

AGMEMOD Hands-on Training

Myrna van Leeuwen, Foppe Bouma, Roel Jongeneel, Ana Rosa Gonzalez-Martinez (WecR), Petra Salamon, Max Zirngibl (TI), Mariia Bogonos (JRC)

The Hague, 27-29 August 2019



Country models

- Myrna van Leeuwen -

Need to be updated





From Data handling to output analysis: Equations



The basic framework



Commodities in AGMEMOD

- soft wheat, durum wheat, barley, maize, rye, oats, rice, other grains
- rapeseed, sunflower seed, soybeans, vegetable oils and meals hereof
- raw milk, butter, whole and skimmed milk powder, cheese, drinking milk, cream, other fresh products, other dairy products
- live animals (cattle, pigs, sheep and goats)
- meat (beef and veal, pork, chicken, other poultry, sheep and goat meat)



not all commodities are covered in all countries

- potatoes
- sugar beets and sugar
- bioethanol from cereals and biodiesel from rapeseeds
- oranges, tomatoes, processed tomatoes, apples and wine
- olives and olive oil
- Under development: teff, casava, beans
 - > 70% of EU agricultural production has been modelled



AGMEMOD country scope

- Austria
- Belgium-Luxembourg
- Bulgaria
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Hungary
- Ireland
- Italy
- Latvia
- Lithuania



- Netherlands
- Poland
- Portugal
- Romania
- Slovenia
- Slovak Republic
- Spain
- Sweden
- United Kingdom
- Croatia
- Turkey
- Russia
- Ukraine
 - Macedonia
- Kenya, Ethiopia, Uganda
- Brazil

some markets in China Mari-food projections

6



AGMEMOD

AGMEMOD country scope

- Austria
- Belgium-Luxembourg
- Bulgaria
- Czech Republic
- Denmark
- Estonia
- Finland
- France
- Germany
- Greece
- Hungary
- Ireland
- Italy
- Latvia
- Lithuania

Concerning the regional scope: countries can be separated into different regions in accordance with the requirements of the analysis

- Netherlands
- Poland
- Portugal
- Romania
- Slovenia
- Slovak Republic
- Spain
- Sweden
- United Kingdom
- Croatia
- Turkey
- Russia
- Ukraine
- Macedonia
- Kenya, Ethiopia, Uganda
- Brazil
- some markets in China Marifood projections



AGMEMOD for EU member states

Under

construction

Model equation files (xls)

Need to be updated





Model in Excel

CC_ModelEquations.xls file:

- database sheet with EQ, IDEN and FX type of functions for all variables from database sheet in CC_Datagmemod.xlsx
- *derived_crop* sheet with EQ, IDEN and FX type of functions for all variables in *derived_crop* sheet of CC_Datagmemod.xlsx
- *derived_livestock* sheet with EQ, IDEN and FX type of functions for all variables in *derived_livestock* sheet of CC_Datagmemod.xlsx





E.g. *basedata* in DE-ModelEquations_baseline.xlsm

A	E	в с	DE	F	G	Н		
1 Database varial	bles and cor	responding tv	pe of equat	tion in	AGMEM	IOD GE	RMAN mod	el
2		responding (j	pooroquu		A OME M		initian initia	
2 Tupo of equations:	ii.							
1 1) EO (ctand	le for Equatio	n: fill in colum	n H)> octi	matod/c	alibrat	od ogu	ation must	he inserted in column I
5 2) EX (stand	for Fixed va	riable: fill in c	(H H) = 3	fixed a	austion	eu equa	no automat	ically made by Agmemod2Game tool
6 3) IDEN (stand	for Identity:	fill in column	H => the de	finition	of the i	dentity	must be in	serted in column 1 (the LHS must be equal to the equation
7 4) SUM REG (stand	Is for Sum of	the regions fi	ll in column b	H) ==> s	ummati		ations will	be automatically made by Agmemod2Gams tool
8	-	*	*	¥ ¥	l	ion equ	adons win	be unternational made by Agmentoazounis toor
9 LAND	DIME	SION MNEMONIC			REGION	TYPE	SPECIFICA	TION
10 AREA Regional								
11 Arabie land	1,000	na Alanade_i	OV ALARA AL	АПА	DE_DV	FX		
12 Arable land	1,000	ALAHADE_I	RG ALAHA AL	AHA	DE_RG	EQ	ALAHADE_	RG=9082.87-8.133064*(TREND70+\$40.727*L90
13								
14 AREA								
15 Land area - Total		Columns	۸_ H •		ne.	IDEN	UAAHA	Column I:
16 Wooded area		Columns	A-11.			FX		
17 Usable agricultu	FIXED p	ositions fo	or descrij	ption		IDEN	Al	Position for specification of
18 Other area		and mnem	onics			FX		model equations
19 Permanent grass lanc	· ·		lonies			FX		model equations
20 Kitchen gardens	150000		Contraction in the	АпА	-	FX		
21 Arable land	1,000	ha ALANADE	ALAHA AL	AHA	_	SUM_R	EG	
22 Land under permanent c	rops 1,000	ha PMAHADE	PMAHA PM	AHA	-	FX		
23 Fodder from arable land	1,000	ha GSA	GSAHA GS	AHA		FX		
24 Vegetable area	1,000	ha	En .	AHA		FX		
25	10	Colun	nn C:					
20 AREA (derived)		mner	nonic				_	
21		milei	nome		-			
20 Arable land other than fo	odder 1,000	ha AGAHADE	AGAHA AG	AHA		IDEN	CRAHA + \	HAHA





Ranges in CC-ModelEquations file

This is managed in Agmemod2Gams.ini

Options Mecmonic Information Data Extensions Exit	
Open Countries File Open GamsCode ModelHeader File Backup Current Model SetFiles Clean up Scenario/DataVariant	Under FILE tab: select On on Ini File
Exit	Open Int Fue
Process a List of Countries	
Processing Options	Progress of Processing Status
 Re-Estimate all Equations in Eviews Add AdjustmentTerm to EQ 	
n Check Used ModelData	
Processing Actions	
Start Processing	
ResetProces	

for EU member states

Adjust ranges in Layout sheet

Fill in here the ranges of ET-ModelEquations.xlsm





Equations in user interface

rite Processes ocenarios inp	ubata Modelsources Results Documents Presentations Help		
	Agmemod2Gams Tool and EQUATION Files	Agmemod2Gams Program	
	Baseline		
	Embrapa 🕨	A I Model Equations	
	AGMEMOD Gams Model and Analyzing Tools	BE Model Equations	
	Baseline >	BG Model Equations	
	Embrapa 🕨	BR Model Equations	
		CN Model Equations	
	for EU	CZ Model Equations	
	11 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	DE Model Equations	
		DK Model Equations	
		EE Model Equations	
		ES Model Equations	
		FI Model Equations	
A	GMEMOD is a dynamic, multi-product, partial equilib	FR Model Equations	mber States,
Cr	roatia, Macedonia, Turkey, Russia and Ukraine.	GR Model Equations	
		HR Model Equations	had been and had a feature of the
A	GMEMOD generates baseline projections up to the 2	HU Model Equations	ne impacts or
pc	nicy changes.	IE Model Equations	
		IT Model Equations	
~	ACMEMOD Data anthin (August 2012)	KZ Model Equations	



Model in GAMS [show]

Agmemod2Gams tool:

- transfers equations from CC_ModelEquations.xlsm (and CC-Eviews.wf1) into GAMS code
- applies consistency tests on data use and data availability (own and foreign! data)
- applies consistency tests on use of mnemonics
 - one-to-one relation between number of variables in CC-Datagmemod.xlsx and the CC_ModelEquations.xlsm files
- Equations_CC.gms file:
 - contains uniform GAMS code across countries
 - harmonized time index





Estimation and calibration (Eviews, R)





Estimation and calibration

TO BE PREPARED





View CC model GAMS code (in Gtree)





Questions so far?







Agmemod2Gams and checking models

- Mariia Bogonos -Mariia, adjust/extend according to own convenience





From Data handling to output analysis: model solving



Agmemod2Gams and transferring Excel code into GAMS code







TO BE PREPARED





Running and solving the model





TO BE PREPARED





Output options; result files (gdx, xls)

– Max Zirngibl –





From Data handling to output analysis: Results



Output options I

- Tables:
 - Excel files
 - GDX files
- Maps:
 - GIS files





Output options II

- 2 options to generate output:
 - Country dependent results
 - Excel files
 - GDX files
 - Scenario dependet results among all countries
 - Excel files
 - GDX files



Scenario dependent output is most useful and used option





Result output options: overview

- 4 tools for creating the output:
 - AGMEMOD GDX Output tables
 - Output tables **by country** (1)
 - Commodity output tables **all scenarios** combined (2)
 - Using the Data Explorer Tool
 - AGMEMOD Gams analyzing tools
 - Output combining **all scenarios**
 - **Two** Excel **tools**:
 - TI graph tool (3)
 - TI GDX2Excel tool (4)





"Country tables (GDX)" (1):

- GDX output using the Data Explorer Tool
- Excel theoretically also possible



for EU member state

- "Country tables (GDX)" (1):
 - CC_Output: all results for the desired country of the last model run
 - CC_PartialOutput: Results of a country for a chosen subset of products

Data Explore	X File: C:\Users\zirngibl\Documents\AGMEMOD_Training\AGMEMOD-JRC-Outlook-D5-Aug2018\MODEL\Scenarios\Baseline_GdxOutput\IT_Output.Gdx	
© Wietse Dol, November 2014, version 5.37 email: LEI.Software@wur.nl	Select elements Multidimensional Select data Options Reset Swap HTML output Save as Graph GJS Print Calculate Choose parameter to view/edit:	<u>P</u> arameter <u>C</u> lose
	Display type:	Show short names
	→ P IT_Output [33,836] → P IT_PartialOutput [2,288] → P IT_Pharm [1,136] → P IT_SFP [572]	





"Country tables (GDX)" (1):

Advantages:

All desired results for specific country available very quick

Disadvantage:

- No comparison between scenarios possible
- Only results of one scenario





- "Commodity output tables all scenarios combined (GDX)"
 (2):
 - GDX output using the Data Explorer Tool

	Tables and Maps	>	
	Country results (Excel : of last run)	>	
	IPTS - Commodity Balance tables (ENGAGE 2015) Baseline	, NI	Agri-food projections
	Country tables (Gdx) Baseline		GMEMOD
	OutPut Tables for all Scenarios combined (Gdx/Gamside)	> Output for all Scenario	[: 21.08.2018 10:02:20]
	Fish Model Output	> Gdx To Excel output of	Balances,etc (DataExplorer) [: 21.08.2018 10:02:42]
	Checking of Differencies	Gdx To Excel output of	Balances, etc (GamsIDE) [: 21.08.2018 10:02:42]
AC	Error Checking Baseline	n model for the EU,	Steps in the AUI:
AGrm	EMOD generates basenne projections up to the zi	uod time horizon and sin	Results
© AC	SMEMOD Partnership (Jan 2018)		OutPut Tables for all Scenarios combine
			(Gdx/Gamside):
			Output for all Scenarios



supren

- "Commodity output tables all scenarios combined (GDX)" (2):
 - AllScen_Output: Results of all countries, scenarios, products activities and years
 - AllScen_PartialOutput: Results like above for a chosen subset of products

Data Ex		Internets\AGMEMOD_Trainin	g\AGMEMOD-JRC-0	Outlook-D:	5-Aug2018\MODEI	\Prog\POS	TPROCESSIN	4G_GISGDX	,All <mark>Scenario</mark> Out	put.gdx	
WAGENIN	Select elements <u>M</u> ultidim	ensional Select <u>d</u> ata	Options Reset	S <u>w</u> ap	HTML <u>o</u> utput	Save as	<u>G</u> raph	GIS Pri	nt Calc <u>u</u> late	<u>P</u> arameter	<u>C</u> lose
© Wietse Dol, November 2014, version 5.37 em	Choose parameter to vie	w/edit:								Show	short names
	Display type:								~	Select	t elements
	P AllScen_Output [1, P AllScen_Output [1, P AllScen_OutputLasi P AllScen_PartialOutput P AllScen_Pharm [33, P AllScen_SFP [10,99]	223,324] Year [27,829] ut [177,589] 142] 8]									



"Commodity output tables all scenarios combined (GDX)"
 (2):

Advantages:

- The export of data is fast, flexible and extensive data presentation options by Data Explorer
- Additional possibility to analyze single balances for products (e.g. demand, supply)

Disadvantages:

- Depending on the needs the option AllScen_PartialOutput is very time consuming to adjust
- For new users the Data Explorer Tool may be confusing at the beginning










Result output options: overview

- 4 tools for creating the output:
 - AGMEMOD GDX Output tables
 - Output tables **by country** (1)
 - Commodity output tables **all scenarios** combined (2)
 - Using the Data Explorer Tool
 - AGMEMOD Gams analyzing tools
 - Output combining **all scenarios**
 - **Two** Excel **tools**:
 - TI graph tool (3)
 - TI GDX2Excel tool (4)





- "TI graph tool" (3):
 - Excel output via Excel interface
 - Scenario dependent
 - Puts out the data of a scenario run
 - Compares baseline results with scenario results
 - Excel software linked to GDX output files

















	A	B C	D	E	F	G	H	1	1	J	K	L	M
1			country	France		goto	\XX	Graph		Version.	16/08/2017		
2 3	\leq	Read GDX	model	C:\Users\zirno	gibl\Documents\	AGMEMOD_	Fraining	AGME	MOD-JRC-OL	Scenario	Baseline		
4 5 6		GOTO Oilseeds tab	GOTO G	rains tab	6. GOTO F	Root tab	G	OT <mark>O</mark> Liv	vestock tab	GOTO D	Dairy tab	GOT <mark>O Fruit</mark> s	s tab
7 8		Rapeseed	Soft v	vheat	4. Potat	oes		Cattle		Whole	milk	Apples	
9		Rape oil	Corn		Sugar	beet	Ε	Ster	os in the	Excel to	ool:		
11		Rape meal	I∕ Rye		Sugar	Ī	Г	3	Select th	ne sheet			
13		Soybean	I Barle	Y.			Г	4.	Select vo	our desi	red produ	ucts for	
14 15		Soybean oil	Durur	n			Г		output				
16 17		Soybean meal	Oats				Г	5.	Read in t	the GDX	(numbers	s (model	
18 19		Sunflower	Othe	r grains		50	Г		output)	into Exc	el format	("Read	
20		Sunflower oil	Tritica	ale		(A)	Г		GDX")			`	
22		 Sunflower meal 	Teff		15	- A Bar O	Е		, After a v	vhile a '	'Report is	done"	
23		BIOFUEL area	Crop	s area	1		Г		window	pops u	ว		
4 4		Chart4 / Chart3 / Chart2	Chart1 / Chart	5 / Chart5 / Ch	art7 REPORT	SETTINGS	3	6.	Go to th	e respe	ctive tab	where	
									your res	ults app	bear ("GO [·]	ТО ххх	

tab")











"TI graph tool" (3):

Advantages:

- Easy to use interface
- Quick graphic output

Disadvantages:

- When many products are chosen, it takes a lot of time and memory to read in all GDX files into Excel
- Set of products and activities predetermined





- "TI GDX2Excel Tool" (4):
 - Excel output via Excel interface
 - Scenario dependent
 - Puts out the data of a scenario run
 - Compares baseline results with scenario results
 - Excel software linked to GDX output files





























1	С	D	E		F	G	H	H	1	J	K	L
1	Basedata				NL	Baseli	ine					
2	2				R							
3 4 5	1. Enter the mnemonics for the products, activities, countries and years you want to import from the			Here the desired country code occurs automatically, depending which country						ccurs country		
6	, c)X file and see aft	er the To	ol has		you	una	veci		Sell		
7 8 9	be	en run.		51 1105		1						
10						1.			K	Т		
11						Р	ļ	A	С	1990	1991	1992
12				WSPFNN	Ļ	WS	PFN		NL			
13												
14							2. I	lf yo	u v	wish to loa	ad the dat	a of the
15							ł	base	elin	e and a so	cenario ru	n as
16								well	lii	nk the cel	ls in the	
17								ween,	,	tive cheet		codata
18							ſ	resp	ec	live sneet	to the bas	sedata
19		2					9	shee	et.			
20		2.										
4	Data =	Signal GDX-basedata GD	X-baseline 🖉 (GDX-scenar	io ables => /	Baselin	ne / So	cenario	• /	Abs. DIFF_sc	enario-baseline	Rel. DIFF
Bereit												







suprema



1	C	D	E	F	G	H	4	J	K	L	M	N	0	P	Q	R	S	T	U	V
	Soft wheat																			
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	201
	Market price (LCU/tonne)																			
	Self-sufficiency rate																			
	cross-check balance																			
	cross-check use										It	ther	e are	ditte	rence	s he	twee	n		
	38											unci	curc	unic	Circo		L VV C CI			
																		1		
											S	cena	rio an	d bas	seiine	e. the	v can) be		
	Rapeseeds															-,	/			
		2000	2001	2002	2003	2004	2005	2006	2007	2008	20	oon i	n +h a	chad			1			20
	Area (1000 ha)										<u> </u>	eni	n the	snee	ls AD	S./Re	I.			
	Yield (t/ha)																			
	Production (1000 t)											IFF o	cona	rio_ha	acolir		th no	citivo		
	Domestic use (1000 t)	-28.7%	-24.8%	7.3%	12.3%	4.2%	4.5%	11.3%	5.2%	3.6%			SCEIIa		136111		in po	SILIVE	.8%	
	Food use (1000 t)	-45.5%	-35.9%																.6%	
	Feed use (1000 t)										a	nd ne	pgativ	e cha	nges					
	Seed use (1000 t)	536.1%	594.4%	594.4%	1049.4%	852.4%	852.4%	369.5%	164.6%	237.4%	u		San	C Chia	inges				1%	51
	Losses (1000 t)	-25.0%	-25.0%				-25.0%		-25.0%	-20.0%	L									
	Processing use (1000 t)	-29.3%	-25.1%	7.3%	12.5%	4_1%	6.0%	11.9%	6.4%	4.0%	4.9%	2.9%	4.4%	-4.1%	-9.3%	15.6%	20.0%	31.3%	-1.7%	
	Imports (1000 t)													-47.0%	11.1%	52.3%	257.1%	4.7%	23.0%	-1
	Exports (1000 t)																			-4
	Net exports (1000 t)													-49.0%	11.8%	57.3%	310.1%	5.1%	24.3%	
	Stock change (1000 t)	-77.2%	-79.1%	-77.3%	-79.7%	-61.7%	80.1%	92.8%	2.5%	-77.1%	-100.0%	-96.5%	231.5%	-4.8%	166.5%	248.1%	183.8%	199.5%	210.5%	19
	Market price (LCU/tonne)	13.2%	-2.2%	-17.2%	-15.8%	9.4%	0.3%	-9.1%	-35.3%	16.3%	-0.9%	-26.7%	-6.8%	-4.0%	23.5%	50.5%	14.7%	9.2%	9.3%	
	Self-sufficiency rate										10.081									
	cross-check balance																			
	cross-check use																			
	Sunflower seeds																			
		2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	201
	Area (1000 ha)																			
	Yield (t/ha)																			
	Production (1000 t)																			
	Domestic use (1000 t)	0.1%	0.0%	-0.1%	0.0%	0.0%	0.0%	0.0%	0.0%	-0.1%	0.0%	-0.1%	-0.1%	19.8%	26.9%	20.1%	24 1%	9.8%	-0.6%	
	Food use (1000 t)	12.8%	23.2%											19.0%	29.4%	21.7%	26.5%	9.8%	-1.8%	-
	Feed use (1000 t)													35.1%	11.1%	11.1%	11.1%	11.1%	11.1%	
	Seed use (1000 t)						200.0%	500.0%	200.0%					88.7%	147.2%	109.8%	122.9%	108.6%	127.0%	
	Losses (1000 t)													-28.2%	10.3%	-3.1%	-4.1%	3.8%	-5.7%	
	Processing use (1000 t)																			
G	DX-basedata 🧹 GDX-baseline	GDX-scenari	o 🖉 Tables =>	📈 Baseline 📈	Scenario / A	Abs. DIFF_scena	irio-baseline	Rel. DIFF_sce	nario-baseline	Graphs =>	🖉 Soft wheat	Barley Ma	ize 🧹 Rapeseeds	RapeseedMeal	Oil Sunflowe	er 🧹 Sunflowerf	1eal_Oil 🖉 Soya	beans 🖉 🖣 🗌)
									340									100	% 🖂 👘	0

















There already exist a lot of output tables which are available and adjustable under:

$...\MODEL\XX_GRAPH\GDX2Excel_Output$

Name	Änderungsdatum	Тур	Größe
AGMEMOD-DE-FARMIS_results.xlsx	18.09.2017 14:54	Microsoft Excel-Arbe	809 KB
GDX2EXCEL_results.xlsx	21.08.2019 17:30	Microsoft Excel-Arbe	1,819 KB
GDX2EXCEL_results_16feb18.xlsx	29.01.2018 15:10	Microsoft Excel-Arbe	673 KB
GDX2EXCEL_results_counries.xlsx	17.10.2016 14:35	Microsoft Excel-Arbe	787 KB
GDX2EXCEL_results_crops.xlsx	21.08.2019 17:31	Microsoft Excel-Arbe	1,434 KB
GDX2EXCEL_results_crops_Africa.xlsx	07.04.2017 11:50	Microsoft Excel-Arbe	1,413 KB
GDX2EXCEL_results_crops_MH.xlsx	14.03.2017 16:06	Microsoft Excel-Arbe	1,590 KB
GDX2EXCEL_results_crops_v1.xlsx	07.04.2017 11:50	Microsoft Excel-Arbe	1,523 KB
GDX2EXCEL_results_crops_v2.xlsx	07.11.2017 17:18	Microsoft Excel-Arbe	1,492 KB
GDX2EXCEL_results_crops_x.xlsx	17.08.2017 13:15	Microsoft Excel-Arbe	1,880 KB
GDX2EXCEL_results_dairy.xlsx	07.08.2017 18:43	Microsoft Excel-Arbe	1,579 KB
GDX2EXCEL_results_empty.xlsx	21.08.2019 17:32	Microsoft Excel-Arbe	682 KB
GDX2EXCEL_results_empty_graphPrep.xlsx	09.11.2017 17:15	Microsoft Excel-Arbe	795 KB
GDX2EXCEL_results_EU_Balance_sweetener.xlsx	16.02.2018 08:41	Microsoft Excel-Arbe	1,345 KB
GDX2EXCEL_results_EU_COM.xlsx	21.04.2017 13:24	Microsoft Excel-Arbe	1,043 KB





 To create your own output file use the file "GDX2Excel_results_empty"

Name	Änderungsdatum	Тур	Größe	
AGMEMOD-DE-FARMIS_results.xlsx	18.09.2017 14:54	Microsoft Excel-Arbe	809 KB	
GDX2EXCEL_results.xlsx	21.08.2019 17:30	Microsoft Excel-Arbe	1,819 KB	
GDX2EXCEL_results_16feb18.xlsx	29.01.2018 15:10	Microsoft Excel-Arbe	673 KB	
GDX2EXCEL_results_counries.xlsx	17.10.2016 14:35	Microsoft Excel-Arbe	787 KB	
GDX2EXCEL_results_crops.xlsx	21.08.2019 17:31	Microsoft Excel-Arbe	1,434 KB	
GDX2EXCEL_results_crops_Africa.xlsx	07.04.2017 11:50	Microsoft Excel-Arbe	1,413 KB	
GDX2EXCEL_results_crops_MH.xlsx	14.03.2017 16:06	Microsoft Excel-Arbe	1,590 KB	
GDX2EXCEL_results_crops_v1.xlsx	07.04.2017 11:50	Microsoft Excel-Arbe	1,523 KB	
GDX2EXCEL_results_crops_v2.xlsx	07.11.2017 17:18	Microsoft Excel-Arbe	1,492 KB	
GDX2EXCEL_results_crops_x.xlsx	17.08.2017 13:15	Microsoft Excel-Arbe	1,880 KB	
GDX2EXCEL results dairy xlsx	07.08.2017 18:43	Microsoft Excel-Arbe	1,579 KB	
GDX2EXCEL_results_empty.xlsx	21.08.2019 17:32	Microsoft Excel-Arbe	682 KB	
GDX2EXCEL_results_empty_graphPrep.xlsx	09.11.2017 17:15	Microsoft Excel-Arbe	795 KB	
GDX2EXCEL_results_EU_Balance_sweetener.xlsx	16.02.2018 08:41	Microsoft Excel-Arbe	1,345 KB	
GDX2EXCEL_results_EU_COM.xlsx	21.04.2017 13:24	Microsoft Excel-Arbe	1,043 KB	





• To choose which country and which table you want to automatically open after running the tool:

odei (Code version 8.45 24 Jan 2018) on: C:(\Deerstzingioi\Documents/Adminimol_raining/Admini/Do-RC-Outdook-D5-Augz Scenarios InputData ModelSources Results Documents Presentations Help Exit	off8/MODEL for: Model Builder – D .
- Scenarios to Run ✓ Basters	Scenario Information Sheet: Baseline
	Aim of Scenario
Add Scenario	BASELINE SCENARIO (2017 Outbook) - CAP 2016-2020 reform - OECD world prices (version July 2017) - Updated and modified policy approach for DE only
Show Scenario StatusInfo	Providing a 2030 Baseline Outlook for: - the EU27 as a whole - individual EU member states - candidate countries Turkey and Macedonia - other European countries (Russia, Ukraine)
	Projections for main agricultural commodities up to 2030
	Scenario decisions and assumptions
	EU28 member states
In the interface go to:	Policy assumptions: - CAP 2016:201 - Dohn Round on EU border protection
1. Scenarios	Macroeconomic assumptions: - world projections to 2010 (updated in 2015) - national macroeconomic projections up to 2030 (updated in 2016)
2. Select a scenario	Biofuel directive: -5% blending directive in 2030
	Additional Scenario description
 Edit Scenario Run Settings Define Excel/XXGraph Output for 	AGMEMOD 8.0: - including Russian. Ukrainian and Rest of the World models - including Regional option structure
Countries	
	[Options for Agmemod Scenario:]
	Scenario Edit Options for: Baseline - define OatViewent / Time Options define OatViewent / Time Options define Only Run Once Options define Conly Run Once Options
	Show Scenario 7 (Editable Data for Agmemod Scenario) (Editable Data for Agmemod Scenario)
	- edit Assumptions Data - edit Policy Harmonization Data - edit County TimeSets Data





NON EU Countries

BA Bosnia

BR Brazil

CN China

ET Ethiopia

GH Ghana

IS Iceland

KE Kenya

KZ Kazakhstan

MK Macedonia

RW Rest of the World

NO Norway

RD Rwanda

TA Tanzania

TR Turkey

UA Ukraine

UE EU total

UG Uganda

US United States

WW Whole World

XX ExternAbstrCountry

RU Russia

BY Belarus

CG CIS Countries

EA East Africa total

🗊 AGMEMOD Scenario Options: Define Excel Output for Countries for scenario: Baseline

EU Countries AT Austria BE Belgium BG Bulgaria CY Cyprus CZ Czech R. DE Germany DK Denmark EE Estonia ES Spain FI Finland FR France GR Greece HR Croatia HU Hungary IE Ireland IT Italy LT Lithuania LV Latvia MT Malta ✓ NL Netherlands PL Poland PT Portugal RO Romania SE Sweden SI Slovenia

 Select a country Tick on: Skip StandardXIsCountryOutput Make XXGraph Output

© Foppe Bouma FOP-IS-IT Version 3.38 Jan 2018







EU A B B C C C D D D E E F G G H H H I I I I I I N N P P R S S S S S S V U	Countries T Austria E Belgium G Bulgaria Y Cyprus Z Czech R. E Germany K Denmark E Estonia S Spain I Finland R France R Greece R Croatia U Hungary I Ireland Italy I Lithuania / Latvia T Malta L Netherlands Poland F Portugal O Romania E Sweden I Slovenia K Slovak R. K United Kingdom	NON EU Countries BA Bosnia BR Brazil BY Belarus CG CIS Countries CN China EA East Africa total ET Ethiopia GH Ghana IS Iceland KE Kenya KZ Kazakhstan MK Macedonia NO Norway RD Rwanda RU Russia RW Rest of the World TA Tanzania TR Turkey UA Ukraine UE EU total UG Uganda US United States WW Whole World XX ExternAbstrCountry	 Additional output possibilities in Excel / XXGraph Print Excel Options GdxToExcel Options MakeFile_For_Crops MakeFile_For_Sweetener MakeFile_For_Meat MakeFile_For_Dairy MakeFile_For_Empty 1. In the tab "GdxToExcel Options" tick your desired output tables you want to get. 2. Apply with the button "close".
uprema			Agri-food proj



"TI GDX2Excel Tool" (4):

Advantages:

- Easy to use and personalize
- Detailed graphic output
- High information content

Disadvantages:

 You always need to re-run the tool to get new results if you add new products in the output tables -> time consuming









- In the end it is **up to you** which tool you use
- Depending on your needs you can also combine the tools





Updating model equations and GAMS code





Equations in GAMS

Equations can be estimated in AGMEMOD with R

- Data updates
- Equation improvements
- Estimation with graph display
- Equation transfer into excel

Improvement of equations:

- Look into other countries to get "inspired"
- Think of the economic relationship of the desired product





Equations in GAMS

- Agmemod2Gams tool:
 - transfers equations from CC_ModelEquations.xlsm (and CC-Eviews.wf1) into GAMS code
 - applies consistency tests on data use and data availability
 - applies consistency tests on use of mnemonics
 - one-to-one relation between number of variables in CC-Datagmemod.xlsx and the CC_ModelEquations.xlsm files
- Equations_CC.gms file:
 - contains uniform GAMS code across countries
 - harmonized time index





Equations in GAMS

- To adjust equations in the model, it is not necessary for you to adjust the equations in the GAMS code
- Re-estimation in R with the AGMEMOD2GAMS program is sufficient
 - AGMEMOD2GAMS program writes them into GAMS code





The A2G tool and R







The A2G tool and R

In the A2G tool go to:

- 1. ModelEquations
- 2. Estimate Equation in R to open the estimation dialog in R

ile <u>1 Options</u>	ModelEquations Data Extensions Exit					
Processing Act	Open ModelEquations xIsm File					
2. <	Estimate Equation in R					
Choose Co	TextVersion of Equations	TextVersion of Equations				
l l	Compare TextVersion of Equations with					
1	StatusInfo File					
	List of Warnings/Errors File Extreme prediction values for Equations					
Proc						
☐ Proc	SummaryFile of Multiple Countries Processed					
	Open Special EquationList to Overrule					
Processin	Open CountryList of Special Equations to Overrule					





R data update

Agmemod2Gams : From Excel Equation definitions to Gams Code Generator	Current scenario: Baseline	Current datavariant: Base	Current Model: MODEL	- 0 X
<u>File Options</u> <u>ModelEquations</u> <u>Data</u> Extensions <u>Exit</u>				
Processing Actions Estimate in R				
Equation to Estimate				
Equation Estimated				
- Faulting Characteristics		1	1 1	
Country Sheet Line	Equation Summary Data Input Graph	Data Estimated Generated R Code	R_MainCode	
BE				
Choose Variable Equation Type				
BeninYear EndYear	mormation	~		
	R-Data to estimate equations h	as to be updated		
	Would you like to perform data	a update now ?		
Select EQTypes Only	Yes <u>N</u> o			
Of the Exception Lines		In the	A2G tool	
		in the		
Estimate Equation Estimate Equation by Hand		In case	e you updated a	any data in
		the da	tahasa shaat F	2 acks you
Put Equation in Equation File		the up	itabase sheet, i	t dsks you
		for an	update to read	in new dat
Save All Files of Estimation		autom	atically	
		autom	latically	

Agmemod2Gams Version 4.65 © Foppe Bouma, FOP-IS-IT, Jan 201





R data update

 However, you can also force R to update itself with the new data of the database

In the A2G tool go to:

- 1. Options
- 2. Tick on *Force Update Data for R*
- After opening R again, a window pops up and data will be updated

Proc	essing Actions Options
	Run Ontions
	Run options
	Show Batch Processes
	🗖 Ignore EQi Equations
	File Locking Options
	Lock Set GmsFiles
	Lock Model GmsFiles
	Other Options
	✓ Enable Estimate In R
<	Force Update Data for R
	Enable Delete Baseline (temporary)
	Enable Special Processinto

1.5

1 1. 11.

dia

Agmemod2Gams Version 4.65 @ Foppe Bouma, FOP-IS-IT, Jan 2018





Re-estimation and adjustment of equations

Agmemod2Gams : From Excel Equation definitions to Gams Code Generator	Current scenario: Baseline Curren	nt datavariant: Base Current Mode
<u>File Options ModelEquations Data Extensions Exit</u> Processing Actions Estimate in R		
Equation to Estimate Equation Estimated (current) WSUDCBE=-1301.39306821275*D7306-48.7872988594616*(WSPFNBE/GB	DPDBE)+0.723303223102584*(BVSPRBE+POSPRBE+F	PKSPRBE)+317.625617281149*POPBE
2. Equation Characteristics Country Sheet Line BE database 88 1. Choose Variable Equation Type WSUDCBE Image: Comparison of the system of the s	Equation Sum In the A2G tool go 1. Search for the variable to re-entryping in the million of excel sheet is of 3.	to: desired estimate by nemonic currently in the displayed quationLine"





Re-estimation and adjustment of equations

Agmemod2Gams : From Excel Equation definitions to Gams Code Generator	Current scenario: Baseline Current datavariant: Base Current M
<u>File Options ModelEquations Data Extensions Exit</u>	
Processing Actions Estimate in R	
1. WSUDCBE=(WSPFNBE/GDPD2010BE)+(BVSPRBE+POSPRBE+PKSPRBE	E)+POPBE
Equation Estimated (current)	
WSUDCBE=-1301.39306821275*D7306-48.7872988594616*(WSPFNBE/0	DPDBE)+0.723303223102584*(BVSPRBE+POSPRBE+PKSPRBE)+317.625617281149*POPBE
Equation Characteristics	Equation Summary Data Input Graph Data Estimated Generated R Code R_MainCode
Country Sheet Line BE database 88	In the A2G tool go to:
Choose Variable Equation Type	1. Adjust the equation in the way you
WSUDCBE EQ_HFX	think
2 Lange EndYear	2. Adjust the starting and ending year
2015	of the equation calculation –
Select EQTypes Only	crucial step!!
1	3 Hit Estimate Equation
Clean EquationLine	
	For eqution specifications further
3. Estimate Equation by Hand	reading of manuals is recommended
	Agri-tood projections
suprema	AGMEMOD
	for EU member states

Equation update: estimation

- When your estimation is done always take a look at:
 - Equation summary tab

Iransformed veriable terms for estimation:	
eq.ieim_i=(WSFINDE/GDEDDE)	
eq.ieim_2-(bySrdetroSrdetriSrde)	
# ======Estimation 1 ===================================	
# original estimation line: WSUDCBE=(WSPFNBE/GDPDBE)+(BVSPRBE+POSPRBE+PKSPRBE)+POPBE	
# estimation period: 1990 - 2015	
eq.Term_1=(WSPFNBE/GDPDBE)	
eq.Term_2=(BVSPRBE+POSPRBE+PKSPRBE)	
<pre>lm(formula = WSUDCBE ~ eq.Term_1 + eq.Term_2 + POPBE, data = d)</pre>	
Paridualar	
KESIQUAIS:	
-451 61 -105 26 44 36 169 09 403 68	
Coefficients:	
Estimate Std. Error t value Pr(> t)	
(Intercept) -1.837e+04 1.342e+03 -13.684 3.07e-12 ***	
eq.Term_1 -3.443e+01 2.216e+01 -1.553 0.135	
eq.Term_2 7.513e-01 6.138e-01 1.224 0.234	
POPBE 1.961e+03 1.691e+02 11.600 7.60e-11 ***	
Signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1	
Residual standard error: 248 on 22 degrees of freedom	
Residual standard citor. 240 on 22 degrees of freedom	





Equation update: estimation

- When your estimation is done always take a look at:
 - Equation summary tab
 - Data Input tab -> avoid zeros here

	Averau.	POPBE	GDPDBE	BVSPRBE	PKSPRBE	POSPRBE	WSUDCBE	WSPFNBE	eq.Term_1
14	2003	10.419032	1.43	286.1	1040.98	430.284328	3029.456	14.454481	10.1080285
5	2004	10.480117	1.45	291.63	1043.44	473.254207	3451.768	11.166477	7.70101862
6	2005	10.546896	1.476073	277.09	1023.75	454.009019	3232.278	11.51945	7.80411944
7	2006	10.619567	1.513208	278.25	1016.05	484.668998	3237.834	15.030631	9.93295766
8	2007	10.697835	1.548563	282.07	1073.2	454.067527	3492.3501	24.054797	15.5336250
9	2008	10.779173	1.578379	277.11	1066.12	336.598696	3984.922287	15.306248	9.69744782
0	2009	10.86029	1.596341	264.11	1091.85	361.316111	4349.106789	12.792145	8.01341630
H	2010	10.93874	1.628842	272.88	1133.66	404.428889	4192.297147	23.186593	14.2350166
2	2011	11.01308	1.664999	281.3	1118.11	402.85125	4319.621211	21.534496	12.9336389
3	2012	11.083553	1.712232	270.87	1120.32	410.32	4521.346508	26.78	15.6404038
14	2013	11.151515	1.73129	257.97	1141.77	388.19	4156.444838	20.25	11.6954806
5	2014	11.219163	1.737191	256.25	1130.55	433.37	4190.361504	18.57	10.6896708
6	2015	11.287943	1.74702	277.07	1136.89	453.027222	4508.149299	16.95	9.70795984
7	2016	11.35838	1 701405	207.303	1074.30	404 007200	4404 475727	17.56	9.85694518
2	2017	11.429335	1.817849	291.186341	1057.59	463.497222	0	0	0
29	2018	11,498518	1.84872	0	0	0	0	0	0




Equation update: estimation

- When your estimation is done always take a look at:
 - Equation summary tab
 - Data Input tab -> avoid zeros here
 - Graph tab







Equation update: estimation

- When your estimation is done always take a look at:
 - Equation summary tab
 - Data Input tab -> avoid zeros here
 - Graph tab







Equation update: estir

- When you are done with estimating:
 - Put the re-estimated equation to the CC_ModelEquations_scenario.xlsm excel file:

1. by hand

2. **by the A2G** tool (don't keep the old equation file when youre asked)

ile <u>Options</u> <u>M</u> o	delEquations D	ata Extensions	<u>E</u> xit	
Processing Actions	Estimate in R			
Equation to E	Estimate			
WSUDCBE=	WSPFNBE/GD	PDBE)+(BVSPRE	BE+POSPRBE+PK	SPRBE)-
Equation Es	timated (new)			
WSUDCBE=	-18369. <mark>4</mark> 82494	8665-34.429096	7675953*(WSPFN	BE/GDP
Equation Characte	ristics			
Country	Sheet		Line	_
BE	databas	e	88	
Choose Va	riable	Equation Typ	e	
WSUDCBE	-	EQ_HFX		
BeginYear		EndYear		
1990		2015		
		-		
I✓ Select E	QTypes Only	I Has Inter	cept	
Clean F	quationLine			
	quanonento			
Estimat	e Equation	Estima	te Equation by Han	Ы
$\boldsymbol{\zeta}$	Put Equ	ation in Equation	n File	
				1
	Save A	II Files of Estimat	tion	
	Save A	II Files of Estimat	tion	

Agmemod2Gams Version 4.65 © Foppe Bouma, FOP-IS-IT, Jan 2018





Processing of new equation file

rocessing Actions Schema of Equation Information in p	e-GAMScode List of Warnings Found Generated GAMSCode Estimate in R		
Choose Countries/Country to Process			
Process all Countries of Current Scenario Process Options list of Countries			
Processing Options	Progress of Processing Status		
Add AdjustmentTerm to EQ	PROCESSING of equations for BE for scenario Baseline at : 23.08.2019 12:23:52 AuxilianyVariables loading done Model Schema to Estimate loading done Processing Equations to EquationSchema to transform to GAMS done Processing Equations to EquationSchema to transform to GAMS done Equations to Analyze file written: Done !! Processing EquationSchema to GAMS code	rd 317]	^
Processing Actions	- ReArranged Equations from LHS to RHS >> Total : 0 of which failed: 0	Automatic GAN Generatio	AS cod m
Start Processing	CONGRATULATIONS !! NO ERRORS FOUND IN MODEL OF: BE >> ONLY 475 WARNINGS FOUND	(by tool)	
Reset Proces	Generated Gms+iles written to AGMEMOU GamsModel: SetOf_iVMAC_Act.gms of which set 6 elements are used in ModelEquations Set_Tuples_it/POLType.gms only used to read new initial values for parameters from Excel SetOf_iVPOLType_ProdAct.gms of which set 10 elements are used in ModelEquations		
	4. SetOf_iVPOL_ProdAct.gms of which set 10 elements are used in ModelEquations 5. Set_Tuples_itVPOLC.gms only used to read new initial values for parameters from Excel 6. SetOf_iVPOL_C_ProdAct.gms of which set 10 elements are used in ModelEquations		¥

Agmemod2Gams Version 4.65 @ Foppe Bouma, FOP-IS-IT, Jan 2018





Processing of new equation file

- No GAMS coding necessary -> A2G tool
- In the end always again run the model and check for improvements!!





Questions so far?









AGMEMOD – Hands-on exercises; special topics - Wrap up of training -Follow up

Petra Salamon, Max Zirngibl (TI) The Hague, 27-29 August 2019



Organisieren 🔹 🥞 Öffnen 🛛 In Biblioth	ek aufnehmen 🔻 Freigeben für 💌 N	leuer Ordner	
🚖 Favoriten	Name	Änderungsdatum	Тур
E Desktop	🐌 GamsTools	5/2/2017 4:39 PM	Dateiordn
🗼 Downloads	🐌 GAMSwin32	5/2/2017 4:38 PM	Dateiordn
lange Street Str	🐌 MODEL	5/2/2017 4:39 PM	Dateiordn
📃 Desktop			
🞇 Bibliotheken			
lider 😂			
la Dokumente			
🕹 Musik			
Jhuenen_Cloud			
Judeos			
🚴 Petra Salamon			
💐 Computer			
😂 OS (C:)			
🥪 Daten (D:)			
🙀 Netfile (\\Nas_disa_1) (H:)			
🙀 INSTITUT (Q:)			
🙀 BWMALR (S:)			

AGMEMOD folder structure



Seite 81Petra SalamonMay 8, 2017SummerSchool 2017



MODEL folder structure



Seite 82Petra SalamonMay 8, 2017SummerSchool 2017





AgmemodGamsCodeGenerator folder structure



Seite 84Petra SalamonMay 8, 2017SummerSchool 2017



Scenario and Submodel folder structures



Seite 85Petra SalamonMay 8, 2017SummerSchool 2017



Useful Basic Toolkit I

- AGMEMOD Graphical User Interface (GUI)
 - Management of input (data, equations, scenarios, output)
 - Easy to apply changes
- Agmemod2Gams tool
 - Migration of model equations into Gams
 - Checks

Seite 86Petra SalamonMay 8, 2017SummerSchool 2017



Technical set-up



Motivation Toolkit - Partnership's perspective

From Partnership's perspective:

- improving *efficiency*: less errors save time and budget:
 - updating of data and model is time consuming (*database* → *estimation* → *GAMS* → *analyse results*); it easily leads to 'errors' (e.g. between data, GAMS code, modelling)
- improving *traceability* of results and analysing options:
 - lists with warnings (potential errors), errors
 - output depicted in tables, graphs, maps
- improving *transferability* to new/changing teams
- improving *flexibility* in respect with adjusting models, add new commodities, add new countries



Motivation Toolkit - Client's perspective

From client's perspective:

- improving *transparency* of the framework
- keeping maintenance process under control
 - data updating
 - modelling updating in response to country market knowledge
- better guarantee of *reproducibility* of study results



AGMEMOD graphical user interface

- interface with menu options (GsePro software)
- captures the process from data base building, scenarios defining and model running to output analysis
- to support the model builder, scenario analyst and customer

we will use in exercises

Seite 90Petra SalamonMay 8, 2017SummerSchool 2017



AGMEMOD_African_Version ben für 🔻 Neuer Ordner A Name gmszlib1.dll gonzalez_DataExplorer.INI gonzalez_GIS.INI gpipe.AgMemod_Info.ini gpipe.exe

Seite 91Petra SalamonMay 8, 2017SummerSchool 2017









Seite 93 May 8, 2017 **Petra Salamon** SummerSchool 2017









Seite 95Petra SalamonMay 8, 2017SummerSchool 2017



Details of AGMEMOD Graphical User Interface

Menu driven user interface with the following items: [show]

- [Processes]:
- [Scenarios]: Defi
- [InputData]:
- [ModelSources]:
- [Results]:
- [Documents]:
- [Presentations]:

Read data and model, run scenarios, write output

- Defining scenario narratives
 - Inspecting/changing data inputs
- ources]: Source GAMS code, other code
- Scenario outcomes (maps, graphs)
 - Storage of relevant documents
 - **s**]: Storage of relevant presentations



AGMEMOD-MODEL Directory and File Structure



From Data handling to output analysis: Data



Four key MS-Excel data files

CC-Datagmemod_[datavariant].xlsx:

• country (CC) files with commodity balance variables (*data* variant dependent)

CountryTimeSet_[Scen].xlsm:

- info on time periods by CC (*scenario dependent*)
 AssumptionsInput_[Scen].xlsm:
- exogenous variables (*scenario dependent*)
 PolicyHarmon_[Scen].xlsm:
 - exogenous policy variables (*scenario dependent*)



Country based endogenous data

CC-Datagmemod.xlsx file:

- *CC*-sheets with observed historical data on commodity balances, domestic prices, including a *CC*-sheet with Country data
- based on agreed mnemonics convention
- V2-parameter type (endogenous)

Update of national data is partners' responsibility

Seite 100Petra SalamonMay 8, 2017SummerSchool 2017



GUI: endogenous country data





RD_Datagmemod_base



Exogenous data

AssumptionsInput.xlsm file:

- One file per scenario
- Data observed 1973 to 2014/2015/2016 (fix across scenarios)
- Projected data 2014/2015/2016 2025 (scenario dependent)



Exogenous data

AssumptionsInput.xlsm file:

- *world* sheet: world market prices (FAPRI, 2010) up to 2025
 VWP-parameter type (exogenous)
- *macro* sheet: macroeconomic variables (national sources) up to 2025, inclusive e.g. Rwanda data:

VMAC-parameter type (exogenous)

- *EU-policy* sheet: EU specific policy measures (EC) up to 2025: **VPOL**-parameter type (exogenous)
- *CC-policy* sheet: country specific policy measures (national sources) to 2025, inclusive e.g. **Rwanda** policy instruments:

VPOLC-parameter type (exogenous)



GUI: exogenous data





E.g. *macro data* in AssumptionsInput_ baseline.xlsm

A	B C	D	E F	G	AX
7 Source: Glo	bal Insight, 15.09.2	2015			
8					2015
261 exchange rate (old	or KSHS/ 1 USD	EXREKE	EXRE		
262 Real GDP per cap.	At 2001 Constant Price	RGDPCKE	RGP	Col	lumns H
263 KSHS	KSHS/USA Dollar	EXRDKE	E	Position	s for dataseries
264 VMAC:	Тантана	MNEMONIC			
265 Popular		ATPCA	POP		Here: Fill in macr
266 R	Columns A-G:	TA	RGDPP		dataseries for
267 C FIXED F	positions for descript	tion	GP-	TA	1.
268 exc.	and mnemonics	AIL		TA	
269 Real GDP per		RGDPCTA	RGDPC	Τ.	273.0752012
270 BIRR	B. A Dollar	EXRDTA	EXPO	TA	0.047385766
271 VMAC:	UGANDA	MNEMONIC			2015
272 Population	Millions	POPUG	POP	UG	39.113
273 Real GDP (At 1995	5 Pr Mill. UGshs2011	RGDPDUG	RGDPD	UG	30125782.77
274 GDP deflator	80=1	GDPDUG	GDPD	UG	214.6968392
275 Uganda Shillings	UGSh/dollar	EXRDUG	EXRD	UG	2504.563078
276 exchange rate (old	or UG Sh/ 1 eur	EXREUG	EXRE	UG	
	Column D	:			
Seite 106	Petra 🥄 mnemoni	C			

Aug 9th, 2016

Petra **mnemonic** AGMEMOD Summer School 2016



From Data handling to output analysis: Equations



AGMEMOD-MODEL Directory and File Structure


GUI: Equations

[Code Version 8.32 19/01/2017]		on: C:\0b_AGMEMOD\AGMEMOD_Afri		
utData	ModelSources Results Documents	Presentations Help Exi	t	
	Baseline	Allow mesitor.	Agmemod2Gam	
	AGMEMOD Gams Model and Ar Baseline	alyzing Tools for:	DE Model Equat GH Model Equat	
	Additional Tools	•	KE Model Equat	



RD_ModelEquations_Baseline

А	В	С	D	E	F	G	Н	
Database equation	is of	Rwanda				RD		
LAND	DIMENSION	MNEMONIC				REGION/C	ou TYPE	SPECIFICA
0000.050700								
CROP SECTOR								
GRAINS AND OILSEEDS	DIMENSION	MNEMONIC						
PRICES								
Soft wheat price	€/100kg	WSPFNRD	WSPFN	WS	PFN	RD	EQ	WSPFNRD
Sorghum price	€/100kg	SGPFNRD	SGPFN	SG	PFN	RD	EQ	SGPFNRD
Maize price	€/100kg	COPFNRD	COPFN	CO	PFN	RD	EQ	COPFNRD
Rice price	€/100kg	REPFNRD	REPFN	RE	PFN	RD	EQ	REPFNRD
Soya price	€/100kg	SBPFNRD	SBPFN	SB	PEN	RD	EQ	SBPFNRD
beans price	RwFr/100kg	BEPFNRD	BEPFN	BE	PFN	RD	EQ	BEPFNRD
SUPPLY AND USE								
	1							
Soft wheat area harvested	1,000 ha	WSAHARD	WSAHA	WS	AHA	RD	EQ	WSAHARD
Soft wheat vield	tonne/ha	WSYHARD	WSYHA	WS	YHA	RD	EQ HEX	WSYHARD
Soft wheat production	1,000 tonne	WSSPRRD	WSSPR	WS	SPR	RD	EQ_HFX	WSSPRRD

Seite 110Petra SalamonMay 8, 2017SummerSchool 2017



From Data handling to output analysis: Agmemod2Gams



Agmemod2GamsCode Generator

Agmemod2Gams tool

- integrated in AGMEMOD user tool (Delphi software)
- to support the model builder with data and model equations checking, GAMS model building
- to avoid use of 'difficulty' applicable software (GAMS)
- focus on the use of 'easily' applicable software (Excel)

we will use in exercises



GUI: Equations

[Code Version 8.32 19/01/2017]		on: C:\0b_AGMEMO	D\AGMEMOD_Afric
utData	ModelSources Results Documents	Presentations Help Exit	t
	Agmemod2Gams Tool and EQUA Baseline	TION Files for ,	Agmemod2Gam
	AGMEMOD Gams Model and Ana Baseline	lyzing Tools for:	DE Model Equat GH Model Equat
	Additional Tools	,	KE Model Equati RD Model Equat



GUI: Agmemod2Gams Code Generator -> RD

T Agmemod2Gams : From Excel Equation definitions to Gams Code Generator	Current scenario: Baseline	Current datavariant: Base	Current Model: N
File Options ModelEquations Data Extensions Exit			
Processing Actions			
Choose Countries/Country to Process	No EviewFiles available to Process fo	or RD	
 Process all Countries of Current Scenario Process Options list of Countries 			
Processing Options	Progress of Processing Status		
Re-Estimate all Equations in Eviews			
☐ Add AdjustmentTerm to EQ			
☐ Check Used ModelData			
Processing Actions			

GUI: Agmemod2Gams Code Generator -> RD



Details of Agmemod2Gams tool [show]

Model builders maintain Excel spreadsheets with assignments on data and equations used in own country model

Based on these spreadsheets (and – if available – Eviews files), the Agmemod2Gams tool

- checks the use of data, mnemonics, specification (with warnings and errors)
- for Eviews users: re-estimates all equations
- automatically generates GAMS codes that fit within the AGMEMOD framework

Mnemonics can be easily changed or added



From Data handling to output analysis: Gams



GUI: Gams code







GUI: Gams code





GUI: Gams code

Gtree: C:\0b_AGMEMOD\AGMEMOD-V7.36_Exercises\MODEL_Rwanda\Prog\Agmemod.gms

<u>File Actions Options G</u>AMS R <u>Programs Templates Close WLOG TortoiseSVN Help</u>

Priles Barneferences	A 🖓 🖄 🕒 🖸 🖓 🖓 🖓 🖉 A 🤅
168] Settings.gms	@CountryListAllCountryModels.gms
184] Agmemod Manager ReadData.gms	1 *
[185] Agmemod Manager RunModel.gms	2 * File · Equations RD ams
- [146] GDXversion V7	3 * Author · Fonne Bouma (FOP-Is-Itdysdall pl)
- [147] GAMSversion 24.2 =	A * Marcian : 1.0
∏ [163] Settings RunModel.gms	
164] SetDefinitions RunModel.gms	5 - Date : 8/5/2010 11:52:45 AM
165] ParameterDefinitions.gms	6 * Created by: Agmemod2Gams Version 3.61b
[166] VariableDefinitions.gms	/ * Remarks :
∏ [167] ReadExogenousData_RunModeLams	8 Şontext
[170] MainModel ams	9 * This Gams model file has automatically been c
[19] Countryl istAllCountryModels ams	10
The [16] Equations AT gms	11 *! BE AWARE that hand made adjustments will be
[17] Equations BE ams	12 *! program will be rerun !!
[18] Equations_BC gms	13
[19] Equations BR gms	14 *! Correct procedure: implement adjustments in vo
[20] Equations BY ams	15 *! and/or in CC-ModelEquations file.
[21] Equations_CG ams	16 *! Accordingly, these adjustments will be impleme
[22] Equations_CO.gms	17 *! in your GAMS model by applying Agmemod
E[23] Equations_C7 gms	19 Cofftext
[24] Equations_DE.gms	
[25] Equations_DE.gms	
[26] Equations_EA ame	
E [27] Equations EE ame	21 Sinclude (SubModel & Scenarios (EquationDeclaration
[20] Equations ES amo	22
[20] Equations_ET ame	23
[20] Equations_ELamo	24 - *! <%GTREE 1 AREA %>
[30] Equations_FLights	25 * Equation[1]: Land area - Total
[31] Equations_FR.gnis	26 EQ TL AHA RD(T1) \$TotalSimulationPeriod("RD",T1)
[32] Equations_OR.gnis [22] Equations_UP amo	27 V2 ("TL AHA", "RD", T1) =E=
[33] Equations_HR.gms	28 V("TL AHA", "RD", T1)
[34] Equations_HU.gms	29 ;
[35] Equations_IE.gms	30 * Equation[2]: Wooded area [Unit:
[36] Equations_11.gms	31 EO AF AHA RD(T1) STotal SimulationPeriod("RD", T1)
[37] Equations_KE.gms	32 $V2("AF AHA" "PD" T1) = E=$
[38] Equations_t/Z.gms	22 V("AF AHA" "DD" T1)
H [39] Equations_L1.gms	24
[40] Equations_LV.gms	34 ; 25 * Twenting (2).
- [41] Equations_MK.gms	35 * Equation[3]: Usable agricultural area (

From Data handling to output analysis: Scenarios



GUI: Scenario set-up

AGMEMOD model [Code Version 8.32 19/01/2017] on: C:\0b_AGMEMOD\AGMEMOD_African_Version\MODEL File Processes Scenarios InputData ModelSources Results Documents Presentations Help Exit Actions Scenarios to Run V Batelne Scenario Information S -Aim of Scenario BASELINE SCEP Add Scenario - CAP 2016-2020 OECD world pri Providing a 203 Show Scenario StatusInfo - the EU27 as a w individual EU me candidate count Scenario decisions and EU28 member s Policy assumptic Left mouse click - CAP 2016-2020 Doha Round on I Macroeconomic - world price project - national macrooc

AGMEMOD 8.0: - including Russial

Petra Salamon Seite 123 May 8, 2017 SummerSchool 2017



GUI: Scenario set-up



GUI: Define countries in model



Define DataVariant / TimeOptions

NON EU Countries	Scenario Run Scenario Type Actual DataV Base Time Options Start Year Start Year Last Simula Output Yea
	NON EU Countries

GUI: Define Excel output



GUI: Define Agmemd2Gams

File Edit View Settings ? 🗋 🚰 🔄 🤊 (*) 👗 🛍 🚵 👫 🍇 💽 🔍 🔍 🔝 🕍 🕸 1 [Scenario Settings] 2 ModelName = AGMEMOD 3;NB for more explanation of the functioning of these scenario options 5 5; Settings used in processes of Agmemod2Gams and Run Process of AGMEMOL 7 A2G_ReArrange_LHStoRHS = 0 8 A2G_Prep_DerivedVar_Lines = 0 9 A2G_Calc_DerivedVar_ForModel = 0 10 A2G_Use_DerivedVar_InMode] = 0 11 A2G_Use_DerivedVar_ForEviews = 0 12 $13 OECD_CalcOptionNr = 0$ 14 OECD_ActivityCorrFactList= 15 16 A2G_FixSlacksAutomatic = 017 A2G_FixSlacksForProducts = 18 A2G_FixSlacksForActivities = 19 20; Activities for closing slack variables in CountryModels when using Enc 21 A2G_WMP_CheckOnPrices = 0 22 A2G_WMP_CheckAndFixSlacks = 0 23 A2G_WMP_CheckAdditionalProducts = BR 24 A2G_WMP_CheckOnPriceActivities = PLD, PND, PWE, PMD, PFN, PWD 25 A2G_WMP_CheckOnSlacksActivities = UDC, SPR 26 27 A2G_ActivateSqueezeModel = 0 28 A2G_SqueezeModelToProducts = RE 29 30; Settings used in Run Process of AGMEMOD V7.3 Model 31; PLEASE Change these values only from main GUI via "Edit Scenario Rur 32 ; 33 ScenarioTypeIsBaseline =1 24 SetAnnualDummiesToZero -0



From Data handling to output analysis: Processing



AGMEMOD model [Code Version 7.50 5/14/2014]	on: C:\0b_AGMEMOD\AGMEMOD-V7.36_Exercises\MODEL_Rwanda
ile Processes Scenarios InputData ModelSources Results I	Documents Presentations Help Exit
Process Options	Loop_states_run
I. Run selected Scenarios	This process does the following steps:
C 2. Create Excel Output for selected Scenarios	 Starts running a scenario from the list of scenarios indicated to run For a scenario: Reads in new Scenario Data from Excel files for this scenario Runs the model for this scenario Adds the output of this scenario to AllScenarioOutput.gdx
3. Calc Scenario differences, Create Tables and Maps	
4. Run all Scenarios (processes 1 and 3 combined)	
Start AGMEMOD Processes and Scenarios	
Aug 9th. 2016 AGMEMOD Summer School	2016 · • IHUNEI

ModelEquations2Gams_Baseline.ini - Notepad2

Snippir	AgMemod_Info	
Datei B	File Edit Config	
Dotei Start Einfüre	time description	
AGMEMOD model [Cod	8/5/2016 12:13:38 PM Start syntax check o	AGMEMOD
File Processes Scenarios InputData	8/5/2016 12:13:39 PM Start reading AGME 8/5/2016 12:13:39 PM - reading excel for: 1	MOD [Code Version 7.50 5/14/2014] Base Data on Base Basedata of RD
Process Options	8/5/2016 12:13:42 PM Start reading AGME	MOD [Code Version 7.50 5/14/2014] Data for Scenario Baseline
	8/5/2016 12:13:42 PM - reading excel for: /	AssumptionsInput Data
	8/5/2016 12:13:52 PM — Solving AGMEMOL 8/5/2016 12:13:52 PM — Solving AGMEMOL	D model for: 2011
I. Run selected Scenarios	8/5/2016 12:13:53 PM - Solving AGMEM	D model for: 2012
	8/5/2016 12:13:53 PM — Solving AGMEM(D model for: 2013
	8/5/2016 12:13:55 PM — Solving AGMEM	D model for: 2014
C 2. Create Excel Output for selected Scenarios		
3. Calc Scenario differences, Create Tables and		
4. Run all Scenarios (processes 1 and 3 combined)		
Start AGMEMOD Proces		

C:\Windows\system32\cmd.exe Iter Phase Ninf Infeasibility RGmax NSB Step InItr MX OK 5.6349443390E+06 (Input point) 0 0 Pre-triangular equations: 170 Post-triangular equations: Θ 0.000000000E+00 (After pre-processing) 0 2 0.000000000E+00 (After scaling) 0 ×× Feasible solution. Value of objective = 0.00000000000 Iter Phase Ninf Objective RGmax NSB Step InItr MX OK 0.000000000E+00 0.0E+00 3 Θ ** Optimal solution. There are no superbasic variables. --- Restarting execution --- Agmemod_Manager_RunModel.gms(18781) 71 Mb --- Reading solution for model Agmemod --- Agmemod_Manager_RunModel.gms(19137) 104 Mb --- OutputData to Excel written in ..\Results\ subdirectory --- Agmemod_Manager_RunModel.gms(19694) 104 Mb --- Agmemod_Manager_RunModel.gms(19803) 104 Mb

THÜNEN

AGMEMOD model [Code Version 7.50 5/14/2014]	on: C:\0b_AGMEMOD\AGMEMOD-V7.36_Exercises\MODEL_Rwanda
File Processes Scenarios InputData ModelSources Results Docu	iments Presentations Help Exit
Process Options	Loop_states_run
I. Run selected Scenarios	Starting PreProcess running for: 1. Run selected Scenarios at: 8/5/2016 12:13:37 PM scenario done: 1 for: Baseline at: 8/5/2016 12:14:49 PM Starting PostProcess running for: 1. Run selected Scenarios at: 8/5/2016 12:14:50 PM Processes finished succesfully at: 8/5/2016 12:14:50 PM ! Time elapsed: 0:01:13
C 2. Create Excel Output for selected Scenarios	
3. Calc Scenario differences, Create Tables and Maps	
4. Run all Scenarios (processes 1 and 3 combined)	
Start AGMEMOD Processes and Scenarios	



From Data handling to output analysis: Output



GUI: Results

8.32 19/01/2017] on: C:\0b_AGMEMOD\AGMEM

ources	Results	Documents	Presentations	Help Exit
	Cou	untry results	(Excel : of last run	1)
	Cou	untry tables (Baseline	(Gdx)	
	Out	Put Tables f	or all Scenarios c	ombined (Gdx/Gamsi
	Error Checking Baseline			
	-71	711	or EU m	ember stat



GUI: Results

in 8.32 19/01/2017]

on: C:\0b_AGMEMOD\AGMEMOD_African_Version\MODEL

Sources	Results	Documents Presentations Help Exit		
	Co	untry results (Excel : of last run)	•	DE Results (Ex
	Country tables (Gdx) Baseline			KE Results (Ex RD Results (E UA Results (E
	OutPut Tables for all Scenarios combined (Gdx/Gamside) Error Checking Baseline		,	
	-77	for EU member states		



GUI: Results

5	Results Documents Presentations Help Exit		
	Country results (Excel : of last run)	+	
	Country tables (Gdx)		
	Baseline	•	DE Output (Gdx)
	OutPut Tables for all Scenarios combined (Gdx/Gamside)	•	GH Output (Gdx
	Error Checking Baseline		RD Output (Gdx)



GUI: Documents

	AGMEMOD workshop in Brussels (6-7 Nov 2013)	Getting started with AGME
	AGMEMOD book - 2012 (Springer publisher)	Agenda workshop
	AGMEMOD articles	, Introduction to AGMEMOD
	AGMEMOD manuals	Dert 1 Manda on everying D
	HELP DESK - How to use? How to implement?	Part 1 Hands-on exercise D Part 2 Hands-on exercise E
	111 for EU m	Answers on Hands-on exer
		AGMEMOD-MODEL Directo
		Mnemonics (products, activ
		Flow charts of AGMEMOD
AGMEMOD is a dynamic, Africa.	multi-product, partial equilibrium model for the EU, it	ts Member States, Macedonia, T
Adhenob generates ba	senire projections up to the 2025 time nonzon and si	numbers the impacts of policy ch
© AGMEMOD Partnership	(May 2014)	
	AGMEMOD is a dynamic, Africa. AGMEMOD generates bas © AGMEMOD Partnership	AGMEMOD book - 2012 (Springer publisher) AGMEMOD articles AGMEMOD manuals HELP DESK - How to use? How to implement? for EU manuals AGMEMOD is a dynamic, multi-product, partial equilibrium model for the EU, if Africa. AGMEMOD generates baseline projections up to the 2025 time horizon and sir © AGMEMOD Partnership (May 2014)

GUI: Presentations

8 F	GMEMOD n	nodel	[Cod	e Version 7.50 5	/14/2014]	on: C:\0b_AGMEMOD\AGMEMOD-V7.36_Exercises\MODEL_Rwanda
File	Processes	Scenarios	InputData	ModelSources	Results	Documents	Presentations Help Exit
							AGMEMOD characteristics - June 2008 (Brussels) by Fred Chantrueil Dairy study - June 2008 (Brussels) by Petra Salamon New commodities - May 2008 (The Hague) by Roberto Esposti Future of AGMEMOD - April 2010 (Brussels) by Core Group AGMEMOD tool - April 2010 (Brussels) by Myrna van Leeuwen Russia and Ukraine - September 2011 (Brussels) by Guna Salputra and N EU27 Outlook - Sepember 2011 (Brussels) by Martin Banse
			AG	MEMOD is a d ica.	ynamic,	multi-produ	ct, partial equilibrium model for the EU, its Member States, Macedonia, 1
				MEMOD gener	ates ba	seline projec	tions up to the 2025 time horizon and simulates the impacts of policy ch
			©	AGMEMOD Pa	rtnershi	p (May 2014	¥)