

# EUROMOD Functions & Parameters II

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UNU-WIDER Training course

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# Content

- Parameter values
- Policy functions: BenCalc and SchedCalc
- System functions: Uprate, SetDefault, DefConst, DefVar, DefOutput
- Special functions



# Content

- **Parameter values**
- Policy functions: BenCalc and SchedCalc
- System functions: Uprate, SetDefault, DefConst, DefVar, DefOutput
- Special functions



# Parameter values

- **Non-condition:**

- Variable (income lists)
- Amount
- Query
- Formula
- Footnote
- Other

- **Condition**



# Parameter values

- **Non-condition:**
  - **Variable (income lists)**
  - **Amount**
  - **Query**
  - **Formula**
  - **Footnote**
  - **Other**
- **Condition**



# Variable parameter values

- Takes the EUROMOD variable as value
- (the same with income lists)

<div><div><div><div></div><div></div></div><div>Run EUROMOD</div></div></div>		<div>Countries</div> <div><div><div></div><div>Simpleland</div><div>loaded</div></div></div>	<div><div>Display</div><div>Country Tools</div><div>Administration Tools</div><div>Add-Ons</div><div>Applications</div><div>Help &amp; Info</div></div> <div><div><div><div><div></div><div></div></div><div>AT</div></div><div><div><div><div></div><div></div></div><div>BE</div></div><div><div><div><div></div><div></div></div><div>BG</div></div><div><div><div><div></div><div></div></div><div>CY</div></div><div><div><div><div></div><div></div></div><div>CZ</div></div><div><div><div><div></div><div></div></div><div>DE</div></div><div><div><div><div></div><div></div></div><div>DK</div></div><div><div><div><div></div><div></div></div><div>EE</div></div><div><div><div><div></div><div></div></div><div>EL</div></div><div><div><div><div></div><div></div></div><div>ES</div></div><div><div><div><div></div><div></div></div><div>FI</div></div><div><div><div><div></div><div></div></div><div>FR</div></div><div><div><div><div></div><div></div></div><div>HR</div></div><div><div><div><div></div><div></div></div><div>HU</div></div><div><div><div><div></div><div></div></div><div>IE</div></div><div><div><div><div></div><div></div></div><div>IT</div></div><div><div><div><div></div><div></div></div><div>LT</div></div><div><div><div><div></div><div></div></div><div>LU</div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div></div>																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																					
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# Amount parameter values

Monetary (numbers; use . for decimal) followed by their period:

- *#m* for monthly (no conversion)
- *#y* for yearly
- *#q* for quarterly
- *#w* for weekly
- *#d* for daily
- *#l* for labour day
- *#s* for six day labour week

Default is *#m* (monthly)

tin_sl		on	TAX: Income Tax
SchedCalc		on	
base		il_TaxableY	
band_lowlim	1	1000#m	income below 1000 per month is not taxed
band_rate	1	0.2	income above 1000#m is taxed with 20%
output_var		tin_s	
TAX_UNIT		tu_individual_sl	

# Query parameter values (1)

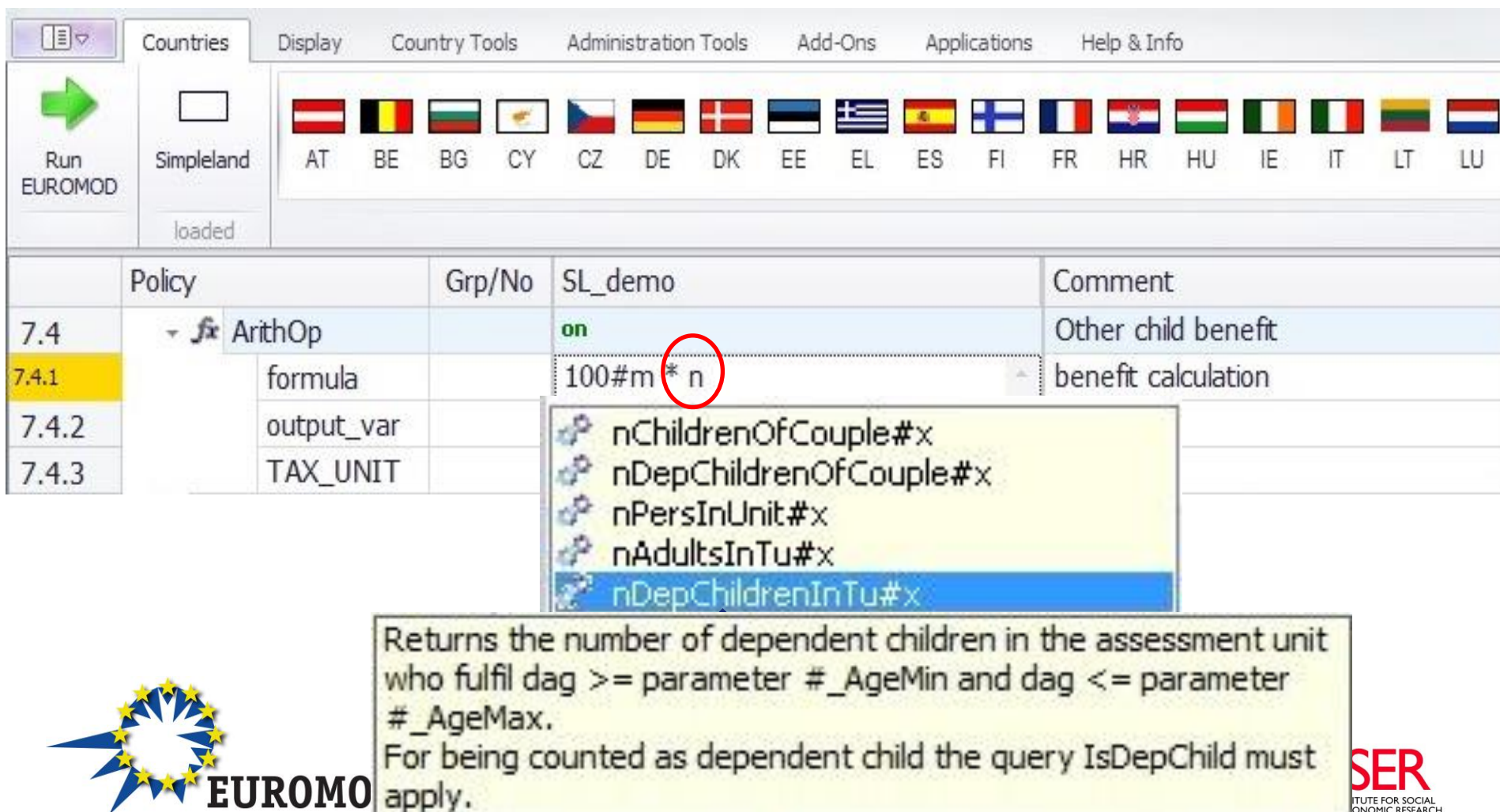
- Frequently used ready made calculations
- The results of a query is either yes/no or some (monetary or non-monetary) value
- Well-documented in Help file!!!

query	description
<b>IsHeadOfTu</b>	Returns 1 if a person is the 'Head' of the assessment unit, i.e. fulfils the fixed head condition and the ExtHeadCond of the assessment unit specification, 0 otherwise.
<b>IsPartner</b>	Returns 1 if a person is the 'Partner' of the assessment unit, i.e. fulfils the PartnerCond of the assessment unit specification, 0 otherwise.
<b>nDepChildrenInTu#x</b>	Returns the number of dependent children in the assessment unit who fulfil dag $\geq$ parameter #_AgeMin and dag $\leq$ parameter #_AgeMax. For being counted as dependent child the query IsDepChild must apply.



# Query parameter values (2)

- Use IntelliSense to enter values



The screenshot displays the EUROMOD software interface. At the top, there is a menu bar with options: Countries, Display, Country Tools, Administration Tools, Add-Ons, Applications, and Help & Info. Below the menu bar, there is a section for 'Countries' with a 'Run EUROMOD' button and a 'Simpleland' button. A row of European country flags is shown, each with its corresponding country code: AT, BE, BG, CY, CZ, DE, DK, EE, EL, ES, FI, FR, HR, HU, IE, IT, LT, LU.

Below the country selection, there is a table with the following columns: Policy, Grp/No, SL\_demo, and Comment. The table contains the following data:

Policy	Grp/No	SL_demo	Comment
7.4	ArithOp	on	Other child benefit
7.4.1	formula	100#m * n	benefit calculation
7.4.2	output_var		
7.4.3	TAX_UNIT		

A dropdown menu is open for the 'n' parameter in the formula '100#m \* n'. The dropdown shows the following suggestions:

- nChildrenOfCouple#x
- nDepChildrenOfCouple#x
- nPersInUnit#x
- nAdultsInTu#x
- nDepChildrenInTu#x

A tooltip for the selected suggestion 'nDepChildrenInTu#x' is displayed, stating: 'Returns the number of dependent children in the assessment unit who fulfil dag >= parameter #\_AgeMin and dag <= parameter #\_AgeMax. For being counted as dependent child the query IsDepChild must apply.'

# Formula parameter values

- Operations: ^, <min>, <max>, <abs>, (), !(), %, /, \*, \, +, -
- Operands:
  - variables (monetary and non monetary)
  - queries
  - income lists

	Policy	Grp/No	SL_demo	Comment
7.2	-  ArithOp		on	
7.2.1	formula		nDepChildrenInTU*(500#m + xed/2) - bsa	For each dependent child 500 per month plus half of educational expenses; deduct social assistance
7.2.2	LowLim		0	
7.2.3	output_var		bched_s	
7.2.4	TAX_UNIT		tu_sben_family_sl	

# Footnote parameter values

- Serve the further specification of other parameters
- Identified by #i (i=number from 1 to....)
  - Limits
  - Amounts
  - Assessment units
  - Specification of queries

ArithOp	on	
Formula	Amount#1+(yem#2)+GetPartnerIncome#3)*0.3	Amount 1 plus 30% of employment income up to 1000#m and partner's employment income
# Amount	1	100#m
# UpLim	2	1000#m
#_Income	3	yem
Output_Var	sin02_s	
TAX_UNIT	tu_individual_sl	

# Other parameter values

- Names – e.g. the name of the output file or an income list
- Categories – e.g. who\_must\_be\_elig = one, one\_adult, all etc.



# Parameter values

- Non-condition:
  - Variable (income lists)
  - Amount
  - Query
  - Formula
  - Footnote
  - Other

- **Condition**



## Condition parameter values

- Logical and comparison operations to evaluate a condition with a yes/no result
- Conditions in by curly brackets {}, can be grouped by parenthesis ()
- Negative condition (i.e. !) can be used with a single condition only

Policy		Grp/No	RO_2014	Comment
23	<b>bched_ro</b>		on	<b>BEN: Means-tested educational allowance (Money for High-School) (Sprijin financiar acordat elevilor din cadrul programului national de protectie sociala 'Bani de</b>
23.1	DefVar		on	
23.2	ArithOp		on	Asset variable
23.3	DefIl		on	Income subject to the means test
23.4	Elig		on	Eligibility
23.4.1	elig_cond		$\{dag < 18\} \& \{dec = 4\} \& \{il\_bchedy\_base\#1 < (nPersInTu\#1 * 150\#m)\} \& \{temp\_asset\#1 = 0\}$	Children below age 18 and in upper secondary education + family income per member lower than threshold; Sanctions due to absenteeism from school not simulated
23.4.2	#_level	1	tu_family_ro	
23.4.3	TAX_UNIT		tu_individual_ro	
23.5	ArithOp		on	Benefit amount



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LT

LU

	Policy	Grp/No	SL_demo	Comment
7.3	<div><div>fx</div><div>Elig</div></div>		on	
7.3.1	Elig_Cond		<u>{IsInEducation} &amp; {dag&lt;18} &amp; {yem&lt;3000#m}</u>	individual is in education and younger than 18; family earnings are below 3,000 per month
7.3.2	TAX_UNIT		tu_sben_family_sl	

condition

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	Policy	Grp/No	SL_demo	Comment
9.2	<div><div>fx</div>ArithOp</div>		on	
9.2.1	Formula		<u>IsInEducation*xed - yem</u>	The benefit funds expenditure for education if the head is in education. Any earnings received by the family are deducted.
9.2.2	LowLim		0	
9.2.3	Output_Var		bched_s	
9.2.4	TAX_UNIT		tu_sben_family_sl	

formula

# Parameter values and the assessment unit

Parameter values	... used in conditions	... used in formulas
Monetary variables (and income lists) ...	Assessment unit	Assessment unit
Non-monetary variables and individual-level queries ...	Each individual in the assessment unit	Head of assessment unit
Non-individual level queries ...	Consult with help file	Consult with help file



# Questions?



# Content

- Parameter values – condition and non-condition
- **Policy functions: BenCalc and SchedCalc**
- System functions: Uprate, SetDefault, DefConst, DefVar, DefOutput
- Special functions



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# Function *BenCalc* (1)

- Benefit calculator used to implement a wide range of policy instruments, in particular benefits
- Combines the functionalities of the functions **func\_Elig** and **func\_ArithOp**
- Calculates a sum of “components”, where the value of a component is only added if a certain condition is fulfilled by at least one member of the assessment unit







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 Countries: Display Country Tools Administration Tools Add-Ons Applications Help & Info

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  ES
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  FR
  HR
  HU
  IE
  IT
  LT
  LU
  LV

loaded

	Policy	Grp/No	FR_2008	Comment
12	  bch00_fr		on	<b>BEN: Universal child benefit (Allocation Familiale AF)</b>
12.1	 DefConst		on	Parameters for AF
12.2	 BenCalc		on	Benefit Amount
12.2.1	Comp_Cond	1	{nDepChildrenInTu=2}	first 2 children
12.2.2	Comp_perTU	1	\$bch00_amt1	
12.2.3	Comp_Cond	2	{nDepChildrenInTu >= 3}	
12.2.4	Comp_perTU	2	\$bch00_amt2	
12.2.5	Comp_Cond	3	{IsNtoMchild#1}	starting with the 4th child....
12.2.6	#_N	1	4	
12.2.7	#_M	1	0	
12.2.8	Comp_perTU			
12.2.9	Comp_Cond		{dag <= 16} & {IsDepChild} & {IsNtoMchild#1} & {IsNtoMchild#2} & {IsNtoMchild#3} & {IsNtoMchild#4} & {IsNtoMchild#5} & {IsNtoMchild#6} & {IsNtoMchild#7} & {IsNtoMchild#8} & {IsNtoMchild#9} & {IsNtoMchild#10} & {IsNtoMchild#11} & {IsNtoMchild#12} & {IsNtoMchild#13} & {IsNtoMchild#14} & {IsNtoMchild#15} & {IsNtoMchild#16} & {IsNtoMchild#17} & {IsNtoMchild#18} & {IsNtoMchild#19} & {IsNtoMchild#20}	Increase for child aged 11-16 (not granted for the first child if only 2 dependent children in the TU)
12.2.10	Comp_perElig	4	\$bch00_amt4	Note: phase out for 15/16 year olds not simulated
12.2.11	Comp_Cond	5	{(nDepChildrenInTu > 2) & {IsNtoMchild#2}} & {dag > 16} & {IsDepChild}	Increase for child aged over 16/14 (not granted for the first child if only 2 dependent children in the TU); Note: lower age limit for older children changed from 16 to 14 in 2011
12.2.12	#_N	2	2	
12.2.13	#_M	2	99	
12.2.14	Comp_perElig	5	\$bch00_amt5	
12.2.15	Output_Var		bch00_s	
12.2.16	TAX_UNIT		tu_bch_fr	





1<sup>st</sup> condition

value if 1<sup>st</sup> condition is fulfilled


 Countries: Display Country Tools Administration Tools Add-Ons Applications Help & Info

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loaded

	Policy	Grp/No	FR_2008	Comment
12	  bch00_fr		on	<b>BEN: Universal child benefit (Allocation Familiale AF)</b>
12.1	 DefConst		on	Parameters for AF
12.2	 BenCalc		on	Benefit Amount
12.2.1	Comp_Cond	1	{nDepChildrenInTu=2}	first 2 children
12.2.2	Comp_perTU	1	\$bch00_amt1	
12.2.3	Comp_Cond	2	{nDepChildrenInTu>=3}	first 3 children
12.2.4	Comp_perTU	2	\$bch00_amt2	
12.2.5	Comp_Cond	3	{IsNtoMchild#1}	child....
12.2.6	#_N	1	4	
12.2.7	#_M	1	99	
12.2.8	Comp_perElig	3	\$bch00_amt3	
12.2.9	Comp_Cond	4	{nDepChildrenInTu>2} & {IsNtoMchild#1}	Increase for child aged 11-16 (not granted for the first child if only 2 dependent children in the TU)
12.2.10	Comp_perElig	4	\$bch00_amt4	Note: phase out for 15/16 year olds not simulated
12.2.11	Comp_Cond	5	{nDepChildrenInTu>2} & {IsNtoMchild#2} & {dag>16} & {IsDepChild}	Increase for child aged over 16/14 (not granted for the first child if only 2 dependent children in the TU); Note: lower age limit for older children changed from 16 to 14 in 2011
12.2.12	#_N	2	2	
12.2.13	#_M	2	99	
12.2.14	Comp_perElig	5	\$bch00_amt5	
12.2.15	Output_Var		bch00_s	
12.2.16	TAX_UNIT		tu_bch_fr	

2<sup>nd</sup> condition




value if 2<sup>nd</sup> condition is fulfilled



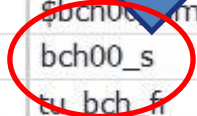

 Countries:  France loaded

Display Country Tools Administration Tools Add-Ons Applications Help & Info

AT BE BG CY CZ DE DK EE EL ES FI FR HR HU IE IT LT LU LV

	Policy	Grp/No	FR_2008	Comment
12	 <b>bch00_fr</b>		on	<b>BEN: Universal child benefit (Allocation Familiale AF)</b>
12.1	 DefConst		on	Parameters for AF
12.2	 BenCalc		on	Benefit Amount
12.2.1	Comp_Cond	1	{nDepChildrenInTu=2}	first 2 children
12.2.2	Comp_perTU	1	\$bch00_amt1	
12.2.3	Comp_Cond	2	{nDepChildrenInTu>=3}	first 3 children
12.2.4	Comp_perTU	2	\$bch00_amt2	
12.2.5	Comp_Cond	3	{IsNtoMchild#1}	starting with the 4th child....
12.2.6	#_N	1	4	
12.2.7	#_M	1	99	
12.2.8	Comp_perElig	3	\$bch00_amt3	
12.2.9	Comp_Cond	4	{(nDepChildrenInTu>2)   {IsNtoMchild#2}} & {dag>=11} & {dag<=16} & {IsDepChild}	Increase for child aged 11-16 (not granted for the first child if only 2 dependent children in the TU)
12.2.10	Comp_perElig			Note: phase out for 15/16 year olds not simulated
12.2.11	Comp_Cond			Increase for child aged over 16/14 (not granted for the first child if only 2 dependent children in the TU); Note: lower age limit for older children changed from 16 to 14 in 2011
12.2.12	#_N	2	2	
12.2.13	#_M	2	99	
12.2.14	Comp_perElig	5	\$bch00_amt5	
12.2.15	Output_Var		bch00_s	
12.2.16	TAX_UNIT		tu_bch_fr	

sum of all values for  
 all conditions that are  
 fulfilled



# Function *BenCalc* (2)

- **comp\_cond** = func\_Elig | elig\_cond
- **comp\_perTU** or **comp\_perElig** = func\_ArithOp | formula
  - **comp\_perTU** amount is added once
  - **comp\_perElig** amount is added once per individual fulfilling the condition is added.
- either perTU OR perElig in one component
- can set upper and lower limits for each component
  - **comp\_lowlim**
  - **comp\_uplim**



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# Function *SchedCalc* (1)

- Tax schedule used (mainly) for progressive taxes
  - Tax bands: **Band\_UpLim** / **Band\_LowLim**  
e.g. a low limit of £1000 means that only monthly income above £1,000 is taxed
  - Tax rate: **Band\_Rate**  
e.g. income above £1,000 are taxed at a rate of 20%
  - Tax amount: **Band\_Amount**  
e.g. on income above £1,000 a tax of £200 has to be paid
  - Tax base : **Base**  
e.g. incomes from employment are taxed
- Other parameters – **quotient** for joint taxation and **simple\_prog**






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## Function *SchedCalc* (2)

Countries		Display	Country Tools	Administration Tools	Add-Ons	Applications	Help & Info
 Run EUROMOD  Czech Republic loaded							
Policy	Grp/No	cz_2005	cz_2006	Comment			
12.22	SchedCalc	on	on	Tax schedule (progressive rates), individual taxation before 2008			
12.22.1	Base	tintb_s	tintb_s	taxable income			
12.22.2	Band_Rate	1	0.15	rate 1			
12.22.3	Band_UpLim	1	109200#y	limit 1			
12.22.4	Band_Rate	2	0.2	rate 2			
12.22.5	Band_UpLim	2	218400#y	limit 2			
12.22.6	Band_Rate	3	0.25	rate 3			
12.22.7	Band_UpLim	3	331200#y	limit 3			
12.22.8	Band_Rate	4	0.32	rate 4			
12.22.9	output_var	tingtit_s	tingtit_s	gross in taxation			
12.22.1	TAX_UNIT	tu_individual_cz	tu_individual_cz	tu: individual			

# Other policy functions

- **Allocate** – reallocates amounts between members of assessment units (subject to conditions)
- **Min**
- **Max**



# Questions?



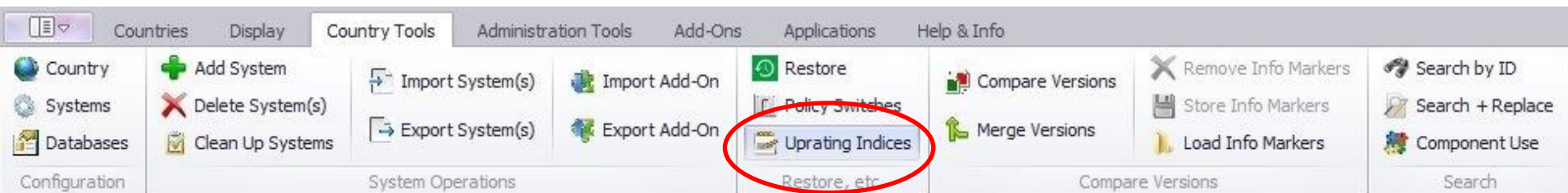
# Content

- Parameter values
- Policy functions: BenCalc and SchedCalc
- **System functions: Uprate, SetDefault, DefConst, DefVar, DefOutput**
- Special functions



# Uprating indices

- Used to uprate monetary variables to price level of policy year
  - E.g. to bring income data from 2010 up to the price level of 2014 policy year
- Based on raw data
  - E.g. a time series of average wages
- EUROMOD calculates the uprating factors
  - E.g. the growth in average wage between 2010 and 2014



Raw Indices Factors per Data and System

	Index	Reference	2001	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	Comment
1	Harmonized consumer price index, annual average (2007=100)	\$HICP	71.0887531	92.9368	100	112	114.8	118.2	122.3	125.2	125.7	123.7	125.91	National Statistical Institute ( <a href="http://www.nsi.bg/sites/default/files/2016-03/2016_Budget_procedure_(Info_-_Ministry_of_Finance)_2016.pdf">http://www.nsi.bg/sites/default/files/2016-03/2016_Budget_procedure_(Info_-_Ministry_of_Finance)_2016.pdf</a> ) For 2015 the HCPI is based on the forecasts to be used for the purpose of the 2016 Budget procedure (Info - Ministry of Finance - 2015)
2	Consumer price index (2007=100)	\$f_cpi	71.22767363	92.2488	100	112.35	114.44	118.26	123.25	126.89	128.02	126.2	126.65	National Statistical Institute ( <a href="http://www.nsi.bg/sites/default/files/2016-03/2016_Budget_procedure_(Info_-_Ministry_of_Finance)_2016.pdf">http://www.nsi.bg/sites/default/files/2016-03/2016_Budget_procedure_(Info_-_Ministry_of_Finance)_2016.pdf</a> ) For 2015 the HCPI is based on the forecasts to be used for the purpose of the 2016 Budget procedure (Info - Ministry of Finance - 2015)
3	Average salary (national level, BGN per month)	\$f_yem	240	360.0	430.60	544.80	609.10	648.10	685.80	731.10	775.10	827.67	842.56	National Statistical Institute - 2007 ( <a href="http://www.nsi.bg/sites/default/files/2016-03/2016_Budget_procedure_(Info_-_Ministry_of_Finance)_2016.pdf">http://www.nsi.bg/sites/default/files/2016-03/2016_Budget_procedure_(Info_-_Ministry_of_Finance)_2016.pdf</a> ) National Statistical Institute - 2014 ( <a href="http://www.nsi.bg/en/content/64">http://www.nsi.bg/en/content/64</a> ) For 2015 the average salary is based on the forecasts to be used for the purpose of the 2016 Budget procedure (Info - Ministry of Finance - 2015)
4	Average pension per a retiree (BGN, per month)	\$f_pen_av	92	152.08	171.62	201.7	244.46	263.44	266.63	271.21	293.96	310.00	319.99	National Social Security Institute - 2007 ( <a href="http://www.nsi.bg/images/bg/ab">http://www.nsi.bg/images/bg/ab</a> ) National Social Security Institute - 2014 ( <a href="http://www.nsi.bg/images/bg/ab">http://www.nsi.bg/images/bg/ab</a> ) Data for 2015 is based on the Law for the Social Security - 2015
5	Average price of bread (BGN, per day)	\$f_aprct	12.74	12.74	12.74	12.74	20.25	21.64	24.10	21.53	22.00	23.94	22.74	National Social Security Institute - 2007 ( <a href="http://www.nsi.bg/images/bg/ab">http://www.nsi.bg/images/bg/ab</a> ) National Social Security Institute - 2014 ( <a href="http://www.nsi.bg/images/bg/ab">http://www.nsi.bg/images/bg/ab</a> ) Data for 2015 is based on the Law for the Social Security - 2015
6	Average for bread small per day								10.61	10.48	12.08	15.00		Data for 2015 is based on the Law for the Social Security - 2015
7	GDP (BGN, mln. Current prices) (for 2014 we used growth estimates for first three quarters of the year)	\$f_gdp	31250	52470	62358.28	71289.36	70562.05	71903.67	78433.55	80044.37	80281.54	82164.06	82406.00	National Statistical Institute - 2007 ( <a href="http://www.nsi.bg/sites/default/files/2016-03/2016_Budget_procedure_(Info_-_Ministry_of_Finance)_2016.pdf">http://www.nsi.bg/sites/default/files/2016-03/2016_Budget_procedure_(Info_-_Ministry_of_Finance)_2016.pdf</a> ) Ministry of Finance - 2015 ( <a href="http://www.mirfin.bg/document/">http://www.mirfin.bg/document/</a> )

policy years

the index

the name of the index

the time series

source of information

2016

Add Year

Delete Year

Check Usage

Save & Close

Cancel



Uprating Indices

Raw Indices Factors per Data and System

Dataset: BG\_2012\_b3 Income Year: 2011 Update

Index	2008	BG_2009	BG_2010	BG_2011	BG_2012	BG_2013	BG_2014	BG_2015
\$HICP	58	0.9387	0.9665	1	1.0237	1.0278	1.0114	1.0295
\$f_cpi	0.8114	0.9116	0.9366	0.9595	1	1.0295	1.0239	1.0276
\$f_yem	0.6279	0.7944	0.8882	0.945	1	1.0661	1.2069	1.2286
\$f_pav	0.6437	0.7837	0.9169	0.988	1	1.017	1.2001	
\$f_br_pct	0.5286	0.6668	0.8402	0.8979	1	0.8934	0.9334	0.9436
\$f_br_pct	0.7615	0.9076	1.0075	1.0179	1	0.9877	1.1385	1.4411
\$f_br_pct	0.795	0.9089	0.8996	0.9167	1	1.0205	1.0236	1.0476
\$f_sicee_base	0.6702	0.8425	0.9337	0	0.0919	1.1501	1.1708	
\$f_sicse_base	0.5368	0.5934	0.6402	0	0.043	1.0759	1.0931	
\$f_bhl	0.5565	0.6696	0.9002	0	0.0659	1.1947	1.1205	
\$f_pen_ind	0.5757	0.6966	0.9174	1	0.093	1.093	1.1225	
\$f_one	1	1	1	1		1	1	

input data

policy years

the name of the index

the calculated uprating factors with respect to 2011 income data

Check Usage Save & Close Cancel

# Upating Indices

Raw Indices Factors per Data and System

Dataset BG\_2008\_a5

Income Year 2007

Update

Index	BG_2007	BG_2008	BG_2009	BG_2010	BG_2011	BG_2012	BG_2013	BG_2014	BG_2015
\$HICP	1	1.12	1.148	1.182	1.223	1.252	1.257	1.237	1.2591
Sf_cpi	1	1.1235	1.1544	1.1826	1.2325	1.2689	1.2802	1.262	1.2665
Sf_yem	1	1.2652	1.4145	1.5051	1.5927	1.6979	1.8	1.9221	1.9567
Sf_pen_av	1	1.2176	1.4244	1.535	1.5536	1.5803	1.7129	1.8063	1.8645
Sf_bmaprct	1	1.2614	1.5895	1.6986	1.8917	1.69	1.7268	1.8791	1.7849
Sf_bmaycct	1	1.1918	1.323	1.3366	1.3131	1.297	1.495	1.8923	2.0037
Sf_gdp	1	1.1432	1.1316	1.1531	1.2578	1.2836	1.2874	1.3176	1.3215
Sf_bun	1	1.1658	1.1872	1.5854	2.1258	2.1221	2.1994	2.2038	2.2276
Sf_yempv	1	1.1232	1.412	1.565	1.6089	1.676	1.7435	1.83	1.9276
Sf_ypr	1	1.0132	0.7763	0.9079	0.8026	1.2632	1.6316	1.2237	1.2257
Sf_sicee_b			0.933	1.4324	1.4922	1.5523	1.6293	1.7162	1.7471
Sf_sicse_b			1.925	1.7949	1.8627	1.8636	1.9428	2.0041	2.0362
Sf_bhl			1.6175	1.7783	1.7968	1.8348	1.9152	2.1466	2.0133
Sf_pen_ind			1.5936	1.737	1.737	1.737	1.8985	1.8985	1.9498
Sf_one				1	1	1	1	1	1

the calculated  
uprating factors  
with respect to  
**2007** income data

Check Usage

Save & Close

Cancel



# Function *Uprate*

<div> <div>Countries</div> <div>Display</div> <div>Country Tools</div> <div>Administration Tools</div> <div>Add-Ons</div> <div>Applications</div> <div>Help &amp; Info</div> </div>							
<div> <div>Country</div> <div>Systems</div> <div>Databases</div> </div>		<div> <div>Add System</div> <div>Delete System(s)</div> <div>Clean Up Systems</div> </div>		<div> <div>Import System(s)</div> <div>Export System(s)</div> </div>		<div> <div>Import Add-On</div> <div>Export Add-On</div> </div>	
Configuration		System Operations		Restore, etc.		Compare Versions	
				<div> <div>Restore</div> <div>Policy Switches</div> <div>Uprating Indices</div> </div>		<div> <div>Compare Versions</div> <div>Merge Versions</div> </div>	
						<div> <div>Remove Info Markers</div> <div>Store Info Markers</div> <div>Load Info Markers</div> </div>	
						<div> <div>Search by ID</div> <div>Search + Replace</div> <div>Component Use</div> </div>	
	Policy	Grp/No	BG_2012	BG_2013	BG_2014	BG_2015	Comment
3	Uprate_bg		on	on	on	on	DEF: UPRATING
3.1	Uprate		on	on	on	on	
3.1.1	dataset		BG_20??_??	BG_20??_??	BG_20??_??	BG_20??_??	
3.1.2	yemtx		\$f_yem	\$f_yem	\$f_yem	\$f_yem	
3.1.3	yemnr		\$f_yem	\$f_yem	\$f_yem	\$f_yem	
3.1.4	AggVar Name	1	yem	yem	yem	yem	
3.1.5	AggVar Part	1	yemtx	yemtx	yemtx	yemtx	
3.1.6	AggVar Part	1	yemnr	yemnr	yemnr	yemnr	
3.1.7	AggVar Tol...	1	1	1	1	1	
3.1.8	ysetx		\$f_yem	\$f_yem	\$f_yem	\$f_yem	
3.1.9	ysenr		\$f_yem	\$f_yem	\$f_yem	\$f_yem	
3.1.10	AggVar Name	2	yse	yse	yse	yse	
3.1.11	AggVar Part	2	ysetx	ysetx	ysetx	ysetx	
3.1.12							
3.1.13						ysenr	
3.1.14						1	
3.1.15						\$f_yem	
3.1.16						\$f_cpi	
3.1.17						\$f_ypr	
3.1.18	yly		\$f_gdp	\$f_gdp	\$f_gdp	\$f_gdp	
3.1.19	yprrt		\$f_ypr	\$f_ypr	\$f_ypr	\$f_ypr	
3.1.20	yempv		\$f_yempv	\$f_yempv	\$f_yempv	\$f_yempv	
3.1.21	yivwg		\$f_yem	\$f_yem	\$f_yem	\$f_yem	
3.1.22	yprld		\$f_ypr	\$f_ypr	\$f_ypr	\$f_ypr	
3.1.23	yem01		\$f_yem	\$f_yem	\$f_yem	\$f_yem	
3.1.24	yem02		\$f_yem	\$f_yem	\$f_yem	\$f_yem	
3.1.25	ysebs		\$f_yem	\$f_yem	\$f_yem	\$f_yem	
3.1.26	xmp		\$f_yem	\$f_yem	\$f_yem	\$f_yem	
3.1.27	tsctber		\$f_sicee_base	\$f_sicee_base	\$f_sicee_base	\$f_sicee_base	
3.1.28	tsctbse		\$f_sicse_base	\$f_sicse_base	\$f_sicse_base	\$f_sicse_base	
3.1.29	yds		\$f_one	\$f_one	\$f_one	\$f_one	
3.1.30	bfaot		\$f_cpi	\$f_cpi	\$f_cpi	\$f_cpi	
3.1.31	bchprls		\$f_cpi	\$f_cpi	\$f_cpi	\$f_cpi	
3.1.32	bchbals		\$f_cpi	\$f_cpi	\$f_cpi	\$f_cpi	

name of income variable to be uprated

the name of the index

the input data set (any BG data set)

# Updating factors

- More than one updating factor could be used to update an income variable
  - E.g. updating factor by region or sector
- If no information is available, then a proxy should be used e.g. growth in prices (CPI)



## Function *SetDefault*

- Sets alternative *values* for a variable if the dataset variable is missing

The screenshot shows the EUROMOD software interface for France. The main table lists variables and their default values. Annotations highlight the 'training\_data' variable and its default value '1'.

Policy	Grp/No	FR_2006	FR_2007	FR_2008	Comment
1 - SetDefault_fr		on	on	on	DEF: Define defaults
1.1 - SetDefault		on	on	on	Training data & hypo data defaults
1.1.1 - Dataset		training_data	training_data	training_data	
1.1.2 - Dataset		hypodata_fr	hypodata_fr	hypodata_fr	
1.1.3 - bunct_s		bun	bun	bun	
1.1.4 - pdi00		pdi	pdi	pdi	
1.1.5 - yemmy		12	12	12	
1.1.6 - bunmt_s		0	0	0	
1.1.7 - yemmy		12	12	12	
1.1.8 - bsuwd_s		bsuwd	bsuwd	bsuwd	
1.1.9 - yem00		yem	yem	yem	
1.1.10 - poa		poa	poa	poa	
1.1.11 - 1		1	1	1	
1.2				on	
1.3				on	Defaults for LMA/RR
1.4		on	on	on	
1.5 - DefConst		on	on	on	Switches
1.6 - ArithOp		on	on	on	
1.7 - ArithOp		on	on	on	
2 - uaa_fr		switch	switch	switch	DEF: Switch between uprating by indexation rules and averages

# Function *DefConst*

- To set up constants name them always starting with a \$

	Policy	Grp/No	BG_2012	BG_2013	Comment
4	ConstDef_bg		on	on	<b>DEF: CONSTANTS</b>
4.1	DefConst		on	on	
4.1.1	\$Minwage		290#m	310#m	minimum wage level
4.1.2	\$SIC_MaxBaseEE		2000#m	2200#m	upper threshold applied on earnings in the calculation of SIC
4.1.3	\$SIC_MinBaseSE		420#m	420#m	lower threshold applied on self-employment income in the calculation of SIC
4.1.4	\$SIC_MaxBaseSE				upper threshold applied on self-employment income in the calculation of SIC
4.1.5	\$GMI				guaranteed minimum income level
4.1.6	\$ImputedWage		0	0	Constant as a switch between yempv and yivwg - if the value is 0, yempv is used; if the value is 1, then yivwg is used for previous monthly gross earnings.
4.2	DefConst		on	on	Parameters used in the UB policy - defined as constants
4.3	DefConst		on	on	Parameters used in the UB policy for eligibility: define constants
5	IIDef_bg		on	on	<b>DEF: INCOME CONCEPTS</b>
6	TUDef_bg		on	on	<b>DEF: ASSESSMENT UNITS</b>

**name of constant**

**constant value across policy years**



# Function *DefVar*

- To set intermediate (temporary) variables not included in VarConfig.xml

Policy		Grp/No	DE_2010	Comment
27	<b>bunnc_de</b>		on	<b>BEN: unemployment benefits II and social benefits (ALG II und Sozialgeld)</b>
27.1	DefConst		on	
27.2	DefVar		on	Defining temporary variables for maximum rent paid
27.2.1	temp_maxrent	1	0	
27.2.2	var_maxrent	1	yes	
	Calc		on	Maximum Rent Paid for in the Context of the Benefit
	comp_cond	1		
	comp_perTU	1		actual rent, capped at a maximum for a single person hh + average heating costs (SOEP)
	comp_cond	2	{nPersinUnit=2}	
27.3.4	comp_perTU	2	xhcr + \$heat_hh2	actual rent, capped at a maximum for a two person hh + average heating costs (SOEP)
27.3.5	comp_cond	3	{nPersinUnit=3}	
27.3.6	comp_perTU	3	xhcr + \$heat_hh3	actual rent, capped at a maximum for a three person hh + average heating costs (SOEP)
27.3.7	comp_cond	4	{nPersinUnit=4}	
27.3.8	comp_perTU	4	xhcr + \$heat_hh4	actual rent, capped at a maximum for a four person hh + average heating costs (SOEP)
27.3.9	comp_cond	5	{nPersinUnit>=5}	
27.3.10	comp_perTU	5	xhcr + \$heat_hh5	actual rent, capped at a maximum for a five person hh + average heating costs (SOEP)
27.3.11	output_var		temp_maxrent	
27.3.12	TAX_UNIT		tu_family2_de	it will also be applied in bsaoa_de and bsa00_de



## Function *DefOutput*

- Determines the content of the output file, TAX\_UNIT: level of aggregation

The screenshot shows the Simpleland software interface. At the top, there is a menu bar with options: Display, Country Tools, Administration Tools, Add-Ons, Applications, and Help & Info. Below the menu is a row of flags representing different countries. The main window displays a table with the following columns: Policy, Grp/No, SL\_demo, and Comment. The table lists various policies, including 'bsa\_sl', 'output\_std\_sl', and 'DefOutput'. A blue arrow points to the 'name of output file' column, and another blue arrow points to the 'separate variables to be included in output data...' column.

Policy	Grp/No	SL_demo	Comment
9	bsa_sl	on	BEN: Social Assistance
10	output_std_sl	on	DEF: STANDARD OUTPUT INDIVIDUAL LEVEL
10.1	DefOutput	on	
10.1.1	file	sl_demo_std	
10.1.2	var	idhh	
10.1.3	var	idpen	+ unique
10.1.4	var	idpartner	habiting
10.1.5	var	idmother	otherwise 0
10.1.6	var	idfather	ID of father if in household otherwise 0
10.1.7	var	dwt	Household Weight
10.1.8	var	dct	demographic : country
10.1.9	var	dag	Age
10.1.10	var		
10.1.11	var		
10.1.12	var		
10.1.13	var		
10.1.14	defil	ils_dispy	standard disposable income
10.1.15	il	ils_dispy	standard disposable income
10.1.16	il	ils_origy	original income
10.1.17	il	ils_ben	All benefits
10.1.18	il	ils_bensim	simulated benefits
10.1.19	il	ils_tax	taxes
10.1.20	il	ils_taxsim	simulated taxes
10.1.21	il	ils_sicce	employee social insurance contributions
10.1.22	il	ils_sicer	employer social insurance contributions
10.1.23	il	ils_sicse	self-employed social insurance contributions
10.1.24	il	ils_pen	Pensions
10.1.25	il	ils_benmt	Means-tested benefits
10.1.26	il	ils_bennt	Non means-tested benefits
10.1.27	nDecimals	2	
10.1.28	TAX_UNIT	tu_individual_sl	
11	output_std_hh_sl	off	DEF: STANDARD OUTPUT HOUSEHOLD LEVEL

The screenshot shows the ERMES software interface. At the top, the 'Country Tools' menu is open, and 'Germany' is selected. The main window displays a tree view of the 'output\_std\_de' policy. The 'DefOutput' node is expanded, showing a list of variables and groups. A blue arrow points to the 'file' variable under 'DefOutput'. Another blue arrow points to the 'unitinfo\_id' variable under the 'unitinfo\_tu' group. Two text boxes provide context: '... or entire variables groups' and 'The output data is at the individual level (the same as the input data)'.

Policy	Grp/No	DE_2010	Comment
31		on	DEF: STANDARD OUTPUT INDIVIDUAL LEVEL
31.1		on	
31.1.1		DE_2010_std	
31.1.2		id*	
31.1.3		d*	
31.1.4		l*	
31.1.5		a*	
31.1.6			
31.1.7			
31.1.8			
31.1.9			
31.1.10		tsc*	
31.1.11		ti*	
31.1.12		ta*	
31.1.13		tp*	
31.1.14		x*	
31.1.15		tx*	
31.1.16		ils_*	
31.1.17		il_*	
31.1.18		2	
31.1.19		tu_individual_de	
31.1.20			
31.1.21			
31.1.22			
31.1.23			
31.1.24			
31.1.25			
31.1.26	1	IsPartner	
31.1.27	2	HeadID	
31.1.28	2	IsPartner	
31.1.29	3	HeadID	
31.1.30	3	IsPartner	
31.1.31	4	HeadID	
31.1.32	4	IsPartner	

# Questions?



# Content

- Parameter values
- Policy functions: BenCalc and SchedCalc
- System functions: Uprate, SetDefault, DefConst, DefVar, DefOutput
- **Special functions**





# Special functions (advanced)

- **Loop** and **UnitLoop** (repeat part (or all) of the tax-benefit calculations)
- **Store** and **Restore** (set a variable to the initial (or other previous) value)
- **ChangeParam** (modify parameters during the model run)
- **Totals** (calculates aggregates over groups of persons/households)
- **DropUnit** and **KeepUnit** (drops certain persons/households from the calculations)
- **ILVarOp** (performs operations on variables that are part of an income list)
- **RandSeed** (generates random numbers)
- **CallProgramme** (calls another programme, e.g., Stata)



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# Questions?



# Exercise – reforming the health tax in Denmark

## Description of existing system:

- Health tax of 8%
- Applied on 'taxable income'
- General Personal Allowance available
- Unused allowance transferred between spouses

## THE EXERCISE

- Modify 2014 system
- Make the unused allowance non-transferable →

hint: switch 'off' relevant functions

- include additional 15% marginal tax rate for income > 100000 per year



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