FACEPA

Farm Accountancy Cost Estimation and Policy Analysis of European Agriculture

USER GUIDE

The FACEPA Model Software

(Estimating Costs of Production using the EU FADN database)

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Executive summary

In the European FADN, costs, detailed by category (seeds, fuel etc), are available for all agricultural holdings. The FACEPA model is designed to allocate these costs to different productions. The starting point to develop the software was a model built by INRA in the 2000' years. Then, the software was established from the works conducted by the vTI in work package (WP) 3 of the FACEPA project.

The FACEPA model is programmed in SAS language and runs on the *Enterprise Guide* SAS module. The model estimates input – output (or production cost) coefficients from EU FADN data. The SAS 'PROC SYSLIN' procedure is used to estimate the FACEPA model. Once the model coefficients have been estimated, it is possible to obtain production costs per quintal (100 kgs), cost per hectare or cost per animal.

The model runs for a single country over a period of several years or for a single year for one or more countries. It is possible to add a classification variable to the list of given variables in order to obtain cost results per sub-group (per region, or per type of farming…). It is also possible to obtain more specialized cost results.

The model takes into account total production automatically. The user defines a list of crop and livestock outputs. Residual terms corresponding to the remaining productions and maintaining the balance between revenues and costs are automatically calculated. Variable and fixed costs are distinguished and calculated. Depending on the user's choice of costs determines the type of income indicator estimated by the FACEPA model. For instance, if the user takes only into consideration costs associated with intermediate consumption, the income indicator is value-added.

The model could include imputed costs for family-owned factors such as family labor, farm-owned land and family-owned assets. However, this procedure to calculate these imputed costs was not tested by the vTI team. More generally, it is necessary to be careful in interpreting the model results on fixed costs.

In the European FADN databases, outputs are valued at the producer price levels. In the FACEPA model, subsidies are considered as negative costs. It is possible to select coupled or total subsidies. In the final model printing results, subsidies are included in the "basic prices". This solution is in theory only valid for coupled subsidies but it is possible to include single farm payments (SFP) and the second pillar payments. Taxes on products are also automatically deducted in the calculation of basic prices.

It is possible to obtain information to assess the statistical significance of the estimated production cost coefficients (Standard errors, t statistics and p-values).

Different options are possible

- It is possible to delete **outliers**.

- The results could be **weighted** (or not) with the SYS02 variable which corresponds to the weight of the holding in the sample used.

- Output value for crop and livestock could include or not **on farm** use of feeds and seeds. If the user includes home-grown production used on farms, it is necessary to adjust the used inputs accordingly.

- The "**Allocation of residuals**" option allows the user to print breakdown of individual costs. The residual difference between the estimated and observed costs for each farm holding is distributed over the different products in proportion to the gross output (with home-grown consumption) or the gross product (without home-grown consumption). This option also creates three groups of farms which differ in terms of intensity in the use of inputs, depending upon the levels of specific costs obtained for each product.

Contents

Abbreviations and Acronyms

AWU	Annual work unit
EU	European Union
FACEPA	Farm Accountancy Cost Estimation and Policy Analysis of European Agriculture
FADN	Farm Accountancy Data Network
INRA	National Institute for Agricultural Research
LU	Livestock Unit
SFP	Single Farm Payments
vTI	Johann Heinrich von Thünen-Institut
WP	Work Package

Introduction

In the European FADN costs, detailed by category (seeds, fuel etc…), are available for all agricultural holdings. The FACEPA model is designed to allocate these costs to different productions or enterprises.

The starting point to develop the software was a model built by INRA in the early 2000's. Then, the software was established from the works conducted by vTI in work package (WP) 3 of the FACEPA project. For further information on the methodology and the implications on the econometric results, the reader may consult the WP3[1] documents, written by the vTI team.

The FACEPA model is programmed in SAS language and runs on the *Enterprise Guide* SAS module. The user chooses the costs he/she wishes to target along with the livestock and crop productions to which these costs will be attributed. There are also a number of options which allow the user to define the sample of agricultural holdings chosen for the estimation of the model according to several criteria such as country, year, type of farming, economic size, etc,). In short, the user must select at the outset the parameters in order to define the model.

This manual explains to uninitiated users how the model works and how to use it.

There are many files stored in the FACEPA directory. Some of these files interact with each other; we recommend that new users copy the directory directly into their hard drives (C:\ or D:\) in order to limit potential errors and make their first trials easier.

File Name	Comments
In the folder D:\ FACEPA\Form_xml	
Form.jar	Form for defining parameters used by the model.
data_file.xml	File which contains the names of the fields in the form and the labels of the available variables.
In the folder D:\ FACEPA\Form_xls	
Form.jar	Form for defining parameters used by the model.
data_file.xls	File which contains the names of the fields in the form and the labels of the available variables.

[1] F. Offermann: Implementation, validation and results of the cost of production model using national FADN databases. FACEPA Deliverable D3-1_vTI, January 2011.
W. Kleinhanss : Implementation, validation and results of the cost of production model using the EU FADN FACEPA Deliverable D3-2_vTI, April 2011.
F. Offermann, W. Kleinhanss : Comparison of cost estimates based on different cost calculation methods and/or different databases. Deliverable D3-3_vTI, Mars 2011

In the folder D:\ FACEPA\SAS_Pgm	
Inter_tab.egp	Program which allows user to validate the parameters (aggregated variables, choice of options etc).
Model.egp	Program which calculates estimated costs and generates required results.
In the folder D:\ FACEPA\Misc	
FADN_CSV_to_SAS_files.sas	If you do not already have the FADN database in the SAS format, this program enables you to convert the CSV file into SAS tables compatible with the model.

There is also an example available to help the user with his/her first steps:

In the folder D:\ FACEPA\example	
parameters_file.txt	Text file containing parameters required by the model (this file is generated by the Java form).
\results	Folder which contains the output tables generated by the model.

There are three required steps to estimating production costs with the FACEPA model:

- **Definition of the parameters with the help of the form component called "*Form.jar*" ;**
- **Verification and validation of the parameters using the program "*Inter_tab.egp*" ;**
- **Estimation of production costs per production using "*Model.egp*".**

The model

The model estimates input – output (production cost) coefficients using EU FADN data. The production cost coefficients β_{ik} are estimated by using the SAS 'PROC SYSLIN' procedure:

$$x_{if} = \sum_{k=1}^{K} \beta_{ik} y_{kf} + u_{if}$$

where

x_{if} is the total cost of input i paid by farm f (including income),

y_{kf} is the total value of output k produced by farm f,

β_{ik} is the unknown coefficient of production. It is defined as the average (for all farms) expenditure on input i required to produce one unit (on value) of output value k,

u_{if} is the error term specific to each input i and farm f.

with:

$$\sum_{k=1}^{K} \beta_{ik} = 1$$

and net farm income being considered as an input.

Warnings

It is not essential that the production list chosen by the user be exhaustive. As all of the productions are included in the model, a residual term is **automatically calculated**.

This residual term is obtained for both crop production (OCROP) and livestock production (OLIST). This distinction is made because crop costs are restricted to zero for livestock production. Fodder is not given a value in the European FADN database[1]. Similarly, costs related to livestock are also equal to zero for crop production. Please note that crop production includes forestry and that livestock production includes other productions (contract rearing, income from occasional rental of grazing areas, custom work, farm tourism, honey and products from apiculture).

The model distinguishes between costs related to livestock, costs related to crops and fixed costs. Total cost, however, is not given. This is justified on the grounds that it allows the user greater flexibility, notably the possibility to select the income indicator.

The user must however verify that the list of costs is exhaustive in order to ensure the coherence of the results. In particular, if the "home-grown-consumption" option is selected, then the variables SE315, F69 and F70 (home-grown feeds for herbivores, pigs and poultry, respectively) must be added to the list of livestock-related costs, and the variable SE290 (home-grown consumed seeds and plants) must be added to the list of crop-related costs.

Remember that in the FADN database, production is calculated at the producer price level.

Subsidies are considered as negative costs. It is possible to select coupled or total subsidies. In the final output, subsidies are included in the "basic prices". This solution is in theory only valid for coupled subsidies but it is possible to include Single Farm Payments (SFP) and the second pillar (pillar II) payments. Taxes on products are also automatically deducted in the calculation of basic prices.

In addition to estimating production cost coefficients, it is also possible to obtain cost per quintal (100 kg), per hectare, per livestock unit, and per head.

The cost per quintal is obtained by multiplying the production coefficient by the output price. It is not given for certain activities where the quantities are unknown, which is the case with for some livestock productions.

As to costs per hectare, the fodder area is divided between the herbivores in proportion to the number of livestock units. The cost per hectare of granivores is not calculated, as they do not use fodder areas.

In the version of the model without home-grown consumption, the grain area corresponding to this home-grown consumption is allocated to herbivores and granivores in proportion to the number of livestock units. (*see appendix 3: forage area allocated to livestock*).

[1] Fertilizer use to produce for animal feed is allocated to livestock productions.

The main options of the model

Different options are available:

- It is possible to delete **outliers**.

- Estimation results can be **weighted** (or not) with the SYS02 variable which corresponds to the weight of each holding in the sample being used.

- The "**Allocation of residuals**" option allows the user to edit the breakdown of individual costs. The (residual) difference between the estimated and observed costs for each farm holding is re-distributed over the different products proportionally to the gross output (including home-grown consumption) or the gross product (excluding home-grown consumption). This option also creates three groups of farms which differ in terms of intensity in the use of inputs, depending upon the levels of specific costs obtained for each product.

- The files include imputed **costs for family-owned factors**. It is possible to include these costs in the model such as family labor, farm-owned land or capital. But, this procedure was not validated by the vTI team. More generally, it is necessary to be careful when the model includes fixed costs.

The “Form” component

The “form” component (called hereafter either “form” or “the form”) is a graphic interface written in Java language which enables the user to create the parameters file (parameters_file .txt).

This form was developed to help uninitiated users avoid unwanted errors. It aims to be as user-friendly and exhaustive as possible.

The parameters file created by form contains all information concerning the choices and options defined by the user.

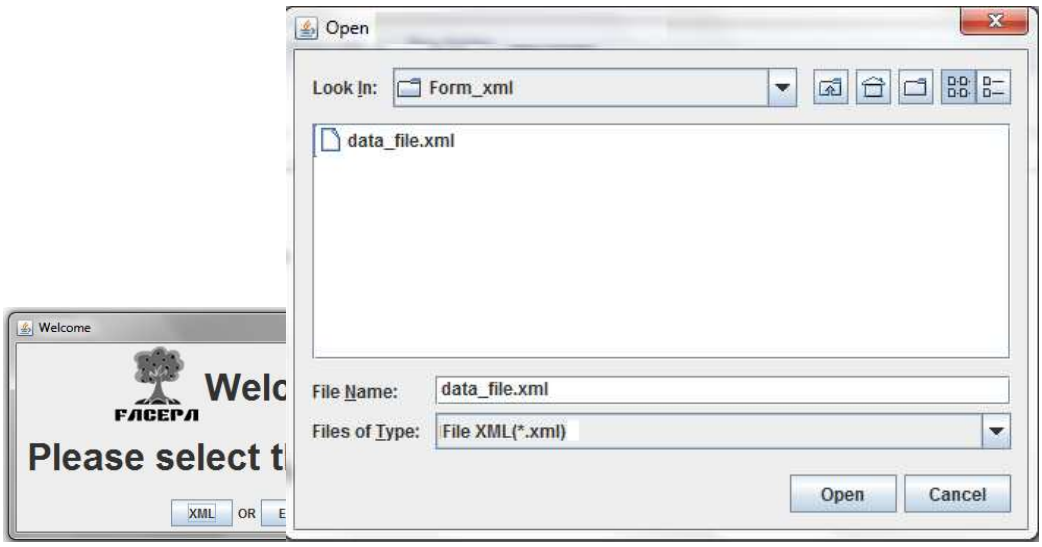
Form comprises two elements: ***Form.jar***, which is the program itself, and ***data_file.xml***, which contains all the data needed by form (labels, menus, variables and terms available…). These data are not contained in ***Form.jar*** so as to enable the user to add new languages or to modify the variables or years without having to modify the Java code.

There is also a version of the form associated with an Excel file (*data file.XLS*) instead of XML, which allows for new variables to be added more easily.

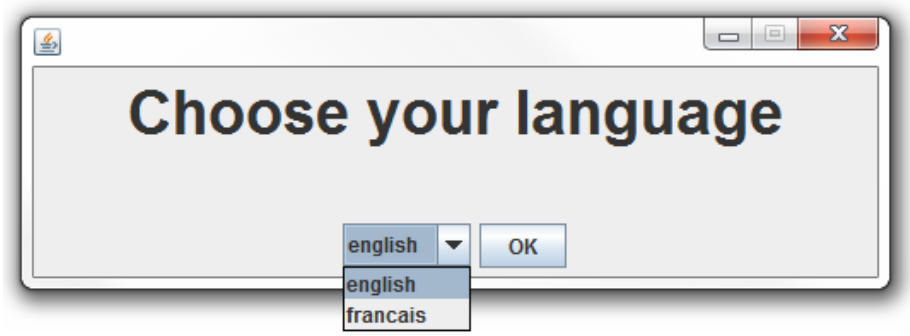
To open form, double click on ***Form.jar***. First you must indicate where the ***data_file.xml*** file used by form is located. **This user guide will use the XLM version of form as its reference**. The procedure for the Excel version is the same, apart from this first step, where the user must indicate the location of ***data_file.xls*** instead of ***data_file.xml***.

Open

Click on “XML” and a file explorer will appear. The XML file is in the same directory is the form, which is why the file explorer is located in the same directory as ***Form.jar***. Select ***data_file.xml*** and click "Open"

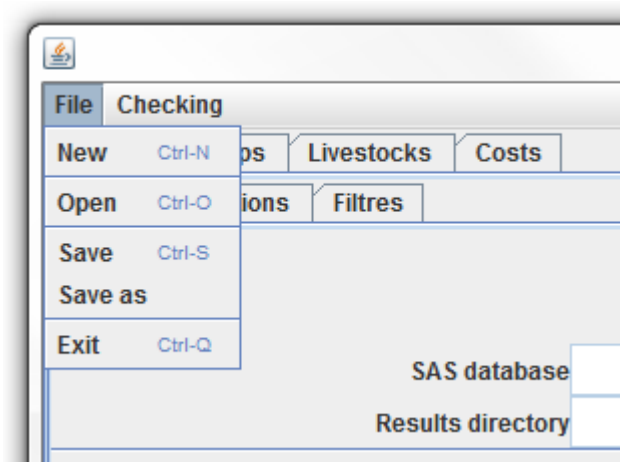


A new window opens with a choice of language. At present the form is only available in English and French, but new languages can easily be added by modifying the XML file.



Choose the language and click "OK" to open the form.

Menus



The "File" menu contains the following options:

New: Clears form of data in order to start a new blank form.

Open: Opens a parameters file in form enabling it to be completed or modified. Go to

File > *Open* or press Ctrl + O, then select your file and click on "Open". It may take a little time to load.

Save: Saves the parameters file keeping its initial name and location (i.e. when it was opened). If the file has never been saved, when you click "Save" the program saves the parameters file in the directory where form is located and name it "***parameters_file.txt***".

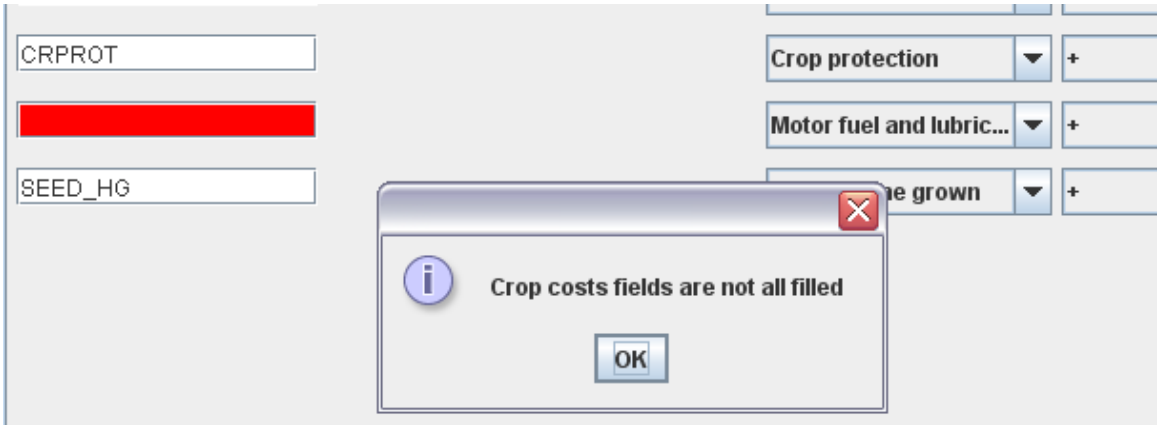
Warning: This command will cause the loss of the initial information if the user has made changes after opening the file.

Save as: Saves the file. A window opens to choose the name and location of the file.

There are a number of fields of information (see below) required for the model to use the parameters file, but it may be saved at any time. However, an incomplete parameters file cannot be read by the model, and such files, when saved, will be labeled as "incomplete" in order to limit ambiguities.

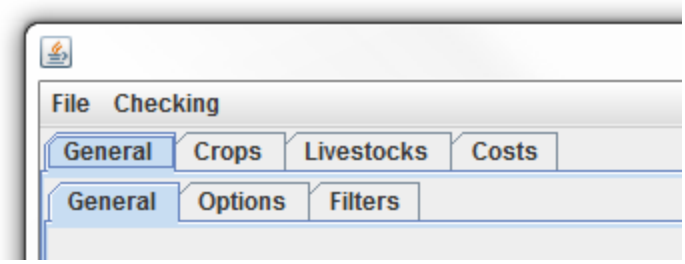
Exit: Allows you to exit the application.

In the Checking menu, the “Check fields” option shows the fields in the form. Required fields which have not been filled in will appear in red, along with an alert message for each incomplete compulsory field.



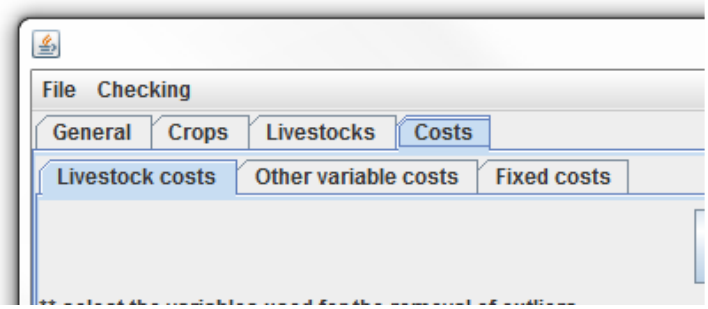
Correct the errors, recheck if desired and save your parameters file.

The Tabs



The ***General*** tab is divided into three sub-tabs: "***General***", "***Options***" and "***Filters***", with each one containing general options of the model such as addresses where databases are to be found, countries and years being selected, weighting options, sampling options, deletion of outliers, etc…

The ***Crops*** and ***Livestock*** tabs enable you to define the variables for crops and livestock which will be used by the model.



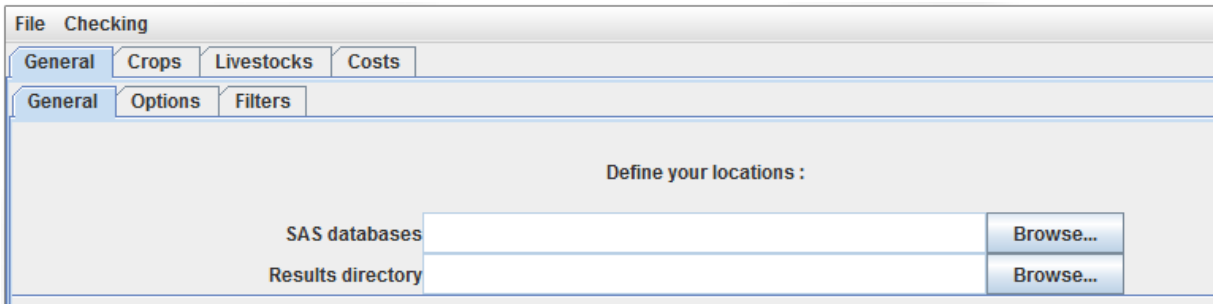
The ***Costs*** tab consists of three sub-tabs: "***Livestock costs***", "***Other variable costs***" (crops costs) and "***Fixed costs***", allowing the user to define which kinds of costs will be taken into consideration by the model.

Completing the Form: The ***general*** tab.

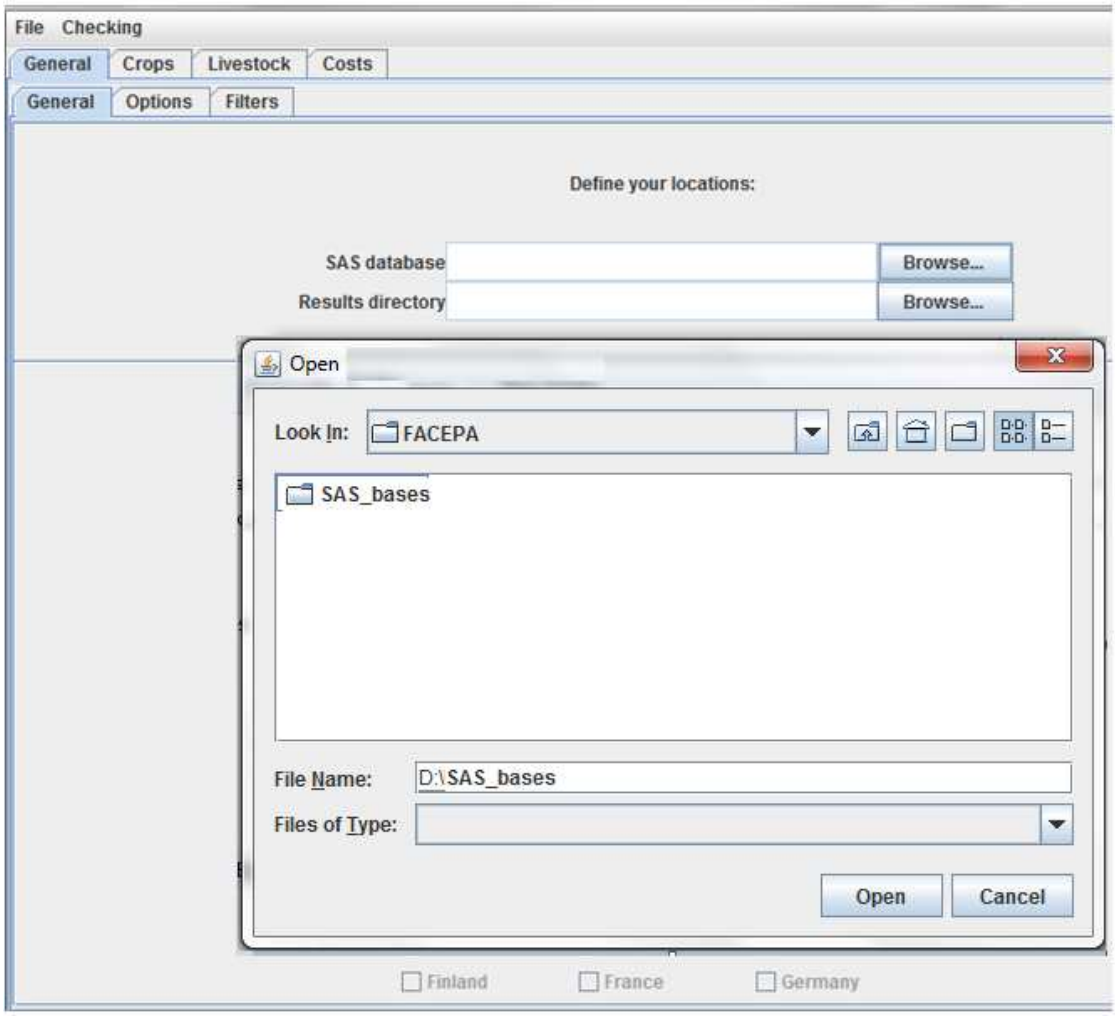
It is recommended that you complete the form in the order presented here.

The *General* sub-tab

First of all you must choose the location of the SAS format database to be used by the model, as well as the location of the directory where the estimation results (coefficients, tests, statistics etc) will be saved.



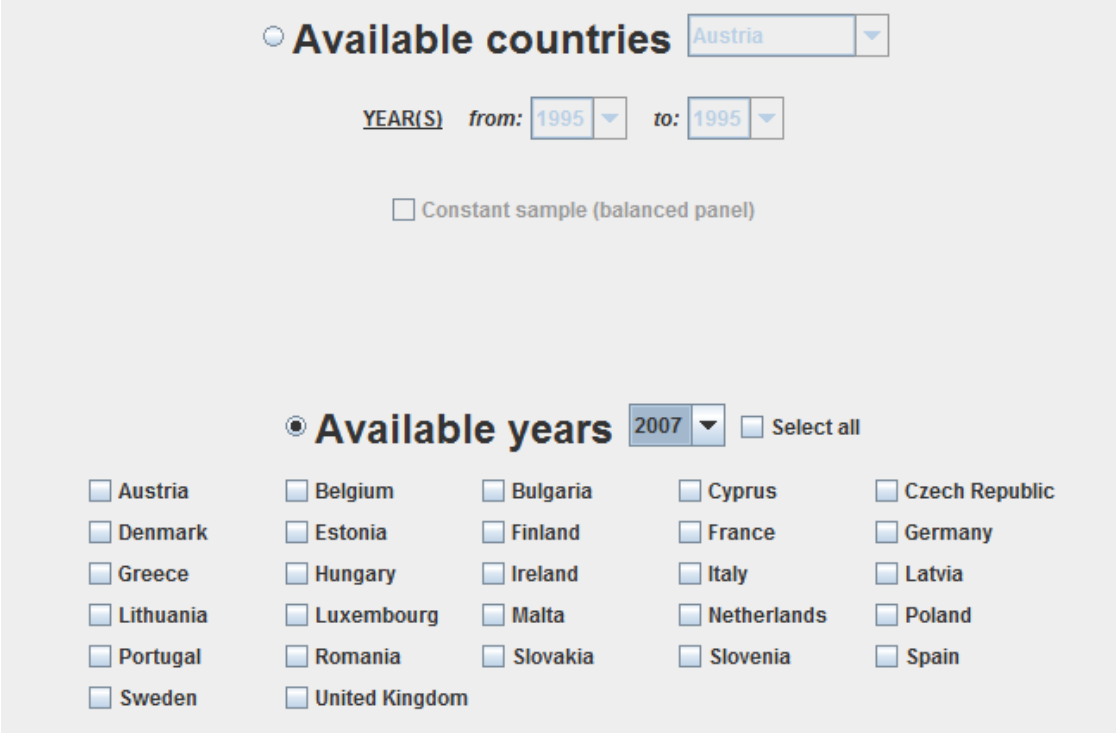
Click on the “Browse” button next to "SAS databases" to open the file explorer, situated in the user's "***My documents***" folder, and scroll to find the directory with the European FADN database in SAS format, then click open to validate.



Now click on the second "Browse" button next to the "Results directory" and in the same way select the directory where the model will save the results files. When you click "Open", the Java form automatically creates a directory named "***Results***" in the selected directory. The "***Results***" directory contains three sub-directories: “***HTML***”, “***SAS***” and “***EXCEL***”. If you have already created a "***Results***" directory, be careful: the form will not delete it, but will add the three sub-directories if they are not already present. If those three sub-directories have already been created, files can be erased by new results of the FACEPA Model if the files results have the same name.

We now arrive at the selection of data used by the model. The first thing to do is to decide whether you want the estimation results:

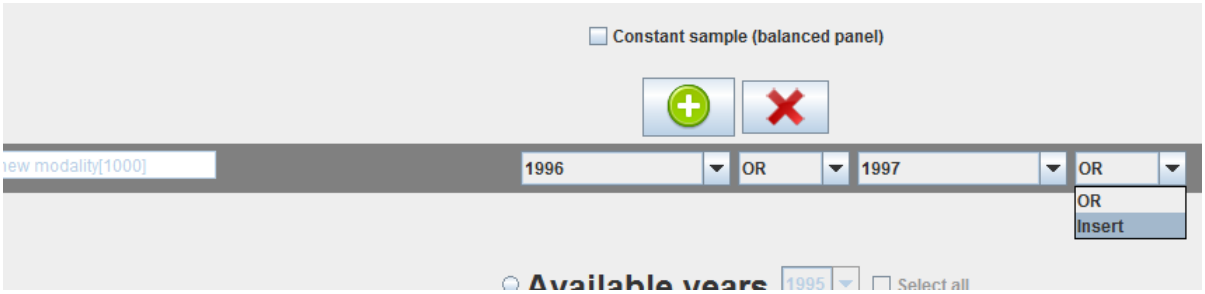
1. **for a single country** over a period of several years
2. **for a single year** for one or more countries:



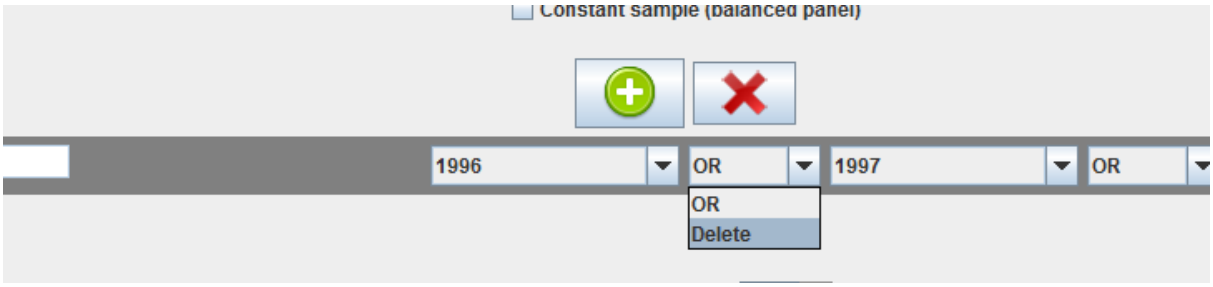
The two options are incompatible. By selecting one of the two, the user is prevented from accessing the control commands of the other option. In the above image example, you will see that the option for a country has been selected. The user must then choose a country and the year or years of the desired results, with the option of checking the "constant sample" box to work on a balanced panel (farm holdings present for all the selected years).

It is also possible to pool several years to be treated by the model as a single year.

Simply click on the green box +  and a line will appear indicating first the code of the new year being created (not to be modified). To the right of the code there is a drop-down menu containing the years as well as a second drop-down menu containing the term "OR". Select the year in the first drop-down menu, then click on the second drop-down menu and choose "Insert" to make another drop-down menu which appears with the remaining years. It is possible to add as many years as desired from the years that are available (see appendix 2).

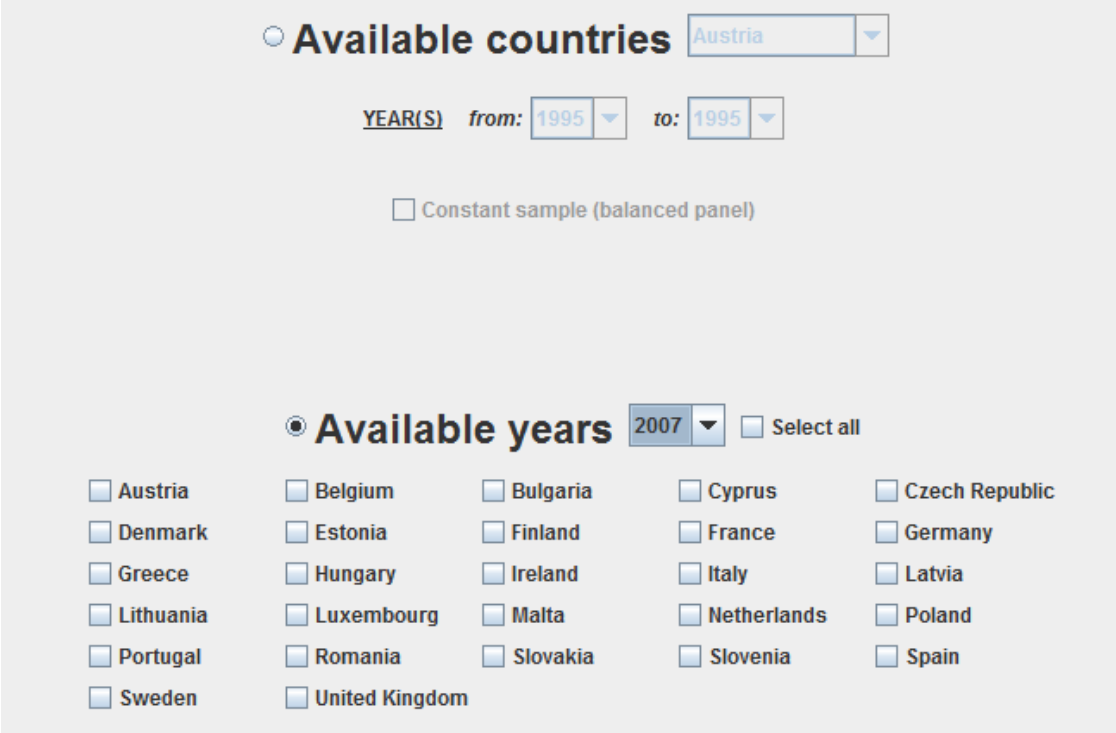


The red-cross box  enables the user to delete the whole line.



To delete a single year, click on the drop-down menu containing the term "OR" to the right of the year and the term "Insert" is replaced by the term "Delete". When you click "Delete" the year to the right of the "Or" menu will be deleted. It is therefore not possible to delete the first year selected unless you delete the whole line.

In the image example shown below, the other option has been selected. The user must choose a year and the countries he/she wishes to work on, with the "select all" key enabling the user to select or drop all the countries with a single click.



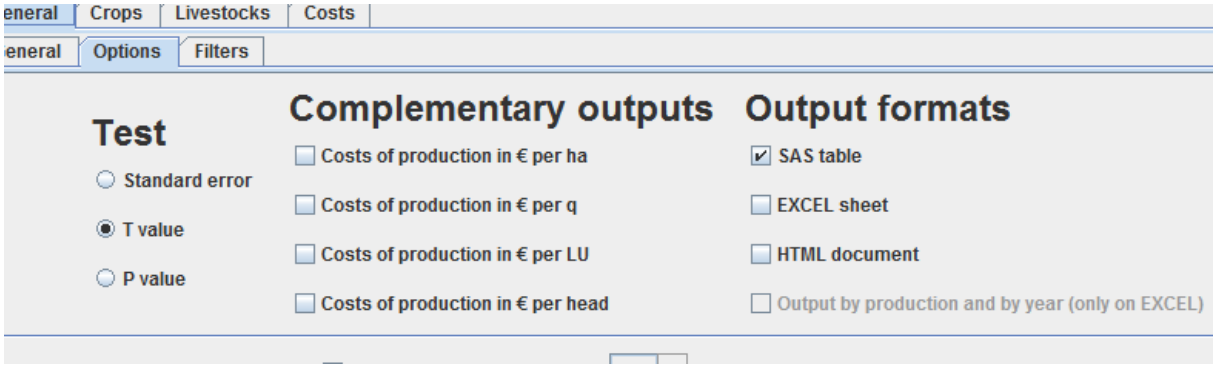
It is possible to pool several countries which the model will then treat as a single country by following the same procedure as for pooling years.

There is also another available option. The checkbox "grouping all countries" allows the user to group all the countries together with a single click. In this way the user can obtain results for the EU-15, EU-25 or EU-27.

Important: When working on several countries, it is no longer possible to choose the "region" variable (A1) in the "classification variables" presented below.

Please find the list of countries and years available in appendix 2.

The *Options* sub-tab



Test:

The model estimates the production cost coefficients with the SAS *Syslin* procedure. It is possible to select here the test statistics used by the *Syslin* procedure to assess the statistical significance of the coefficients. You can choose between the following options:

- *Standard error*: editing the standard error of the estimated coefficients;
- *T value*: editing the T statistic value (= estimated coefficient / standard error);
- *P- value*: editing the probability level of the T statistic value in a Student distribution.

Output formats:

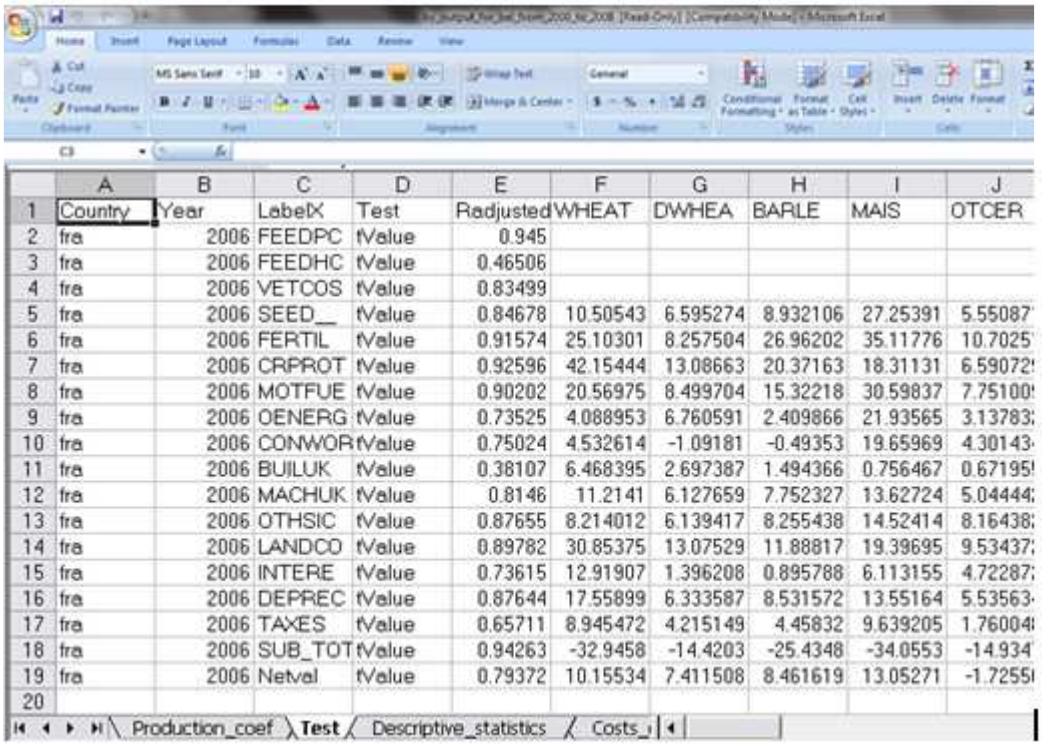
The model generates output tables in SAS format by default, but it is also possible to obtain this output as an Excel table and/or an HTML page. **To generate output results in EXCEL format, the user must have Microsoft EXCEL installed on the computer. If not, SAS Enterprise guide will not be able to generate this output**.

SAS Table:

coef_for_fra.sas7bdat

	Country	Year	Label	WHEAT	DWHEA	BARLE	MAIS	OTCER
37	fra	2006	FEEDPC	.	.	.	.	.
38	fra	2006	FEEDHC	.	.	.	.	.
39	fra	2006	VETCOS	.	.	.	.	.
40	fra	2006	SEED__	0.0482168	0.0669046	0.0757440	0.1062227	0.1258185
41	fra	2006	FERTIL	0.1379386	0.1002876	0.2737299	0.1638667	0.2904318
42	fra	2006	CRPROT	0.1978563	0.1357603	0.1766616	0.0729843	0.1527701
43	fra	2006	MOTFUE	0.0552480	0.0504580	0.0760358	0.0697895	0.1028122
44	fra	2006	OENERG	0.0091163	0.0333143	0.0099268	0.0415301	0.0345491
45	fra	2006	CONWOR	0.0415923	-0.022143	-0.008367	0.1531950	0.1949287
46	fra	2006	BUILUK	0.0145911	0.0134485	0.0062281	0.0014490	0.0074856
47	fra	2006	MACHUK	0.0555209	0.0670541	0.0709144	0.0572933	0.1233400
48	fra	2006	OTHSIC	0.0723480	0.1195190	0.1343450	0.1086341	0.3551349

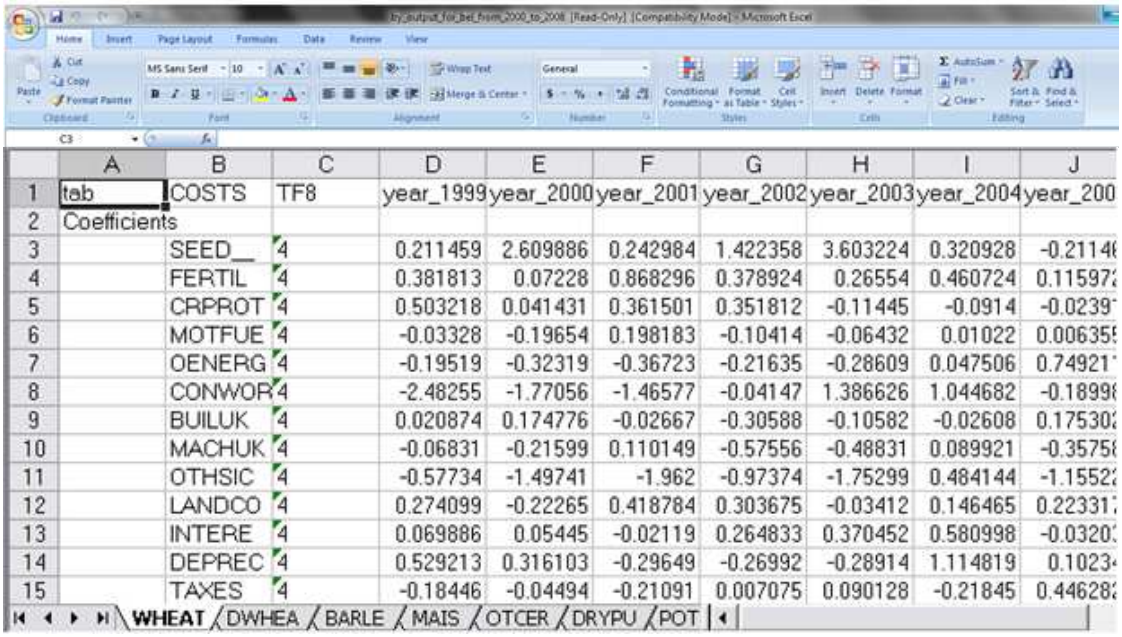
EXCEL Table:



	A	B	C	D	E	F	G	H	I	J
1	Country	Year	LabelX	Test	Radjusted	WHEAT	DWHEA	BARLE	MAIS	OTCER
2	fra	2006	FEEDPC	tValue	0.945					
3	fra	2006	FEEDHC	tValue	0.46506					
4	fra	2006	VETCOS	tValue	0.83499					
5	fra	2006	SEED__	tValue	0.84678	10.50543	6.595274	8.932106	27.25391	5.55087
6	fra	2006	FERTIL	tValue	0.91574	25.10301	8.257504	26.96202	35.11776	10.7025
7	fra	2006	CRPROT	tValue	0.92596	42.15444	13.08663	20.37163	18.31131	6.59072
8	fra	2006	MOTFUE	tValue	0.90202	20.56975	8.499704	15.32218	30.59837	7.75100
9	fra	2006	OENERG	tValue	0.73525	4.088953	6.760591	2.409866	21.93565	3.13783
10	fra	2006	CONWOR	tValue	0.75024	4.532614	-1.09181	-0.49353	19.65969	4.30143
11	fra	2006	BUILUK	tValue	0.38107	6.468395	2.697387	1.494366	0.756467	0.67195
12	fra	2006	MACHUK	tValue	0.8146	11.2141	6.127659	7.752327	13.62724	5.04444
13	fra	2006	OTHSIC	tValue	0.87655	8.214012	6.139417	8.255438	14.52414	8.16438
14	fra	2006	LANDCO	tValue	0.89782	30.85375	13.07529	11.88817	19.39695	9.53437
15	fra	2006	INTERE	tValue	0.73615	12.91907	1.396208	0.895788	6.113155	4.72287
16	fra	2006	DEPREC	tValue	0.87644	17.55899	6.333587	8.531572	13.55164	5.53563
17	fra	2006	TAXES	tValue	0.65711	8.945472	4.215149	4.45832	9.639205	1.76004
18	fra	2006	SUB_TOT	tValue	0.94263	-32.9458	-14.4203	-25.4348	-34.0553	-14.934
19	fra	2006	Netval	tValue	0.79372	10.15534	7.411508	8.461619	13.05271	-1.7255
20										

Production_coef | Test | Descriptive_statistics | Costs_

If you select several years or several countries with the EXCEL option, you also have access to an additional option by ticking "*Output by production and by year (only in Excel)*" which enables the user to obtain an EXCEL document containing output by production and by year, presenting one production per EXCEL sheet.



	A	B	C	D	E	F	G	H	I	J
1	tab	COSTS	TF8	year_1999	year_2000	year_2001	year_2002	year_2003	year_2004	year_200
2	Coefficients									
3		SEED__	4	0.211459	2.609886	0.242984	1.422358	3.603224	0.320928	-0.2114
4		FERTIL	4	0.381813	0.07228	0.868296	0.378924	0.26554	0.460724	0.11597
5		CRPROT	4	0.503218	0.041431	0.361501	0.351812	-0.11445	-0.0914	-0.0239
6		MOTFUE	4	-0.03328	-0.19654	0.198183	-0.10414	-0.06432	0.01022	0.00635
7		OENERG	4	-0.19519	-0.32319	-0.36723	-0.21635	-0.28609	0.047506	0.74921
8		CONWOR	4	-2.48255	-1.77056	-1.46577	-0.04147	1.386626	1.044682	-0.1899
9		BUILUK	4	0.020874	0.174776	-0.02667	-0.30588	-0.10582	-0.02608	0.17530
10		MACHUK	4	-0.06831	-0.21599	0.110149	-0.57556	-0.48831	0.089921	-0.3575
11		OTHSIC	4	-0.57734	-1.49741	-1.962	-0.97374	-1.75299	0.484144	-1.1552
12		LANDCO	4	0.274099	-0.22265	0.418784	0.303675	-0.03412	0.146465	0.22331
13		INTERE	4	0.069886	0.05445	-0.02119	0.264833	0.370452	0.580998	-0.0320
14		DEPREC	4	0.529213	0.316103	-0.29649	-0.26992	-0.28914	1.114819	0.1023
15		TAXES	4	-0.18446	-0.04494	-0.21091	0.007075	0.090128	-0.21845	0.44628

WHEAT | DWHEA | BARLE | MAIS | OTCER | DRYPU | POT

Note: If SAS is not selected, there will be no OUTPUT window when the model will be finished. There will be only files in the library /Results/.

Additional results:

The model generates the three following main tables: "***Production coef***", "***Tests***" and "***Descriptive statistics***" (this output will be detailed later). But it is also possible to obtain additional results per product with monetary costs in Euros per hectare, per quintal (100 kgs), per livestock unit, and per head. With each of these tables there is an associated table detailing the main types of costs, along with a second table which gives the total costs per intensity group if the "**Allocation of residuals**" option is selected (see the explanation below).

Costs of production in € per ha for 2007

Country	Year	INPUT	UY_WHEAT	UY_DWHEAT	UY_BARLEY	UY_MAIS	UY_OTCER	UY_DRYPU	UY_POTAT	UY_
fra	2007	TOTAL	1183.08	1118.02	913.232	1756.40	695.202	829.700	6043.85	
fra	2007	FEEDPC	.	.	.	.	.	.	.	
fra	2007	FEEDHC	.	.	.	.	.	.	.	
fra	2007	VETCOS	.	.	.	.	.	.	.	
fra	2007	SEED	58.30	103.62	57.275	120.14	71.189	0.854	788.20	
fra	2007	FERTIL	149.35	143.78	180.101	224.65	195.464	-76.045	271.29	
fra	2007	CRPROT	189.88	152.06	115.294	121.20	93.405	-14.618	560.19	
fra	2007	MOTFUE	56.95	62.54	55.654	86.49	59.013	-4.453	122.82	
fra	2007	OENERG	-2.44	-3.10	2.321	50.15	13.372	7.171	89.12	
fra	2007	CONWOR	45.09	49.25	-30.992	178.18	95.885	25.124	348.04	
fra	2007	BUILUK	3.04	2.78	-3.210	17.70	10.263	18.935	93.13	
fra	2007	MACHUK	74.35	78.61	61.895	93.41	88.669	13.994	236.13	
fra	2007	OTHSIC	25.13	88.57	53.889	137.08	82.921	196.684	477.46	

Summary in € per ha for 2007

Label	YEAR	WHEAT	DWHEAT	BARLEY	MAIS	OTCER	DRYPU	POTAT	SUGAR	RAPE	OCROP	CATTL
Production_price	2007	1183.08	1118.02	913.23	1756.40	695.20	829.700	6043.85	2133.98	805.73	4222.48	808.34
Taxes	2007	16.29	14.84	8.82	18.65	11.25	2.324	92.74	48.39	9.42	41.97	7.57
Subsidies	2007	-408.60	-540.12	-391.43	-490.95	-465.29	-113.755	-70.90	-530.10	-264.34	-78.98	-314.66
Basic_price	2007	1575.39	1643.30	1295.84	2228.69	1149.25	941.131	6022.02	2615.68	1060.66	4259.49	1115.43
Variable_costs	2007	454.47	462.01	408.32	552.49	419.07	-94.262	1742.50	931.12	275.34	528.41	405.14
Fixed_costs	2007	519.44	579.94	402.29	929.55	720.16	529.931	2750.18	1327.48	580.45	2197.50	649.76
Total_costs	2007	973.92	1041.95	810.61	1482.04	1139.24	435.670	4492.69	2258.60	855.78	2725.91	1054.89
Net_Income	2007	601.47	601.35	485.23	746.65	10.01	505.461	1529.33	357.08	204.88	1533.58	60.54

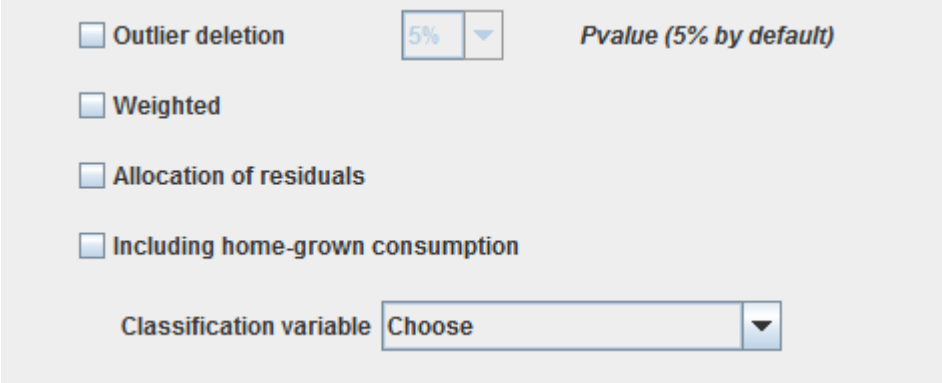
Total cost by group in € per ha for 2007

Country	Year	GRP	WHEAT	DWHEAT	BARLEY	MAIS	OTCER	DRYPU	POTAT	SUGAR	RAPE	OCROP	CATTL
fra	2007	1_low	566.36	566.50	500.09	943.05	613.76	208.955	2014.53	1768.49	568.76	154.85	436.84
fra	2007	2_mid	880.16	1008.75	772.24	1369.31	1083.45	369.203	3902.97	2311.57	820.22	810.26	1059.00
fra	2007	3_high	1230.83	1516.34	1102.86	1941.90	1764.87	699.372	8416.15	3024.85	1157.25	22292.07	2159.82

(Only if the "**Allocation of residuals**" option is selected)

The above two (three) tables are also available in Euros per quintal, per livestock unit, or per head.

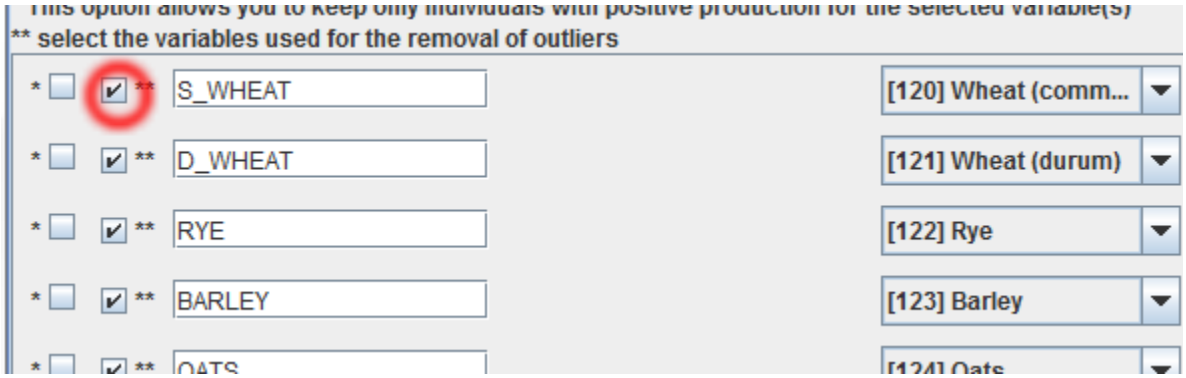
You must now choose between several options:



Outlier deletion

It is possible to delete outliers. By ticking the "Outlier deletion" box you have a choice of three values for the size criterion level (1%, 5% or 10%) defining the tail area of the distribution that the program will use in the outlier deletion process.

By default, all production and cost variables will be "cleaned up". However, the user can limit the selection of productions and/or costs to be treated in the CROPS, LIVESTOCK and COSTS sheets by unticking the box followed by the symbol** next to each of the products not intended to be "cleaned up".



Weighting of estimation results

If you tick the "Weighted" option, the estimation results will be weighted with the SYS02 variable which corresponds to the weight of each farm holding in the sample being used.

A word of caution: for balanced panels the weight remains the same and therefore does not take into account the possible effects of farm holdings dropped from the selected data sample.

"Allocation of residuals" option

The (residual) difference between the estimated and observed costs for each farm holding is distributed over the different products in proportion to gross output (including home-grown consumption) or gross product (excluding home-grown consumption). The "**Allocation of residuals**" option allows you to edit the breakdown of individual costs.

The printed results are now all "allocated", except the significance tests for the value of the coefficients, estimated before the "**Allocation of residuals**".

This option also allows the user to create three groups which sort out the farm holdings according to three levels (low, medium and high) of intensity in inputs used to produce a given product. The "low-level input" ("1_low") group represents 30% of the farm holdings (in terms of weighted area) and has the lowest production cost coefficients. The "Mid-level input" ("2_mid") group represents the 40% in the middle range, and "high-level input" ("3_high") the 30% with the highest production cost coefficients. The output result table generated by this option gives average production cost coefficient for each group and for each production as well as the sums of the area, the productions and the corresponding quantities.

Coefs for total cost by group for 2007

Country	Year	GRP	Label	WHEAT	DWHEAT	BARLEY	MAIS	OTCER	DRYPU	POTAT	S
fra	2007	1_low	sum area	38411.66	4278.07	13464.07	13424.80	4291.60	1943.15	1083.80	2
fra	2007	1_low	sum output	51446244.00	5952404.00	13603750.00	26441027.00	3329316.00	1897769.00	7289197.00	6500
fra	2007	1_low	sum quanti	2657593.00	194704.00	774482.00	1357917.00	193613.00	7999.10	459228.00	2460
fra	2007	1_low	coef	0.59	0.75	0.75	0.70	1.55	0.37	0.63	
fra	2007	2_mid	sum area	51678.10	5244.19	19200.81	16641.62	4915.55	2682.47	1400.78	4
fra	2007	2_mid	sum output	60805512.00	5741814.00	17587407.00	28795784.00	3279114.00	2238880.00	8577800.00	8759
fra	2007	2_mid	sum quanti	3372359.00	224887.00	1072021.00	1547983.00	203223.00	10207.80	597792.00	3423
fra	2007	2_mid	coef	0.86	0.96	0.92	0.86	1.76	0.53	0.75	
fra	2007	3_high	sum area	34030.10	3745.74	13070.81	10302.37	3449.13	2216.57	1276.76	2
fra	2007	3_high	sum output	34766106.00	3189803.00	10329456.00	15650136.00	1863013.00	1599846.00	6869285.00	5869
fra	2007	3_high	sum quanti	2044233.00	152045.00	656814.00	911150.00	124723.00	7214.30	521647.00	2334
fra	2007	3_high	coef	1.14	1.53	1.23	1.12	2.11	0.79	0.97	

This option also generates costs per hectare, quintals or tons, livestock unit and head, if these options are selected in "***Additional results***" (see the explanation above).

Finally, if the "SAS table" option is selected from the "Output formats" menu, the "**Allocation of residuals**" option generates a SAS table, "***TAB COEF GRP***", containing all the farm holdings in the selected sample, along with a certain amount of information about these holdings, such as the productions (Yi), costs (Xj) defined in the form, the values of the estimated coefficients (th_YiXj) and production cost (GRP_Yi) associated with each product.

Including or excluding home-grown consumption

The option "Including home-grown consumption" enables the user to work on gross production (add home-grown production used directly on the agricultural holding).

Be careful, however, do not forget to add the cost variables representing expenses devoted to home-grown feeds by herbivores (SE315), pigs (F69), poultry (F70), and home-grown seeds and plants (SE290).

Breakdown of (cost) estimates with a classification variable

It is also possible to add a classification variable to the list of selected variables, in order to obtain cost results per sub-group (for instance, per region, or per type of farming). By selecting a classification variable, two buttons appear on the left of the drop-down menu. The green plus sign enables the user to add a group of variables, and the red-cross box to delete one. It is thus possible to group two or more modalities (categories) of the selected classification variable into one modality.

Warning: Using a classification variable requires a lot of system resources, due to the large number of tables that are edited. Furthermore, the amount of output results that are generated is multiplied by the number of categories for the selected classification variable; these output results are therefore more difficult to read and interpret.

Comment: a single classification variable can be used to avoid:

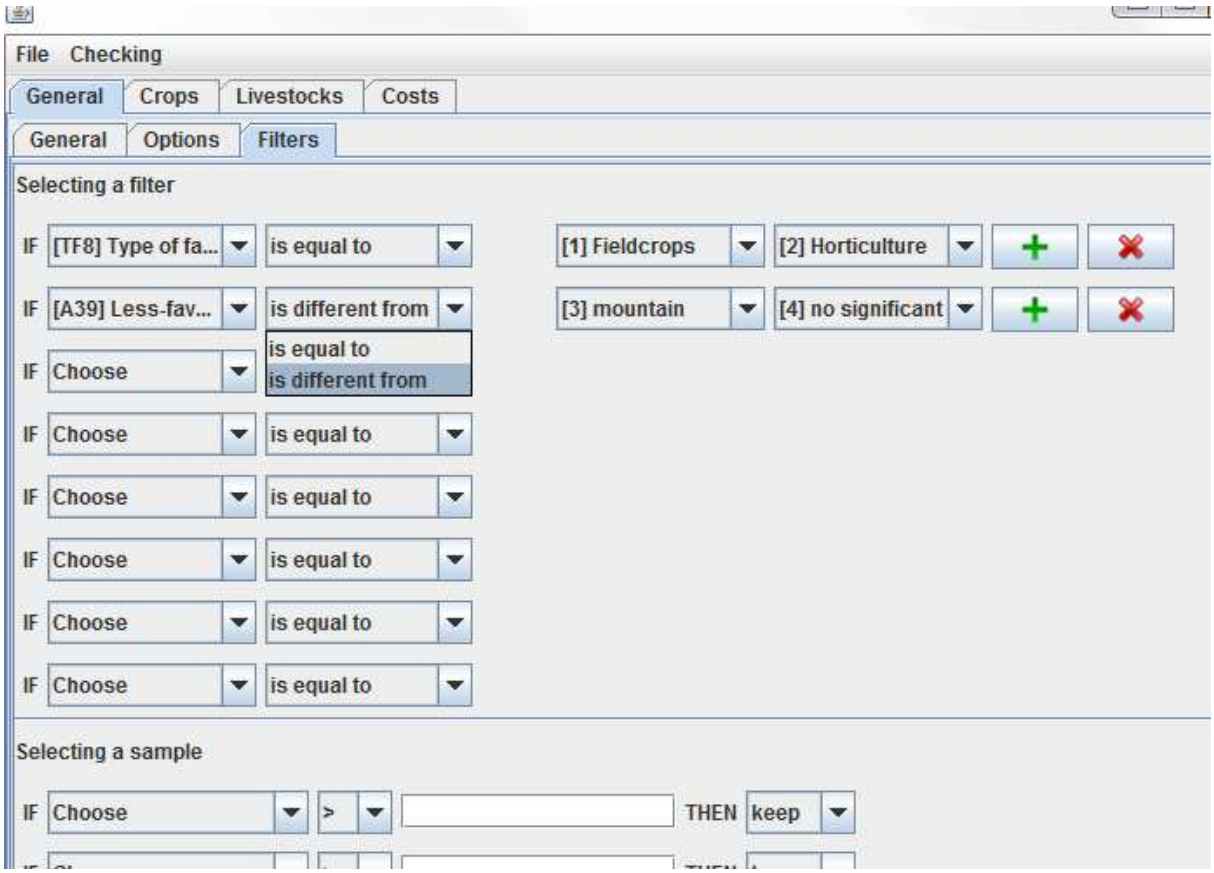
- Too many tables
- Too long calculation time
- Misleading information stemming from too-small samples

The *Filters* sub-tab

It is possible to reduce the size of the sample by selecting a filter based on one or more European FADN variables. Selected farm holdings can meet certain modalities for qualitative-type variables (Selecting a filter), or thresholds for numerical variables (Selecting a sample).

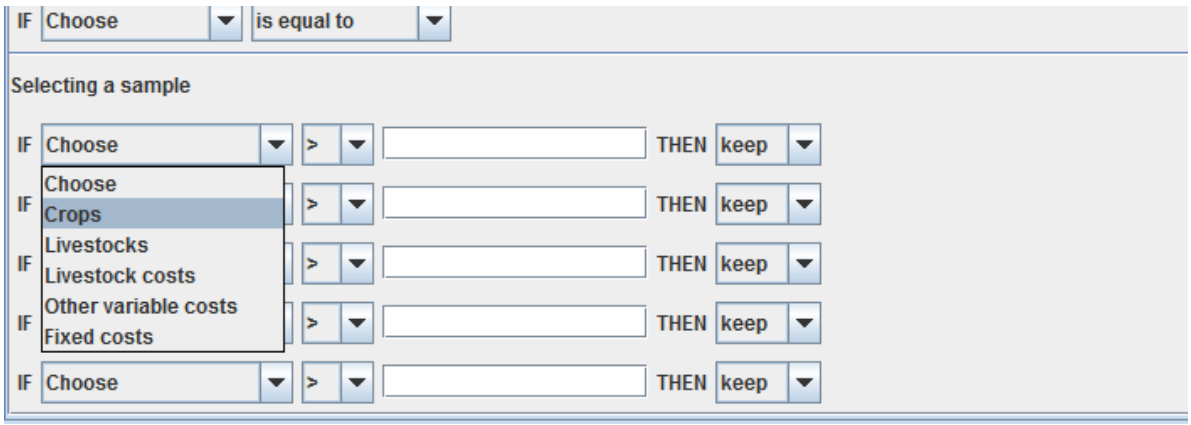
Selecting a filter:

For qualitative-type variables, select the one from the proposed list (the same one as the classification list) and define the modalities of this variable you wish to save or delete. You can create up to eight filters, and thus filter through eight variables.

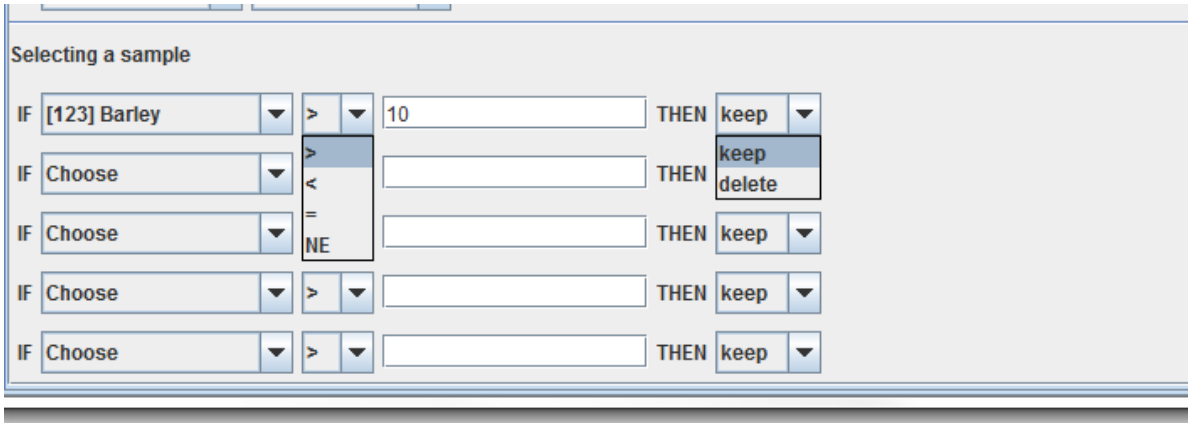


Selecting a sample:

This second option allows the user to choose a sample from one or more numerical variables (production or cost in Euros). The first step is to select the type of variable (i.e. crop production, livestock production, variable livestock costs, variable crop costs, fixed costs). The drop-down menu will then give you a list of related variables.



Now define the selected criterion by choosing one of the operators, the value to be compared and whether you want to save or delete the individuals (farm holdings) that meet the selected criterion.



For Crops and Livestock, the variables used for filtering are the output values (gross production if the option “Including home-grown consumption”). In the example above, we have saved only the farm holdings that have a production of barley greater than ten Euros.

In order to select a sample of farm holdings with a selection criterion other than gross production or a physical quantity, this is possible with a direct modification of the corresponding instruction in the parameters file.

Example: a selection of farms with at least 10 hectares of barley is desirable.
Select barley when selecting the sample (see above). When the parameters file is completed, save it and open it in the bloc-note. Then,

replace the command:
if O_123 > 10 /* 1 */ ;

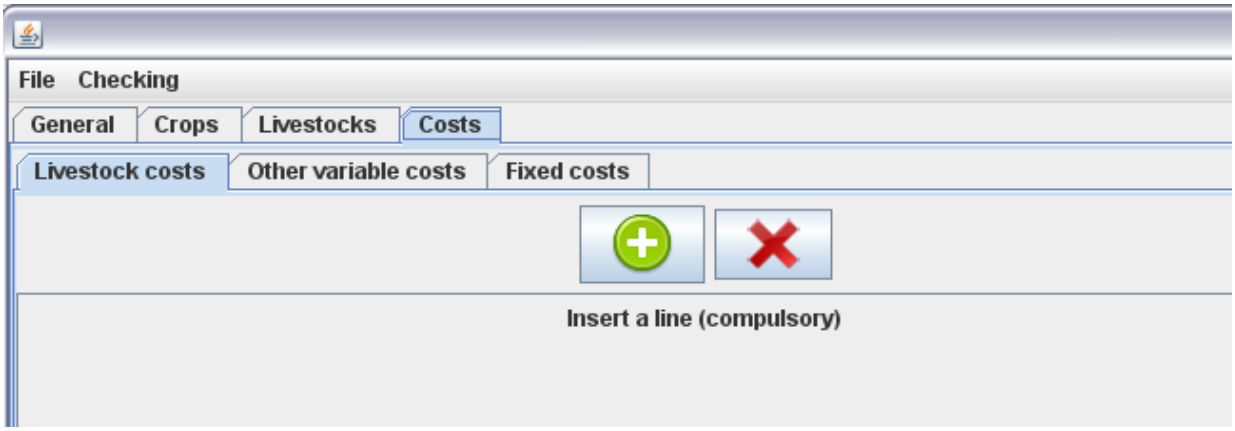
by the command:
if A_123 > 10 /* 1 */ ;

It is possible to do the same with other outputs.

O_xxx for gross output or gross product (values)
A_xxx for areas
Q_xxx for gross output or gross product (quantities or volumes)

with xxx = the code for the list of crops or livestock (see appendix 2).

Completing the form: selection of crop and livestock productions and different types of costs.



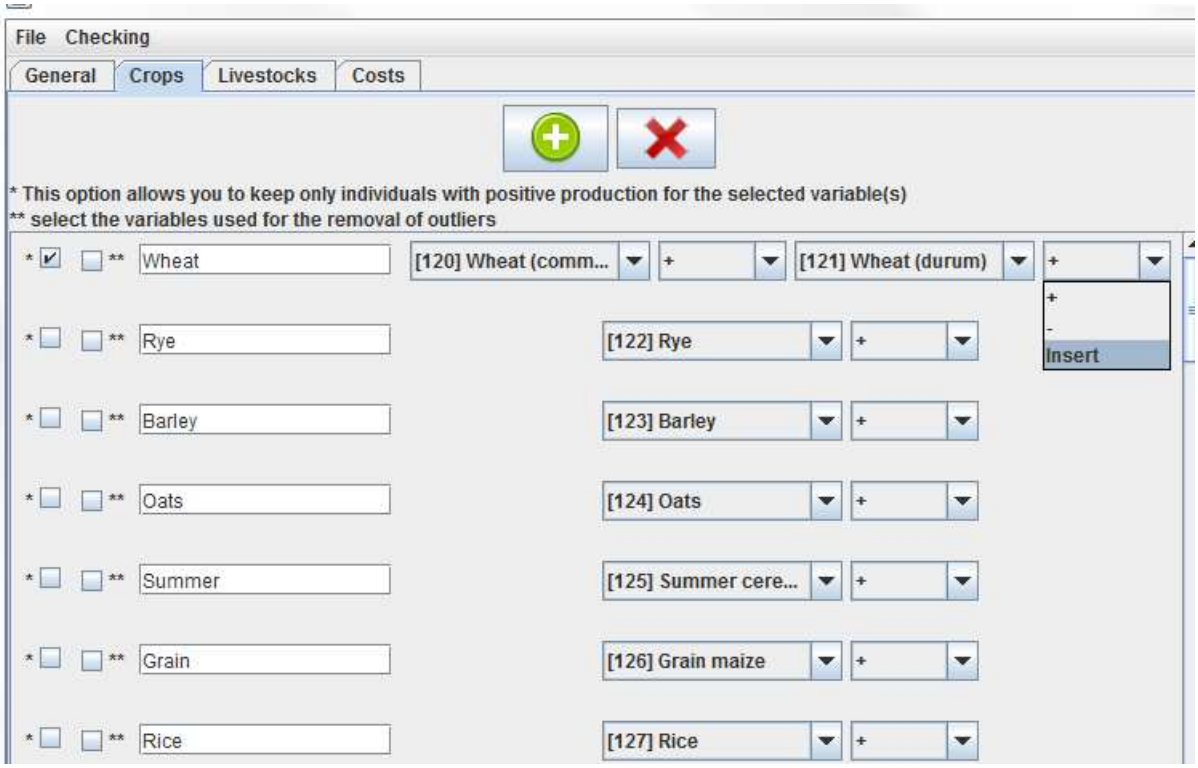
Now that general options have been selected, the productions (crop and livestock) along with the costs (variable and fixed) must be defined and then be entered into the estimable production cost model.

The "***Crops***" and "***Livestock***" tabs function in the same way; the "***Costs***" tab is divided into three sub-tabs, "***Livestock costs***", "***Other variable Costs***" and "***Fixed costs***".

To add a product or a cost, click on this icon: 

Note: the new product will be inserted after the product where the cursor is positioned. If no product is selected, the new line is inserted at the end of the list.

To delete a product or cost, select the line and click on this icon: 



In the "***Crops***" and "***Livestock***" tabs, the green button with a ”+” sign brings up a line with five fields:

- The first checkbox, preceded by the symbol “*” is an option which allows the user to save only those farm holdings with a positive value for the selected variable. For example, only farm holdings with a positive production (a gross product for the version excluding home-grown consumption) for the “wheat” variable (sum of variables K120TP and K121TP) will be entered into the database used by the model.

Important: This option can considerably reduce the number of farm holdings, especially if it is applied to uncommon productions or several productions at the same time. It is therefore necessary to check that the obtained database is not empty before running the production cost model.

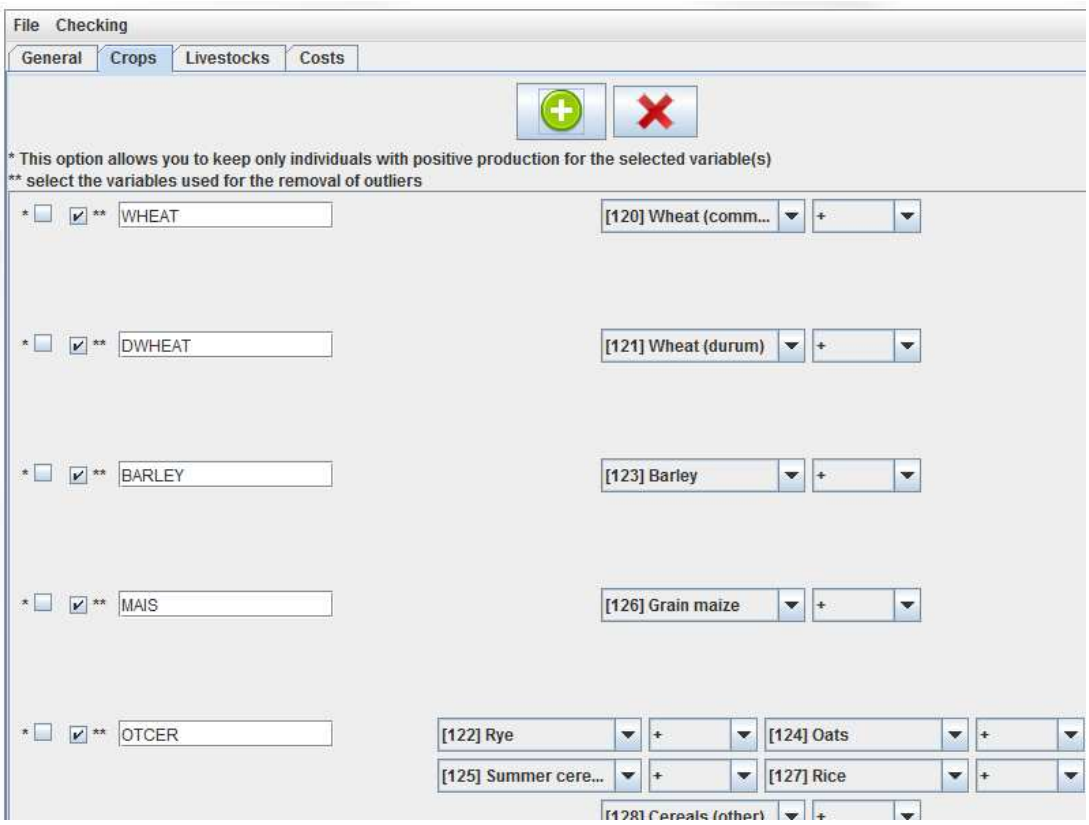
- The second checkbox, followed by the symbol “**” has already been mentioned. It is associated with the "Outlier deletion" option and enables the user to identify which variables he/she wishes to use in the deletion of outliers.
- The dialog box allows the user to label the variable being created. This is essential. The label is limited to 14 characters and special characters are not accepted. Only letters and underscores are accepted. In order to help the user, the form automatically generates a name corresponding to the first selected variable, but this name is not definitive and can be easily changed.
- The drop-down menu enables the user to choose a variable from a list of available variables (see appendix for the complete list).
- If you select "insert" in the second drop-down menu, a new drop-down menu appears with a list of remaining productions. This is so as to be able to concatenate these productions into a single variable. You can add as many productions as you wish from the list, but it is not possible to use the same production twice.

There are limits, however, to the number of variables being created. It is thus possible to define 47 crop production variables, 21 livestock production variables, eight variable livestock cost variables, five variable crop cost variables and 18 fixed cost variables (not including the variable F83 - taxes- which is included in the model, and subsidies which are defined separately from fixed costs).

Certain "other" types of productions have been created to avoid duplicates. For example, oil-seed crops are broken down into rapeseed, sunflower, soya and others. To add the oilseed crop output variable, you must select the sum of the above mentioned productions, as explained above. It is easy to aggregate the variables in the form.

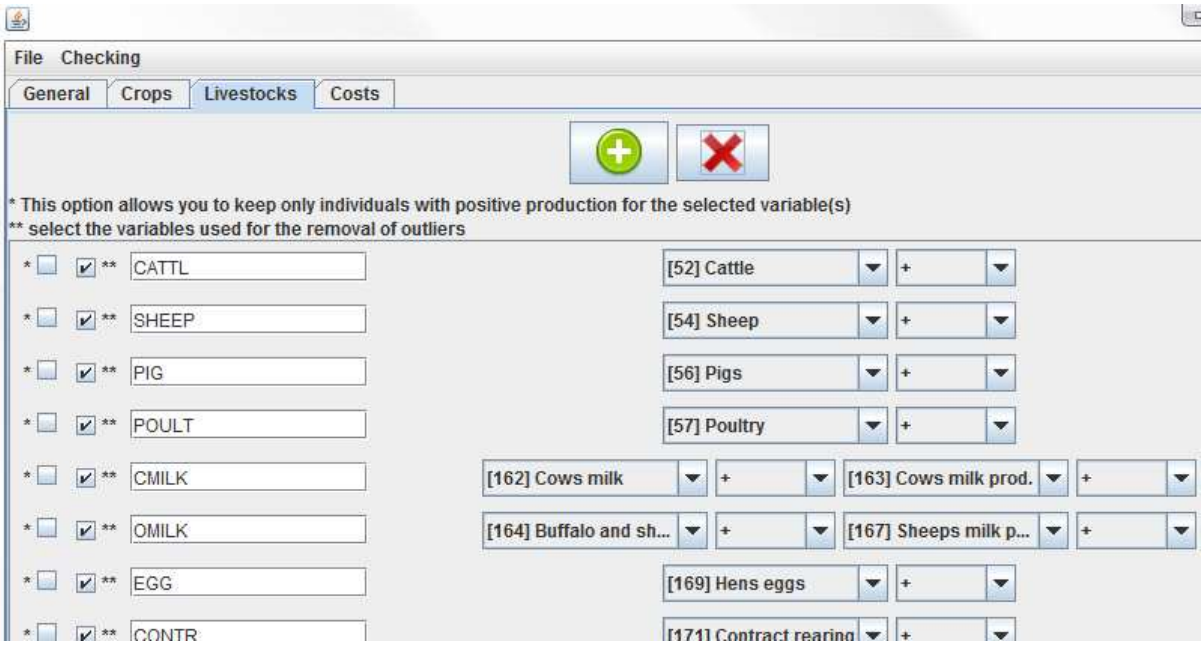
The cost of production model automatically creates two variables, **OCROP** (Other Crops) and **OLIST** (Other Livestock). They respectively correspond to the residual crop and livestock productions not included by the user in the java form. This is so as to include all productions of farm holdings in the regression estimations. **This operation is not done for the costs.**

Crops



See appendix 2 for list of available crop products

Livestock



See appendix 2 for the list of available livestock and other products.

Costs

The three cost tabs are similar to the tabs for crop and livestock productions, and are constructed in the same way, except that the first checkbox is not available.

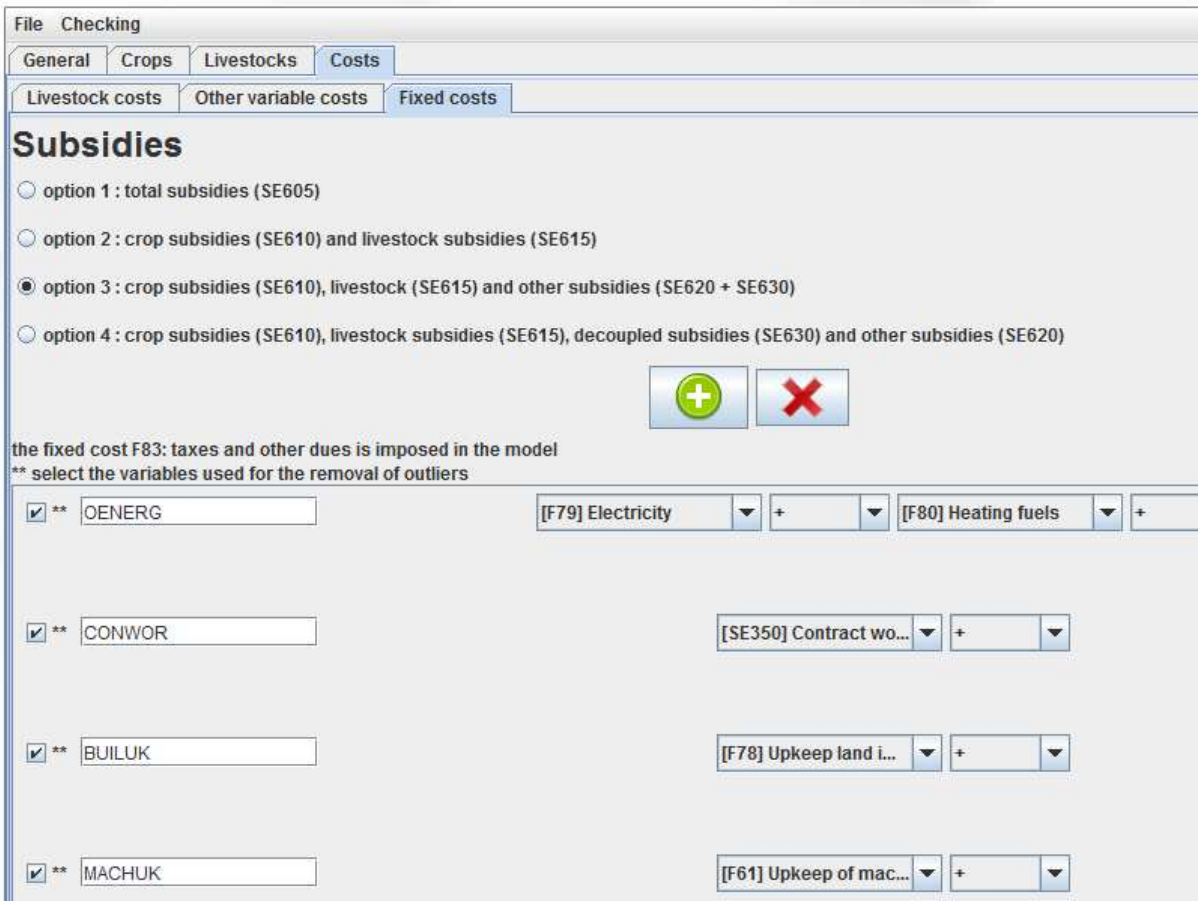
The "***Fixed costs***" sub-tab has an extra part for subsidies. The user must choose one of the four following options; the fourth one being selected by default:

- Option 1: total subsidies (SE605)

- Option 2: crop subsidies (SE610) and livestock subsidies (SE615)

- Option 3: crop subsidies (SE610), livestock subsidies (SE615) and other subsidies (SE620 + SE630)

- Option 4: crop subsidies (SE610), livestock subsidies (SE615), decoupled subsidies (SE630) and other subsidies (SE620)



See appendix 2 for the list of available costs.

The production cost model does not create an "other costs" variable related to costs not included in the model. However, it does create a "NetVal" variable which is the difference between the total revenues and total costs:

NetVal = sum of output values - sum of costs (including taxes) + subsidies

The NetVal variable can be considered to be value-added, if the user does only take intermediate consumption into account. It is thus possible to choose the type of margin (gross or net) by including depreciation or not.

The user may also wish to include in total costs the expenses associated farm-owned factors of production such as faire-valoir direct, equity capital or family labor. To do this, it is possible to add the following calculated cost items:

Calculated land rent
Calculated for each farm holding in the sample by multiplying the number of hectares directly owned by the farmer by the unit (per hectare) land rent prevailing in the region.

Calculated interest cost
Calculated for each farm holding in the sample by multiplying the interest rate prevailing in the region multiplied by the value of the equity capital (to which estimated land rents have been taken away).

Calculated family labor cost
Calculated for each farm holding in the sample by multiplying the number of annual family work units (AWU) by the wage rage per AWU employed in the region.

These calculated costs can be useful, notably for comparing individual farm holdings with incorporated farms, for which various costs are outsourced.

Do not forget to save the file when you have finished, in order to create the parameters file required for the FACEPA model to work!

Example of a parameters file

When you save your file, (using the Save or Save as option) the Java form creates a parameters file containing the information required for the model to run. This file is in a text format and looks like this one:

```
NOT      [1]
/*************************************************************************/
/*************************   PARAMETERS FILE   ***************************/
/*********************   The Cost of Production Model   ******************/
/*************************************************************************/

Y<--- CAL  Y to stall N otherwose
N<--- PS   Y for weighted N otherwise
N<--- CST Y for constant N otherwise
Y<--- INTRA Y with intra N otherwise
09<--- NV   Number of crop variables (2 positions)
09<--- NA   Number of livestock variables (2 positions)
07<--- CV   Number of variable costs (2 positions)
3<--- CA   of which number of livestock variable costs (1 position)
09<--- CF   Number of fixed costs (2 positions)
3<--- SUB   Number of subsidies (1 position)
1<--- byprod excel output by prod and year takes 0 or 1
fra<--- COUNT Selected country
00<--- NBCOUNT  Number of countries [2]

2007<--- FYEAR First year
2008<--- LYEAR Last year
ST<--- TESTB Type of test PV ST or TV
1<--- parea Costs per ha takes the values 0 or 1
1<--- pqtl Costs per q takes the value 0 or 1
0<--- plvst Costs per LU takes the value 0 or 1
0<--- phead Costs per head takes the value 0 or 1
1<--- sasform SAS output takes 0 or 1
1<--- xlsform EXCEL output takes 0 or 1
1<--- htmlform HTML output takes 0 or 1
1<--- OUTLIER Deletion of outliers takes 0 or 1
A<--- PVO pvalue outlier
"C:\Users\FACEPA\BASES\SAS"  [3]
C:\Users\FACEPA\results      [4]
Y1 Y3   [5]
YA1 YA3 XA1  [6]
if A26 in ('01','02','10')then delete;  [7]
if SE300 < 10 /* 4 */ then delete;  [8]
if TF8 = "5" OR TF8 = "6" then TF8 = "10"; if TF8 = "7" OR TF8 = "8" then TF8 = "11"; [9]
TF8   [10]
if A24 = "est" OR A24 = "sve" then A24 = "ct1" ;  [11]
crp01*O_120
crp02*O_121
crp03*O_123
crp04*O_126
crp05*O_122+O_124+O_125+O_127+O_128
crp06*O_360+O_361+O_330
crp07*O_130
crp08*O_131
crp09*O_331
liv01*O_52
liv02*O_54
liv03*O_56
liv04*O_57
liv05*O_162+O_163
liv06*O_164+O_167
liv07*O_169                                   [12]
  [...]
fixed_cost09            *F83
subsidies01             *(-SE610)
subsidies02             *(-SE615)
subsidies03             *(-SE620)+(-SE630)    [13]

WHEAT
DWHEAT
BARLEY
MAIS
OTCER
DRYPU                                         [14]
ROTAT
```

[1] line generated only if the parameters file is incomplete

[2] number of countries = 00 because the "per year" option is selected

[3] path of the directory containing the SAS databases

[4] path of the directory where results will be saved

[5] list of variables that have to be positive so that the farm observation is kept in the sample (0 otherwise)

[6] productions and costs included by the outlier option, YAi relating to crop and livestock production, XAi to costs (0 otherwise)

[7] line generated by the filter with string type variables (blank line otherwise)

[8] line generated by the filter with numerical variables (blank line otherwise)

[9] line generated if there is an aggregation of classification variables (0 otherwise)

[10] selected classification variables (0 otherwise)

[11] line generated if the aggregation of countries (if the option "per country" is selected) or years (if the option "per year" is selected)

[12] formula to calculate of crop variables (crp_i) and livestock variables (liv_i)

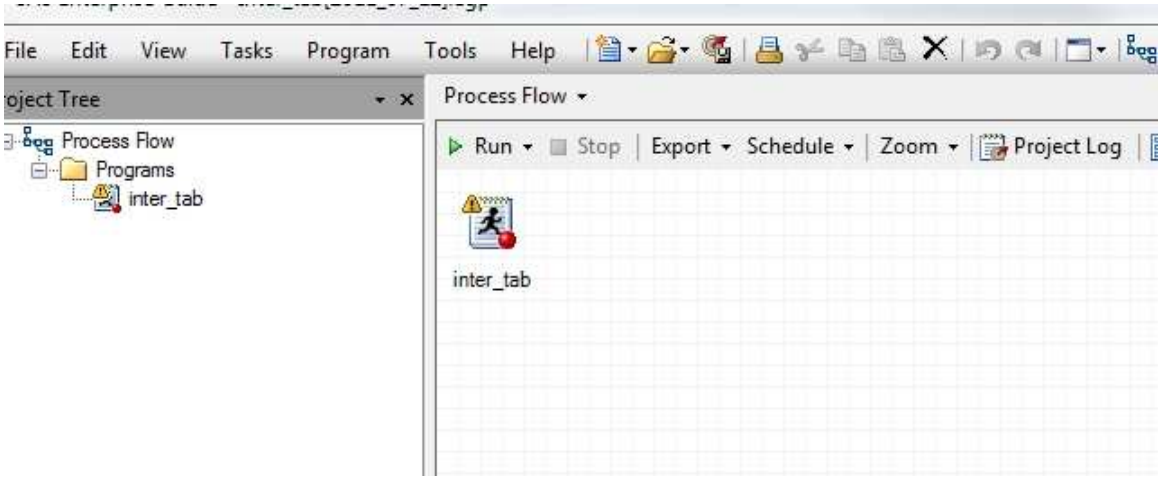
[13] formula for the calculation of different costs

[14] labels of crop variables, livestock variables and different costs.

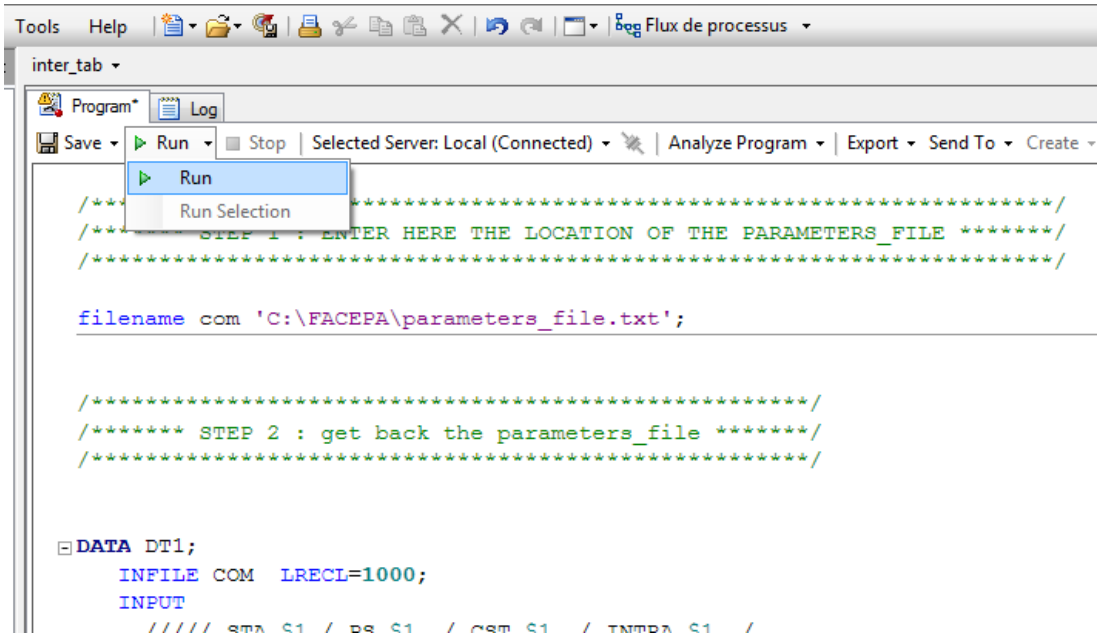
Validation of parameters and intermediate tables

The form ensures that the user will obtain a parameters file avoiding the syntax errors in the model. However the user must take certain precautions to obtain the most reliable estimation results as possible. The sample being used must contain enough observations to back up the estimations. The combination of filters, classification variables and deletion of outliers can rapidly diminish the number of observations. Furthermore, the model can take a long time to generate production cost coefficients, especially if many countries or years are selected. It is therefore strongly recommended to start by using the "***inter_tab.egp***" program **before** running the model. This program, which also runs with Enterprise Guide, enables the user to generate intermediate tables which will inform the user on the variables defined in the form (average costs, number of farm holdings, production share, etc). In so doing the user can get a quick idea of the selected sample and can, if need be, return to the java form to make changes in case that problems (such as non-existing production, wrong choice of options etc…) crop out.

The program "***inter_tab.egp***" can be found in the *FACEPA\SAS_Pgm* directory. Double-click to open this program.



The process flow only contains one code. Double click to open so as to indicate the path of the directory containing the parameters file to be tested.



Correct the path in single quotes after the filename and indicate the path of the directory where the parameters file you wish to test is stored.

After you have modified the path, click on "Run" to execute the “inter_tab” program.

This program generates two main tables (or more depending on the options that have been selected by the user in the form):

The first table, named "***OUTPUT***" contains information about crop and livestock production defined in the form (number of farms and average production values[1]). The "Sample" column indicates whether the data concern all farm holdings in the defined sample ("ALL FARMS") or just those with a positive value for the production of interest ("WITH"). This table also shows each share of each production with respect to the total production value.

OUTPUTS for fra

YEAR	Sample	Label	Units	WHEAT	DWHEAT	BARLEY	MAIS	OTCER	DRYPU	POTAT	SUGAR	RAPE
2007	ALL_FARMS	total nb	farms	7362.00	7362.00	7362.00	7362.00	7362.00	7362.00	7362.00	7362.00	7362.00
2008	ALL_FARMS	total nb	farms	7460.00	7460.00	7460.00	7460.00	7460.00	7460.00	7460.00	7460.00	7460.00
2007	WITH	number	farms	4181.00	492.00	2950.00	2117.00	1660.00	719.00	327.00	780.00	2076.00
2008	WITH	number	farms	4282.00	493.00	2973.00	2237.00	1677.00	576.00	318.00	687.00	1935.00
2007	WITH	mean	€	35857.23	31304.21	14280.83	33635.69	5071.00	8041.80	71793.33	27652.97	18058.14
2008	WITH	mean	€	34769.49	32397.28	16550.46	24296.30	4962.18	9314.70	71623.92	30979.35	25372.01
2007	ALL_FARMS	mean	€	20373.65	2092.05	5734.06	9699.62	1151.00	793.04	3208.37	2929.82	5092.19
2008	ALL_FARMS	mean	€	20018.09	2145.34	6651.24	7386.60	1136.11	744.18	3091.54	2861.23	6581.08
2007	ALL_FARMS	share	%	10.89	1.12	3.06	5.18	0.62	0.42	1.71	1.57	2.72
2008	ALL_FARMS	share	%	10.38	1.11	3.45	3.83	0.59	0.39	1.60	1.48	3.41

[1] Gross production for the "with home-grown" option, gross product for "without home-grown"option.

The "***INPUT***" table contains the average value of the costs defined by the user for all of the farm holdings in the sample ("ALL FARMS") or for those with a positive value ("WITH") concerned by these expenses.

INPUTS for fra

YEAR	Sample	Label	Units	FEEDPC	FEEDHC	VETCOS	SEED	FERTIL	CRPROT	MOTFUE	OENERG	CONWOR	E
2007	ALL_FARMS	mean	€	19726.24	2681.41	3410.96	7279.52	10710.03	9844.02	5180.63	3450.21	10858.81	
2008	ALL_FARMS	mean	€	23319.71	2753.08	3649.67	8202.03	13462.09	11148.84	6924.91	3662.31	11481.02	
2007	WITH	mean	€	34519.74	6895.04	5961.88	8431.70	11280.01	10418.58	5416.04	3631.74	11400.82	
2008	WITH	mean	€	41165.42	7136.19	6416.82	9536.65	14249.04	11867.91	7210.03	3831.82	12046.19	

If you have chosen a classification variable ("Organic Farming" in the example below), a supplementary table is generated, showing the number of farms per type of production for the different modalities of this classification variable.

Number of farm by year and by Organic Farming

Year	Class_Var	Sample	Label	WHEAT	DWHEAT	BARLEY	MAIS	OTCER	DRYPU	POTAT	SUGAR	RAPE	CATT
2007	1	WITH [NOT WEIGHTED]	nb_of_farm	4035	479	2859	2069	1580	673	306	756	2025	336
2007	2	WITH [NOT WEIGHTED]	nb_of_farm	63	2	36	15	52	26	8	4	10	7
2007	3	WITH [NOT WEIGHTED]	nb_of_farm	57	5	39	26	27	8	7	6	23	6
2008	1	WITH [NOT WEIGHTED]	nb_of_farm	4178	486	2903	2191	1607	552	305	680	1902	337
2008	2	WITH [NOT WEIGHTED]	nb_of_farm	42	5	25	12	41	13	6	0	6	5
2008	3	WITH [NOT WEIGHTED]	nb_of_farm	50	2	40	30	29	7	4	2	17	5

The preceding table can provide weighted or unweighted results, depending on whether the user has selected the "Weighted" option in the form. The indication "[WEIGHTED]" or "[NOT WEIGHTED]" in the "Sample" column reminds the user of the option that has been selected in the form.

If the number of holdings is too small for a product, it is preferable to return to the Java form to modify the parameters: Delete the product, aggregate it with a product with similar characteristics, or revise the classification variable by aggregating some of the modalities.

Finally, if the user has selected the "OUTLIER" option in the Java form, two other tables will be generated in order to assess the impact of deleting outliers. First the number of farm holdings considered as outliers, then a table showing part of the data from the "OUTPUT" table, but this time from the sample before deletion of outliers, in order to be able to compare results.

NB of OUTLIER by outputs for fra

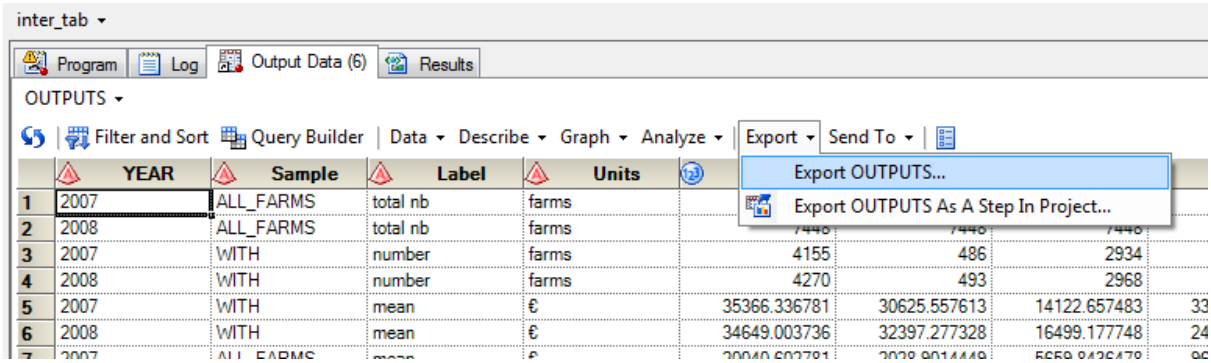
YEAR	Sample	Label	Units	WHEAT	DWHEAT	BARLEY	MAIS	OTCER	DRYPU	POTAT	SUGAR	RAPE	OCROP	CATTL
2007	WITH	number	farms	26	6	16	7	1	12	6	14	18	4	1
2008	WITH	number	farms	12	0	5	4	0	4	3	5	10	2	1

Page Break

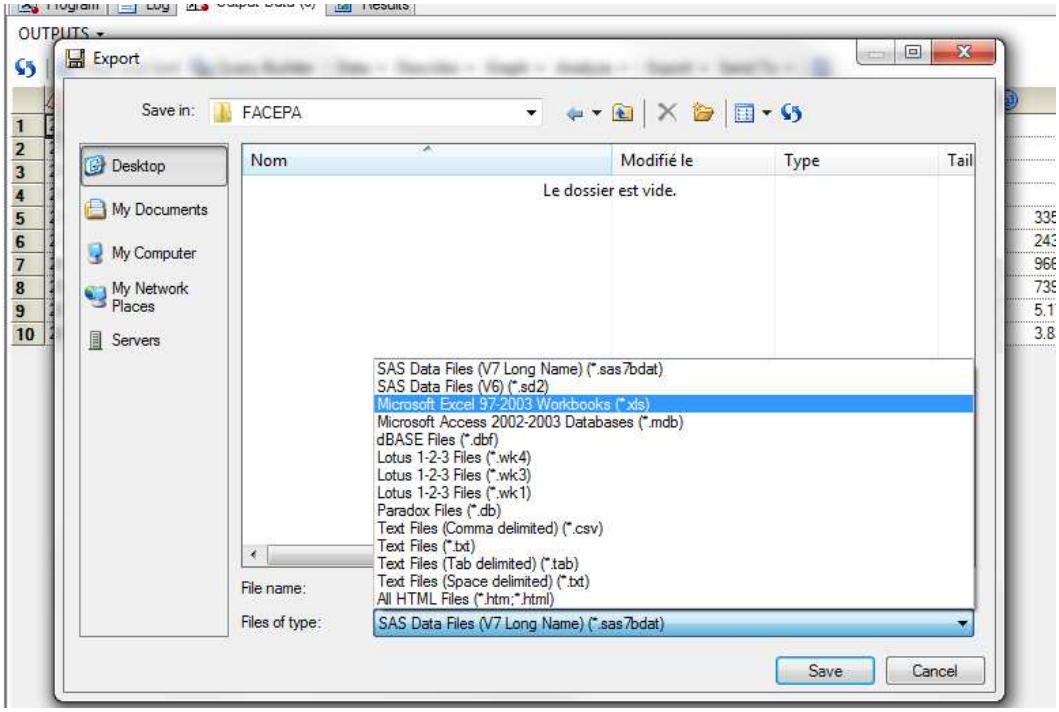
outputs WITH OUTLIERS for fra

YEAR	Sample	Label	Units	WHEAT	DWHEAT	BARLEY	MAIS	OTCER	DRYPU	POTAT	SUGAR	RAPE
2007	WITH	mean	€	35857.23	31304.21	14280.83	33635.69	5071.00	8041.80	71793.33	27652.97	18058.14
2008	WITH	mean	€	34769.49	32397.28	16550.46	24296.30	4962.18	9314.70	71623.92	30979.35	25372.01
2007	ALL_FARMS	mean	€	20373.65	2092.05	5734.06	9699.62	1151.00	793.04	3208.37	2929.82	5092.19
2008	ALL_FARMS	mean	€	20018.09	2145.34	6651.24	7386.60	1136.11	744.18	3091.54	2861.23	6581.08
2007	ALL_FARMS	shar	%	10.89	1.12	3.06	5.18	0.62	0.42	1.71	1.57	2.72
2008	ALL_FARMS	shar	%	10.38	1.11	3.45	3.83	0.59	0.39	1.60	1.48	3.41

If desired, it is very easy to export these output tables from the SAS table format (Output Data): Click on "Export", then "Export *name of the table…*".



Choose the format of the export:



Errors to avoid

Here are the most frequently encountered errors which prevent the "***inter_tab.egp***" program from producing results:

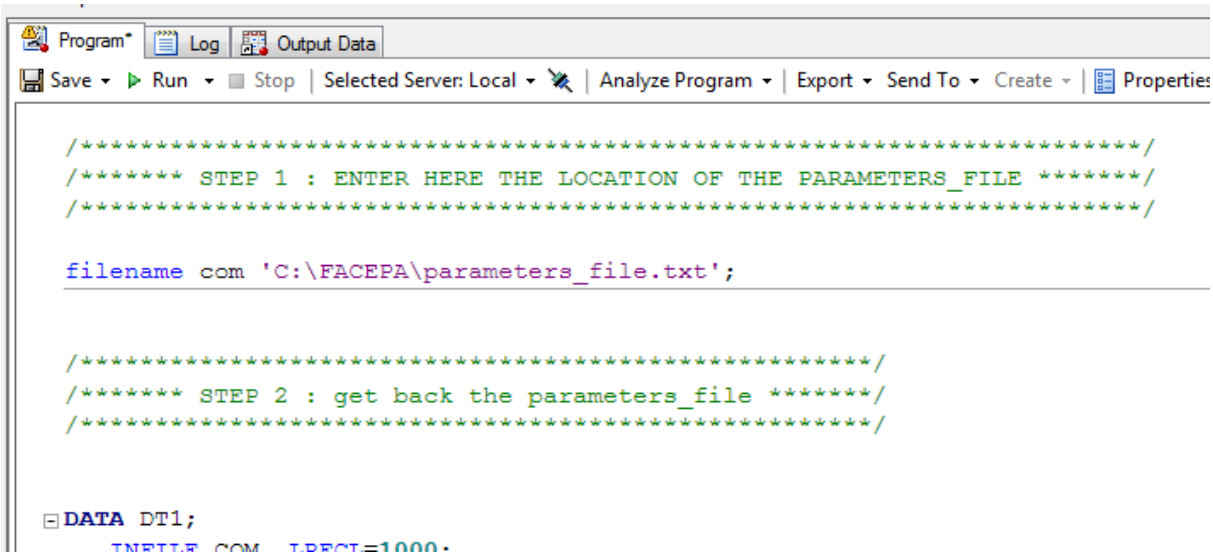
1. The path indicated for the parameters file is not valid.
2. The path indicated for storing the SAS databases is not valid.
3. The SAS databases are incomplete.
4. The sample defined by the user is empty (too many limitations for the variables).

Model for estimating production cost coefficients: the FACEPA model

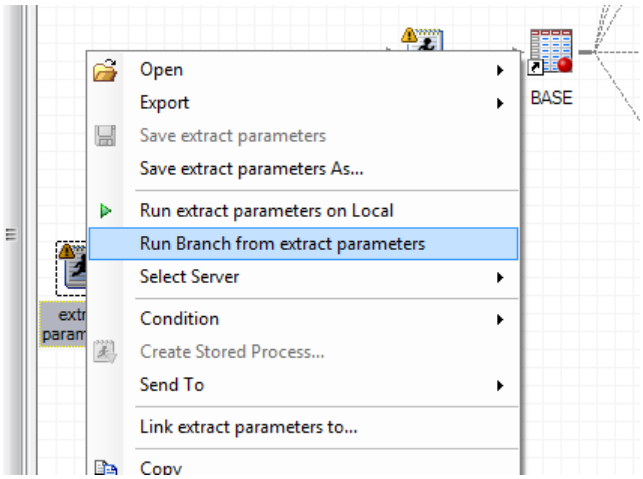
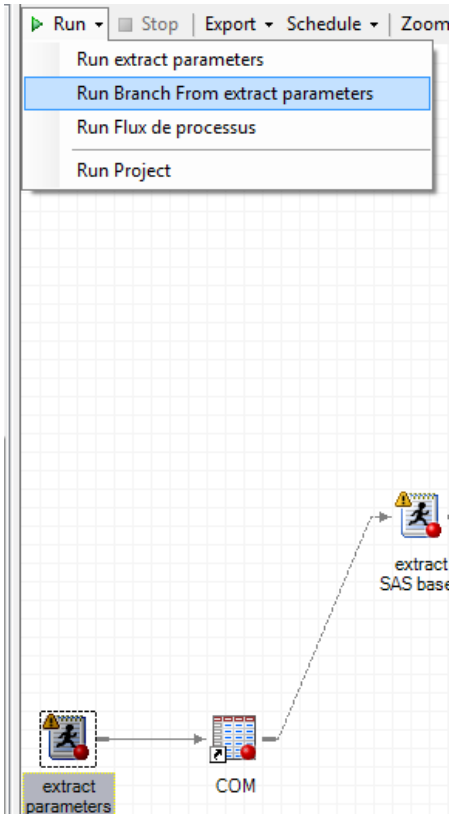
To activate the model, go to the FACEPA\SAS_Pgm directory and double click on the SAS Enterprise Guide "***model.egp***" program.

The first thing to do is to open the first code, named "extract parameters" on the left of the process flow. Correct the path in single quotes after the filename, indicating the path to the directory with the parameters file that you wish to test.

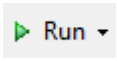
Example:

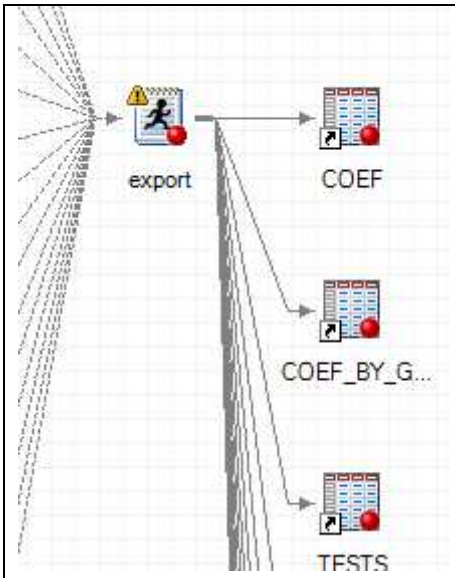


Then go to the branch structure to run the process flow. There are several ways to proceed which may vary slightly in different versions of Enterprise Guide. Here are the two ways to proceed, using version 4.3 of Enterprise Guide:

[1]	[2]
	

[1] Right click on the first code on the left then click "Run Branch from extract parameters".

[2] Single click on "extract parameters" to select it, click on  then select "Run Branch from extract parameters".

	Wait for the model to finish running. The SAS tables which allow you to generate output tables are located at the end, after the code "export", to the right of the process flow (if the "SAS tables" format has been selected in the output options). It is also possible to open the HTML pages  (if the option is selected) directly in Enterprise Guide.

Caution: Microsoft EXCEL must be installed on the computer if the EXCEL checkbox is ticked, otherwise the files cannot be generated. Furthermore, the name generated for the output file depends on the country and the year. If there is a results table from a same country or same year already open, the table cannot be overwritten by the model. It is therefore strongly recommended that you empty the folders contained in the "results" directory before running the model.

Appendix 1: For experienced users.

Some information about the different process flow codes.

Extract parameters

Extracts the parameters file containing the options chosen by the user, the variables defined with their labels and calculation formulae.

As for output, the COM table contains in a single line all information from the parameters file required for the model to work

Extract SAS bases

This part of the program extracts the databases in SAS format (as many databases to extract as there are countries or years selected). If several countries or years are selected, these databases will be concatenated, so there will be only one table in output: "BASE".

Crop / live / input / other / misc

"crop" is for data relating to crops, "live" for data relating to livestock, "input" for data relating to costs, "other" concerns the other variables and "misc" other general variables.

Each of these five codes retrieves variables required by the model, renames them and adds their labels. It also creates a variable called "IDENT", which is a concatenation of variables A1, A2 and A3.

Merge

Merges the five previously created databases.

Forage areas are allocated proportionally between meat production and milk production from different herbivores.

Livestock units and heads are allocated proportionally between meat and milk production.

Caution: after running this part of the program, LU and NB 52, NB 54 et NB 55 (which correspond respectively to livestock units and the number of heads of cattle, sheep and goats) will be associated with meat production, and not total production (meat + milk).

Extract for SYSLIN proc

Creates the database used by the SYSLIN procedure, containing he information that is strictly necessary in terms of variables for greater efficiency.

For each variable defined in the form by the user, the program generates the associated variables containing production, area, quantities, livestock units, number of heads and the label defined in the form by the user.

Proc SYSLIN

The SYSLIN procedure estimates parameters in an interdependent system of linear regression equations.

Tables that are generated are as follows:

Temp> coefficients estimated by the proc SYSLIN

t_syslin_fitstatistics> Goodness of fit statistics (including Adjusted R-square)

t_syslin_parameterestimates > (tests)

t_syslin_modelvars1 > names and labels of the model

Output SYSLIN

Retrieves and treats tables created by the SYSLIN procedure and generates the following tables from the results:

1) T_SUM_F > descriptive statistics
2) TAB1 > production coefficients
3) TAB2 > Tests
4) TAB3 > Costs per hectare
5) TAB4 > Costs per quantity
6) TAB5 > Costs per LU
7) TAB6 > Costs per head
8) RECAP_TAB3 > Recap per hectare
9) RECAP_TAB4 > Recap per quantity
10) RECAP_TAB5 > Recap per LU
11) RECAP_TAB6 > Recap per head
12) SUM_GRP> Coefficients and other information per adjustment group
13) T_MEAN_AA> Total cost per hectare per adjustment group
14) T_MEAN_Q> Total cost per quantity per adjustment group
15) T_MEAN_LU> Total cost per LU per adjustment group
16) T_MEAN_NB> Total cost per head per adjustment group

Export

The last treatment of output tables before exporting results tables in the desired format.

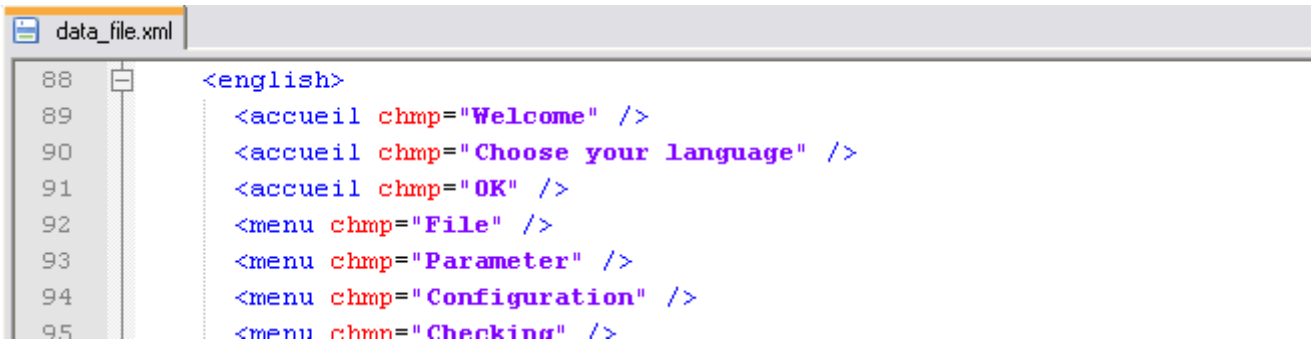
The data_file

This file contains the information required to open the Java form, such as the available productions and costs, the variables and their labels, the countries and years that are available. This data file comes in two formats, XML and EXCEL, and in different languages (English and French at present)

Data_file.XML

To open the XML file (in order to modify it), Notepad++ is recommended (free software). Here are some screen captures:

Java form labels:



It is possible to modify the Java form labels. Be sure to choose the concerned language, "english" or "francais". To add another language, this model must be copied and all the labels must be indicated, otherwise the form will not be able to run.

Data available:

```
349     <vegetaux id="0_120">
350         <francais>Blé tendre</francais>
351         <english>Wheat (common)</english>
352     </vegetaux>
353     <vegetaux id="0_121">
354         <francais>Blé dur</francais>
355         <english>Wheat (durum)</english>
356     </vegetaux>
357     <vegetaux id="0_122">
358         <francais>seigle</francais>
359         <english>Rye</english>
```

It is possible to modify this list of data, and also to add or delete productions or costs, or to add available countries and years. Be sure to always follow the model with signposts per type of variable and per language.

Data_file.XLS

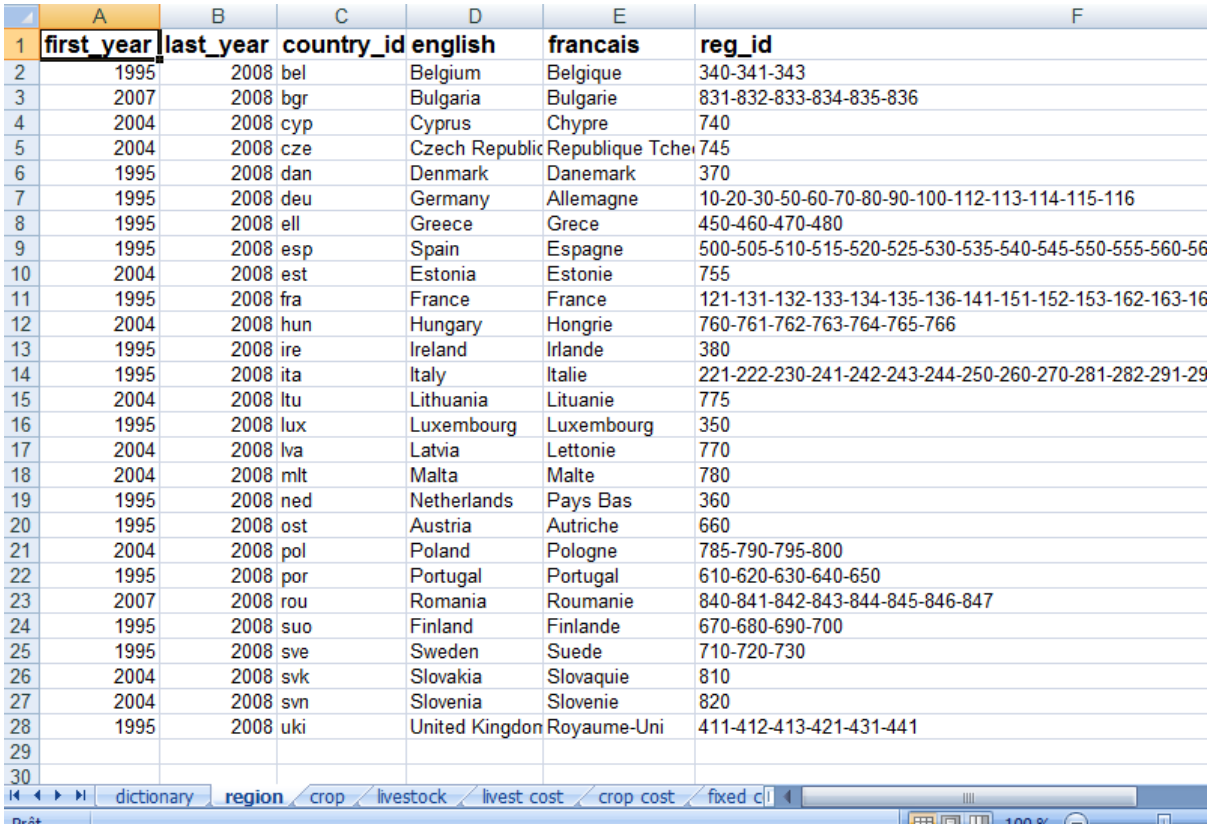
To open the Excel file (in order to modify it), Microsoft Excel is recommended. Here are some screen captures:

The Java form labels:

	A	B	C	D	E
1	**english**	**francais**			
2					
3	**home**	**home**			
4	Welcome	Bienvenue			
5	Choose your language	Choix de la langue			
6	OK	Valider			
7	Loading	Chargement			
8	Please wait during the load...	Veuillez patienter...			
9					
10	**menu**	**menu**			
11	File	Fichier			
12	Parameter	Parametre			
13	Configuration	Configuration			
14	Checking	Verification			
15	Open	Ouvrir			
16	Exit	Quitter			
17	Save	Enregistrer			
18	Save as	Enregistrer sous			
19	exit application	quitter l'application			
20	open a file	ouvrir un fichier parametres			
21	save a parameters file	enregistrer un fichier paramètres			
22	save a parameters file as..	enregistrer un fichier paramètres sous..			
23	Check fields	Vérifier			
24	this option checks that the fields a	cette option permet de vérifier si les champs sont correctement remplis			

dictionary | region | crop | livestock | livest cost | crop

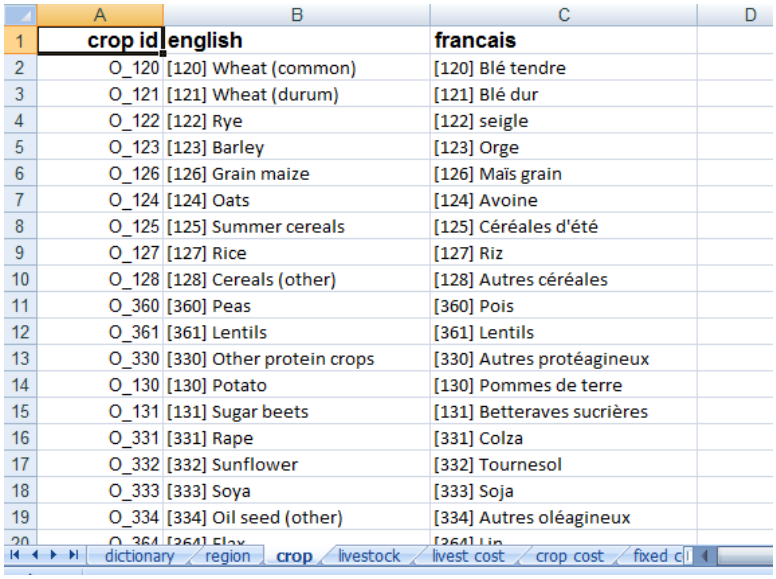
It is possible to modify the labels of the Java form. To add a language the model must be copied in the following column and all labels indicated (including in the other tabs) otherwise the form will not be able to run.



first_year	last_year	country_id	english	francais	reg_id
1995	2008	bel	Belgium	Belgique	340-341-343
2007	2008	bgr	Bulgaria	Bulgarie	831-832-833-834-835-836
2004	2008	cyp	Cyprus	Chypre	740
2004	2008	cze	Czech Republic	Republique Tche	745
1995	2008	dan	Denmark	Danemark	370
1995	2008	deu	Germany	Allemagne	10-20-30-50-60-70-80-90-100-112-113-114-115-116
1995	2008	ell	Greece	Grece	450-460-470-480
1995	2008	esp	Spain	Espagne	500-505-510-515-520-525-530-535-540-545-550-555-560-56
2004	2008	est	Estonia	Estonie	755
1995	2008	fra	France	France	121-131-132-133-134-135-136-141-151-152-153-162-163-16
2004	2008	hun	Hungary	Hongrie	760-761-762-763-764-765-766
1995	2008	ire	Ireland	Irlande	380
1995	2008	ita	Italy	Italie	221-222-230-241-242-243-244-250-260-270-281-282-291-29
2004	2008	ltu	Lithuania	Lituanie	775
1995	2008	lux	Luxembourg	Luxembourg	350
2004	2008	lva	Latvia	Lettonie	770
2004	2008	mlt	Malta	Malte	780
1995	2008	ned	Netherlands	Pays Bas	360
1995	2008	ost	Austria	Autriche	660
2004	2008	pol	Poland	Pologne	785-790-795-800
1995	2008	por	Portugal	Portugal	610-620-630-640-650
2007	2008	rou	Romania	Roumanie	840-841-842-843-844-845-846-847
1995	2008	suo	Finland	Finlande	670-680-690-700
1995	2008	sve	Sweden	Suede	710-720-730
2004	2008	svk	Slovakia	Slovaquie	810
2004	2008	svn	Slovenia	Slovenie	820
1995	2008	uki	United Kingdon	Royaume-Uni	411-412-413-421-431-441

dictionary | region | crop | livestock | livest cost | crop cost | fixed c

To add a country, go to the "region" tab and complete the file. Be sure to include all the information, such as the "first_year" and "last_year" available, the country key ("country_id"), and the key for the region/s separated by a hyphen.

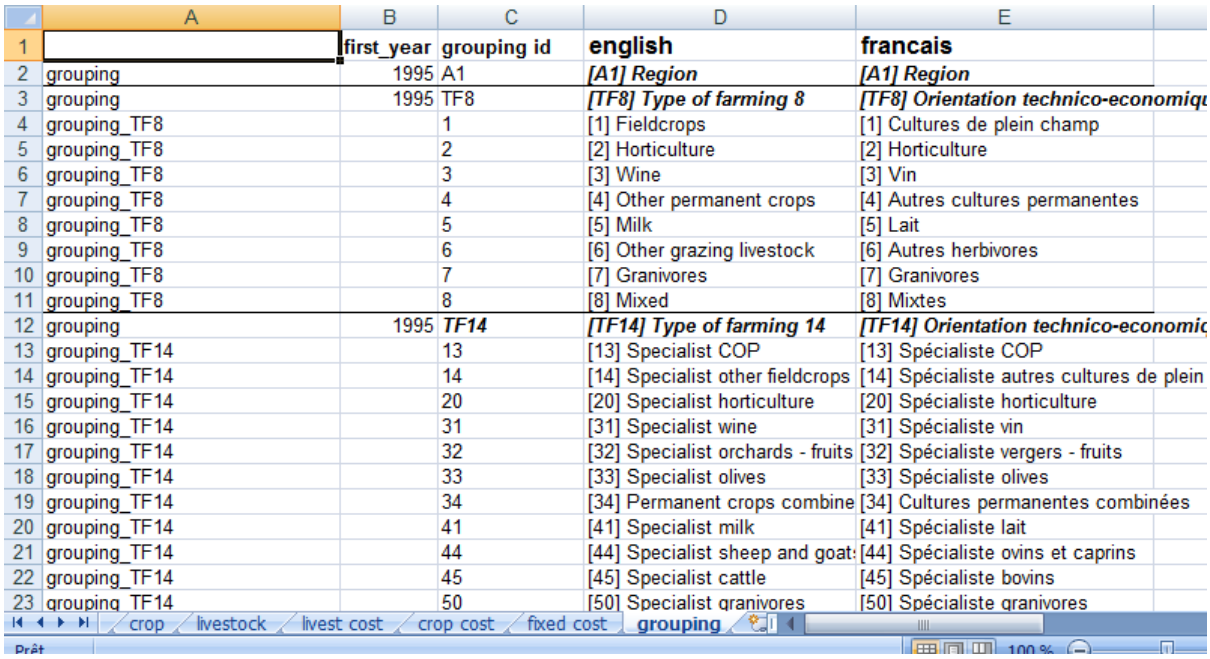


crop id	english	francais
O_120	[120] Wheat (common)	[120] Blé tendre
O_121	[121] Wheat (durum)	[121] Blé dur
O_122	[122] Rye	[122] seigle
O_123	[123] Barley	[123] Orge
O_126	[126] Grain maize	[126] Maïs grain
O_124	[124] Oats	[124] Avoine
O_125	[125] Summer cereals	[125] Céréales d'été
O_127	[127] Rice	[127] Riz
O_128	[128] Cereals (other)	[128] Autres céréales
O_360	[360] Peas	[360] Pois
O_361	[361] Lentils	[361] Lentils
O_330	[330] Other protein crops	[330] Autres protéagineux
O_130	[130] Potato	[130] Pommes de terre
O_131	[131] Sugar beets	[131] Betteraves sucrières
O_331	[331] Rape	[331] Colza
O_332	[332] Sunflower	[332] Tournesol
O_333	[333] Soya	[333] Soja
O_334	[334] Oil seed (other)	[334] Autres oléagineux

dictionary | region | crop | livestock | livest cost | crop cost | fixed c

"crop" and "livestock" tabs and the three types of costs ("livest cost", "crop cost" and "fixed cost") are done on the same model. If you wish to add a production, put it at the end, indicating its label in the first column and the code key in the following columns. Caution: If you add a variable you must modify the SAS code in Enterprise Guide (declaration of the variable).

The last tab, "grouping", contains the variables which can be used as classification variables and as filter variables ("selecting a filter").



	A	B	C	D	E
1		first_year	grouping id	english	francais
2	grouping	1995	A1	*[A1] Region*	*[A1] Region*
3	grouping	1995	TF8	*[TF8] Type of farming 8*	*[TF8] Orientation technico-economiqu*
4	grouping_TF8		1	[1] Fieldcrops	[1] Cultures de plein champ
5	grouping_TF8		2	[2] Horticulture	[2] Horticulture
6	grouping_TF8		3	[3] Wine	[3] Vin
7	grouping_TF8		4	[4] Other permanent crops	[4] Autres cultures permanentes
8	grouping_TF8		5	[5] Milk	[5] Lait
9	grouping_TF8		6	[6] Other grazing livestock	[6] Autres herbivores
10	grouping_TF8		7	[7] Granivores	[7] Granivores
11	grouping_TF8		8	[8] Mixed	[8] Mixtes
12	grouping	1995	*TF14*	*[TF14] Type of farming 14*	*[TF14] Orientation technico-economic*
13	grouping_TF14		13	[13] Specialist COP	[13] Spécialiste COP
14	grouping_TF14		14	[14] Specialist other fieldcrops	[14] Spécialiste autres cultures de plein
15	grouping_TF14		20	[20] Specialist horticulture	[20] Spécialiste horticulture
16	grouping_TF14		31	[31] Specialist wine	[31] Spécialiste vin
17	grouping_TF14		32	[32] Specialist orchards - fruits	[32] Spécialiste vergers - fruits
18	grouping_TF14		33	[33] Specialist olives	[33] Spécialiste olives
19	grouping_TF14		34	[34] Permanent crops combine	[34] Cultures permanentes combinées
20	grouping_TF14		41	[41] Specialist milk	[41] Spécialiste lait
21	grouping_TF14		44	[44] Specialist sheep and goat	[44] Spécialiste ovins et caprins
22	grouping_TF14		45	[45] Specialist cattle	[45] Spécialiste bovins
23	grouping_TF14		50	[50] Specialist granivores	[50] Spécialiste granivores

crop | livestock | livest cost | crop cost | fixed cost | grouping

To add a variable, go to the bottom of this table (without leaving a line blank) and complete it as follows:

First line:

Column A	Column B	Column C	Following columns
"grouping"	"first year of the variable"	"code of the variable"	"label of the variable in different languages"

You must then add as many lines as there are modalities for the added variable.

Each of these lines must contain the following information about these modalities:

The first column must contain the term "grouping" + the "code of the variable", for example "grouping_TF8" or "grouping_A24". The second line must remain blank. The next line contains the code of the modality, and the following columns contain the label of the modality in different languages.

The code of the variables is also rewritten here in brackets before the label of the modalities and of the variable. This allows the code and the formulation of the variables and modalities to appear in the form. It is not obligatory, however.

If you add a variable, it is recommended that you fully complete the file, however if you wish, you can delete one of the languages from the form.

You are strongly advised not to use special characters in the formula, as this may result in problems when opening the form.

If a "grouping" variable is added, it must be declared in the model's SAS code.

Appendix 2: Dictionary of Variables

Countries

Countries	Code	Year(s)
Austria	ost	from 1995
Belgium	bel	from 1995
Bulgaria	bgr	from 2007
Cyprus	cyp	from 2004
Czech Republic	cze	from 2004
Denmark	dan	from 1995
Estonia	est	from 2004
Finland	suo	from 1995
France	fra	from 1995
Germany	deu	from 1995
Greece	ell	from 1995
Hungary	hun	from 2004
Ireland	ire	from 1995
Italy	ita	from 1995
Latvia	lva	from 2004
Lithuania	ltu	from 2004
Luxembourg	lux	from 1995
Malta	mlt	from 2004
Netherlands	ned	from 1995
Poland	pol	from 2004
Portugal	por	from 1995
Romania	rou	from 2007
Slovakia	svk	from 2004
Slovenia	svn	from 2004
Spain	esp	from 1995
Sweden	sve	from 1995
United Kingdom	uki	from 1995

Available variables used for classification or in the first filters

Region (A1)

Countries with several regions

BEL	BGR	DEU	ELL	ESP	FRA	HUN	ITA	POL	POR	ROU	SUO	SVE	UKI
340	831	010	450	500	121	760	221	785	610	840	670	710	411
341	832	020	460	505	131	761	222	790	620	841	680	720	412
343	833	030	470	510	132	762	230	795	630	842	690	730	413
	834	050	480	515	133	763	241	800	640	843	700		421
	835	060		520	134	764	242		650	844			431
	836	070		525	135	765	243			845			441
		080		530	136	766	244			846			
		090		535	141		250			847			
		100		540	151		260						
		112		545	152		270						
		113		550	153		281						
		114		555	162		282						
		115		560	163		291						
		116		565	164		292						
				570	182		301						
				575	183		302						
				580	184		303						
					192		311						
					193		312						
					201		320						
					203		330						
					204								

Region (A1) suite

Countries with only one region

CYP	CZE	DAN	EST	IRE	LTU	LUX	LVA	MLT	NED	OST	SVK	SVN
740	745	370	755	380	775	350	770	780	360	660	810	820

Type of farming 8 groups (TF8)

Code	Name
1	Fieldcrops
2	Horticulture
3	Wine
4	Other permanent crops
5	Milk
6	Other grazing livestock
7	Granivores
8	Mixed

Type of farming 14 groups (TF14)

Code	Name
13	Specialist COP
14	Specialist other fieldcrops
20	Specialist horticulture
31	Specialist wine
32	Specialist orchards - fruits
33	Specialist olives
34	Permanent crops combined
41	Specialist milk
44	Specialist sheep and goats
45	Specialist cattle
50	Specialist granivores
60	Mixed crops
70	Mixed livestock
80	Mixed crops and livestock

OTEB: type of farming 8 groups (no mixed production group)[1]

Name	OTEB	aggregates the following OTE
Fieldcrops (A)	1	1310, 1320, 1330, 1410, 1420, 1430, 1441, 1442, 1443, 6020, 6030, 6040, 6050, 8110, 8130, 8210
Milk (C)	2	4110, 4120, 4310, 7110, 8120
Grazing livestock (D)	3	4210, 4220, 4320, 4410, 4420, 4430, 4440, 7120, 8140
Granivores (E)	4	5011, 5012, 5013, 5021, 5022, 5023, 5031, 5032, 7210, 7220, 7230
Quality wine (FCPVQ)	5	3110
Ordinary wine (FCPVO)	6	3120, 3130, 3141, 3142, 3143
Other permanent crops (FAUCP)	7	3211, 3212, 3213, 3220, 3230, 3300, 3400, 6062, 8220
Horticulture (FM)	8	2011, 2012, 2013, 2021, 2022, 2023, 2031, 2032, 2033, 2034, 6010, 6061, 8231, 8232

Organisational form (A18)

Code	Name
1	Individual (family) farms
2	Partnerships
3	Other

Warning: this variable is available only from 2002 onwards.

Economic Size Class (A26)

Code	Grouping (size in ESU)
01	< 2 ESU
02	[2 - 4[ESU
03	[4 - 6[ESU
04	[6 - 8[ESU
05	[8 - 12[ESU
06	[12 - 16[ESU
07	[16 - 40[ESU
08	[40 - 100[ESU

[1] created by the French team

09	[100 - 250[ESU
10	>= 250 ESU

ESU = European size units

Organic farming (A32)

Code	Definition
1	does not apply organic production methods
2	applies only organic production methods
3	is converting to organic production methods or applies both organic and other production methods

Warning: this variable is available only from 2000 onwards.

Less-favoured area (A39)

Code	Definition
1	not in less-favoured areas (i.e. in "normal" areas)
2	in less-favoured not mountain areas
3	in less-favoured mountain areas
4	no significant areas in the member state or region

Principal type of farming (A29)

Code	Name
13	Specialist COP
14	Specialist other fieldcrops
20	Specialist horticulture
31	Specialist wine
32	Specialist orchards - fruits
33	Specialist olives
34	Permanent crops combined
41	Specialist milk
42	Specialist cattle
43	Mixed milk rearing and fattening
44	Specialist sheep and goats
50	Specialist granivores

60	Mixed crops
71	grazing livestock
72	granivores
81	field crops and grazing livestock combined
82	Mixed crops and livestock

Type of farming at recording (A30)

Code	Name
1310	Specialist COP (other than rice)
1320	Specialist rice
1330	COP and rice combined
1410	Specialist root crops
1420	Cereals and root crops combined
1430	Specialist field vegetables
1441	Specialist tobacco
1442	Specialist cotton
1443	Various field crops combined
2011	Specialist market garden vegetables – outdoor
2012	Specialist market garden vegetables - under glass
2013	Specialist market garden vegetables, outdoor and under glass combined
2021	Specialist flowers and ornamentals – outdoor
2022	Specialist flowers and ornamentals - under glass
2023	Specialist flowers and ornamentals, outdoor and under glass combined
2031	General market garden cropping – outdoor
2032	General market garden cropping - under glass
2033	Specialist mushrooms
2034	Various market garden crops combined
3110	Quality wine
3120	Wine other than quality
3130	Quality & other wine combined
3141	Specialist table grapes
3142	Specialist raisins

3143	Mixed vineyards
3211	Specialist fresh fruits (other than citrus)
3212	Specialist nuts
3213	Fresh fruits (other than citrus) and nuts combined
3220	Citrus fruits
3230	Fruits & citrus fruits combined
3300	Olives
3400	Various permanent crops combined
4110	Milk
4120	Milk & cattle rearing
4210	Cattle rearing
4220	Cattle fattening
4310	Dairying with rearing & fattening
4320	Rearing & fattening with dairying
4410	Sheep
4420	Sheep & cattle combined
4430	Goats
4440	Various grazing livestock
5011	Specialist pig rearing
5012	Specialist pig fattening
5013	Pig rearing and fattening combined
5021	Specialist layers
5022	Specialist poultry-meat
5023	Layers and poultry-meat combined
5031	Pigs and poultry combined
5032	Pigs, poultry and other granivores combined
6010	Market gardening & permanent crops
6020	Field crops & market gardening
6030	Field crops & vineyards
6040	Field crops & permanent crops
6050	Mixed cropping-mainly field crops
6061	Mixed cropping, mainly market gardening

6062	Mixed cropping, mainly permanent crops
7110	Mixed livestock-mainly dairying
7120	Mixed livestock-mainly non-dairy grazing
7210	Mixed livestock-granivores & dairying
7220	Mixed livestock-granivores & non-dairy grazing
7230	Mixed livestock-granivores with various livestock
8110	Field crops & dairying
8120	Dairying & field crops
8130	Field crops & non-dairy grazing
8140	Non-dairy grazing & field crops
8210	Field crops & granivores
8220	Permanent crops & grazing livestock
8231	Apiculture
8232	Various mixed holdings

Altitude zone (A41)

Code	Definition
1	at less than 300 metres
2	at from 300 to 600 metres
3	at above 600 metres
4	data not available

Environmental constraints Area (A45)

Code	Definition
0	data not available
1	no environmental restrictions
2	environmental restrictions

General type of farming 8 (A28)

Code	Definition
1	Field crops
2	Horticulture
3	Permanent crops
4	Grazing livestock
5	Granivore
6	Mixed cropping
7	mixed livestock
8	Mixed crops-livestock

Classification UAA (CLUAA)

Code	Definition
1	< 5 Ha
2	[5 - 10[Ha
3	[10 - 20[Ha
4	[20 - 30[Ha
5	[30 - 50[Ha
6	> 50 Ha

Structural Funds area (A44)

Code	Definition
0	data not available
1	none [before 2000]
2	Objective 1 area [before 2000]
3	Objective 5b area [before 2000]
4	Objective 6 area [before 2000]
5	none [since 2000]
6	Objective 1 area [since 2000]
7	Objective 2 area [since 2000]
8	area eligible to transitional support [since 2000]

Crops

Description	Formula (EU FADN name)
Wheat (common)	K120TP
Wheat (durum)	K121TP
Rye	K122TP
Barley	K123TP
Oats	K124TP
Summer cereal mixes	K125TP
Grain maize	K126TP
Rice	K127TP
Other cereals	K128TP
Peas	K360TP
Lentils	K361TP
Other protein crops	K330TP
Potatoes	K130TP
Sugar beet	K131TP
Rape	K331TP
Sunflower	K332TP
Soya	K333TP
Other oil seed	K334TP
Flax	K364TP
Hops	K133TP
Tobacco	K134TP
Other industrial crops	K135TP
Fresh vegetables open field	K136TP
Fresh vegetables market gardening	K137TP
Fresh veg. under glass excl. tomatoes	K138TP-K337TP
Tomatoes	K337TP
Mushrooms	K139TP
Flowers open air	K140TP
Flowers protected	K141TP
Grass seed	K142TP

Other seeds	K143TP
Fodder roots and brassicas	K144TP
Other fodder plants	K145TP
Fallow land	K146TP
Temporary grass	K147TP
Other arable crops	K148TP
Permanent pasture	K150TP
Rough grazing	K151TP
Pome fruit excl. table grapes	K349TP
Stone fruit excl. olives	K350TP
Nuts	K351TP
Small fruits and berries	K352TP
Tropical fruits	K353TP
Citrus (oranges)	K354TP
Citrus (tangerines, mandarines, clementines)	K355TP
Citrus (lemons)	K356TP
Citrus (other)	K357TP
Olives (table)	K281TP
Olives (for oil production)	K282TP
Olive oil	K283TP
Olive by-products	K284TP
Table grapes	K285TP
Grapes Wine (quality)	K286TP
Grapes wine (other than quality)	K287TP
Misc. vine products	K288TP
Wine (quality)	K289TP
Wine (other than quality)	K290TP
Raisins	K291TP
Other vine products	K155TP-K285TP-K286TP-K287TP-K288TP-K289TP-K290TP-K291TP
Permanent crops	K156TP
Nurseries	K157TP
Other permanent crops	K158TP

Young plantations	K159TP
Processed products from crops	K160TP
By-products from crops	K161TP
Woodland (*)	K174TP + K175TP + K176TP (K173TP not available)

(*) woodland is included in crops outputs

Livestock

Description	Formula (EU FADN name)
Livestock outputs	
Horses	E51TO
Cattle	E52TO
Sheep	E54TO
Goats	E55TO
Pigs	E56TO
Poultry	E57TO
Other animals	E58TO
Cows' milk	K162TP
Cows' milk products	K163TP
Sheep's milk	K164TP
Goat's milk	K165TP
Wool	K166TP
Sheep's milk products	K167TP
Goat’s milk products	K168TP
Hens' eggs	K169TP
Other animal products	K170TP
Contract rearing (*)	K171TP
Occasional letting forage (*)	K172TP
Contract work for others (*)	K177TP
Receipts from tourism (*)	K179TP
Honey & bee products	K313TP

(*) other outputs included in livestock outputs

Inputs

Description	Formula (EU FADN name)
Livestock costs:	
Concentrated feedingstuffs for grazing livestock	F64
Coarse fodder for grazing livestock	F65
Feedingstuffs for pigs	F66
Feedingstuffs for poultry and small animals	F67
Feed for grazing livestock (home grown)	SE315
Feed for pig home grown	F69
Feed for poultry and small animals (home grown)	F70
Other livestock specific costs	SE330
Other variable costs:	
Motor fuels and lubricants	F62
Seeds and seedlings purchased	F72
Seeds (home grown)	SE290
Fertilizers	SE295
Crop protection	SE300
Fixed costs:	
Rent paid	SE375
Wages paid	SE370
Depreciation	SE360
Contract work	SE350
Forestry specific costs	SE331
Other crop specific costs	SE305
Interest paid for land and buildings	F90
Interest paid for working capital and creditors	F92
Taxes on land and buildings	F88
Insurance for farm buildings	F87
Other farming overheads	F84
Insurance	F82
Water	F81
Heating fuels	F80
Electricity	F79

Upkeep of land improvements and buildings	F78
Car expenses	F63
Upkeep of machinery and equipment	F61
Fixed costs imposed by the model:	
Taxes (*)	F83
Other fixed costs:	
Computed wage (**)	Z01
Computed rent (***)	Z02
Computed interest (****)	Z03
Subsidies (considered as negative input):	
Total subsidies on crops	(-SE610)
Total subsidies on livestock	(-SE615)
Other subsidies	(-SE620)
Decoupled payments	(-SE630)

(*) The "Taxes" variable is imposed by the model: it can't be chosen in the Java form list but it will appear in the results tables. This choice is imposed in order to calculate the output at basic prices (output + coupled subsidies - taxes).

(**) The average price of AWU (by region) multiplied by the family AWU per farm:

`Z01 = [Σ SE370 / Σ SE020] by region * [SE010-SE020]`

(***) The average price of the rent (by region) multiplied by the UAA in owner occupation per farm:

`Z02 =[Σ SE375 / Σ (SE030 + B50)] by region * B48`

(****) The average price of the interest (by region) multiplied by SE436 (total assets) minus loans (SE490+SE495) minus computed rent (Z02). If computed interest is negative then it is set as zero.

```
Z03 = [Σ SE380 / Σ (SE490 + SE495)] by region * (SE436-SE490-SE495) -
Z02

if Z03 < 0 then Z03 = 0
```

Appendix 3: forage area allocated to livestock

The areas of fodder crops and pastures (temporary or permanent) are allocated to livestock productions (equines, cattle, sheep and goats, cow milk, ewe milk, goat milk) according to the number of LU.

For cattle, sheep and goats, the allocation of milk and dairy products is done by quantity.

Example for sheep milk

Forage area to be allocated `SHERB = K144AA + K145AA + K147AA + K150AA`

Number of herbivore LUs `UHERB = LU_51 + LU_52 + LU_55 + LU_54`

Ewes are considered as dairy sheep if milk production is over 5% of the production of the sheep farm.

If `(K164TP + K167TP) / ( E54TO + K164TP + K167TP) > 0.05` then `LU_ewes = D40AV * 0.1`

With K164TP, gross ewe milk product, K167TP gross ewe dairy product, E54TO gross product sheep meat (mutton), D40AV number of sheep, U0410L LU dairy sheep.

`LU_meat = LU_sheep – LU_ewes`

Area allocated to sheep meat `A_54 = SHERB * (LU_meat / UHERB)`

The area allocated to dairy sheep is divided between milk and cheese:

Milk: `A_164 = SHERB * (LU_ewes / UHERB) * (K164QQ / (K164QQ + Q167QQ))`

Dairy product : `A_167 = SHERB * (LU_ewes / UHERB) * (Q167QQ / (K164QQ + Q167QQ))`

To ensure coherence in the model, the forage area SHERB is reduced from the allocated areas (A_54, A_164, A_167,…).

Comment: Pig, poultry and eggs have no area allocated if the option "Including home-grown consumption" is selected. If this option is not selected, the cereal-growing area corresponding to this home-grown consumption is allocated according to the number of livestok units.

With this option, the cereal-growing areas are also allocated to herbivores (corresponding to the area of home-grown consumption from the total production) according to the number of livestock units.

Example for pig

O_CER the sum of the cereal productions(K120TP + K121TP + K122TP + K123TP + K124TP + K125TP + K126TP + K128TP)

A_CER the sum of the cereal-growing areas (K120AA + K121AA + K122AA + K123AA + K124AA + K125AA + K126AA + K128AA)

If O_CER is positive, then home-grown production (INTRAP)of granivore feed is calculated from the total production:

INTRAP= F69 / O_CER

A_56 the area attributed to pig is equal to A_CER * INTRAP

These areas are then set at 0 if the INTRAP coefficient is less than 0 and A_56 = A_CER if INTRAP > 1.

Appendix 4: Exchange rate used in FADN Databases to convert national units into euros

year	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
bel	42,35358	42,15573	40,95097	40,43596	39,20909	38,64957	39,75310	40,70471	40,46743	40,33990
dan	7,88284	7,92465	7,59946	7,62781	7,45044	7,30935	7,41614	7,52064	7,45340	7,44297
deu	2,05678	2,04706	1,97325	1,92806	1,89320	1,88796	1,93692	1,97424	1,95952	1,95583
ell	0,20141	0,22522	0,24698	0,26857	0,28802	0,30299	0,30555	0,30936	0,33073	0,32576
esp	129,31560	128,46850	132,51270	149,12400	158,91880	163,00000	160,74750	165,88670	167,18400	166,38600
fra	6,91416	6,97334	6,84881	6,63368	6,58273	6,52505	6,49300	6,61260	6,60141	6,55957
ire	0,76777	0,76781	0,76074	0,79995	0,79361	0,81552	0,79345	0,74752	0,78625	0,78756
ita	1,52194	1,53324	1,59529	1,84123	1,91483	2,13014	1,95896	1,92930	1,94365	1,93627
lux	42,35358	42,15573	40,95097	40,43596	39,20909	38,64957	39,75310	40,70471	40,46743	40,33990
ned	2,31710	2,30662	2,23835	2,16994	2,13489	2,10485	2,16490	2,22180	2,21150	2,20371
ost						13,18239	13,43447	13,82400	13,85450	13,76030
por	181,10760	178,61410	174,69800	188,36990	196,90580	196,10470	195,76150	198,58890	201,69500	200,48200
suo						5,70855	5,82816	5,88064	5,98251	5,94573
sve						9,33192	8,51472	8,65117	8,91593	8,77460
uki	0,71047	0,70262	0,75273	0,77121	0,78289	0,83666	0,79427	0,68228	0,68142	0,64623

year	2000	2001	2002	2003	2004	2005	2006	2007	2008
bel	40,33990	40,33990	40,33990	40,33990	40,33990	40,33990	40,33990	40,33990	40,33990
bgr								1,95580	1,95580
cyp					0,58192	0,57683	0,57500	0,58263	0,58263
cze					31,90567	29,78400	28,34200	27,76600	24,95900
dan	7,45380	7,45058	7,43052	7,43114	7,43990	7,45180	7,45910	7,45060	7,45595
deu	1,95583	1,95583	1,95583	1,95583	1,95583	1,95583	1,95583	1,95583	1,95583
ell	0,33664	0,34075	0,34075	0,34075	0,34075	0,34075	0,34075	0,34075	0,34075
esp	166,38600	166,38600	166,38600	166,38600	166,38600	166,38600	166,38600	166,38600	166,38600
est					15,64660	15,64660	15,64600	15,64600	15,64660
fra	6,55957	6,55957	6,55957	6,55957	6,55957	6,55957	6,55957	6,55957	6,55957

hun					0,25178	0,24805	0,26427	0,25135	0,25174
ire	0,78756	0,78756	0,78756	0,78756	0,78756	0,78756	0,78756	0,78756	0,78756
ita	1,93627	1,93627	1,93627	1,93627	1,93627	1,93627	1,93627	1,93627	1,93627
ltu					3,45286	3,45280	3,45280	3,45280	3,45280
lux	40,33990	40,33990	40,33990	40,33990	40,33990	40,33990	40,33990	40,33990	40,33990
lva					0,66508	0,69620	0,69620	0,70010	0,70263
mlt					0,42794	0,42990	0,42900	0,42930	0,42930
ned	2,20371	2,20371	2,20371	2,20371	2,20371	2,20371	2,20371	2,20371	2,20371
ost	13,76030	13,76030	13,76030	13,76030	13,76030	13,76030	13,76030	13,76030	13,76030
pol					4,53224	4,02300	3,89500	3,78370	3,51511
por	200,48200	200,48200	200,48200	200,48200	200,48200	200,48200	200,48200	200,48200	200,48200
rou								3,33280	3,68402
suo	5,94573	5,94573	5,94573	5,94573	5,94573	5,94573	5,94573	5,94573	5,94573
sve	8,45489	9,25269	9,16110	9,17367	9,12430	9,28220	9,25400	9,25010	9,61688
svk					40,03283	38,59900	37,23400	33,77500	33,77500
svn					239,06690	239,56810	239,64000	239,64000	239,64000
uki	0,61438	0,61853	0,63689	0,69559	0,68018	0,68225	0,67861	0,69828	0,82150

Farm Accountancy Cost Estimation and Policy Analysis of European Agriculture

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