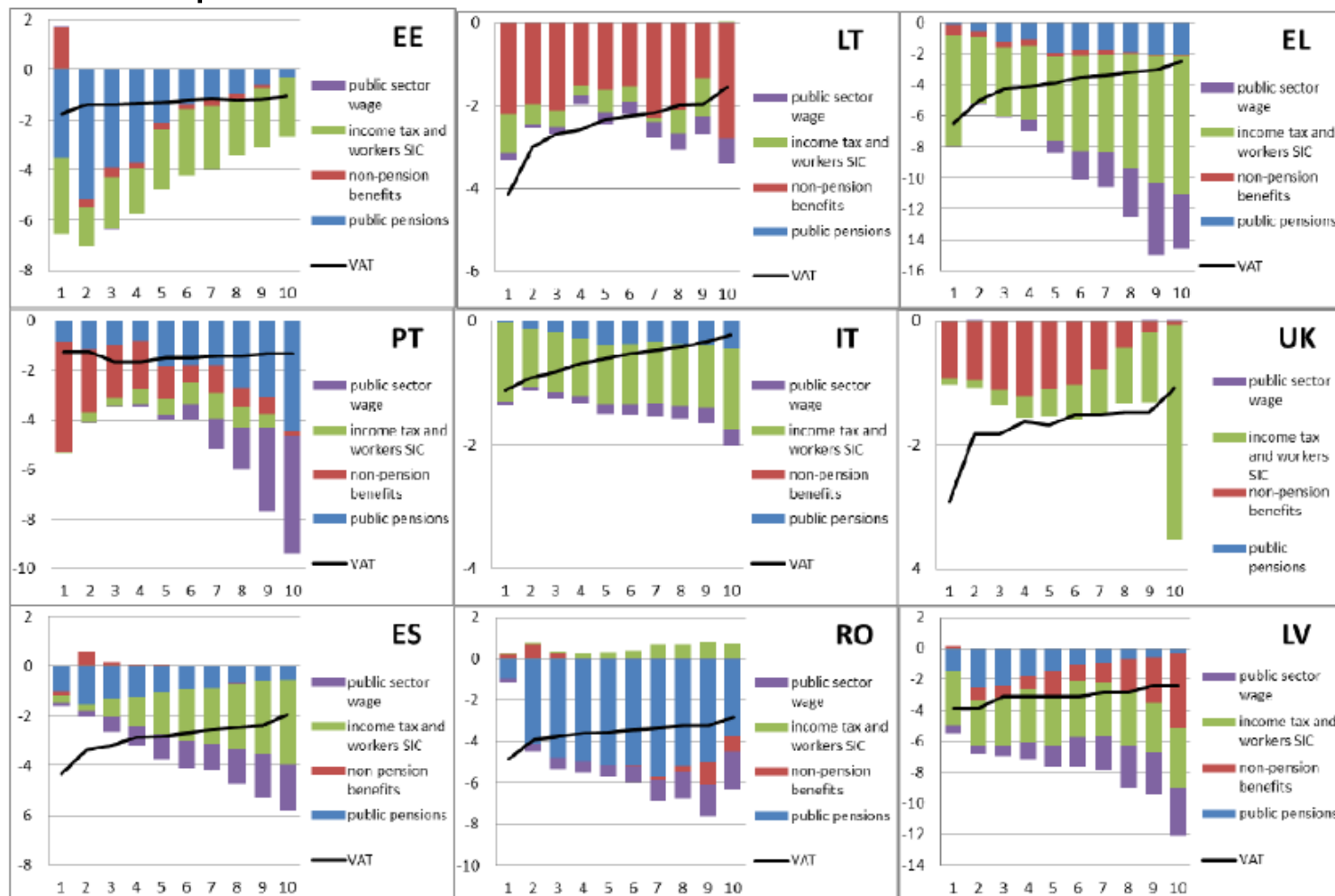
- To what extent tax-benefit systems support those who became unemployed at the onset of the Great Recession ?
 - Simulation of individual transitions



Source: Fernandez et al. (2013) using EUROMOD

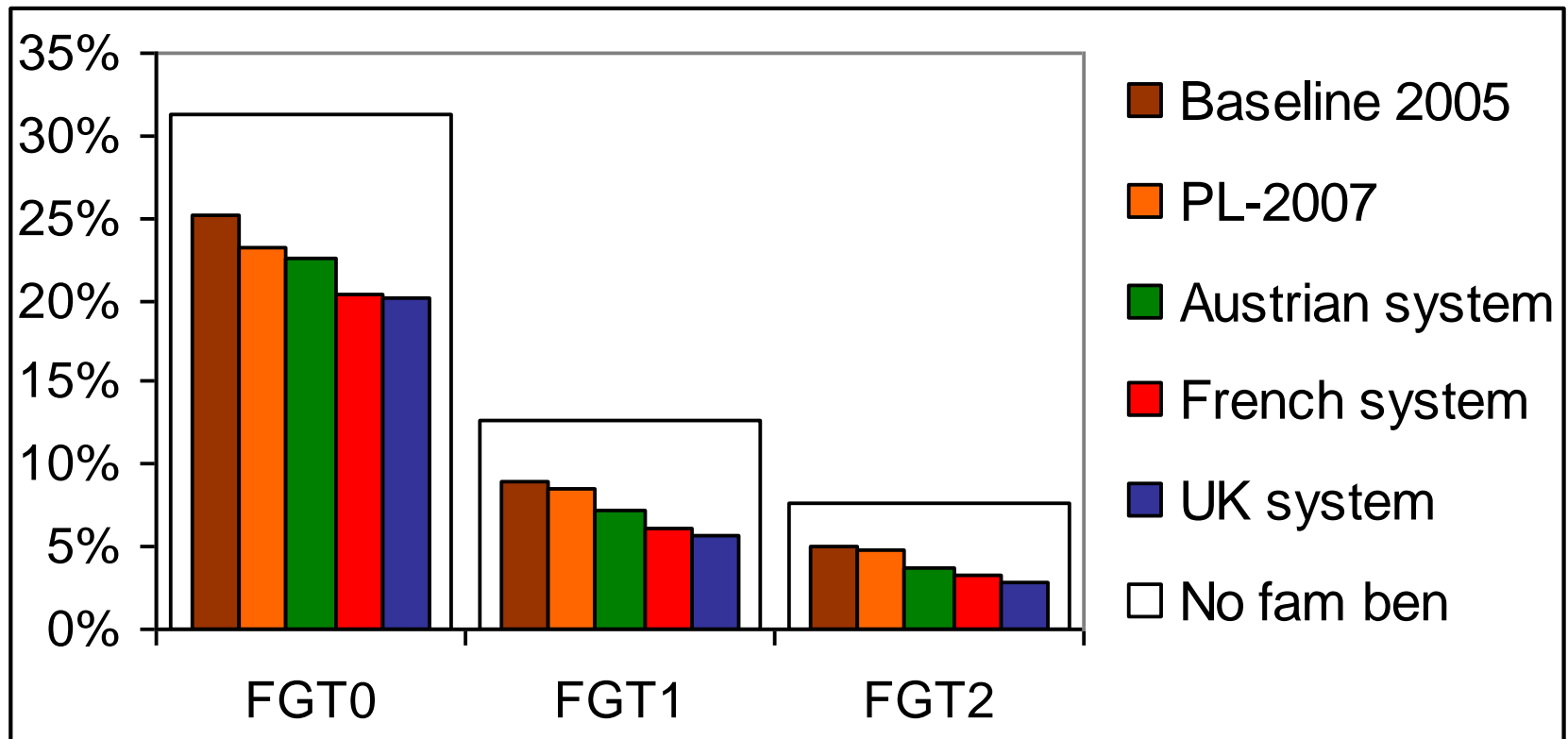
Counterfactual scenarios - III

- Which is the distributional impact of the Austerity Measures?
 - Comparison with a business-as-usual scenario transitions



Counterfactual scenarios - IV

- Which are the effects of alternative strategies to support children in Poland ?
 - Policy (system) swapping
 - Revenue neutrality



Source: Levy et al. (2009) using EUROMOD

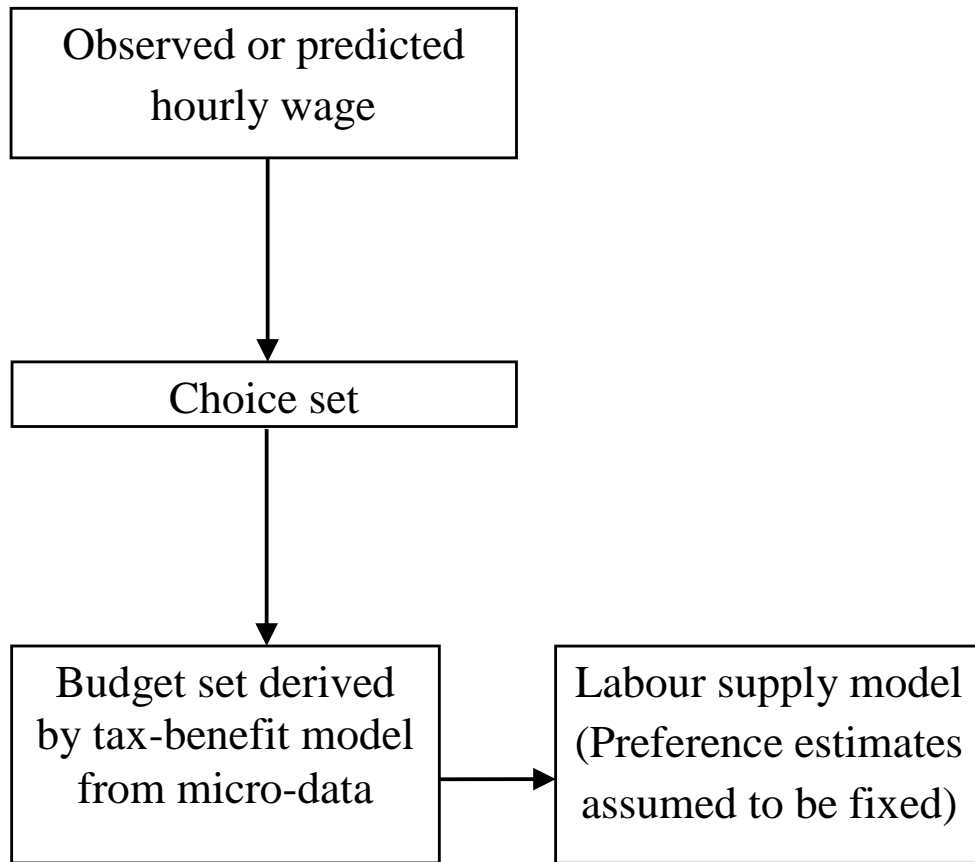


Behavioural reactions

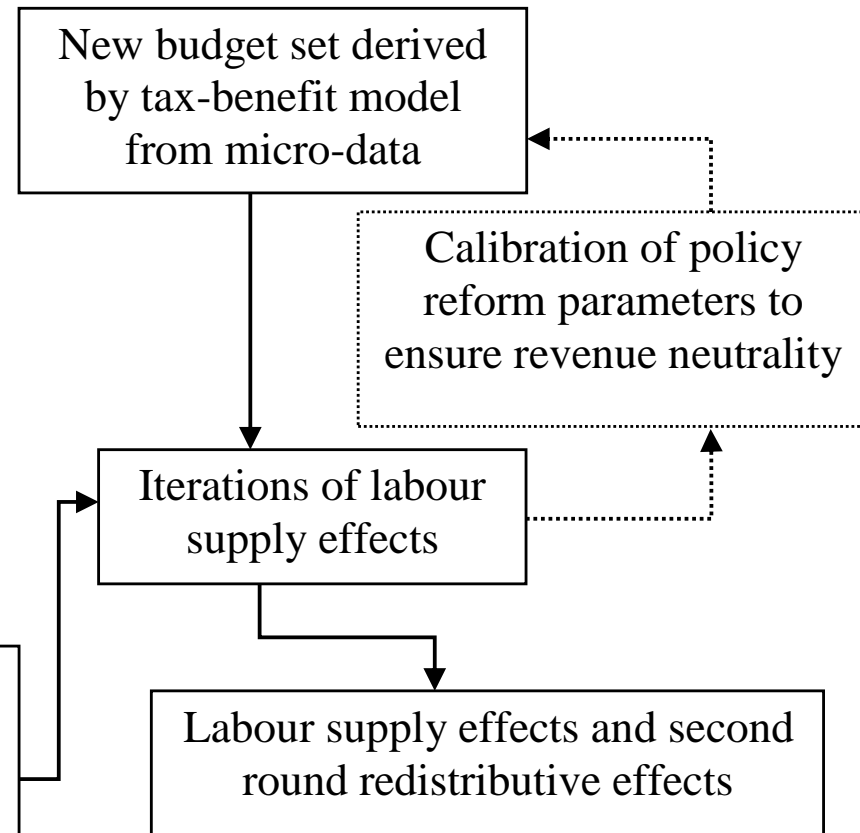
- Impact of policies and macro shocks on individual behaviour
- Micro level: behavioural models
 - Ex-ante evaluation of behavioural reactions to changes in tax-benefit policies
 - Structural discrete choice models
- Macro level: link between MSM and macro models
 - Micro-macro feedbacks (equity and efficiency aspects)
 - Top-down, Bottom-up, Recursive approach

Behavioural reactions – Labour supply model

Pre-reform

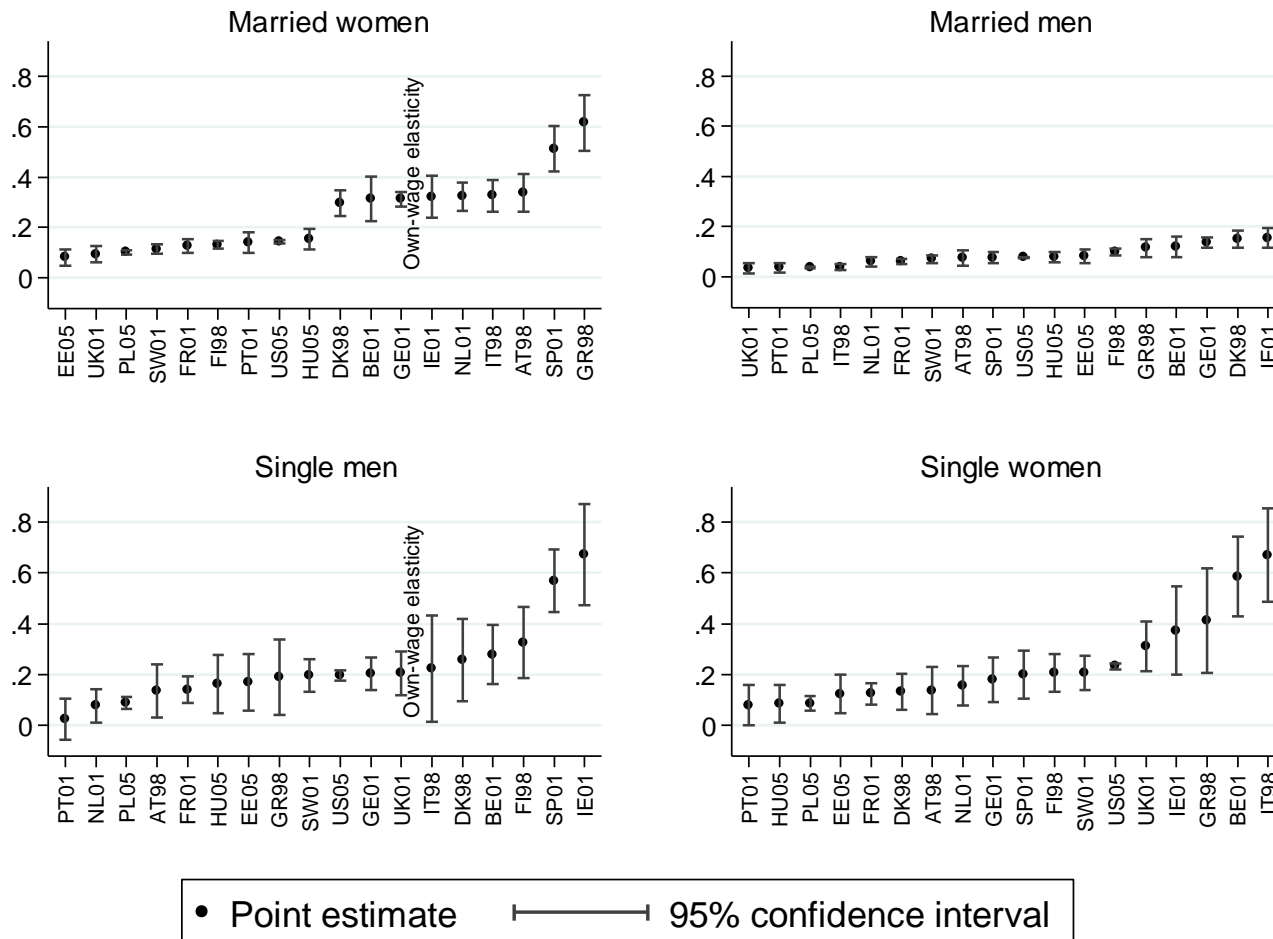


Post-reform



Behavioural reactions I

■ Labour supply elasticities



Source: Bargain et al. (2013) using EUROMOD and TAXSIM

Behavioural reactions II

- Which would be the effects of new in-work benefits in Italy?
 - Transition matrix – women in couples

Family based in-work benefit

Individual in-work benefit

All women in couples

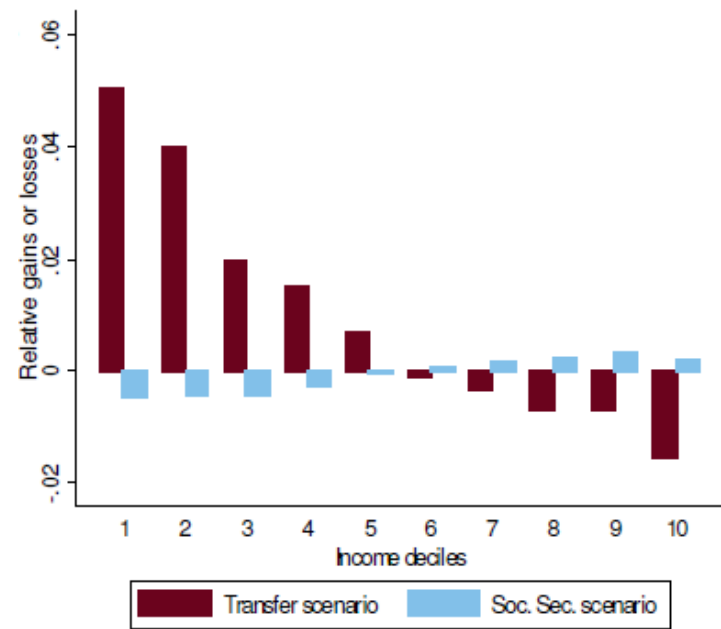
Pre reform	Post reform					Pre reform	Post reform				
	0-7 hr	8-19 hr	20-30 hr	31-40 hr	41+ hr		0-7 hr	8-19 hr	20-30 hr	31-40 hr	41+ hr
0-7 hr	39.7	1.9	0.9	0.3	0.0	0-7 hr	37.9	2.9	1.7	0.3	0.0
8-19 hr	0.2	5.2	0.0	0.0	0.0	8-19 hr	0.0	5.3	0.2	0.0	0.0
20-30 hr	0.2	0.1	18.7	0.0	0.0	20-30 hr	0.0	0.3	18.7	0.0	0.0
31-40 hr	0.1	0.1	0.0	26.3	0.0	31-40 hr	0.0	0.4	0.3	25.8	0.0
41+ hr	0.0	0.0	0.0	0.0	6.2	41+ hr	0.0	0.0	0.0	0.0	6.2

Source: Figari (2011) using EUROMOD

Behavioural reactions III

- Efficiency and Equity Aspects of Energy Taxation
 - GEM-E3 + EUROMOD

<i>Difference (%) with reference (2050)</i>	<i>Transfer scenario</i>			
	<i>Brussels</i>	<i>Flanders</i>	<i>Wallonia</i>	<i>Belgium</i>
GDP	-0.14	-0.31	-0.85	-0.40
Employment	1.93	-0.29	-1.99	-0.31
Household cons.	0.34	0.22	0.20	0.22
Investment	0.11	-0.18	-0.78	-0.26
CO2 Emissions	-1.13	-2.55	-3.58	-2.63



Source: Vandyck (2013) using GEM-E3 and EUROMOD



Tax-benefit design and micro-level indicators

- Institutional details of tax-benefit instruments
 - Tax expenditures
 - Tax base
 -
- Interactions between different instruments
 - Social Assistance and Income Tax
 -
- Appropriate and timely indicators
 - Child contingent support
 - Effective Marginal Tax Rates
 - Nowcasting inequality and poverty rates

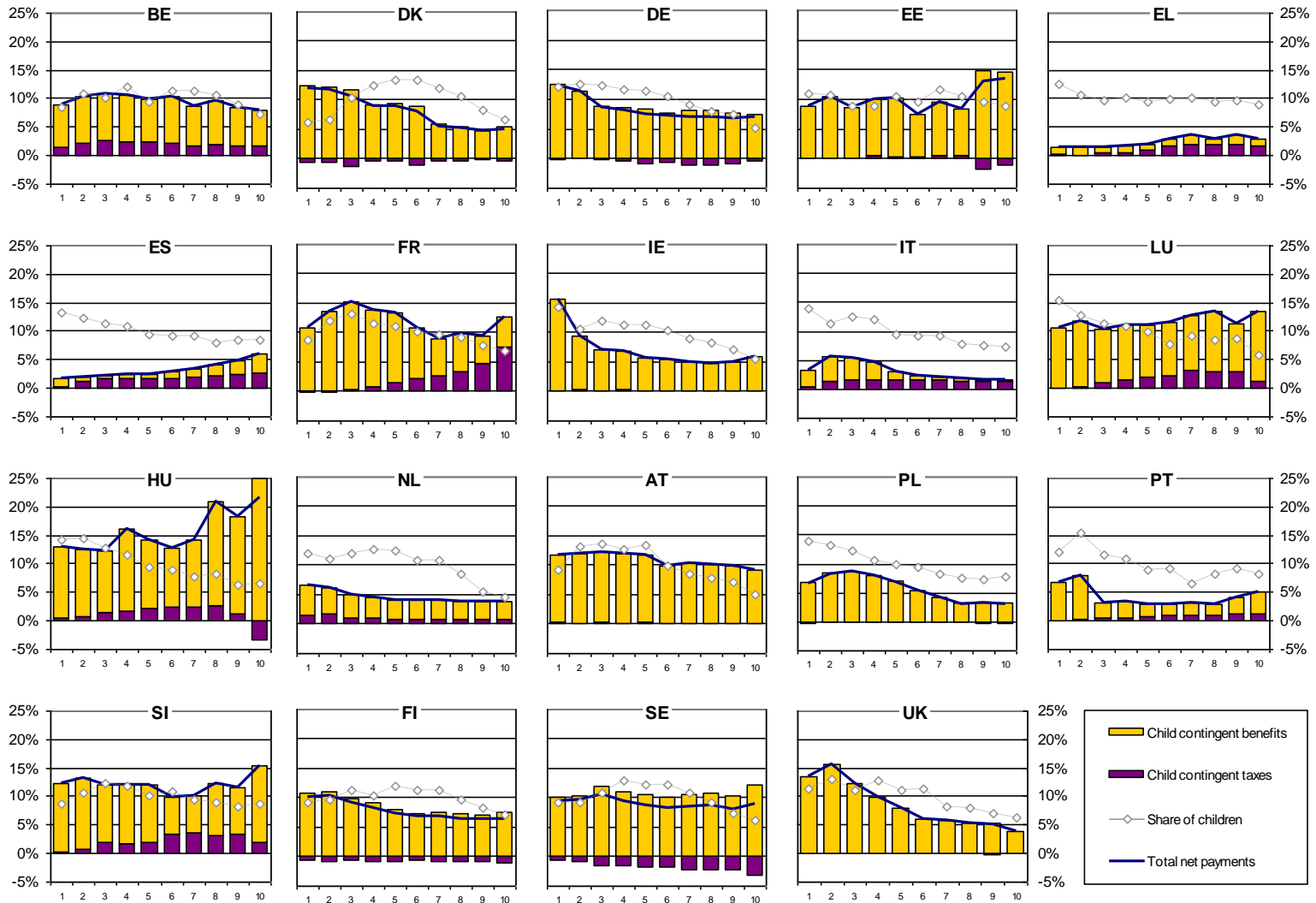
Tax-benefit design I

- Distribution of expenditure on mortgage interest tax relief

	Quintile 1 (poorest)	Quintile 2	Quintile 3	Quintile 4	Quintile 5 (richest)	All
Denmark	4.1	9.4	17.0	24.8	44.6	100
Finland	3.8	11.3	20.0	28.6	36.3	100
Greece	0.0	2.5	11.9	28.5	57.1	100
Ireland	1.2	9.2	18.2	26.7	44.6	100
Italy	0.6	3.9	21.5	30.9	43.0	100
Luxembourg	1.6	4.0	12.5	39.8	42.2	100
Netherlands	3.6	10.8	17.2	25.9	42.5	100
Portugal	0.2	4.8	17.2	29.7	48.1	100
Spain	1.4	11.8	20.6	28.5	37.8	100
Sweden	5.5	12.8	20.3	28.1	33.3	100

Micro level indicators I

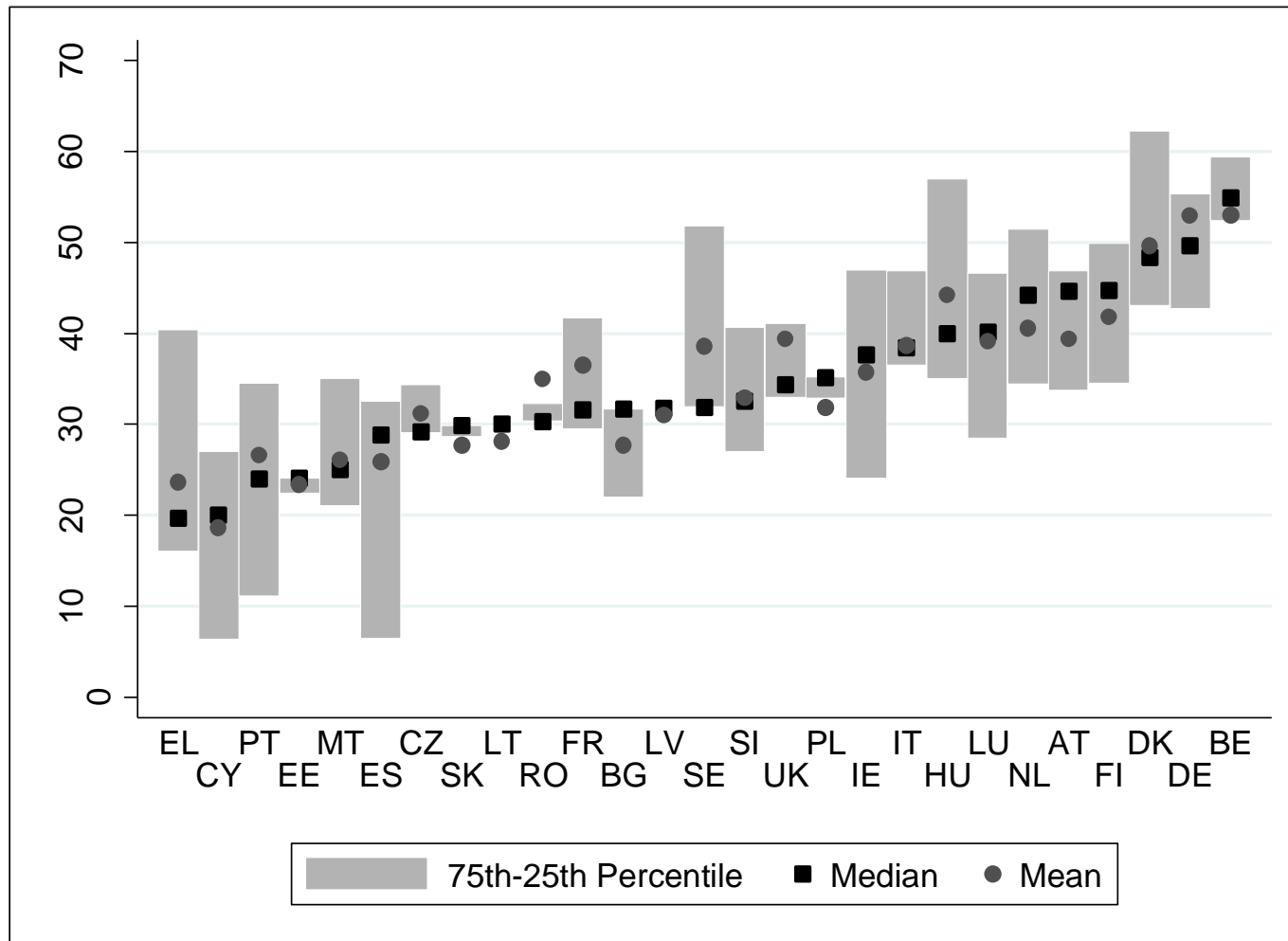
■ Child contingent support



Source: Figari, Paulus and Sutherland (2011) using EUROMOD

Micro level indicators II

Effective Marginal Tax Rates



Source: Jara and Tumino (2013) using EUROMOD

Micro level indicators III

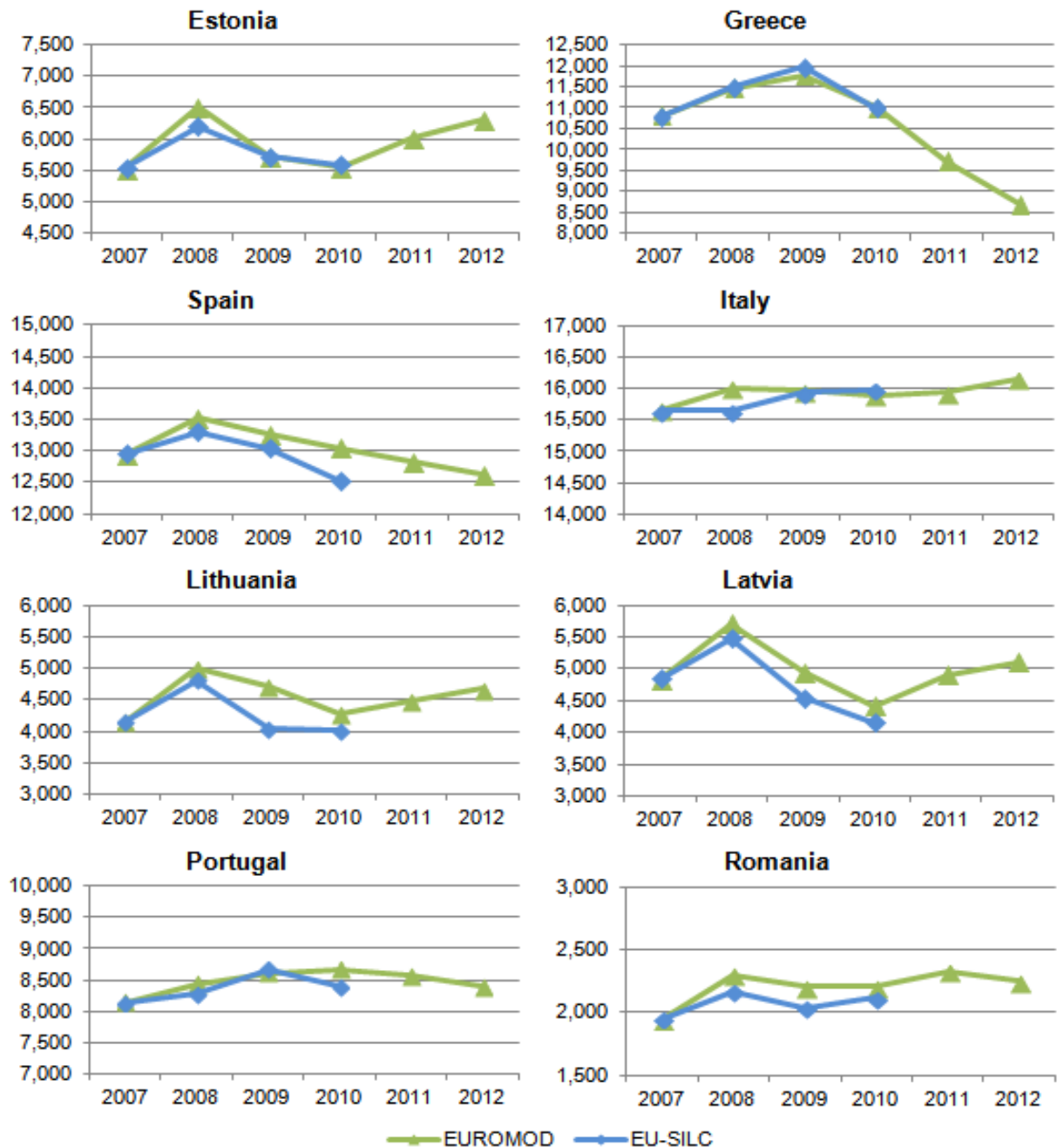
- Nowcasting income and poverty rates
 - EUROMOD simulation
 - Adjusting EUROMOD to account for employment changes
 - **Employment transitions**
(net changes in employment rates modelled within 18 stratum by age, gender, educational status: random selection + 200 replications for more robust results)
 - Share of **long-term unemployment** to capture changes in eligibility for benefit receipt *(similar method)*
 - Calibration to align EUROMOD and EU-SILC

Nowcasting

EUROMOD 2007-2012 and EU-SILC 2007-2010:
Median equivalized household disposable income (EUR per year)

Note: SILC data corresponds to the income reference period.

Source: Navicke, Rastrigina and Sutherland (2013) using EUROMOD



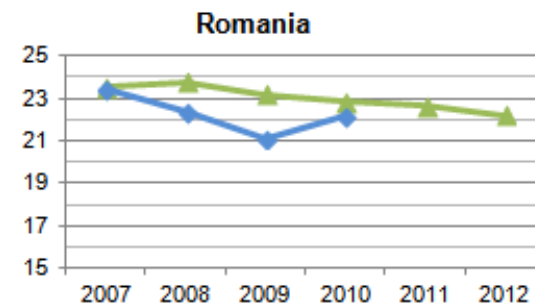
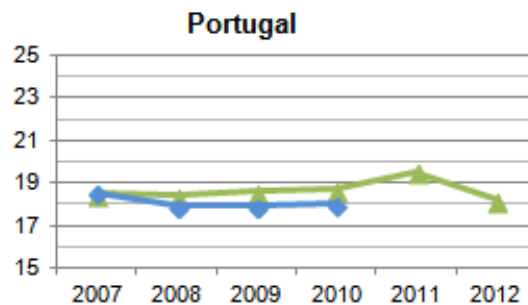
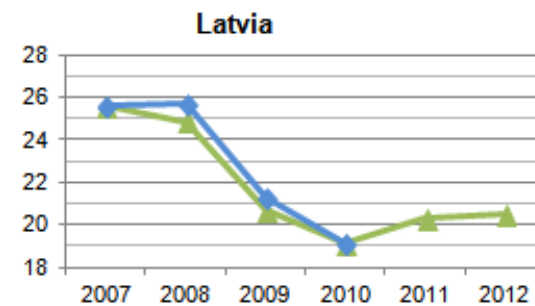
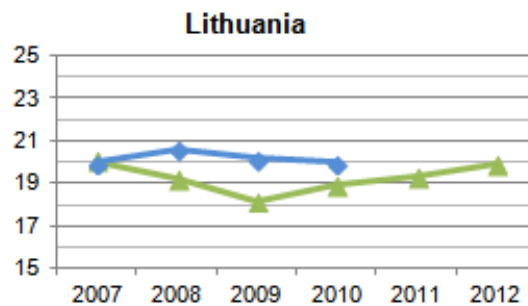
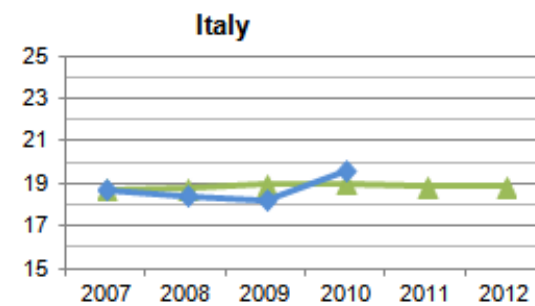
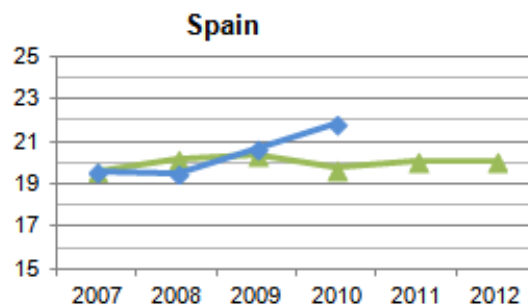
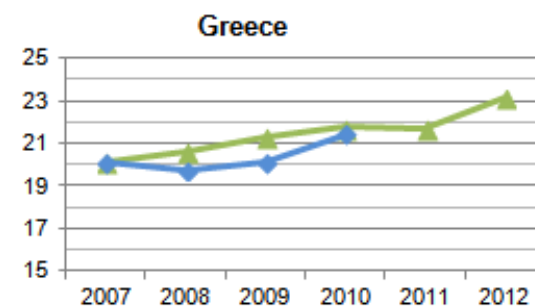
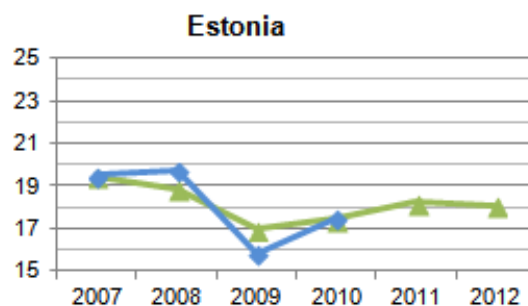
Nowcasting

Poverty risk

EUROMOD 2007-2012
and EU-SILC 2007-2010:
At risk of poverty rates
(using 60% median as the
threshold)

Notes: EU-SILC numbers are lagged
by one year to correspond to the
income reference year

Source: Navicke, Rastrigina and
Sutherland (2013) using
EUROMOD



— EUROMOD — EU-SILC



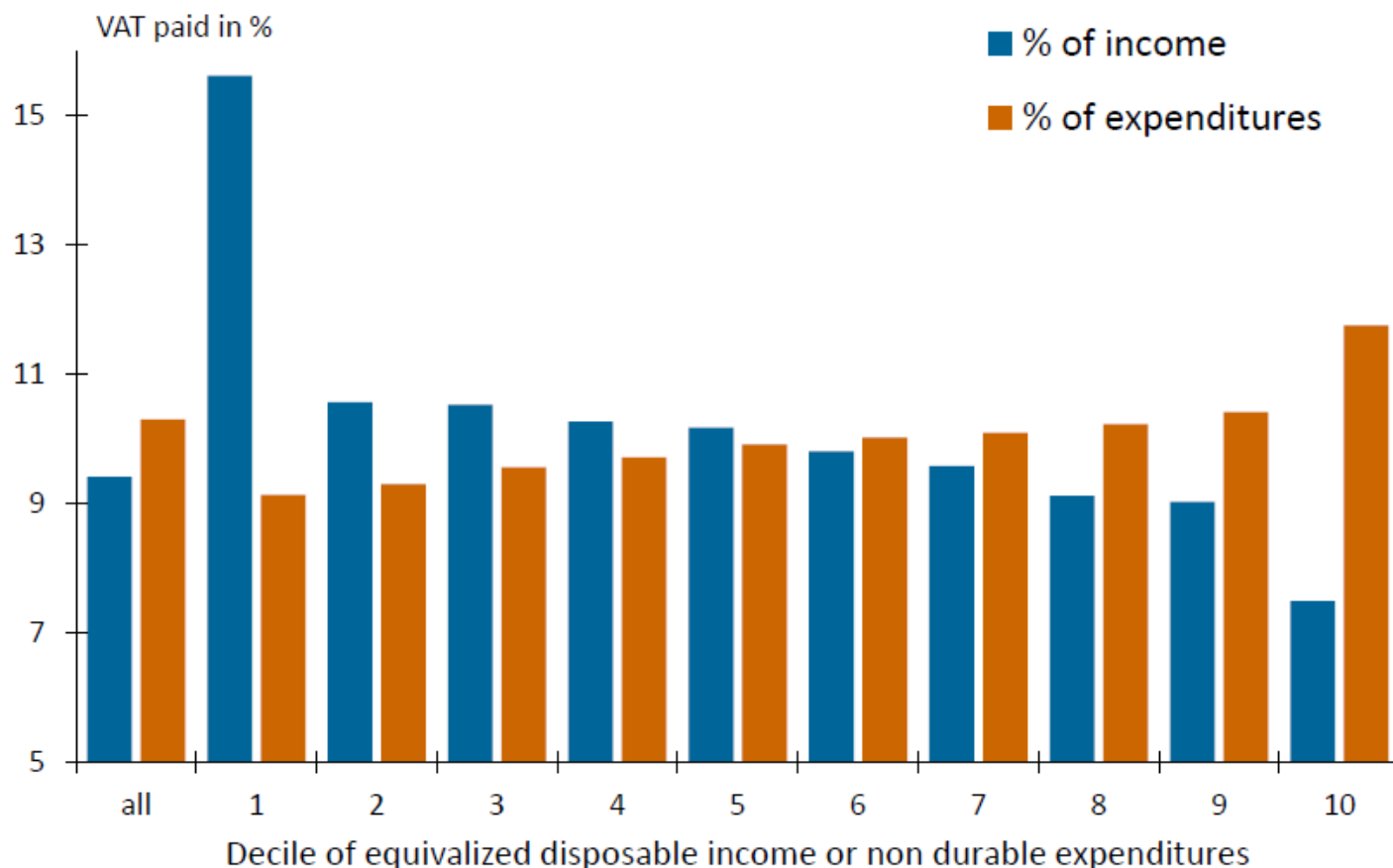
Interactions of tax-benefit instruments

- Whole tax-benefit system
 - Indirect taxes
 - In-kind benefits
- Measurement of individual well-being goes beyond current disposable income
 - Expenditure
 - [Permanent income → dynamic MSM]

Interactions of tax-benefit instruments - I

- Does the regressivity of indirect taxes depends on the income concept used in the analysis?

□ Belgium

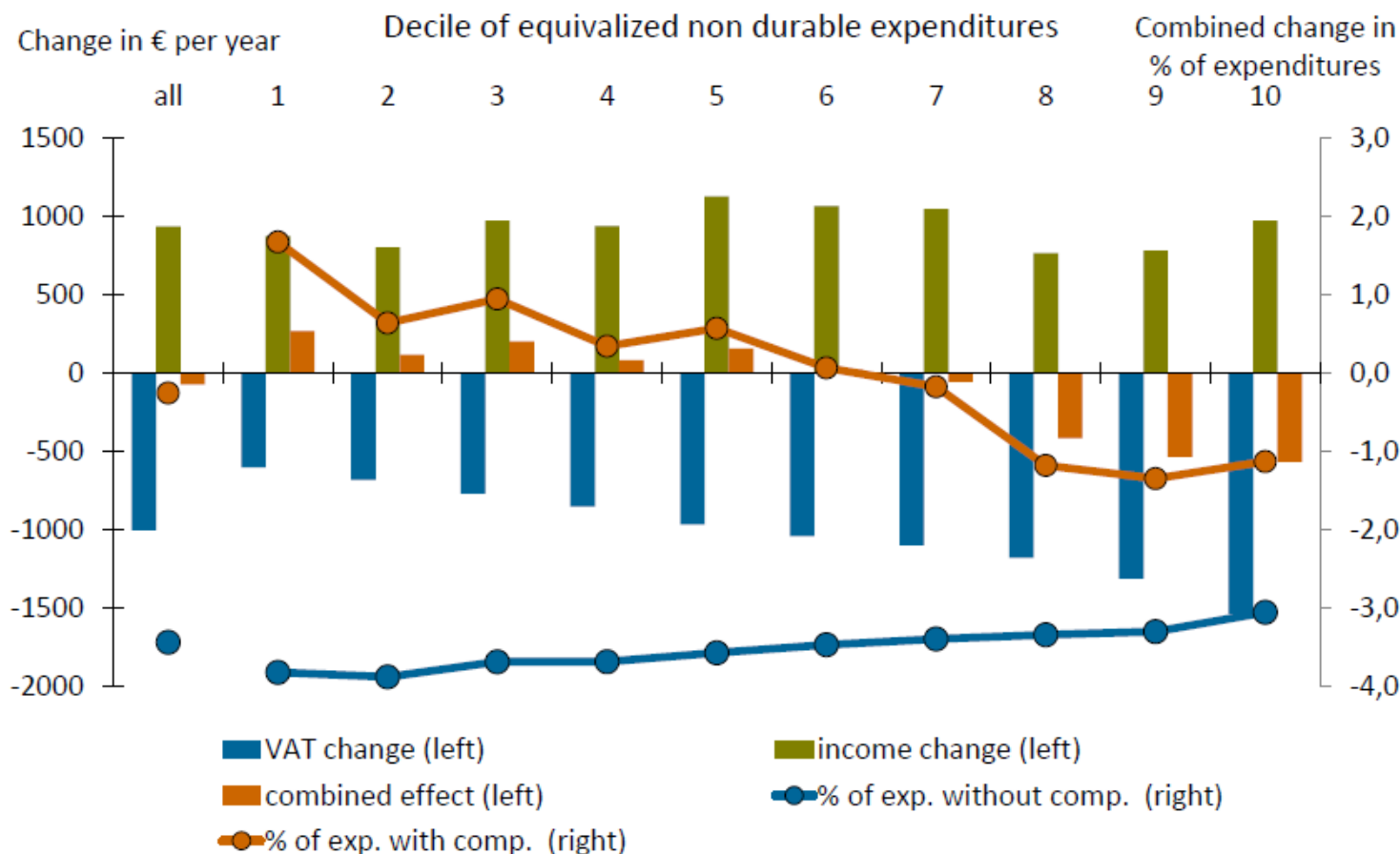


Source: Decoster et al. (2012) using EUROMOD

Interactions of tax-benefit instruments - II

■ Effect of fiscal devaluation (Belgium)

- Uniform VAT, with increase in social benefits (+2.9%) and decrease in SSC for low wages



Source: Decoster et al. (2012) using EUROMOD

Interactions of tax-benefit instruments - III

- Redistributive effects of tax-benefit components
 - Imputed rent, non cash public education & health transfers
 - Needs-adjusted equivalence scale

Income component	Belgium		Greece		United Kingdom	
	CI	NA	CI	NA	CI	NA
Original income						
Public pensions	29.8	23.0	68.8	43.2	21.1	14.0
Nonmeans-tested benefits	26.0	20.8	24.5	15.4	19.8	13.5
Means-tested benefits	3.3	2.5	0.5	0.3	36.9	24.9
SIC (employer)	12.4	9.8	-0.5	0.0	5.8	4.0
SIC (employee, self-employed)	5.7	4.4	-0.8	-0.5	3.4	2.4
Personal taxes	25.4	19.3	29.9	18.7	20.3	13.9
Disposable income						
Indirect taxes	-2.4	-1.8	-22.4	-13.9	-7.3	-4.7
Post-indirect-tax cash income						
Imputed rent		0.7		10.1		7.5
Noncash public education transfers		9.7		11.0		11.3
Noncash public health transfers		11.4		14.3		12.9
Extended income						

Source: Figari and Paulus (2013) using EUROMOD

Some recent papers using EUROMOD - I

- Avram S., F. Figari, C. Leventi, H. Levy, J. Navicke, M. Matsaganis, E. Militaru, A. Paulus, O. Rastrigina and H. Sutherland, The distributional effects of fiscal consolidation in 9 EU countries, EUROMOD Working Paper EM 2/13, 2013
- Bargain O., The Distributional Effects of Tax-Benefit Policies under New Labour: A Shapley Decomposition, *Oxford Bulletin of Economics and Statistics*, 2012
- Bargain O., Orsini, K., and A. Peichl, 'Comparing Labor Supply Elasticities in Europe and the US: New Results', *Journal of Human Resources*, 2013. Forthcoming
- Decoster A., Spiritus, K, Haan P. and R. Ochmann, Assessing VAT reforms by means of EUROMOD, Presentation at the DG-EMPL Conference Microsimulation for Policy Making in Times Crisis, 2012
- Dolls M., C. Fuest, A. Peichl, Automatic stabilizers and economic crisis: US vs. Europe, *Journal of Public Economics*, 2012.
- Fernandez Salgado M., Figari F., Sutherland H., and A. Tumino, Welfare compensation for unemployment in the Great Recession, *Review of Income and Wealth*, 2013. Forthcoming.

Some recent papers using EUROMOD - II

- Figari F., From housewives to independent earners: can the tax system help Italian women to work?, ISER Working Paper 15-2011, 2011
- Figari F., H. Immervoll, H. Levy, H. Sutherland, Inequalities within couples in Europe: market incomes and the role of taxes and benefits, *Eastern Economic Journal*, 2011
- Figari, F. and A. Paulus, The distributional effects of taxes and transfers under alternative income concepts: the importance of three 'i's, *Public Finance Review*, 2013. Forthcoming.
- Figari F., A. Paulus, H. Sutherland, Measuring the size and impact of public cash support for children in cross-national perspective, *Social Science Computer Review*, 2011.
- Immervoll H., H. J. Kleven, C. T. Kreiner, N. Verdellin, Optimal tax and transfer programs for couples with extensive labor supply responses, *Journal of Public Economics*, 2011.
- Jara X. and A. Tumino, Tax-benefit systems, income distribution and work incentives in the European Union', *The International Journal of Microsimulation* 6(1): 27-62, 2013.



Some recent papers using EUROMOD - III

- Levy H., Morawski, L., and M. Myck, Alternative tax-benefit strategies to support children in Poland, in Lelkes O. and H. Sutherland (Eds.) *An Enlarged Role for Tax Benefit Models: assessing policies in the enlarged European Union*, Farnham: Asghate, 2009
- Matsaganis M., Estimating the distributional effects of mortgage interest tax relief in Europe, Athens University of Economics and Business, DIEES WP 1109, 2011.
- Navicke, J., O. Rastrigina and H. Sutherland, Nowcasting Indicators of Poverty Risk in the European Union: A Microsimulation Approach, *Social Indicators Research*, 2013. Forthcoming
- Vandyck T., Efficiency and Equity Aspects of Energy Taxation, EUROMOD Working Paper EM 12/13, 2013



EUROMOD

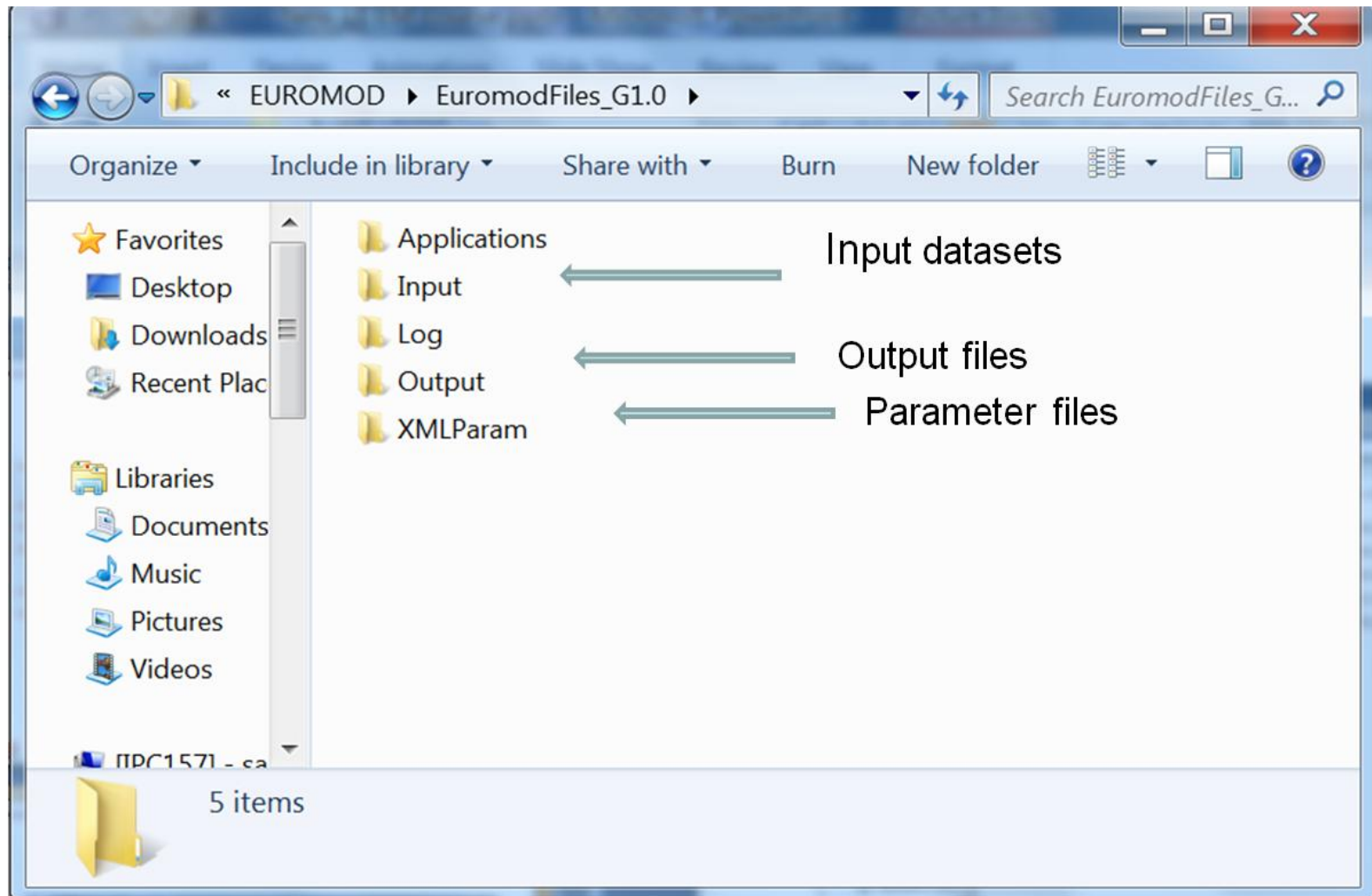
User Interface



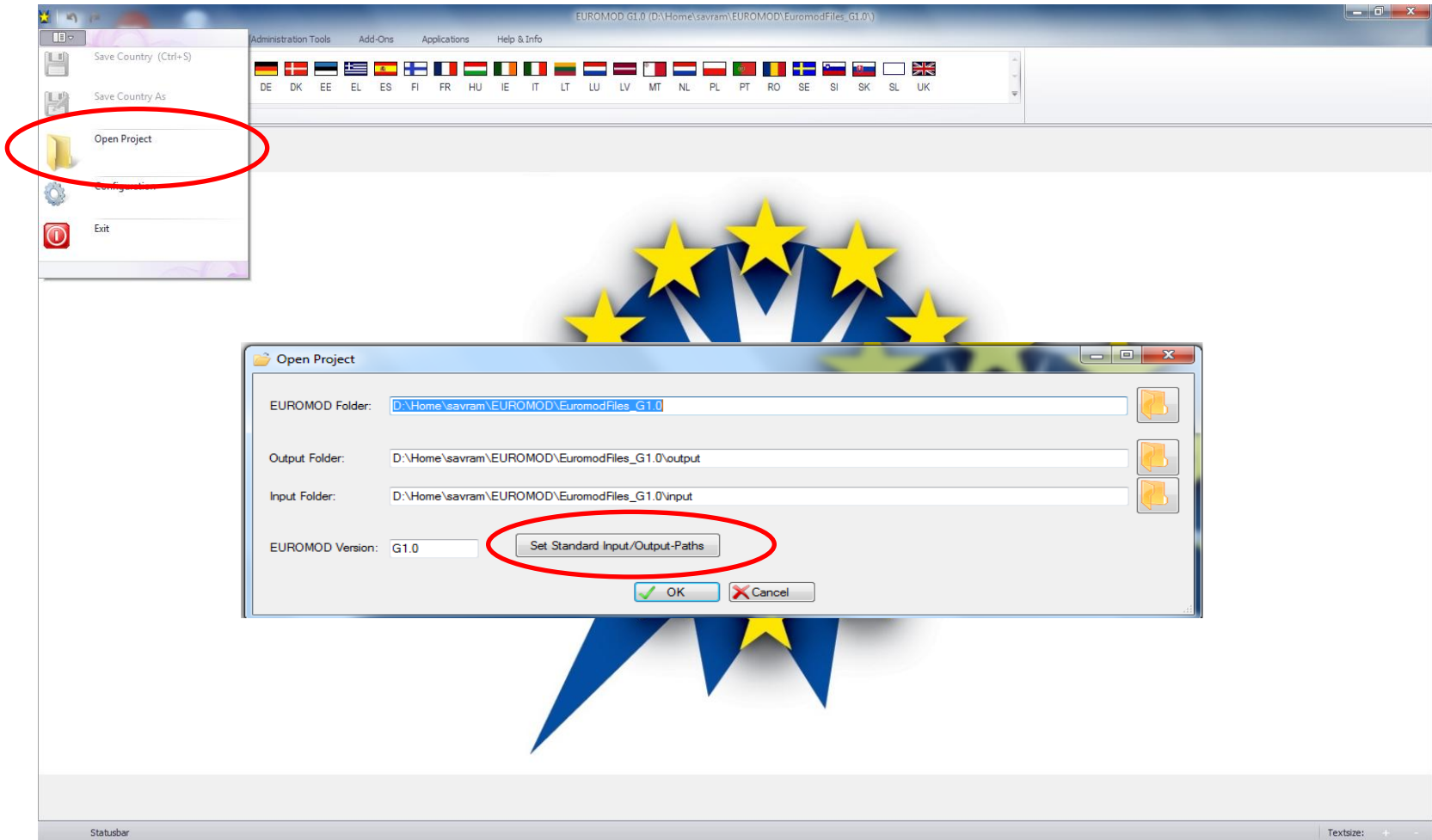
Installation

- Requires Microsoft .NET framework files or an Internet connection to download files in the SETUP process
 - Complete separation between UI and 'content' (i.e. XML) files
 - Only one copy of the UI but can use multiple 'content' files
 - ...but content files must have set structure of folders
-
- Run the Installation Wizard
 - Set the path to your EUROMOD files
 - Project path
 - (if necessary) separate input data and output data paths

EUROMOD folder structure



Linking EUROMOD to content files

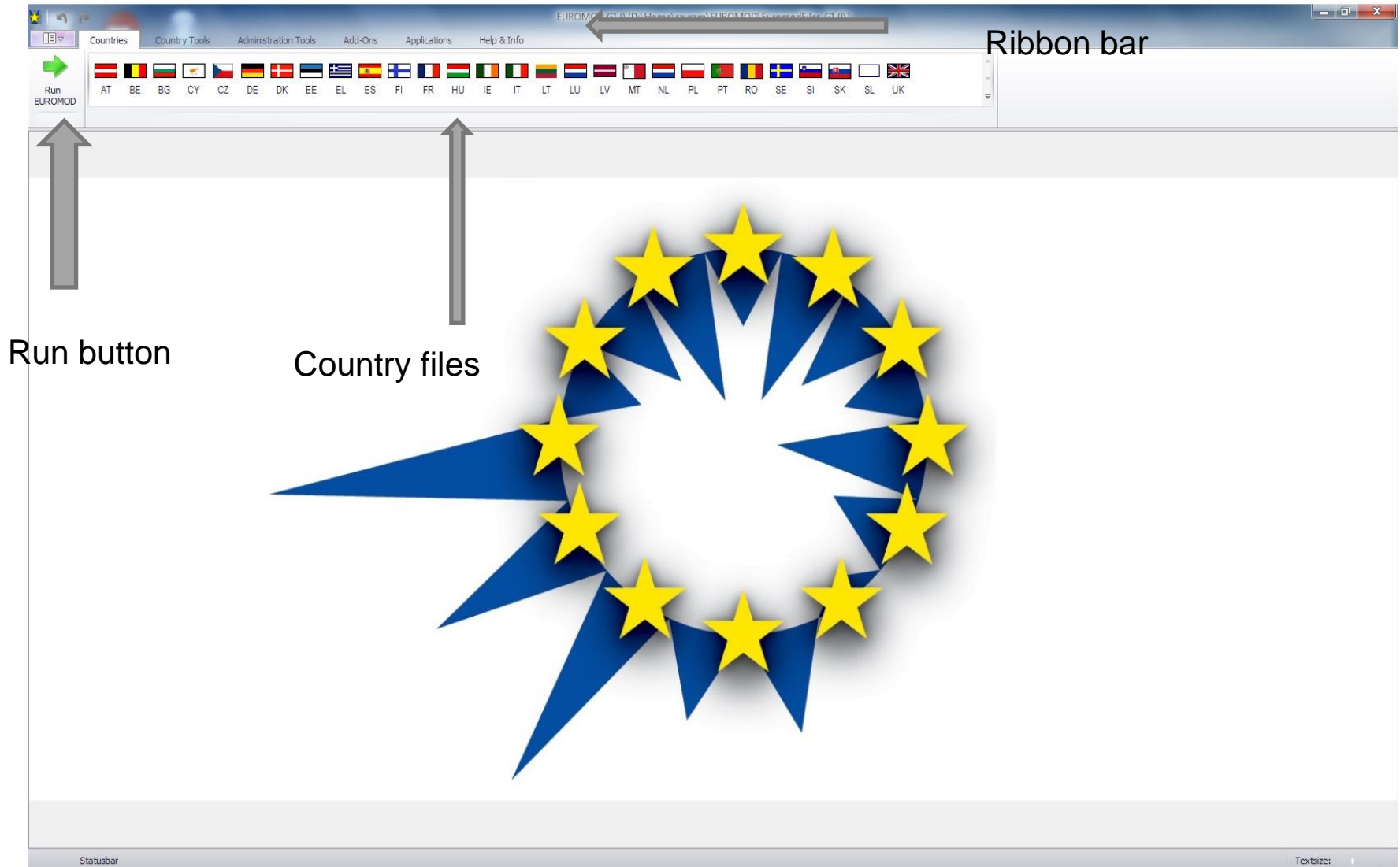




User Interface (UI)

- Single stand-alone piece of software-Windows OS
- Single working environment
- Mostly point and click but some hot keys are available (standard and specific)
- In-built features that allow for improved user control and guidance
- Intuitive!!
- Features:
 - Ribbon bar with tabs
 - Context menus
 - IntelliSense (suggestion of parameter values)
 - Drag and drop
 - Bookmarks and comments
 - Built-in help

User Interface (UI)



Working environment

open country

policy systems

The screenshot shows the EUROMOD software interface for Austria (AT). The main window displays a table of policy systems with the following columns: Policy, Grp/No, at_2007, at_2008, at_2009, at_2010, at_2011, at_2012, and Comment. The table lists 24 policy systems, each with a status (on/off) for each year and a descriptive comment. The interface also includes a menu bar at the top and a country selection bar below it.

Policy	Grp/No	at_2007	at_2008	at_2009	at_2010	at_2011	at_2012	Comment
1	uprate_at	on	on	on	on	on	on	DEF: UPDATING FACTORS
2	ConstDef_at	on	on	on	on	on	on	DEF: CONSTANTS
3	random_at	off	on	on	on	on	on	DEF: Defining a random number for assigning families to different schemes in bcc00_s
4	switch_webmodel_at	off	off	off	off	off	off	DEF: Switch to allow to use input variables instead of simulated variables in the web-based model
5	ildef_at	on	on	on	on	on	on	DEF: INCOME CONCEPTS
6	tundef_at	on	on	on	on	on	on	DEF: ASSESSMENT UNITS
7	yse_at	on	on	on	on	on	on	DEF: recode negative self-employment values to zero
8	yem_at	off	off	off	off	off	off	DEF: minimum wage (Minimumgehalt)
9	tscer_at	on	on	on	on	on	on	SIC: social insurance contributions employer (Arbeitgeberbeiträge zur Sozialversicherung)
10	tscee_at	on	on	on	on	on	on	SIC: social insurance contributions employee (Arbeitnehmerbeiträge zur Sozialversicherung)
11	tsce_at	on	on	on	on	on	on	SIC: social insurance contributions self-employed (Beiträge zur Sozialversicherung für Selbstständige)
12	bch00_at	on	on	on	on	on	on	BEN: Main child benefit (Familienbeihilfe)
13	pch00_at	off	off	off	off	off	off	BEN: child bonus for pensioners (Kinderzuschuss)
14	pchcs_at	off	off	off	off	off	off	BEN: child bonus for civil servant pensioners (Kinderzulage)
15	bunct_at	on	on	on	on	on	on	BEN: unemployment benefit (Arbeitslosengeld)
16	pmmtu_at	on	on	on	on	on	on	BEN: minimum pension top-up (Ausgleichszulage)
17	pcstu_at	on	on	on	on	on	on	BEN: minimum pension top-up for civil servants (Ergänzungszulage)
18	tsce_at	on	on	on	on	on	on	SIC: social insurance contributions pensioner (Beiträge zur Sozialversicherung für Rentner)
19	bch00_at	on	on	on	on	on	on	BEN: Main child benefit (Familienbeihilfe)(repetition of policy with order 12)
20	tin_at	on	on	on	on	on	on	TAX: income tax (Einkommenssteuer)
21	bunnc_at	on	on	on	on	on	on	BEN: Unemployment assistance (Notstandshilfe)
22	bunct_at	on	on	on	on	on	on	BEN: unemployment benefit (Arbeitslosengeld)(repetition of policy with order 15)
23	bunnc_at	on	on	on	on	on	on	BEN: Unemployment assistance (Notstandshilfe)(repetition of policy with order 21)
24	pmmtu_at	on	on	on	on	on	on	BEN: minimum pension top-up (Ausgleichszulage)(repetition of policy with order 16)
								BEN: minimum pension top-up for civil

comments

policies

Ribbon bar



- **Country tools:**
 - country must be open to activate buttons
 - contains options that manipulate the general parameters of a country file
 - name and acronym
 - currencies used for parameters in the system and output
 - which datasets are available and their characteristics
- **Adding and deleting systems**
- **Viewing options:**
 - full spine vs. single policy
 - Search & replace, formatting, bookmarks
- **More advanced (import/ export systems, add-ons etc.)**

Systems Settings

Austria - EUROMOD G1.0 (D:\Home\savram\EUROMOD\EuromodFiles_G1.0)

Country Tools Administration Tools Add-Ons Applications Help & Info

Country **Systems** Databases Full Spine Add System Delete System(s) Import System(s) Export System(s) Import Add-On Export Add-On Compare Versions Pol Func Param Search + Replace Component Use Conditional Formatting Suspend System Formatting Set E

Configuration Policy View Search

Policy	Grp/No	at_2007	at_2008	at_2009	at_2010
1	▶ uprate_at	on	on	on	on
2	▶ ConstDef_at	on	on	on	on
3	▶ ranc_at	off	on	on	on
4	▶ switc				
5	▶ ildef				
6	▶ tundef				
7	▶ yse_a				
8	▶ yem_				
9	▶ tscer				
10	▶ tscee				
11	▶ tscee				
12	▶ bch00				
13	▶ pch00_at	on	on	on	on
14	▶ pchcs_at	off	off	off	off
15	▶ bunct_at	on	on	on	on

AT

System	Exchange Rate	Currency Parameters	Currency Output	Private	Income for Unit Head Definition
▶ at_2007	1	euro	euro	<input type="checkbox"/>	ils_origy
at_2008	1	euro	euro	<input type="checkbox"/>	ils_origy
at_2009	1	euro	euro	<input type="checkbox"/>	ils_origy
at_2010	1	euro	euro	<input type="checkbox"/>	ils_origy
at_2011	1	euro	euro	<input type="checkbox"/>	ils_origy
at_2012	1	euro	euro	<input type="checkbox"/>	ils_origy

OK Cancel

set exchange rate

income used for head definition

Parameters' currency

output currency

Database settings

The screenshot shows the EUROMOD G1.0 software interface. The 'Databases' menu is circled in red. A 'Configure Databases' dialog box is open, showing a table of datasets and systems for the year 2012. The dialog includes options for Collection Year, Income Year, Currency (euro), Decimal Sign, Private, and Use Common Default. Arrows point to the 'Add Dataset' button, the 'Path' field, and the 'Characteristics of dataset to be filled in' table.

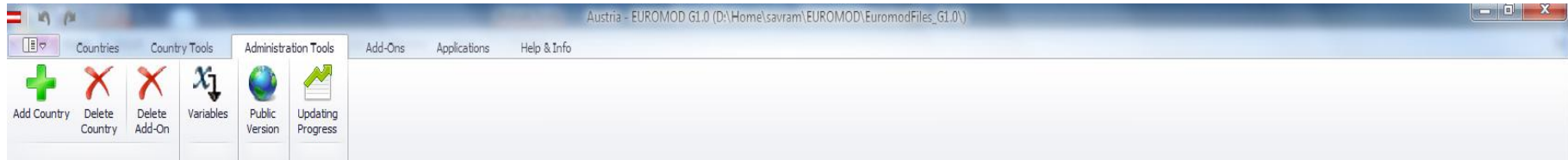
AT		at_2007	at_2008	at_2009	at_2010	at_2011	at_2012
hypodata_at	x	x	x	x	x	x	x
training_data	x	x	x	x	x	x	x
AT_2008_a3.txt	best	best	best	best	best	best	best

characteristics of dataset to be filled in

adding/ deleting

folder where micro-data stored if different from default

Ribbon bar



■ Administration tools:

- adding and deleting countries
- accessing and administering the variables file
- updating progress: overview of available policy systems and datasets

■ More advanced :

- available add-ons
- applications (EXCEL based)

-

EUROMOD Help

The screenshot shows the EUROMOD software interface. At the top, a menu bar includes 'Countries', 'Country Tools', 'Administration Tools', 'Add-Ons', 'Applications', and 'Help & Info'. The 'Help & Info' menu is circled in red. Below the menu bar, there are icons for 'Help' (a lifebuoy) and 'Version' (a document), also circled in red. The main window is titled 'EUROMOD Help' and contains a 'Contents' pane on the left and a main text area on the right. The 'Contents' pane has a 'Search' tab and a list of folders: 'EUROMOD Basic Concepts', 'Working with EUROMOD', 'EUROMOD Functions', 'EUROMOD Installation and Architecture', and 'EUROMOD Version Control'. Two vertical arrows point upwards from the words 'browse' and 'search' to the 'Contents' pane. The main text area displays the 'EUROMOD Basic Concepts' section, which includes the following text:

EUROMOD Basic Concepts

What is EUROMOD?

EUROMOD is a tax-benefit microsimulation model for the European Union (EU) that enables researchers and policy analysts to calculate, in a comparable manner, the effects of taxes and benefits on household incomes and work incentives for the population of each country and for the EU as a whole. As well as calculating the effects of actual policies it is also used to evaluate the effects of tax-benefit policy reforms and other changes on poverty, inequality, incentives and government budgets.

What can EUROMOD do?

EUROMOD can be used in many different ways in different contexts. Examples include:

Standard

- Estimation of poverty, inequality and redistribution statistics under actual conditions, previous or future tax-benefit rules
- Budgetary effects
- Effects of simple tax-benefit policy reforms (or illustrative changes to household composition and original income)
- "Model family" calculations
- Indicators of work incentives

More advanced

- Complex policy reforms (e.g. effects of revenue-neutral changes to tax rates and social insurance regulations)
- Policy swapping between countries (i.e. effects on country A of adopting a policy measure currently

Context menus

Austria - EUROMOD G1.0 (D:\Home\savram\EUROMOD\EuromodFiles_G1.0\)

Country Tools Administration Tools Add-Ons Applications Help & Info

Run EUROMOD loaded

Policy	Grp/No	at_2007	at_2008	at_2009	at_2010	at_2011	at_2012	Comment
1	▶ uprate_at	on	on	on	on	on	on	DEF: UPDATING FACTORS
2	▶ ConstDef_at	on	on	on	on	on	on	DEF: CONSTANTS
3	▶ random_at	off	on	on	on	on	on	DEF: Defining a random number for assigning families to different schemes in bcc00_s
4	▶ switch_webmodel_at	off	off	off	off	off	off	DEF: Switch to allow to use input variables instead of simulated variables in the web-based model
5	▶ ildef_at	on	on	on	on	on	on	DEF: INCOME CONCEPTS
6	▶ tundef_at	on	on	on	on	on	on	DEF: ASSESSMENT UNITS
7	▶ yse_at	on	on	on	on	on	on	DEF: recode negative self-employment values to zero
8	▶ yem_at	off	off	off	off	off	off	DEF: minimum wage (Minimumegehalt)
9	▶ tscer_at	on	on	on	on	on	on	SIC: social insurance contributions employer (Arbeitgeberbeiträge zur Sozialversicherung)
10	▶ tscee_at	on	on	on	on	on	on	SIC: social insurance contributions employee (Arbeitnehmerbeiträge zur Sozialversicherung)
11	▶ tscse_at	on	on	on	on	on	on	SIC: social insurance contributions self-employed (Beiträge zur Sozialversicherung für Selbstständige)
12	▼ bch00_at	on	on	on	on	on	on	BEN: Main child benefit (Familienbeihilfe)
12.1	▶ Elig		on	on	on	on	on	TAX: tax allowance for cost of earnings (Werbungskostenabzug)
12.2	▶ Arith		on	on	on	on	on	
12.3	▶ Elig		on	on	on	on	on	TAX: tax allowance for employees: exceptional deductions (Sonderausgabenpauschale)
12.4	▶ Arith		on	on	on	on	on	
12.5	▶ BenC		on	on	on	on	on	
12.6	▶ DefV		on	on	on	off	off	
12.7	▶ BenC		on	on	on	off	off	
12.8	▶ Arith		on	on	on	off	off	
12.9	▶ BenC		off	off	off	on	on	Schulstartgeld
13	▶ pch00_		off	off	off	off	off	BEN: child bonus for pensioners (Kinderzuschuss)
14	▶ pchcs_		off	off	off	off	off	BEN: child bonus for civil servant pensioners (Kinderzulage)
15	▶ bunct_		on	on	on	on	on	BEN: unemployment benefit (Arbeitslosengeld)
16	▶ pmmtu_		on	on	on	on	on	BEN: minimum pension top-up (Ausgleichszulage)
17	▶ pcstu_		on	on	on	on	on	BEN: minimum pension top-up for civil servants (Ergänzungszulage)
18	▶ tscpe_		on	on	on	on	on	SIC: social insurance contributions pensioner (Beiträge zur Sozialversicherung für Rentner)

AT bch00_at Textsize: + -



Context Menus

- Activated by right-clicking
 - Column headings
 - Row headings
 - Function headings/ parameter names
 - Comments
- Intuitive options controlling the respective elements

IntelliSense

Austria - EUROMOD G1.0 (D:\Home\savram\EUROMOD\EuromodFiles_G1.0)

Country Tools Administration Tools Add-Ons Applications Help & Info

Country Systems Databases Full Spine Add System Delete System(s) Import System(s) Export System(s) Import Add-On Export Add-On Compare Versions Pol Func Param Search + Replace Component Use Conditional Formatting Suspend System Formatting Set Bookmarks Clear

Configuration Policy View Search Node Color

Policy	Grp/No	at_2007	at_2008	at_2009	at_2010	at_2011	at_2012	Comment
7	yse_at	on	on	on	on	on	on	DEF: recode negative self-employment values to zero
7.1	DefVar	on	on	on	on	on	on	
7.2	ArithOp	on	on	on	on	on	on	dummy for having non-zero self-employed income
7.3	Max	on	on	on	on	on	on	exclude negative values for self-employment income
8	yem_at	off	off	off	off	off	off	DEF: minimum wage (Minimumgehalt)
9	tscer_at	on	on	on	on	on	on	SIC: social insurance contributions employer (Arbeitgeberbeiträge zur Sozialversicherung)
10	tscee_at	on	on	on	on	on	on	SIC: social insurance contributions employee (Arbeitnehmerbeiträge zur Sozialversicherung)
11	tsce_at	on	on	on	on	on	on	SIC: social insurance contributions self-employed (Beiträge zur Sozialversicherung für Selbstständige)
12	bch00_at	on	on	on	on	on	on	BEN: Main child benefit (Familienbeihilfe)
12.1	Elig	on	on	on	on	on	on	TAX: tax allowance for cost of earnings (Werbungskostenabzug)
12.1.1	elig_cond	{yem>0}	{yem>0}	{yem>0}	{yem>0}	{yem>0}	{yem>0}	
12.1.2	TAX_UNIT	tu_individual_at	tu_individual_at	tu_individual_at	tu_individual_at	tu_individual_at	tu_individual_at	
12.2	ArithOp	on	on	on	on	on	on	
12.3	Elig	on	on	on	on	on	on	TAX: tax allowance for employees: exceptional deductions (Sonderausgabenpauschale)
12.4	ArithOp	on	on	on	on	on	on	
12.5	BenCalc	on	on	on	on	on	on	
12.6	DefVar	off	on	on	on	off	on	
12.7	BenCalc	off	on	on	on	on	off	
12.8	ArithOp	off	on	on	on	on	off	
12.9	BenCalc	off	off	off	off	off	on	Schulstartgeld
13	pch00_at	off	off	off	off	off	off	BEN: child bonus for pensioners (Kinderzuschuss)
14	pchcs_at	off	off	off	off	off	off	BEN: child bonus for civil servant pensioners (Kinderzulage)
15	bunct_at	on	on	on	on	on	on	BEN: unemployment benefit (Arbeitslosengeld)
16	pmmtu_at	on	on	on	on	on	on	BEN: minimum pension top-up (Ausgleichszulage)
17	pctstu_at	on	on	on	on	on	on	BEN: minimum pension top-up for civil servants (Ergänzungszulage)
18	tsce_at	on	on	on	on	on	on	SIC: social insurance contributions pensioner (Beiträge zur Sozialversicherung für Rentner)
19	bch00_at	on	on	on	on	on	on	BEN: Main child benefit (Familienbeihilfe)(repetition of policy with order 12) TAX: income tax

AT bch00_at - Elig

Variable Administration

Administration of Variables and Acronyms

Variables Acronyms

Select All Filters Monetary Data Has Specific Description DEMOGRAPHIC INCOME EXPENDITURE EUROSTAT
 Unselect All Filters Non-monetary Simulated Country: Any Country LABOUR MARKET TAX IN KIND IDENTIFIER
 BENEFIT/PENSION ASSETS SYSTEM UNKNOWN Search

Edit Show variables ...

Variables

Name	Monetary	Automatic Label
1 afc	<input checked="" type="checkbox"/>	assets : financial capital
2 afc00	<input checked="" type="checkbox"/>	assets : financial capital : main/basic
3 afc00_s	<input checked="" type="checkbox"/>	assets : financial capital : main/basic : simulated
4 aiv	<input checked="" type="checkbox"/>	assets : imputed value
5 aldagar	<input type="checkbox"/>	assets : land : agriculture : area in m2
6 aldagariv	<input type="checkbox"/>	assets : land : agriculture : area in m2 : imputed value
7 aldar	<input type="checkbox"/>	assets : land : area in m2
8 aldiv_s	<input checked="" type="checkbox"/>	assets : land : imputed value : simulated
9 aldmv_s	<input checked="" type="checkbox"/>	assets : land : market value : simulated
10 aldnaar	<input type="checkbox"/>	assets : land : non agricultural : area in m2
11 amolv	<input checked="" type="checkbox"/>	assets : mortgage : loan value
12 amolv_s	<input checked="" type="checkbox"/>	assets : mortgage : loan value : simulated
13 amoyl	<input type="checkbox"/>	assets : mortgage : year of loan
14 amoyl_s	<input type="checkbox"/>	assets : mortgage : year of loan : simulated
15 amrar	<input type="checkbox"/>	assets : main residence : area in m2
16 amriv	<input checked="" type="checkbox"/>	assets : main residence : imputed value
17 amriv_s	<input checked="" type="checkbox"/>	assets : main residence : imputed value : simulated
18 amrmv	<input checked="" type="checkbox"/>	assets : main residence : market value
19 amrmv_s	<input checked="" type="checkbox"/>	assets : main residence : market value : simulated
20 amrrm	<input type="checkbox"/>	assets : main residence : number of rooms
21 amrrm00	<input type="checkbox"/>	assets : main residence : number of rooms : main/basic
22 amrtn	<input type="checkbox"/>	assets : main residence : tenure
23 amrtn00	<input type="checkbox"/>	assets : main residence : tenure : main/basic
24 amrtp	<input type="checkbox"/>	assets : main residence : type of residence
25 amv	<input checked="" type="checkbox"/>	assets : market value
26 aobiv	<input checked="" type="checkbox"/>	assets : other building : imputed value

name

List of all variables existing in all countries in alphabetical order

Set vbl to monetary or non-monetary

automatic label

Acronyms

Description	Acronym
DEMOGRAPHIC	D
LABOUR MARKET	L
BENEFIT/PENSION	B/P
INCOME	Y
TAX	T
ASSETS	A
EXPENDITURE	X
IN KIND	K
SYSTEM	S
EUROSTAT	E

Descriptions

Country	Description
at	-
be	financial capital
bg	-
cy	financial capital
cz	Financial capital (Finanční kapitál)
de	-
dk	Financial Capital
ee	-
el	financial capital

Description of variable for countries where it is used

Categories

Value	Description
-------	-------------

Adding a variable

Administration of Variables and Acronyms

Variables

	Name	Monetary	Automatic Label
1	afc	<input checked="" type="checkbox"/>	assets : financial capital
2		<input checked="" type="checkbox"/>	
3	afc00	<input checked="" type="checkbox"/>	assets : financial capital : main/basic
4	afc00_s	<input checked="" type="checkbox"/>	assets : financial capital : main/basic : simulated
5	aiv	<input checked="" type="checkbox"/>	assets : imputed value
6	aldagar	<input type="checkbox"/>	assets : land : agriculture : area in m2
7	aldagariv	<input type="checkbox"/>	assets : land : agriculture : area in m2 : imputed value
8	aldar	<input type="checkbox"/>	assets : land : area in m2
9	aldiv_s	<input checked="" type="checkbox"/>	assets : land : imputed value : simulated
10	aldmv_s	<input checked="" type="checkbox"/>	assets : land : market value : simulated
11	aldnaar	<input type="checkbox"/>	assets : land : non agricultural : area in m2
12	amolv	<input checked="" type="checkbox"/>	assets : mortgage : loan value
13	amolv_s	<input checked="" type="checkbox"/>	assets : mortgage : loan value : simulated
14	amoyl	<input type="checkbox"/>	assets : mortgage : year of loan
15	amoyl_s	<input type="checkbox"/>	assets : mortgage : year of loan : simulated
16	amrar	<input type="checkbox"/>	assets : main residence : area in m2
17	amriv	<input checked="" type="checkbox"/>	assets : main residence : imputed value
18	amriv_s	<input checked="" type="checkbox"/>	assets : main residence : imputed value : simulated
19	amrmv	<input checked="" type="checkbox"/>	assets : main residence : market value
20	amrmv_s	<input checked="" type="checkbox"/>	assets : main residence : market value : simulated
21	amrrm	<input type="checkbox"/>	assets : main residence : number of rooms
22	amrrm00	<input type="checkbox"/>	assets : main residence : number of rooms : main/basic
23	amrtn	<input type="checkbox"/>	assets : main residence : tenure
24	amrtn00	<input type="checkbox"/>	assets : main residence : tenure : main/basic
25	amrtp	<input type="checkbox"/>	assets : main residence : type of residence
26	amv	<input checked="" type="checkbox"/>	assets : market value

Acronyms

Description	Acronym
DEMOGRAPHIC	D
LABOUR MARKET	L
BENEFIT/PENSION	B/P
INCOME	Y
TAX	T
ASSETS	A
EXPENDITURE	X
IN KIND	K
SYSTEM	S
EUROSTAT	E

Descriptions

Country	Description
at	-
be	-
bg	-
cy	-
cz	-
de	-
dk	-
ee	-
el	-

Categories

Value	Description
-------	-------------

new empty row;
fill in name and monetary

Naming a variable

Administration of Variables and Acronyms

Variables

Name	Monetary	Automatic Label
1 afc	<input checked="" type="checkbox"/>	assets : financial capital
2 afc00	<input checked="" type="checkbox"/>	assets : financial capital : main/basic
3 aarag	<input checked="" type="checkbox"/>	assets : area in m2 : agriculture
4 afc00_s	<input checked="" type="checkbox"/>	assets : financial capital : main/basic : simulated
5 aiv	<input checked="" type="checkbox"/>	assets : imputed value
6 aldagar	<input type="checkbox"/>	assets : land : agriculture : area in m2
7 aldagariv	<input type="checkbox"/>	assets : land : agriculture : area in m2 : imputed value
8 aldar	<input type="checkbox"/>	assets : land : area in m2
9 aldiv_s	<input checked="" type="checkbox"/>	assets : land : imputed value : simulated
10 aldmv_s	<input checked="" type="checkbox"/>	assets : land : market value : simulated
11 aldnaar	<input type="checkbox"/>	assets : land : non agricultural : area in m2
12 amolv	<input checked="" type="checkbox"/>	assets : mortgage : loan value
13 amolv_s	<input checked="" type="checkbox"/>	assets : mortgage : loan value : simulated
14 amoyl	<input type="checkbox"/>	assets : mortgage : year of loan
15 amoyl_s	<input type="checkbox"/>	assets : mortgage : year of loan : simulated
16 amrar	<input type="checkbox"/>	assets : main residence : area in m2
17 amriv	<input checked="" type="checkbox"/>	assets : main residence : imputed value
18 amriv_s	<input checked="" type="checkbox"/>	assets : main residence : imputed value : simulated
19 amrmv	<input checked="" type="checkbox"/>	assets : main residence : market value
20 amrmv_s	<input checked="" type="checkbox"/>	assets : main residence : market value : simulated
21 amrrm	<input type="checkbox"/>	assets : main residence : number of rooms
22 amrrm00	<input type="checkbox"/>	assets : main residence : number of rooms : main/basic
23 amrtn	<input type="checkbox"/>	assets : main residence : tenure
24 amrtn00	<input type="checkbox"/>	assets : main residence : tenure : main/basic
25 amrtp	<input type="checkbox"/>	assets : main residence : type of residence
26 amv	<input checked="" type="checkbox"/>	assets : market value

Acronyms

Description	Acronym
TAX	T
ASSETS	A
main	
use	
agriculture	AG
business	BS
non agricultural	NA
characteristics	
area in m2	AR
building's age (years)	BY
heating	HT
imputed value	IV
years living in this residence	LY
market value	MV
number of owners	OW
purchased	PU
number of rooms	RM
residence	RS
tenure	TN
year of construction	YC
year moved into	YM
type of residence	TP
year of loan	YL
loan value	LV
numbers	
EXPENDITURE	X
IN KIND	K
SYSTEM	S
EUROSTAT	E

EUROMOD - Request

Invalid variable name: wrong order of acronyms.

Undo change?

Yes No

acronyms

UI checks validity of name and existence of the variable

Descriptions

Country	Description
at	-
be	-
bg	-
cy	-
cz	-
de	-
dk	-
ee	-
el	-

Categories

Value	Description
-------	-------------

Filtering variables

Administration of Variables and Acronyms

Variables | Acronyms

Add Variable | Delete Variable | **Apply Filters** | Select All Filters | Inselect All Filters

Monetary | Data | Has Specific Description | DEMOGRAPHIC | INCOME | EXPENDITURE | EUROSTAT

Non-monetary | Simulated | Country: Any Country | LABOUR MARKET | TAX | IN KIND | IDENTIFIER

BENEFIT/PENSION | ASSETS | SYSTEM | UNKNOWN | Search

Edit | Show variables ...

Variables

Name	Monetary	Automatic Label
393 d08	<input type="checkbox"/>	demographic : 08
394 dag	<input type="checkbox"/>	demographic : age
395 dag00	<input type="checkbox"/>	demographic : age : main/basic
396 dct	<input type="checkbox"/>	demographic : country
397 dcu	<input type="checkbox"/>	demographic : consensual union
398 dcz	<input type="checkbox"/>	demographic : citizenship
399 ddi	<input type="checkbox"/>	demographic : disability
400 ddi01	<input type="checkbox"/>	demographic : disability : 01
401 ddi02	<input type="checkbox"/>	demographic : disability : 02
402 ddiv	<input type="checkbox"/>	demographic : disability : level (%)
403 ddiot	<input type="checkbox"/>	demographic : disability : other
404 ddi02	<input type="checkbox"/>	demographic : disability : period
405 ddi02	<input type="checkbox"/>	demographic : disability : period : main/basic
406 ddita	<input type="checkbox"/>	demographic : disability : tax related
411 ddt	<input type="checkbox"/>	demographic : date of interview
412 dec	<input type="checkbox"/>	demographic : education - current status
413 deh	<input type="checkbox"/>	demographic : education - highest status
414 deh02	<input type="checkbox"/>	demographic : education - highest status : 02
415 dew	<input type="checkbox"/>	demographic : education - when achieved highest status
416 dey	<input type="checkbox"/>	demographic : education - number of years
417 dgn	<input type="checkbox"/>	demographic : gender
418 dhr	<input type="checkbox"/>	demographic : home responsible
419 dhr01	<input type="checkbox"/>	demographic : home responsible : 01
421 dmp	<input type="checkbox"/>	demographic : municipality population
422 dms	<input type="checkbox"/>	demographic : marital status
423 dmsyy03	<input type="checkbox"/>	demographic : marital status : number of years : 03
424 dmsyy04	<input type="checkbox"/>	demographic : marital status : number of years : 04

Acronyms

Description	Acronym
LABOUR MARKET	L
BENEFIT/PENSION	B/P
INCOME	Y
TAX	T
ASSETS	A
main	
business	AG
business	BS
non agricultural	NA
characteristics	
area in m2	AR
building's age (years)	BY
heating	HT
imputed value	IV
years living in this residence	LY
market value	MV
number of owners	OW
purchased	PU
number of rooms	RM
residence	RS
tenure	TN
year of construction	YC
year moved into	YM
type of residence	TP
year of loan	YL
loan value	LV
numbers	
EXPENDITURE	X
IN KIND	K
SYSTEM	S
EUROSTAT	F

Descriptions

Country	Description
at	-
be	-
bg	-
cy	-
cz	-
de	-
dk	-

Categories

Value	Description
-------	-------------

select filters

Running EUROMOD

The screenshot displays the EUROMOD software interface. The main window shows a list of countries (AT, BE, BG, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HU, IE, IT, LT, LU, LV, MT, NL, PL, PT, RO, SE, SI, SK, SL, UK) and a 'Run EUROMOD' button circled in red. A dialog box titled 'Run EUROMOD' is open, showing a table with columns for 'Run', 'Country', 'System', and 'Dataset'. The 'Run' column has a checked box for the first row. The 'Country' column lists 'AT'. The 'System' column lists 'at_2007' through 'at_2012'. The 'Dataset' column lists 'AT_2008_a3.txt (Best Match)', 'hypodata_at', 'training_data', 'AT_2009_a3.txt (Best Match)', 'AT_2010_a3.txt (Best Match)', 'AT_2011_a3.txt (Best Match)', and 'AT_2012_a3.txt (Best Match)'. Three arrows point to the 'Run' button, the 'Country' column, and the 'Dataset' column. The text 'select countries' and 'select datasets' are placed near the arrows. The 'Run' button in the dialog box is also circled in red. The background shows the main EUROMOD interface with a 'Run EUROMOD' button circled in red.

Run	Country	System	Dataset
<input checked="" type="checkbox"/>	AT	at_2007	AT_2008_a3.txt (Best Match)
<input type="checkbox"/>	AT	at_2008	hypodata_at
<input type="checkbox"/>	AT	at_2009	training_data
<input type="checkbox"/>	AT	at_2010	AT_2009_a3.txt (Best Match)
<input type="checkbox"/>	AT	at_2011	AT_2010_a3.txt (Best Match)
<input type="checkbox"/>	AT	at_2012	AT_2011_a3.txt (Best Match)

Output path: D:\Home\savram\EUROMOD\EuromodFiles_G1.0\output\

Running EUROMOD

The screenshot displays the EUROMOD software interface. The main window is titled 'Austria - EUROMOD G1.0 (D:\Home\savram\EUROMOD\EuromodFiles_G1.0)'. The 'Run EUROMOD' dialog box is open, showing the 'Advanced Settings' tab. The 'Advanced Settings' tab includes the following options:

- Do not stop on non-critical errors
- Add date to output-filename
- Log runtime in detail
- Close dialog after run
- Number of parallel runs: 1

An arrow points from the 'Advanced Settings' tab to the text 'extra options'. Below the dialog box, the 'Run' table is visible:

Run	Country	System	Dataset
<input checked="" type="checkbox"/>	AT	at_2007	training_data
<input type="checkbox"/>	AT	at_2008	AT_2008_a3.txt (Best Match)
<input type="checkbox"/>	AT	at_2009	AT_2008_a3.txt (Best Match)
<input type="checkbox"/>	AT	at_2010	AT_2008_a3.txt (Best Match)
<input type="checkbox"/>	AT	at_2011	AT_2008_a3.txt (Best Match)
<input type="checkbox"/>	AT	at_2012	AT_2008_a3.txt (Best Match)

The 'Output path' is set to 'D:\Home\savram\EUROMOD\EuromodFiles_G1.0\output\'. The background shows a list of policies and their status for various years (at_2007 to at_2012).

Running EUROMOD

The screenshot displays the EUROMOD software interface. A 'Run dialog' window is open, showing the configuration for a run. The window has a 'Configuration' tab with a table of settings:

Configuration	Status	Time	... Show	Stop
training_data (at_2007)	running	17:45:28	Run Log	Error Log

Arrows point from the text labels to the corresponding elements in the dialog:

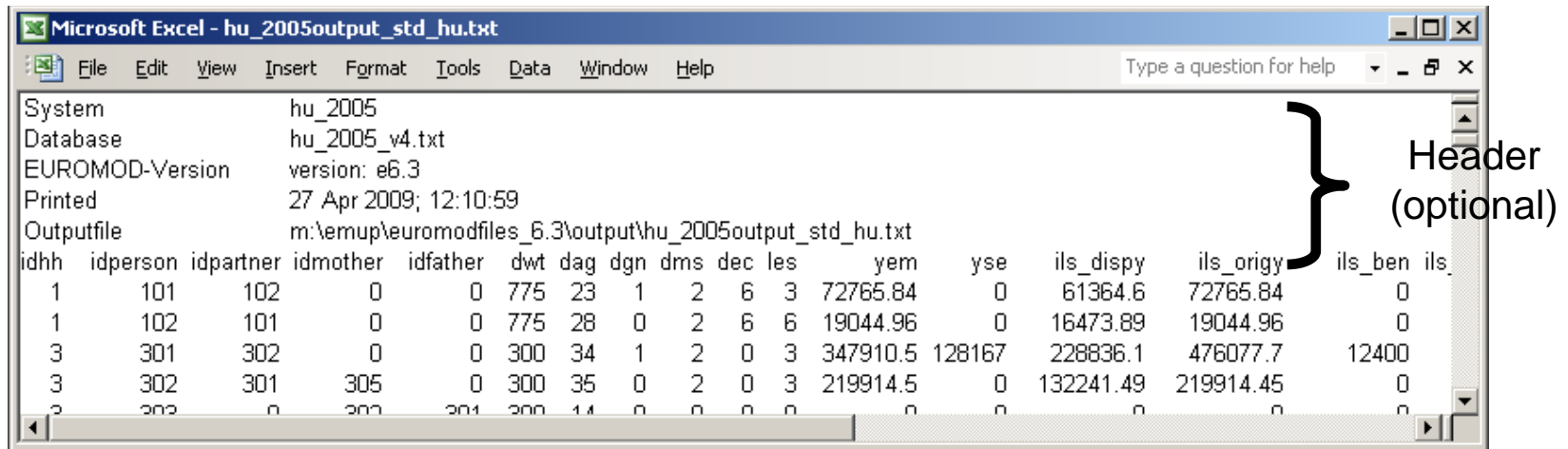
- 'status' points to the 'Status' column.
- 'data and systems running' points to the 'training_data (at_2007)' row.
- 'control display of run log and error log' points to the 'Run Log' and 'Error Log' buttons.
- 'run dialog' points to the dialog window itself.
- 'run/ error log' points to the 'Run Log' button.

The background shows a table with columns for 'at_2011', 'at_2012', and 'Comment'. The 'at_2011' and 'at_2012' columns contain 'on' or 'off' values. The 'Comment' column contains various policy names and descriptions.

	at_2011	at_2012	Comment
1	on	on	DEF: UPDATING FACTORS
2	on	on	DEF: CONSTANTS
3	on	on	DEF: Defining a random number for assigning families to different schemes in bcc00_s
4	off	off	DEF: Switch to allow to use input variables instead of simulated variables in the web-based model
5	on	on	DEF: INCOME CONCEPTS
6	on	on	DEF: ASSESSMENT UNITS
7	on	on	DEF: recode negative self-employment values to zero
8	off	off	DEF: minimum wage (Minimengehalt)
9	on	on	SIC: social insurance contributions employer (Arbeitgeberbeiträge zur Sozialversicherung)
10	on	on	SIC: social insurance contributions employee (Arbeitnehmerbeiträge zur Sozialversicherung)
11	on	on	SIC: social insurance contributions self-employed (Beiträge zur Sozialversicherung für Selbstständige)
12	on	on	BEN: Main child benefit (Familienbeihilfe)
13	off	off	BEN: child bonus for pensioners (Kinderzuschuss)
14	off	off	BEN: child bonus for civil servant pensioners (Kinderzulage)
15	on	on	BEN: unemployment benefit (Arbeitslosengeld)
16	on	on	BEN: minimum pension top-up (Ausgleichszulage)
17	on	on	BEN: minimum pension top-up for civil servants (Ergänzungszulage)
18	on	on	SIC: social insurance contributions pensioner (Beiträge zur Sozialversicherung für Rentner)
19	on	on	BEN: Main child benefit (Familienbeihilfe)(repetition of policy with order 12)
20	on	on	TAX: income tax (Einkommenssteuer)
21	on	on	BEN: Unemployment assistance (Notstandshilfe)
22	on	on	BEN: unemployment benefit (Arbeitslosengeld)(repetition of policy with order 15)
23	on	on	BEN: Unemployment assistance (Notstandshilfe)(repetition of policy with order 21)
24	on	on	BEN: minimum pension top-up (Ausgleichszulage)(repetition of

Output files

- micro-data (with an optional header)



Microsoft Excel - hu_2005output_std_hu.txt

File Edit View Insert Format Tools Data Window Help

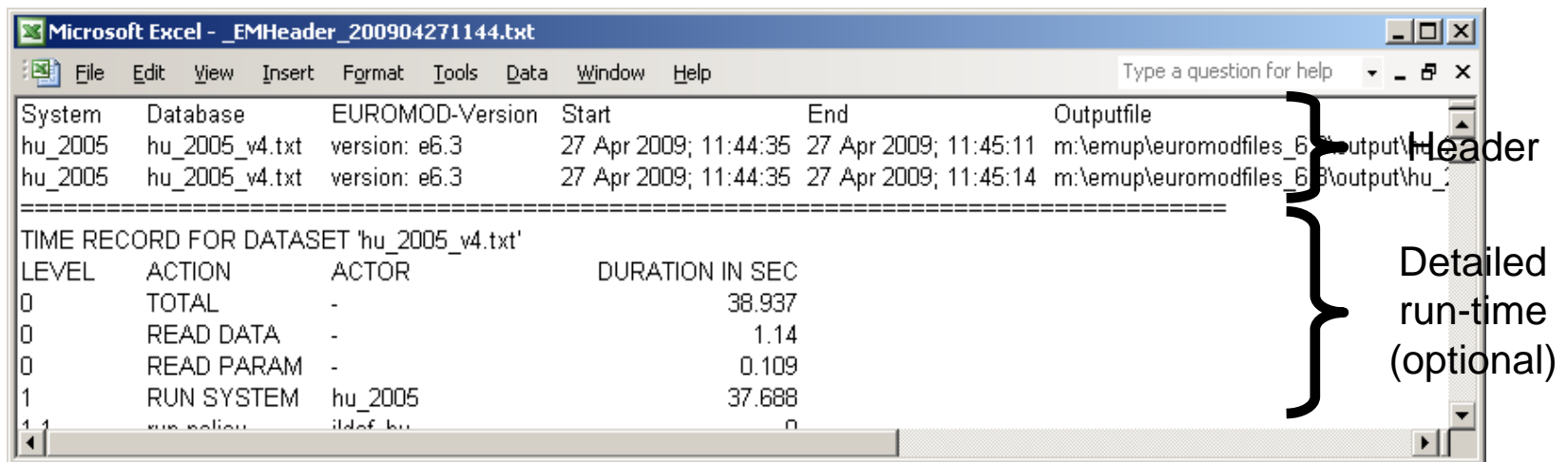
Type a question for help

System hu_2005
Database hu_2005_v4.txt
EUROMOD-Version version: e6.3
Printed 27 Apr 2009; 12:10:59
Outputfile m:\emup\euromodfiles_6.3\output\hu_2005output_std_hu.txt

Header (optional)

idhh	idperson	idpartner	idmother	idfather	dwt	dag	dgn	dms	dec	les	yem	yse	ils_dispy	ils_origy	ils_ben	ils_...
1	101	102	0	0	775	23	1	2	6	3	72765.84	0	61364.6	72765.84	0	
1	102	101	0	0	775	28	0	2	6	6	19044.96	0	16473.89	19044.96	0	
3	301	302	0	0	300	34	1	2	0	3	347910.5	128167	228836.1	476077.7	12400	
3	302	301	305	0	300	35	0	2	0	3	219914.5	0	132241.49	219914.45	0	

- separate header file (optional)



Microsoft Excel - _EMHeader_200904271144.txt

File Edit View Insert Format Tools Data Window Help

Type a question for help

System	Database	EUROMOD-Version	Start	End	Outputfile
hu_2005	hu_2005_v4.txt	version: e6.3	27 Apr 2009; 11:44:35	27 Apr 2009; 11:45:11	m:\emup\euromodfiles_6.3\output\hu_...
hu_2005	hu_2005_v4.txt	version: e6.3	27 Apr 2009; 11:44:35	27 Apr 2009; 11:45:14	m:\emup\euromodfiles_6.3\output\hu_...

Header

=====

TIME RECORD FOR DATASET 'hu_2005_v4.txt'

LEVEL	ACTION	ACTOR	DURATION IN SEC
0	TOTAL	-	38.937
0	READ DATA	-	1.14
0	READ PARAM	-	0.109
1	RUN SYSTEM	hu_2005	37.688
1	run policy	ildef hu	0

Detailed run-time (optional)



Output files

- Content defined in policy output_std_cc
- Usually including:
 - All variables present in the input microdata file
 - Simulated variables (i.e. simulated taxes and benefits)
 - Standardized income lists
 - (optional) non-standard income lists
 - (optional) temporary variables
 - (optional) Tax unit identification info
- Control level at which info is outputted (ex: individual, household etc.)

Summary Statistics Tool

- Output of EUROMOD = micro-data
- Process using a statistical software package (ex. Stata)
- Only for training purposes- Summary Statistics Tool
- Computes a range of commonly used indicators and statistics:
 - poverty rates for the overall population and for selected groups and the Gini coefficient
 - distribution of household income, taxes and benefits by income group
 - demographic information on households by income group
- Currently in Excel
- Computed indicators are fixed and cannot be changed
→ not for 'real' analysis!!!
- 7 tables produced in Excel

Summary statistics tool



This screenshot shows the Excel spreadsheet 'EM_SumStat.xls' in compatibility mode. The spreadsheet contains the following information:

- Header:** EUROMOD: Summary Statistics, version: 20110615
- Security Warning:** Macros have been disabled. An arrow points to the 'enable macros' button.
- PATH:** C:\EUROMOD\Output\ (An arrow points to this field with the text 'folder where your output file is stored').
- FILES:** A table with columns: Country, System, Year, Micro output file (indiv. level), Header (Y/N)?, Data in euros?, and Statistics in euros?.
- Example Row:** eu, lu, lu2003, 2003, lu_2003_std.txt, N, Y, Y.
- Run Button:** A 'Run' button is circled in red.
- Annotation:** A bracket underlines the 'Micro output file' column, with an arrow pointing to it and the text 'fill in required info one row per output file'.

Summary Statistics Tool

country and system on which statistics calculated

one sheet per output file

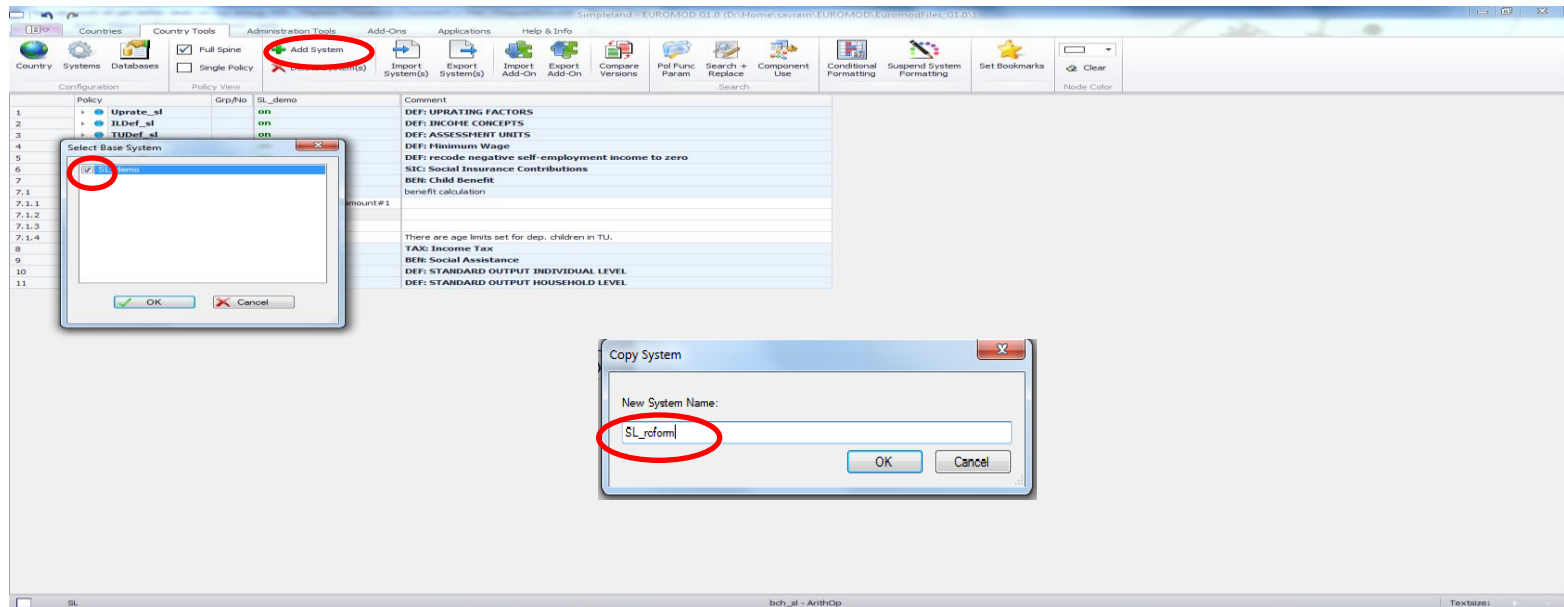
Decile Group	Disposable income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.	Simulated Benefits	Simulated Taxes
1	657	210	210	442	-6	1	100.0%	100.0%
2	1,360	1,000	1,000	559	185	14	37.2%	100.0%
3	1,838	1,434	1,434	765	335	26	26.3%	100.0%
4	1,886	1,576	1,576	733	398	26	18.3%	100.0%
5	2,029	1,437	1,437	1,086	448	47	13.4%	100.0%
6	2,539	2,424	2,424	790	647	29	19.2%	100.0%
7	2,931	2,515	2,515	1,245	784	45	13.1%	100.0%
8	3,006	2,244	2,244	1,622	801	60	3.9%	100.0%
9	3,881	4,085	4,085	1,088	1,257	36	10.1%	100.0%
10	5,046	6,875	6,875	568	2,391	6	21.3%	100.0%
All	2,457	2,298	2,298	887	700	29	20.5%	100.0%
Poor*	976	584	584	481	82	6	71.1%	100.0%

Decile Group	Disposable income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.	Simulated Benefits	Simulated Taxes
1	615	196	196	414	-8	1	100.0%	100.0%
2	1,273	936	936	523	174	13	37.2%	100.0%
3	1,720	1,342	1,342	716	314	25	26.3%	100.0%
4	1,765	1,475	1,475	686	372	24	18.3%	100.0%
5	1,899	1,345	1,345	1,017	419	44	13.4%	100.0%
6	2,376	2,269	2,269	740	605	27	19.2%	100.0%
7	2,744	2,354	2,354	1,166	734	42	13.1%	100.0%
8	2,814	2,101	2,101	1,519	750	56	3.9%	100.0%
9	3,633	3,824	3,824	1,019	1,176	34	10.1%	100.0%
10	4,724	6,436	6,436	532	2,239	6	21.3%	100.0%
All	2,300	2,152	2,152	830	655	27	20.5%	100.0%
Poor*	914	546	546	450	77	6	71.1%	100.0%

Decile Group	Disposable income	Original Income	of which Cur. Earned Inc.	All Benefits incl.Pub.Pen.	All Taxes	Social Ins. Contrib.
1	3.5%	1.2%	1.2%	6.6%	-0.1%	0.5%

Implementing a simple reform

- Where:
 - Simpleland
- What:
 - make the child benefit more generous
- How:
 - Open Simpleland
 - Add a new system where your reform will be implemented



Implementing a simple reform

■ How:

- Open the child benefit policy
- Make the changes in the new (reform) system

The screenshot shows the EUROMOD G1.0 software interface. The main window displays a table comparing two policy systems: 'SL_demo' and 'SL_reform'. The 'SL_reform' column is circled in red. The table lists various policy components and their status in both systems.

Policy	Grp/No	SL_demo	SL_reform	Comment
1	Uprate_sl	on	on	DEF: UPDATING FACTORS
2	ILDef_sl	on	on	DEF: INCOME CONCEPTS
3	TUDef_sl	on	on	DEF: ASSESSMENT UNITS
4	yem_sl	on	on	DEF: Minimum Wage
5	yse_sl	on	on	DEF: recode negative self-employment income to zero
6	sic_sl	on	on	SIC: Social Insurance Contributions
7	bch_sl	on	on	BEN: Child Benefit
7.1	- Jx: ArithOp	on	on	benefit calculation
7.1.1	formula	nDepChildrenInTU*amount#1	nDepChildrenInTU*amount#1	
7.1.2	#_amount	200#m	250#m	
7.1.3	output_var	bch_s	bch_s	
7.1.4	TAX_UNIT	tu_sben_family_sl	tu_sben_family_sl	There are age limits set for dep. children in TU.
8	tin_sl	on	on	TAX: Income Tax
9	bsa_sl	on	on	BEN: Social Assistance
10	output_std_sl	on	on	DEF: STANDARD OUTPUT INDIVIDUAL LEVEL
11	output_std_hh_sl	off	off	DEF: STANDARD OUTPUT HOUSEHOLD LEVEL

- Run EUROMOD
- Analyze results with the Summary Statistics Tool

Error handling

Simpleland - EUROMOD G1.0 (D:\Home\savram\EUROMOD\EuromodFiles_G1.0)

Country Tools Administration Tools Add-Ons Applications Help & Info

Country Systems Databases Full Spine Single Policy Add System Delete System(s) Import System(s) Export System(s) Import Add-On Export Add-On Compare Versions Pol Func Param Search + Replace Component Use Conditional Formatting Suspend System Formatting Set Bookmarks Clear Node Color

Policy	Grp/No	SL_demo	SL_reform	Comment
1	Uprate_sl	on	on	DEF: UPRATING FACTORS
2	ILDef_sl	on	on	DEF: INCOME CONCEPTS
3	TUDef_sl	on	on	DEF: ASSESSMENT UNITS
4	yem_sl	on	on	DEF: Minimum Wage
5	yse_sl	on	on	DEF: recode negative self-employment income to zero
6	sic_sl	on	on	SIC: Social Insurance Contributions
7	bch_sl	on	on	BEN: Child Benefit
7.1	ArithOp	on	on	benefit calculation
7.1.1	formula	nDepChildrenInTU*amount#1	nDepChildrenInTU*amount#1	
7.1.2	#_amount	200#m	250#m	
7.1.3	output_var	bch_s	bch_s	
7.1.4	TAX_UNIT	tu_sben_family_sl	tu_sben_family_sl	There are age limits set for dep. children in TU.
8	tin_sl	on	on	TAX: Income Tax
9	bsa_sl	on	on	BEN: Social Assistance
10	output_std_sl	on	on	DEF: STANDARD OUTPUT INDIVIDUAL LEVEL
11	output_std_hh_sl	off	off	DEF: STANDARD OUTPUT HOUSEHOLD LEVEL

produce an error

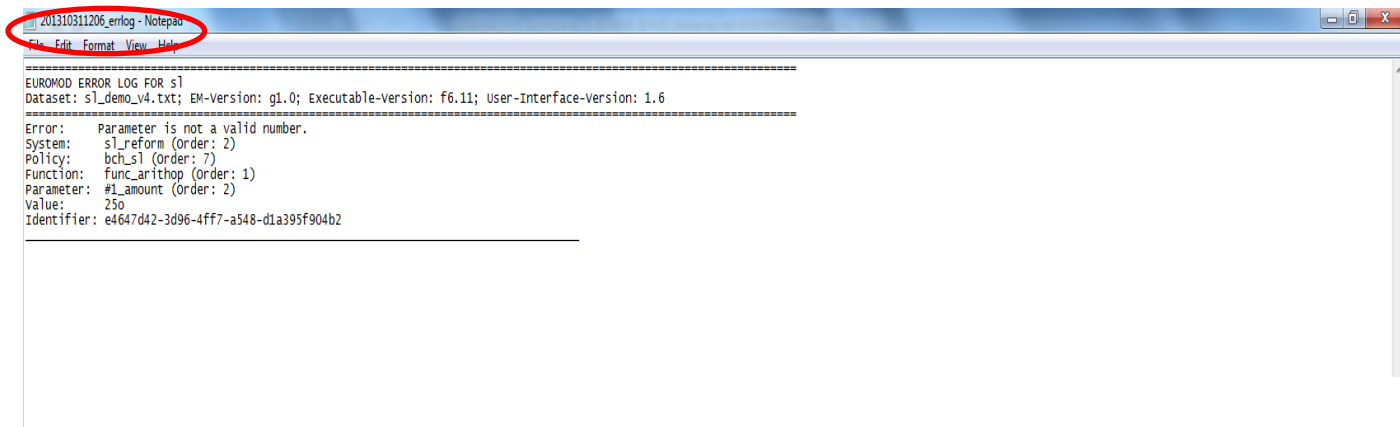
Error handling

info on nature and location of the error

Policy	Grp/No	SL_demo	SL_reform	Comment
1	Uprate_sl	on	on	DEF: UPDATING FACTORS
2	ILDef_sl	on	on	DEF: INCOME CONCEPTS
3	TUDef_sl	on	on	DEF: ASSESSMENT UNITS
4	yes_sl			Wage
5	yse_sl			negative self-employment income to zero
6	sic_sl			insurance Contributions
7	bch_sl			profit
7.1	ArithOp	on	on	Benefit calculation
7.1.1	formula	nDepChildrenInTU*amount#1	nDepChildrenInTU*amount#1	
7.1.2	#_amount	1	200#m	
7.1.3	output_var		bch_s	
7.1.4	TAX_UNIT		tu_sben_family_sl	There are age limits set for dep. children in TU.
8	tin_sl	on	on	TAX: Income Tax
9	bsa_sl	on	on	BEN: Social Assistance
10	output_std_sl	on	on	DEF: STANDARD OUTPUT INDIVIDUAL LEVEL
11	output_std_hh_sl	off	off	DEF: STANDARD OUTPUT HOUSEHOLD LEVEL

Error handling

- Output folder-error log file (text format)
- Same info as in the running dialog box
- Error logs contain time stamp of their creation
- Info about EUROMOD version, policy system where error occurred and dataset used



```
201310311206_errlog - Notepad
File Edit Format View Help
=====
EUROMOD ERROR LOG FOR s1
Dataset: s1_demo_v4.txt; EM-Version: g1.0; Executable-Version: f6.11; User-Interface-Version: 1.6
=====
Error:   Parameter is not a valid number.
System:  s1_reform (order: 2)
Policy:  bch_s1 (order: 7)
Function: furc_arithop (order: 1)
Parameter: #1_amount (order: 2)
Value:   250
Identifier: e4647d42-3d96-4ff7-a548-d1a395f904b2
=====
```

Documentation

- **MANUALS**

- Euromod Terminology

- Running Euromod and Basic Concepts

- Euromod Functions

} all in built-in help

- **COUNTRY REPORTS (CR)**

(<https://www.iser.essex.ac.uk/euromod/resources-for-euromod-users/country-reports>)

- **DATA DESCRIPTION DOCUMENTS (DRD)**

- **WORKING PAPERS**

(<https://www.iser.essex.ac.uk/euromod/working-papers>)



Additional features

■ Documentation

- Country Reports
- Data Requirement Documents
- Manuals
- Recipes
- Working Papers

■ Tools:

- Summary statistics
- Budget constraint charts (for standard hh types)
- METRs calculation



Country report

1. Basic information

- background information (e.g. country statistics)
- brief description and statistics of all policies

2. Simulation of taxes and benefits in Euromod

- scope and order of simulation
- detailed information on simulated policies (incl. assumptions)

3. Data

- general description, sample quality and weights
- data adjustment, imputations and assumptions

4. Validation

- policy validation
- income distribution validation: poverty and inequality
- “health warnings”



Access to model and data

- Web <http://www.iser.essex.ac.uk/research/euromod>
 - Summary statistics
 - Documentation: Country Reports, Working Papers
- Model is freely available for non-commercial use
 - Contact euromod@essex.ac.uk to obtain the link for downloading (incl. manuals)
- Data access conditions set out by the original data provider
 - EU-SILC (UDB): (for now) EUROMOD users need to join our project network contract with Eurostat
 - Other data: relatively straightforward procedures
- Free training courses



Responsibilities of EUROMOD hand-on users

- Respect data access rules and conditions
- Acknowledge EUROMOD when it is used
- Submit all papers using EUROMOD for inclusion in the WP series
- Take responsibility for your own use of the model
- Tell us about bugs or errors
- Keep us informed about what you are working on and when you are working actively: that way we can keep you informed of relevant changes



Further information on EUROMOD

- Technical papers:

- Immervoll H, C O'Donoghue and H Sutherland (1999), An Introduction to EUROMOD, EM 0/99.
- Sutherland H (ed) (2001), EUROMOD: an integrated European Benefit-tax model. Final Report, EM 9/01.
- Lietz C and D Mantovani (2006): Lessons from building and using EUROMOD, EM 5/06.

- Web site: <http://www.iser.essex.ac.uk/research/euromod>

- Country Reports
- Recipes
- Working Papers

Useful links and references

- International Microsimulation Association <http://www.microsimulation.org/>
- International Journal of Micosimulation
<http://www.microsimulation.org/IJM/index.htm>
- Sutherland H. and F. Figari, 2013, EUROMOD: the European Union tax-benefit microsimulation model, *International Journal of Microsimulation* 6(1) 4-26.
- Figari F., A. Paulus and H. Sutherland, 2013, Microsimulation and Policy Analysis, in Handbook of Income Distribution Volume 2, edited by A. B. Atkinson and F. Bourguignon, Elsevier, forthcoming.
- Lelkes O. and H. Sutherland (eds), 2009, *Tax and Benefit Policies in the Enlarged Europe: Assessing the Impact with Microsimulation Models*, Ashgate.
- Bourguignon F. and A. Spadaro, 2006, Microsimulation as a tool for evaluating redistribution policies, *Journal of Economic Inequality* 4(1): 77-106.
- Bargain O. (ed), 2006, *Microsimulation In Action: Policy Analysis in Europe using EUROMOD*, Research In Labor Economics Vol 25, Elsevier.