



## **User guide: The FACEPA model software (costs of production: FADN)**

Jean-Pierre Butault, Guillaume Zardet, Loïc Mathias, Nathalie Delame,  
Dominique Desbois, Jean-Marc Rousselle, Werner Kleinhanss, Frank  
Offermann

### **► To cite this version:**

Jean-Pierre Butault, Guillaume Zardet, Loïc Mathias, Nathalie Delame, Dominique Desbois, et al..  
User guide: The FACEPA model software (costs of production: FADN). [Technical Report] FACEPA  
Deliverable No. D4.2, auto-saisine. 2011, 72 p. hal-01186941

**HAL Id: hal-01186941**

**<https://hal.science/hal-01186941>**

Submitted on 6 Jun 2020

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

**FACEPA**

*Farm Accountancy Cost Estimation and  
Policy Analysis of European Agriculture*



---

## **USER GUIDE**

### **The FACEPA Model Software (Costs of Production: FADN)**

FACEPA Deliverable No. D4.2 - September 2011

---

INRA AgroParisTech (France)

Butault Jean-Pierre, Zardet Guillaume, Mathias Loïc  
Delame Nathalie, Desbois Dominique, Rousselle Jean-Marc

vTI, Braunschweig (Germany)  
Kleinhanss Werner, Offermann Frank

The research leading to these results has received funding from the European Community's Seventh Framework Program (FP7/2007-2013) under *grant agreement* n° 212292.



## Executive summary

In the European FADN, the costs, detailed by category (seeds, fuel etc), are available for agricultural holdings. The FACEPA model is designed to allocate these costs to different productions. The start point of 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 WP3.

The FACEPA model is programmed in SAS language and runs on the *Enterprise Guide* SAS module. The model estimates input – output coefficients from EU FADN data. The technical coefficients of production are estimated by using the SAS 'PROC SYSLIN' procedure. From these coefficients, it is possible to deduce costs per quintal, 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 variables given, in order to obtain results per sub-group (per region, or per type of farming...). It is also possible to obtain the results on a specific field.

The model takes into account automatically the total production. The user defines a list of crops outputs and livestock outputs and the balances are automatically calculated.

For inputs, variable costs and fixed costs are distinguished, but the total input is not given. The choice of input determines the income indicator which is integrated in the model. For example, if the user takes only the intermediate consumptions, the income indicator is the added value.

The files include imputed costs for family-owned factors. It is possible to include these costs in the model. But, this procedure was not tested by the vTI team. More generally, it is necessary to be careful in interpreting the results on the fixed costs.

In the FADN data, the values of output are given at the production prices. In the model, 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 coherent 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 judge the significance of the coefficients (Standard error, T value, P value.).

Different options are possible

- It is possible to delete **outliers** (see Vti reports).
- The results could be **weighted** (or not) with the SYS02 variable which corresponds to the weight of the holding in the sample used.
- The production includes or not the production used on farm. If the user takes the production used on farms, it is necessary to put in the inputs seed and feed produced on farm.
- The "**Allocation of residuals**" option allows you to edit the breakdown of individual costs. The residual difference between the estimated values and the real values calculated for each holding is distributed over the different products proportionally to the gross output (with home-grown consumption) or the gross product (without home-grown consumption). This

option also creates three groups of intensity according to the holding coefficients calculated for each production.

# Contents

<b>EXECUTIVE SUMMARY .....</b>	<b>3</b>
<b>CONTENTS .....</b>	<b>5</b>
<b>ABBREVIATIONS AND ACRONYMS.....</b>	<b>7</b>
<b>INTRODUCTION .....</b>	<b>8</b>
<b>THE MODEL.....</b>	<b>10</b>
<b>CAUTION .....</b>	<b>11</b>
<b>THE MAIN OPTIONS OF THE MODEL.....</b>	<b>13</b>
<b>THE FORM .....</b>	<b>14</b>
OPEN.....	14
MENUS.....	15
THE TABS.....	17
COMPLETING THE FORM: THE <i>GENERAL</i> TAB. ....	17
<i>The General subtab</i> .....	17
<i>The Options subtab</i> .....	22
<i>The Filters subtab</i> .....	27
COMPLETING THE FORM: CHOICE OF LIVESTOCK PRODUCTION, CROP PRODUCTION AND DIFFERENT	
TYPES OF COSTS. ....	30
<i>Crops</i> .....	32
<i>Livestock</i> .....	33
<i>Costs</i> .....	33
EXAMPLE OF A PARAMETERS FILE.....	36
<b>VALIDATION OF PARAMETERS AND INTERMEDIARY TABLES.....</b>	<b>38</b>
ERRORS TO AVOID.....	42
<b>MODEL FOR ESTIMATING PRODUCTION COST COEFFICIENTS - THE FACEPA</b>	
<b>MODEL .....</b>	<b>43</b>
<b>APPENDIX 1: FOR EXPERIENCED USERS. ....</b>	<b>46</b>
SOME INFORMATION ABOUT THE DIFFERENT PROCESS FLOW CODES. ....	46
<i>extract parameters</i> .....	46
<i>extract SAS bases</i> .....	46
<i>crop / live / input / other / misc</i> .....	46
<i>merge</i> .....	46
<i>extract for syslin proc</i> .....	46
<i>proc syslin</i> .....	46
<i>output syslin</i> .....	47
<i>export</i> .....	47
THE DATA_FILE.....	48
<i>Data_file.XML</i> .....	48

<i>Data_file.XLS</i> .....	49
<b>APPENDIX 2: DICTIONARY OF VARIABLES .....</b>	<b>53</b>
COUNTRIES .....	53
AVAILABLE VARIABLES USED FOR CLASSIFICATION OR IN THE FIRST FILTERS.....	54
CROPS .....	62
LIVESTOCK .....	64
INPUTS .....	65
<b>APPENDIX 3: FORAGE AREA ALLOCATED TO LIVESTOCK .....</b>	<b>67</b>
EXAMPLE FOR SHEEP MILK.....	67
EXAMPLE FOR SWINE .....	68
<b>APPENDIX 4: EXCHANGE RATE USED IN FADN DATABASES TO CONVERT NATIONAL UNITS INTO EUROS .....</b>	<b>69</b>

# Abbreviations and Acronyms

EU	European Union
FACEPA	Farm Accountancy Cost Estimation and Policy Analysis of European Agriculture
FADN	Farm Accountancy Data Network



# Introduction

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

The start point of 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 WP3. For further information on the methodology and the implications on the results, the reader may consult the WP3<sup>1</sup> 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 wishes to target along with the livestock and crop productions that these costs will be attributed to. There are also a number of options which allow the user to define the sample agricultural holdings chosen for the estimations the model will work on (country, year, type of farming etc) along with classification variables (region, type of farming, economic dimension). In short, the user must choose his/her 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	Comment
In the folder D:\FACEPA\Form	
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\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

---

<sup>1</sup> F. Offermann: **Implementation, validation and results of the cost of production model using national FADN data bases. 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 data bases. Deliverable D3-3\_vTI, Mars 2011**

	required results.
In the folder D:\FACEPA\Misc	
	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 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 coefficients from EU FADN data. The technical coefficients of production cost  $\beta_{ik}$  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  $f$ ,

$\beta_{ik}$  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:

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

the income being considered as an input.

## Caution

It is not essential that the production list chosen by the user be complete. As all of the productions are included in the model, the balance is automatically calculated based on the choice of productions

The balance is calculated for both crop production (OCROP) and livestock production (OLIST). This distinction is made because crop costs are restricted to 0 for livestock production. Fodder is not given a value in the European FADN<sup>1</sup>. Similarly, costs related to livestock are nil 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, third-party labour, farm tourism, honey and products from apiculture).

The model distinguishes between costs related to livestock, costs related to crops and fixed costs. The total cost, however, is not given. This is to allow the user greater flexibility, notably enabling the user to choose the revenue indicator

The user must however verify that the list of costs is complete 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-consumed feed for herbivores, swine and poultry) must be added to the list of livestock-related costs, and the variable SE290 (seeds and plants home-grown consumed) must be added to the list of crop costs.

Remember that in the FADN, production is calculated at the price of production

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 coherent 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.

As well as production coefficients, it is also possible to obtain cost per quintal, per hectare, per livestock unit, and per head:

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

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

In this version of the model, apart from home-grown consumption, the grain area corresponding to this home-grown consumption is allocated to herbivores and granivores

---

<sup>1</sup> Fertilizers for animal feed are allocated to livestock productions

according to the number of livestock units. (*see appendix 3: forage area allocated to livestock*).

# The main options of the model

Different options are available:

- It is possible to delete **outliers**.
- the results can be **weighted** (or not) with the SYS02 variable which corresponds to the weight of the holding in the sample used.
- The "**Allocation of residuals**" option allows you to edit the breakdown of individual costs. The residual difference between the estimated values and the real values calculated for each holding is distributed over the different products proportionally to the gross output (with home-grown consumption) or the gross product (without home-grown consumption). This option also creates three groups of intensity according to the holding coefficients calculated for each production.
- The option "**With production used on-farm**" enables the user to work on gross production (adds home-grown consumed production, produced and used on the agricultural holding).
- The files include imputed **costs for family-owned factors**. It is possible to include these costs in the model. But, this procedure was not validated by the vTI team. More generally, it is necessary to be careful when the model includes fixed cost.

# The Form

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 complete as possible.

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

This form comprises two elements: Form.jar, which is the program itself, and data\_file.xml, which contains all the data needed by the form (labels, menus, variables and terms available...). This data is 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, but which makes the form less effective in terms of speed of access to the information.

To open the form, double click on Form.jar. First you must indicate where the data\_file.xml file used by the form is located. This guide will use the XLM version of the 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 "XML" and a file explorer will appear. The XML file is in the same directory as the form, which is why the file explorer is located in the same directory as Form.jar. Select data\_file.xml and click "Open"

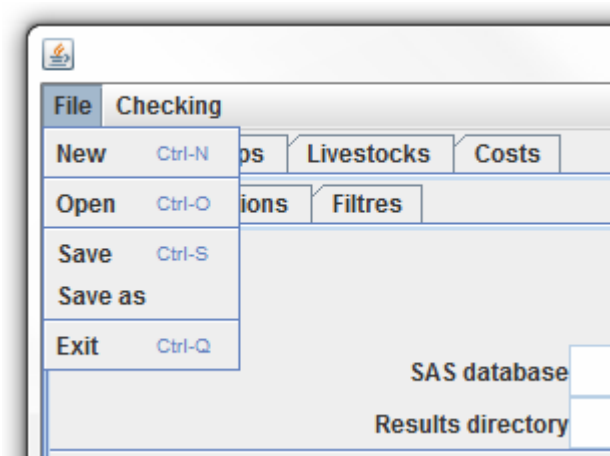


A new window opens with a choice of language. At present the form is only available in English and French, but new languages can easily be added by modifying the XML file.



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

## Menus





The "File" menu contains the following options:

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

**Open:** Opens a parameter file in the 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 the name and location of when it was opened. If the file has never been saved, when you click "Save" the program saves a parameters file named "parameters\_file.txt" in the directory where the form is located.

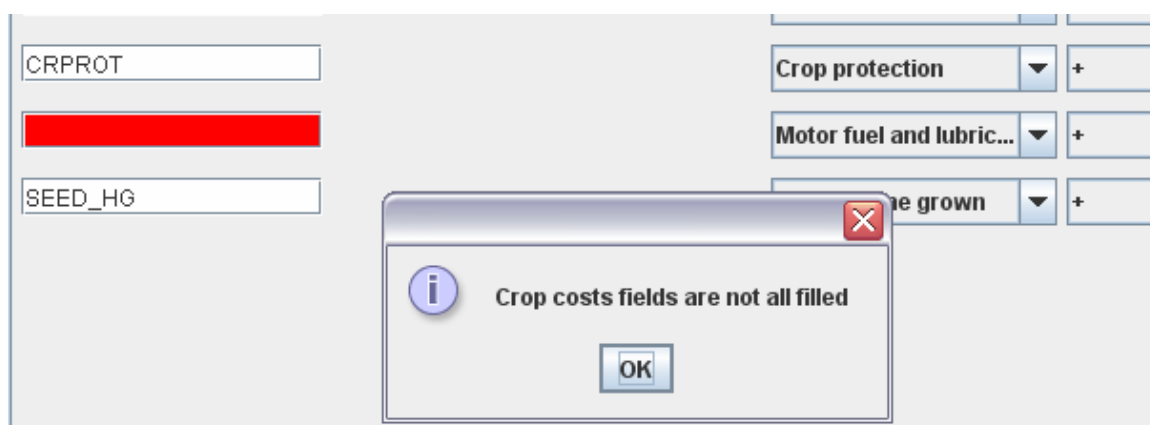
**Warning:** This will cause the loss of the initial information if the user has made changes after opening the document.

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

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

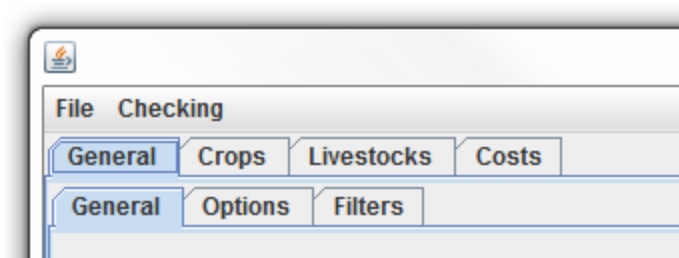
**Exit:** Allows you to exit the application.

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 field.



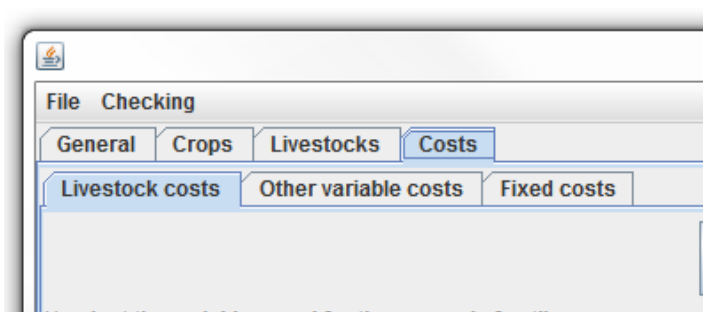
Correct the errors, recheck if desired and save your parameters file.

## The Tabs



The General tab is divided in 3 subtabs: "General", "Options" and "Filters", which each contain general options such as addresses where databases are to be found, countries and years selected, weighting options, sampling options, deletion of outliers, output, etc.

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



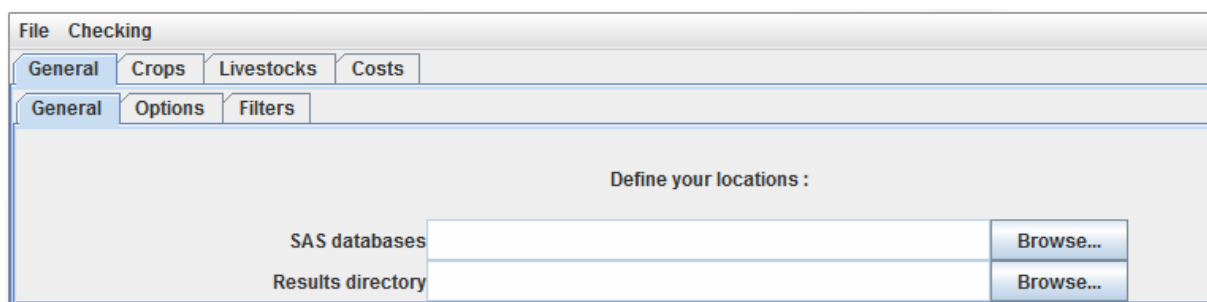
The Costs tab consists of 3 subtabs: "Livestock costs", "Other variable costs" (crops costs) and "Fixed costs", allowing the user to define which costs will be used by the model.

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

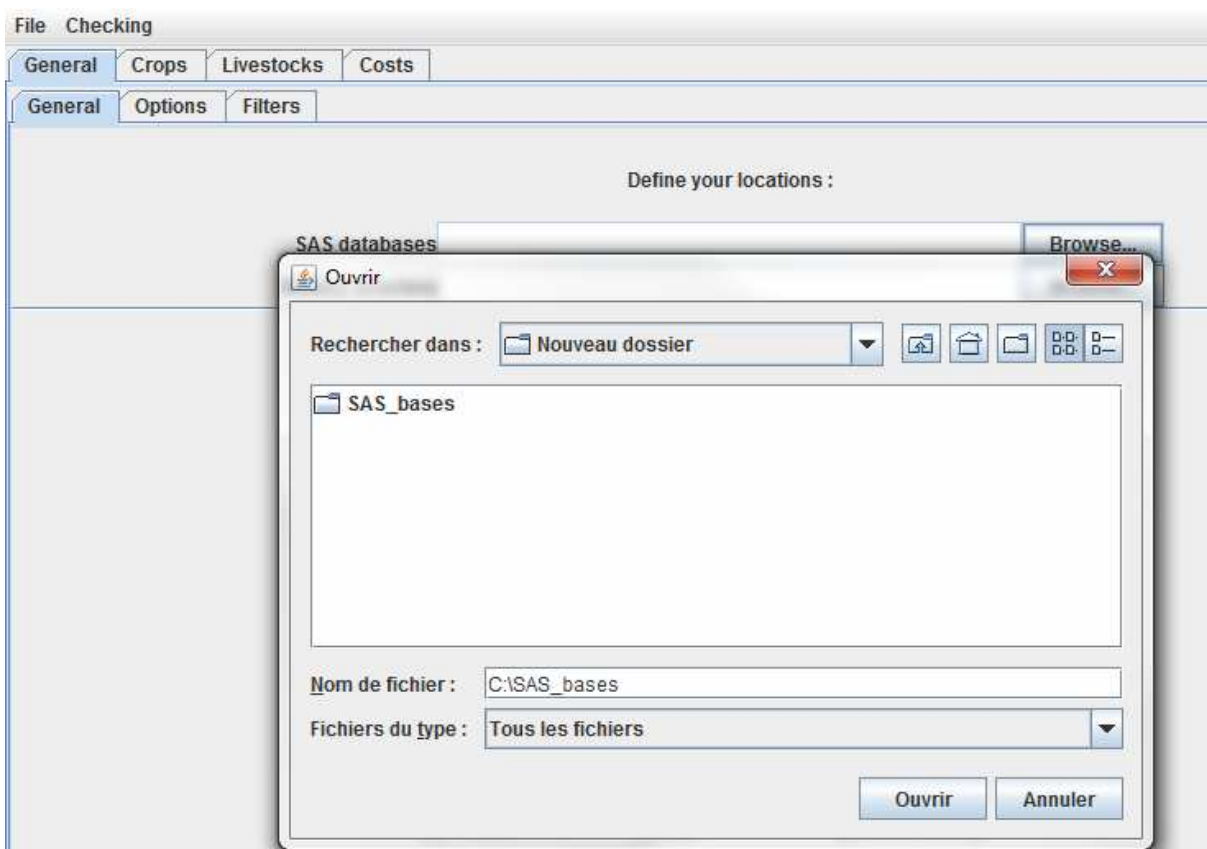
It is recommended that you complete the form in the order presented here.

### The *General* subtab

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 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 choose the directory where the model will save the results folder. When you click "Open", the Java form automatically creates a directory named "Results" in the directory selected. 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 choice of data used by the model. The first thing to do is choose if you want the results:


For a single country over a period of several years

For a single year for one or more countries:


The screenshot shows a web interface for selecting data. At the top, there are two buttons labeled 'Browse...'. Below them is a section titled 'Available countries' with a radio button selected. A dropdown menu shows 'Austria'. Below this, there are two dropdown menus for 'YEAR(S)' with 'from: 1995' and 'to: 1995'. A checkbox labeled 'Constant sample (balanced panel)' is present. Below this are two buttons: a green one with a '+' and a red one with an 'X', with the text 'Insert a line' below them. Below these is another section titled 'Available years' with a radio button selected. A dropdown menu shows '1995' and a 'Select all' checkbox. Below this is a grid of checkboxes for various countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and United Kingdom.

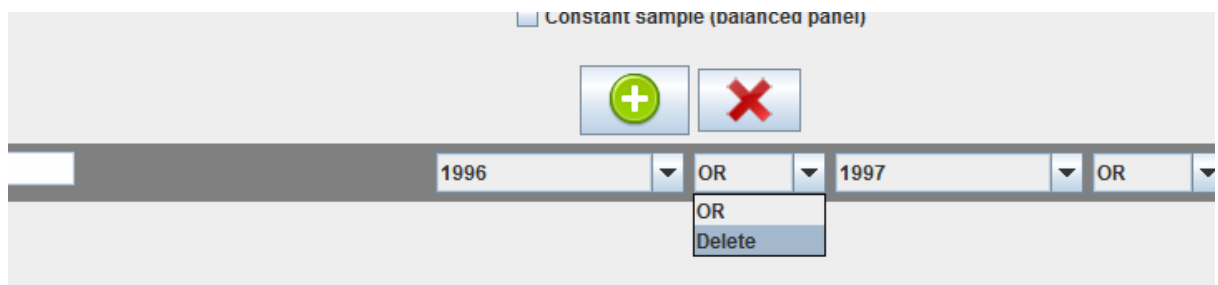
The two options are incompatible. By choosing one, the user is prevented from accessing the controls of the other option. In the example image above, you will see that the option for a country has been selected. The user must then choose a country and the year or years of the results desired, with the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

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

Simply click on the green +  and a line will appear indicating first the code of the new year 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 appear with the remaining years. It is possible to add as many years as desired from the years available (see appendix 2).



The red cross  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 example image 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" enabling the user to select or deselect all the countries with a single click.

results directory Browse...

---

☐ **Available countries** Austria ▼

YEAR(S)      from: 1995 ▼      to: 1995 ▼

☐ Constant sample (balanced panel)

☒ **Available years** 2006 ▼    ☐ all select

<input checked="" type="checkbox"/> Austria	<input type="checkbox"/> Belgium	<input type="checkbox"/> Cyprus	<input type="checkbox"/> Czech Republic	<input type="checkbox"/> Denmark
<input type="checkbox"/> Estonia	<input type="checkbox"/> Finland	<input type="checkbox"/> France	<input type="checkbox"/> Germany	<input type="checkbox"/> Greece
<input type="checkbox"/> Hungary	<input checked="" type="checkbox"/> Ireland	<input type="checkbox"/> Italy	<input checked="" type="checkbox"/> Latvia	<input type="checkbox"/> Lithuania
<input type="checkbox"/> Luxembourg	<input type="checkbox"/> Malta	<input type="checkbox"/> Netherlands	<input type="checkbox"/> Poland	<input type="checkbox"/> Portugal
<input type="checkbox"/> Slovakia	<input type="checkbox"/> Slovenia	<input checked="" type="checkbox"/> Spain	<input type="checkbox"/> Sweden	<input type="checkbox"/> United Kingdom

It is possible to group several countries together for the model to treat as a single country by following the same procedure as for grouping years.

☒ Luxembourg    ☒ Netherlands    ☒ Portugal

☒ Spain    ☒ Sweden    ☒ United Kingdom

+
X
☒ grouping all countries

new code ct1

Austria	OR	Belgium	OR	Denmark
OR	France	OR	Germany	OR
Ireland	OR	Italy	OR	Luxembourg

There is also another option available. 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.

NB: 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* subtab

The screenshot shows the 'Options' subtab with the following settings:

- Test:**
  - ☐ Standard error
  - ☒ T value
  - ☐ P value
- Complementary outputs:**
  - ☐ Costs of production in € per ha
  - ☐ Costs of production in € per q
  - ☐ Costs of production in € per LU
  - ☐ Costs of production in € per head
- Output formats:**
  - ☒ SAS table
  - ☐ EXCEL sheet
  - ☐ HTML document
  - ☐ Output by production and by year (only on EXCEL)

### *Test:*

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

- *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 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:

	Country	Year	Label	WHEAT	DWHEA	BARLE	MAIS	OT CER
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										

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_2005
2	Coefficients									
3		SEED__	4	0.211459	2.609886	0.242984	1.422358	3.603224	0.320928	-0.21146
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

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 three 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, 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	UY
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	OTHSC	25.13	88.57	53.889	137.08	82.921	106.681	177.46	-

**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:

The screenshot shows a software interface with the following options:

- ☐ Costs of production in € per head
- ☐ Output by production and by year (only on EXCEL)
- ☐ Deletion of outliers (5% ▼) *Pvalue (5% is the default)*
- ☐ Weighted
- ☐ Stalled
- ☐ Production used on-farm
- Classification variable: Choose ▼

### *Removal of outliers*

It is possible to delete outliers. By ticking the "Deletion of outliers" 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 trimming process.

By default, all of the variables of production and costs 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".

The screenshot shows a software interface with the following options:

This option allows you to keep only individuals with positive production for the selected variable(s)

\*\* select the variables used for the removal of outliers

Variable	Selection	Description
S_WHEAT	<input checked="" type="checkbox"/> **	[120] Wheat (comm... ▼
D_WHEAT	<input checked="" type="checkbox"/> **	[121] Wheat (durum) ▼
RYE	<input checked="" type="checkbox"/> **	[122] Rye ▼
BARLEY	<input checked="" type="checkbox"/> **	[123] Barley ▼
OATS	<input checked="" type="checkbox"/> **	[124] Oats ▼

### *Weighting of results*

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

Caution, for balanced panels the weight remains the same and therefore does not take into account the possible effects of churn.

### *Input Adjustment*

The residual difference between the estimated values and the real values calculated for each holding is distributed over the different products proportionally to the gross output (with home-grown consumption) or the gross product (without 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 the holdings according to the holding coefficients calculated for each production, the intensity level converted from the level of costs used. The "low-level input" ("1\_low") group represents 30% of the holdings (in terms of weighted area) and has the lowest coefficients. "Mid-level input" ("2\_mid") represents the 40% in the middle bracket, and "high-level input" ("3\_high") the 30% with the highest coefficients. The output table generated by this option gives the average 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, quantity, livestock unit and head, if these options are selected in "Additional results" (see the explanation above).

Lastly, 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 holdings in the sample studied, 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 the intensity group cost per production (GRP\_Yi).

#### *With or without home-grown consumption*

The option "With production used on-farm" enables the user to work on gross production (add home-grown consumed production, produced and used on the agricultural holding).

Be careful, however, to add the costs SE315, F69, F70, and SE290, home-grown consumption respectively attributed to herbivore feed, swine feed, poultry feed, seeds and plants.

#### *Breakdown of estimates with a classification variable*

It is also possible to add a classification variable to the list of variables given, in order to obtain results per sub-group (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 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 edited. Furthermore, the amount of output generated is multiplied by the number of categories for the selected classification variable; this output is therefore less readable.*

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* subtab**

It is possible to limit the sample by choosing a filter based on one or more European FADN variables. Approved holdings can answer certain conditions for character variables (Selecting a filter), or thresholds for numerical variables (Selecting a sample).

#### *Selecting a filter:*

For character variables, choose the variable from the list given (the same as the classification list) and define the modalities of the variable you wish to save or delete. You can create up to eight filters, and thus filter through eight variables.

File Checking

General Crops Livestocks Costs

General Options Filters

Selecting a filter

IF [TF8] Type of fa... is equal to [1] Fieldcrops [2] Horticulture + X

IF [A39] Less-fav... is different from [3] mountain [4] no significant + X

IF Choose is equal to is different from

IF Choose is equal to

IF Choose is equal to

IF Choose is equal to

IF Choose is equal to

IF Choose is equal to

IF Choose is equal to

Selecting a sample

IF Choose > THEN keep

### 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 choose the type of variable

(crops production, livestock production, variable livestock costs, variable crop costs, fixed costs). The drop-down menu will then give you a list of related variables.

IF Choose is equal to

Selecting a sample

IF Choose > THEN keep

IF Choose > THEN keep

IF Crops > THEN keep

IF Livestocks > THEN keep

IF Livestock costs > THEN keep

IF Other variable costs > THEN keep

IF Fixed costs > THEN keep

IF Choose > THEN keep

Now define your conditions by choosing one of the operators, the value to be compared and whether you want to save or delete the ones that meet your condition.

Selecting a sample

IF [123] Barley	>	10	THEN keep
IF Choose	>		THEN keep
IF Choose	<		THEN delete
IF Choose	=		THEN keep
IF Choose	NE		THEN keep
IF Choose	>		THEN keep
IF Choose	>		THEN keep

For Crops and Livestock, the variables used for filter are the output values (gross production if the option “With production used on-farm”). In the example above, we have saved only the holdings that have a production of barley superior to ten Euros.

*In order to select a sample with a quantity of output, it is possible with a direct modification of the text in the parameters file.*

*Example: Selection of farms with at least 10 hectares of barley is wished.*

Choose barley in selecting sample (see above). When the parameter file is completed, save it and open the parameter file in a 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.

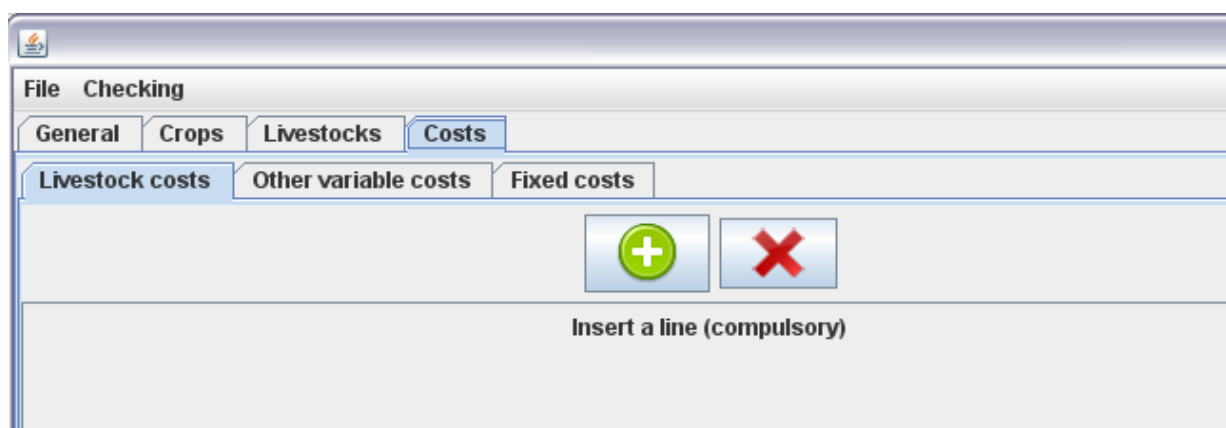
O\_xxx for output (value)

A\_xxx for area

Q\_xxx for output (quantity)

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

Completing the form: choice of livestock production, crop production and different types of costs.



The screenshot shows a software window titled 'File Checking'. It has a main menu bar with 'File' and 'Checking'. Below the menu bar are four tabs: 'General', 'Crops', 'Livestocks', and 'Costs'. The 'Costs' tab is selected. Under the 'Costs' tab, there are three sub-tabs: 'Livestock costs', 'Other variable costs', and 'Fixed costs'. Below these sub-tabs, there are two buttons: a green button with a white '+' sign and a red button with a white 'X' sign. Below these buttons, the text 'Insert a line (compulsory)' is displayed.

Now that general options have been selected, you must define the productions (crop and livestock) along with the costs (variable and fixed) to be entered into the cost estimation model.

The "Crops" and "Livestock" tabs work in the same way; the "Costs" tab is divided into three subtabs, "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.

Comment: the new product will be inserted before the product that the cursor is pointing at. 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:

File Checking

General Crops Livestocks Costs

+ -

\* This option allows you to keep only individuals with positive production for the selected variable(s)  
 \*\* select the variables used for the removal of outliers

* <input checked="" type="checkbox"/> **	Wheat	[120] Wheat (comm...	+	[121] Wheat (durum)	+
* <input type="checkbox"/> **	Rye	[122] Rye	+		
* <input type="checkbox"/> **	Barley	[123] Barley	+		
* <input type="checkbox"/> **	Oats	[124] Oats	+		
* <input type="checkbox"/> **	Summer	[125] Summer cere...	+		
* <input type="checkbox"/> **	Grain	[126] Grain maize	+		
* <input type="checkbox"/> **	Rice	[127] Rice	+		

Insert

In the "Crops" and "Livestock" tabs, the green + button 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 holdings with a positive value for the chosen variable. For example, only holdings with a positive production (a gross product for the version without home-grown consumption) for the wheat variable (the sum of variables K120TP and K121TP), will be entered into the database used by the model.

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

The second checkbox, followed by the symbol \*\* has already been mentioned. It is associated with the "Deletion of outliers" option and enables the user to identify which variables he/she wishes to use in the deletion of outliers.

The dialogue box allows the user to label the variable 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 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 created. It is thus possible to define 47 crop productions, 21 livestock productions, 8 variable livestock cost, 5 variable crop costs and 18 fixed costs (not including F83 - taxes- which are included in the model, and subsidies which are defined separately to fixed costs).

Certain "other" types of productions have been created to avoid repeats. For example, oil-seed crops are broken down into rapeseed, sunflower, soya and others. To add the

oil-seed crop variable, you must choose the sum of the productions mentioned above, 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 correspond to the balance of crop production and livestock production not included by the user in the java form. This is so as to include all productions of holdings in the regressions. **This operation is not done for the costs.***

## Crops

File Checking

General Crops Livestocks Costs

+ -

\* This option allows you to keep only individuals with positive production for the selected variable(s)  
 \*\* select the variables used for the removal of outliers

* <input type="checkbox"/>	<input checked="" type="checkbox"/> **	WHEAT	[120] Wheat (comm...	+	
* <input type="checkbox"/>	<input checked="" type="checkbox"/> **	DWHEAT	[121] Wheat (durum)	+	
* <input type="checkbox"/>	<input checked="" type="checkbox"/> **	BARLEY	[123] Barley	+	
* <input type="checkbox"/>	<input checked="" type="checkbox"/> **	MAIS	[126] Grain maize	+	
* <input type="checkbox"/>	<input checked="" type="checkbox"/> **	OTCER	[122] Rye	+	
			[124] Oats	+	
			[125] Summer cere...	+	
			[127] Rice	+	
			[128] Cereals (other)	+	

See appendix for list of crop production available

## Livestock

File Checking

General Crops Livestocks Costs

+ X

\* This option allows you to keep only individuals with positive production for the selected variable(s)  
 \*\* select the variables used for the removal of outliers

* <input checked="" type="checkbox"/> ** CATTLE	[52] Cattle	+	
* <input checked="" type="checkbox"/> ** SHEEP	[54] Sheep	+	
* <input checked="" type="checkbox"/> ** PIG	[56] Pigs	+	
* <input checked="" type="checkbox"/> ** POULT	[57] Poultry	+	
* <input checked="" type="checkbox"/> ** CMILK	[162] Cows milk	+	[163] Cows milk prod. +
* <input checked="" type="checkbox"/> ** OMILK	[164] Buffalo and sh...	+	[167] Sheeps milk p... +
* <input checked="" type="checkbox"/> ** EGG	[169] Hens eggs	+	
* <input checked="" type="checkbox"/> ** CONTR	[171] Contract rearing	+	

See appendix for list of livestock productions and other productions available.

## Costs

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

The "Fixed costs" subtab has an extra part for subsidies. The user must choose one of the four following options; the fourth option is 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)



File Checking

General Crops Livestocks **Costs**

Livestock costs Other variable costs **Fixed costs**

### Subsidies

☐ option 1 : total subsidies (SE605)  
☐ option 2 : crop subsidies (SE610) and livestock subsidies (SE615)  
☒ option 3 : crop subsidies (SE610), livestock (SE615) and other subsidies (SE620 + SE630)  
☐ option 4 : crop subsidies (SE610), livestock subsidies (SE615), decoupled subsidies (SE630) and other subsidies (SE620)

the fixed cost F83: taxes and other dues is imposed in the model  
 \*\* select the variables used for the removal of outliers

<input checked="" type="checkbox"/> **	OENERG	[F79] Electricity	+	[F80] Heating fuels	+
<input checked="" type="checkbox"/> **	CONWOR	[SE350] Contract wo...	+		
<input checked="" type="checkbox"/> **	BUILUK	[F78] Upkeep land i...	+		
<input checked="" type="checkbox"/> **	MACHUK	[F61] Upkeep of mac...	+		

See appendix for list of available costs.

*The cost production model does not create an "other costs" variable related to costs not included in the model. However, it does create a "NetVal" variable, the difference between the resources and the expenses:*

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

The grand total, (NetVal) can be the added value, if the user does not take intermediary 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 the costs the payment of bills on the property such as direct owner-farming, equity capital or family labour. To do this, it is possible to add the related calculated costs:

***Calculated tenant farming***

Calculated for each holding in the sample by multiplying the number of hectares directly owner-farmed by the rate of tenant farming per hectare in the region.

***Calculated interest***

Calculated for each holding in the sample by short-term (ST) and medium and long term (MLT) interest rates multiplied by the value of the equity capital, minus calculated tenant farming

***Calculated salary***

Calculated for each holding in the sample by multiplying the number of family annual work units (AWU) by the rate of salary per AWU employed in the region.

These calculated costs can be useful, notably for comparing individual holdings with company 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 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 text format. This is what it looks like:

```

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

Y<--- CAL Y to stall N otherwise
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<--- pgtl 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_168
[...]
fixed_cost09
subsidies01
subsidies02
subsidies03
*F83
*(-SE610)
*(-SE615)
*(-SE620)+(-SE630) [13]

WHEAT
DWHEAT
BARLEY
MAIS
OTCER
DRYPU
ROTAT [14]

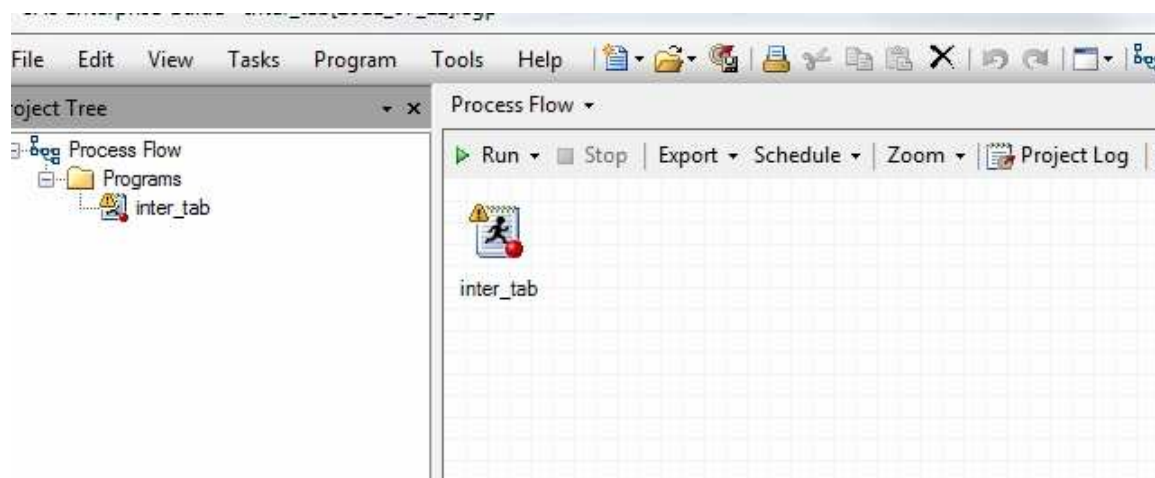
```

- [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 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 (line blank otherwise)
- [8] line generated by the filter with numerical variables (line blank otherwise)
- [9] line generated if there is aggregation of classification variable (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 for calculation of crop variables ( $crp_i$ ) livestock variables ( $liv_i$ )
- [13] formula for calculation of different costs
- [14] labels of crop variables, livestock variables and different costs.

## Validation of parameters and intermediary tables

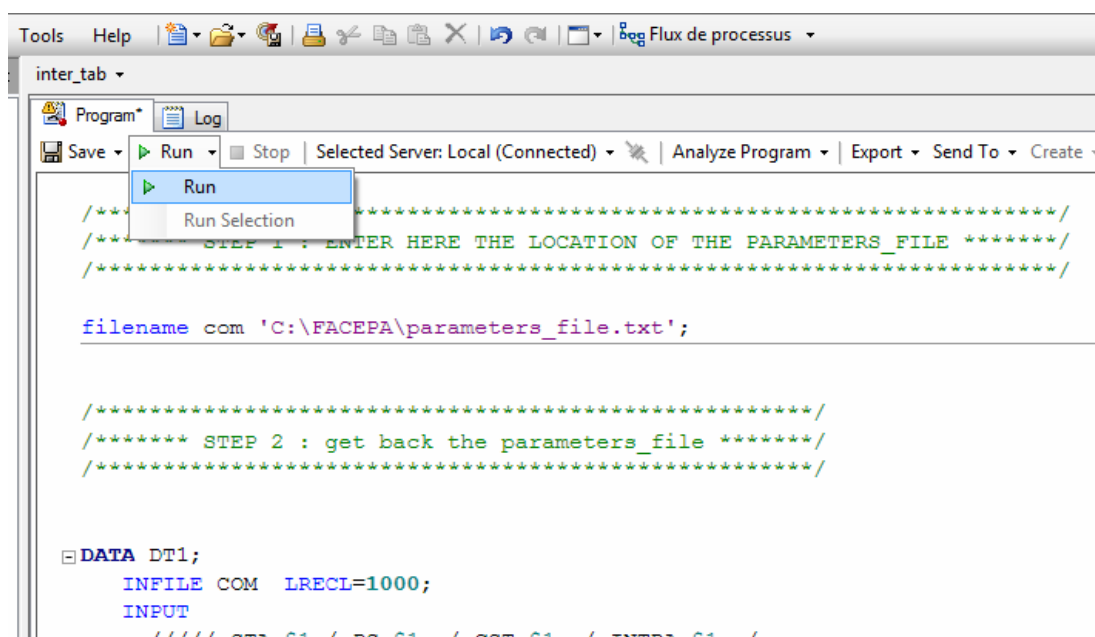
The form ensures that the user will obtain a parameters file avoiding the syntax errors in the model. However the user must take certain precautions to obtain the most reliable results possible. The sample used must contain enough observations to back up the estimations. The combination of filters, classification 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, also run with Enterprise Guide, enables the user to generate intermediary tables which will inform the user of the variables defined in the form (average costs, number of holdings, production share of the total etc). In this way the user can get a quick idea of the sample and can ultimately return to the java form to make modifications in case of problems (non-existing production, wrong choice of options etc).

The program "inter\_tab.egp" can be found in the *FACEPA\SAS\_Pgm* directory. Double-click to open.



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 run the inter\_tab program.

This program generates two main tables (or more depending on the options 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<sup>1</sup>). The "Sample" column indicates whether the data concerns all holdings in the defined sample ("ALL FARMS") or just those with a positive value for the production concerned ("WITH"). This table also shows each production's share of the total production.

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

<sup>1</sup> Gross production for the "with home-grown" option, gross product for "without home-grown"



The "INPUT" table contains the average value of the costs defined by the user for all of the 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
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 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 give 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 selected in the form.

If the number of holdings is too low 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 production methods, or revise the classification variable by aggregating some of the modalities.

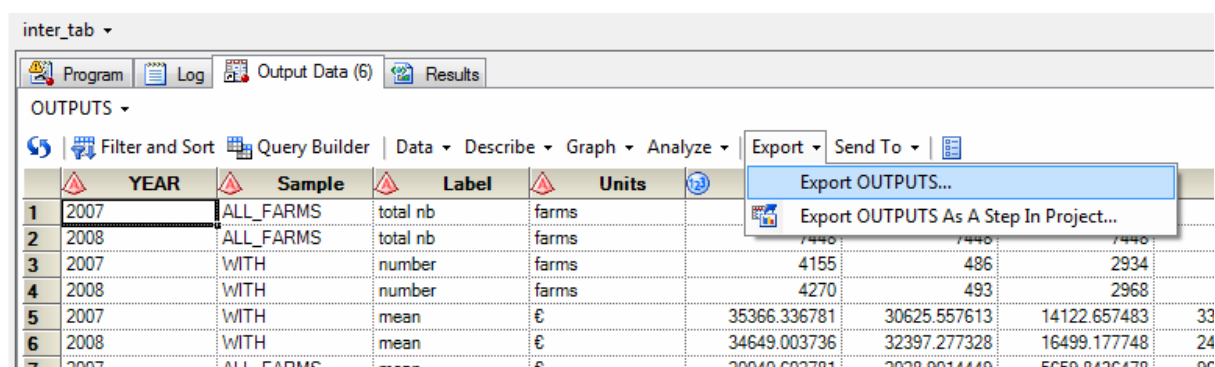
Lastly, if the user has selected the "OUTLIER" option in the Java form, two other tables will be generated in order to judge the impact of deleting outliers. First the number of holdings considered as outliers, then a table showing part of the data from the "OUTPUT" table, but this time from the sample 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
2007	WITH	number	farms	26	6	16	7	1	12	6	14	18	4
2008	WITH	number	farms	12	0	5	4	0	4	3	5	10	2

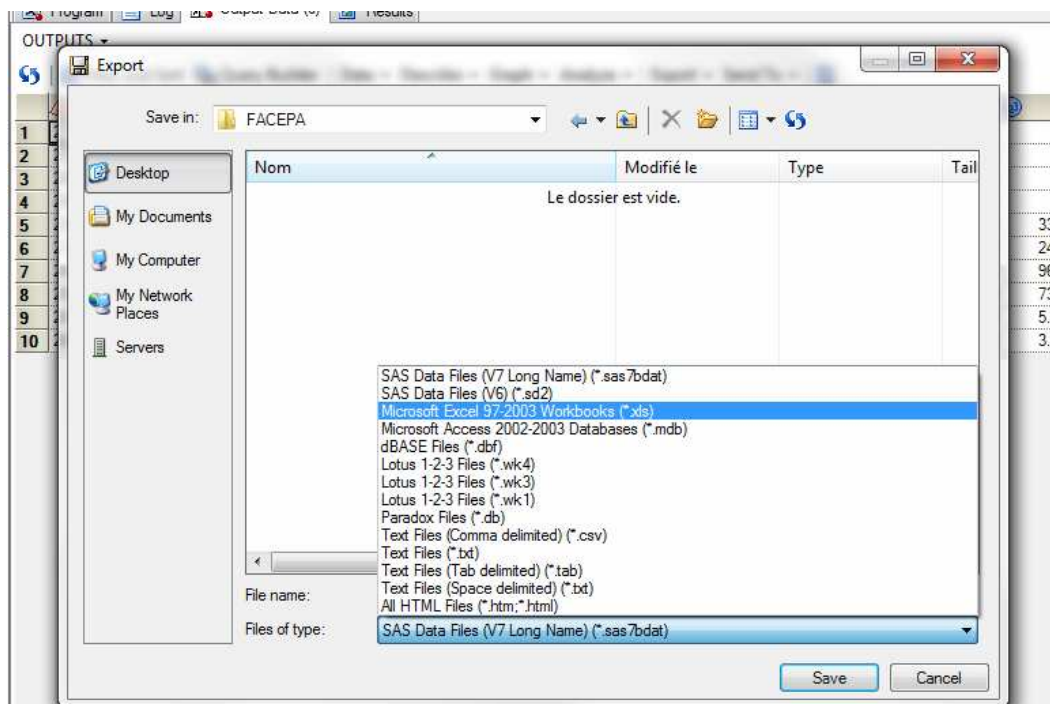
Page Break

outputs WITH OUTLIERS for fra													
YEAR	Sample	Label	Units	WHEAT	DWHEAT	BARLEY	MAIS	OTCER	DRYPU	POTAT	SUGAR	RAPE	OCROP
2007	WITH	mean	€	35857.23	31304.21	14280.83	33635.69	5071.00	8041.80	71793.33	27652.97	18058.14	10
2008	WITH	mean	€	34769.49	32397.28	16550.46	24296.30	4962.18	9314.70	71623.92	30979.35	25372.01	9
2007	ALL_FARMS	mean	€	20373.65	2092.05	5734.06	9699.62	1151.00	793.04	3208.37	2929.82	5092.19	6
2008	ALL_FARMS	mean	€	20018.09	2145.34	6651.24	7386.60	1136.11	744.18	3091.54	2861.23	6581.08	6
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.egg` program from producing results:

The path indicated for the parameters file is not valid.

The path indicated for storing the SAS databases is not valid.

The SAS databases are incomplete.

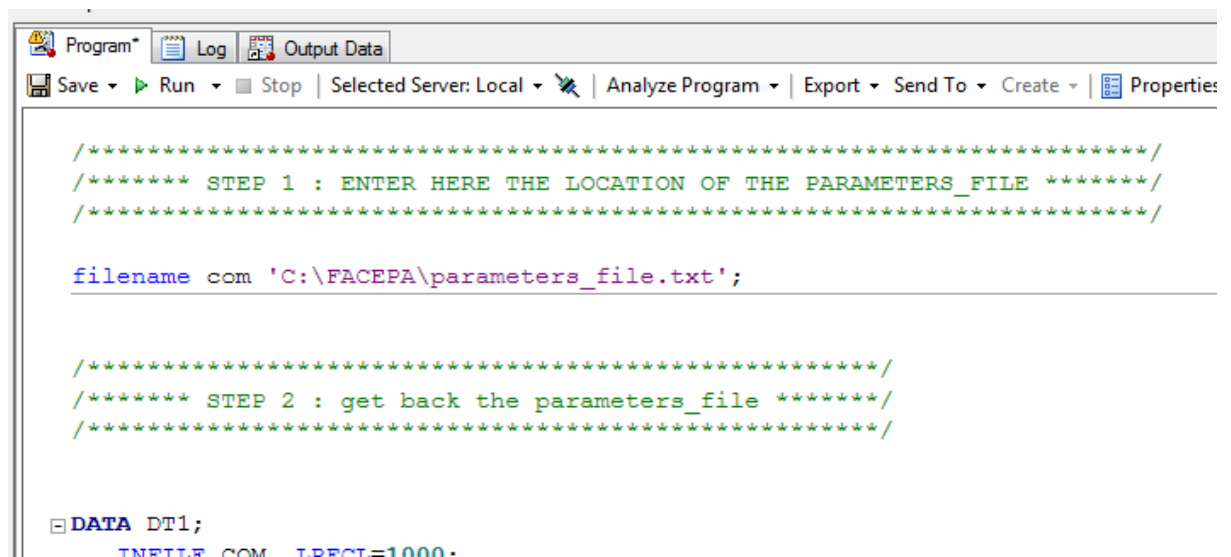
The sample defined by the user is empty (too many limitations for the variables).

# Model for estimating production cost coefficients - the FACEPA model

To open 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:



```
Program* Log Output Data
Save Run Stop Selected Server: Local Analyze Program Export Send To Create Properties

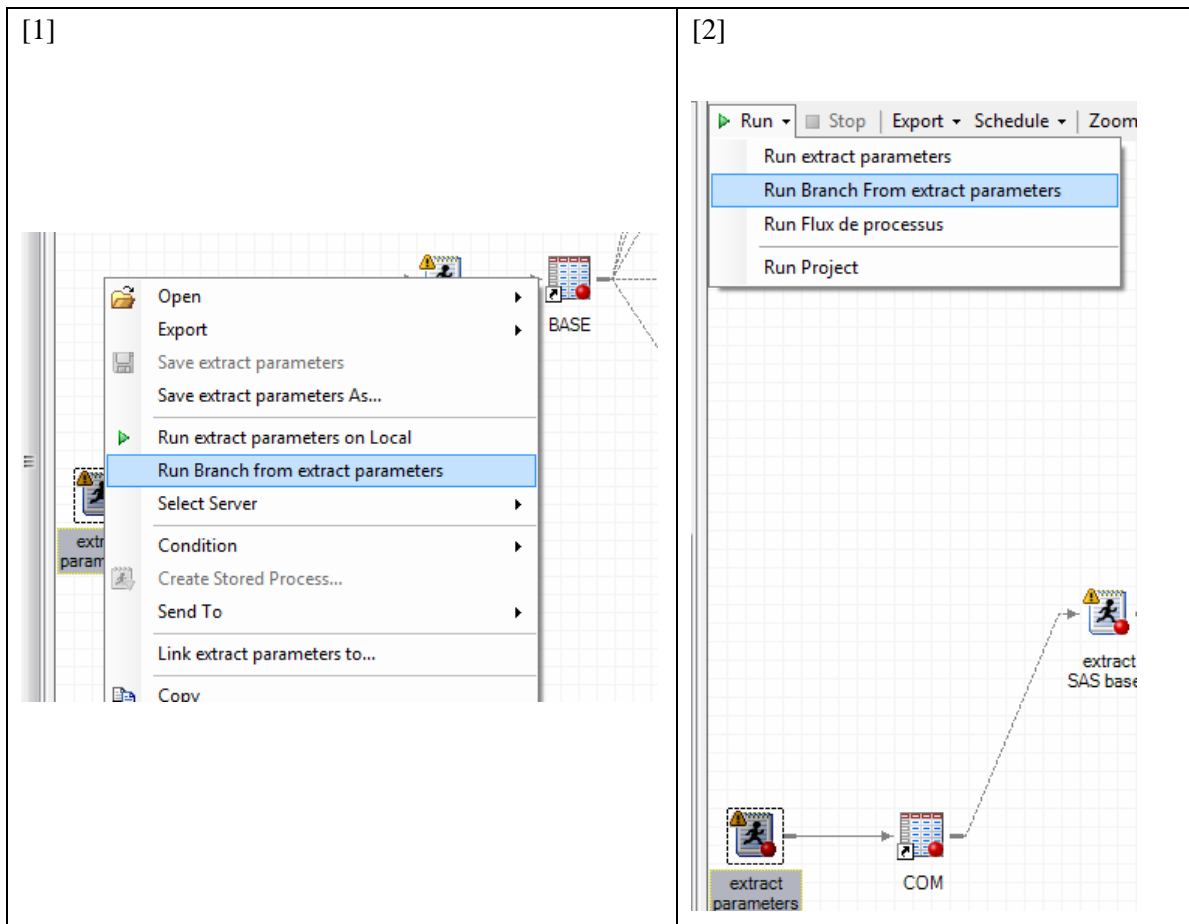
/***** STEP 1 : ENTER HERE THE LOCATION OF THE PARAMETERS_FILE *****/
/***** STEP 1 : ENTER HERE THE LOCATION OF THE PARAMETERS_FILE *****/

filename com 'C:\FACEPA\parameters_file.txt';

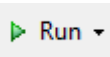
/***** STEP 2 : get back the parameters_file *****/
/***** STEP 2 : get back the parameters_file *****/

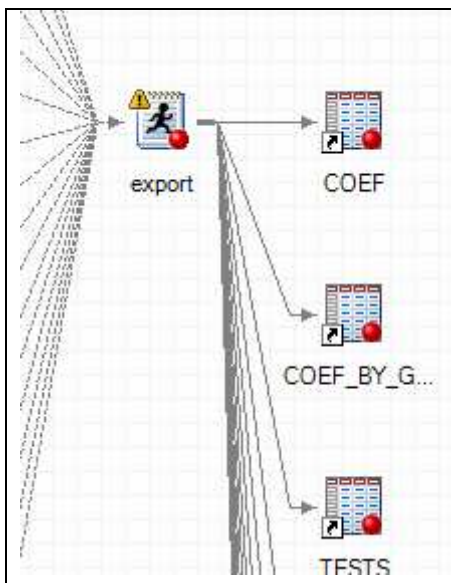
DATA DT1;
INFILE COM LRECL=1000;
```

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] 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.

In 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 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, 54 et 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 the 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 generated:

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:

T\_SUM\_F > descriptive statistics

TAB1 > production coefficients

TAB2 > Tests

TAB3 > Costs per hectare

TAB4 > Costs per quantity

TAB5 > Costs per LU

TAB6 > Costs per head

RECAP\_TAB3 > Recap per hectare

RECAP\_TAB4 > Recap per quantity

RECAP\_TAB5 > Recap per LU

RECAP\_TAB6 > Recap per head

SUM\_GRP> Coefficients and other information per adjustment group

T\_MEAN\_AA> Total cost per hectare per adjustment group

T\_MEAN\_Q> Total cost per quantity per adjustment group

T\_MEAN\_LU> Total cost per LU per adjustment group

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.



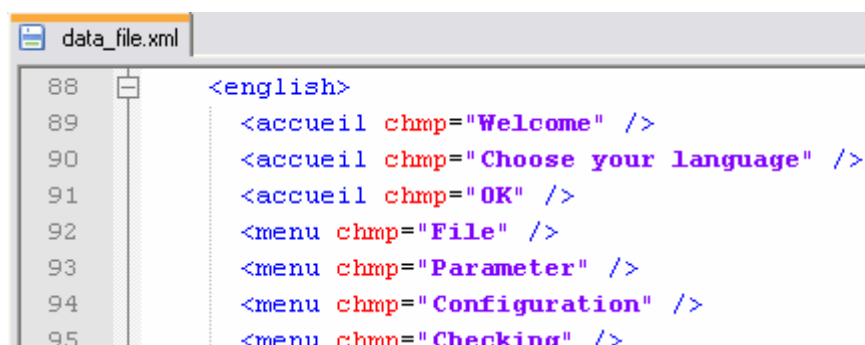
## The data\_file

This file contains the information required to open the Java form, such as the productions and costs available, the variables and their labels, the countries and years 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:



```
data_file.xml
88      <english>
89          <accueil chmp="Welcome" />
90          <accueil chmp="Choose your language" />
91          <accueil chmp="OK" />
92          <menu chmp="File" />
93          <menu chmp="Parameter" />
94          <menu chmp="Configuration" />
95          <menu chmp="Checking" />
```

It is possible to modify the Java form labels. Be sure to choose the language concerned, "english" or "français". 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:



```
172      <donnee>
173          <language>français english</language>
174          <date_end id="2007" />
175          <pays id="bel">
176              <date_start>1995</date_start>
177              <code_postal>340 341 343</code_postal>
178              <français>Belgique</français>
179              <english>Belgium</english>
180          </pays>
181          <pays id="dan">
182              <date_start>1995</date_start>
183              <code_postal>370</code_postal>
184              <français>Danemark</français>
```

```

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>Rve</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	Vérification			
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 are correctly filled				
	dictionary	region	crop	livestock	livest cost

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.

	A	B	C	D	E	F
1	first_year	last_year	country_id	english	français	reg_id
2	1995	2008	bel	Belgium	Belgique	340-341-343
3	2007	2008	bgr	Bulgaria	Bulgarie	831-832-833-834-835-836
4	2004	2008	cyp	Cyprus	Chypre	740
5	2004	2008	cze	Czech Republic	Republique Tchèque	745
6	1995	2008	dan	Denmark	Danemark	370
7	1995	2008	deu	Germany	Allemagne	10-20-30-50-60-70-80-90-100-112-113-114-115-116
8	1995	2008	ell	Greece	Grèce	450-460-470-480
9	1995	2008	esp	Spain	Espagne	500-505-510-515-520-525-530-535-540-545-550-555-560-56
10	2004	2008	est	Estonia	Estonie	755
11	1995	2008	fra	France	France	121-131-132-133-134-135-136-141-151-152-153-162-163-16
12	2004	2008	hun	Hungary	Hongrie	760-761-762-763-764-765-766
13	1995	2008	ire	Ireland	Irlande	380
14	1995	2008	ita	Italy	Italie	221-222-230-241-242-243-244-250-260-270-281-282-291-29
15	2004	2008	ltu	Lithuania	Lituanie	775
16	1995	2008	lux	Luxembourg	Luxembourg	350
17	2004	2008	lva	Latvia	Lettonie	770
18	2004	2008	mlt	Malta	Malte	780
19	1995	2008	ned	Netherlands	Pays Bas	360
20	1995	2008	ost	Austria	Autriche	660
21	2004	2008	pol	Poland	Pologne	785-790-795-800
22	1995	2008	por	Portugal	Portugal	610-620-630-640-650
23	2007	2008	rou	Romania	Roumanie	840-841-842-843-844-845-846-847
24	1995	2008	suu	Finland	Finlande	670-680-690-700
25	1995	2008	sve	Sweden	Suède	710-720-730
26	2004	2008	svk	Slovakia	Slovaquie	810
27	2004	2008	svn	Slovenia	Slovenie	820
28	1995	2008	uki	United Kingdom	Royaume-Uni	411-412-413-421-431-441
29						
30						

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.

	A	B	C	D
1	crop_id	english	français	
2	O_120	[120] Wheat (common)	[120] Blé tendre	
3	O_121	[121] Wheat (durum)	[121] Blé dur	
4	O_122	[122] Rye	[122] seigle	
5	O_123	[123] Barley	[123] Orge	
6	O_126	[126] Grain maize	[126] Mais grain	
7	O_124	[124] Oats	[124] Avoine	
8	O_125	[125] Summer cereals	[125] Céréales d'été	
9	O_127	[127] Rice	[127] Riz	
10	O_128	[128] Cereals (other)	[128] Autres céréales	
11	O_360	[360] Peas	[360] Pois	
12	O_361	[361] Lentils	[361] Lentils	
13	O_330	[330] Other protein crops	[330] Autres protéagineux	
14	O_130	[130] Potato	[130] Pommes de terre	
15	O_131	[131] Sugar beets	[131] Betteraves sucrières	
16	O_331	[331] Rape	[331] Colza	
17	O_332	[332] Sunflower	[332] Tournesol	
18	O_333	[333] Soya	[333] Soja	
19	O_334	[334] Oil seed (other)	[334] Autres oléagineux	
20	O_364	[364] Flax	[364] Lin	

"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	français
2	grouping	1995	A1	[A1] Region	[A1] Region
3	grouping	1995	TF8	[TF8] Type of farming 8	[TF8] Orientation technico-économique
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-économique
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

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)<sup>1</sup>

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*

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

---

<sup>1</sup> 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*

#### 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)
<b>Livestock outputs</b>	
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)
<b>Livestock costs:</b>	
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
<b>Other variable costs:</b>	
Motor fuels and lubricants	F62
Seeds and seedlings purchased	F72
Seeds (home grown)	SE290
Fertilizers	SE295
Crop protection	SE300
<b>Fixed costs:</b>	
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:

$$Z01 = [\sum SE370 / \sum SE020] \text{ by region} * [SE010-SE020]$$

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

$$Z02 = [\sum SE375 / \sum (SE030 + B50)] \text{ by region} * B48$$

(\*\*\*\*) 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.

$$Z03 = [\sum SE380 / \sum (SE490 + SE495)] \text{ by region} * (SE436-SE490-SE495) - Z02$$

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: Swine, poultry and eggs have no area allocated if the option "With production used on-farm" 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 livestock 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 swine

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:

$$\text{INTRAP} = F69 / O\_CER$$

A\_56 the area attributed to swine 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*  
[www.ekon.slu.se/facepa](http://www.ekon.slu.se/facepa)