SPEL system

Technical documentation (Rev. 1)
Vol. 2: BS, SFSS, MFSS

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The concept of the SPEL system was developed at the Institut für Agrarpolitik, Marktforschung und Wirtschaftssoziologie of the University of Bonn by W. Henrichsmeyer, W. Wolf and H.-J. Greuel.

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1. INTRODUCTION

1.1. Overview of the documentation

The SPEL approach is characterized by mutual interaction between model-builders and statisticians or policy-makers. There are different models to deal with different questions, e.g. the SPEL/EU-Model for the agricultural sector of the EU Member States and the EU as a whole.

In general, the SPEL System offers a systematically structured data system to be used for

- checking the consistency of agricultural statistics,
- monitoring the present situation in the agricultural sector,
- ex-post analyses of sectoral developments, and
- forecasts and policy simulations of the effects of alternative policies from short-term and medium-term viewpoints.

The set of statistical data is not taken as final but subjected to consistency checks and critical investigations, which may lead to the jointly agreed revision of existing statistics and proposals for amendments and conceptual changes for new statistics. It is not assumed, either, that policy-makers are able to specify target variables before taking a closer look at the problems involved. Instead, the fundamental idea is that target priorities emerge during the process of policy dialogue on trade-offs between target variables.

The principal technical approach for the whole SPEL System is transparency and a flexible user interface. Transparency means that each data element can be traced back to the basic data sources and the underlying assumptions. The flexible user interface facilitates dialogue between policy-makers and the model.

Some general features of the SPEL/EU-Model can be characterized by the items:

- activity-based concept: division of the agricultural sector into activities, in order to trace production interactions;
- consistency accounting framework: to balance physical and monetary flows.

The technical documentation of the SPEL System consists of the following parts:

Basic information

SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics

This volume includes the documentation of all technical basics, as there are data dimensions, file format conventions, utilities and multi-purpose programs without any model specific code. This general software was developed by EuroCARE in cooperation with the Institut für Agrarpolitik, University of Bonn, and is applied to other uses, too.

Specific information for the models of the SPEL System

> SPEL System, Technical Documentation (Rev. 1), Vol. 2: BS, SFSS, MFSS
>
> This volume describes the generation of the SPEL/EU components Base System (BS), Short-term Forecast- and Simulation System (SFSS) and Medium-term Forecast and Simulation System (MFSS) in terms of the underlying methodological ideas and technical basics.

The technical documentation is designed as a guide for operators and users familiar with the VM/CMS system on an IBM or compatible main frame.

A knowledge of the basic information described in 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics' will make it easier to follow and appraise the details of this volume.

For the methodological aspects; see the methodological documentation.

1.2. Syntax conventions

When describing parameters or options, the following syntax conventions are used:

- When there is a choice between two or more parameter values, the values will be separated by a vertical bar ('|'). For example, the parameter that allows the amount of listed information for a SPEL program to be set to 'FULL', 'ROUGH' and 'NONE' will appear as follows:

  FULL | ROUGH | NONE

- Optional parameter definitions are given in brackets, and operands for which an appropriate value must be substituted are given in italics. For example, if a user wants to define a selection of table columns and rows and optionally the amount of listed information, this will appear as follows:

  COLUMNS = *columns*, ROWS = *rows*, [LSTLEVEL = FULL | ROUGH | NONE]

- However care must be taken not to actually enter the brackets and vertical bars that appear in descriptions of parameters, since they are not part of the actual parameter definition.

In the screen dumps describing panel user interfaces, the following conventions are used:

- All user inputs are bold-printed, in this documentation they are only formal examples.
- When there is a choice between two or more cursor selections, the selectable items are also bold-printed.

2. COMPONENTS OF THE SPEL/EU-MODEL

The SPEL/EU-Model consists of three components :

- Base System
- Short-term Forecast and Simulation System
- Medium-term Forecast and Simulation System

The forecast and simulation components work on the results of the Base System component.

The components are divided into several work sectors, which reflect the main methodological aspects.

Each work sector is technically implemented by a set of work steps, which are applications of separate computer programs.

Table 1 gives an overview of the SPEL/EU-Model components, their work sectors and work steps.

Table 1a: Components of the SPEL/EU-Model (Base System)

Components	Work sector	Work steps
Base System (BS)	Data preparation	Data format conversion (DATCON program)
		Optional data archiving (IMPPACK program)
		Optional data selection (IMPSEL program)
		Data compilation (ORIGIN program)
	Completion of time series	Completion by subjective estimation (EV program)
		Completion by trend estimation (TREND program)
		Completion taking into account the methodological dependencies (COMPLET program)
	Base Model (BM)	Consistency at Member State level and EU aggregation level (BASEMOD program)
		Optional aggregation of user-defined regions (AGGREG program)

Table 1b: Components of the SPEL/EU-Model (SFSS, MFSS)

Components	Work sector	Work steps
Short-term Forecast and Simulation System (SFSS)	Preparatory work	System proposals for exogenous variables (SFPROP program) Experts' judgement (SFEXP program)
	Short-term Model (SM)	Forecast and simulation (SFS program) Optional aggregation of user-defined regions (AGGREG program)
Medium-term Forecast and Simulation System (MFSS)	Preparatory work	Calculation of trend-based shifts (COMPLET program) Calibration of supply and demand elasticities (MFELAS program) Preparation of experts' proposals (Editor)
	Medium-term Model (MM)	Forecast and simulation (MFS program) Optional aggregation of user-defined regions (AGGREG program)

The programs BASEMOD, AGGREG, SFPROP, SFS, MFELAS and MFS are methodologically adjusted programs for the SPEL/EU-Model and the descriptions are included in this volume. The others are general programs described in 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

Additional reports for the results of work steps can be generated by the general programs EV, DASERV and DAOUT. The EXPLOIT program, described in this volume, provides the user with tables showing more methodological aspects.

Table 1 shows the complete sequence of work steps for the SPEL/EU-Model. The figure is divided into three parts with respect to the three different components. Each step works on the results of the previous one. The components SFSS and MFSS work on the results of the Base System component. The work steps are not interdependent Therefore the control parameters have to be checked for consistency; e.g. if the previous work step has run for the region UK only, the next step must not access other regions. If a work step has to be repeated with different input data or control parameters the sequence can be restarted at the points marked in figure 1.

Figure 1: Work steps of the Base System component

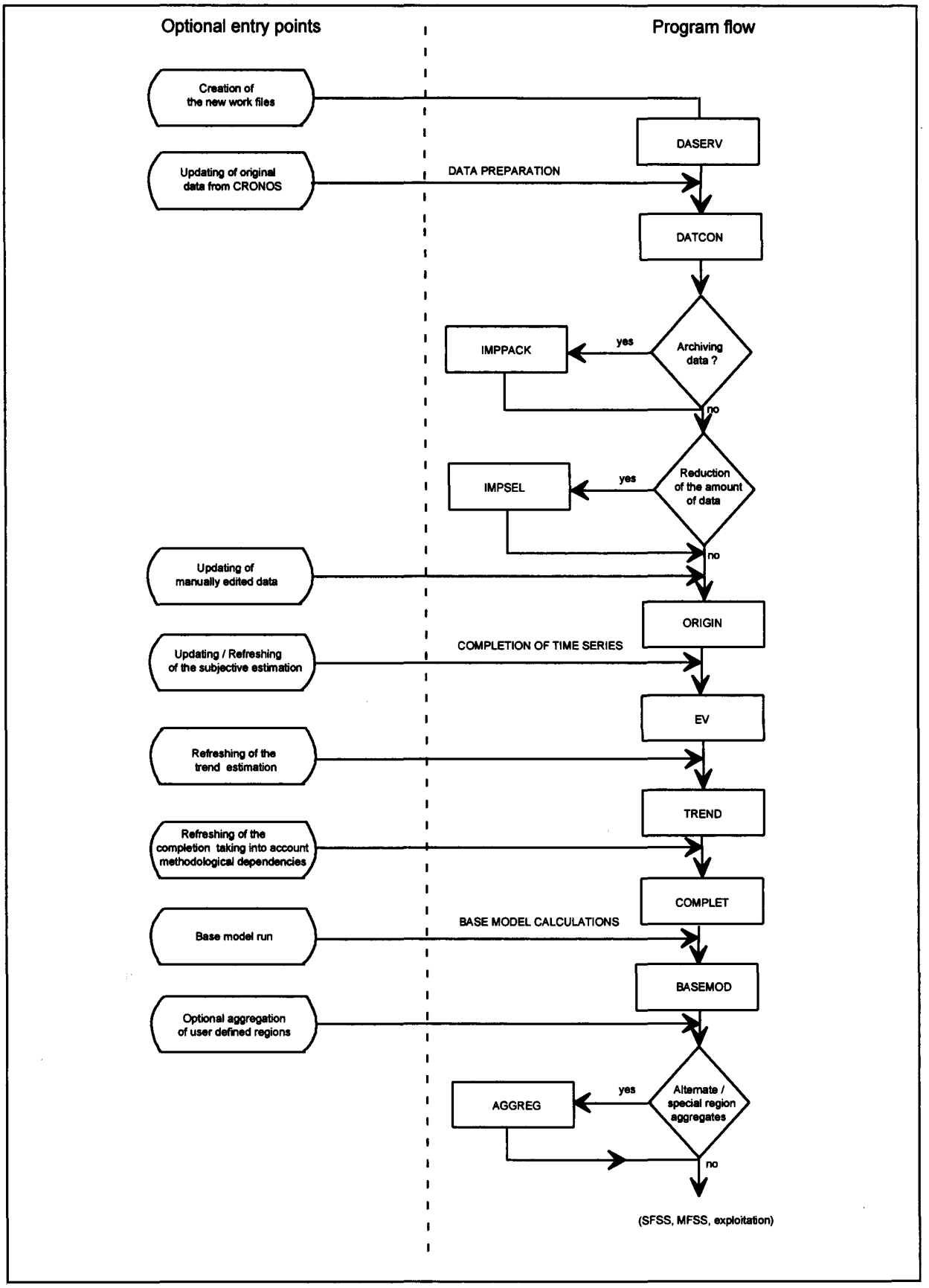


Figure 1 a: Work steps of the SFSS components

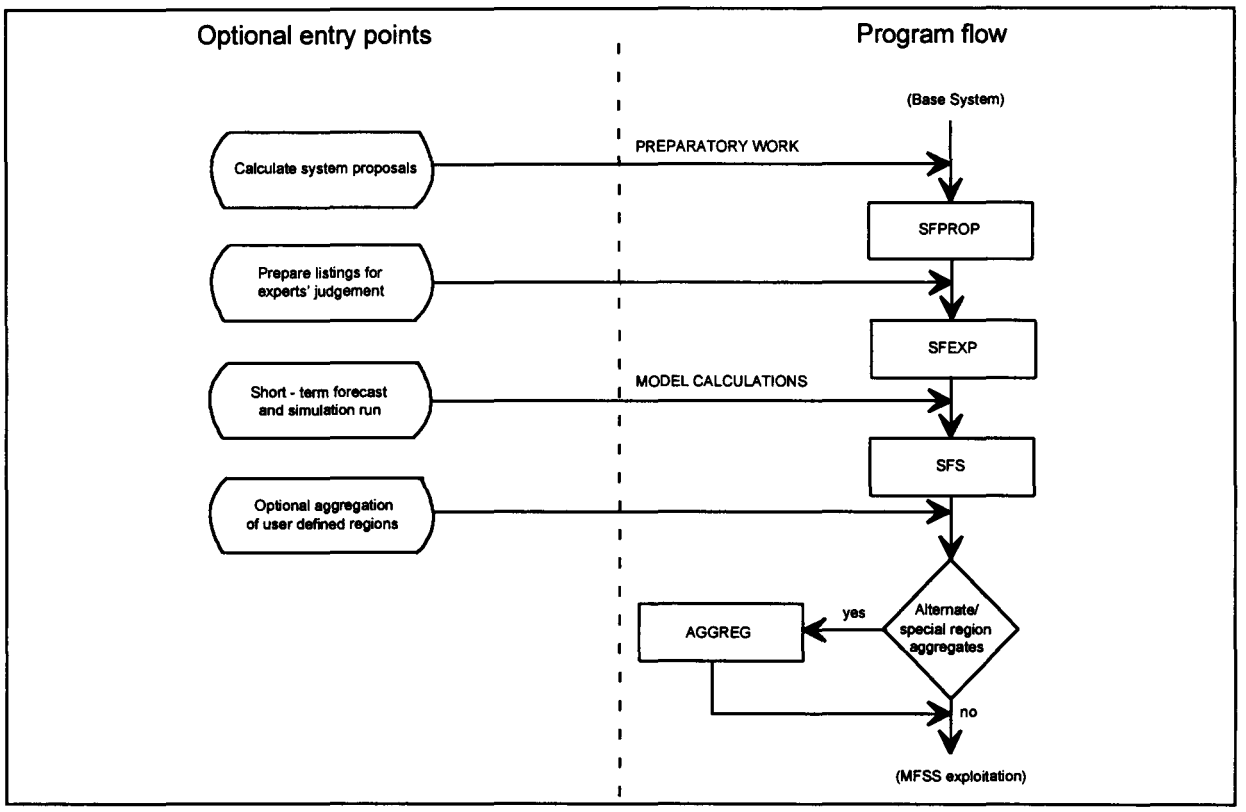
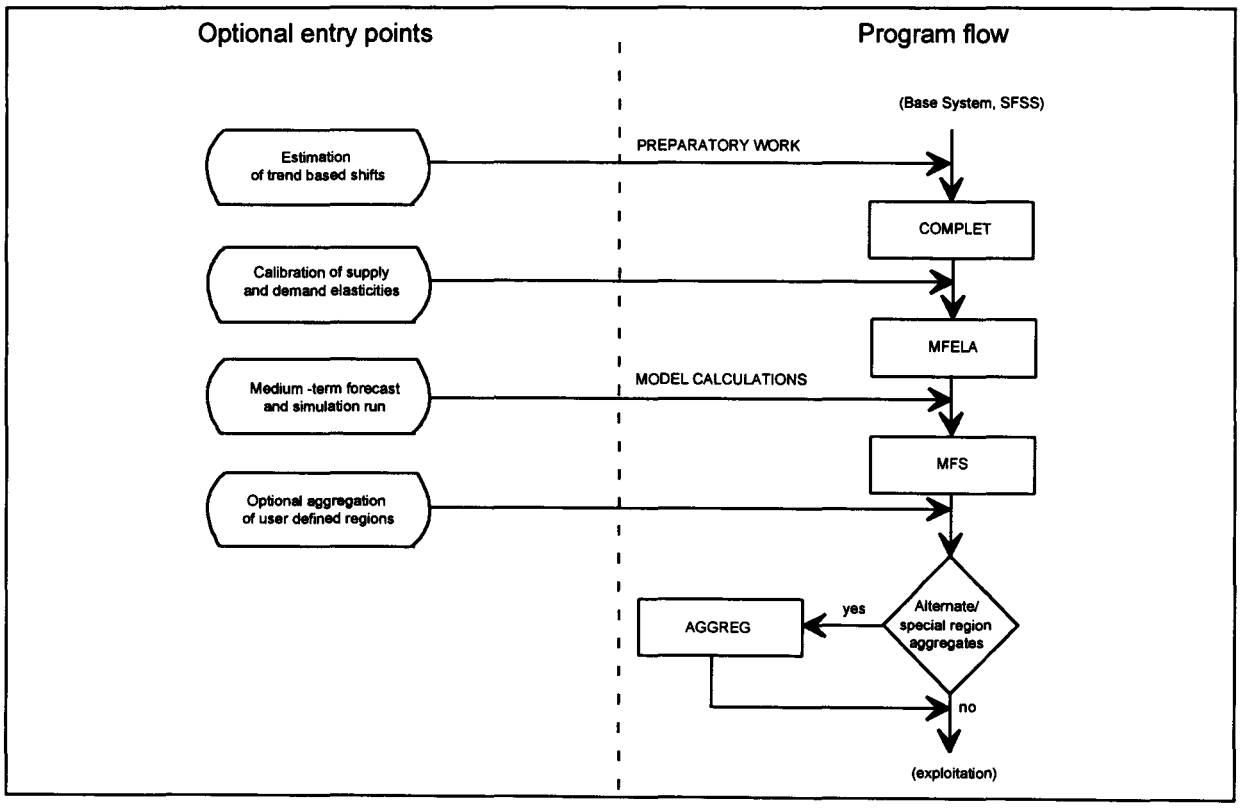


Figure 1 b: Work steps of the MFSS component



3. IMPLEMENTATION

The SPEL software is implemented on the VM/CMS dialog system on the Amdahl mainframe at Eurostat in Luxembourg. The programming language is FORTRAN 77. Interfaces are designed within the mainframe software to prepare exploitation data for PC standard software.

3.1. Users and operators

To become familiar with the SPEL System it is important to know about the SPEL System structure and the work levels for SPEL operators and users.

Working with the SPEL System can be done at two levels (see figure 'User and operator level') :

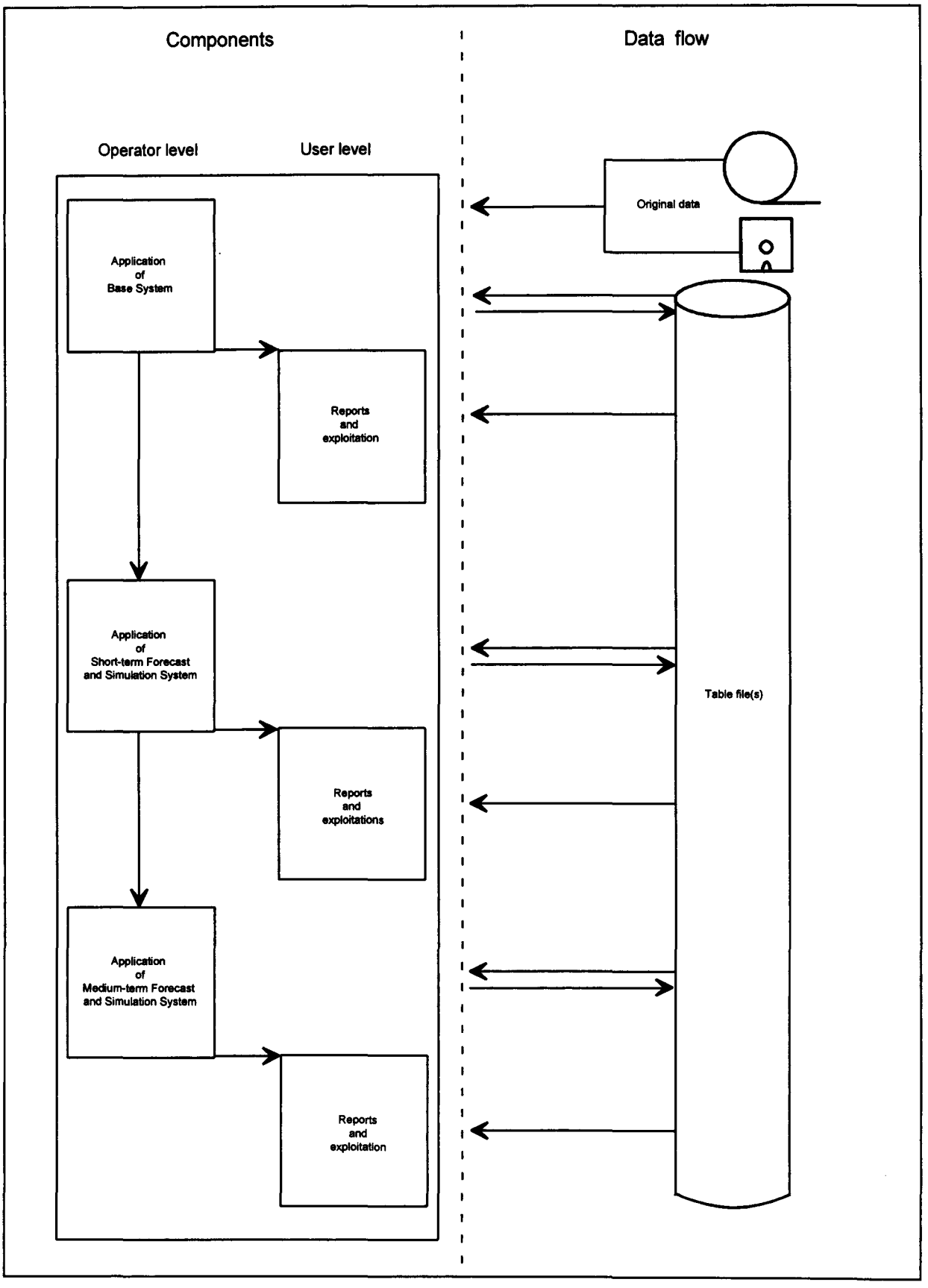
- Operator level
- User level

Operators are responsible for preparing original data and doing specific model calculations in line with the methodology.

Ex-post data and model results are offered to the users for reports and exploitations. A set of user-friendly programs is made available to users, who do not need to have detailed computer experience.

All development and revisions of SPEL software will be done by programmers.

Figure 2: User and Operator level



3.2. The shell

The SPEL/EU shell is a full screen interface that integrates the separate programs to work on the SPEL/EU-Model. The sequence of the panels reflects the components, work sectors and work steps as described in table 1. The additional utilities for free disposal are offered to the operator/user.

The shell is composed of: selection; edit; and display panels. The panel layout and usage are identical to the work step panels in SPEL, but are installation dependent and managed by the SPEL team, Luxembourg. (see 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics')

3.3. Initializing environment

The SPEL environment is initialized by the execution of the SPEL command. The allocation of files to several disks considers the missing file sharing features of the VM/CMS system.

Initializing the user environment means that the SPEL programs and utilities are made available by linking the following disks :

C: temporary disk linked with R/W access (only if the C disk mode is free for use)

F: SPEL/EU system disk providing the executable SPEL programs for all model components including all control files necessary to run the programs. Additionally the disk provides the Base System and simulation results.
This disk is linked in R/O.

I: SPEL System disk providing executable general programs, linked in R/O.

Initializing the operator environment means that four additional disks may be linked:

E: SPEL operator system disk linked in R/O or R/W

H: SPEL/EU disk to run the SFSS model, linked in R/O or R/W
and
SPEL/EU disk to run the MFSS model, linked in R/O or R/W

J: SPEL/EU disk to run the Base System, linked in R/O or R/W

L: SPEL/EU disk containing exogenous data mostly stored in IMP files, linked in R/O or R/W

The default A disk is still accessible for users and operators in current mode.

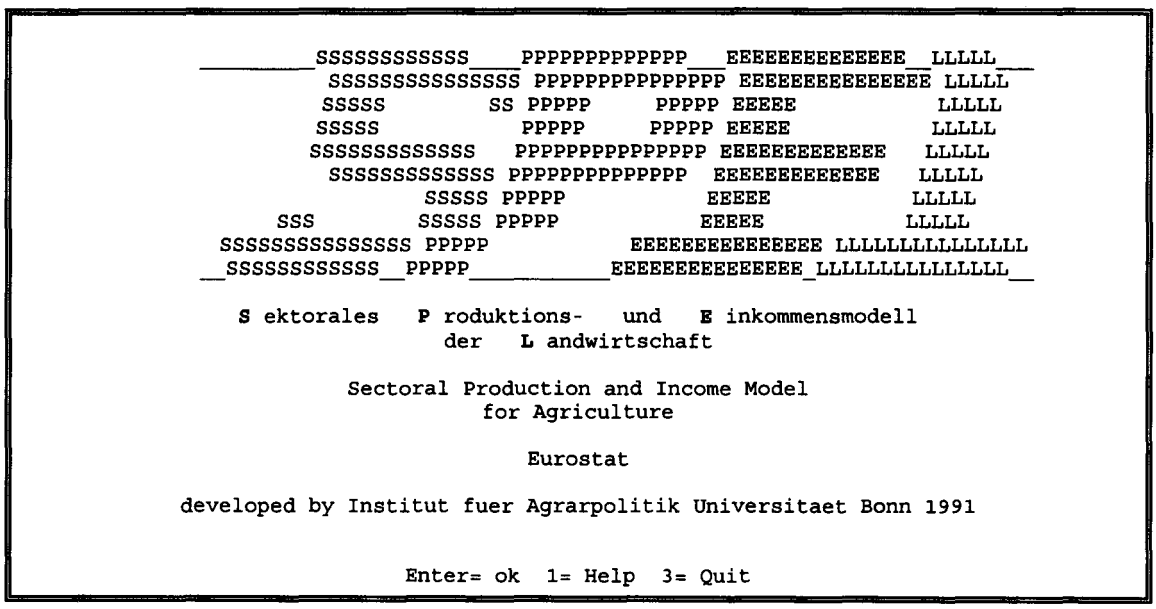
3.4. Getting started

Before using the SPEL/EU shell make sure that the SPEL EXEC file is on your A disk. This program is distributed by the SPEL team, Luxembourg.

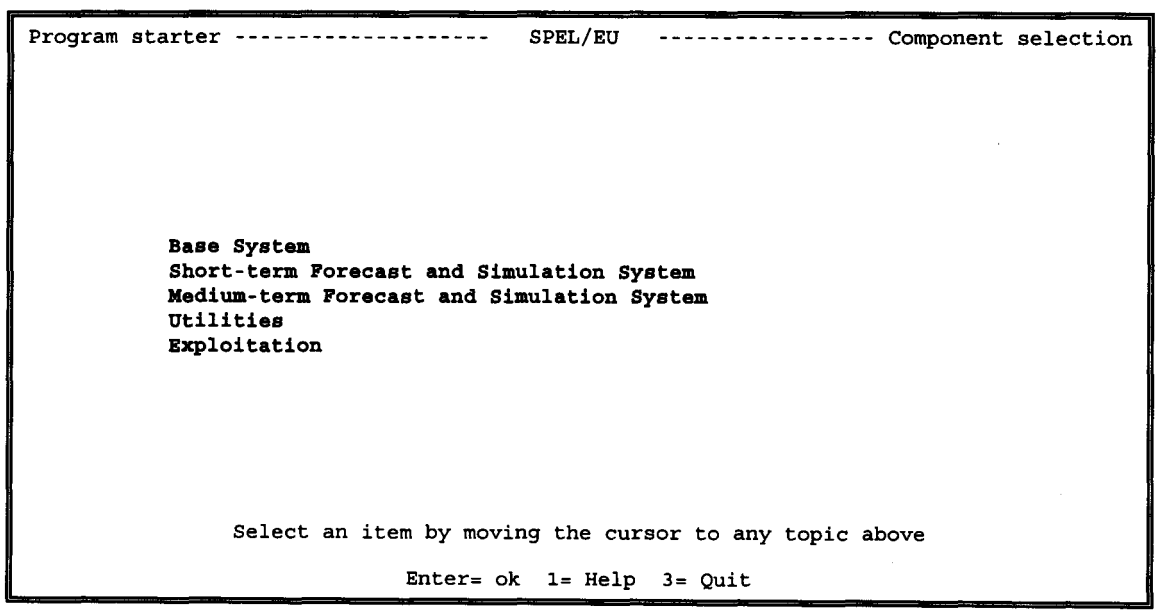
To start the SPEL/EU shell, type SPEL in the VM/CMS command level and press ENTER.
This command may be added to the PROFILE EXEC file in order to start the SPEL/EU shell automatically at the beginning of the user's session. If the user intents to work without the SPEL/EU shell he may contact his SPEL team.

The first panel is the SPEL logo followed by a general selection panel for component selection.

SPEL/EU startup screen



Component and utility selection screen



The operator can select one of the three components (Base System, SFSS or MFSS) or the set of utilities or the set of exploitation programs.

The user's selection is restricted to the set of utilities and the set of exploitation programs.

For each component a work sector selection panel will be displayed, which is described in each case within the chapters for the specific component. For utilities and exploitation, special selection panels are displayed too.

3.5. General program control

General program control is done by parameters. Each parameter has a unique name and its current value is defined by an assignment

parameterName = parameterValue

The *parameterValue* is interpreted according to on the application. The specific usage of the parameters is described in the documentation of each SPEL program.

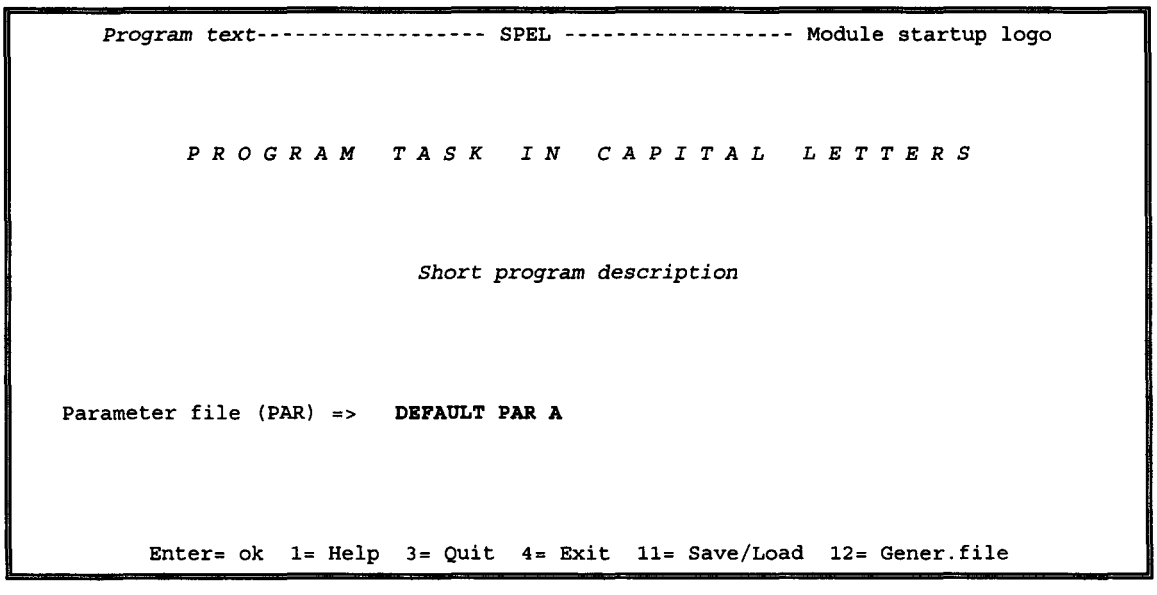
Most SPEL programs require the selection of SPEL data dimensions by codes. For these selections, the user often has to enter more than one code as *parameterValue*, e.g. if the user wants to select codes for several regions. Depending on the application program, SPEL offers the following general options:

- a sequence of codes, such as 'D E F GR'
- an alphanumerical range defined by a lower and upper bound, such as 'A : Z'
- a logical range defined by a lower and upper bound, such as 'SWHE - OCER', according to the methodological code sequence as defined in the COD file
- a combination of ranges and sequences, such as 'SWHE - BARL MAIZ OCER'
- a star ('*') to select all items

Presets for all these parameter values are loaded from general control files of PAR format. The parameters can be modified during run-time by panels. A detailed description of parameter files and panels is included in the 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

Whenever the operator or user is selecting a single work step a separate SPEL program will be invoked. Each SPEL program uses panel interfaces. When starting a program, the first panel will always be the 'Module startup screen'.

Module startup screen



This screen gives a short program description and prompts the user for the parameter file name. By pressing the function key 12, an edit panel will be displayed which will allow names of general files to be changed. Depending on the application program, the file names for run time messages and warnings(LOG file), more detailed information for the operator (LST file), code descriptions (DES file) and on-line help information (local HLP file and global HLP file) can be updated.

In the LOG file the user will find a copy of all messages displayed on screen during program execution. More detailed information about work steps will be included as well. In the LST file the user will find listings as results of program tasks. The description file includes SPEL code description text to be used for messages and listings. The HLP files are accessed when the user presses the help key.

Parameters

Parameter file (PAR)

PAR file containing the program parameters for the program start.

4. BASE SYSTEM (BS)

The Base System component is divided into three work sectors:

- Data preparation
- Completion of time series
- Base Model.

Each sector is implemented in several work steps realized by separate programs. Each step works on the results of the previous one, so that the steps must be executed in a fixed order. Nevertheless it is possible to restart from any step in the sequence, provided that the previous step has been completed successfully.

The following panel of the SPEL/EU shell lets the operator select a work sector.

Work sector selection screen

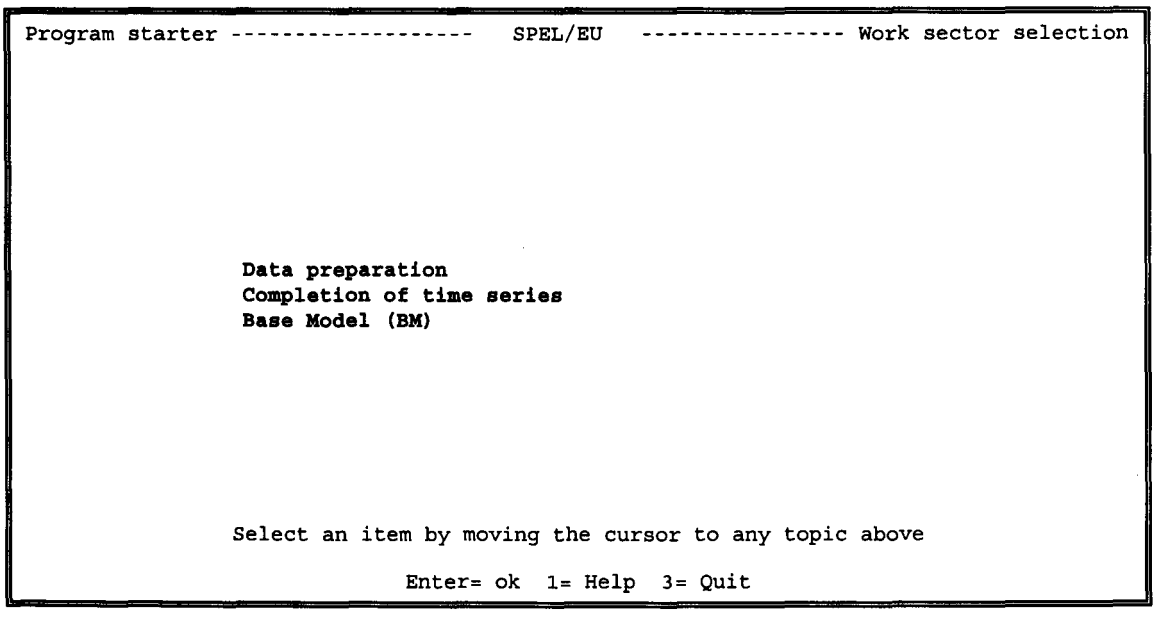


Figure 3: BS: Work steps and data flow

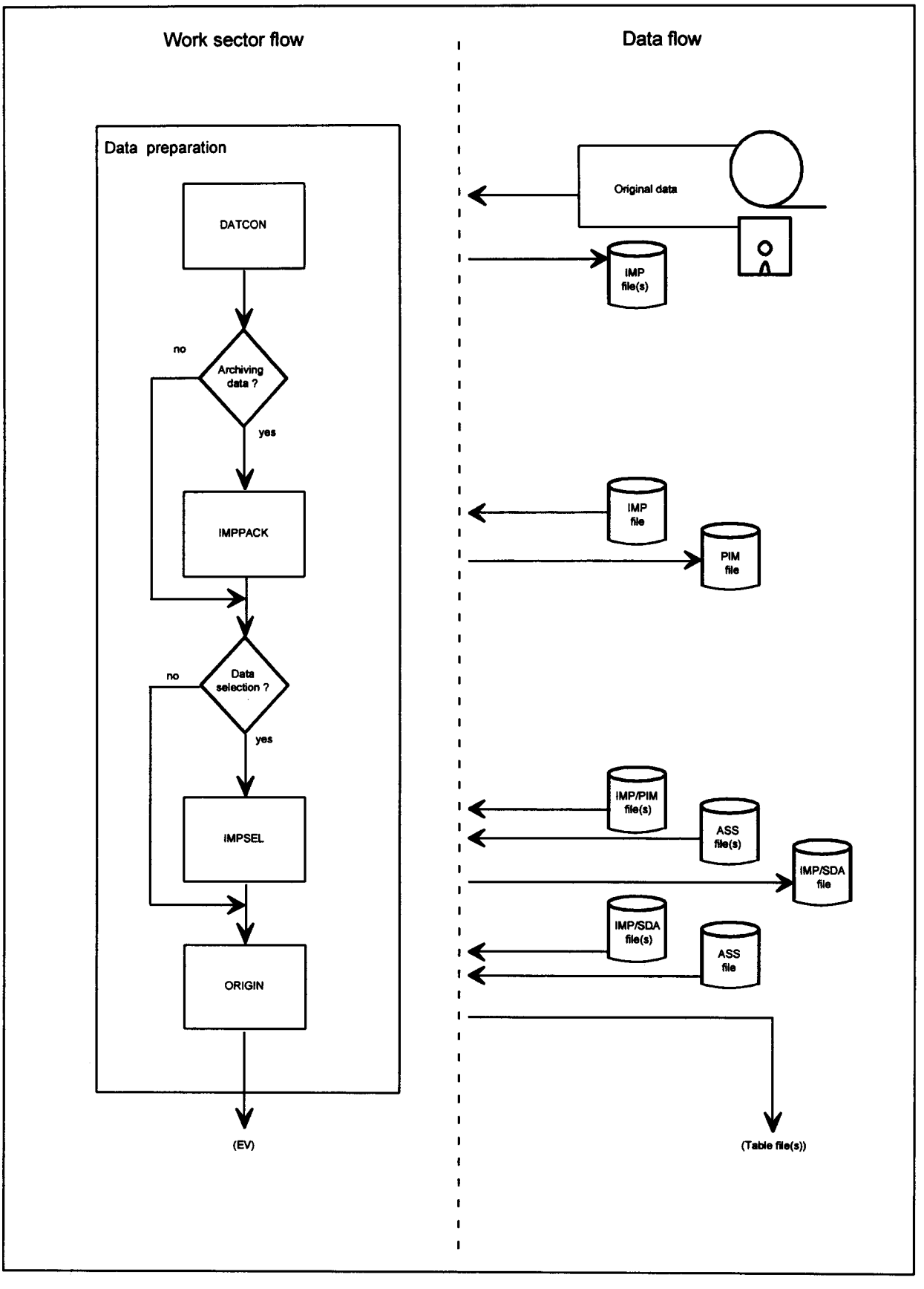
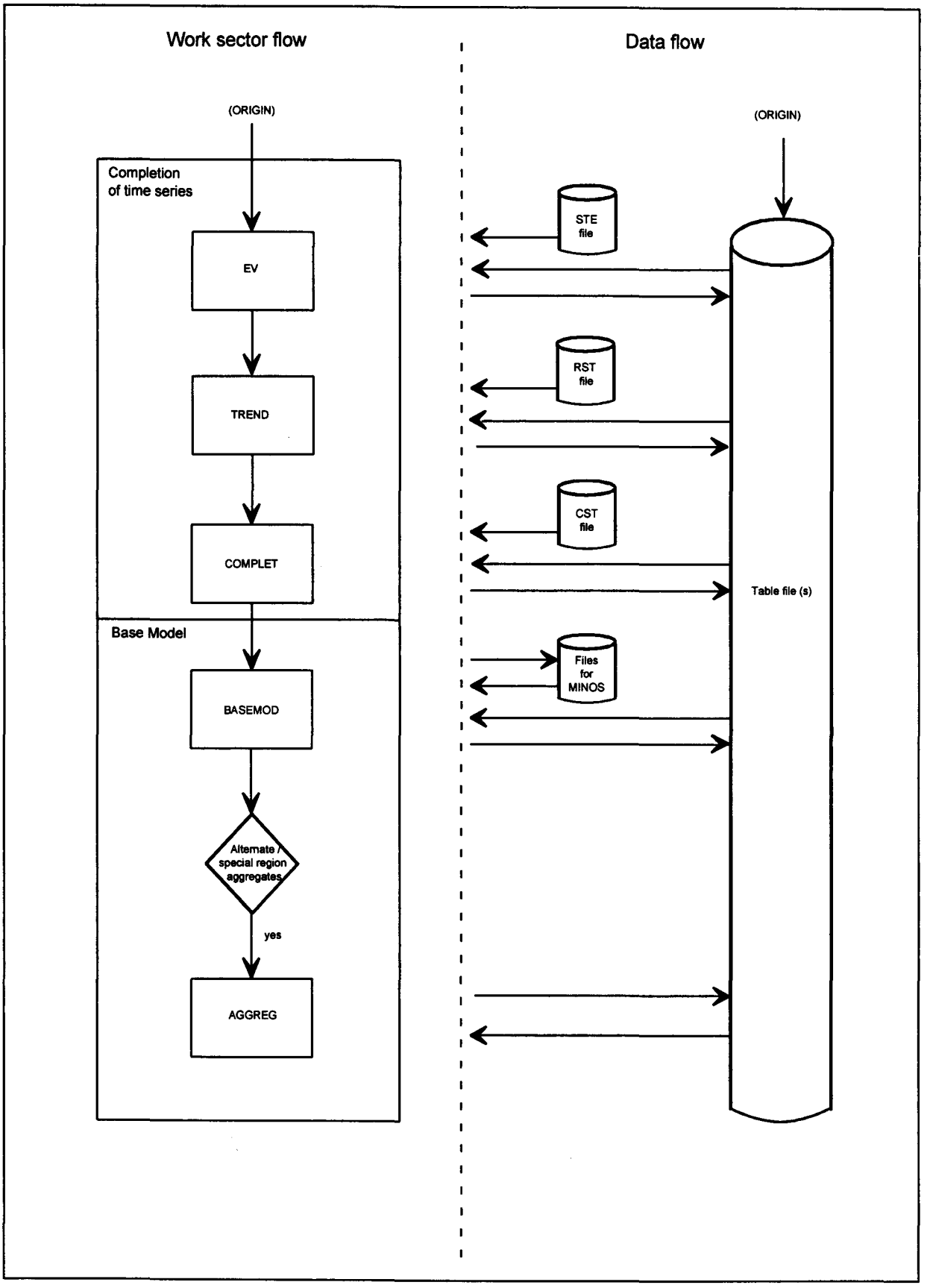


Figure 3 (continued): BS: Work steps and data flow

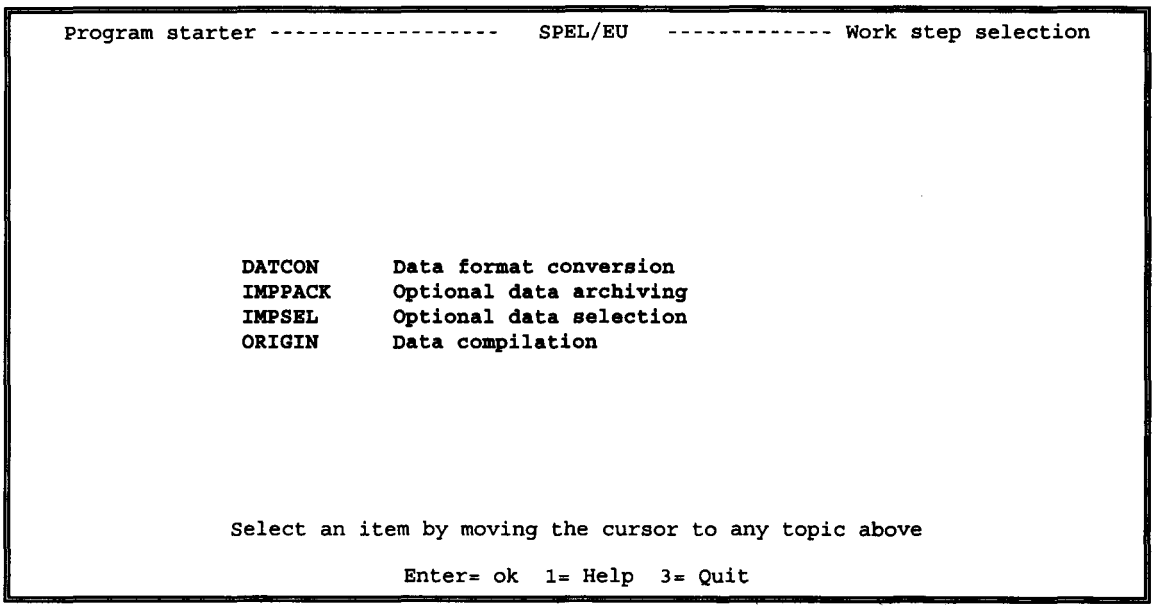


4.1. Data preparation

The work sector 'Data preparation' is mainly done in two work steps (DATCON and ORIGIN). A third work step (IMPPACK) and a forth working step (IMPSEL) can be added.

The following panel of the SPEL/EU shell lets the operator select a work step.

Work step selection screen



In the DATCON work step the different external data source formats are converted to IMP format.

Optionally two other work steps may be inserted before ORIGIN. The IMPPACK program can pack and archive the source data already stored in IMP files in order to save disk space. Via the IMPSEL program the amount of external source data can be reduced for the current model application.

The ORIGIN work step imports data into the model work file of TAB format.

4.1.1. Data format conversion

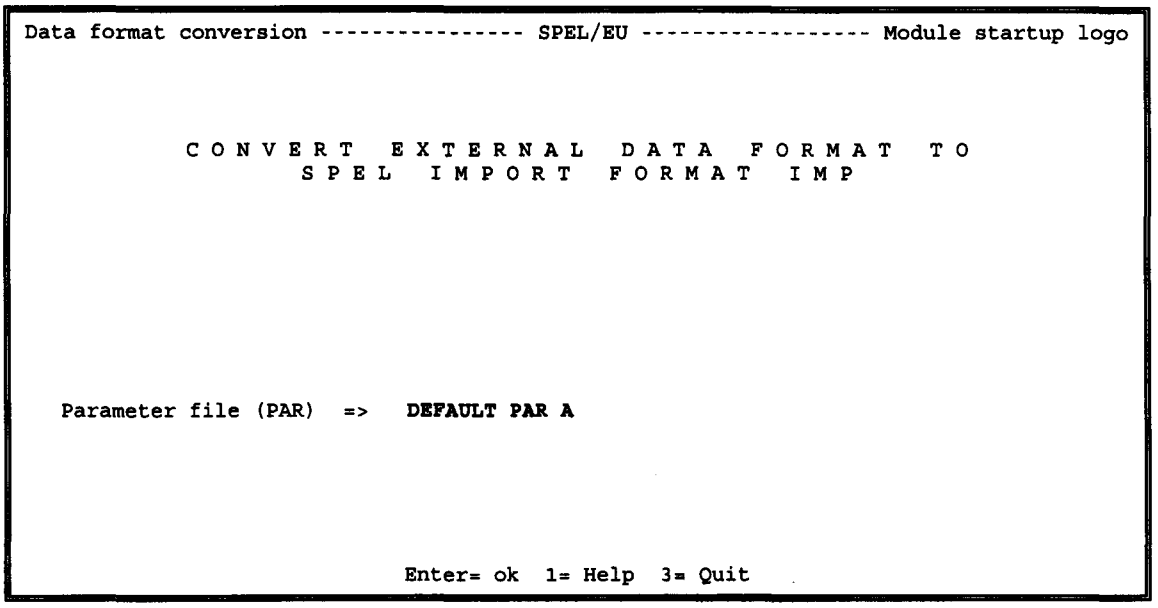
Most exogenous data files are stored on general tapes. The format conversion by the DATCON program has to be done on a computer system which can access tape units. The format standardization process, which includes a complete sorting step, is CPU time and I/O consuming. It is therefore recommended that the format conversion should always be run in batch mode.

The 'job' for the batch component of the VM/CMS operating system will be generated on line and executed offline. This means, that the shell queries the operator for the parameters needed and generates the job in a temporary file to be submitted to the batch system. The output file will be sent after execution of the job to the CMS virtual reader and must be transferred to a CMS disk by the CMS RECEIVE command (the CMS command level is available via 'Utilities' in the 'Component and utility selection screen').

The output format is always IMP.

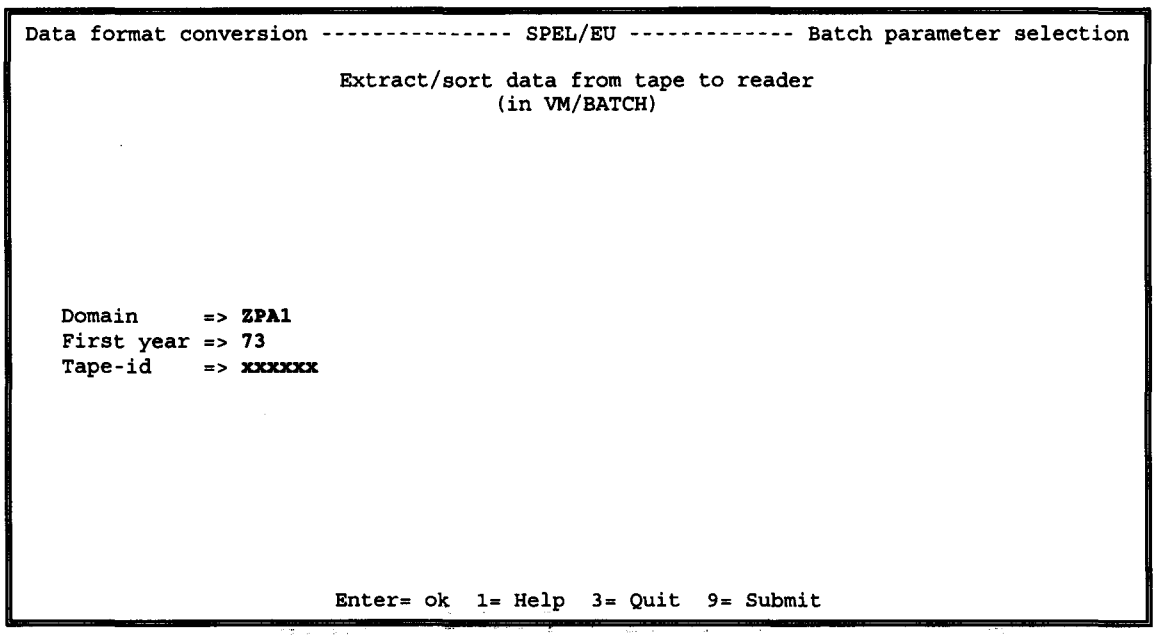
Format standardization should always be done by the operator. Users should contact the SPEL team. The operator has to specify the tape-id, the domain type and the first year for output.

Module startup screen



For detailed information, see chapter 'General program control'.

Batch parameter selection screen



Parameters:

Domain

Select one domain type code.

The following domain types are currently supported:
COSA, PRAG, SEC1, ZPA1

First year

Enter the first year to include in the output file, e.g. '73' for the year 1973.

Tape-id

Enter the tape-id of that tape where the data on the selected domain are stored.

The DATCON program is a utility program described in 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

4.1.2. Optional data archiving

The IMP files can be read directly by the ORIGIN program. Optionally large IMP files can be archived by the IMPPACK program.

Within the panels the user can select between the PACK and the UNPACK service. Packed files of PIM format save disk space but they cannot be managed by editors or listed using view/browse commands.

This program is a general program described in 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

4.1.3. Optional data selection

Selection is done by the IMPSEL program.

The program panels allow data selection by regions, sub-regions, years and periodicity. Up to ten files of IMP or PIM format can be selected for input, and one file of IMP or SDA format will be output. The output file format SDA is recommended for optimum space economy. When SDA format is selected an ASS input file must have been created to define the assignments of original item codes to SPEL table element codes.

Up to five ASS files may be used for selection and conversion of external data source codes to SPEL table element codes.

This program is a general program described in 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

4.1.4. Data compilation

All SPEL applications work on TAB files. To import files of IMP format (result of DATCON program) and/or SDA format (e.g. results of IMPSEL program or manually edited) into the TAB file, the ORIGIN program is used.

- For IMP input files the original item codes are compiled into SPEL table element codes. An ASS input file must have been created to define the assignments of original item codes to SPEL table element codes.
- For SDA input files no code assignments are necessary because the codes in these files are already SPEL table element codes.
- A selection of input data is defined for each differentiation criterion (e.g. region, year).

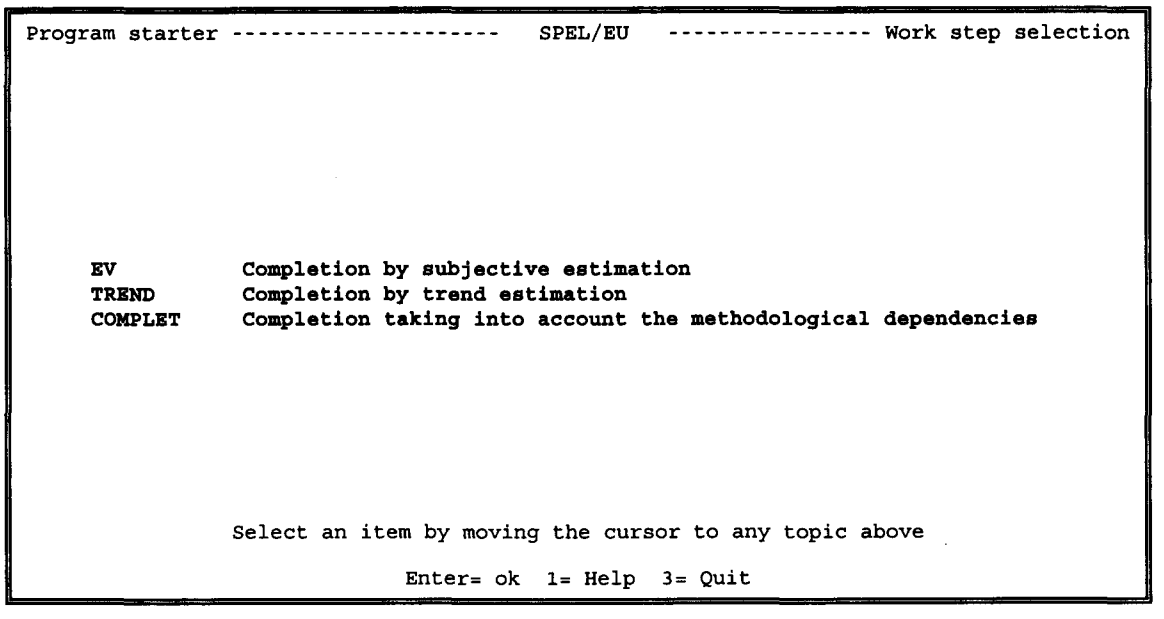
The ORIGIN program can also be used to check the ASS file for legal SPEL table element codes. In this mode the program does not access any numerical data.

This program is a general program described in 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

4.2. Completion of time series

The original data sources are incomplete. The three work steps of the work sector 'Completion of time series' fill in the missing data.

Work step selection screen



To fill in the missing data, first subjective estimations are done by the EV program. Any remaining missing data are then filled in either with values coming from the TREND trend estimation program or with values evaluated by the COMPLET program.

Currently the control file of the EV program and the documentation listings of the TREND and COMPLET program outline the data completion rules and steps that have been followed in order to fill in missing data.

4.2.1. Completion by subjective estimation

The EV program allows data to be analyzed in the econometric sense via regression equations with one or more independent variables. Simple arithmetical operations with time series (e.g. multiplication) are also supported. The program is completely steered by a STE control file.

Whenever regressions with more than one independent variable or arithmetical transformation are necessary to fill in missing data, EV is used. For each time series to be estimated, the control parameters (e.g. independent variables and data transformations) are subjectively determined by experts. They are collected as control statements in STE control files.

The SPEL/EU shell offers a panel to specify the STE control file.

EV steering file selection screen

```
Evaluation program ------------- SPEL/EU ---------------- STE file selection

                          Please enter STE file name




EV steering file (STE)=>




                          Enter= ok  1= Help  3= Quit
```

Parameters:

EV steering file (STE)

> This STE file contains the control statements for the EV program.
> It must be of STE format.

The EV program is a general program and is described in 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

4.2.2. Completion by trend estimation

In the second work step, trend estimations for all remaining missing data are carried out by the TREND program via simple trend estimations using ordinary least squares (OLS).

The TREND program is steered by panels and optionally by an RST steering file. The panel inputs define the overall available elements of each dimension (regions, years etc.), default parameters for

regression control, the reference period and 'best fit' criteria for automatic selection, whereas the steering file allows special regression control parameters for specific time series to be defined.

For each time series containing missing data, estimations with six different data transformations are normally calculated. The best fitting function is automatically selected. For this application of TREND, the coefficient of determination is used in SPEL as the best fit criteria.

The original time series, the estimated time series, the statistical figures, the type of the selected function and the completed time series can be printed. If the automatically selected function type is not acceptable to the user, he can explicitly define the transformation type and reference interval for each time series in an RST steering file. This file may be input for the next run of TREND.

The TREND program is a general program and is described in 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

4.2.3. Completion taking into account the methodological dependencies

In the third work step the COMPLET program fills gaps in time series of the SPEL data base, taking into account the methodological structure of the SPEL table.

The COMPLET program is steered in combinations of panels and the CST steering language. Panel inputs define the overall available elements of each dimension (regions, years etc.), whereas the steering language allows the user to define individual calculations of time series identified by region, type and model area and a combination of column and row codes.

The algorithms for completion done by the COMPLET program fall into two methods, both using dependencies of time series:

- The 'RATIO' method calculates 'data missings' within the dependent time series by applying the relative change of the independent variable to the dependent variable using the average of the first *n* available observations. If the number *n* is not defined by the user, n=3 is assumed.

- The 'REGRESS' method calculates 'data missings' within the dependent time series by single equation OLS estimations, where the user can define the data transformation type for the independent and for the dependent variable. If the transformation types are not user-defined, regressions are calculated for six fixed data transformations and an automatic selection by coefficient of determination is made. For trend estimations the independent time series is the vector of selected years.

Arithmetical expressions on time series can be written in mathematical formula spelling within the steering language.

The original time series, the estimated time series, the statistical figures, the type of selected function and the completed time series are printed. For arithmetical calculations each component and the resulting time series are printed.

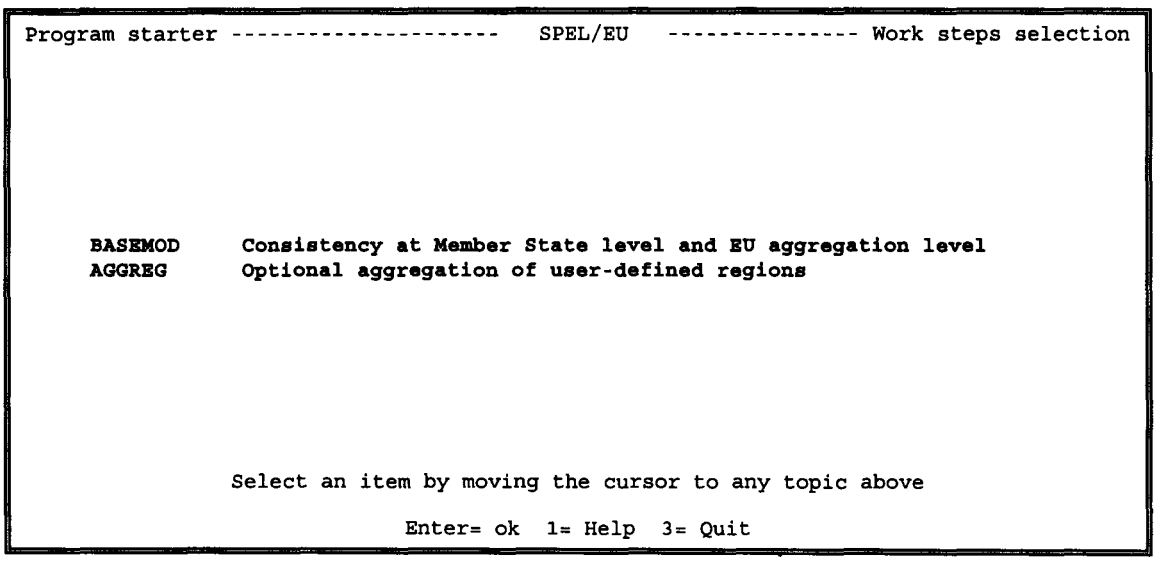
The COMPLET program is a general program and is described in 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

4.3. Base Model (BM)

After completing all the stages of the work sectors 'Data preparation' and 'Completion of time series', the complete set of resulting time series is stored in SPEL tables in the TAB file. This data set is used by the BM for establishing the consistent data base, called SPEL/EU-Data, e.g. for the ex-post period from 1973 up to the current year. SPEL/EU-Data consistency is calculated for each Member State and the EU as a whole. The methodological background is described in 'SPEL System, Methodological Documentation (Rev. 1), Vol. 1: Basics, BS, SFSS, Part 1' in general terms and for the model in 'SPEL System, Methodological Documentation (Rev. 1), Vol. 1: Basics, BS, SFSS, Part 2' for special numerical algorithms.

For further application select a work step.

Work step selection screen



4.3.1. Consistency at Member State level and EU aggregation level

Consistency (model) calculations are carried out for SPEL/EU-Data both at Member State level and for the EU as a whole.

The BASEMOD program is divided into two main steps, which are:

- Consistency at Member State level
- Aggregation to EU level.

The technical realization of the 'consistency' step refers to the stepwise and one-by-one principle of the methodological approach (see figure 'Technical realization of the BASEMOD program').

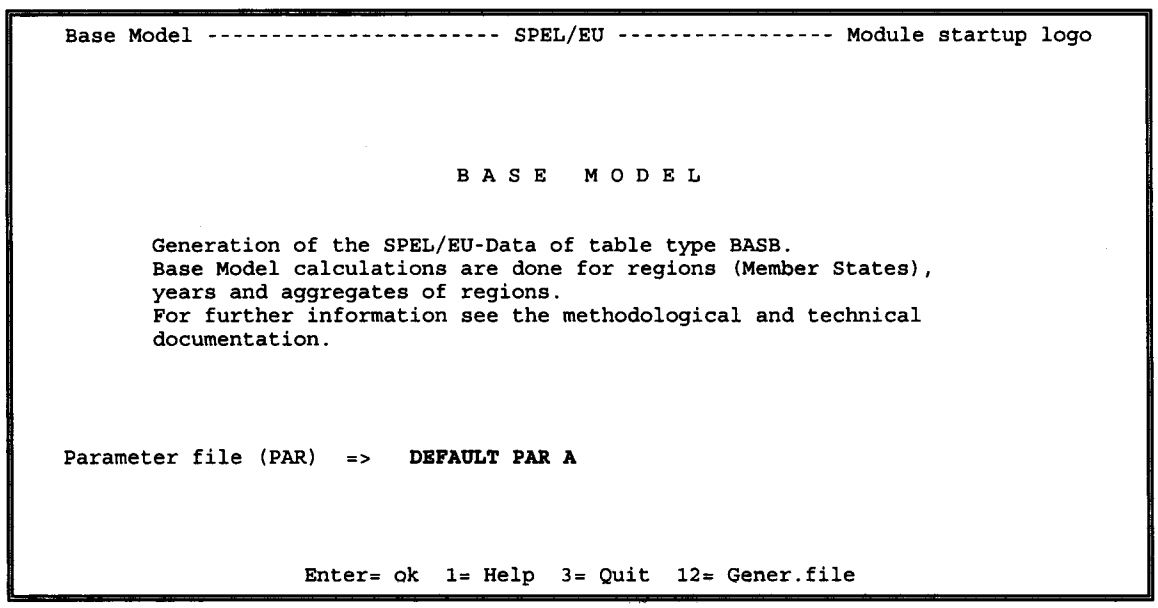
In a first part, the calculations are done in a sequential approach by sequential call of subroutines. To minimize the sectoral feedingstuff costs of a calendar year used to generate the gross animal production, a simultaneous approach is realized by the application of a large-scale optimizing program (NLP program). The MINOS program developed by Stanford University is used. This software package is provided as a FORTRAN 77 subroutine package, which makes it easy to embed the subroutine calls into the BASEMOD program. Further, MINOS is delivered by source code, so that the MINOS user interfaces can easily be adapted to the general program control by parameters as used for all SPEL programs.

Within the BASEMOD program, a special 'model generator' realized in a set of subroutines is called to establish the input file for MINOS. This file reflects the structure of the equation/inequation system and the objective function. A special control file of SDA format is used to define the maxima- and minima restrictions. After the optimizing calculations, MINOS puts the solution in an output file which is again input for the BASEMOD program.

The remaining consistency calculations are done sequentially.

The second step 'Aggregation to EU level' of the BASEMOD program will be computed as soon as a consistent data base is established for all Member States. Within this step the consistency algorithms as used for each Member State are called again.

Module startup screen



For detailed information, see chapter 'General program control'.

Figure 4: BASEMOD program flow chart

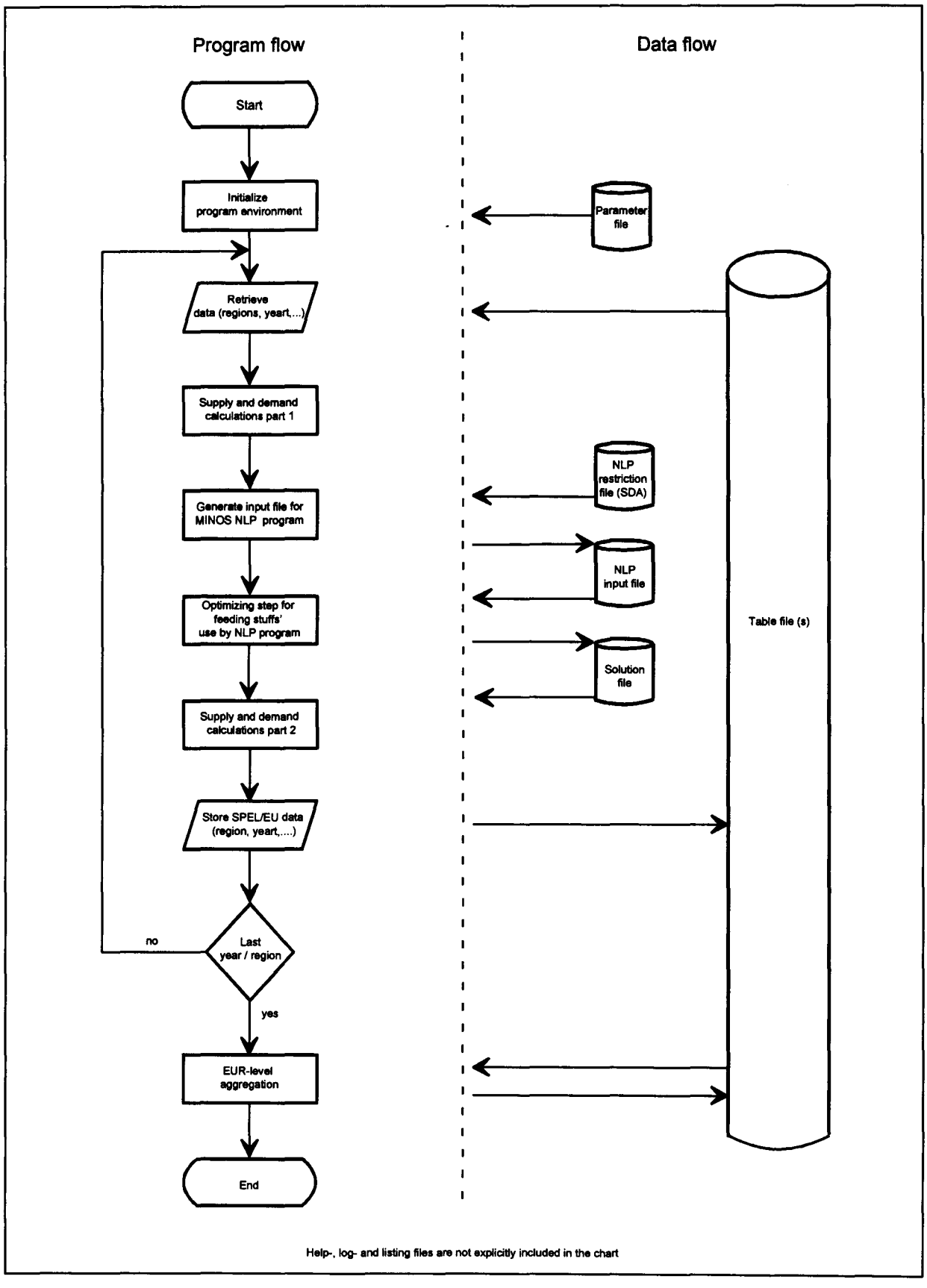


Table 2: Technical realization of the BASEMOD Program

Subroutine	Description	
BASGET	Get data from table file	
BS0RES	Get NLP-restrictions	
BASADJ	Data adjustment for special regions	
BASEAA	EAA check	
BASSBS	Check original supply balance sheet	
BASFCY	Feed resource aggregation (crop year)	
BASCLV	Activity levels crop production	
BASCXG	Crop output production ABTA	
BASCOC	Crop output coefficient of MAC	
BASALV	Animal production and activity level	
BASAXG	Physical animal output generation ABTA	
BASAOC	Animal output coefficient MAC	***sequential approach***
BASCXU	Crop output use ABTA	
BASAXU	Animal output use ABTA	
BASFAG	Aggregation feed resources (calendar year)	
BASDEM	Demand component	
BASPRC	Producer prices animal products	
BASPVA	Disaggregation of production values of EAA	
BASPRI	Prices of final products	
BASFHB	Check hypothetical feed requirements and resources	
BASYGO	Input generation and input use ABTA	
BASIPR	Input prices for input generation ABTA	

⇩

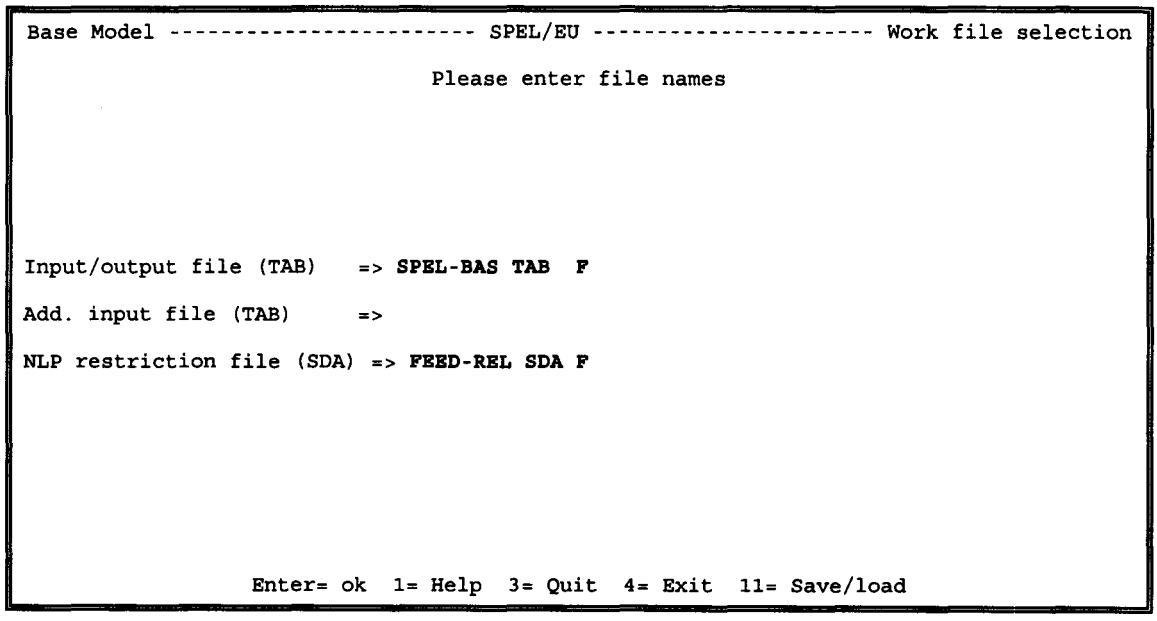
Feedingstuff calculations
Non-linear Programming solution

simultaneous approach

⇩

BS0FIG	Input generation of ABTA for feed component	
BS0CIC	Crop input coefficient of MAC	
BS0AIC	Animal input coefficient of MAC	
BS0AGA	Aggreg. production / input / GVA per activity level	***sequential approach***
BS0AGS	Aggreg. production / input /GVA sectoral level	
BS0CHK	ABTA / MAC consistency	
BS0CEA	EAA consistency inside ABTA	
BS0PID	Calculation of implicit price indices	
BASCAP	'Modified GVAM' calculated by CAP-data from DG VI	
BS0PUT	Put results in table file	

Table file selection screen



Parameters:

Input/output file (TAB)

This TAB file contains SPEL tables.

It is used for table input and table output.

Add. input file (TAB)

Additional TAB input file. If specified, this file is to be accessed subsequently for tables not found in the first defined table file.

NLP restriction file (SDA)

SDA input file containing restriction data for the feed component of the BASEMOD program.

Table file key selection screen

```
Base Model ----------------------- SPEL/EU ---------------- Table file key selection

                              Please enter key selection
        ATTENTION: - Subkeys for base year, type and model area are protected



Region        ( 3 Ch.) => F

Sub-region    ( 2 Ch.) => 00

Current year  ( 2 Ch.) => 84 : 86

Periodicity   ( 2 Ch.) => 00

Base year     ( 2 Ch.) => NN

Type          ( 4 Ch.) => BASB

Model area    ( 1 Ch.) => S D

                  Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Region

Region selection. Specify a single region code, a sequence of codes, an alphanumerical range, a logical range, a combination of sequences and ranges or "*'.

The maximum number of regions that may be selected is 20.

The EUR-level aggregate region is always implicitly calculated by aggregating the Member States. For regions not defined in the current region selection, the BASEMOD results are obtained from previously calculated tables.

Sub-region

Sub-regions are currently not used.

The whole region has the sub-region code '00'. Always specify '00'.

Current year

Year selection. Specify a single year, a sequence of years, a numerical range or a combination of sequences and ranges.

The maximum number of years that may be selected is 30.

Periodicity

Periodicities are currently not used.

The whole year has the periodicity code '00'. Always specify '00'.

Base year

Protected subkey

For ex-post calculations the code for the base year is always 'NN'.

Type

Protected subkey

For table output the type code 'BASB' is always used with the BASEMOD program.

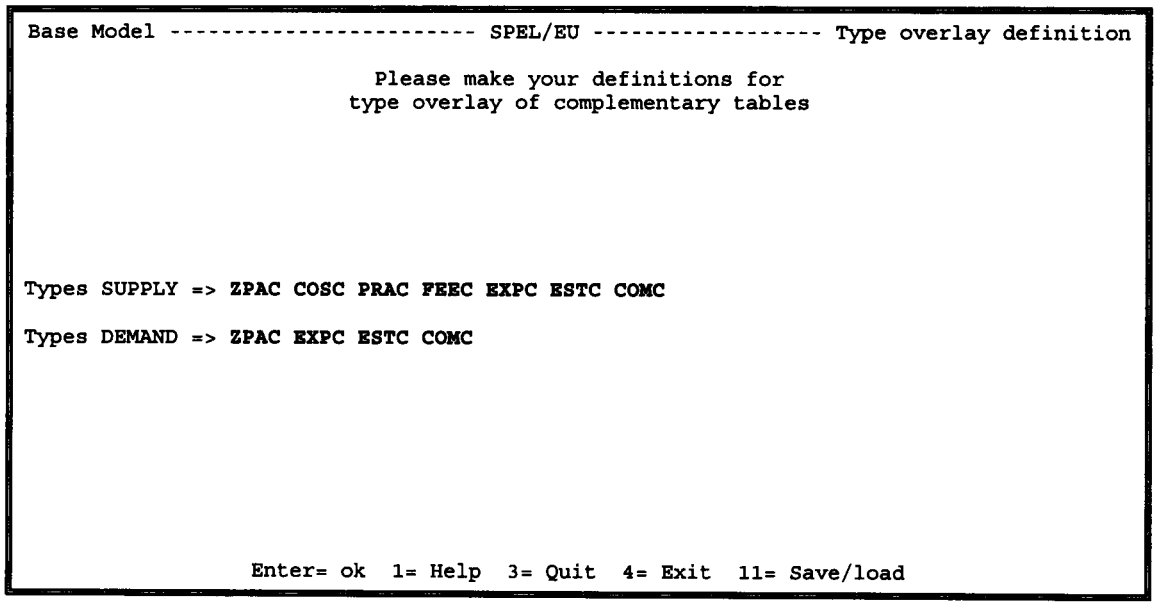
Model area

Protected subkey

The calculations are always applied to supply ('S') and demand ('D').

For detailed information on code selection see chapter 'General program control'.

Type overlay definition screen



Parameters :

Types SUPPLY

For complementary supply table input, define an overlay hierarchy of table type codes . Time series are filled by the first existing data that are found in the sequence of type codes from left to right.

Types DEMAND

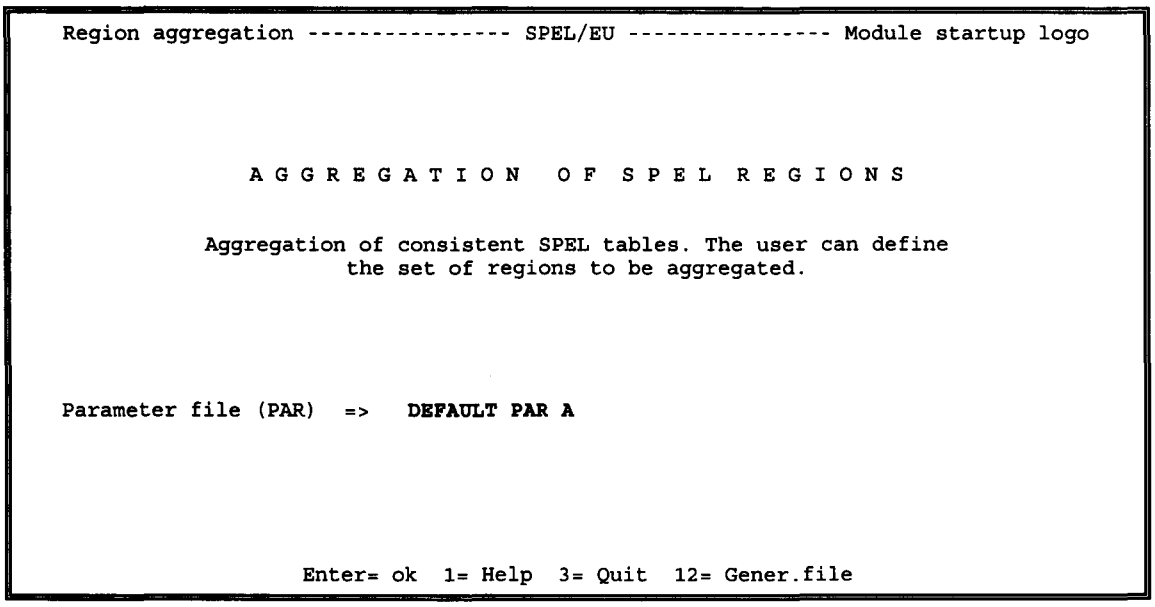
For complementary demand table input, define an overlay hierarchy of table type codes. Time series are filled by the first existing data that are found in the sequence of type codes from left to right.

4.3.2. Optional aggregation of user-defined regions

The EUR-level region is implicitly aggregated by the BASEMOD work step. To calculate additional aggregates defined by program parameters, the AGGREG program can be used.

The input tables are results of the BASEMOD work step. For consistent calculation of the aggregates, the algorithms of the BASEMOD program are used.

Module startup screen



For detailed information, see chapter 'General program control'.

Figure 5: AGGREG program flow chart

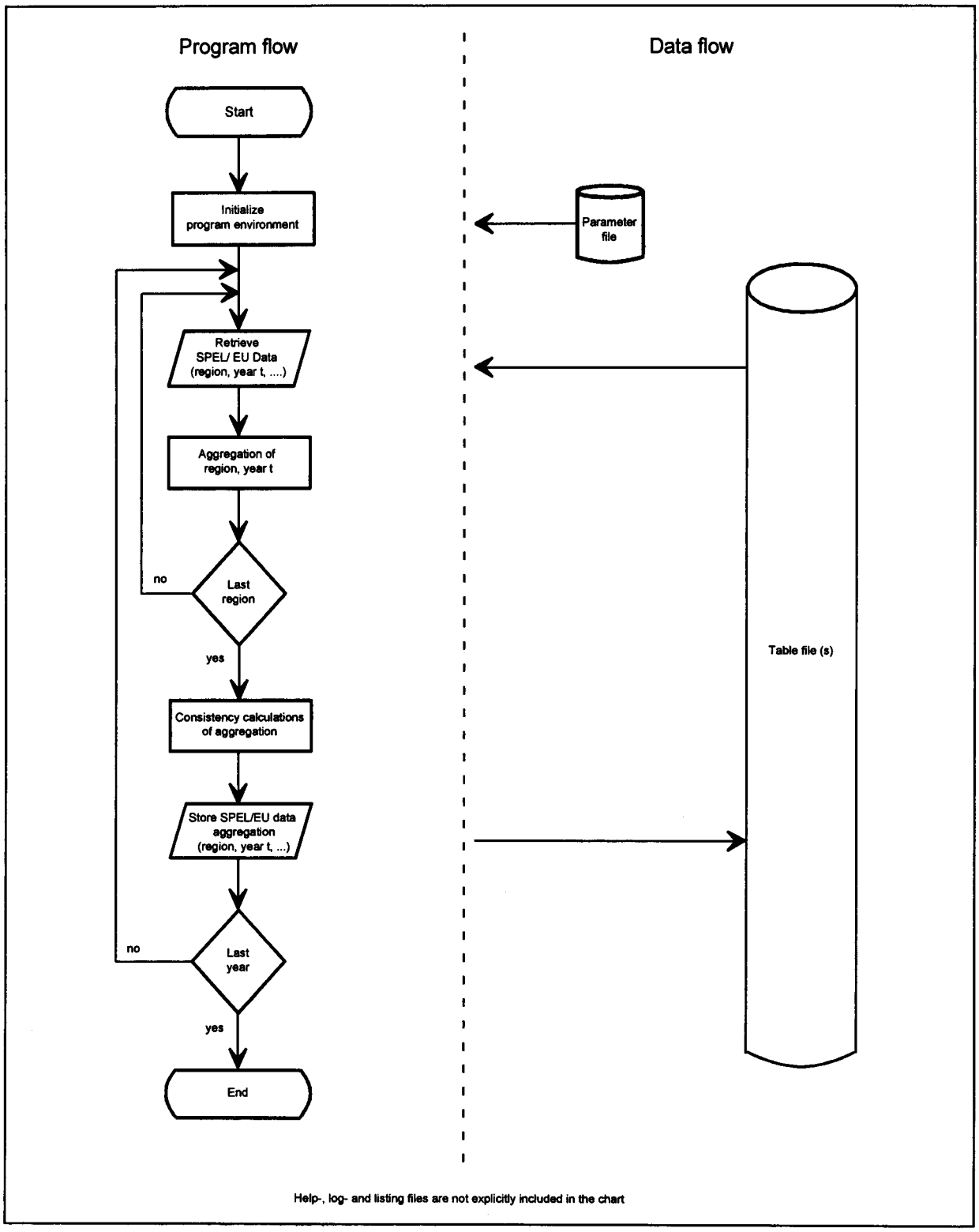


Table file selection screen

```
Region aggregation ------------------- SPEL/EU ----------------- Work file selection

                              Please enter file names




Input/output file (TAB) => SPEL-BAS TAB  H
Add. input file (TAB)   => SPEL-BAS TAB  B




                  Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Input/output file (TAB)

TAB file containing SPEL tables for entries. It is used for table input and output.

Add. input file (TAB)

Additional TAB input file. This file is to be accessed for tables not found in the first file.

Aggregate key selection screen

```
Region aggregation ----------------- SPEL/EU --------------- Aggregate key selection

                  Please specify the keys of the aggregate to build



Aggregate, region & sub-region ( 3 & 2 ch.) => AEP 00
Current year                   ( 2 ch.) => 71 : 92
Periodicity                    ( 2 ch.) => 00
Base year                      ( 2 ch.) => NN
Type                           ( 4 ch.) => BASB
Model area                     ( 1 ch.) => S



                  Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Region aggregate, region & sub-region

Select an aggregate code for the aggregate to be calculated. Each aggregate code consists of a region code (three characters) and a sub-region code (two characters) separated by a blank.
If the aggregate code is a non-standard aggregate code (aggregate not defined in the COD file), the program will display an additional panel to define codes of the aggregate components. In the screen above, the 'AEP 00' code is a non-standard aggregate code.

Current year

Year selection. Specify a single year, a sequence of years, a numerical range or a combination of sequences and ranges.

The maximum number of years that may be selected is 30.

Periodicity

Periodicities are currently not used.

The whole year has the periodicity code '00'. Always specify '00'.

Base year

The base year selection is limited to one base year.

For ex-post calculations the code for the base year is always 'NN'.

Type

The type selection is limited to one type.

Specify a type, such as 'AGGB'.

Model area

The model area selection is limited to one model area.

Select one model area code, such as 'S'.

For detailed information on code selection see chapter 'General program control'.

The next screen is only displayed for standard aggregate codes ('O12 00' aggregate is already defined in the COD file). The aggregate components and the currency code are displayed to be checked.

Check selection screen

```
Region aggregation ------------------- SPEL/EU --------------------- Check selection

              Please check currency and components for aggregate O12 00:

Currency:     ECU

Components:   B   00       DK  00       D11 00       GR  00       E   00
              F   00       IRL 00       I   00       L   00       NL  00
              P   00       UK  00

               Select an action by moving the cursor to any topic below


                     Continue aggregation
                     Revise aggregate selection



                  Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Item selection:

Continue aggregation

Program execution continues doing the aggregation for the displayed aggregate components.

Revise aggregate selection

Program returns to the 'Table key selection' panel.

If the aggregate is not standard, the aggregate components and the currency have to be defined in the following.

Aggregate component definition screen

```
Region aggregation ------------------- SPEL/EU ----------------- Aggregate definition

              Please enter currency and components for aggregate AEP 00:

Aggregate: AEP 00, currency       => ECU
Aggregate: AEP 00, component:  1 => E 00
Aggregate: AEP 00, component:  2 => P 00
Aggregate: AEP 00, component:  3 =>
Aggregate: AEP 00, component:  4 =>
Aggregate: AEP 00, component:  5 =>
Aggregate: AEP 00, component:  6 =>
Aggregate: AEP 00, component:  7 =>
Aggregate: AEP 00, component:  8 =>
Aggregate: AEP 00, component:  9 =>
Aggregate: AEP 00, component: 10 =>
Aggregate: AEP 00, component: 11 =>
Aggregate: AEP 00, component: 12 =>
Aggregate: AEP 00, component: 13 =>
Aggregate: AEP 00, component: 14 =>
Aggregate: AEP 00, component: 15 =>
Aggregate: AEP 00, component: 16 =>
Aggregate: AEP 00, component: 17 =>

                  Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Aggregate ....., currency

Specify currency code (three characters) of aggregate defined in the 'Aggregate key selection panel'.

Currency codes permitted are: ECU, BFR, DKR, DM, DR, PTA, FF, IRL, LIT, LFR, HFL, ESC, UKL and US$.

Aggregate ....., component: *rrr ss*

Specify region (three characters) and sub-region code (two characters) of n'th component of aggregate defined in the 'Aggregate key selection panel'.

5. SHORT-TERM FORECAST AND SIMULATION SYSTEM (SFSS)

The component Short-term Forecast and Simulation System is divided into two work sectors:

- Preparatory work
- Short-term Model

Each sector is implemented in several work steps realized by separate programs.

The SPEL/EU-Data forms the base from which simulations may be carried out. Short-term forecasts and simulations are calculated using consistent SPEL tables of basic structure (type: BASB). All growth rate specifications within the SFSS are related to a 'base year', normally the last year for which consistent SPEL/EU-Data are available. The simulation results will be consistent SPEL tables of basic structure, too (table type: SFSB).

Inside the tables, SFSS differentiates between endogenous and exogenous variables. Exogenous variables are those for which growth rates can be specified outside the system. Endogenous variables are calculated by the simulation system using consistency algorithms such as those in the Base Model.

The definitions of endogenous and exogenous variables and the methodological background of SFSS is described in 'SPEL System, Methodological Documentation (Rev. 1), Vol. 1: Basics, BS, SFSS, Part 1' in general terms and for the model in 'SPEL System, Methodological Documentation (Rev. 1), Vol. 1: Basics, BS, SFSS, Part 3' for special numerical algorithms.

The following panel of the SPEL/EU shell lets the operator select a work sector.

Work sector selection screen

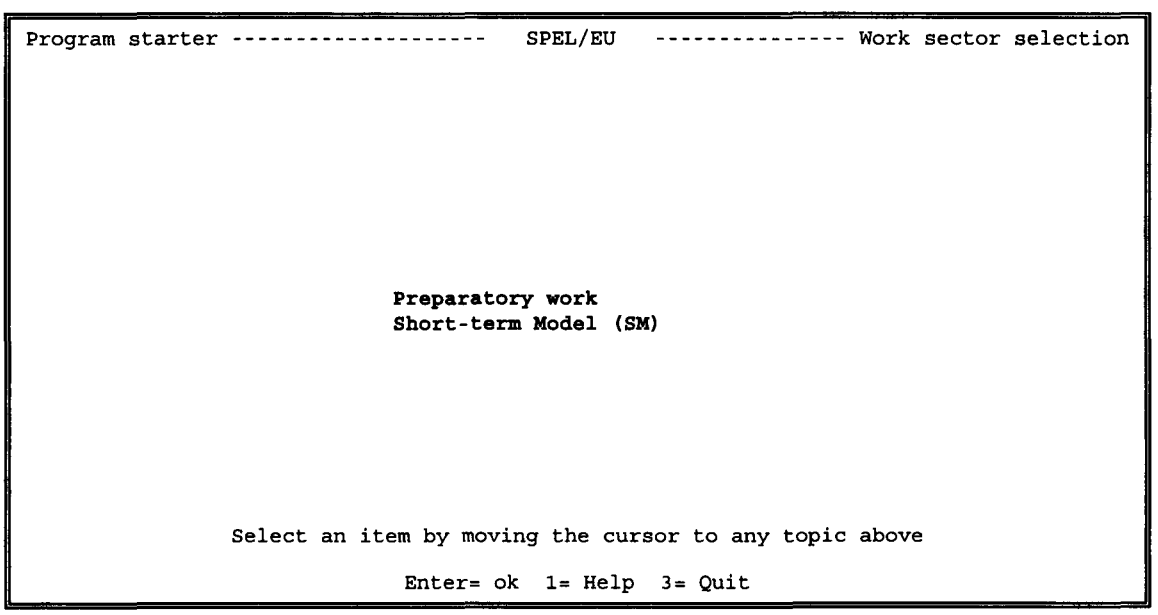
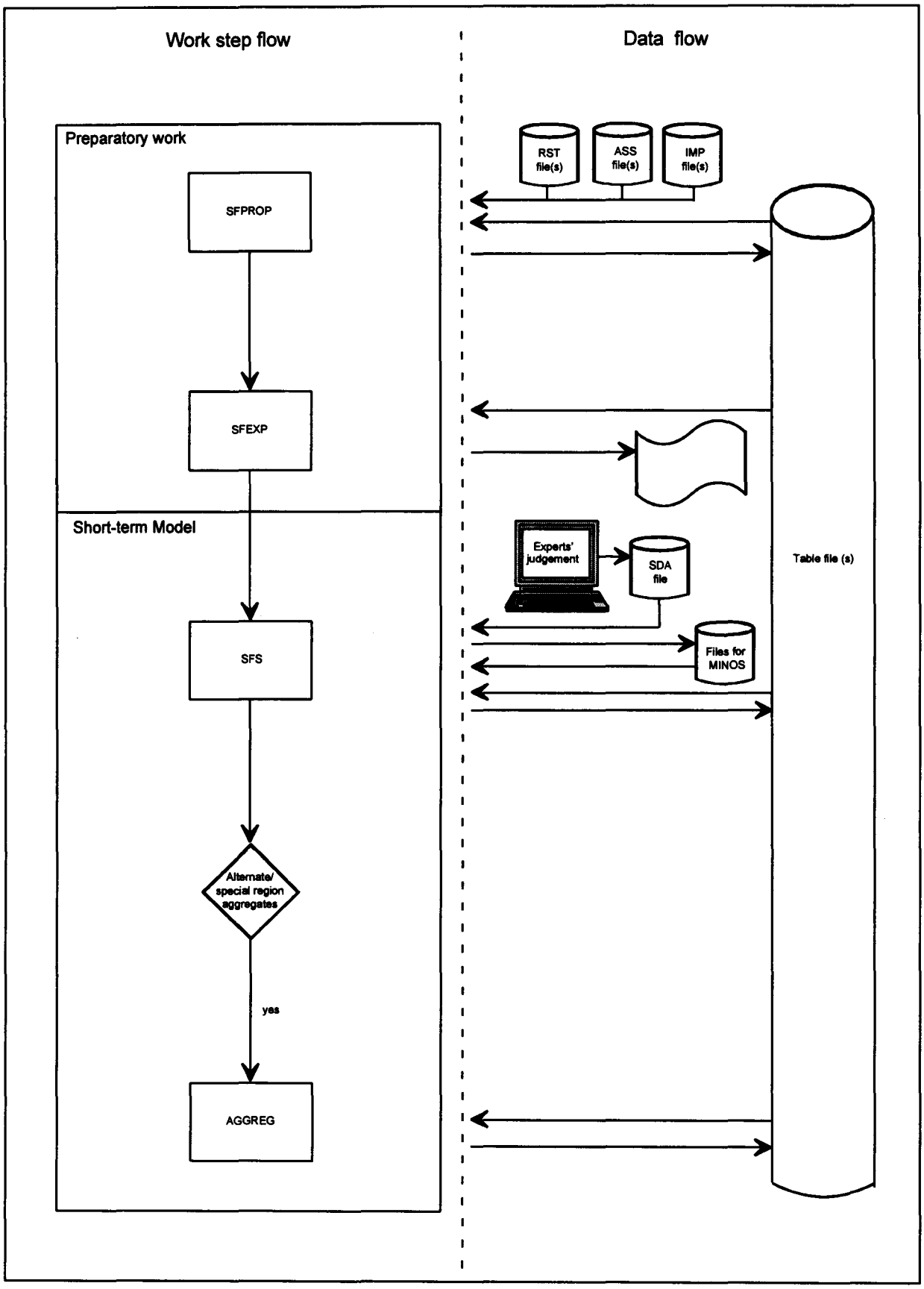


Figure 6: SFSS: Work steps and data flow



5.1. Preparatory work

For growth rates of exogenous variables 'experts' are responsible. To make it easier to specify the growth rates, a first work step (SFPROP program) computes system proposals for all exogenous variables. The system proposals are stored in tables of basic structure (table type: SFPB).

These proposals are submitted to the experts for judgement and may be revised. The experts' data are stored as growth rates in files of SDA format (table type: SFEB).

Work step selection screen

```
Program starter --------------------   SPEL/EU   --------------- Work steps selection




     SFPROP      System proposals for exogenous variables
     SFEXP       Print special lists of system proposals for experts' checking




                Select an item by moving the cursor to any topic above

                              Enter= ok  1= Help  3= Quit
```

5.1.1. System proposals for exogenous variables

System proposals for each exogenous variable are computed by the SFPROP program from

- specified indicator time series which must extend through the projection period. Typically statistical data from Eurostat are used.
- six alternative trend estimations for the original time series as outlined below.

The resulting proposals are stored in a TAB file.

On default for the original time series, six OLS estimations are calculated with different data transformations for the dependent variable and the trend. The data transformations are:

	dependent	trend
1.	linear	linear
2.	linear	inverse
3.	logarithmic	inverse
4.	logarithmic	logarithmic
5.	linear	logarithmic
6.	logarithmic	linear

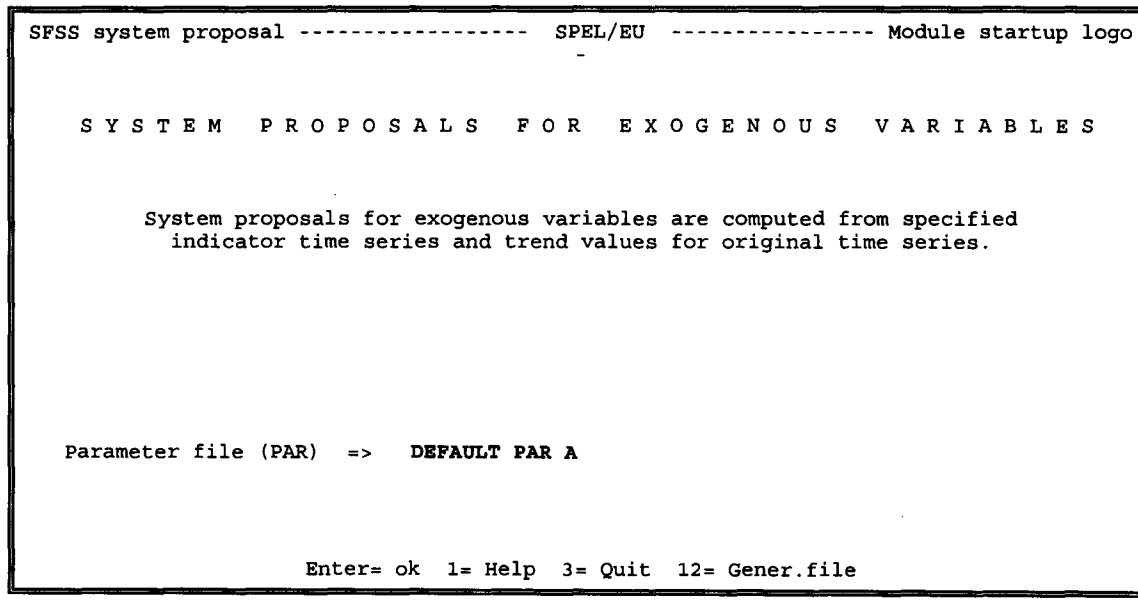
The computational process is in three steps:

- The system computes for each indicator variable a time series of growth factors from the indicator's observations.
- For the alternative trend estimations, growth factors are computed from each of the original values in year *t* to the trend values in year *t+(projection period)*. The projection period may be one, two or three years, so that the computed growth reflects the projection period.
- All of the computed growth factor series are compared with growth factor series of the original data. The system proposal will be the best fitting one. The fitting criteria may be either the coefficient of determination or the Theil's coefficient.

When an indicator time series is selected, for each projection year the growth rate of the indicator (base year to projection year) will be stored as the system proposal.

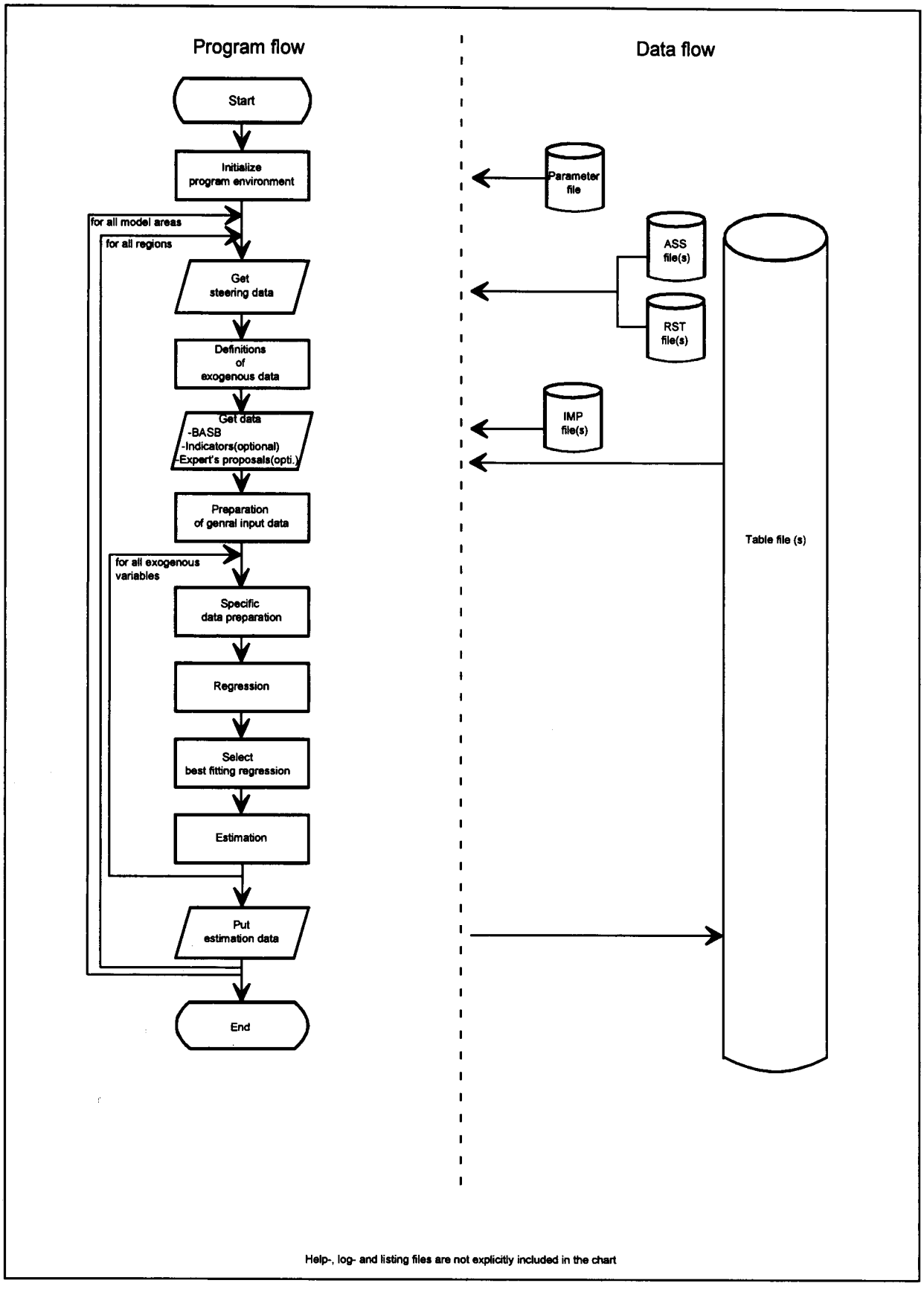
When one of the alternative trend estimations is selected, for each projection year the growth rate from the base year's original data to the trend estimation of the projection year will be stored as the system proposal.

Module startup screen



For detailed information, see chapter 'General program control'.

Figure 7: SFPROP program flow chart



Work file selection screen

```
SFSS system proposal ---------------- SPEL/EU ---------------- Work file selection

                              Please enter file names



Input/output file (TAB)           => SPEL-USR TAB H
Add. input file (TAB)             => SPEL-SYS TAB F
Regression steering file (RST): 1 => SFPROP RST H
Regression steering file (RST): 2 =>
Assign file (ASS): 1              => SFPROP ASS H
Assign file (ASS): 2              =>
Indicator file (IMP): 1           => SFZPA1 IMP A
Indicator file (IMP): 2           => SFPRAG IMP A
Indicator file (IMP): 3           =>




                 Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Input/output file (TAB)

TAB file containing the consistent tables of the SPEL/EU-Data. The file will be used for input and output.

Add. input file (TAB)

Additional TAB input file. If specified, this file is to be accessed for tables not found in the first file.

Regression steering file (RST): 1

If specified, this RST file contains explicit definitions for the trend estimations for selected time series of the exogenous SPEL/EU-Data.

For the SFPROP application the file includes extensions to the standard RST format. The extensions are described in the chapter 'Extensions to steering file formats'.

Regression steering file (RST): 2

Additional RST file, if specified.

Assign file (ASS): 1

If specified, this ASS file contains assignments of alternate indicator codes (originator codes as used in the indicator files) to SPEL table element codes.

For the SFPROP application the file includes extensions to the standard ASS format. The extensions are described in chapter 'Extensions to steering file formats'.

Assign (ASS) file: 2

Additional ASS file, if specified.

Indicator file (IMP): 1

If specified, this IMP file contains indicator time series.

Indicator file (IMP): 2

Additional IMP file, if specified.

Indicator file: 3

Additional IMP file, if specified.

Table key selection screen

```
SFSS system proposal ------------------  SPEL/EU  ---------------- Table key selection

                              Please enter key selection
        ATTENTION: - Subkeys for table output type and model area are protected

Region                ( 3 ch.) => D F
Sub-region            ( 2 ch.) => 00
Projection year       ( 2 ch.) => 92 93
Periodicity           ( 2 ch.) => 00
Projection base year  ( 2 ch.) => 91
Table output type     ( 4 ch.) => SFPB
Model area            ( 1 ch.) => S D


                  Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Region

Region selection. Specify a single region code, a sequence of codes, an alphanumerical range, a logical range, a combination of sequences and ranges or "*'.

The maximum number of regions that may be selected is 20.

Sub-region

Sub-regions are currently not used.

The whole region has the sub-region code '00'. Always specify '00'.

Projection year

Up to three projection years. Specify a single year, a sequence of years, a numerical range or a combination of sequences and ranges.

Periodicity

Periodicities are currently not used.

The whole year has the periodicity code '00'. Always specify '00'.

Projection base year

Base year of the projection.

Select one base year, such as '91'.

Table output type

Protected subkey.

For table output the type code 'SFPB' is always used with the SFPROP program.

Model area

Protected subkey.

The calculations are always applied to supply ('S') and demand ('D').

For detailed information on code selection see chapter 'General program control'.

Miscellaneous parameter selection screen

```
SFSS system proposal --------------  SPEL/EU  ------------- Miscellaneous parameter

                Please specify parameters for reference and output


Reference interval                        (start : end) => 72 : 85
Significance coefficient          (THEIL/DETERMINATION) => DETERMINATION
Deflator                                  (GDP/PPS/NONE) => NONE
Documentation level          (FULL/ROUGH/MINIMUM/NONE) => MINIMUM
Output level                             (PROPOSAL/NONE) => PROPOSAL




                Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Reference interval

Define at least five years for the reference intervals.

The reference interval may be redefined for the trend estimations of specific exogenous variables in the RST steering file.

Significance coefficient

Select one of the following for best fit criteria:

THEIL	Theil's coefficient[1]
DETERMINATION	coefficient of determination.[2]

Deflator

You can choose between the following deflators:

GDP	price index of gross domestic product
PPS	index Purchasing Power Standard
NONE	no deflator (nominal price development)

The deflator may be redefined for specific exogenous variables in the RST steering file.

Documentation level

You can choose between the following documentation levels:

FULL provides, for each exogenous variable, documentation on
- steering parameters
- indicators and original values for the whole of reference/ projection period
- results of all data transformation alternatives
- the selected transformation type
- the proposal time series.

ROUGH provides, for each exogenous variable, documentation on
- steering parameters
- indicators and original values for the whole of reference/projection period
- the proposal time series.

MINIMUM provides, for each exogenous variable, documentation on
- indicators and original values for the whole of reference/projection period
- the proposal time series.

NONE nothing will be documented.

---

1 $\text{THEIL} = \frac{\text{Sum of squares of deviation}}{\text{Sum of squares of yearly changes}}$

Source: Henri Theil, Applied Economic Forecasting, Amsterdam 1971, page 28

2 $\text{DETERMINATION} = \frac{\text{Sum of squares explained}}{\text{Sum of squares total}}$

Output level

For output into the TAB file you can choose between two levels:

PROPOSAL	the system proposal for the forecast period are stored
NONE	nothing is stored

5.1.1.1. Extensions to steering file formats

For the Short-term Forecast and Simulation System (SFSS) the following extensions are added to the standard steering file formats RST and ASS.

The RST format as described in 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics', is defined for the regression steering records from position 1 to 33.
For the SFSS two parameters are added.

pos. 34-41	ccccrrrr	deflator or other divisor either defined by a SPEL table element code or a key word as follows: GDP: price index of gross domestic product PPS: index Purchasing Power Standard NONE: no deflator (nominal price development)
pos 43-50	ccccrrrr	SPEL table element code of an independent variable for non-trend estimations

For SFSS in the ASS format multiple assignments of external data source codes to a single SPEL table element code are allowed to define alternate indicator time series.

Example of an ASS file including SFSS extensions:

```
----+----1----+----2----+----3----+----4----+----5----+----6----+----7----
ASS TARGET=B.SWHE.SWHE, SOURCE=ZPA11111012;
ASS TARGET=B.SWHE.SWHE, SOURCE=ZPA13110012;
ASS TARGET=B.SWHE.SWHE, SOURCE=ZPA13110010;
*
ASS TARGET=B.OATS.OATS, SOURCE=ZPA11112212;
ASS TARGET=B.OATS.OATS, SOURCE=ZPA13116012;
ASS TARGET=B.OATS.OATS, SOURCE=ZPA13116010;
*
* ....
-----+----1----+----2----+----3----+----4----+----5----+----6----+----7----
```

5.1.2. Print lists of system proposals for experts' checking

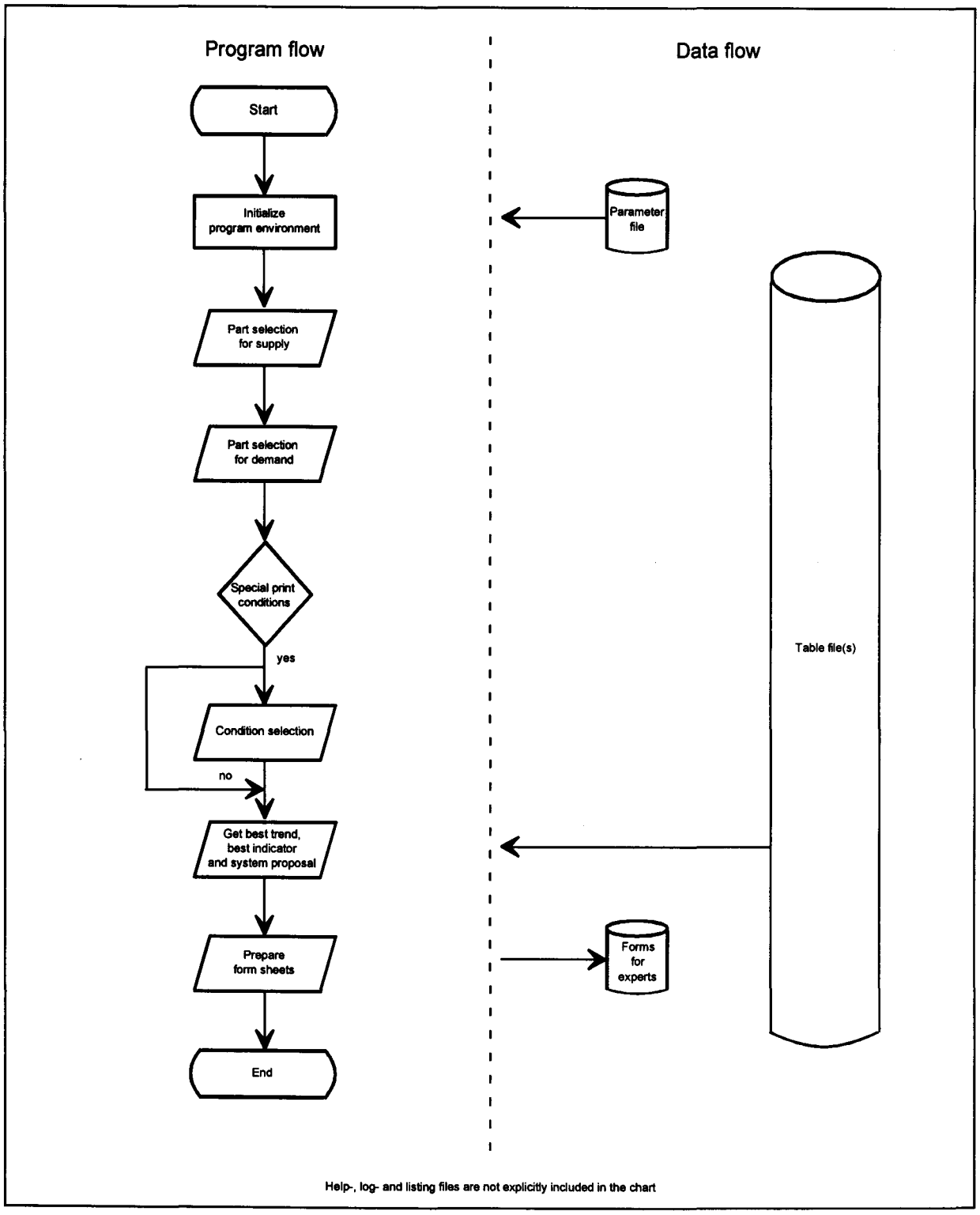
The system proposals for the exogenous variables have to be checked by experts. Normally, specific groups of exogenous variables, e.g. the group 'Crop output coefficient', have to be submitted to different experts. The SFEXP program is able to generate form sheets including for every projection year tables in which for all Member States in the table columns, the first three table rows show:

- The trend estimation of the best fitting data transformation.
- The best-fitting estimations based on an indicator time series, if available.
- The system proposal.

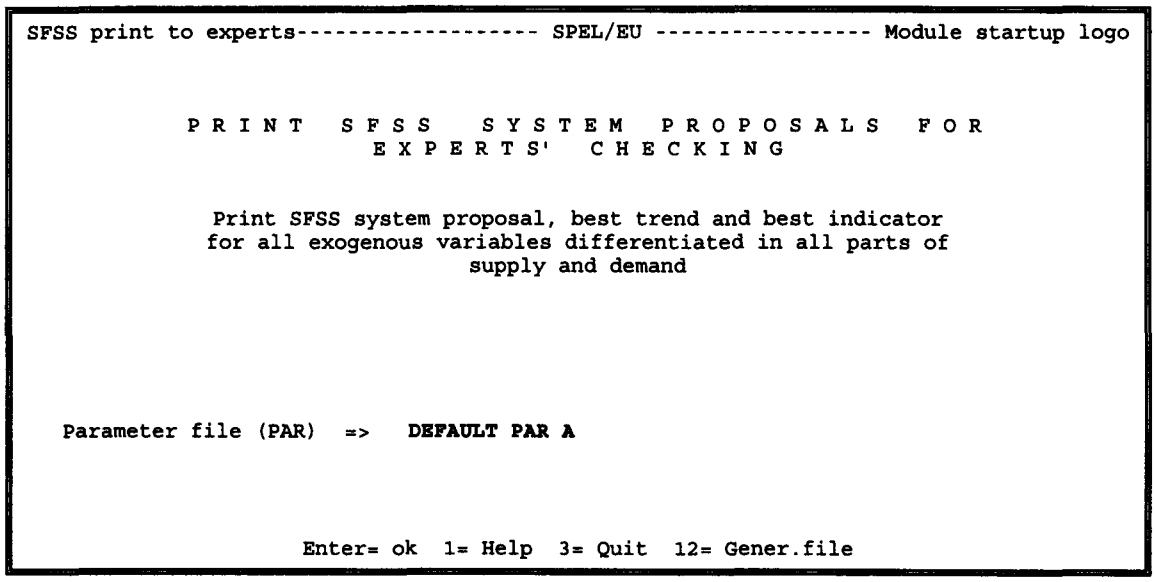
The last three table rows are empty for experts' data, coming from Eurostat or DG VI.

The form sheets can be prepared to transfer to PC standard software like EXCEL.

Figure 8: SFEXP program flow chart

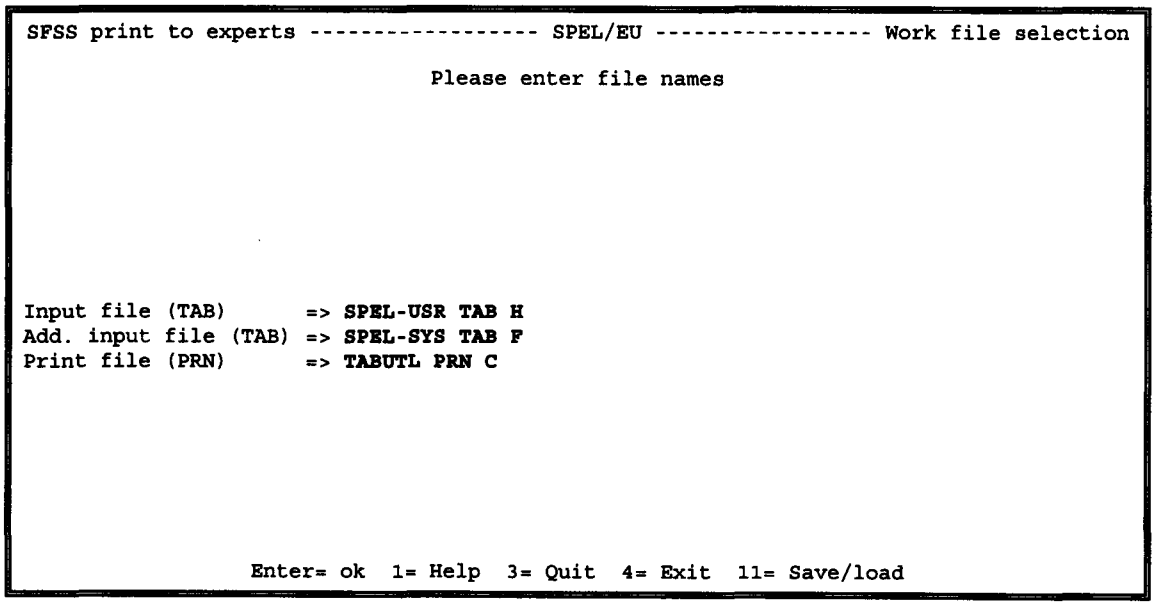


Module startup screen



For detailed information, see chapter 'General program control'.

Work file selection screen



Parameters:

Input file (TAB)

The TAB input file contains the tables for best trend, best indicator and system proposal.

Add. input file (TAB)

Additional TAB input file. If specified, this file is to be accessed for tables not found in the first file.

Print file (PRN)

This file has to be specified if the parameter 'output to expert level' in the 'output steering panel' (see below) is set to 'PRINT'.

Parts selection for supply screen

```
SFSS print to experts ------------------- SPEL/EU ------------------ Parts selection

                  Please make your selection for parts of SUPPLY



          Part 1      Crop output coefficient
          Part 2      Animal output coefficient
          Part 3      Levels of production activities (crop)
          Part 4      Animal production
          Part 5      Farm gate prices - producer prices
          Part 6      Farm gate prices - purchase prices
          Part 7      Other variables (national or sectoral)



               Select an item by moving the cursor to any topic above

                Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Item selection:

Part 1....7

The exogenous variables of each part are described in 'SPEL System, Methodological Documentation (Rev. 1), Vol. 1: Basics, BS, SFSS, Part 3, Annexes'.

Parts selection for demand screen

```
SFSS print to experts ------------------- SPEL/EU ------------------ Parts selection

                  Please make your selection for parts of DEMAND




          Part 1      Total domestic use and population
          Part 2      Other national data



               Select an item by moving the cursor to any topic above

                Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Item selection:

Part 1....2

The exogenous variables of each part are described in 'SPEL System, Methodological Documentation (Rev. 1), Vol. 1: Basics, BS, SFSS, Part 3, Annexes'.

Output steering selection screen

```
SFSS print to experts ------------------- SPEL/EU ------------------ Output steering

                        Please select parameters for output




Years to be printed              ( 2 ch.) => 93 : 94
Base year of projection          ( 2 ch.) => 92
Type best trend                  ( 4 ch.) => SFTB
Type best indicator              ( 4 ch.) => SFIB
Type system proposal             ( 4 ch.) => SFPB
Output to experts level  (PRINT/CSV/GCS) => PRINT
Special list conditions          (YES/NO) => YES









                 Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Years to be printed

The years selection is limited to three years. Specify a single year, a sequence of years, a numerical range or a combination of sequences and ranges (see chapter 'General program control').

Base year of projection

Select the base year of the projection, such as '92'.

Type best trend

Select one type code identifying SPEL tables of basic structure which include the best trend estimations.

Type best indicator

Select one type code identifying SPEL tables of basic structure which include the best estimations based on an indicator time series.

Type system proposal

Select one type code identifying SPEL tables of basic structure which include the system proposal.

Output to experts (PRINT/CSV/GCS)

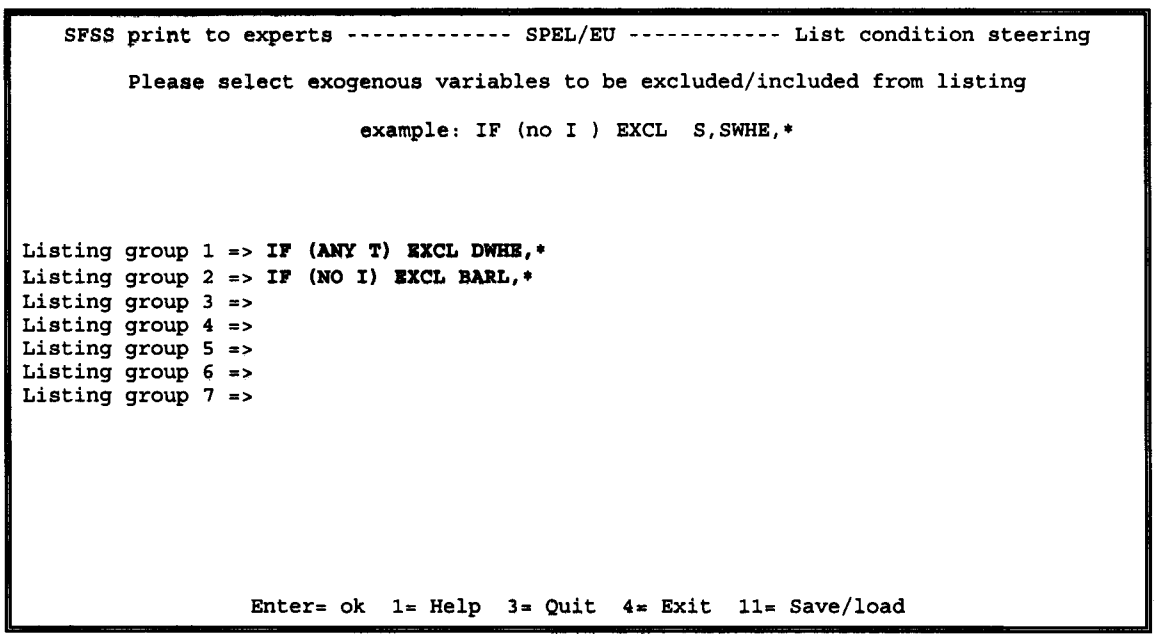
Select one of the following output modes:

PRINT	the print tables are stored in the PRN file
CSV	the tables are stored in a file of CSV format. This format is used to transfer data to PC standard software, such as EXCEL.
GCS	The same format as CSV, but the ';' is used as column separation.

Special list conditions (YES/NO)

YES	An additional panel will be displayed for output steering.
NO	All exogenous variables within the selected groups will be printed.

List condition steering screen



Parameters:

Listing group

For groups of columns and row codes which identify the time series of the SPEL data base the user can define special list conditions.

In general all exogenous variables within the selected parts (see 'Part selection panel') are listed by the 'List condition steering panel', special rules for excluding and including may be set for one or a group of time series. A listing group with a higher label will redefine the handling of table elements also included in groups with the lower labels, (e.g. the column code 'SWHE' of group n may be included in the column definition '*' of group n-1).

Syntax:

[IF (*keyWord dataIdentifier*] *order columnCode,rowCode*

keyWord — Keyword to define a condition
- ANY — if there exists *dataIdentifier*
- FULL — if there are only *dataIdentifier*
- NO — if there is no *dataIdentifier*

dataIdentifier — One character code to identify data
- I — Data estimated using indicator time series
- T — Trend estimation data

order — Keyword to define a action
- EXCL — exclude from listing
- INCL — include to listing

columnCode — Specify a single column code, a sequence of codes, an alphanumerical range, a logical range, a combination of sequences and ranges or "*'.

rowCode — Specify a single row code, a sequence of codes, an alphanumerical range, a logical range, a combination of sequences and ranges or "*'.

Example:

IF (NO I) EXCL SWHE,*:

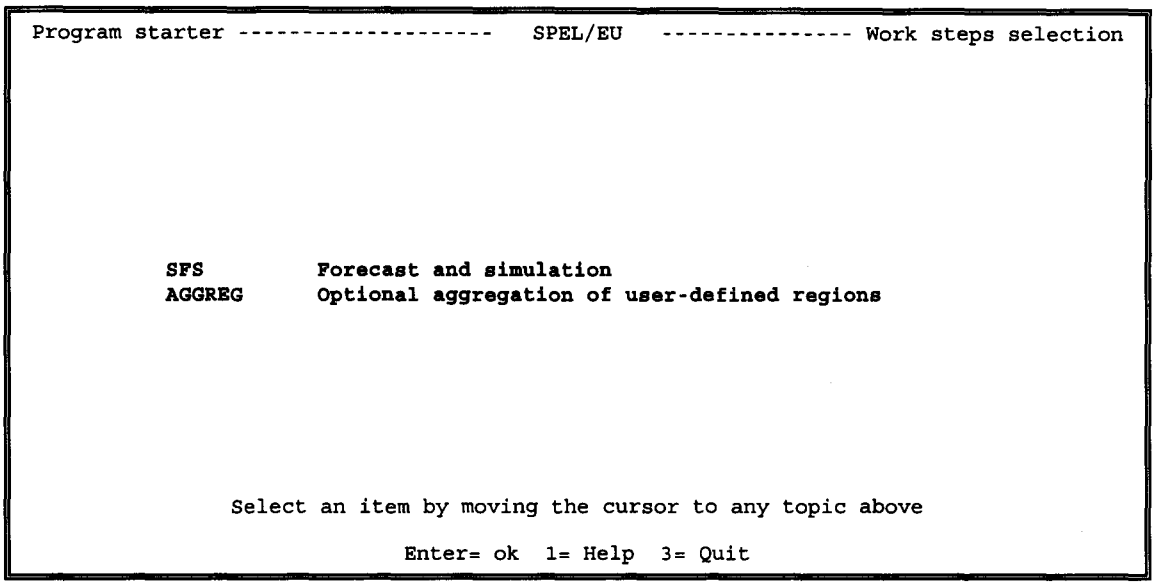
If there are no proposals based on indicator time series, there will be no printing for all table rows in the table column 'SWHE'.

5.2. Short-term Model

The set of the checked growth rates for the exogenous variables is used as base for the short-term forecasts and simulations done by the SFS program. This simulation is done for every Member State. The EU as a whole is built by aggregation of the Member State results. For non-standard aggregates, e.g. the aggregate from the Netherlands, Belgium and Luxembourg, the AGGREG program can be executed.

To select one work step the SPEL/EU shell offers the following screen:

Work step selection screen



5.2.1. Forecast and simulation

Short-term forecast and simulation is done by the SFS program.

First the extrapolation of all exogenous variables is calculated. The user can define a sequence of how to use the different kinds of proposal (expert, system, trend, indicator) for the forecast period. Normally, if no statistical data are available, the experts' judgements, otherwise the system proposals, which are the results of the SFPROP program, are used (see 'Proposal sequence panel' below). Secondly, the endogenous variables are calculated using consistency algorithms such as those used in the Base Model.

The technical realization of the 'consistency' steps reflects again the stepwise and one-by-one principle of the methodological approach (see figure 'Technical realization of the SFS program').

In a first stage, the calculations are done by sequential calls of subroutines. To minimize the sectoral feedingstuff costs of a calendar year used to generate the gross animal production, a simultaneous approach is realized by the application of a large-scale optimizing program (NLP program). The hypothetical feed resources, which are bounded by lower and upper limits, are allocated to the production activities. The 'model generator' software and the MINOS package are again used, as described for the Base Model calculations (see chapter 'Consistency at Member State level and EU aggregation level'). The remaining consistency calculations are done sequentially.

After the simulation or forecasting work is finished for all regions, the EUR-level aggregation is done in the same way as for the Base Model.

The results of the SFS program are stored in the TAB file.

Figure 9: SFS program flow chart

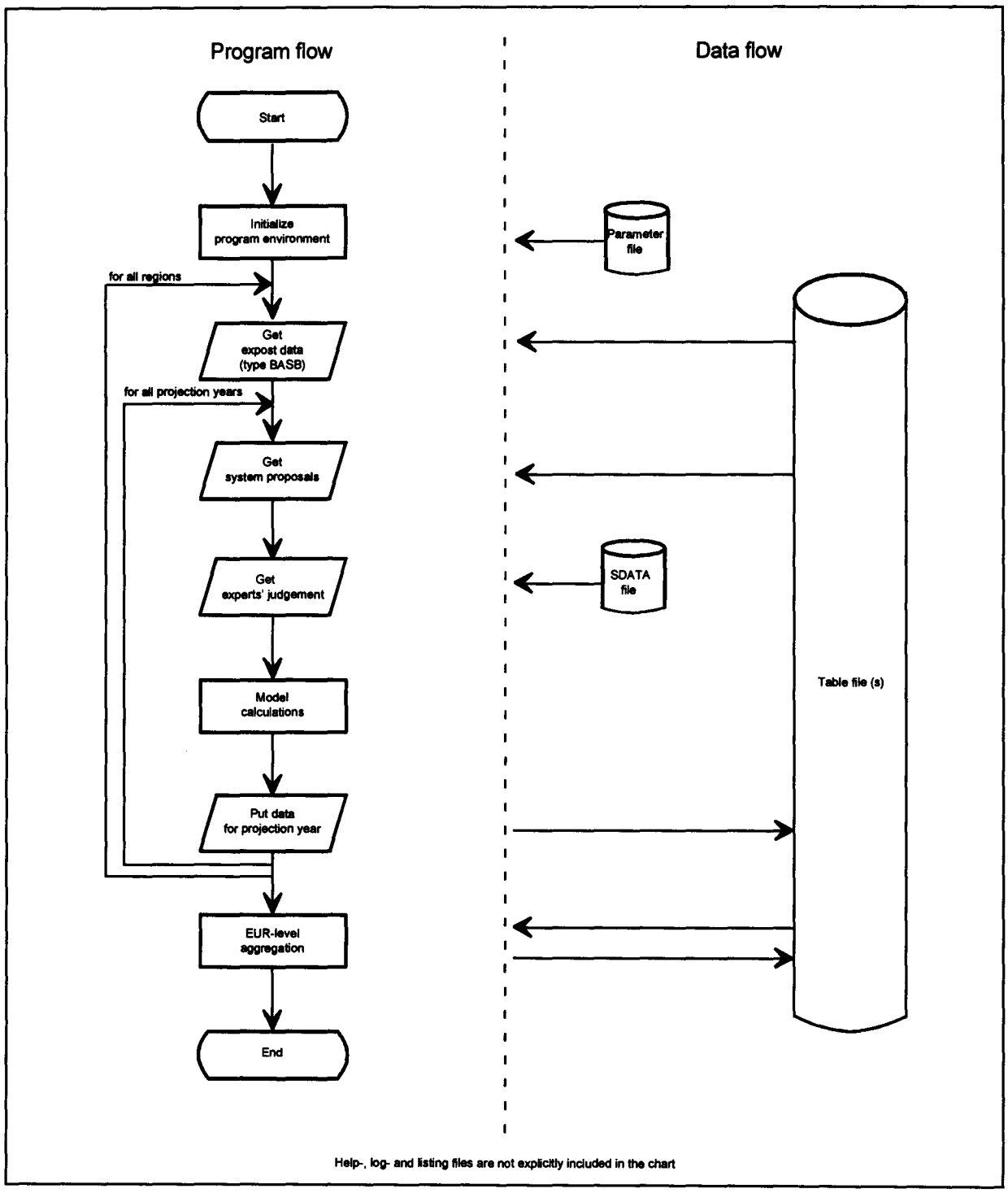


Table 3: Technical realization of the SFS Program

Subroutine	Description	
SFSEXG	Get exogenous data (SFS)	
SFSEVA	Compute evaluations for exogenous data	
BS0RES	Get NLP restrictions	
SFSNAT	Calculation of national economy variables	
SFSCLV	Crop production activity levels / Output Generation of ABTA	
SFSALV	Animal production activity levels / Output Generation of ABTA	***sequential approach***
SFSOUU	Output use of ABTA	
BS0COC	Crop output coefficient of MAC	
BS0AOC	Animal output coefficient of MAC	
SFSPRI	Farm gate prices: exogenous specified	
SFSINU	Input use of MAC: specific crop and general input	
SFSING	Input generation of ABTA	
SFSENP	Farm gate prices: endogenous specified	

⇩

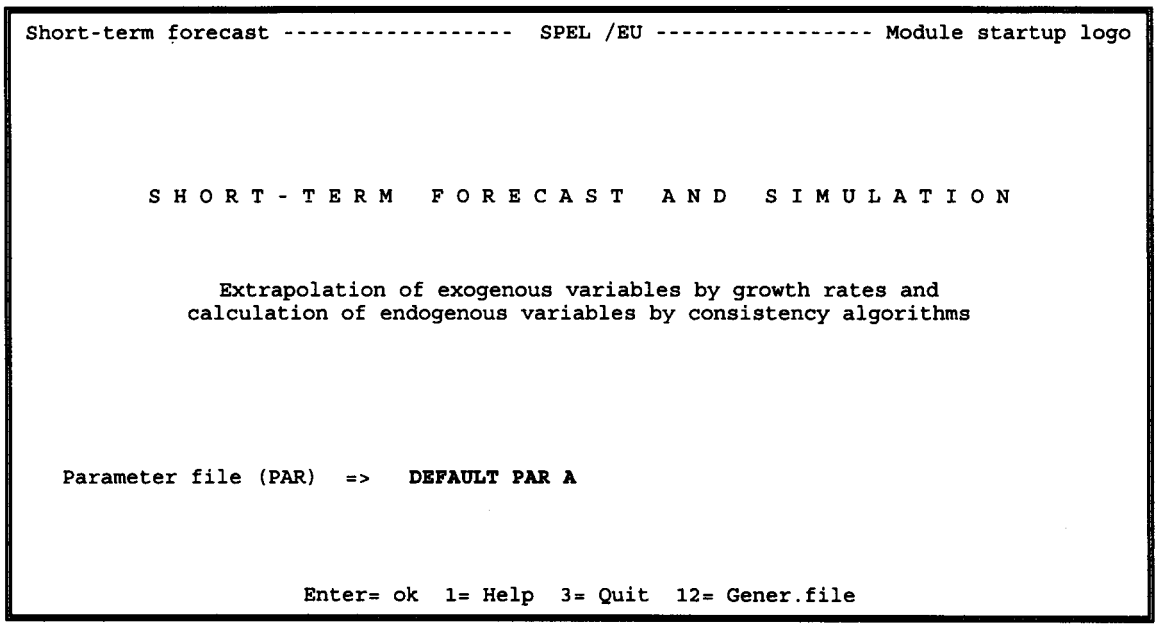
Feedingstuff calculations
Non-linear Programming solution

simultaneous approach

⇩

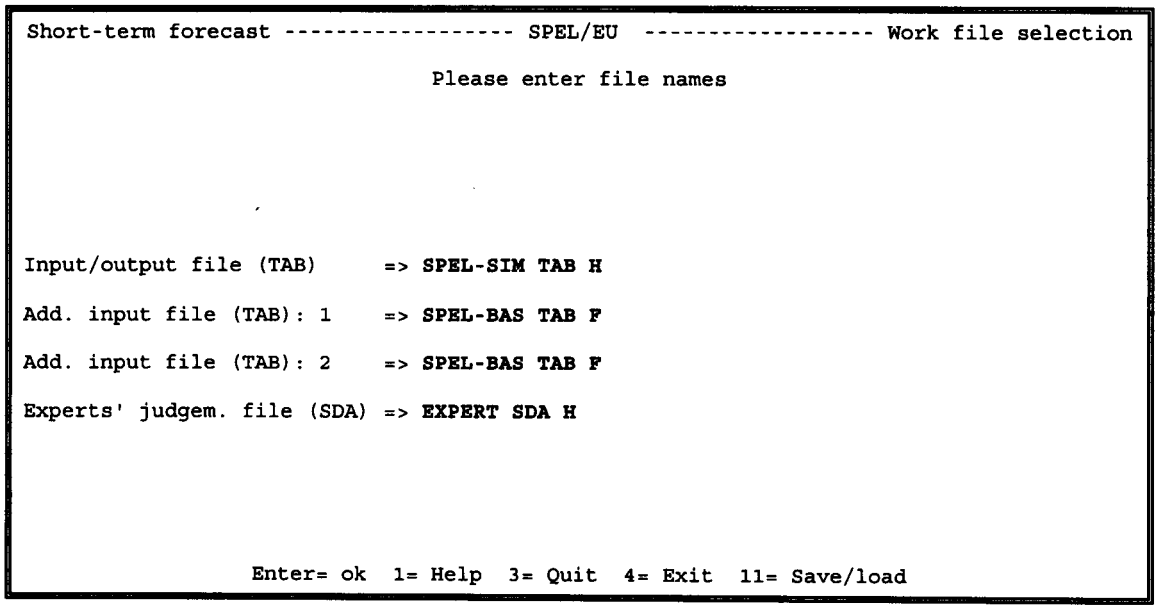
BS0FIG	Input generation of ABTA for feed component	
SFSICO	Input coefficients of MAC	
SFSDEM	Additional demand component of ABTA	
SFSEAA	EAA suppositions of ABTA	
BS0AGA	Aggreg. production / input / GVA per activity level	***sequential approach***
BS0AGS	Aggreg. production / input /GVA sectoral level	
BS0CHK	ABTA / MAC consistency	
BS0CEA	EAA consistency inside ABTA	
BS0PID	Calculation of implicit price indices	
SFSCAP	'Modified GVAM' calculated by CAP-data from DG VI	
BS0PUT	Put results in table file	

Module startup screen



For detailed information, see chapter 'General program control'.

Work file selection screen



Parameters:

Input/output file (TAB)

This TAB file contains SPEL tables.

It will be used for table input and table output.

Add. table file (input): .....

Additional TAB input files. If specified, these files are then to be accessed for tables not found in the first defined table file.

Experts' judgm. file

This SDA file contains the experts' judgements (table type: SFEB) for exogenous variables. The data must be average annual growth rates in percent from the base year's data to the projection year's data.

Table key selection screen

```
Short-term forecast------------------- SPEL/EU ------------------Table key selection

                          Please enter key selection
                ATTENTION: - Subkey for model area is protected


Region                ( 3 ch.) => D F

Sub-region            ( 2 ch.) => 00

Projection year       ( 2 ch.) => 93 : 94

Periodicity           ( 2 ch.) => 00

Projection base year  ( 2 ch.) => 93

Projection table type ( 4 ch.) => SFSB

Reference table type  ( 4 ch.) => SFSB

Model area            ( 1 ch.) => S D

                Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Region

Region selection. Specify a single region code, a sequence of codes, an alphanumerical range, a logical range, a combination of sequences and ranges or "*'.

The maximum number of regions that may be selected is 20.

Sub-region

Sub-regions are currently not used.

The whole region has the sub-region code '00'. Always specify '00'.

Projection year

Up to three projection years. Specify a single year, a sequence of years, a numerical range or a combination of sequences and ranges.

Periodicity

Periodicities are currently not used.

The whole year has the periodicity code '00'. Always specify '00'.

Projection base year

Select the base year of projection, such as '93'. The growth rates as results of the SFS program will be calculated from projection base year to the projection year.

Projection table type

The selection is limited to one type for projection tables.

Select one type of four characters, where the first character must be 'S' and the last character for the table structure must be 'B', such as 'SFSB'.

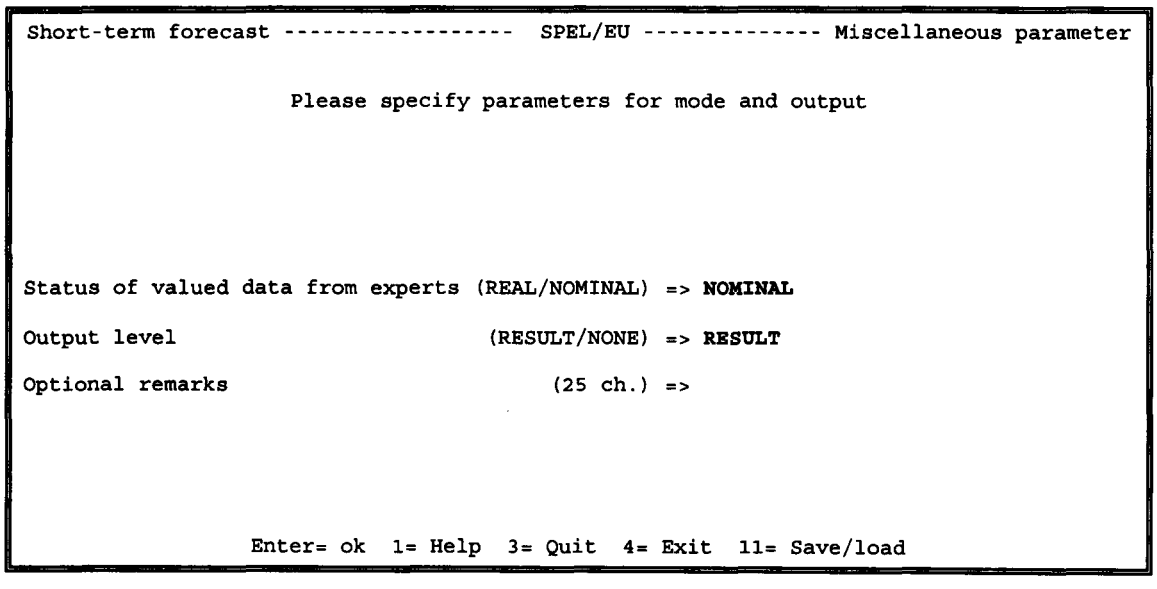
Model area

Protected subkey.

The calculations are always applied to supply ('S') and demand ('D').

For detailed information on code selection see chapter 'General program control'.

Miscellaneous parameter selection screen



Parameters:

Status of valued data from experts

Select one of the following keywords to indicate the status of the valued proposals coming from experts.

REAL	deflated values
NOMINAL	values in current prices

Output level

For output into the TAB file you can choose between two levels:

RESULT	the results for the forecast period are stored
NONE	nothing is stored (to be used just for consistency checks)

Optional remark

Character string up to 25 characters to be saved as comment in the entry text area of each table of forecast data.

Proposal selection screen

```
Short-term forecast ---------------------  SPEL/EU ----------------  Proposal sequence


    Please specify a sequence of use for the proposals for the exogenous variables
                            Use the following keywords
     E = expert    P = system proposal    T = trend    I = indicator    S = statistics


General for all parts                                 => S E P
Supply part 1: Crop output coefficient                =>
Supply part 2: Animal output coefficient              =>
Supply part 3: Levels of production activities (crop) =>
Supply part 4: Animal production                      =>
Supply part 5: Farm gate prices - producer prices     =>
Supply part 6: Farm gate prices - purchase prices     =>
Supply part 7: Other variables (national + sectoral)  =>
Demand part 1: Total domestic use and population      =>
Demand part 2: Other national data                    =>




                 Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

General for all parts

Specify a sequence of keywords of how to use the different kinds of proposal for the forecast period. The first existing data that are found in the sequence from left to right are used. The following keywords can be used:

E	experts' judgement
P	system proposal (result of SFPROP program)
T	trend (result of SFPROP program)
I	indicator (result of SFPROP program)
S	statistical data already available are the forecast period

Example:

Input sequence 'S E P':

Use generally for all exogenous variables first statistical data, if already available, secondly proposals coming from experts' judgement, and thirdly the proposals calculated by the SFPROP program.

Supply part 1....7:

Select a special sequence for a specific part within model area supply. The notation is the same as for the parameter 'General for all parts'.

Demand part 1....7:

Select a special sequence for a specific part within model area demand. The notation is the same as for the parameter 'General for all parts'.

5.2.2. Optional aggregation of user-defined regions (AGGREG)

The EUR-level aggregate region is implicitly calculated by the SFS work step To calculate additional aggregates defined by program parameters, the AGGREG program can be used. The input tables have to be consistent, i.e. they should be results of the SFS work step.

The parameters of the AGGREG program are described in the Base Model (BM) work sector documentation.

6. MEDIUM-TERM FORECAST AND SIMULATION SYSTEM (MFSS)

The MFSS is designed for medium-term forecasts of sectoral production, income and demand developments for an ex-ante period of about 6 years. It is used for simulations and policy-oriented modelling in mutual dialogue with policy makers, statisticians, policy-makers and officials. Therefore, on a highly detailed basis (activity-based approach), the effects of individual variables relating to policy objectives and instruments on the production and demand of agricultural products and on agricultural value added are taken into account by the modelling framework. For more details on methodological aspects see 'SPEL System, Methodological Documentation (Rev. 1), Vol. 2: MFSS'.

The MFSS component is technically divided into two work sectors:

- Preparatory work
- Medium-term Model

Each sector is implemented in several work steps realized by separate programs.

The following panel of the SPEL/EU shell lets the operator select a work sector.

Work sector selection screen

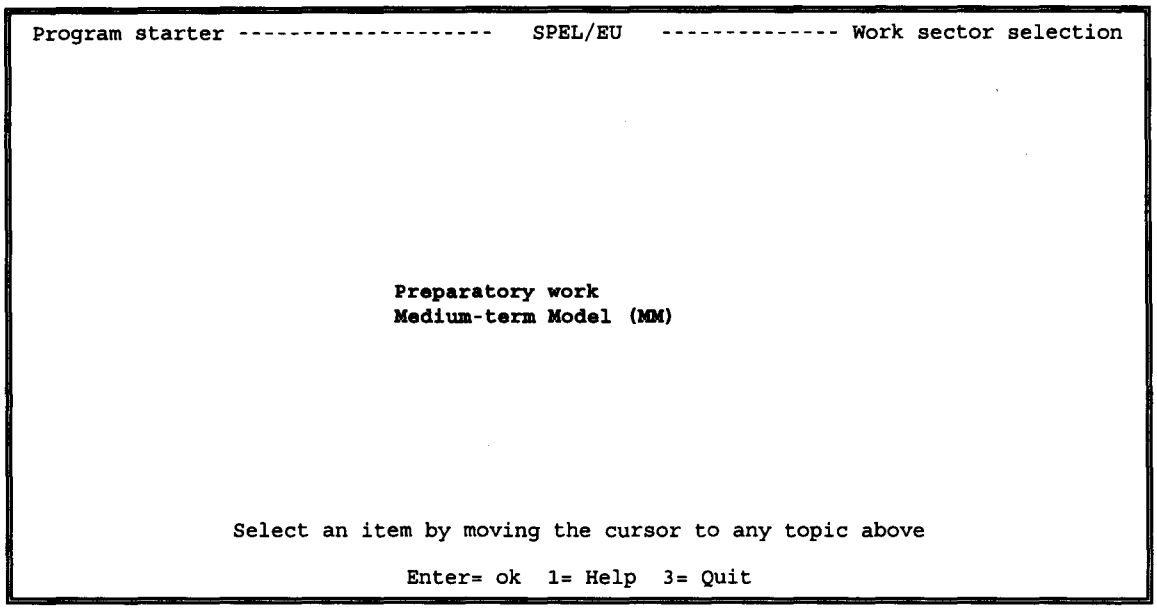
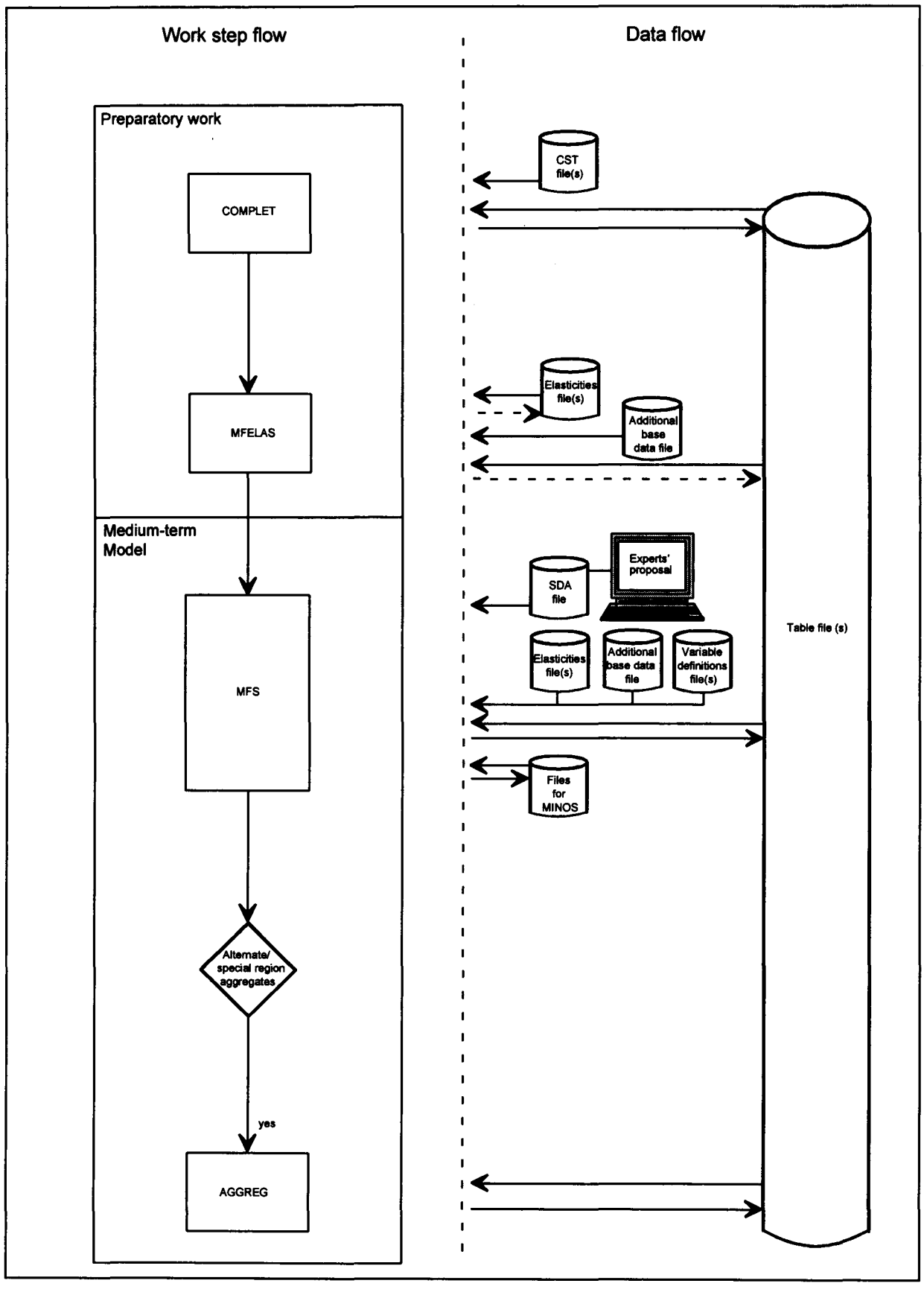


Figure 10: MFSS: work steps and data flow



6.1. Preparatory work

The base for model calculations is the consistent tables of the SPEL/EU-Data for the ex-post period created by the SPEL/EU-BS and SPEL/EU-SFSS. However, before a simulation with MFSS can be run trend-based shifts such as system proposals and elasticities as well as manually edited experts' proposals must be available.

The following panel of the SPEL/EU shell lets the operator select a work step.

Work step selection screen

```
Program starter --------------------   SPEL/EU   --------------- Work steps selection




          COMPLET          Calculation of trend-based shifts
          MFELAS           Calibration of elasticities




                Select an item by moving the cursor to any topic above

                              Enter= ok  1= Help  3= Quit
```

6.1.1. Calculation of trend-based shifts

Most behavioural equations of the MFSS contain exogenous shifts factors which are obtained from trend-estimates by the COMPLET program based on consistent tables of the SPEL/EU-Data. Shift factors are calculated for both the supply part and the demand part. The set of facilities offered by the COMPLET program (regression by single equation, trend estimation, application of relative changes of one variable to another one, arithmetical operations) is useful for this purpose. CST steering files must be edited to define the calculations.

Trend-based shifts are calculated for example for:

- Production activity levels
- Input/output coefficients
- Population

The COMPLET program is a general program and is described in 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

6.1.2. Calibration of elasticities

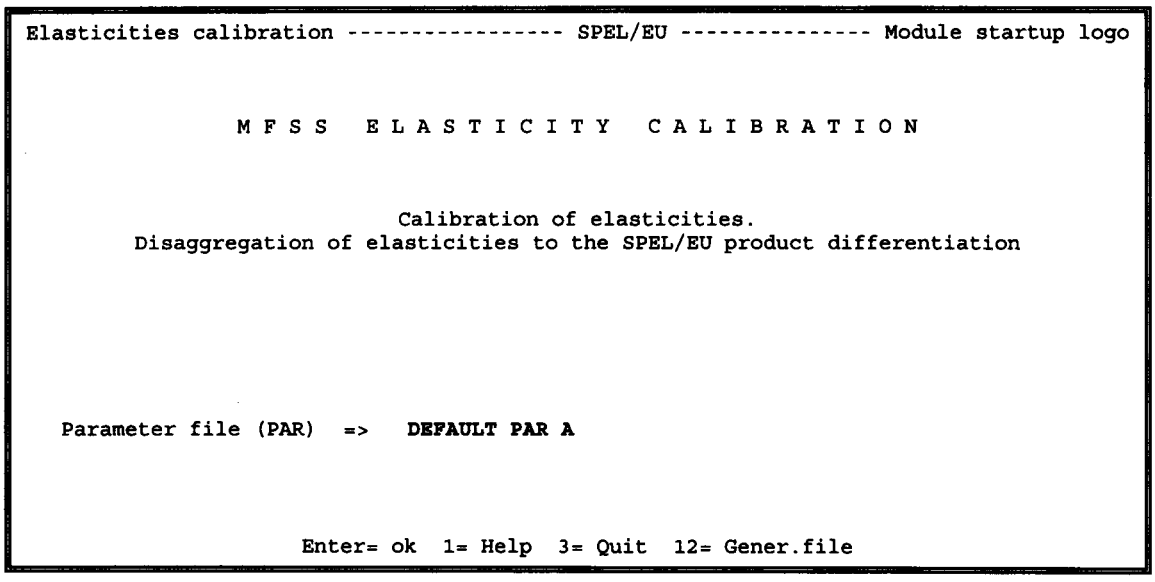
On the supply side the elasticities describe the response of the agricultural sector in activity levels, e.g. acreages and herd sizes, to changes in the value addeds of the production activities.

On the demand side the elasticities describe responses of the quantities used for human consumption to changes in consumer prices and income.

Elasticities can be prepared by the MFELAS program, which offers the user a set of services:

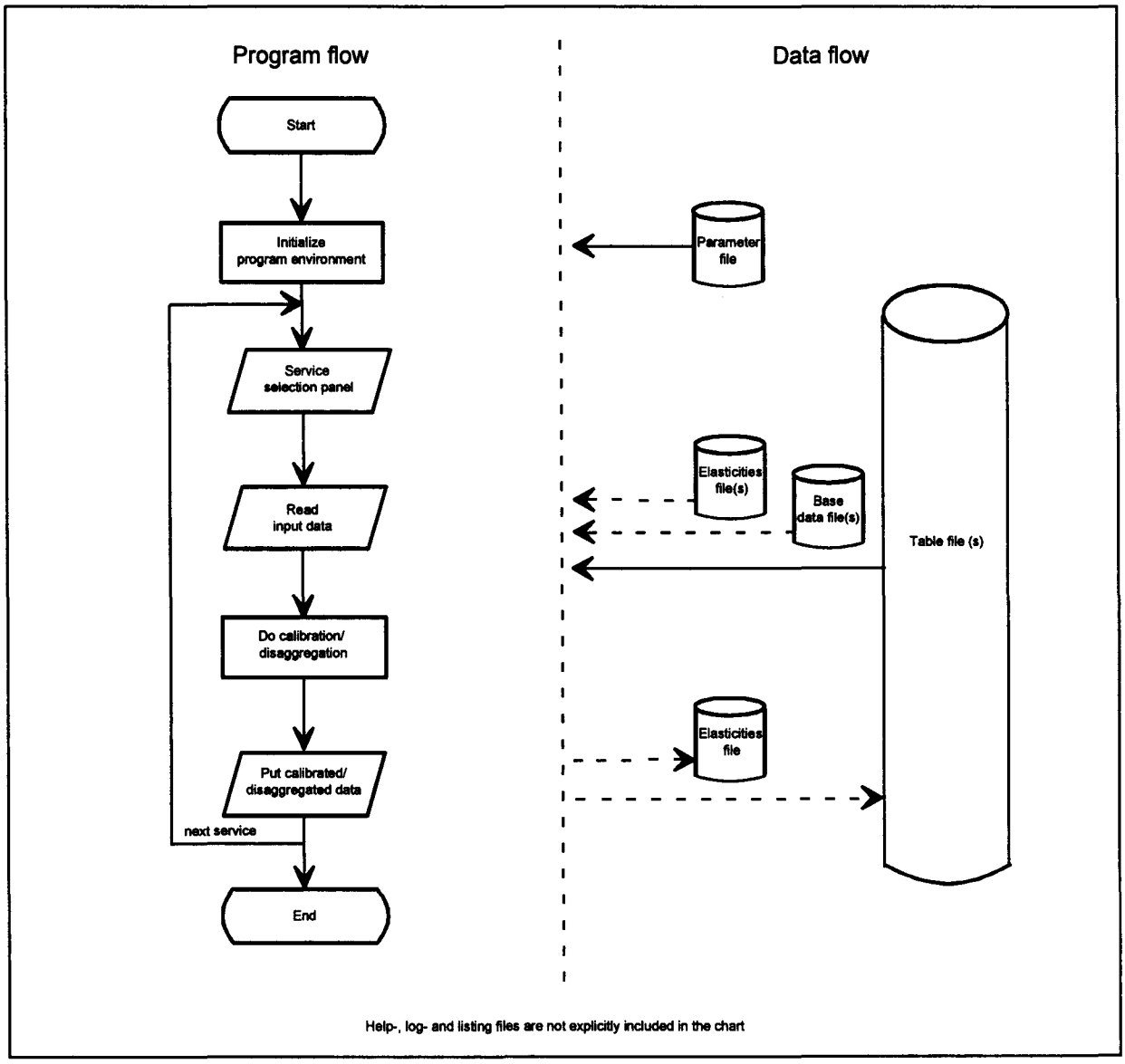
- The calibration of supply and demand elasticities is based on a quadratic programming approach which minimizes the deviation between the non-calibrated (ingoing) set and the calibrated (outgoing) set subject to constraints derived from microeconomic theory.
- Disaggregation of sets of demand elasticities from higher aggregation levels to the deeper SPEL/EU product differentiation.
- Storage of the calibrated data in files of TAB or SDA format.

Module startup screen

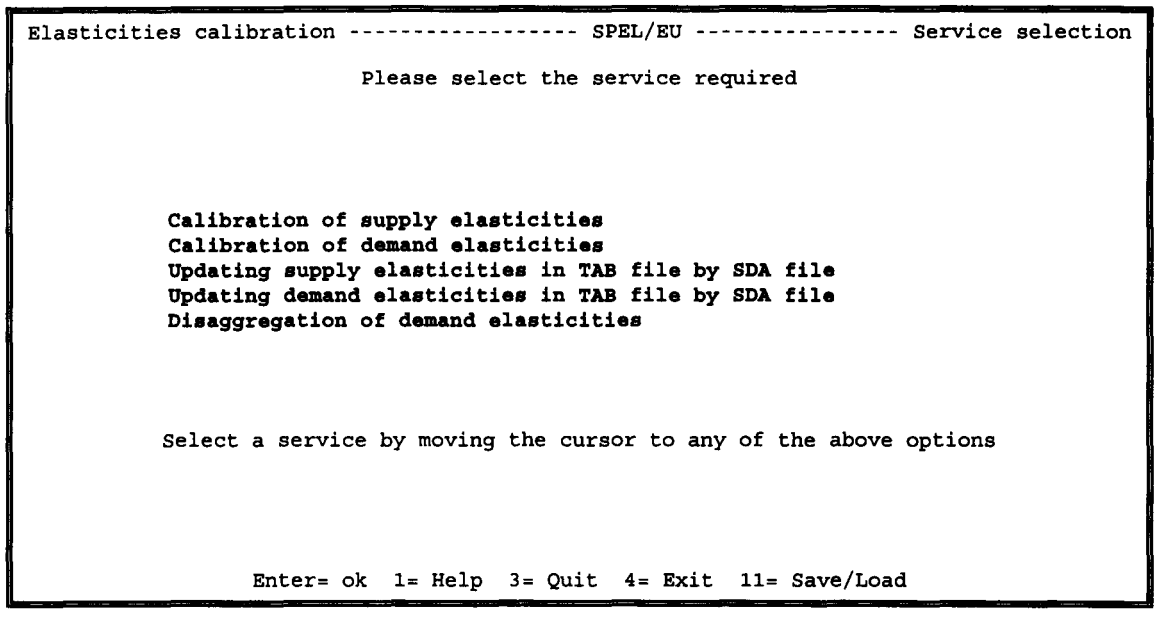


For detailed information, see chapter 'General program control'.

Figure 11: MFELAS program flow chart



Service selection screen



Selection items:

Calibration of supply elasticities

A set of ingoing supply elasticities is calibrated and the results are stored in a SDA file and/or in tables in a TAB file.

Calibration of demand elasticities

A set of ingoing demand elasticities is calibrated and the results are stored in a SDA file and/or in tables in a TAB file.

Updating supply elasticities in TAB file by SDA file

SPEL tables of supply elasticities are updated by data read from a SDA file and again stored in tables in a TAB file.

Updating demand elasticities in TAB file by SDA file

SPEL tables of demand elasticities are updated by data read from a SDA file and again stored in tables in a TAB file.

Disaggregation of demand elasticities

The ingoing demand elasticities may be available at a higher aggregation level. In this case the program can be used to disaggregate the elasticities to the SPEL/EU product breakdown.

Calibration of supply elasticities / Calibration of demand elasticities:

The set of ingoing elasticities is calibrated by a quadratic programming approach using the MINOS package of Stanford University. For detailed methodological information, see 'SPEL System, Methodological Documentation (Rev. 1), Vol. 2: MFSS'.

Input data for the calibration process can be read from SDA files and/or TAB files. Data from SDA files always have higher priority and will therefore update those coming from TAB files.

Work file selection screen

```
Elasticities calibration ---------------- SPEL/EU ---------------- Work file selection

                              Please enter file names




Input elast.  (+bounds) file (SDA) => ELASNW SDA F
Output elast. (+bounds) file (SDA) => ELAS SDA A
Input/output elast.     file (TAB) =>
Input base data         file (SDA) =>
Input base data         file (TAB) => SPEL-SYS TAB F









                  Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Input elast. (+bounds) file (SDA)

The SDA input file, if specified, contains elasticities to be calibrated. The upper and lower bounds to be used in the calibration process may be included too (see below 'Restriction screen').

Output elast. (+bounds) file (SDA)

Output SDA output file, if specified, where the calibrated elasticities and the upper and lower bounds used in the calibration process may be stored.

Input/output elast. file (TAB)

Input TAB file, if specified, where the elasticities set is read from and written to. Input data read from this file are always updated by data coming from the 'Input elast. (+bounds) file (SDA)' file.

Input base data file (SDA)

Input SDA file, if specified, to enter special base data optionally needed for the calibration process.

Input base data file (TAB)

Input TAB file to enter the base data. Normally this file contains the consistent tables of the SPEL/EU-Data. The input base data may be updated by data coming from the 'Input base data file (SDA)' file.

Table key selection screen

```
Elasticities calibration ---------------- SPEL/EU -------------- Table key selection

                              Please make your selection

Region              ( 3 ch.) => D F
Sub-region          ( 2 ch.) => 00
Current year        ( 2 ch.) => 92
Periodicity         ( 2 ch.) => 00
Base year           ( 2 ch.) => NN
Elasticity type     ( 4 ch.) => ELSE
Base data type      ( 4 ch.) = BASB
Model area          ( 1 ch.) => E


                  Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Region

Region selection. Specify a single region code, a sequence of codes, an alphanumerical range, a logical range, a combination of sequences and ranges or '*'.

The maximum number of regions that may be selected is 20.

Sub-region

Sub-regions are currently not used.

The whole region has the sub-region code '00'. Always specify '00'.

Current year

Year selection. Specify a single year, a sequence of years, a numerical range or a combination of sequences and ranges.

The maximum number of years that may be selected is 30.

Periodicity

Periodicities are currently not used.

The whole year has the periodicity code '00'. Always specify '00'.

Base year

Select one base year, such as 'NN' or '91'

Elasticity type

For supply elasticities the type is always 'ELSE' and for the demand elasticities the type is 'ELCE'.

The subkey cannot be modified.

Base data type

Select one type code for input of base data. Usually, 'BASB' is used.

Model area

The calculations are always applied to model 'E' (supply & demand).

The subkey cannot be modified.

For detailed information on code selection see chapter 'General program control'.

Restrictions selection screen

```
Elasticities calibration ---------- SPEL/EU ---------- Restrictions selection

                    Please choose restrictions for calibration



Homogeneity                     (Y/N) => Y
Symmetry                        (Y/N) => Y
Sign of own price elasticity    (Y/N) => Y
Additivity                      (Y/N) => Y
Generate missing elasticities   (Y/N) => Y



                Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Homogeneity

Enter 'Y' for 'yes' or 'N' for 'no' to enable or disable the homogeneity restrictions.

Symmetry

Enter 'Y' for 'yes' or 'N' for 'no' to enable or disable the symmetry restrictions.

Sign of own price elasticities

Enter 'Y' for 'yes' to force positive sign of own price elasticities for supply or negative sign for demand elasticities.

Additivity

Enter 'Y' for 'yes' or 'N' for 'no' to enable or disable the additivity restrictions. On the supply side, adding up of area shares will be taken into account.

Generate missing elasticities

Enter 'Y' for 'yes' to calculate elasticities based on symmetry conditions.

General bounds selection screen

```
Elasticities calibration ------------- SPEL/EU ------------ General bounds selection

                  Please enter general bounds for all elasticities




Lower bounds absolute => -5.0

Lower bounds absolute => +5.0

Bound relative     (%) => 100.

Read bounds in   (Y/N) => Y




                Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Lower bounds absolute

Enter a floating point number which sets a uniform lower bound for all elasticities, e.g. entering '+1.5' will keep all elasticities above this margin.

Upper bounds absolute

Enter a floating point number which sets a uniform upper bound for all elasticities, e.g. entering '+1.5' will keep all elasticities below this margin.

Bounds relative

Enter a floating point number expressed as percentage which sets a relative corridor around each of the elasticities, e.g. 50.0 will keep the calibrated elasticities between 50% and 150% of the ingoing ones. Experience shows that at least 100% should be allowed to offer the solver (MINOS software) the chance to set some of the elasticities to zero.

Bounds read in

Enter 'Y' for yes to read individual bounds for each elasticity from the input elasticities file of SDA format.

Remark: The effective bounds for each of the elasticities is derived as follows:

1. as far as an individual bound is read in, it is applied.
2. if no individual bounds are set, the more restrictive ones are calculated from the parameters for absolute and relative bounds.

Updating supply elasticities in TAB file by SDA file / Updating demand elasticities in TAB file by SDA file:

These services read tables of elasticities from a SDA file. These tables are stored as entries in a TAB file, where already existing tables are updated by the new elasticities data.

Work file selection screen

```
Elasticities calibration ---------- SPEL/EU ---------- Work file selection

                          Please enter file names




Input elast.  (+bounds) file (SDA) => ELASNW SDA F

Input/output elast.     file (TAB) => SPEL-SYS TAB F




            Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Input elast. (+bounds) file (SDA)

The SDA input file contains elasticities. The upper and lower bounds to be used in the calibration process may also be included in the same file.

Input/output elast. file (TAB)

Input TAB file, where the elasticities set is read from and written to.

Table key selection screen

```
Elasticities calibration ---------------- SPEL/EU -------------- Table key selection

                              Please make your selection


Region             ( 3 ch.) => D F
Sub-region         ( 2 ch.) => 00
Current year       ( 2 ch.) => 92
Periodicity        ( 2 ch.) => 00
Base year          ( 2 ch.) => NN
Elasticity type    ( 4 ch.) => ELSE
Model area         ( 1 ch.) => E


                  Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Region

Region selection. Specify a single region code, a sequence of codes, an alphanumerical range, a logical range, a combination of sequences and ranges or '*'.

The maximum number of regions that may be selected is 20.

Sub-region

Sub-regions are currently not used.

The whole region has the sub-region code '00'. Always specify '00'.

Current year

Year selection. Specify a single year, a sequence of years, a numerical range or a combination of sequences and ranges.

The maximum number of years that may be selected is 30.

Periodicity

Periodicities are currently not used.

The whole year has the periodicity code '00'. Always specify '00'.

Base year

Select one base year, such as 'NN' or '91'

Elasticity type

For supply elasticities the type is 'ELSE' and for the demand elasticities the type is 'ELCE'.

The subkey cannot be modified.

Model area

The subkey cannot be modified. The service is always applied to model 'E' (supply & demand).

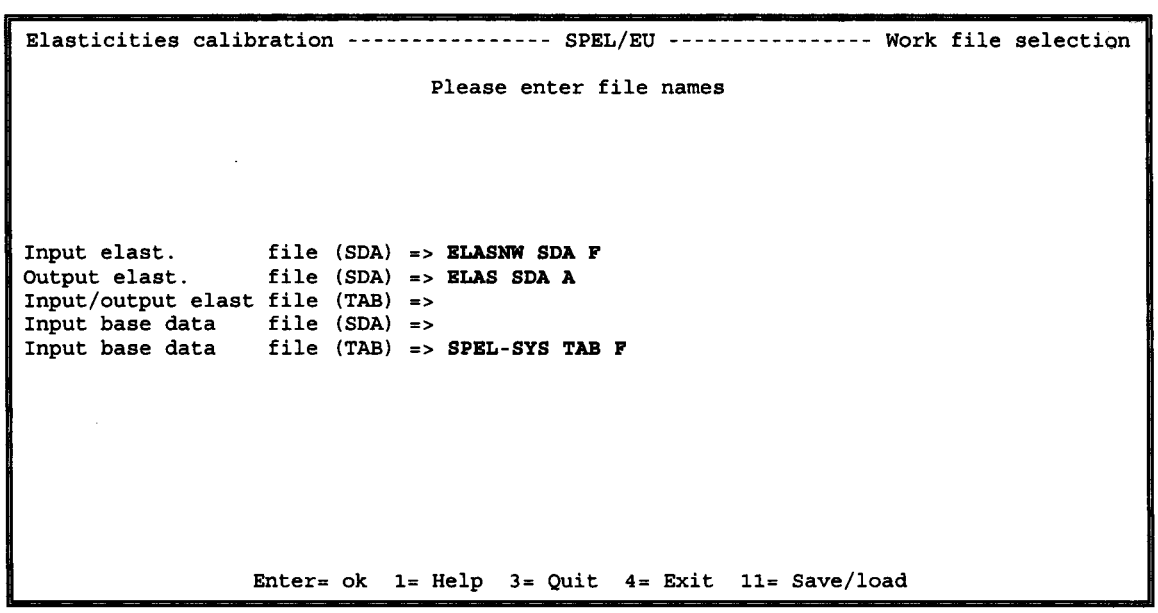
The subkey cannot be modified.

For detailed information on code selection see chapter 'General program control'.

Disaggregation of demand elasticities:

The ingoing demand elasticities may be available at a higher aggregation level. This service can be used to disaggregate the elasticities to the SPEL/EU product breakdown.

Work file selection screen



Parameters:

Input elast. file (SDA)

The SDA input file, if specified, contains elasticities to be disaggregated.

Output elast. file (SDA)

The SDA output file, if specified, where the disaggregated elasticities may be stored.

Input/output elast. file (TAB)

TAB input file, if specified, where the elasticities set is read from and written to. Input data read from this file are always updated by data coming from the 'Input elast. file (SDA)' file.

Input base data file (SDA)

SDA input file, if specified, to enter special base data optionally needed for the disaggregation process.

Input base data file (TAB)

TAB input file to enter the base data. Normally this file contains the consistent tables of the SPEL/EU-Data. The input base data may be updated by data coming from the 'Input base data file (SDA)' file.

Table key selection screen

```
Elasticities calibration ---------------- SPEL/EU -------------- Table key selection

                              Please make your selection


Region             ( 3 ch.) => D F
Sub-region         ( 2 ch.) => 00
Current year       ( 2 ch.) => 92
Periodicity        ( 2 ch.) => 00
Base year          ( 2 ch.) => NN
Elasticity type    ( 4 ch.) => ELCE
Model area         ( 1 ch.) => E


                  Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Region

Region selection. Specify a single region code, a sequence of codes, an alphanumerical range, a logical range, a combination of sequences and ranges or '*'.

The maximum number of regions that may be selected is 20.

Sub-region

Sub-regions are currently not used.

The whole region has the sub-region code '00'. Always specify '00'.

Current year

Year selection. Specify a single year, a sequence of years, a numerical range or a combination of sequences and ranges.

The maximum number of years that may be selected is 30.

Periodicity

Periodicities are currently not used.

The whole year has the periodicity code '00'. Always specify '00'.

Base year

Select one base year, such as 'NN' or '91'

Elasticity type

For demand elasticities the type is always 'ELCE'.

The subkey cannot be modified.

Model area

The calculations are always applied to model 'E' (supply & demand).

The subkey cannot be modified.

For detailed information on code selection see chapter 'General program control'.

6.1.3. Editing of experts' proposals

Part of the exogenous variables used in MFSS simulations stem from experts' judgements. These proposals have to be edited manually by a text editor in a file of SDA format. For more details on the definition and use of exogenous variables, see methodological documentation.

6.2. Medium-term Model

The medium-term forecasts and simulations are done by the MFS program. Simulations are calculated for each Member State. The EU as a whole is implicitly built by aggregation of the Member State results. For non-standard aggregates, e.g. the aggregate from the Netherlands, Belgium and Luxembourg, the AGGREG program can be executed.

To select a work step, the SPEL/EU shell offers the following screen:

Work step selection screen

```
Program starter --------------------   SPEL/EU   ---------------- Work steps selection




          MFS          Forecast and simulation
          AGGREG       Optional aggregation of user-defined regions




                Select an item by moving the cursor to any topic above

                              Enter= ok  1= Help  3= Quit
```

6.2.1. Forecast and simulation

Medium-term forecasting and simulation is done by the MFS program for an ex-ante period of about 6 years.

The design of the Medium-term Model is characterized by a modular approach: the complete agricultural sector model is divided into individual components (supply, demand and external trade) and further into sub-models, each representing a sub-system of sectoral interaction.

The linkage of the components follows the dynamic coupling principle, which technically means that the model solution for a projection year t+1 is part of the data input for t+2. Therefore, the MFS program runs strictly within a loop over the projection years: all individual components are solved for a given projection year before the projection for the following year can be started.

Within a loop over the projection years, the MFS program begins with the supply component.

- The definitions for the exogenous and endogenous variables, the reference data from SPEL/EU-BS and SPEL/EU-SFSS (data for the ex-post period) and from SPEL/EU-MFSS (for previous projection years), the trend-based shifts, the sets of elasticities and experts' proposals for exogenous variables are read.

- Price and value added expectations are modelled in the expectation model.

- Based on the results of the expectation model, the yield model estimates input and output coefficients of production activities.

- Both the results of the expectation model and the yield model enter into the activity model, which takes account of many interdependencies within the agricultural sector (e.g. medium-term response of the production activity levels to changing profitability, determination of the feed mix, balancing of physical output and input flows).

  The activity model is solved within the framework of a non-linear programming (NLP) approach. The program builds up the NLP input file, which contains the information about the type of constraints (equalities and inequalities), the bounds on the variables and the values of the coefficients of the constraints, and it prepares the vectors of quadratic and linear coefficients of the objective function to be maximized. The input file is read by the NLP solver (MINOS software from Stanford University), which feeds the optimized solution into a solution file.

- Finally, the solution file is read and the 'ABTA' and 'MAC' are computed from the results of the preceding model calculations. The SPEL table including the medium-term projection for the current projection year, is stored in a TAB file.

- An aggregation procedure is called to obtain results at EUR-level.

After having accomplished the operations on the supply component, the MFS program works on the demand and external trade components.

- The definitions for the exogenous and endogenous variables, the reference data from SPEL/EU-BS and SPEL/EU-SFSS (data for the ex-post period) and from SPEL/EU-MFSS (for previous projection years), the trend-based shifts, the sets of elasticities and experts' proposals for exogenous variables are read.

- The demand and external trade components are solved simultaneously by an NLP approach. The MFS program prepares an NLP input file and the vectors of coefficients for the quadratic objective function. It calls the NLP solver, which finally produces a solution file.

- The 'Additional demand component' is computed from the results of the preceding calculations. Also the 'ABTA' and 'MAC' of the already stored supply tables are updated, since their price elements might have adapted new values after the demand calculations. The SPEL tables for supply and demand including the medium-term projection for the current projection year is stored in a TAB file.

- An aggregation procedure is called to obtain results at EUR-level.

For more methodological details see 'SPEL System, Methodological Documentation (Rev. 1), Vol. 2: MFSS'.

Figure 12: MFS program flow chart

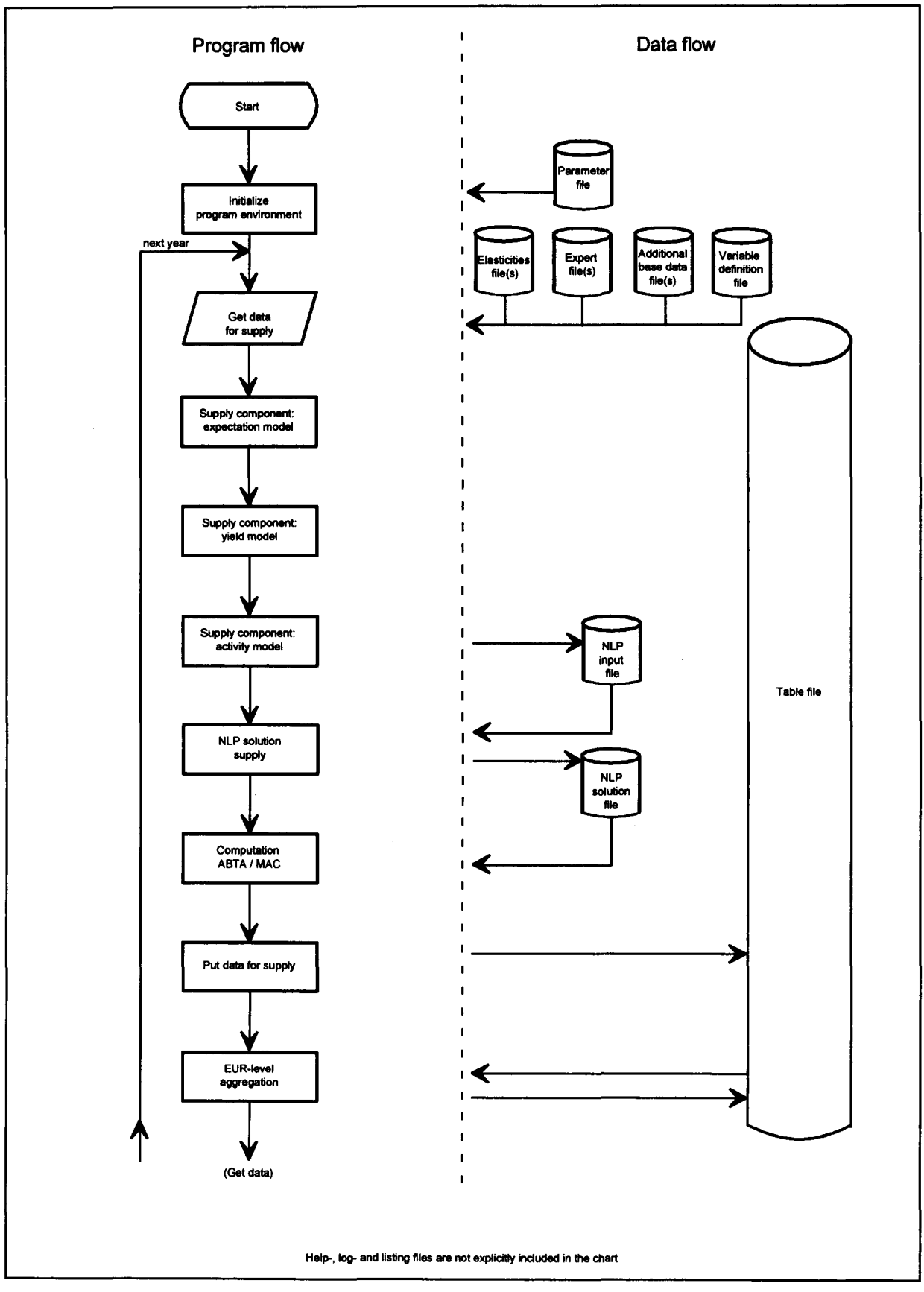


Figure 12 (continued) : MFS program flow chart

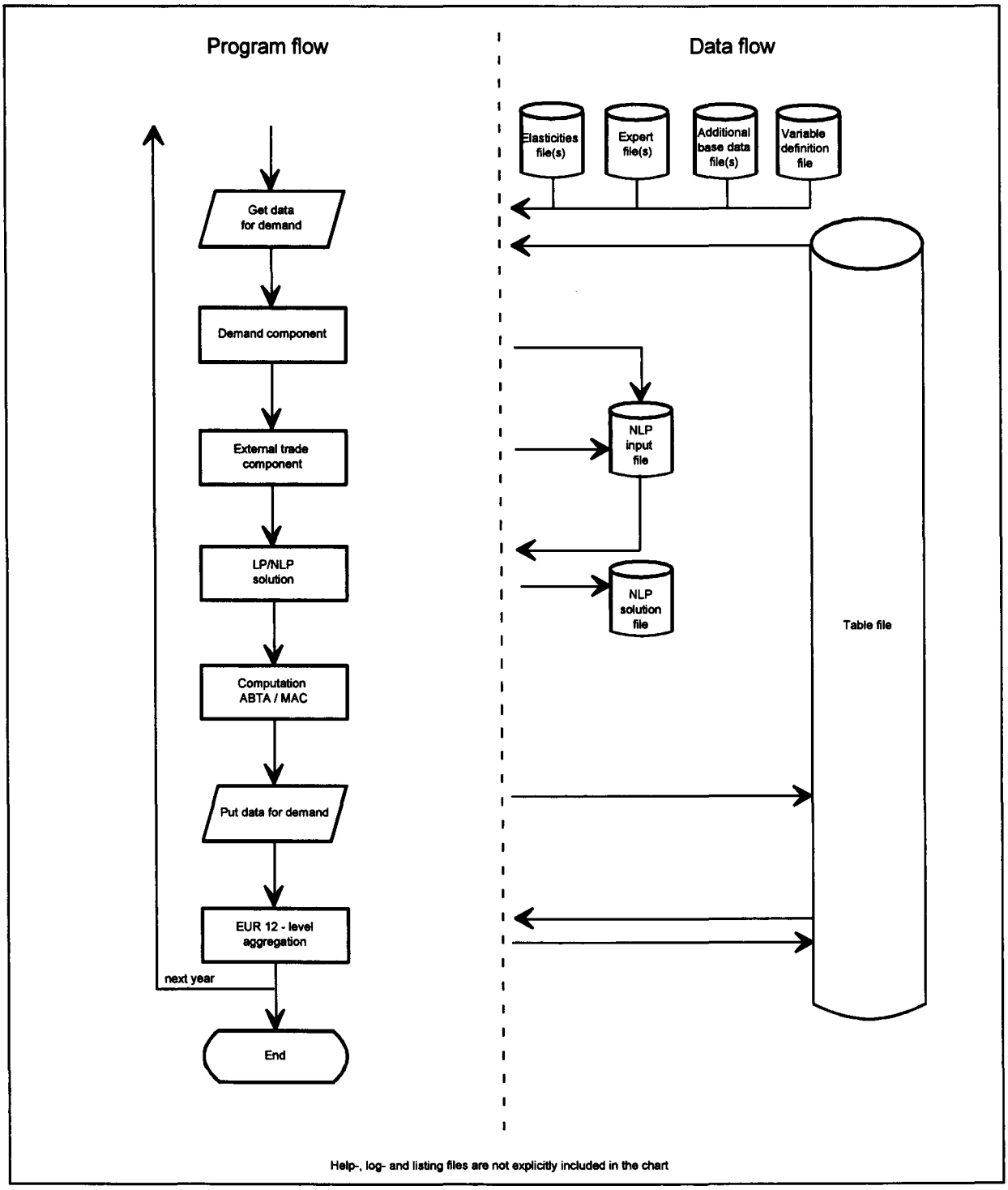


Table 4 a: Technical realization of the MFS Program (supply)

Subroutine	Description	
RCONST	Getting constraints parameter	
RGENER	Generate input file for non-linear programming solution	
GENROW	Generation of row section for NLP input file	
REGCOL	Generation of region. column section for NLP input file	
MFREGS	Building up coefficients for supply	
MFGET	Getting data (reference, trends, proposals, elasticities)	
MFXST	Preparation of trend table	
MFXSE	Checking of experts' proposal for supply	
MFEXO	Reading and processing of overlay definitions for exogenous variables.	
MFEXPE	Expectation model	***sequential approach***
MFINTE	Yield model	
MFYIEL	Calculation of yield function	
MFYPRE	Preparation of data for simulation of yield reaction	
MFYIAD	Adjustment factor for parameters of yield function	
MFSPEC	Calculation of special variables	
MFXSF	Preparation of input matrix for feed requirements	
MFDEFL	Deflation of expected gross value addeds and prices	
MFELAS	Transformation of production activity elasticities into linear impact coefficients	
MFREGS	Generation of regional columns / parameter for objective function	
MFCAP	Preparation of coefficients rel. to CAP reform scenario	
RQFEED	Calculation of requirements funct. for animal activities	
RQFETP	Technical progress within feed requirements	
MFPUT	Putting intermediate results for year t	

⇩

Non-linear Programming solution — ***simultaneous approach***

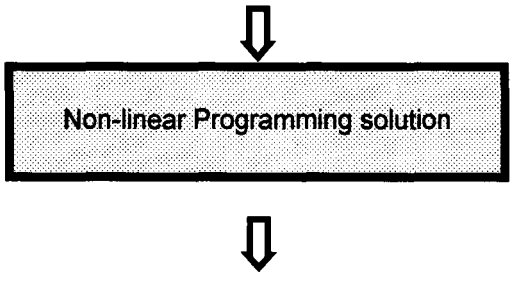
⇩

GETSOL	Getting NLP solution into array	
MFABTA	Generation ABTA and MAC	
MFGET	Getting reference data	
MFABT1	Generation ABTA and MAC for supply	
MFSPEC	Calculation of special variables	
MFPRI1	Calculation of internal use prices 1	***sequential approach***
MFPRO1	Calculation of monetary aggregates 1	
MFPRI2	Calculation of internal use prices 2	
MFPRO2	Calculation of monetary aggregates 2	
MFPRIC	Calculation of farm gate pr. / unit value price indices	
MFPRO3	Calculation of aggregates / value added of prod. act.	
MFPUT	Putting simulation results	

Table 4 b: Technical realization of the MFS Program (demand)

Subroutine	Description
MFECPR	Calculations on EUR level
MFGET	Getting data (reference, trends, proposals, elasticities)
MFGETC	Getting consumer prices
MFXDE	Checking of experts' proposal for demand
MFEXO	Reading and processing of overlay definitions for exogenous variables
MFPROC	Processing coefficients / special feeding stuff ratio
MFAGG3	Calculation of raw product costs
MFELAT	Transformation of ROW net import elasticities into linear impact coefficients
RCONST	Getting constraints parameter
RGENER	Generate input file for non-linear programming solution
GENROW	Generation of row section for NLP input file
REGCOL	Generation of regional column section for NLP input file
MFREGD	Building up coefficients for demand
MFGET	Getting data (reference, trends, proposals, elasticities)
MFGETC	Getting consumer prices
MFXST	Preparation of trend table for supply
MFXDT	Preparation of trend table for demand
MFXDE	Checking of experts' proposal for demand
MFEXO	Specification of legality of experts' proposal
MFPROC	Processing coefficients / special feeding stuff ratio
MFAGG3	Calculation of raw product costs
MFELAD	Completion of elasticity matrix
MFMAPR	Taking over results from supply component
MFELD2	Transformation of demand elasticities into linear impact coefficients
MFRGD1	Generation of regional columns
MFCOND	Calculation of constant term of human demand function
MFPUT	Putting intermediate results for year t
SECCOL	Generation of sectoral column section for NLP input file
MFSECD	Building up coefficients
MFCONT	Calculation of constant term of ROW net trade function

sequential approach

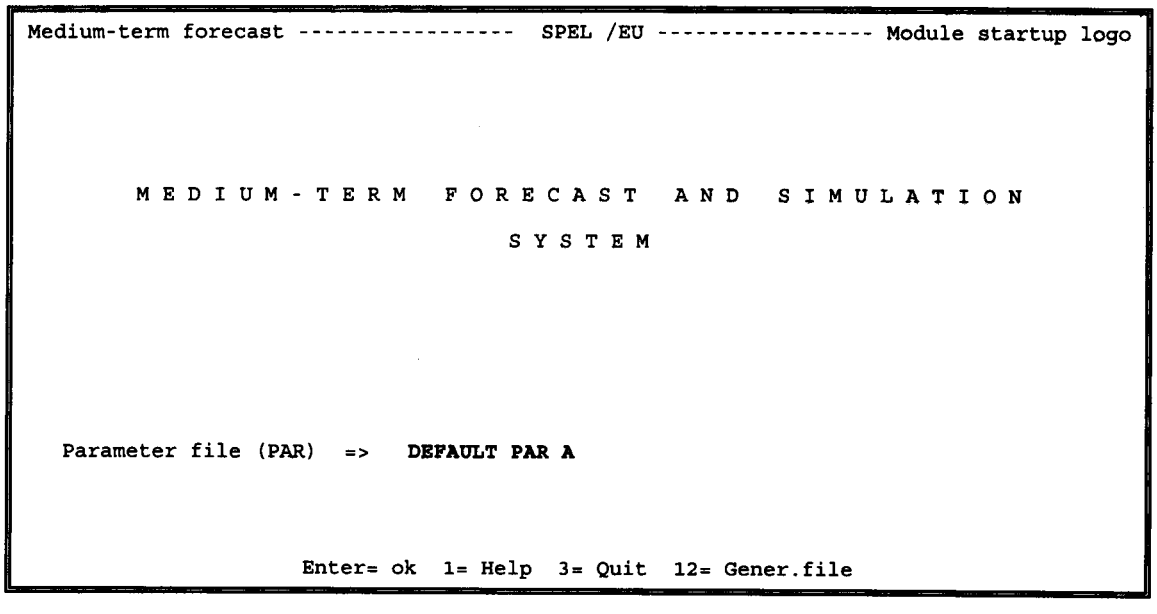


simultaneous approach

GETSOL	Getting NLP solution into array
MFABTA	Generation ABTA and MAC
.....MFGET	Getting reference data
MFABT2	Generation ABTA and MAC for demand
MFAGG3	Calculation of raw product costs
MFELAD	Completion of elasticity matrix
MFSPEC	Calculation of special variables
MFPRI1	Calculation of internal use prices 1
MFPRO1	Calculation of monetary aggregates 1
MFPRI2	Calculation of internal use prices 2
MFPRO2	Calculation of monetary aggregates 1
MFPRIC	Calculation of farm gate prices / unit value price indices
MFPRO3	Calculation of aggregates / value added of production activity
MFDEMA	Generating additional demand component
MFPROC	Processing coefficients / special feeding stuff ratio
MFTARI	Calculation of intra EUR price gaps
MFPUT	Putting simulation results

sequential approach

Module startup screen



For detailed information, see chapter 'General program control'.

Table key selection screen

```
Medium-term forecast -------------------- SPEL/EU ---------------- Table key selection

                            Please make your selection
        Note the following abbreviation: 'by&t'  for 'base year and type(s)'

Region                        ( 3 ch.) => D F

Projection year               ( 2 ch.) => 93 : 97

Projection results      by&t  ( 6 ch.) => 92MFSB

Reference data          by&t  ( 6 ch.) => 92MFSB NNBASB

Trend-based proposals   by&t  ( 6 ch.) => NNCOMB NNBASB

Experts' proposals      by&t  ( 6 ch.) => NNEXPB

Model area                    ( 1 ch.) => S D



                 Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Region

Region selection. Specify a single region code, a sequence of codes, an alphanumerical range, a logical range, a combination of sequences and ranges or '*'.

The maximum number of regions that may be selected is 20.

Projection year

Year selection. Specify a single year, a sequence of years, a numerical range or a combination of sequences and ranges.

The maximum number of years that may be selected is 6.

Projection results by&t

Base year and type selection for MFSS projection results. Specify a sequence of base year connected with type codes to be selected such as '93MFSB'.

Reference data by&t

Base year and type selection for reference data. Specify one or more sequences of base year connected with type codes to be selected such as '92MFSB NNBASB'. The reference data used will be obtained from the first existing table that is found in the sequence of base year&type codes from left to right.

Trend-based proposals by&t

Base year and type selection for trend-based proposals, e.g. trend-based shifts. Specify one or more sequences of base year connected with type codes to be selected such as 'NNCOMB NNBASB'. The trend-based proposal data used will be obtained from the first existing table that is found in the sequence of base year&type codes from left to right.

Experts' proposals by&t

Base year and type selection for experts' proposals. Specify one or more sequences of base year connected with type codes to be selected such as 'NNMEXB'. The experts' proposal data used will be obtained from the first existing table that is found in the sequence of base year&type codes from left to right.

Model area

Specify 'S' for supply or 'D' for demand or 'S D' to do the simulations for supply and demand.

For detailed information on code selection see chapter 'General program control'.

Work file selection screen

```
Medium-term forecast---------------- SPEL/EU ------------------- Work file selection

                              Please enter file names



Input supply elasticities  (SDA) => ELASUP SDA A
Input demand elasticities  (SDA) => ELADEM SDA A
Input experts' proposals   (SDA) => SIMBAS SDA A
Input consumer prices      (SDA) => CPRI SDA A
Input supply variable def. (PST) => OVLSUP PST A
Input supply variable def. (PST) => OVLDEM PST A
Input/output file for MFSB (TAB) => SPEL-SIM TAB A
Input        file for MEXB (TAB) => SPEL-SIM TAB A
Input        file for BASB (TAB) => SPEL-SYS TAB A
Input        file for COMB (TAB) => SPEL-SIM TAB A




                  Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

Input supply elasticities (SDA)

The SDA input file contains elasticities for supply.

Input demand elasticities (SDA)

The SDA input file contains elasticities for demand.

Input experts' proposals (SDA)

The SDA input file contains experts' proposals.

Input supply variable def. (PST)

The definitions for the exogenous and endogenous variables may differ for each forecasting run. This PST input file contains the current definitions for the supply component. For more detailed information about PST files, see chapter below.

Input demand variable def. (PST)

This PST input file contains the current definitions for the exogenous and endogenous variables for the demand component. For more detailed information about PST files, see chapter below.

Input/output file for *tttt* (TAB)

TAB input/output file for table type *tttt*. The table type code refers to the user input as defined for the parameter 'Result base year & type' of the previous panel.

Input file for *tttt* (TAB)

TAB input file for table type *tttt*.

The number of displayed input lines refers to the number of defined table types for the parameters 'Reference base years & types', 'Trend prop. base years & types' and 'Experts' prop. base years & types' of the previous panel.

The screen shown above is built up from the inputs as displayed in the 'Table key selection screen'.

Simulation steering screen

```
Medium-term forecast------------------ SPEL/EU -------------------Simulation steering

                        Please enter simulation alternatives




CAP-reform scenario    (YES/NO) => YES
Yield model       (ECONOM/CALIB) => ECONOM
Aggregation switch     (ON/OFF) => ON




                 Enter= ok  1= Help  3= Quit  4= Exit  11= Save/load
```

Parameters:

CAP-reform scenario (YES/NO)

Enter 'YES' or 'NO' to enable or disable the CAP-reform scenario.

Yield model (ECONOM/CALIB)

Yield model steering for endogenous yields. Enter one or a sequence of the following keywords. The yield coefficients will be calculated by the first alternative model for which parameter exist.

ECONOM the yield coefficients are estimated by the econometric model
CALIB the yield coefficients are estimated by the calibrated model

Aggregation switch (ON/OFF)

Enter 'ON' to compute the EUR-level aggregate after the forecastings for the supply component and after the forecastings for the demand component are finalized.

6.2.1.1. PST files

PST files are used to define which sources are used for exogenous variables and how endogenous variables are calculated for a MFSS simulation run.

The PST files are sequential files with a fixed record length of 255. For user friendly editing, the line length should not exceed 72 characters.

File structure:

The PST file is composed of comment lines and statements. There is one type of statements: the DEF statement. A statement may be continued on continuation lines up to a total statement length of 255 characters. Except inside literals, lower-case characters are treated as if they were the upper case equivalent. The last character of a statement is always a semicolon.

- Comment line

Comment lines are denoted by placing a '*' in the first character column of the line. Comments may occur anywhere in the file; they may be intermingled with statement continuation lines.

- DEF statement

These statements are used to define the sources of exogenous variables and the calculation of endogenous ones.

Syntax:.

DEF COLUMNS=*columns*, ROWS=*rows*, REGION=*region*,
SOURCE = ENDO | NLP | PROP | TREND | BASE,
PART=*ipart* ;

Each statement must begin with the keyword DEF and must end with the delimiter ';'. The parameter values may be enclosed by quotes.

Parameter COLUMNS:

columns Sequence and/or range of character table column codes (e.g.: SWHE - OCER)

Parameter ROWS:

rows Sequence and/or range of character table row codes (e.g.: SWHE - OCER)

Parameter REGION:

rows Sequence and/or range of character region codes (e.g.: D F UK)

Parameter SOURCE:

For endogenous variables one of the following keywords may be used:

ENDO Variables are endogenously calculated.
NLP Variables are obtained from previously calculated NLP results.

For exogenous variables any combination of the following keywords may be used:

PROP	Data of experts' proposals as defined in the parameter 'Experts' proposals by&t' of program MFSS
TREND	Data of trend based proposals as defined in the parameter 'Trend based proposals by&t' of program MFSS
BASE	Base year of projection data as defined in the parameter 'Reference data by&t' of program MFSS

The data for the exogenous variables will be obtained from the first existing data that is found in the sequence of the sources defined by the keywords from left to right.

Parameter PART:

Additional parameter to assign groups of variables to specific parts. This grouping is useful for getting experts' proposals and exploitation routines.

ipart	Part number

6.2.2. Optional aggregation of user-defined regions (AGGREG)

The EUR-level aggregate region is implicitly calculated by the MFS work step To calculate additional aggregates defined by program parameters the AGGREG program can be used. The input tables have to be consistent; that means they should be results of the MFS work step.

The parameters of the AGGREG program are described in the Base Model (BM) work sector documentation.

7. UTILITIES

The utilities can be independently used from the model components. The selection is done by the following screen.

Utilities selection screen

```
Program starter ---------------------- SPEL ---------------------- Utilities selection



          DASERV            Maintenance of TAB files
          IMPSEL            Selection and Conversion of IMP and SDA files
          IMPPACK           Pack/unpack IMP files
          TABUTL            Check time series
          EV                General estimation and evaluation program
          DAOUT             SPEL data base output

          Link of the SPEL disks
          File list of the output disk
          CMS command level (type RETURN when finished)



               Select an item by moving the cursor to any topic above

                              Enter= ok  1= Help  3= Quit
```

7.1. Maintenance of TAB files (DASERV)

The file format of the TAB files cannot be managed by conventional editors.

The DASERV program offers many services for TAB file maintenance:

- the creation and organization of new files
- listing and comparing of the entries (SPEL tables)
- listing and checking of the file directory (table of contents of entries)

For further detailed information on the DASERV program see 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

7.2. Selection and conversion of IMP and SDA files (IMPSEL)

The IMPSEL program works on sequential files of IMP and SDA format

It offers:

- to reduce the amount of data in IMP or SDA files by item selection
- to convert codes (e.g. original domain codes to SPEL table element codes)

- to convert file format, IMP to SDA or vice versa.

All three facilities can be combined. For code conversion an ASS file must be defined.

For further detailed information on the IMPSEL program see 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

7.3. Pack/unpack IMP file (IMPPACK)

The IMPPACK program offers the user the possibility to pack IMP files in order to save disk space. These compressed files are of PIM format. and can be again unpacked by the IMPPACK program

For further detailed information on the IMPPACK program see 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

7.4. Checking time series (TABUTL)

The TABUTL program offers the user three different services to check and compare time series stored in a TAB file:

List deviations to previous year

The deviations of the current year data to the previous year data are listed.

Compare two time series and list deviations

The deviations of the current year data are listed.

Update one time series by another and list deviations

The deviations of the data are listed and all missing data within a specified update interval of the first time series are updated by the data of the second time series for the same year.

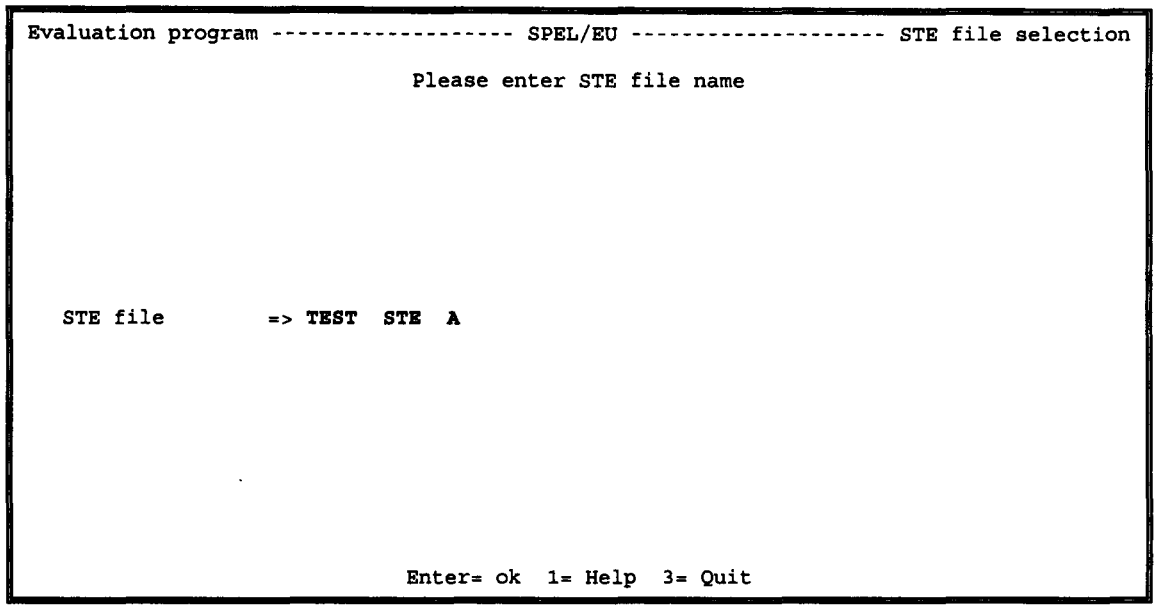
For further detailed information on the TABUTL program see 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

7.5. General estimation and evaluation program (EV)

The EV program offers general evaluations and single equation regression estimations based on the standard file formats TAB and SDA. It may be used for ad-hoc exploitations.

Selecting this utility the SPEL/EU shell will display a panel to specify the STE control file.

STE file selection screen



Parameters:

STE file

The STE file contains the control statements for the EV program.

If no STE file name is entered, the EV program will start in the dialog mode to enter the commands directly from the keyboard and to execute the operations immediately.
Use $STOP to leave the dialog mode.

For further detailed information on the EV program see 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

7.6. SPEL data base output (DAOUT)

Selections of data from TAB files can be printed and exported by the DAOUT utility. The data selection is done by using a list of selection criteria, referring to the identifiers for the SPEL data dimensions (region, sub-region, year, periodicity, base year, table type, table column and table row).
There are four different output modes:

- printing file
- SDA file
- file of CSV format for import to PC standard software, e.g. EXCEL
- file of German CSV format (including ';' as column separator)

The data dimensions can be transposed for output, except for SDA output mode.

For further detailed information on the DAPRINT program see 'SPEL System, Technical Documentation (Rev. 1), Vol. 1: Basics'.

7.7. Link of the SPEL disks

To check mode and access of the operator/user's disks the SPEL/EU shell offers the following panel:

Disk link screen (e.g. for users)

```
Program starter ------------------ SPEL/EU -------------------- Link of the SPEL disks

                    Disks currently accessed and their access mode

C (Output/work files)        => R/W
F (SPEL/EU system files)     => R/O
I (SPEL System files)        => R/O
E (SPEL operator files)      => R/O
H (SPEL/EU simulation data).=> R/O
J (SPEL/EU Base Model data)  => R/O
L (SPEL/EU external data)    => R/O

           Enter R/W for read and write access and R/O for read only access

                                Enter= ok  1= Help  3= Quit
```

Parameters for users and operators:

C (Output/work files)

The C disk is a temporary disk containing program output files or program LOG files.

Both operators and users have access to this disk. It is linked for R/W access.

F (SPEL/EU System files)

SPEL/EU System disk providing the executable SPEL programs for all model components including all control files necessary to run the programs. Additionally the disk provides the Base System and simulation results..

Both operators and users have access to this disk. It is linked for R/O access as default.

This disk can be linked in R/W mode by operators only.

I (SPEL System files)

The I disk is the SPEL System disk providing general programs.

Both operators and users have access to this disk. It is linked for R/O access as default.

This disk can be linked in R/W mode by operators only.

Parameters for operators only:

E (SPEL operator files)

The E disk is a special disk for the operator.

Its access is restricted to the operator. It is normally linked for R/O access as default.

The disk can be linked in R/W mode.

H (SPEL/EU simulation data)

The H disk is the SPEL/EU disk to run the SFSS and the MFSS model.

Its access is restricted to the operator. It is normally linked for R/O access as default.

The disk can be linked in R/W mode.

J (SPEL/EU Base Model data)

The J disk is the SPEL/EU disk to run the Base System.

Its access is restricted to the operator. It is normally linked for R/O access as default.

The disk can be linked in R/W mode.

L (SPEL/EU external data)

The L disk is the SPEL/EU disk for exogenous data mostly stored in IMP files.

Its access is restricted to the operator. It is normally linked for R/O access as default.

The disk can be linked in R/W mode.

7.8. File list of the output disk

Selecting this item the CMS FILELIST command is invoked for the C disk. A list of all existing files on this disk will be displayed.

To come back to the SPEL/EU shell the user has to quit the FILELIST (enter QUIT or press PF3).

7.9. CMS command level

Selecting this item the SPEL/EU shell will be temporary pass control to the VM/CMS dialog system. In this level all CMS facilities are available. The user just has to type 'RETURN' to come back to the SPEL/EU shell.

This item may be selected to check data files or to call the system editor.

8. EXPLOITATION

8.1. EXPLOIT program

The EXPLOIT program is designed as a tool to extract, combine and process data from the data base of SPEL/EU components, as there are the Base System, the SFSS and the MFSS, in order to prepare pre-set tables. From the point of view of the operator, these tables have a fixed structure, i.e. the items contained and the calculations needed for each of the tables are coded in fixed form in the program. At a given level of program development, the number of different tables offered is therefore stable. The operator may still determine the regions, years and data sources to be printed, some aspects of the table layout and the file format to print. Additionally, for some of the tables, the selection of outputs and inputs and their aggregation may be freely defined.

Seen from a programming viewpoint, the internal data handling and the table coding procedure are designed to be flexible enough for additions and modifications to be made easily. The program structure may be viewed as a compromise between overall flexibility - to offer an instrument where the operator may define tables himself - and stability - to ensure that the tables prepared are checked for their methodological content and numerical accuracy.

The EXPLOIT program is steered with the help of panels and parameter files. The panels can be divided into two sections:

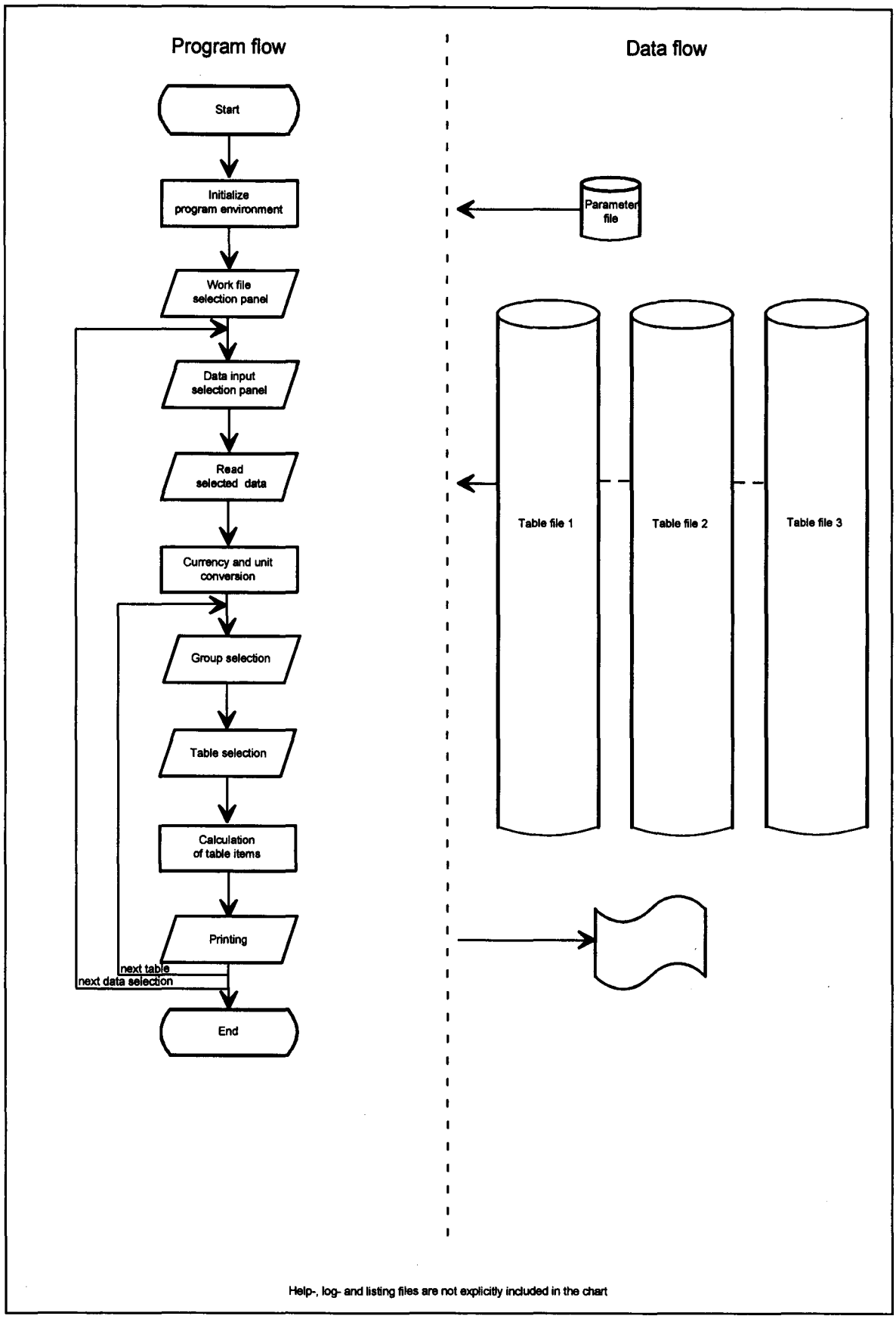
- the overall steering panels, which define data sources, table layout and file format. These panels will affect all the tables printed. They are described comprehensively in this chapter.
- and the table selection panels. Their number and structure may be changed over time, depending on user needs, when new tables are to be added or existing ones to be modified. For this reason, only a sub-set of these panels is described here as an example, and the user is invited to use the program itself to experience its possibilities.

Module startup screen

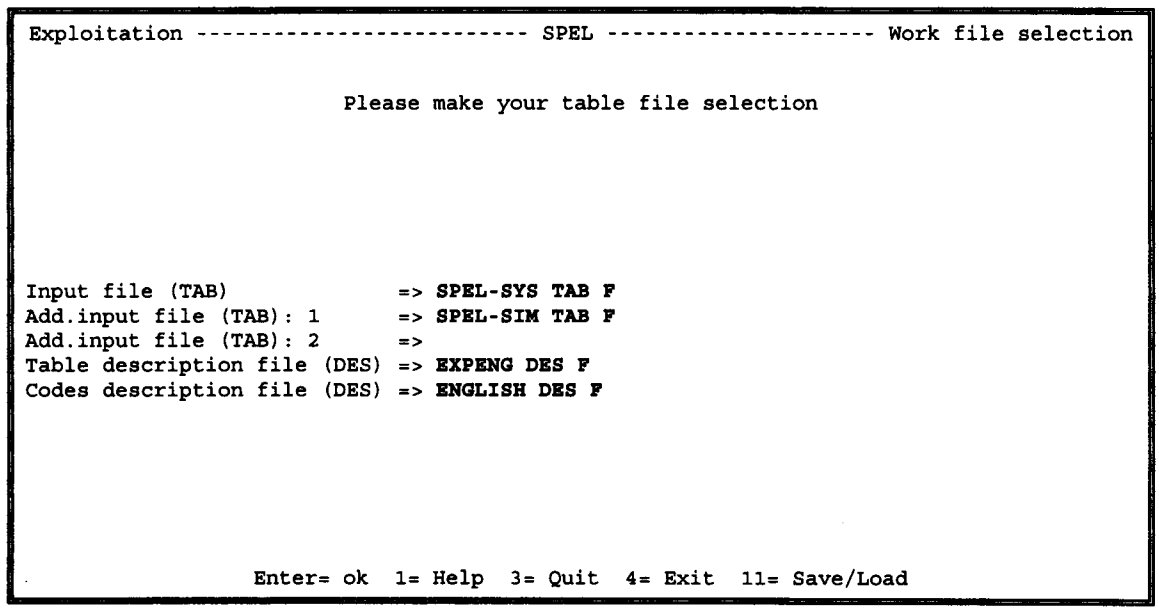
```
Exploitation ---------------------------- SPEL------------------- Module startup logo

                          ** E X P L O I T A T I O N **



    Use this module to generate pre-formatted pre-set tabular
    listings to file for subsequent printing or to export
    in CSV format to PC for treatment in spreadsheet programs.

    In order to utilise the module, please ensure that the SPEL/EU data tables and/or
    forecasts results have been prepared.



  Parameter file (PAR)  =>   DEFAULT PAR A

        Enter= ok  1= Help  3= Quit  4= Exit  11= Save/Load  12= Gener.file
```

For detailed information, see chapter 'General program control'.

Figure 13: EXPLOIT program flow chart



Work file selection screen



Parameters:

Input file (TAB)

This TAB file is used for input of the SPEL/EU-Data tables.

Add. input file (TAB file): 1

Additional TAB file, used for input of the SPEL/EU-Data tables if not found in 'Table file'. Typically, this file may contain the result tables of the SPEL-SFSS.

Add. input file (TAB file): 2

Additional TAB file, used for input of the SPEL/EU-Data tables if not found in 'Table file' and 'Add.table file : 2'. Typically, this file may contain the result tables of the SPEL-MFSS.

Table description file (DES)

Text descriptions of header and bottom lines and the items for the pre-set tables to be printed. This input file is a special application of the TAB format and is built by the DESCRI program. It contains descriptions in a specific language.

Codes description file (DES)

Text descriptions of SPEL codes. This input file is a special application of the TAB format and is built by the DESCRI program. It contains the full descriptions for all elements of SPEL tables in a specific language (ENGLISH, GERMAN, FRENCH or ITALIAN).

Input data selection screen

```
     Exploitation ---------------- SPEL ------------------ Input data selection

                        Please make your input data selection


Region                        ( 3 ch.) => D F
Expost years                  ( 2 ch.) => 73 : 93
Expost base year & type       ( 6 ch.) => NNBASB
SFSS projection years         ( 2 ch.) => 94
Expost base year & type       ( 6 ch.) => 93SFSB
MFSS projection years         ( 2 ch.) => 95 : 98
MFSS base year & type         ( 6 ch.) => 93MFSB
Model Area                    ( 1 ch.) => S
Deflator (GDP/PPS/NONE)                => GDP
Currency (NC/ECU)                      =>
Default aggregates (YES/NO)            =>
Print aggregate definitions (YES/NO)   =>



                  Enter= ok  1= Help  3= Quit  4= Exit  11= Save/Load
```

Parameters:

Region

Region selection. Specify a single region code, a sequence of codes, an alphanumerical range, a logical range, a combination of sequences and ranges or "*'.

The maximum number of regions that may be selected is 30.

Expost years

Selection of years in the expost period (type(s) and base year(s) used for input are set in the next line). Specify a single year, a sequence of years, a numerical range or a combination of sequences and ranges.

Expost base year and type

Type and base year selection. Specify a sequence of base year in conjunction with type codes to be selected such as 'NNBASB'. The sequence is used to read data for the years t-1 and 1990, also (which are not printed).

SFSS projections years

Selection of years for which results of the SFSS will be printed. Specify a single year, a sequence of years, a numerical range or a combination of sequences and ranges (see chapter 'General program control').

SFSS base year and type

Type and base year selection for SFSS results. Specify a sequence of base year in conjunction with type codes to be selected such as '93SFSB'.

MFSS projections years

Selection of years for which results of the MFSS will be printed. Specify a single year, a sequence of years, a numerical range or a combination of sequences and ranges (see chapter 'General program control').

MFSS base year and type

Type and base year selection for SFSS results. Specify a sequence of base year in conjunction with type codes to be selected such as '93SFSB'.

Model area

Select one of the following model area codes:

'S' for supply
'D' for demand
'E' for supply&demand

Deflator (GDP/PPS/NONE)

Selection of the deflator used to convert nominal to real values. Choose one of the following:

GDP: the index of the gross domestic product is used as deflator.
PPS : purchasing power standards are used for deflating nominal values.
NONE: no deflating, real values are equal to nominal ones.

Default aggregates (YES/NO)

Determination of whether default aggregates defined in the parameter files will be used or whether the default settings may be changed. Choose one of the following:

YES: the default aggregate definition from the parameter file will be used.
NO: edit the aggregate definitions.

Print aggregate definitions (YES/NO)

Determination of whether the aggregate definitions will be printed on top of the listing. Choose one of the following:

YES: aggregate definitions will be printed.
NO: aggregate definitions will not be contained in the print file.

Remarks:

- The data input is done after this panel is displayed. Depending on the amount of data tables selected and the performance of the computer equipment used, the input may take some time. Changes in consecutive panel will not lead to a renewed data input, unless the user jumps backed in the 'Input data selection screen'.

- At least one of the 'years'-parameters must be set. The related 'base year and types'-parameters must be set, too.

- The resulting years to be printed must cover one closed period.

If the parameter 'Default aggregates' is set to 'NO', aggregate definition panels for crop and animal products and inputs are displayed. The next screen shows as example for these aggregate definitions the panels for crop products.

Aggregate definitions screen

```
Exploitation ------------------------- SPEL ------------------ Aggregate definitions

              Please enter the aggregate definitions for crop products
                  Example 'Aggr. definition C:1 => WHEA SWHE DWHE'

Aggr. definition C:  1 => WHEA SWHE DWHE
Aggr. definition C:  2 => INDU FLAX TOBA OIND
Aggr. definition C:  3 =>
Aggr. definition C:  4 =>
Aggr. definition C:  5 =>
Aggr. definition C:  6 =>
Aggr. definition C:  7 =>
Aggr. definition C:  8 =>
Aggr. definition C:  9 =>
Aggr. definition C: 10 =>
Aggr. definition C: 11 =>
Aggr. definition C: 12 =>
Aggr. definition C: 13 =>
Aggr. definition C: 14 =>
Aggr. definition C: 15 =>
Aggr. definition C: 16 =>
Aggr. definition C: 17 =>
Aggr. definition C: 18 =>

                  Enter= ok  1= Help  3= Quit  4= Exit  11= Save/Load
```

Parameters:

Aggr. definition C: ..

This panel will define which crop products or crop product aggregates will be printed in the tables (in as far as the tables are broken down by product). Up to 18 aggregates or single products may be selected. Enter one of the following in each of the lines you want to use:

- a single row code, e.g. BARL. The row codes must stem from the legal SPEL row codes.
- an aggregate definition, consisting of the code for the aggregate and a sequence, a range or the combination of both, of legal SPEL row codes. The code of the aggregates must be unique and must not be one of the SPEL row codes; e.g. WHEA SWHE DWHE. In the example given, the aggregate WHEA is defined to consist of SWHE and DWHE.

Remark: For animal aggregates, the parameter name will be 'Aggr. definition A:' and for input aggregates it will be 'Aggr. definition I: '.

If the parameter 'Default aggregates' is set to 'NO', an aggregate description panel for the aggregates defined in the previous panel is displayed.

Aggregate descriptions screen

```
Exploitation ------------------------- SPEL ------------------ Aggregate definitions


          Please enter the aggregate descriptions
          Example 'Aggr. description WHEA => Soft and durum wheat'




Aggr. description: WHEA => Soft and durum wheat
Aggr. description: INDU => Industrial crops




                Enter= ok  1= Help  3= Quit  4= Exit  11= Save/Load
```

Parameters:

Aggr. description : ..

This panel will set the aggregate descriptions printed in the tables. The input fields are equal to the number of aggregates defined in the preceding panel. In as far as single SPEL-row codes are used, the description stems from the SPEL long-text description system and cannot be edited manually.

Print parameters

```
Exploitation --------------------------- SPEL --------------------- Print parameters


                        Please set the print parameters



Indexing year                              => 90
Indexing region                            => D
Output mode (PRINT/CSV/GCSV)               => PRINT
Print rows (ITEMS/YEARS/REGIONS/TYPES)     => ITEMS
Print columns (ITEMS/YEARS/REGIONS/TYPES)  => YEARS
Print tables (ITEMS/YEARS/REGIONS/TYPES)   => REGIONS




                Enter= ok  1= Help  3= Quit  4= Exit  11= Save/Load
```

Parameters:

Indexing year

The year which will be used as a basis for the calculation of indexes over time. The year chosen must lie in the sequence of years entered in the fields of the 'Data input selection panel'. For single year indexes, the index value of the indexing year will be equal to 100. For three year averages, the index value will be calculated from a three year average around the indexing year, so that the index of the indexing year itself may differ from 100.

Indexing region

The region which will be used as a basis for the calculation of indexes over regions. The region chosen must lie in the regions entered in the fields of the 'Data input selection panel'. The index value of the indexing region will be equal to 100.

Output mode (PRINT/CSV/GCSV)

The output mode which determines the file format used for printing the tables. Choose one of the following:

PRINT — the tabular forms are ready to be sent on a printer.

CSV — the tabular forms are prepared in CSV format to be imported in spreadsheet programs. The columns separator will be ';'.

GCSV — the tabular forms are prepared in German CSV format to be imported by spreadsheet programs., The columns separator will be ';'.

Print rows (ITEMS/YEARS/REGIONS/TYPES)

Each tabular form offers items, i.e. the different values to print and their descriptions, which are available for the years, regions and types chosen in the 'Input data selection panel'. The input fields define whether these items or years or regions or types will be contained in the rows of the printed tables. Thus, by changing the setting on that and the following two input fields, the table layout may be rotated, depending on the informational needs of the user. Most tables are originally designed to contain the items in the rows and the years in the columns.

Print columns (ITEMS/YEARS/REGIONS/TYPES)

The input fields define whether these items or years or regions or types will be contained in the columns of the printed tables.

Print tables (ITEMS/YEARS/REGIONS/TYPES)

The input fields define whether these items or years or regions or types will be contained in the table headers of the printed tables.

Group selection screen

```
Exploitation ---------------------- SPEL ------------------- Group selection

                  Choose one of the following table groups




                  Whole sector
                  Production activity breakdown
                  Demand aspects




            Select an item by moving the cursor to any topic above


              Enter= ok  1= Help  3= Quit  4= Exit  11= Save/Load
```

Item selection:

Whole sector

Detailed information on the income situation of the agricultural sector as a whole is provided in the tables comprised in this group.

Production activity breakdown

Detailed information on the income situation in specific agricultural sectors is provided in the tables summarized in this group.

Demand aspects

Detailed information on market balance sheets for specific products is provided in the tables summarized in this group.

As example for the different table selection screens comprised in the EXPLOIT program, the items offered for the selection 'Production activity breakdown' (see above) are presented.

Table selection screen

```
Exploitation ---------- SPEL ---------- Table selection

                Choose one of the following tables



     Torcasio-table 1, index on years
     Torcasio-table 2, index on years
     Shares on sectoral values, index on years
     Torcasio-table 1, index on regions
     Torcasio-table 2, index on regions
     Shares on sectoral values, index on regions




          Select an item by moving the cursor to any topic above

           Enter= ok  1= Help  3= Quit  4= Exit  11= Save/Load
```

Item selection:

Torcasio-table 1, index on years

The so-called 'Torcasio-table 1' offers for each of the products or product aggregates information on gross production, gross value added at market prices and some cost positions per 1000 kg.

Values are presented in nominal absolute terms, as index of three-year moving average of real values as well as the resulting growth rates. Besides, information concerning the development of yield coefficients and areas resp. herd sizes is provided.

Index figures are calculated by dividing by the value of the indexing year.

Torcasio-table 2, index on years

The so-called 'Torcasio-table 2' offers for each of the products or product aggregates information on gross production, gross value added at market prices and some cost positions per 1000 kg. Values are presented as yearly growth rates. Besides, the estimated yearly growth rate over the total period is printed.

Index figures are calculated by dividing by the value of the indexing year.

Shares on sectoral values, index on years

The tables provide for each product resp. product aggregate in selection the share of specific positions (gross production, input use, variable input use, overheads use, gross value added and for crop products the area) on the sectoral totals.

Index figures are calculated by dividing by the value of the indexing year.

Torcasio-table 1, index on regions

The so-called 'Torcasio-table 1' offers for each of the products or product aggregates information on gross production, gross value added at market prices and some cost positions per 1000 kg.

Values are presented in nominal absolute terms, as index of three-year moving average of real values as well as the resulting growth rates. Besides, information concerning the development of yield coefficients and areas resp. herd sizes is provided.

Index figures are calculated by dividing by the value of the indexing region.

Torcasio-table 2, index on regions

The so-called 'Torcasio-table 2' offers for each of the products or product aggregates information on gross production, gross value added at market prices and some cost positions per 1000 kg. Values are presented as yearly growth rates. Besides, the estimated yearly growth rate over the total period is printed.

Index figures are calculated by dividing by the value of the indexing region.

Shares on sectoral values, index on regions

The tables provide for each product resp. product aggregate in selection the share of specific positions (gross production, input use, variable input use, overheads use, gross value added and for crop products the area) on the sectoral totals.

Index figures are calculated by dividing by the value of the indexing region.

10. INDEX

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European Commission

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The technical documentation of the SPEL system comprises two comprehensive volumes for users and operators working with the SPEL on-line system. It outlines the principal technical approach for the whole SPEL system and points out the user interface flexibility and transparency. Transparency means that data can be traced back to the basic sources and underlying assumptions. Volume 2 describes the components of the SPEL/EU model. These components are the base system (BS), the short-term forecast and simulation system (SFSS) and the medium-term forecast and simulation system (MFSS). The documentation emphasizes in particular the technical basics, whilst respecting the methodological ideas. Furthermore, it outlines, step by step, data preparation and model calculation as they are offered to operators and users. Volume 2 concludes with a presentation of utilities and exploitation programs offered to the SPEL/EU model user.