

2005/2006
**Consumer
Price
Index**

2. Data Management

The BiH Consumer Price Index



Bosnia and Herzegovina

**Agency for Statistics of
Bosnia and Herzegovina**

Federal Institute of Statistics

Republika Srpska Institute of Statistics

Volume 2. Data Management

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Foreword

The 2004 Bosnia and Herzegovina (BiH) Household Budget Survey was implemented in partnership by the Bosnia and Herzegovina Agency for Statistics (BHAS), the Federal Institute of Statistics (FIS) and the Republika Srpska Institute of Statistics (RSIS).

Financial support to carry out the survey was provided by the Italian Government and Cooperazione Italiana, with the technical assistance of the experts of ISTAT, the Italian National Institute of Statistics.

Support for the production of the HBS sample was given by DFID, the United Kingdom Department for International Development.

The project also included a component on Consumer Price Index: the whole intervention aimed at the definition and adoption of a new common basket of products for BiH as a whole, at the implementation of a new consumer price survey methodology compliant with European standards, at the design and production of a new application for the collection, entry, processing and management of price data, at the estimation of new weights based on Household Budget Survey data and at the calculation of new Consumer Prices Indices: these have been calculated for 2005 and 2006.

The two publications on prices, coordinated by Federico Polidoro of ISTAT, report on the progressive implementation of the Consumer Price Index component; they provide a complete guide on all methodological and data management issues and present an analysis of new data and indexes.

The present publication appears in the HBS series, together with the one on consumer price methodology and results and the other two presenting, respectively, the HBS methodology design and the analysis of survey results: they form the core outcome of the project' intervention for the conduction of the 2004 Household Budget Survey.

Directors of the Statistical Institutions of Bosnia Herzegovina - Zdenko Milinovic of the Bosnia and Herzegovina Agency for Statistics, Dervis Djurdevic of the Federal Institute of Statistics and Slavko Sobot of the Republika Srpska Institute of Statistics - have provided to this project thorough support, even prior to its onset, and the necessary guidance based on partnership.

The implementation of the price component is the result of the joint effort of committed colleagues, who have had this opportunity to share their professionalism and expertise, but also their sense of friendship and exchange; it has been ensured by an ad hoc team of experts: Rubina Delic, Zeljka Draskovic, Nedzada Hadzalic, Mesuda Kamberovic, Denijal Karanovic, Amina Muhic, Igor Radan, Bogdana Radic, Edin Sabanovic, Nevenka Sekulic, Enzo Agnesse, Giuliano Gialli, Stefania Occhiobello, Federico Polidoro, Antonella Simone, Marco Zaninelli.

Special thanks go to Vera Nastic for the translation, editing and layout of the publications in all languages and to Tiziana Pellicciotti for the editing and layout of the English version.

Introduction¹

The development of the procedure for the consumer price survey in Bosnia Herzegovina has taken into account the long-time experience of the Information System group that supports the activities of data collection and processing for the production of consumer price statistics in Italy.

Since the end of the '80s ISTAT has adopted a procedure for recording and processing data collected by the Municipal Offices of Statistics (MOS) of the towns that participate in the consumer price survey. Until today this procedure, that is used by ISTAT and by MOS and coded by a programming language, has implemented all the organisational measures and the methodological innovations that in the meantime have been adopted in the survey, with the aim to improve the quality of consumer price statistics. In particular, it implemented in operational terms the passage to the chain indices at the end of the '90s, and the registration of temporary price reductions starting from 2002.

The analysis of the procedure adopted by ISTAT and the general revision of the consumer price survey, together with the specific needs expressed by the colleagues involved in consumer price statistics in Bosnia Herzegovina, have allowed to identify the technological environment and the main statistical functions and variables to develop the new procedure for the CPI.

In terms of IT approach, the starting point in consumer price statistics was the lack of a data entry and calculation procedure common to the two Entities and Brcko District (RSIS used a Delphi procedure, FIS used Excel files) that, along with the methodological issues, did not make it possible to build up an unique price index at country level.

Moreover the procedures in use would not allow to check automatically the data entered and, above all, would not allow to manage some crucial issues as, for example, the replacement of elementary items.

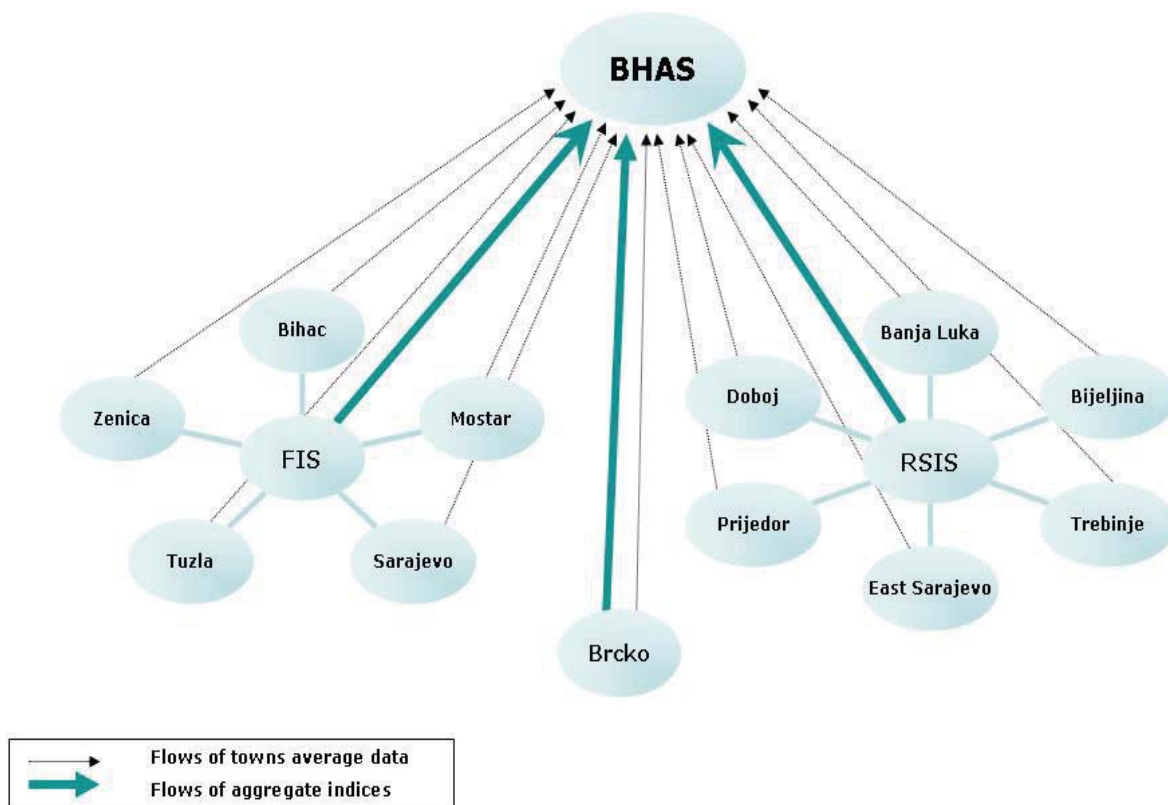
The new procedure was implemented taking into account the statistical and methodological aspects that have guided the general revision of the consumer price survey in Bosnia Herzegovina.

The procedure that was developed and adopted for the CPI has taken account of the present organisation of the consumer price survey in the field. As already sketched in the first volume, in Bosnia Herzegovina 12 towns (5 in FBiH, 6 in RS and Brcko) carry out the data collection and are in charge of entering and checking the data and calculating the average data and the indices at level of towns and Brcko District. Moreover, in Sarajevo and Banja Luka, FIS and RSIS respectively receive the average data from the towns, they ask, if necessary, for further checks in the field and calculate the indices at

¹ Stefania Occhiobello, ISTAT, Division for Price Statistics and Foreign Trade, Price Statistics Section

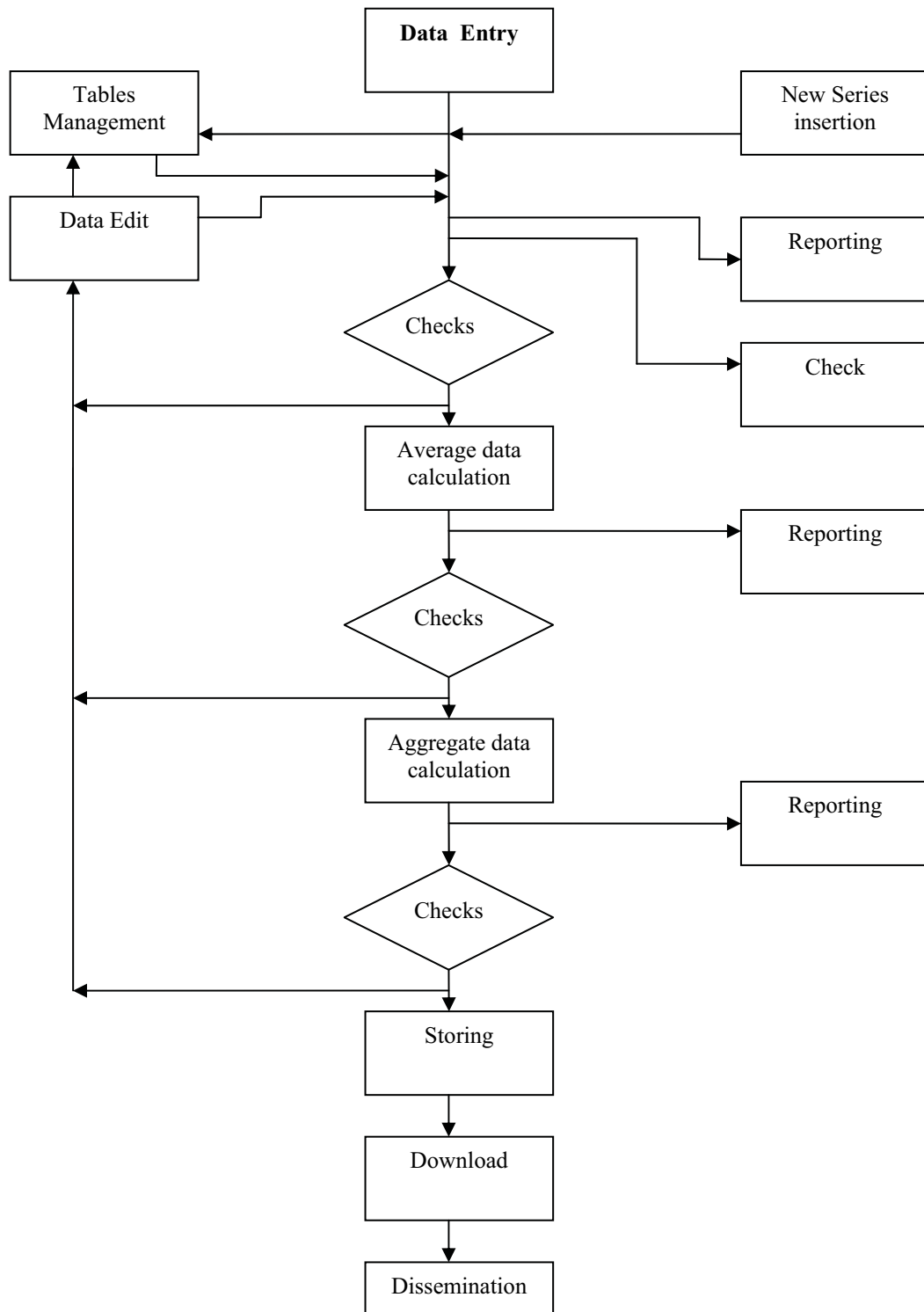
entity level. Finally, BHAS collects the average data coming from all the towns including Brcko, and calculates the indices at country level, adopting the formula described in volume 1 (paragraph 1.16). The procedure developed reflects this framework in geographical terms and in terms of tasks assigned to the different structures involved (Figure 1.1). It consists mainly of two modules: the module for data entry and check and for the calculation of the average data at town level, and the module for the indices calculation at entity and country level. The first one (denominated Module 1) is described in Chapters from 2 to 8, whereas the functions of the module for the indices calculation at entity and country level (that will be denominated Module 2) will be described in Chapter 9.

Figure 1.1 – Data flows in BiH CPI – years 2005 - 2006



Generally speaking, the calculation process for the consumer prices indices that represented the general reference to develop the procedure can be viewed like a flow-chart with different steps, often iterative (Figure 1.2).

Figure 1.2 – BiH CPI: calculation process for the indices



1. General aspects

1.1 The development environment²

The first issue tackled was the technological development environment. It was defined on the basis of a careful recognition both of the user knowledge and of the operating systems and technological platforms available in the statistical offices involved in the procedure. The crucial aim of this step of recognition was the release of a product that could be self-managed by IT experts of FIS, RSIS, BHAS and Brcko District Statistical Agency. Finally, Microsoft Access 2000 for Microsoft Windows was chosen as technological environment to develop the CPI procedure. Access is a Windows-based database system and a powerful program to create and manage databases.

Firstly, this choice adopted has taken into account the recognition on user knowledge and operating systems and platforms available. Secondly, it has also matched the requirement of self-maintenance and further development of the application. Matching this requirement was crucial in order to assure the implementation in the procedure of the possible evolution of the methodological, legal and organisational framework of the consumer price survey. Moreover, the development environment adopted allows statisticians to use the procedure browsing it in a friendly and simple way. Finally, the analysis of the needs has led to plan a flexible database structure suitable for the survey, designed so as to allow further changes and upgrades. The final structure of the database described in the following paragraph is the results of consecutive improvements, made possible by this flexible structure. The technological environment was chosen taking into account the possibility of exporting the procedure from the present architecture to other relational environments. For this reason, the entire procedure both for Module 1 and for Module 2 was divided in two parts: back-end and front-end. Back-end contains only tables with data and relationships, front-end contains the application interface.

1.2 Database structure: conceptual, logical and physical outline³

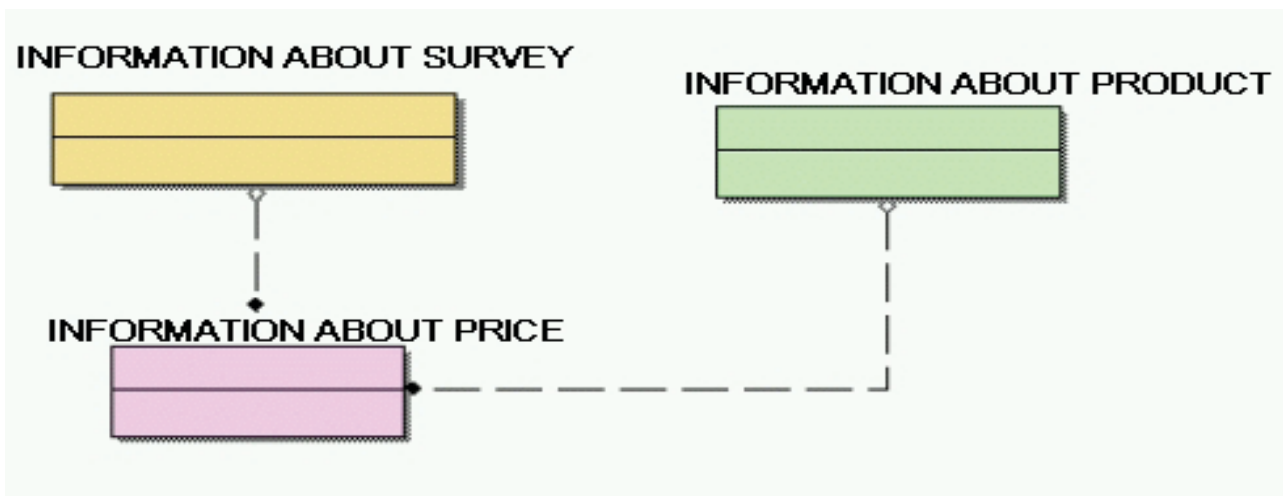
The ERD (Entity-Relationship Diagram) has guided the activities carried out for modelling the database and it has allowed to represent in a graphical way the data_ objects and their relationships. Data_ objects are represented by rectangles with a name, their relationships by lines that connect the objects. To define the ERD of the database a top-down strategy was adopted. The conceptual outline was produced by consecutive

² Antonella Simone, ISTAT, Division for Price Statistics and Foreign Trade, Price Statistics Section

³ Stefania Occhiobello, ISTAT, Division for Price Statistics and Foreign Trade, Price Statistics Section

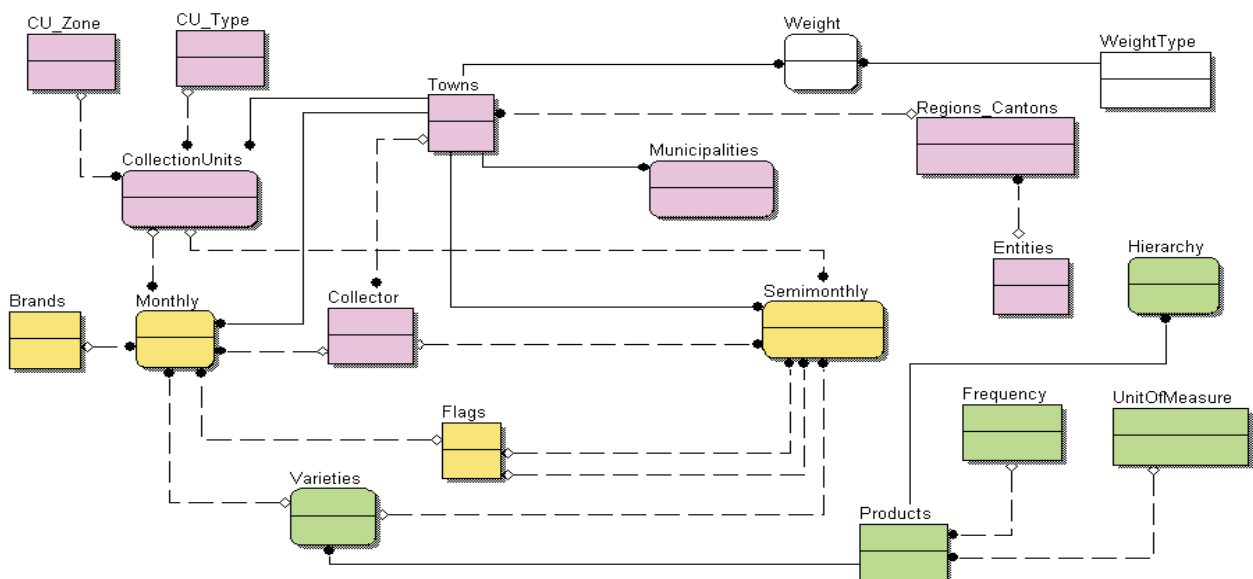
improvements starting from a drafted outline, where the three macro fundamental entities were described separately (Figure 1.3).

Figure 1.3 – Conceptual outline of data base for BiH CPI: macro fundamental entities



The conceptual outline was then improved and enlarged and the result is described in Figure 1.4.

Figure 1.4 Complete conceptual outline of data base for BiH CPI



Finally, the main data_objects were characterized and defined, together with the attributes which describe them and the relationships among them.

The translation of the conceptual outline into the physical outline was carried out adopting the relational model and led to the definition of the outline illustrated in Figure 1.5 for elementary data and in Figure 1.6 for the aggregate.

Figure 1.5 Physical outline of data base of BiH CPI for elementary data

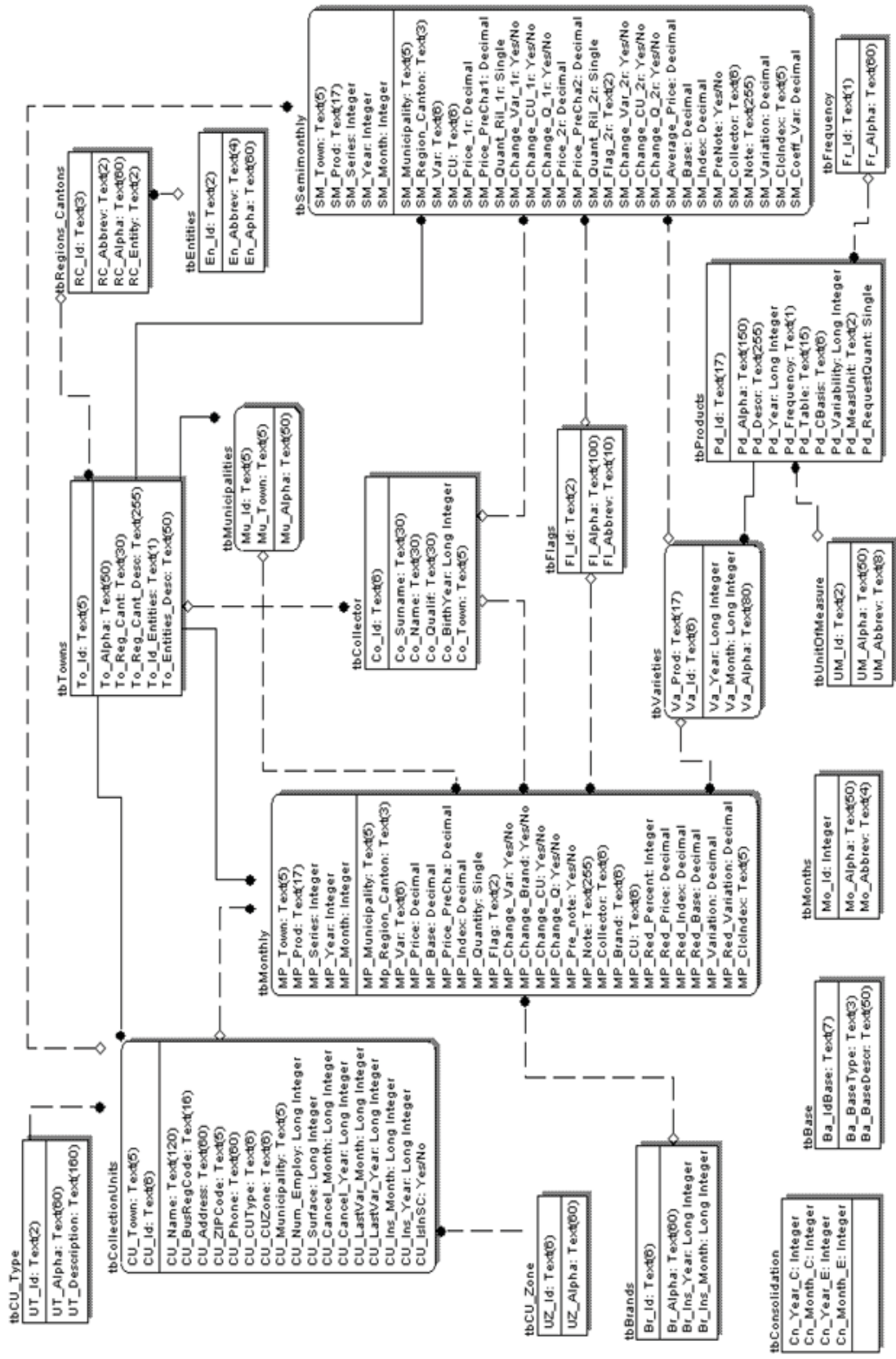
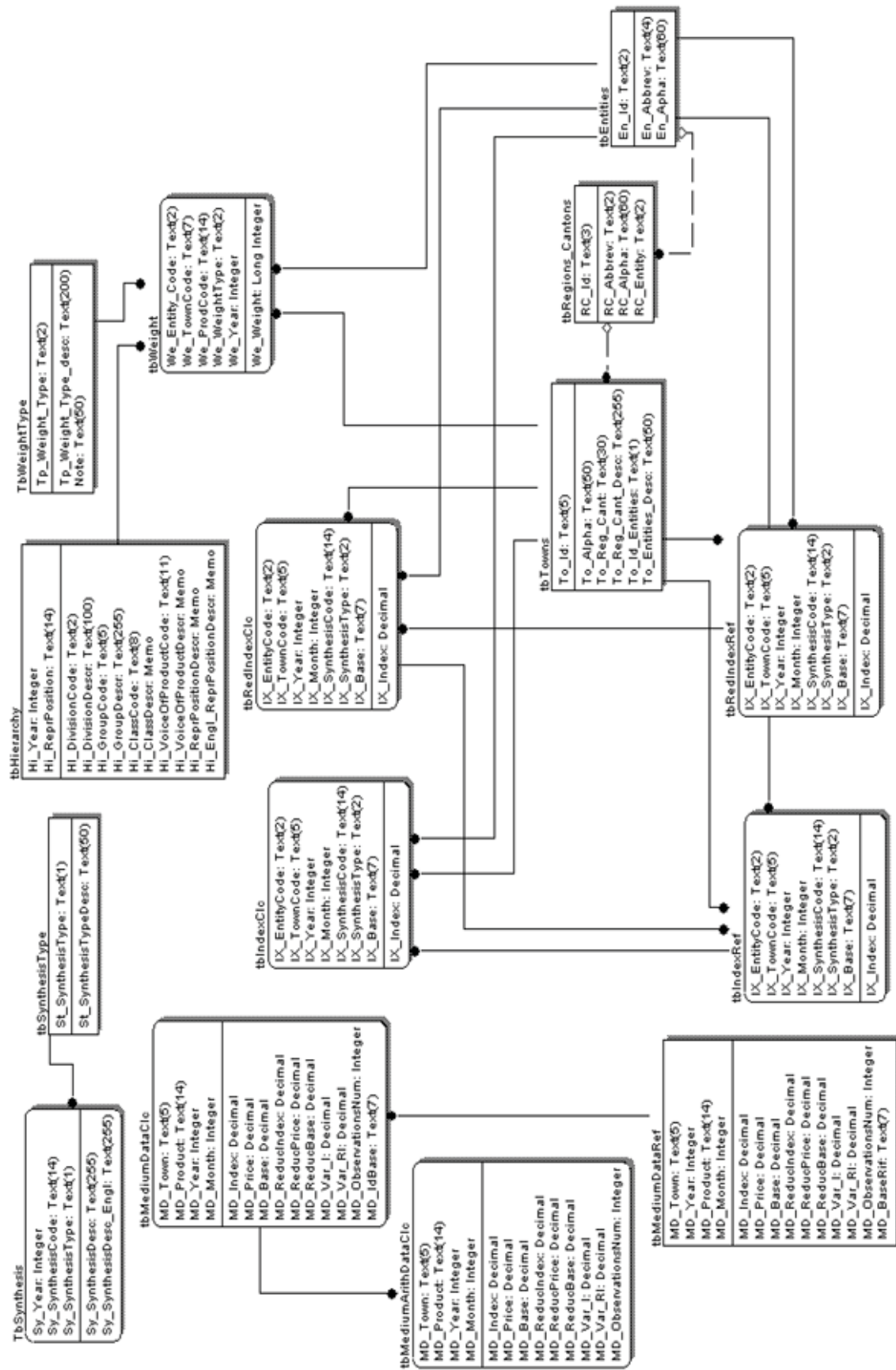


Figure 1.6 Physical outline of data base of BiH CPI for aggregate data



1.3 The application description and installation⁴

To allow the updating of the procedure for Module 1 and for Module 2, it was divided in two main parts: back-end and front-end.

Back-end contains only tables with data (a password can be set to avoid modifications on the table structure); front-end contains table links, forms, reports, macros, modules, routines.

Once the table structures have been defined, further changes on the application will be done substituting only the front-end.

To this aim the four files listed in Figure 1.7 were created:

Figure 1.7



CPI.mdb is the front-end;

CPI.mdb is a link file;

CPI_be.mdb is the back-end, i.e. the database;

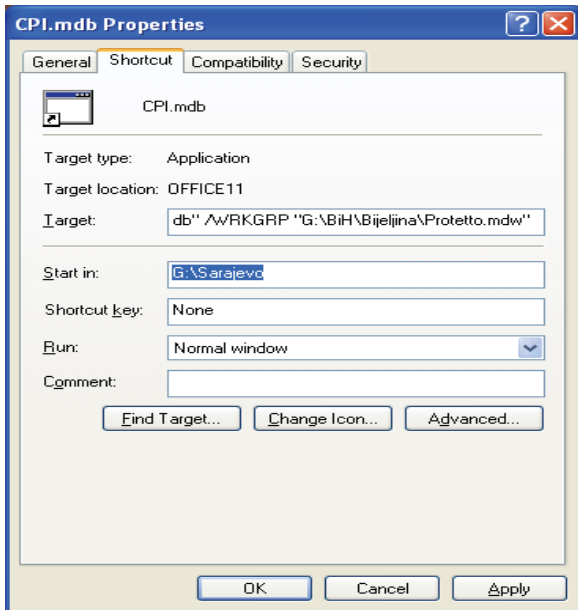
Protetto.mdw is a special workgroup file to store usernames, groups and passwords.

Depending on the pre-existing situation, it is possible to load the new procedure by two different approaches:

1. If an old procedure release containing the four files above mentioned has already been loaded on the pc, it will only be necessary to overwrite the cpi.mdb (not link but front-end), which will become the new front-end.
2. If the CPI procedure has never been loaded on the pc (or if it is necessary to change pc) all files have to be copied in a folder and the path in cpi.mdb link has to be changed. For example, if the user is working in the path G:\Sarajevo, to change the path in cpi.mdb the user has to click with the mouse right button on the cpi.mdb file, select Properties and then link: at this point the source path can be changed (Figure 1.8).

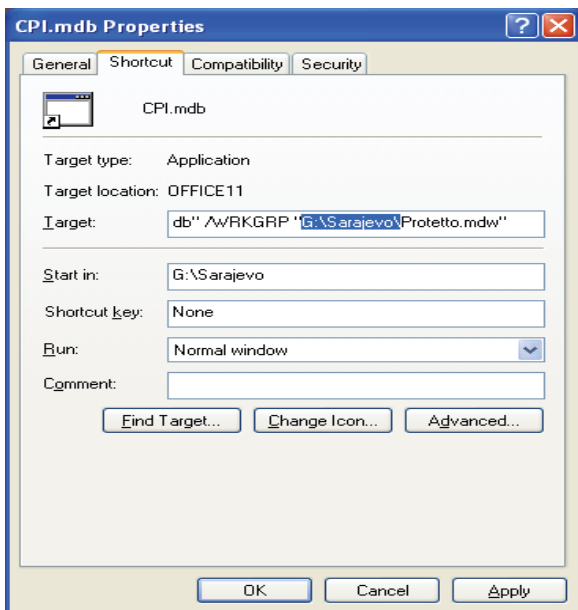
⁴ Antonella Simone, ISTAT, Division for Price Statistics and Foreign Trade, Price Statistics Section

Figure 1.8



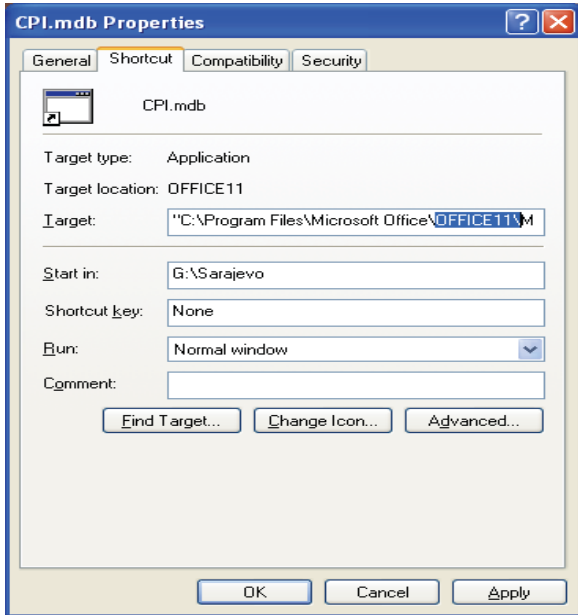
The destination path has to be set as follows: "C:\Programmi\Microsoft Office\OFFICE\MSACCESS.EXE" "G:\Sarajevo\CPI.mdb" /WRKGRP "G:\Sarajevo\Protetto.mdw" (Figure 1.9).

Figure 1.9



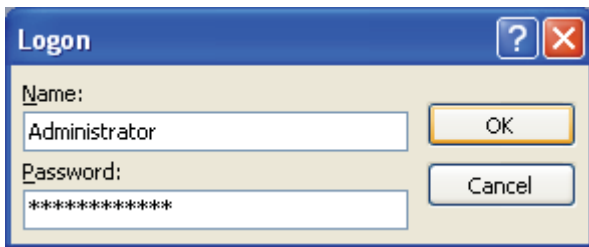
Also the Office name folder (Figure 1.10) has to be set according to its release (in Office 2000 the MSACCESS.EXE is installed in a folder named Office, in Office XP is Office10, in Office 2003 is Office11, and so on).

Figure 1.10



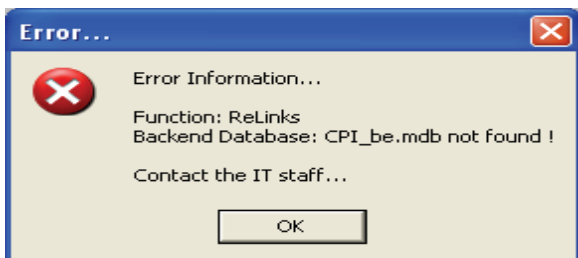
Once the procedure has been loaded on the pc, it will be accessible as administrator (Figure 1.11): launching cpi.mdb link, a routine to link tables between back-end and front-end will start.

Figure 1.11



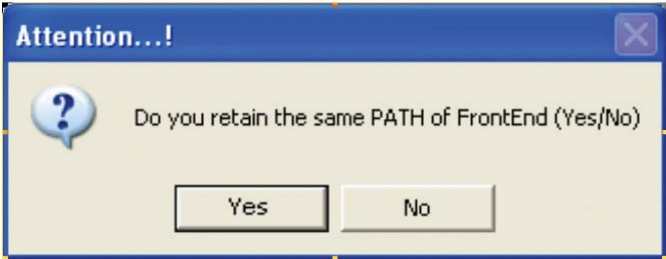
Accessing as user an error on linking tables will appear (Figure 1.12).

Figure 1.12



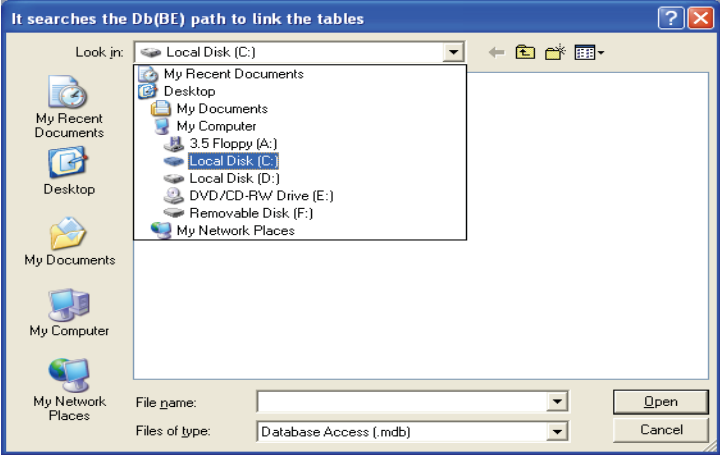
Accessing as Administrator, a question on path will be asked (Figure 1.13).

Figure 1.13



Installing the file cpi_be.mdb (back-end) in the same folder as the cpi.mdb (front-end), it will be enough to select “Yes”, otherwise No choosing the correct path (Figure 1.14).

Figure 1.14



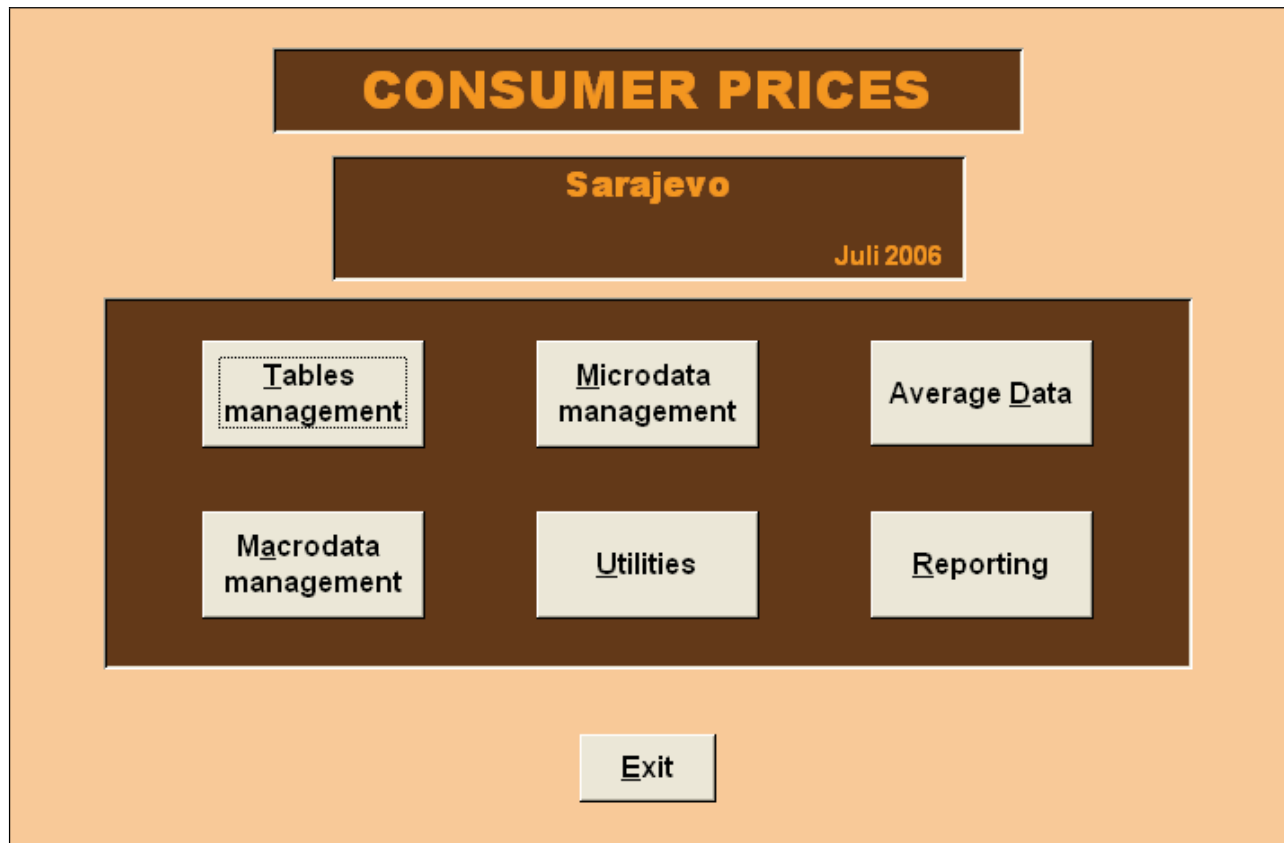
Once the link is created, linking step is no more necessary, unless the user moves cpi_be.mdb to another path.

2. Module 1 - General menu⁵

The main form of Module 1 (Figure 2.1) of the procedure developed for the CPI allows the user to manage the main functions available:

1. tables management, that introduces all the tools that allow the user to manage the main information that is essential to run data collection, data entry and average data calculation (basket of products, archives of variety and brands, etc.);
2. Microdata management, that opens the form from which it is possible to start the data entry or data edit;
3. Average data, that introduces the user to the sections that allow the calculation of the average prices and indices at level of representative positions, and in particular to the download of the representative position indices in order to calculate the aggregate ones;
4. Macrodata management, that allows the calculation of composite indices;
5. Utilities, that makes available some tools to manage both the data collection and the data entry;
6. Reporting, that allows the user to list the microdata.

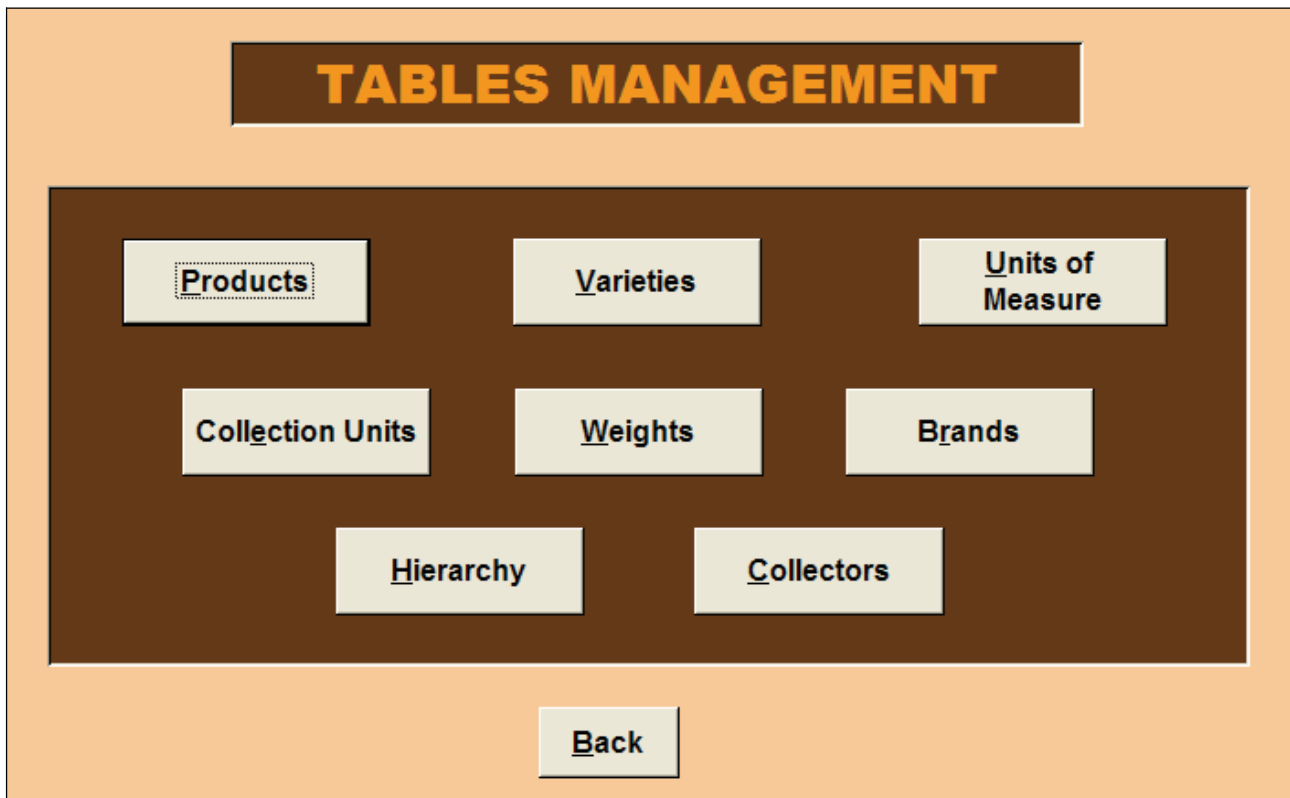
Figure 2.1



⁵ Stefania Occhiobello, ISTAT, Division for Price Statistics and Foreign Trade, Price Statistics Section

Clicking the Tables management button of the General Menu, the form in Figure 2.2 will appear. From this form the user can access and display or change the information concerning different set of information that are crucial for data collection and indices calculation (basket of products, varieties, units of measurement, collection units, brands and collectors). A complete description of Tables management is available in Chapter 3 of this volume.

Figure 2.2



Clicking the Microdata management button of the General Menu, the form in Figure 2.3 will appear. It allows the user to enter, edit and check microdata. A complete description of Microdata management is available in Chapter 4 of this volume.

Clicking the Average data button of the General Menu, the form in Figure 2.4 will appear. Using this form the user can calculate the geometrical mean of micro-indices, in order to obtain indices at product level. It is also possible to calculate the arithmetical mean of the quotations and indices based on arithmetical mean of the quotations in order to keep for a while a continuity with the retail prices index. In particular, clicking the Download button the user creates and downloads, in the directory in which the application currently works, a text file with the average quotations and the indices for the representative positions of the current month, that will be loaded in the Module 2, to calculate the aggregate indices at level of entity or country. A complete description of Average data is available in Chapter 5 of this volume.

Figure 2.3

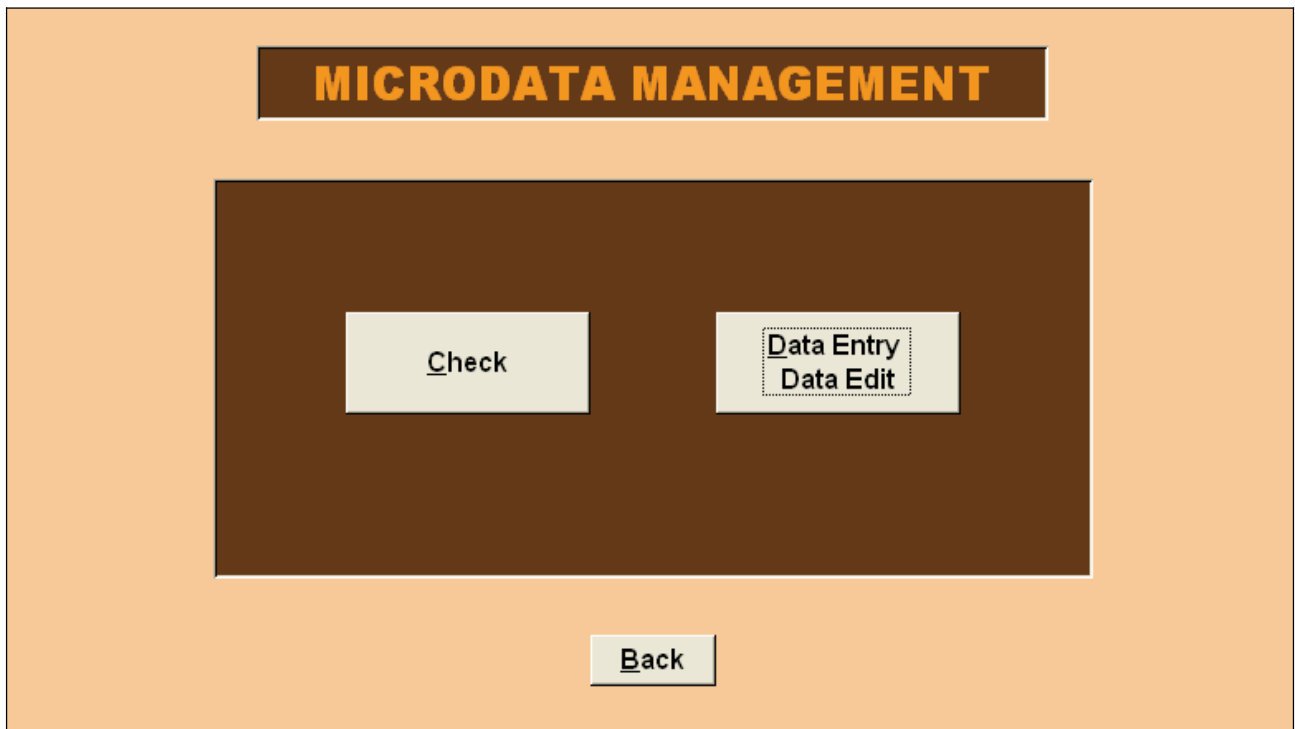
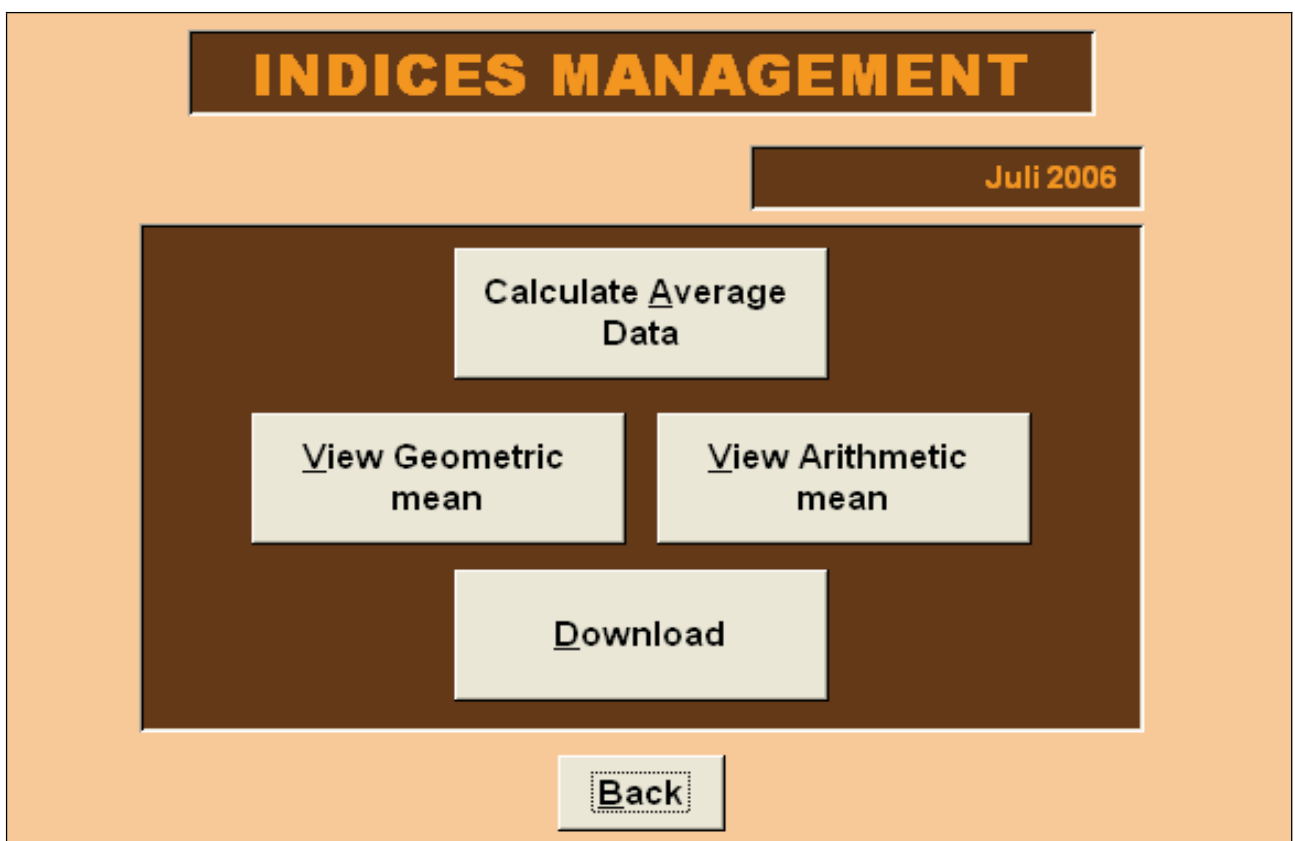


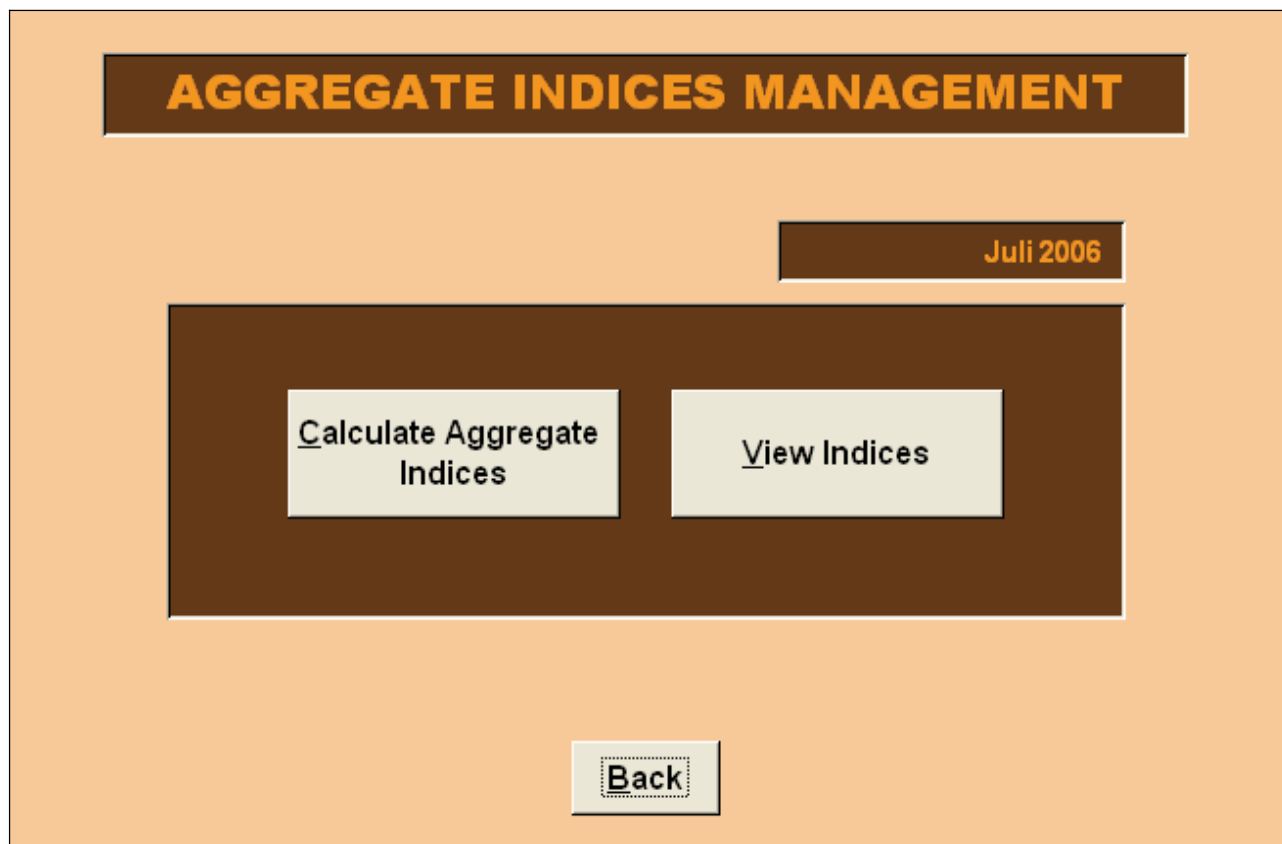
Figure 2.4



Clicking the Macrodata Management button the user will access another form (Figure 2.5) that will allow her/him to calculate the aggregate indices at town level either in base

December of the previous year or in reference base (2005=100). A complete description of Macrodata management is available in Chapter 6 of this volume.

Figure 2.5



Clicking the Utilities button of the General Menu, the form in Figure 2.6 will appear. It allows the user, in December, to create a new dataset for entering data in the following year, to manage series, store all the data that have been worked and the results of the calculation for the current month, to print the questionnaires (forms) to be used for the data collection in the field. The utility Collector tour management has not yet been implemented since it requires a well-defined organization of the work of collectors and, according to the Italian experience, the use of hand-held computers in order to carry out the data collection in the field. A complete description of Utilities is available in Chapter 7 of this volume.

Clicking the Reporting button the form 2.7 will appear, and the user can access monthly and bimonthly microdata. To view data the user can choose between two options: Display that will produce a report that cannot be adjusted but can be exported in rtf format (Microsoft Word), and Save on file that will allow the user to download the list of microdata in an Excel file. A complete description of Reporting is available in Chapter 8 of this volume.

Figure 2.6

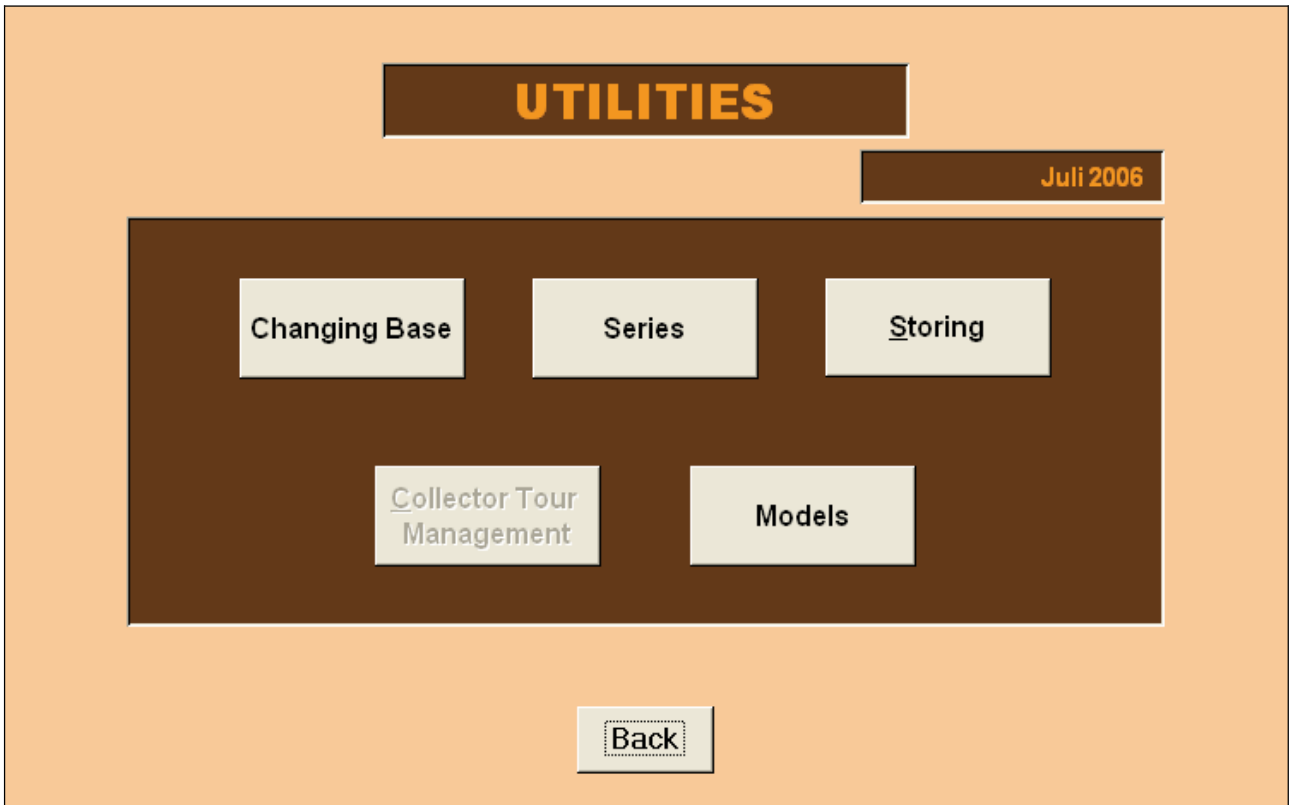


Figure 2.7



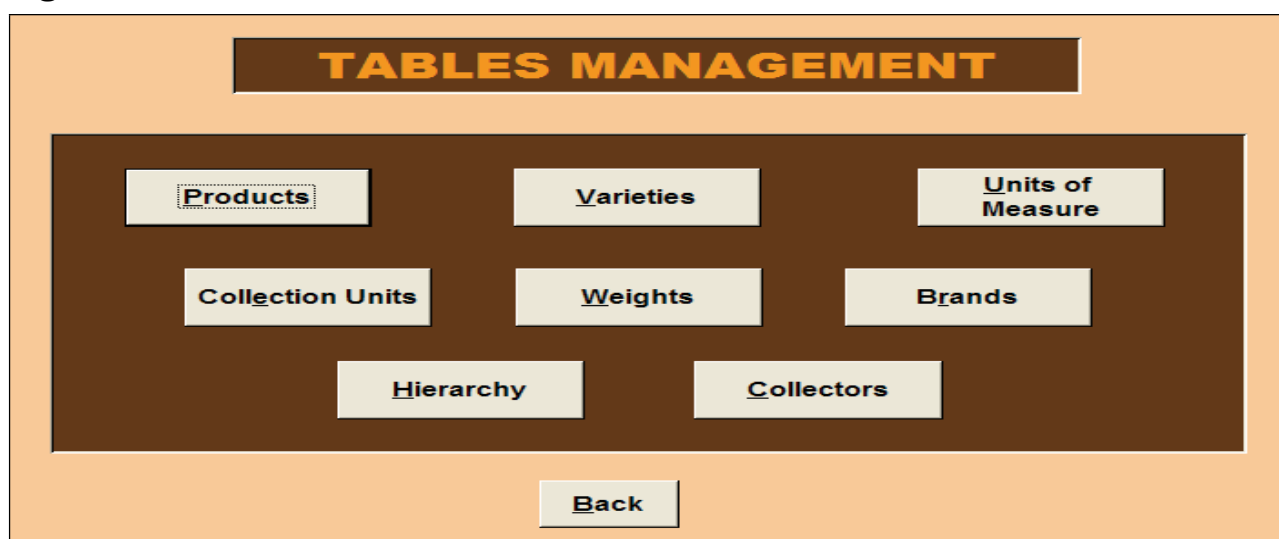
3. Module 1 - Tables management⁶

Clicking the Tables management button of the General Menu, the form in Figure 3.1 will appear. From this form the user can access (and in some cases change) all the basic information that allow to carry out the data entry and the calculation of consumer price indices at town level.

On the one hand, the information that allows to manage data collection and data entry concerns products, varieties, units of measure, collection units, brands and collectors.

On the other hand, the information that allows to calculate the consumer price indices at town level for different levels of aggregation concerns weights and hierarchy.

Figure 3.1



3.1 Products

Clicking on Products (Figure 3.1), the form in Figure 3.2 will appear:

Figure 3.2

The screenshot shows a form titled "PRODUCTS" in orange text on a dark brown background. The form contains the following fields and controls:

- Product Code: 01.01.01.01.01 (1)
- Product: Pirinač (2)
- Description: Pirinač, glazina (3)
- Max rate of change +/-: 10 % (4)
- Requested quantity: 1000 (6)
- Frequency: Monthly (5)
- Unit of measure: gr (7)

At the bottom, there are several buttons and controls:

- An icon button (8)
- An "Edit" button (9)
- A "Back" button (12)
- A "Find record" button (11) with navigation arrows (10) on either side.

⁶ Giuliano Gialli, ISTAT, Division for Price Statistics and Foreign Trade, Price Statistics Section

Description

- 1 COICOP code;
- 2 short denomination of the product;
- 3 more detailed description, useful for the collectors to identify exactly the elementary item for which the price is collected;
- 4 maximum rate of change: it indicates the range of tolerance of the difference in terms of percentage between the current month price entered and the price of the previous month. If the current price entered is out of this range, the procedure warns the user (see Chapter 4.) and asks for a note to justify the possible too large variation;
- 5 frequency, that indicates the frequency of price collection for the product selected;
- 6 requested quantity, that is the common quantity to which each single price collected is referred;
- 7 unit of measure, in which the requested quantity and the collected one are expressed.

Use

Clicking the button (8) the user can export the complete list of the products in the basket in Excel format. By default the Excel file will be saved in the same directory where the application CPI is located.

With the Edit (9) button a figure referred to the product selected will appear, that is very similar to the form in Figure 3.2; opening this figure it is only possible to change the maximum rate of change. For the time being the maximum rate of change is fixed at 10% for all the products, but really an analysis of the price variability should lead to adopt different ranges for each product.

Using respectively buttons (10) the user can scroll the list; (11) Find record, opens the Access Find message box, so the user can search for a specific product, inserting the code, or the name or the description.

Back (12) returns to the previous form (Figure 3.1).

3.2 Varieties

Clicking on Varieties (Figure 3.1), the form in Figure 3.3 will appear.

Figure 3.3

Variety code	Variety name
000001	duguljasto zrno - kesa
000002	duguljasto zrno- kesa I klasa
000003	okruglo zrno - kesa

Description

- 1 COICOP code of the product;
- 2 short denomination of the product;
- 3 list of all the varieties of the product. The information about variety is always associated to a product: this means that a product has to be selected in order to display a list of varieties.

Use

Clicking on New (4) the form in Figure 3.4 will appear: it allows to insert a new variety for the product selected and displayed in fields (1) and (2).

Figure 3.4

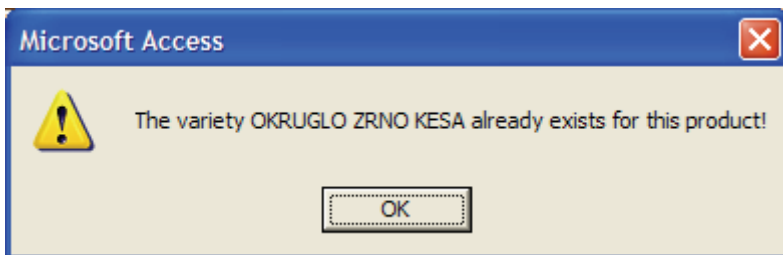
Variety Code	000002
Variety name	

The code of the new variety to be entered is automatically calculated and is not editable. The form presents an empty field in which the user has to enter the description of the new variety. If the user leaves this field empty and clicks the Ok button the following message box will appear:



The message above means that, before selecting Ok, the user has to insert the description of the new variety; otherwise, the user can exit the form (Figure 3.4), clicking on Cancel.

It is not possible to insert a variety with the same description of another variety. If the user inserts a variety that already exists, the procedure displays the following warning message:



and it will not allow to insert it. The user has to enter a different description for the new variety, or press the Cancel button.

Clicking on the Edit (5) button, the user can edit the name of a specific variety: to do this the user has to select in the list (3) the variety to be edited.

If the user clicks on Edit without selecting a variety, the following message box appears:



The user can also edit a variety by double-clicking on it in the list (3).

With button (6) the list can be scrolled.

The option Find record (7), in the form in Figure 3.3, opens the Access Find message box to search for a product: the user can go to a specific product, entering its code or name. To display a specific variety, a product has to be selected.

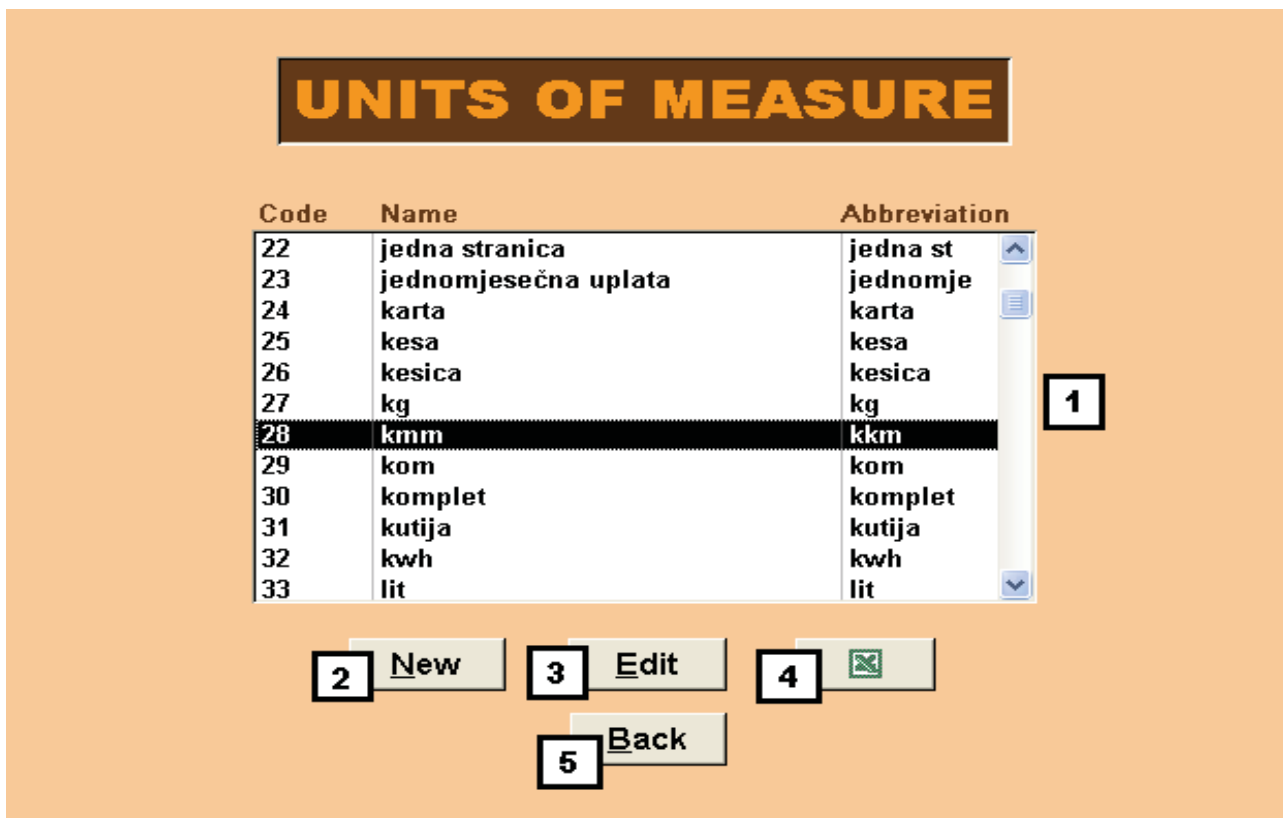
Clicking on button (8) the user can export the complete list of varieties in Excel format and the Excel file will be saved in the same directory where the application CPI is located.

Back (9) returns to Figure 3.2.

3.3 Units of measure

Clicking on Units of measure (Figure 3.1), the form in Figure 3.5 will appear:

Figure 3.5



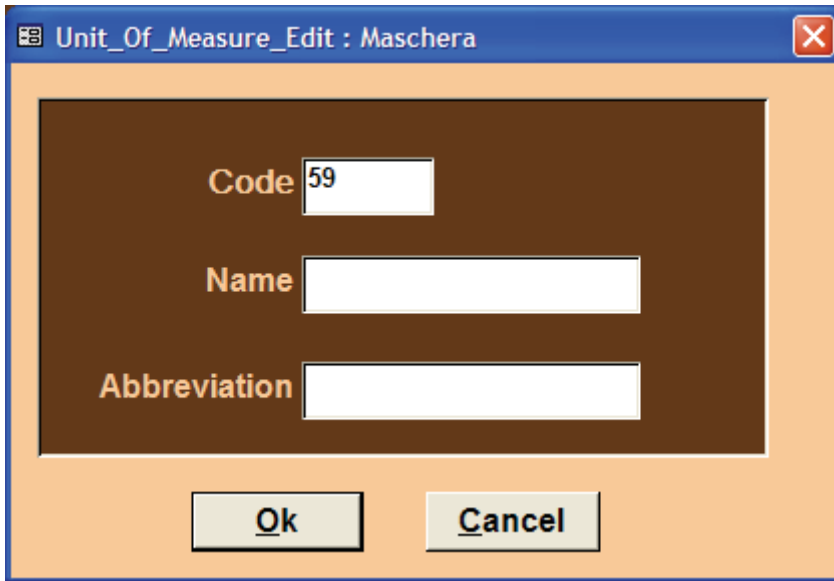
Description

1 in this list the user can view all the units of measure that have been entered;

Use

Clicking the New (2) button, the form in Figure 3.6 will appear, and the user can insert a new unit of measure.

Figure 3.6



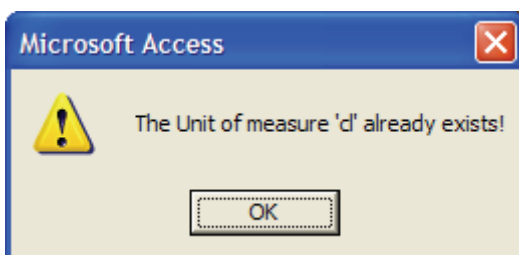
The screenshot shows a dialog box titled "Unit_Of_Measure_Edit : Maschera". It has a blue title bar with a close button. The main area is dark brown and contains three input fields: "Code" with the value "59", "Name" (empty), and "Abbreviation" (empty). At the bottom, there are two buttons: "Ok" and "Cancel".

The code of the new unit of measure to be entered is automatically calculated and is not editable. The figure makes available an empty field for the description of the new unit of measure. If the user leaves this field empty and clicks on the button Ok the following message box will appear:



The message above means that, before selecting Ok, the user has to insert the description of the new unit of measure; otherwise, the user can exit the form, clicking on Cancel.

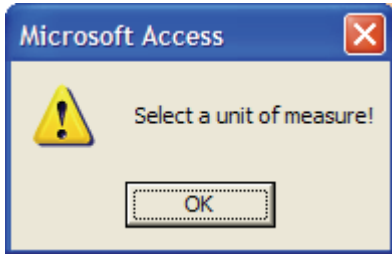
It is not possible to insert an unit of measure with the same description of another unit. If the user inserts an already existing unit of measure, the following warning message will appear:



and the procedure does not allow to insert it. The user has to enter a different description for the new unit of measure, or click on Cancel.

Clicking the Edit (3) button in Figure 3.5, the user can edit the description of a specific unit of measure, selecting it from the list (1).

If the user clicks on Edit without selecting an unit of measure, the following message appears:



The user can also edit a unit of measure by double-clicking on it in the list (1).

Clicking the button (4) the user can export the complete list of units of measure in Excel format and the Excel file will be saved in the same directory where the application CPI is located.

Back (5) returns to the mask in Figure 3.6.

3.4 Collection units

Clicking on Collection Units (CU, Figure 3.1), the form in Figure 3.7 will appear:

Figure 3.7

A screenshot of a web-based form titled 'COLLECTION UNITS'. The form has a dark red header with the title in yellow. Below the header are various input fields and buttons. Numbered callouts (1-23) point to specific elements: 1: Municipality dropdown (value: Prijedor); 2: Municipality text field (value: Prijedor); 3: Code text field (value: 000002); 4: Business register code text field (value: STR); 5: Name text field (value: Prodavnica "Elektromer"); 6: Address text field (value: Kralja Petra I Oslobodioca /); 7: ZIP Code text field (value: 79000); 8: Phone text field (value: 052-211-135); 9: Number of employees text field; 10: Zone dropdown (value: Not classified); 11: Type dropdown (value: chain stores); 12: Surface (sqm) text field; 13: Inserting Date (Month/Year) fields; 14: Last Variation Date (Month/Year) fields; 15: Deleting Date (Month/Year) fields; 16: Located in a Shopping Center checkbox; 17: New button; 18: Edit button; 19: Activate/Deactivate button; 20: Back button; 21: Back button; 22: Find record button; 23: Find record button.

Description

- 1 Town code and name;
- 2 municipality name;
- 3 code of the collection unit (CU);
- 4 business register code of the CU;
- 5 name of the CU;
- 6 address of the CU;
- 7 postal/ZIP code of the CU;
- 8 phone number;
- 9 number of the employees of the CU;
- 10 zone: this is a relevant information as it indicates if the CU is located in a peripheral or central zone;
- 11 type of CU; this information indicates the kind of trade distribution the CU belongs to (supermarket, hypermarket, discount etc.);
- 12 extending surface of the CU measured in squared meters;
- 13 date of the insertion of this CU in the application;
- 14 this date indicates when information concerning this CU has been modified in some parts;
- 15 this date indicates when this CU has been deactivated with button (20); if a CU has been deactivated, it will be not used in the data entry;
- 16 this flag indicates whether the CU is located in a shopping center or not.

Use

Clicking on button (17) the user can export the complete list of CUs in Excel format, in case he/she needs this format for elaborations. The Excel file will be saved in the same directory where the application CPI is located.

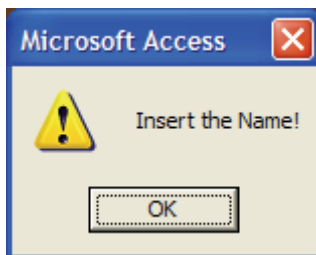
Clicking the New (18) button the user can insert a new CU; it will open the form in Figure 3.8, where the user can view the code (automatically calculated and not editable) of the new CU inserted, and empty fields in which he/she has to insert the data that identify the new CU.

Figure 3.8

The screenshot shows a form titled "COLLECTION UNITS" with the following fields and controls:

- 1**: Municipality dropdown (value: Prijedor)
- 2**: Municipality dropdown (value: Prijedor)
- 3**: Code text box (value: 000002)
- 4**: Business register code text box (value: STR)
- 5**: Name text box (value: Prodavnica "Elektromer")
- 6**: Address text box (value: Kralja Petra I Oslobodioca /)
- 7**: ZIP Code text box (value: 79000)
- 8**: Phone text box (value: 052-211-135)
- 9**: Number of employees text box
- 10**: Zone dropdown (value: Not classified)
- 11**: Type dropdown (value: chain stores)
- 12**: Surface (sqm) text box
- 13**: Inserting Date (Month Year)
- 14**: Last Variation Date (Month Year)
- 15**: Deleting Date (Month Year)
- 16**: Located in a Shopping Center checkbox
- 17**: New button
- 18**: Edit button
- 19**: Activate/Deactivate button
- 20**: Activate/Deactivate button
- 21**: Back button
- 22**: Navigation buttons (Home, Previous, Find record, Next, End)
- 23**: Find record button

If the user leaves this field empty, clicking on Ok the following message box will appear:



The compulsory data for a new CU to be inserted are name, municipality, zone and type.

Clicking on Ok, the new CU is inserted in the database, and the user can view it clicking on the button ► | that shows the last CU.

Clicking the Edit (19) button, the user can edit the data of a single CU (Figure 3.9). As before, the compulsory data are name, municipality, zone and type.

Clicking the Activate/Deactivate (20) button, the user can deactivate a single CU (for example if it was definitively closed) and it will be no longer considered by the application. The user can reactivate a deactivated CU clicking again the button (20).

With the buttons (22) the user can scroll the list, Find record (23) opens the Access Find message box to find a CU, so that the user can go to a specific CU.

Back (21) returns to the previous form (Figure 3.8).

Figure 3.9

Collection_Units_Edit : Maschera

Town 103 Sarajevo Municipality N.SARAJEVO

Code 000001 Business register code 4200504460022

Name AS

Address Z.OD BOSNE 46 ZIP Code 71000

Phone Number of employees 26

Zone Not classified Type Specialised Depa Surface (sqm) 250

Located in a Shopping Center

Ok Cancel

3.5 Weights

Clicking the Weights button (Figure 3.1), the form in Figure 3.10 will appear.

Figure 3.10

WEIGHTS

Weights

Weights for reduced price indices

Show Weights

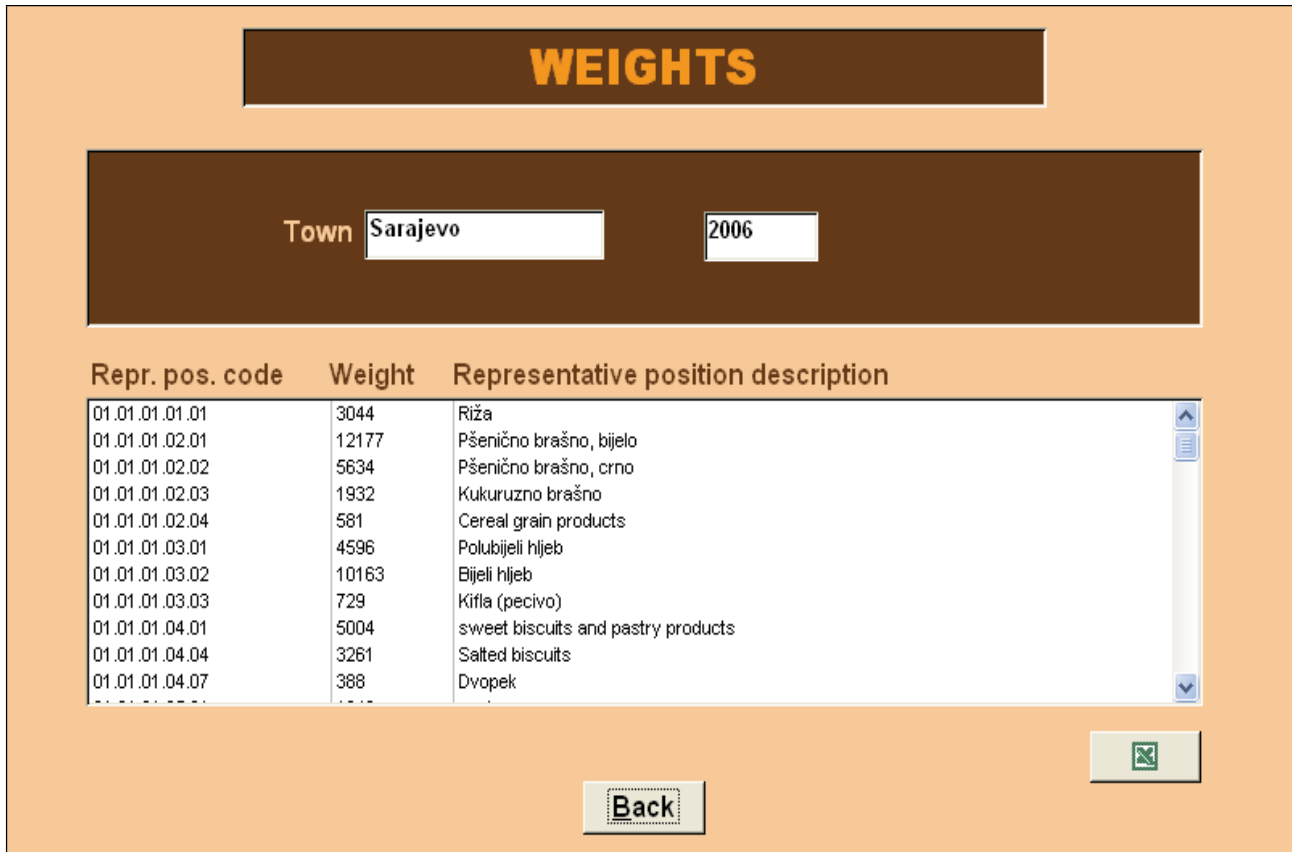
Back

Selecting the sort of weights the user wants to be displayed (in the box on the left) and then clicking on Show weights, the weights selected will be displayed (Figure 3.11).

The weights to calculate town aggregate indices (either taking into account or not the temporary reductions of prices) are based on the estimates of household consumption

expenditure (they are called the vertical ones). The minimum level of detail available for household consumption expenditure is at entity level; therefore the town weights have been calculated distributing the weights at entity level according to the number of products which are present in each town basket.

Figure 3.11



3.6 Brands

Clicking on Brands the form in Figure 3.12 will appear:

Figure 3.12



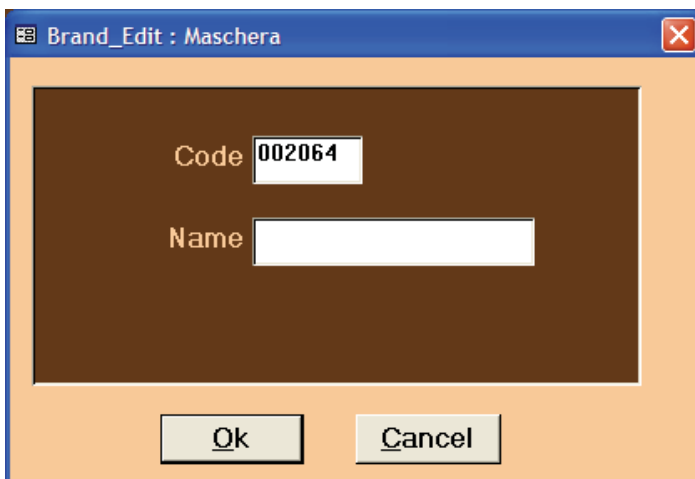
Description

1. in this list the user can see all the brands entered;

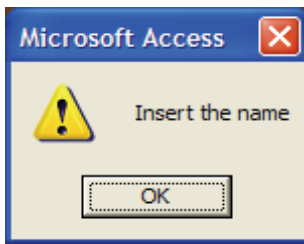
Use

Clicking on New (2) the user can insert a new brand, through the form in Figure 3.13, in which the user can view the code (automatically calculated and not editable) of the new brand inserted and an empty field in which he/she has to insert the name of the new brand.

Figure 3.13

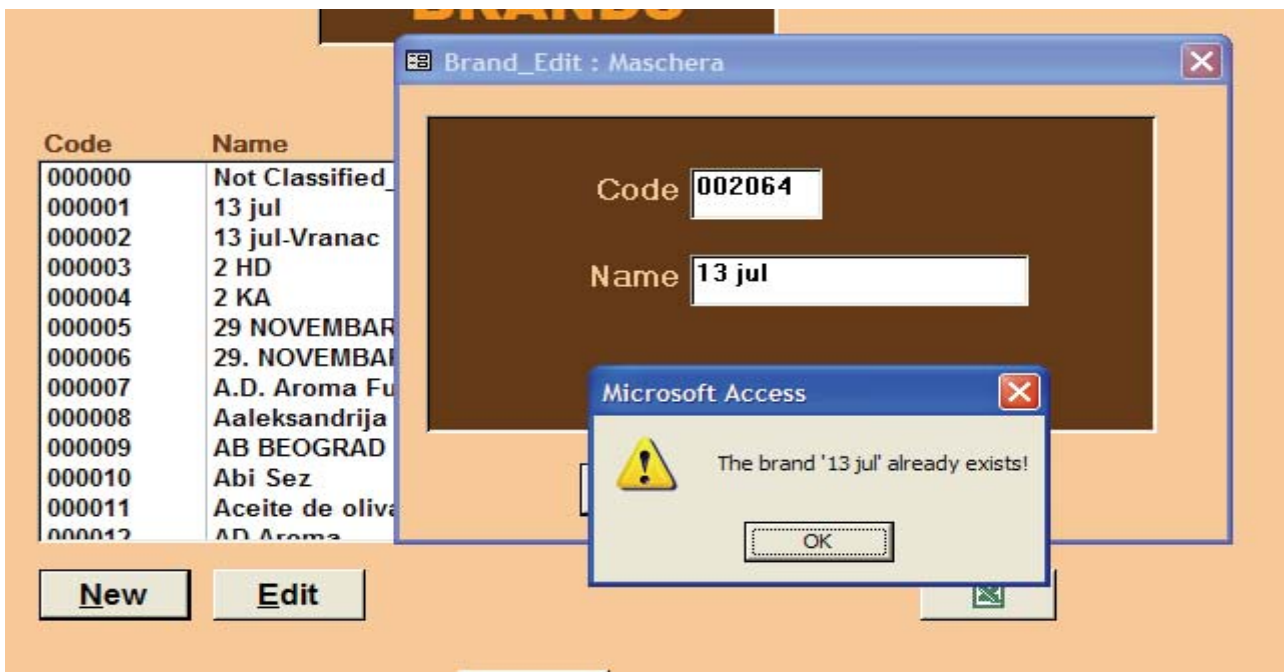


If the user leaves this field empty, clicking on Ok the following message box will appear:



It is not possible to insert a brand with the same name of another brand. If the user inserts an already existing brand, the procedure warns the user with the message in Figure 3.14:

Figure 3.14



and it will not allow to insert it; the user has to enter a different name for the new brand. Pressing the Cancel button (without insertion of a new brand) the user exits the mask in Figure 3.13.

Clicking on Edit (3) in the form in Figure 3.12, the user can edit the name of a specific brand: prior to this, he/she has to select in the list (1) the brand to be edited.

Clicking on Edit without selecting a brand, the following message box will appear:



The user can also edit a brand simply double-clicking on it in the list (1).

Clicking on the button (4) in the form in Figure 3.12, the user can export in Excel format the complete list of brands available, if he/she needs this format for elaborations. The Excel file will be saved in the same directory where the application CPI is located.

Back (5) returns to the previous form.

3.7 Hierarchy

Clicking the Hierarchy button (Figure 3.1) an Excel file will be produced (Figure 3.15), containing the hierarchical organization of divisions, groups, classes, voices of product and representative positions.

In the list displayed, the superior aggregate, to which the inferior one belongs, is repeated as many times as the inferior aggregates are.

Figure 3.15

Division Code	Division Descr	Group Code	Group Descr	Class Code	Class Descr	Voice Of Product Code	Voice Of Product Descr	Pos Rapp Code	Pos Rapp Descr
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.01	Bread and cereals	01.01.01.01	Rice	01.01.01.01.01	Riža
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.01	Bread and cereals	01.01.01.02	other cereals products	01.01.01.02.01	Pšenicno brašno, bij
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.01	Bread and cereals	01.01.01.02	other cereals products	01.01.01.02.02	Pšenicno brašno, cr
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.01	Bread and cereals	01.01.01.02	other cereals products	01.01.01.02.03	Kukuruzno brašno
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.01	Bread and cereals	01.01.01.02	other cereals products	01.01.01.02.04	Cereal grain products
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.01	Bread and cereals	01.01.01.03	Bread	01.01.01.03.01	Polubijeli hljeb
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.01	Bread and cereals	01.01.01.03	Bread	01.01.01.03.02	Bijeli hljeb
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.01	Bread and cereals	01.01.01.03	Bread	01.01.01.03.03	Kifla (pecivo)
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.01	Bread and cereals	01.01.01.04	Other bakery products	01.01.01.04.01	products
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.01	Bread and cereals	01.01.01.04	Other bakery products	01.01.01.04.04	Salted biscuits
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.01	Bread and cereals	01.01.01.04	Other bakery products	01.01.01.04.07	Dvopek
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.01	Bread and cereals	01.01.01.05	Pasta products	01.01.01.05.01	pasta
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.01	Bread and cereals	01.01.01.05	Pasta products	01.01.01.05.02	Tjestenina (makaroni
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.02	Meat	01.01.02.01	Beef and veal	01.01.02.01.01	Junece meso sa kos
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.02	Meat	01.01.02.01	Beef and veal	01.01.02.01.02	Junece meso od but
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.02	Meat	01.01.02.01	Beef and veal	01.01.02.01.03	Telece meso sa kost
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.02	Meat	01.01.02.01	Beef and veal	01.01.02.01.04	Telece meso od bute
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.02	Meat	01.01.02.02	Pork	01.01.02.02.01	Svinjsko meso sa ko
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.02	Meat	01.01.02.02	Pork	01.01.02.02.02	Svinjsko meso od bu
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.02	Meat	01.01.02.03	Lamb, mutton, goat	01.01.02.03.01	Jagnjece meso
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.02	Meat	01.01.02.04	Poultry	01.01.02.04.01	Svježa piletina
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.02	Meat	01.01.02.04	Poultry	01.01.02.04.02	Pileci fileti
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.02	Meat	01.01.02.05	offal	01.01.02.05.03	Junece džigerica (jet
01	FOOD AND NON-ALCOHOLIC BEVERAGES	01.01	Food	01.01.02	Meat	01.01.02.06	meat preparations	01.01.02.06.04	Suha ovcetina, stelja

3.8 Collectors

Clicking on Collectors, the form in Figure 3.16 will appear:

Figure 3.16

The screenshot shows a web form titled "COLLECTORS" with a dark brown header. The form contains several input fields: "Code" (value: 101), "Surname" (value: Srđan), "Name" (value: Radičić), "Year of Birth", and "Qualification". Below the form are several buttons: "New", "Edit", a button with a magnifying glass icon, "Find record", and "Back". There are also navigation arrows. Numbered callouts (1-11) point to various elements: 1 points to the Code field, 2 to the Surname field, 3 to the Name field, 4 to the Year of Birth field, 5 to the Qualification field, 6 to the New button, 7 to the Edit button, 8 to the magnifying glass icon, 9 to the navigation arrows, 10 to the Find record button, and 11 to the Back button.

Description

- 1 code of the collector;
- 2 surname of the collector;
- 3 name of the collector;
- 4 year of birth of the collector;
- 5 collector's qualification;

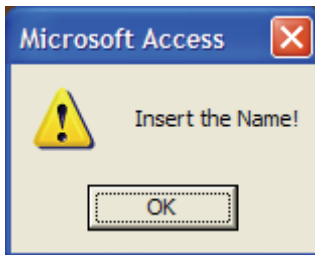
Use

Clicking the New (6) button the user can insert a new collector; the form in Figure 3.17 will appear:

Figure 3.17

The screenshot shows a window titled "Collector_Edit : Maschera" with a dark brown header. The form contains several input fields: "Id" (value: 00105), "Surname", "Name", "Year of Birth", and "Qualification". Below the form are two buttons: "Ok" and "Cancel".

In the form in Figure 3.17 the user can view the code (automatically calculated and not editable) of the new collector inserted, and empty fields in which he/she has to insert the data that identify the new collector. If the user leaves this field empty, clicking on Ok the following message box will appear:



The user has to enter all the requested data. Clicking on OK, the new collector is inserted in the database, and the user can view it clicking on the button ► | that shows the last collector inserted.

Clicking the Edit (7) button the user can edit the data of a single collector. As before, all the data are compulsory.

Clicking on button (8) the user can export the complete list of collectors in Excel format, if he/she needs this format for elaborations. The Excel file will be saved in the same directory where the application CPI is located.

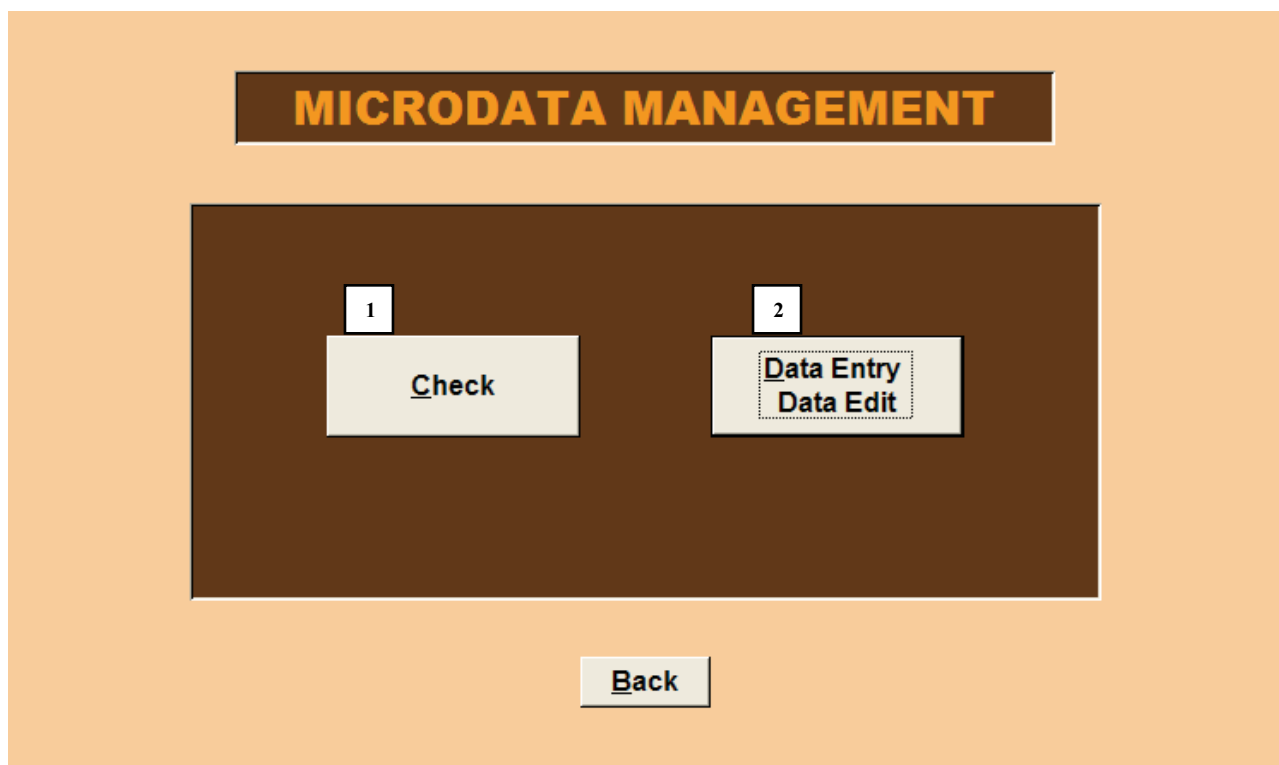
With the buttons (9) the user can scroll the list, Find record (10) opens the Access Find message box to find a specific collector.

Back (11) returns to the previous form.

4. Module 1 - Microdata Management

Clicking the Microdata management button of the General Menu (Chapter 2, Figure 2.1), the form in Figure 4.1 will appear. It allows the user to enter (2), check (1) and adjust (2) micro data.

Figure 4.1



4.1 Data Entry/Data Edit⁷

Clicking the button Data Entry/Data Edit the form in Figure 4.2 will appear. This form allows the user to manage data entry or data edit. The difference between the two functions is the following: data entry is the function used to enter the prices observed in the month for which the collected data are being processed, whereas data edit is the function used to adjust the data of the current month for those collection units and/or products for which prices have already been entered.

Paragraphs 4.1.1 and 4.1.2 will describe the forms and the options of the data entry functions. The forms and the options of data edit have not been illustrated, as they are described in these paragraphs. Therefore, the user who wants to manage appropriately the data edit forms should consult paragraphs 4.1.1 and 4.1.2.

⁷ Federico Polidoro, ISTAT, Division for Price Statistics and Foreign Trade, Price Statistics Section

Figure 4.2

Description

- 1 year and month for which data are processed;
- 2 code and alphabetical description of the town for which data are entered;
- 3 box for the selection of the collection frequency (monthly or bimonthly);
- 4 selection of the collection unit (by the combo box beside);
- 5 no selection of the collection unit (data entry or data edit will start from the first collection unit available)
- 6 product selection (by the combo box beside);
- 7 no product selection (data entry or data edit will start from the first product available);
- 8 data entry;
- 9 data edit.

Use

From the form in Figure 4.2 it is possible to start the data entry (8) or data edit (9) for monthly or bimonthly products (choosing the collection frequency in box 3). Selecting 8, the user will enter the data for the current month. Selecting 9, the user will adjust data already entered for the month in question in case some mistakes have been detected.

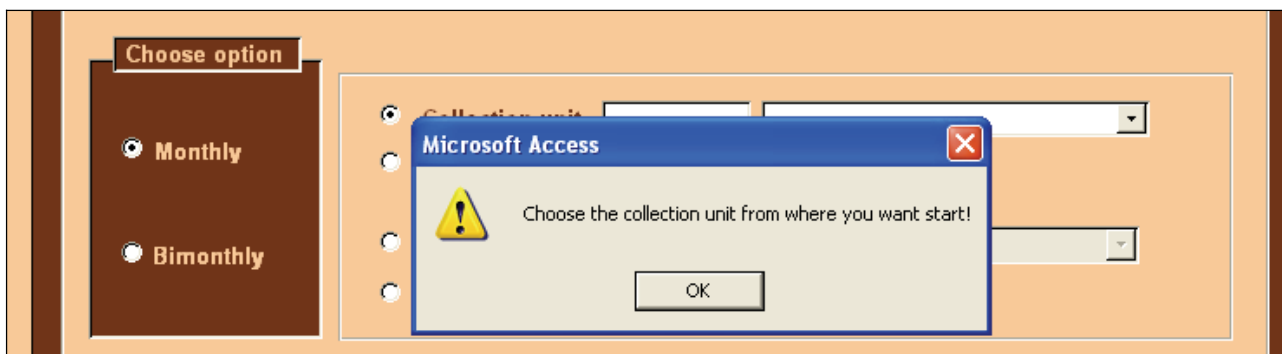
Data entry or data edit can be managed by collection unit (4/5) or by product (6/7).

If the user wants to open data entry/edit forms:

- selecting 4 and the collection unit in the corresponding combo box, all the data on the collection unit selected will be displayed, starting from the first product (products are ordered by COICOP code) for which prices are observed;
- selecting 5 the data on all the collection units (starting from the first in order of collection unit code) for which data entry for the month in question has not been carried out will be displayed. For each collection unit the form to enter the data will be shown in order of COICOP code of the product.

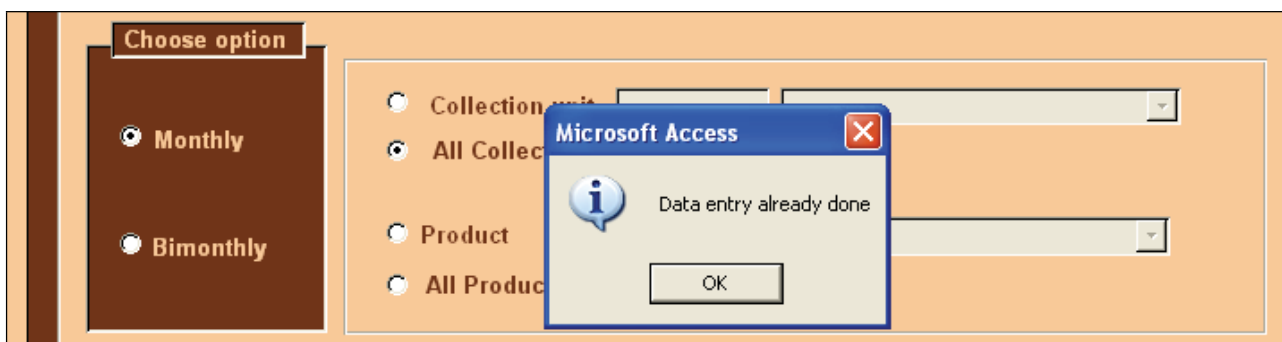
The options activated are controlled by the procedure, that warns the user of possible mistakes. For example, the box message in Figure 4.3 warns that the user has selected 4 without choosing the collection unit from which to start data entry/edit.

Figure 4.3



Another example of check carried out by the procedure is shown in Figure 4.4: a message box warns the user that the data entry for the month selected is completed. In this case the user can only activate data edit functions (9).

Figure 4.4



Vice versa, if the user has selected the data edit button for a month for which the data entry has not been carried out yet, the message box in Figure 4.5 will be displayed. In this case the user has to enter the data activating data entry functions (8).

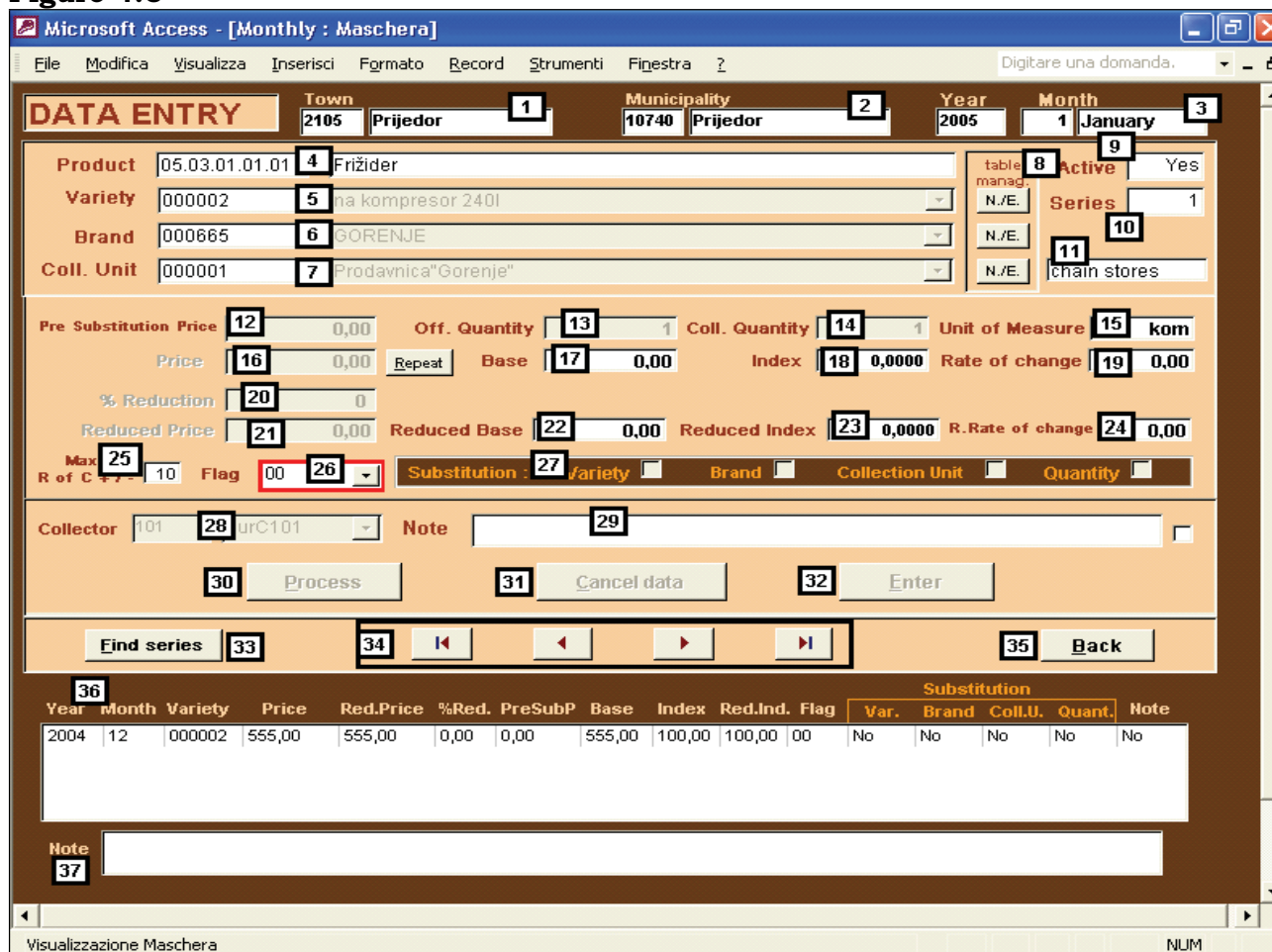
Figure 4.5



4.2 Monthly data entry⁸

After the selection of the frequency of data collection (monthly, Figure 4.2) and the access by collection unit or by product, the user can select 8 (data entry) in the form of Microdata management and the form in Figure 4.6 will appear.

Figure 4.6



Description

- 1 code and alphabetical description of the town for which data are entered;
- 2 code and alphabetical description of the municipality for which data are entered;
- 3 current year and month for which data are being processed;

⁸ Federico Polidoro, ISTAT, Division for Price Statistics and Foreign Trade, Price Statistics Section

- 4 COICOP code and description of the product for which the prices observed are entered by the user;
- 5 code and description of the variety that identifies the elementary item for which the prices observed are entered by the user; each product has its own varieties;
- 6 code and description of the brand that identifies the elementary item for which the prices observed are entered by the user;
- 7 code and name of the collection unit in which the prices are observed;
- 8 links to the forms that allow the user to insert a new (N./) variety, brand or collection unit or to edit (/E.) one of them. These links are very useful when it is necessary to carry out a substitution and the user has forgotten to insert previously the new variety, brand or collection unit;
- 9 flag concerning the series:
 - **Yes:** the series is used in the calculation of the index of the product;
 - **NoDel:** the series is not used in the calculation of the index of product because it has been deleted;
 - **NoNew:** the series is not used in the calculation of the index of product because it is a new series recently inserted.

Generally speaking, the methodological design of the consumer price survey is based on the sample stability in terms of number of elementary observations during the year: when the base prices (December) of the calculation indices are collected, the collection plan in each town is defined and the number of elementary items (that are quotes in terms of prices observed and series in terms of microindices) is fixed. Therefore series should not be deleted or added. Still, in the phase of revision of the survey, during the first two quarters of 2005, it was considered useful to make available a function to delete series inserted by mistake or insert series that were not inserted by mistake. The possibility of inserting series can be useful also for the future: it allows to enhance local collection plan, avoiding that the new series participate in the current calculation of the indices (see § 7.2);

- 10 series number; each product in each town has its own series, so that the code of the product together with the series number identifies univocally the elementary item;
- 11 description of the typology of collection unit (typologies with their respective codes are described in Figure 4.7);

Figure 4.7

Collection unit typology		
Code	Typology	Description
00	Not classified	
01	No specialised Department Store	No food, surface more than 400 squared metres, 5 sectors for different kinds of product of large consumption
02	Specialised Department Store	No food, surface more than 400 squared metres, one kind of product
03	Hypermarket	food (supermarket characteristics) and no food (department store characteristics), surface more than 2500 squared metres
04	Hard discount	No brand products, medium surface
05	chain stores	At least 6 outlets
06	Supermarket	food and grocery, surface more than 250 squared metres
07	Micromarket	food, surface less than 250 squared metres
08	traditional outlet	
09	open market	
10	consumer cooperative	
11	Other Units	

- 12 price of the previous month for the new elementary item that is replacing the old one;
- 13 official quantity, that is the common quantity, predefined for each product, to which the price observed is reported through the collected quantity in order to calculate the average price of products;
- 14 collected quantity, that is the quantity the observed price is referred to;
- 15 abbreviation of the unit of measure;
- 16 observed price in the current month for which data are being processed;
- 17 calculation base of the series;
- 18 index in the current month (for each elementary item selected in the local collection plan, a microindex is calculated as the ratio between the price of the current month and the base price, i.e. the price in December of the previous year);
- 19 rate of change of the index compared to the previous month;
- 20 percentage of price reduction;
- 21 reduced price in the current month;
- 22 reduced price base;
- 23 reduced price index in the current month;
- 24 rate of change of the reduced price index with respect to the previous month;
- 25 maximum rate of change: it indicates the range of tolerance of the percentage difference between the current month price entered and the price of the previous

month. If this difference is out of this range, the procedure warns the user and asks for a note to explain the possible too large variation;

26 flag (see table in Figure 4.8) concerning the price observed;

Figure 4.8

Flags	Description	acronym
00	No flag	nf
11	No collected data: collector has not carried out the collection	ncdc
12	No collected data: temporary closing	ncdtc
13	No collected data: definitive closing	ncddc
14	No collected data: item temporarily not available	ncdita
15	No collected data: item definitively not available	ncdida
16	No collected data: item under observation by municipality	ncdium
17	No collected data: item under observation by Statistical Agency	ncdiuS
21	substitution: observed price for previous month	soppm
22	substitution: estimated price for previous month	seppm
23	substitution: fictitious (updating information)	sfu
40	reduced price	rp
41	price, reduced price and percentage of discount collected	prppd
42	price and reduced price collected	prp
43	price and percentage of discount collected	ppd
44	reduced price and percentage of discount collected	rppd

27 check boxes to identify the type of substitution;

28 code and name of the collector;

29 explanatory note; it is required if the rate of change of the index in the month in question is out of a predefined interval (25);

30 data Process: it produces the calculation (micro index, rate of change, etc.) on the basis of the data entered;

31 data Cancel: it allows the user to cancel the data entered before storing them;

32 data Enter: it is the button to store the data entered. After the storage of data and before the calculation of average data and the download of the elementary indices, the user can adjust the micro data using the data edit functions;

33 Find series, that allows the user to search for a specific series;

34 Record selector: the elementary items are run by collection unit and product or by product and collection unit, depending on the access mode selected;

35 Back, to go back to the previous mask;

36 time series of all the information concerning the elementary item selected;

37 note concerning a possible too high rate of change registered in the previous months. In this window the note referred to the month selected in 36 will be displayed (if in the column Note the user finds Yes a note was registered for that month; if he/she finds No, no justification was required by the procedure);

Use

The **Data Entry** function will be activated putting one of the values in the list box (Figure 4.8) of the Flag (26), according to the user's needs. This list allows three main types of choice (flag=00; flag= 11,12,13,14,15,16,17; flag=21,22,23):

FLAG = 00

Flag 00 (Figure 4.9) is the value that will be most used: it means that the price has been observed (not estimated) and that the collector has not carried out a substitution. Flag=00 can be activated also pressing the Return key in the keyboard.

Figure 4.9

Pre Substitution Price	0,00	Off. Quantity	1	Coll. Quantity	1	Unit of Measure	m3	
Price	0,00	Repeat	Base	0,00	Index	0,0000	Rate of change	0,00
% Reduction	0							
Reduced Price	0,00	Reduced Base	0,00	Reduced Index	0,0000	R. Rate of change	0,00	
Max R of C +/-	10	Flag	00	Substitution: Variety	Brand	Collection Unit	Quantity	
Collector	101	SUR	00	no flag	nf			
			11	no collected data: collector has not carried out the collection	ncdc			
			12	no collected data: temporary closing	ncdtc			
			13	no collected data: definitive closing	ncddc			
			14	no collected data: item temporarily not available	ncdita			
			15	no collected data: item definitively not available	ncdida			
			16	no collected data: item under observation by municipality	ncdium			
			17	no collected data: item under observation by Statistical Agency	ncdius			
			21	substitution: observed price for previous month	soppm			
			22	substitution: estimated price for previous month	seppm			
			23	substitution: fictitious (updating information)	sfu			

If flag=00, cells Price (16), Reduced Price (21) and Percentage of Reduction (20) will be enabled (Figure 4.10).

Figure 4.10

Pre Substitution Price	0,00	Off. Quantity	1	Coll. Quantity	1	Unit of Measure	m3	
Price	0,00	Repeat	Base	0,00	Index	0,0000	Rate of change	0,00
% Reduction	0							
Reduced Price	0,00	Reduced Base	0,00	Reduced Index	0,0000	R. Rate of change	0,00	
Max R of C +/-	10	Flag	00	Substitution: Variety	Brand	Collection Unit	Quantity	

Five cases can occur:

a. Only purchase price entry

When the collector has observed only the purchase price for the current month:

- the user has to enter the purchase price in the cell Price and then click Process (30) or press the Return key.
- If the user selects Process without inserting any price, the procedure warns him/her as shown in Figure 4.11.

Figure 4.11

After clicking Process, micro index (18) and rate of change (19) with respect to the previous month are calculated adopting the following formula:

$$\checkmark \text{Icm} = \text{round} ((\text{Pcm} / \text{Bcm} * 100);4) \quad [1]$$

$$\checkmark \text{Rc}_{t-1} = \text{round} ((\text{Icm}/\text{Ipm}) * 100 - 100);2) \quad [2]$$

where

Pcm = current month price

Bcm = current month base price

Icm = current month index

Ipm = previous month index

Rc_{t-1} = rate of change with respect to the previous month;

- a control function is activated: if Rc_{t-1} is out of a predefined interval (25) an explanatory note (29) is required (Figure 4.12).

Figure 4.12

The results of the data process are shown in the cells of the form shown in Figure 4.13.

Figure 4.13

- the user can select Ok or press the Return key;
- if the data entered present mistakes, or if for any reason the user wants to cancel them, he/she can click Cancel data (31) and restart the data entry;
- if the data entered are valid, the user can store them in the data base clicking Enter (32) or pressing the Return key;

As soon as the data entry is finalised, the functions Process, Cancel data and Enter are disabled and data entry for next item starts.

b. Purchase price and reduced price entry

When the collector has observed the purchase price and the reduced price for the current month:

- the user has to enter the purchase price in the cell Price;
- then he/she has to enter the reduced price in the cell Reduced Price (Figure 4.14).

Figure 4.14

Pre Substitution Price	<input type="text" value="0,00"/>	Off. Quantity	<input type="text" value="1"/>	Coll. Quantity	<input type="text" value="1"/>	Unit of Measure	<input type="text" value="m3"/>	
Price	<input type="text" value="35,00"/>	<input type="button" value="Repeat"/>	Base	<input type="text" value="0,00"/>	Index	<input type="text" value="0,0000"/>	Rate of change	<input type="text" value="0,00"/>
% Reduction	<input type="text" value="0"/>							
Reduced Price	<input type="text" value="31,50"/>	Reduced Base	<input type="text" value="0,00"/>	Reduced Index	<input type="text" value="0,0000"/>	R.Rate of change	<input type="text" value="0,00"/>	
Max R of C + / -	<input type="text" value="10"/>	Flag	<input type="text" value="00"/>	Substitution: Variety <input type="checkbox"/> Brand <input type="checkbox"/> Collection Unit <input type="checkbox"/> Quantity <input type="checkbox"/>				

- then the user can click Process (30);
- if the user selects Process without inserting any price, the procedure warns him/her as shown in Figure 4.11.

After clicking Process, for both purchase and reduced prices, micro index (18) and rate of change (19) with respect to the previous month are calculated adopting the formulae [1] and [2];

- the percentage of reduction is then calculated on the basis of the reduced price entered;
- for the purchase price index a control function is activated: if $R_{C_{t-1}}$ is out of a predefined interval (25) an explanatory note (29) is required (Figure 4.12).

The results of the data processing are shown in the cells of the mask and the Flag is updated with value 42 (Figure 4.15);

Figure 4.15

Pre Substitution Price	<input type="text" value="0,00"/>	Off. Quantity	<input type="text" value="1"/>	Coll. Quantity	<input type="text" value="1"/>	Unit of Measure	<input type="text" value="m3"/>	
Price	<input type="text" value="35,00"/>	<input type="button" value="Repeat"/>	Base	<input type="text" value="35,00"/>	Index	<input type="text" value="100,000"/>	Rate of change	<input type="text" value="0,00"/>
% Reduction	<input type="text" value="10"/>							
Reduced Price	<input type="text" value="31,50"/>	Reduced Base	<input type="text" value="35,00"/>	Reduced Index	<input type="text" value="90,000"/>	R.Rate of change	<input type="text" value="-10,00"/>	
Max R of C + / -	<input type="text" value="10"/>	Flag	<input type="text" value="42"/>	Substitution : <input type="checkbox"/> Variety <input type="checkbox"/> Brand <input type="checkbox"/> Collection Unit <input type="checkbox"/> Quantity <input type="checkbox"/>				

- if the data entered present mistakes or if for any reason the user wants to cancel them, he/she can click Cancel data (31) and restart the data entry;
- if the data entered are valid, the user can store them in the data base clicking Enter (32);

As soon as the data entry is finalised, the functions Process, Cancel data and Enter are disabled and data entry for next item starts.

c. Purchase price and percentage of reduction entry

When the collector has observed the purchase price and the percentage of reduction for the current month:

- the user has to enter purchase price in the cell Price;
- then he/she has to enter the percentage of reduction in the cell Reduced Price (Figure 4.16);

Figure 4.16

Pre Substitution Price	<input type="text" value="0,00"/>	Off. Quantity	<input type="text" value="1"/>	Coll. Quantity	<input type="text" value="1"/>	Unit of Measure	<input type="text" value="m3"/>	
Price	<input type="text" value="35,00"/>	<input type="button" value="Repeat"/>	Base	<input type="text" value="0,00"/>	Index	<input type="text" value="0,0000"/>	Rate of change	<input type="text" value="0,00"/>
% Reduction	<input type="text" value="10"/>							
Reduced Price	<input type="text" value="0,00"/>	Reduced Base	<input type="text" value="0,00"/>	Reduced Index	<input type="text" value="0,0000"/>	R.Rate of change	<input type="text" value="0,00"/>	
Max R of C + / -	<input type="text" value="10"/>	Flag	<input type="text" value="00"/>	Substitution : <input type="checkbox"/> Variety <input type="checkbox"/> Brand <input type="checkbox"/> Collection Unit <input type="checkbox"/> Quantity <input type="checkbox"/>				

- then the user can click Process (30);
- if the user selects Process without inserting any price, the procedure warns him/her as shown in Figure 4.11;
- the reduced price is calculated.

After clicking Process, for both purchase and reduced prices micro index (18) and rate of change (19) with respect to the previous month are calculated adopting the formulae [1] and [2];

- the reduced price is then calculated on the basis of the percentage of reduction entered (Figure 4.17);

- for the purchase price index a control function is activated: if $R_{C_{t-1}}$ is out of a predefined interval (25) an explanatory note (29) is required (Figure 4.12).

The results of the data processing are shown in the cells of the mask and the Flag is updated with value 43 (Figure 4.17);

Figure 4.17

- If the data entered present mistakes, or if for any reason the user wants to cancel them, he/she can click Cancel data (31) and restart the data entry;
- If the data entered are valid, the user can store them clicking Enter (32);

As soon as the data entry is finalised, the functions Process, Cancel data and Enter are disabled and data entry for next item starts.

d. Purchase price, reduced price and percentage of reduction entry

When the collector has observed the purchase price, the reduced price and the percentage of reduction for the current month:

- the user has to enter purchase price in the cell Price;
- then he/she has to enter the reduced price and the percentage of reduction in the cell Reduced Price and Percentage of discount respectively (Figure 4.18);

Figure 4.18

- then the user can click Process (30);
- a consistency check between the purchase price, the reduced price and the percentage of reduction entered is activated, warning the user for possible mistakes (Figure 4.19); the procedure tolerates a difference up to +/- 2% between the percentage of reduction entered and the one calculated on the basis of the purchase and reduced price entered (Figure 4.20).

Figure 4.19

Pre Substitution Price: 0,00 Off. Quantity: 1000 Coll. Quantity: 1000 Unit of Measure: gr
 Price: 8,20 Repeat Base: Index: 0,0000 Rate of change: 0,00
 % Reduction: 12
 Reduced Price: 7,00 Reduced Base: Index: 0,0000 R. Rate of change: 0,00
 Max R of C +/-: 10 Flag: 00 Substitution: Collection Unit Quantity

Microsoft Access
 Data error
 OK

Figure 4.20

Pre Substitution Price: 0,00 Off. Quantity: 1000 Coll. Quantity: 1000 Unit of Measure: gr
 Price: 8,20 Repeat Base: 8,20 Index: 100,000 Rate of change: 0,00
 % Reduction: 12
 Reduced Price: 7,21 Reduced Base: Index: 87,9268 R. Rate of change: -12,07
 Max R of C +/-: 10 Flag: 41 Substitution: Collection Unit Quantity
 Collector: 101 surC101 Note

Microsoft Access
 Elaboration successful
 OK

- for both purchase and reduced prices, micro index (18) and rate of change (19) with respect to the previous month are calculated adopting the formulae [1] and [2];
- the percentage of reduction is then recalculated on the basis of reduced price entered;

Figure 4.21

Pre Substitution Price: 0,00 Off. Quantity: 1000 Coll. Quantity: 1000 Unit of Measure: gr
 Price: 8,20 Repeat Base: 8,20 Index: 100,000 Rate of change: 0,00
 % Reduction: 12
 Reduced Price: 7,20 Reduced Base: 8,20 Reduced Index: 87,8049 R. Rate of change: -12,20
 Max R of C +/-: 10 Flag: 41 Substitution: Variety Brand Collection Unit Quantity

- for the purchase price index a control function is activated: if $R_{C_{t-1}}$ is out of a predefined interval (25) an explanatory note (29) is required (Figure 4.12).

The results of the data process are shown in the cells of the mask, and the Flag is updated with value 41 (Figure 4.21);

- If the data entered present mistakes, or if for any reason the user wants to cancel them, he/she can click Cancel data (31) and restart the data entry;
- If the data entered are valid, the user can store them clicking Enter (32);

As soon as the data entry is finalised, the functions Process, Cancel data and Enter are disabled and data entry for next item starts.

e. Reduced price and percentage of reduction entry

When the collector has observed the reduced price and the percentage of reduction for the current month:

- the user has to enter the percentage of reduction;
- then he/she has to enter the reduced price in the cell Reduced Price (Figure 4.22);

Figure 4.22

Pre Substitution Price	0,00	Off. Quantity	1000	Coll. Quantity	1000	Unit of Measure	gr	
Price	0,00	Repeat	Base	0,00	Index	0,0000	Rate of change	0,00
% Reduction	15							
Reduced Price	6,90	Reduced Base	0,00	Reduced Index	0,0000	R.Rate of change	0,00	
Max R of C +/-	10	Flag	00	Substitution : Variety <input type="checkbox"/> Brand <input type="checkbox"/> Collection Unit <input type="checkbox"/> Quantity <input type="checkbox"/>				

- then the user can click Process (30);
- the purchase prices is calculated;
- for both purchase and reduced prices, micro index (18) and rate of change (19) with respect to the previous month are calculated adopting the formulae [1] and [2];
- for the purchase price index a control function is activated: if $R_{C_{t-1}}$ is out of a predefined interval (25) an explanatory note (29) is required (Figure 4.12).

The results of the data processing are shown in the cells of the mask and the Flag is updated with value 44 (Figure 4.23)

Figure 4.23

Pre Substitution Price	0,00	Off. Quantity	1000	Coll. Quantity	1000	Unit of Measure	gr	
Price	8,12	Repeat	Base	8,20	Index	98,9957	Rate of change	-1,00
% Reduction	15							
Reduced Price	6,90	Reduced Base	8,20	Reduced Index	84,1463	R.Rate of change	-15,85	
Max R of C +/-	10	Flag	44	Substitution : Variety <input type="checkbox"/> Brand <input type="checkbox"/> Collection Unit <input type="checkbox"/> Quantity <input type="checkbox"/>				

- if the data entered present mistakes or if for any reason the user wants to cancel them, he/she can click Cancel data (31) and restart the data entry;
- if the data entered are valid, the user can store them clicking Enter (32);

As soon as the data entry is finalised, the functions Process, Cancel data and Enter are disabled and data entry for next item starts.

FLAG = 11, 12, 13, 14, 15, 16, 17,18

Flags from 11 to 18 are all referred to missing observations. The first digit (1) of the flags means missing observation and the second digit provides the reason for the missing observation, as shown in the list in Figure 4.24.

The flags from 11 to 18 are used when the collector could not observe the price of a specific elementary item, and therefore the price has to be estimated. For the time being, the approach adopted to estimate the price in case of missing observation is repeating the price of the previous period of data collection (month).

Therefore, in the case of missing observation:

- according to the reason why the price was not observed, the user has to select one of the flags using the drop-down menu in the form in Figure 4.24;

Figure 4.24

Flag	Description	Code
00	no flag	nf
11	no collected data: collector has not carried out the collection	ncdc
12	no collected data: temporary closing	ncdtc
13	no collected data: definitive closing	ncddc
14	no collected data: item temporarily not available	ncdita
15	no collected data: item definitively not available	ncdida
16	no collected data: item under observation by municipality	ncdiuM
17	no collected data: item under observation by Statistical Agency	ncdiuS
21	substitution: observed price for previous month	soppm
22	substitution: estimated price for previous month	seppm
23	substitution: fictitious (updating information)	sfu

No cell will be enabled, the application will show automatically in the cell Price the previous month price and the functions Process and Cancel data will be enabled (Figure 4.25).

Figure 4.25

- then the user can click on Process (30);
- if the data entered present mistakes, or if for any reason the user wants to cancel them, he/she can click Cancel data (31) and restart the data entry;
- if the data entered are valid, the user can store them clicking Enter (32);

As soon as the data entry is finalised, the functions Process, Cancel data and Enter are disabled and data entry for next item starts.

FLAG = 21, 22, 23

Flags from 21 to 23 are all referred to cases of substitution of elementary items. The first digit (2) in the flag means substitution, and the second digit identifies the price entered for the previous month price of the new item (1= observed price; 2= estimated price) or the event of updating an information regarding variety or brand previously missing (3). The meaning of the flags are again available in the form in Figure 4.26.

Usually the substitution of a specific item is due to a change in at least one of the four aspects that identify each elementary item:

- a) brand; the brand for which the price was collected until the previous month is no longer available or it has lost the requisite of "more sold" brand;
- b) variety; the variety for which the price was collected until the previous month is no longer available or it has lost the requisite of "more sold" variety;
- c) package; that specific package for which the price was collected until the previous month is no longer available or it has lost the requisite of "more sold" package;
- d) outlet; the outlet where the price collection was carried out has definitively closed. Therefore a substitution is necessary for all the products available in the closed outlet.

Moreover the substitution can be necessary because the old elementary item has lost the requisite of being the more sold item.

Figure 4.26

Pre Substitution Price	<input type="text" value="0,00"/>	Off. Quantity	<input type="text" value="1"/>	Coll. Quantity	<input type="text" value="1"/>	Unit of Measure	<input type="text" value="m3"/>	
Price	<input type="text" value="0,00"/>	Repeat	Base	<input type="text" value="0,00"/>	Index	<input type="text" value="0,0000"/>	Rate of change	<input type="text" value="0,00"/>
% Reduction	<input type="text" value="0"/>							
Reduced Price	<input type="text" value="0,00"/>	Reduced Base	<input type="text" value="0,00"/>	Reduced Index	<input type="text" value="0,0000"/>	R.Rate of change	<input type="text" value="0,00"/>	
Max R of C +/-	<input type="text" value="10"/>	Flag	<input type="text" value="00"/>	Substitution : Variety <input type="checkbox"/> Brand <input type="checkbox"/> Collection Unit <input type="checkbox"/> Quantity <input type="checkbox"/>				
Collector	<input type="text" value="101"/>	SUP						
			00	no flag		nf		
			11	no collected data: collector has not carried out the collection		ncdc		
			12	no collected data: temporary closing		ncdtc		
			13	no collected data: definitive closing		ncddc		
			14	no collected data: item temporarily not available		ncdita		
			15	no collected data: item definitively not available		ncdida		
			16	no collected data: item under observation by municipality		ncdiuM		
			17	no collected data: item under observation by Statistical Agency		ncdiuS		
			21	substitution: observed price for previous month		soppm		
			22	substitution: estimated price for previous month		seppm		
			23	substitution: fictitious (updating information)		sfu		

Therefore the user has to select one of the flags available to signal a substitution. The cells Price and the cells Variety, Brand, Collection Unit and Quantity in the frame Substitution will be enabled (Figure 4.27).

Figure 4.27

Product	<input type="text" value="04.05.04.01.01"/>	<input type="text" value="Drvo za ogrev"/>	table manag.	Active	<input type="text" value="Yes"/>			
Variety	<input type="text" value="000001"/>	<input type="text" value="DRVA ZA OGREV, NEISCJEPANO"/>	N./E.	Series	<input type="text" value="1"/>			
Brand	<input type="text" value="999999"/>	<input type="text" value="NP"/>	N./E.					
Coll. Unit	<input type="text" value="000000"/>	<input type="text" value="N.C."/>	N./E.		<input type="text" value="Not classified"/>			
Pre Substitution Price	<input type="text" value="0,00"/>	Off. Quantity	<input type="text" value="1"/>	Coll. Quantity	<input type="text" value="1"/>	Unit of Measure	<input type="text" value="m3"/>	
Price	<input type="text" value="0,00"/>	Repeat	Base	<input type="text" value="0,00"/>	Index	<input type="text" value="0,0000"/>	Rate of change	<input type="text" value="0,00"/>
% Reduction	<input type="text" value="0"/>							
Reduced Price	<input type="text" value="0,00"/>	Reduced Base	<input type="text" value="0,00"/>	Reduced Index	<input type="text" value="0,0000"/>	R.Rate of change	<input type="text" value="0,00"/>	
Max R of C +/-	<input type="text" value="10"/>	Flag	<input type="text" value="21"/>	Substitution : Variety <input checked="" type="checkbox"/> Brand <input type="checkbox"/> Collection Unit <input type="checkbox"/> Quantity <input type="checkbox"/>				

Then the user has to proceed in the following four ways, depending on the kind of substitution to be carried out (for variety, brand, collection unit or quantity collected):

a. Variety substitution

- selecting variety in the frame Substitution (27), the cell Variety (5) in the box list above and the cell Pre Substitution Price (12) for the new variety price of the previous month will be enabled (Figure 4.28);

Figure 4.28

Product	01.01.01.02.01	Pšenično brašno, bijelo	table manag.	Active	Yes
Variety	000002	BIJE. PSE. BRAS. TIP 400	N./E.	Series	1
Brand	000860	Klas Sarajevo	N./E.		
Coll. Unit	000009	MAXI kod Mare	N./E.	Hard discount	

Pre Substitution Price	0,00	Off. Quantity	1000	Coll. Quantity	1000	Unit of Measure	gr	
Price	0,00	Repeat	Base	0,00	Index	0,0000	Rate of change	0,00
% Reduction	0							
Reduced Price	0,00	Reduced Base	0,00	Reduced Index	0,0000	R.Rate of change	0,00	

Max R of C +/-	10	Flag	21	Substitution :	Variety <input checked="" type="checkbox"/>	Brand <input type="checkbox"/>	Collection Unit <input type="checkbox"/>	Quantity <input type="checkbox"/>
-----------------------	----	-------------	----	-----------------------	--	---------------------------------------	---	--

- Selecting the new variety (Figure 4.29). If the new variety has not been inserted using the function available in Tables management, the user can enter it using the links to the forms that allow the user to insert a new (N./) variety, brand or collection unit or to edit (/E.) one of them.

Figure 4.29

Product	01.01.01.02.01	Pšenično brašno, bijelo	table manag.	Active	Yes
Variety	000002	BIJE. PSE. BRAS. TIP 400	N./E.	Series	1
Brand	000860	BIJE. PSE. BI 000001	01.01.01.02.01	N./E.	
Coll. Unit	000009	BIJE. PSE. BI 000002	01.01.01.02.01	N./E.	
		MAXI kod Mare		Hard discount	

Pre Substitution Price	0,00	Off. Quantity	1000	Coll. Quantity	1000	Unit of Measure	gr	
Price	0,00	Repeat	Base	0,00	Index	0,0000	Rate of change	0,00
% Reduction	0							
Reduced Price	0,00	Reduced Base	0,00	Reduced Index	0,0000	R.Rate of change	0,00	

Max R of C +/-	10	Flag	21	Substitution :	Variety <input checked="" type="checkbox"/>	Brand <input type="checkbox"/>	Collection Unit <input type="checkbox"/>	Quantity <input type="checkbox"/>
-----------------------	----	-------------	----	-----------------------	--	---------------------------------------	---	--

- entering price in the cell Price;
- entering the new variety price of the previous month in the cell Pre Substitution Price;
- clicking Process.

An automatic control on missing values is carried out by the procedure and provides the following possible error messages: a missing price for the current month (Figure 4.30) or for the previous month (Pre Substitution Price, Figure 4.31), a missing selection in the frame Substitution (Figure 4.32) in case the user has not chosen the aspect for which he/she is carrying out the substitution; a missing substitution (Figure 4.33) when the user has not changed the variety.

Figure 4.30

Pre Substitution Price: 0,00
 Price: 0,00
 % Reduction: 0
 Reduced Price: 0,00
 Max R of C +/-: 10
 Flag: 21

Microsoft Access
 Insert the price
 OK

Figure 4.31

Pre Substitution Price: 0,00
 Price: 1,30
 % Reduction: 0
 Reduced Price: 0,00
 Max R of C +/-: 10
 Flag: 21

Microsoft Access
 Insert previous price
 OK

Figure 4.32

Product: 01.01.01.02.01 | Pšenično brašno, bijelo
 Variety: 000002 | BIJE. PSE. BRAS. TIP 400
 Brand: 000860 | Klas Sarajevo
 Coll. Unit: 000009 | MAXI kod Mare

Pre Substitution Price: 0,00
 Price: 1,30
 % Reduction: 0
 Reduced Price: 0,00
 Max R of C +/-: 10
 Flag: 21

Microsoft Access
 Do you want to make a change?
 Yes No

Figure 4.33

Product: 01.01.01.02.01 | Pšenično brašno, bijelo
 Variety: 000002 | BIJE. PSE. BRAS. TIP 400
 Brand: 000860 | Klas Sarajevo
 Coll. Unit: 000009 | MAXI kod Mare

Pre Substitution Price: 0,00
 Price: 1,30
 % Reduction: 0
 Reduced Price: 0,00
 Max R of C +/-: 10
 Flag: 21

Microsoft Access
 Do you want to change the variety?
 Yes No

Clicking Process, the base (17) for the elementary series is recalculated by the following algorithm:

$$\checkmark B_n = \text{round} ((P_n / P_o * B_o); 2)$$

where

B_n = calculation base price for the new item

B_o = calculation base price for the old item

P_n = previous month price for the new item

P_o = previous month price for the old item.

After clicking Process, micro index (18) and rate of change (19) with respect to the previous month are calculated adopting the formulae [1] and [2];

- a control function is activated: the rate of change is out of a predefined interval (25) an explanatory note (29) is required (Figure 4.12).

The results of the data processing are shown in the cells of the mask.

- if the data entered present mistakes, or if for any reason the user wants to cancel them, he/she can click Cancel data and restart the data entry;
- if the data entered are valid, the user can store them in the data base clicking Enter;

As soon as the data entry is finalised, the functions Process, Cancel data and Enter are disabled and data entry for next item starts.

b. Brand substitution

- selecting brand in the frame Substitution (27), the cell Brand (6) in the box list above and the cell Pre Substitution Price (12) for new brand price of the previous month will be enabled;
- selecting the new brand. If the new brand has not been inserted using the function available in Tables management, the user can enter it using the links to the forms that allow the user to insert a new (N./) variety, brand or collection unit or to edit (/E.) one of them;
- entering price in the cell Price;
- entering the new brand price of the previous month in the cell Pre Substitution Price;
- clicking Process.

For the subsequent steps the user can consult the instructions described for variety substitution, making reference to brand.

c. Collection Unit substitution

- Selecting the collection unit in the frame Substitution (27), the cell Collection unit (7) in the box list above and the cell Pre Substitution Price (12) for new collection unit price of the previous month will be enabled;
- selecting the new collection unit. If the new collection unit has not been inserted using the function available in Tables management, the user can enter it using the links to the forms that allow the user to insert a new (N./) variety, brand or collection unit or to edit (/E.) one of them;
- entering price in the cell Price;
- entering the new collection unit price of the previous month in the cell Pre Substitution Price;
- clicking Process.

For the subsequent steps, the user can consult the instructions described for variety substitution, making reference to collection unit.

d. Quantity substitution

- selecting quantity in the frame Substitution (27), the cell Coll. Quantity (14) will be enabled; the cell Pre Substitution Price (12) for the new collected quantity price of the previous month will be enabled only if the new quantity is higher/lower than $\pm 10\%$ of the quantity collected in the previous month. In case the new collected quantity were less than $\pm 10\%$ compared to the previous month, and without other changes, the new quantity price of the previous month will be calculated automatically, since it is meant as a simple packaging change not an actual substitution of the elementary item.
- entering the new quantity in the cell Coll. Quantity
- entering price in the cell Price;
- if the cell is enabled, entering the new quantity collected price of the previous month in the cell Pre Substitution Price;
- clicking Process.

For the subsequent steps, the user can consult the instructions described for variety substitution, making reference to quantity collected. An automatic control is only carried out by the procedure for the substitution of quantity collected: if the new quantity is about ten times or the tenth part of the official quantity, this will be pointed out and a confirmation of the value entered will be asked (Figure 4.34).

Figure 4.34

The screenshot shows a software interface with a confirmation dialog box. The dialog box is titled "Microsoft Access" and contains the text: "Too high difference between collected and official quantity! Do you confirm?". Below the text are two buttons: "Yes" and "No". The background form has several fields: "Pre Substitution Price" (1.20), "Off. Quantity" (1000), "Coll. Quantity" (10), "Unit of Measure" (gr), "Price", "% Reduction", "Reduced Price", "Rate of change" (0.00), "Max R of C +/-" (10), and "Flag" (22). The "Flag" field is highlighted with a red box.

4.3 Bimonthly data entry ⁹

After selecting the frequency of data collection (Figure 4.2), the access by collection unit or by product, the user can select 8 (data entry) in the form of microdata management and the form in Figure 4.35 will appear.

Figure 4.35

The screenshot shows a Microsoft Access form titled "Semimonthly : Maschera". The form is used for data entry and contains the following fields and sections:

- Town:** 2105, Prijedor (1)
- Municipality:** 10740, Prijedor (2)
- Year:** 2005 (3)
- Month:** 1, January (3)
- Product:** 01.01.07.01.10 (4), Boranija
- Variety:** 000001 (5), n.p.
- Coll. Unit:** 000000 (6), N/P
- Active:** Yes (8)
- Series:** 1 (9)
- Not classified:** (10)
- 1st Col.:** 1st PreSub Price (11) 0,00, 2nd PreSub Price (12) 0,00, Off. Quantity (13) 1000, Coll. Quantity (14) 1000, Price (15) 0,00, Repeat (16), Unit of Measure (17) gr, Flag (18) 00, Substitution: Variety, Collection Unit, Quantity (19)
- 2nd Col.:** Price (20) 0,00, Repeat (21), Coll. Quantity (22) 1000, Flag (23) 00, Substitution: (24), Quantity
- Max R of C +:** 10 (25), Average price (26) 0,00, Base (27) 0,00, Index (28) 0,0000, Rate of change (29) 0,00
- Collector:** 101 (30), Note (31)
- Buttons:** Process (32), Cancel data (33), Enter (34), Find series (35), Navigation arrows (36), Back (37)
- Table:**

Year	Month	Var.	1st Surv.		2nd Surv.		Avg	Base	Index	Substitution 1st Coll.			Sub. 2nd Coll.	
			Price	Flag	Price	Flag				Var.	C.U.	Quan.	Quantity	Note?
2004	12	000001	3,00	00	3,00	00	3,00	3,00	100,00	No	No	No	No	No
- Note:** (39)

Description

- 1 code and alphabetical description of the town for which data are entered;
- 2 code and alphabetical description of the municipality for which data are entered;
- 3 current year and month for which data are being processed;
- 4 COICOP code and description of the product for which the prices observed are entered in the form;

⁹ Stefania Occhiobello, ISTAT, Division for Price Statistics and Foreign Trade, Price Statistics Section

- 5 code and description of the variety that identifies the elementary item for which the prices observed are entered in the form; each product has its own varieties;
- 6 code and name of the collection unit in which the prices of the elementary item are observed;
- 7 links to the forms that allow the user to insert a new (N./) variety, brand or collection unit or to edit (/E.) one of them. These links are very useful when the user has to carry out a substitution and he/she has forgotten to insert previously the new variety, brand or collection unit;
- 8 flag concerning the series. Concerning the modalities and the meaning of this flag see description (9) in § 4.1;
- 9 series number; each product in each town has its own series, so that the code of the product together with the series number allow to identify univocally the elementary item;
- 10 description of the typology of the collection unit (typologies with their respective codes are described in Figure 4.7);
- 11 price collected during the first data collection in the previous month for the new elementary item that is substituting the old item;
- 12 price collected during the second data collection in the previous month for the new elementary item that is substituting the old item;
- 13 official quantity, that is the common quantity, defined *a priori* for each product, to which the price observed is reported through the quantity collected in order to calculate the average price of products;
- 14 collected quantity, that is the quantity to which the observed price is referred to;
- 15 observed price in the first data collection in the month in question;
- 16 price repeating button (in case the first price observed for the current month is equal to the last price observed in the previous month);
- 17 abbreviation of the unit of measure;
- 18 flag (see table in Figure 4.8) concerning the price observed;
- 19 check boxes to identify the type of substitution;
- 20 observed price in the second data collection in the month in question;
- 21 price repeating button (in case the second price observed for the current month is equal to the first);
- 22 collected quantity, that is the quantity the observed price is referred to;
- 23 flag (see table in Figure 4.8) concerning the price observed;
- 24 check box to select a possible substitution for collected quantity (in the second period collection only quantity substitution is allowed);

- 25 maximum rate of change: it indicates the range of tolerance of the percentage difference between the average (between first and second price observed) current month price entered and the average price of the previous month. If this difference is out of this range, the procedure warns the user and asks for a note to explain the possible too large variation;
- 26 average price of the two prices observed in the current month and calculated on the official quantity;
- 27 calculation base of the series;
- 28 index in the current month (for each elementary item referred to products for which prices are collected bimonthly, a microindex is calculated as ratio between the average price of the two elementary quotes observed and the average price calculated in a month assumed as base, i.e. in general, December of the previous year);
- 29 rate of change of the index compared to the previous month;
- 30 code and name of the collector;
- 31 explanatory note; it is required if the rate of change of the index in the elaboration month is out of a predefined interval (25);
- 32 data Process: it produces the calculation (micro index, rate of change, etc.) on the basis of the data entered;
- 33 data Cancel: it allows the user to cancel the data entered;
- 34 data Enter: it is the button to store the data entered. After storing the data and before the calculation of average data and download of the elementary indices, the user can adjust the micro data using the data edit functions;
- 35 Find series, that allows the user to search for a specific series;
- 36 Record selector: the elementary items are run by collection unit and product or by product and collection unit, depending on the access to data entry selected;
- 37 Back, to go back to the previous mask;
- 38 time series of all the information concerning the selected elementary item;
- 39 note concerning a possible too high rate of change registered in the previous months. The note referred to the month selected in 38 will be displayed in this window (if in column Note the user finds Yes a note was registered for that month; if he/she finds No, no justification was required by the procedure);

Use

The **Data Entry** function is activated from the part of the form dedicated to the first data collection. The starting point is the selection of a value among those available in the list box (Figure 4.36) of the Flag (18), according to the needs of the user.

Figure 4.36

1st Col.	1st PreSub Price	0,00	2nd PreSub Price	0,00	Off. Quantity	1000	Coll. Quantity	1000
	Price	0,00	Repeat		Unit of Measure	gr		
	Flag	00	Substitution: Variety <input type="checkbox"/> Collection Unit <input type="checkbox"/> Quantity <input type="checkbox"/>					
2nd Col.	Price	0,00	Flag	00				
	Max R of C + J -	10	Average	0,00				
Collector	101	surC101						

00	no flag	nf
11	no collected data: collector has not carried out the collection	ncdc
12	no collected data: temporary closing	ncdctc
13	no collected data: definitive closing	ncddc
14	no collected data: item temporarily not available	ncdita
15	no collected data: item definitively not available	ncdida
16	no collected data: item under observation by municipality	ncdium
17	no collected data: item under observation by Statistical Agency	ncdiuS
21	substitution: observed price for previous month	soppm
22	substitution: estimated price for previous month	seppm
23	substitution: fictitious (updating information)	sfu

This list allows three main types of choice (flag=00; flag= 11,12,13,14,15,16,17; flag=21,22,23):

FLAG = 00

Flag 00 (Figure 4.36) is the value that will be mostly used: it means that the price has been observed (not estimated) and that the collector has not carried out a substitution. Flag=00 can be activated also by pressing the enter button in the keyboard.

If flag=00 is activated for the first price observed in the current month, the cell Price (15) will be enabled (Figure 4.37).

Figure 4.37

Two cases may occur:

a) Price of the 2nd data collection equal to price of the 1st data collection

If the collector has observed the same price for an elementary item in the current month:

- The user has to enter the price of the first data collection in the cell Price and then click Process (32).
- If the user selects Process without inserting any price, the procedure displays the warning message shown in Figure 4.38.

Figure 4.38

The screenshot shows a data entry interface with two rows for data collection. The first row (1st Col.) has fields for '1st PreSub Price' (0,00), '2nd PreSub Price' (0,00), 'Off. Quantity' (1000), and 'Coll. Quantity' (1000). Below these are 'Price' (0,00), 'Flag' (00), and 'Substitution' options. The second row (2nd Col.) has 'Price' (0,00) and 'Flag' (00). A 'Microsoft Access' error dialog box is overlaid on the second row, with a yellow warning icon and the text 'Insert at least one price!' and an 'OK' button.

The price of second data collection (20) is automatically updated with the value of the price of first data collection (Figure 4.39).

Figure 4.39

This screenshot shows the same data entry interface. The first row's 'Price' is now 3,00. The second row's 'Price' is also 3,00. An information dialog box from Microsoft Access is overlaid, with an information icon and the text 'The price of the 2nd collection has been set like the price of the 1st one' and an 'OK' button.

The average price (26) of the two prices observed in the current month is calculated on the official quantity.

After clicking on Process, micro index (28) and rate of change (29) with respect to the previous month are calculated adopting the following formula:

$$\checkmark \text{Ibcm} = \text{round} ((\text{Pbcm} / \text{Bbcm} * 100);4) \quad [3]$$

$$\checkmark \text{Rbc}_{t-1} = \text{round} ((\text{Ibcm}/\text{Ibpm}) * 100 - 100);2) \quad [4]$$

where

Pbcm = current month average price referred to official quantity

Bbcm = current month base average price referred to official quantity

Ibcm = current month index

Ibpm = previous month index

Rbc_{t-1} = rate of change with respect to the previous month;

- a control function is activated: if Rbc_{t-1} is out of a predefined interval (25) an explanatory note (31) is required (Figure 4.40).

Figure 4.40

The screenshot shows a data entry interface with two main sections: '1st Col.' and '2nd Col.'. Each section contains fields for '1st PreSub Price', '2nd PreSub Price', 'Off. Quantity', and 'Coll. Quantity'. Below these are 'Price' (with a 'Repeat' button), 'Flag' (a dropdown menu), and 'Substitution' fields. At the bottom, there are summary fields: 'Max R of C + / -', 'Average price', 'Base', 'Index', and 'Rate of change'. A 'Collector' field and a 'Note' checkbox are also present. A 'Microsoft Access' dialog box is overlaid on the form, showing a warning icon and the message 'Variation: 166,67 Insert a note' with an 'OK' button.

The results of the data process are shown in the cells of the form in Figure 4.41.

Figure 4.41

This screenshot shows the same data entry interface as Figure 4.40. The 'Price' field in the '1st Col.' section has been updated to '3,00'. The 'Microsoft Access' dialog box now displays an information icon and the message 'Elaboration successful' with an 'OK' button. The 'Average price' field at the bottom has also updated to '3,00', and the 'Index' field has changed to '100,000'.

- the user can select Ok;
- if the data entered present mistakes, or if for any reason the user wants to cancel them, he/she can click Cancel data (33) and restart the data entry;
- if the data entered are valid, the user can store them in the data base clicking Enter (34).

As soon as the data entry is finalised, the functions Process, Cancel data and Enter are disabled and data entry for next item starts.

b) Price of the 2nd data collection different from price of the 1st data collection

If the collector has observed two different prices for an elementary item in the month in question:

- the user has to enter the price of the first data collection in the cell Price;
- then he/she has to select flag 00 in the cell Flag of the second data collection (Figure 4.42).

Figure 4.42

Code	Description	Code
00	no flag	nf
11	no collected data: collector has not carried out the collection	ncdc
12	no collected data: temporary closing	ncdtc
13	no collected data: definitive closing	ncddc
14	no collected data: item temporarily not available	ncdita
15	no collected data: item definitively not available	ncdida
16	no collected data: item under observation by municipality	ncdiuM
17	no collected data: item under observation by Statistical Agency	ncdiuS
21	substitution: observed price for previous month	sopppm
22	substitution: estimated price for previous month	sepppm
23	substitution: fictitious (updating information)	sfu

The cell Price (20) for the second data collection will be enabled (Figure 4.43).

Figure 4.43

- the user has to enter the price of the second data collection in the cell Price (20) and then click Process (32);
- if the user selects Process without inserting any price, the procedure displays the same warning message as in Figure 4.38.

After clicking on Process, micro index (28) and rate of change (29) compared to the previous month are calculated adopting the formulae [3] and [4];

- a control function is activated: if Rbc_{t-1} is out of a predefined interval (25) an explanatory note (31) is required (Figure 4.40).

The results of the data processing are shown in the cells of the form in Figure 4.44.

Figure 4.44

The screenshot shows a data entry form with a Microsoft Access dialog box overlay. The dialog box, titled "Microsoft Access", contains an information icon and the text "Elaboration successful" with an "OK" button. The form in the background has the following fields and values:

- Price: 3,00 (with a "Repeat" button)
- Flag: 00 (highlighted with a red box)
- Substitution: [empty]
- Unit of Measure: gr
- 2nd Col. Price: 3,00 (with a "Repeat" button)
- 2nd Col. Flag: 00
- 2nd Col. Substitution: [empty]
- Coll. Quantity: 1000
- Quantity: [empty]
- Max R of C +/-: 10
- Average price: 3,00
- Base: 3,00
- Index: 100,000
- Rate of change: 0,00
- Collector: 101
- surC101
- Note: [empty]

At the bottom of the form are three buttons: "Process", "Cancel data", and "Enter".

- the user can select OK;
- if the data entered present mistakes, or if for any reason the user wants to cancel them, he/she can click Cancel data (33) and restart the data entry;
- if the data entered are valid, the user can store them clicking Enter (34).

As soon as the data entry is finalised, the functions Process, Cancel data and Enter are disabled and data entry for next item starts.

FLAG = 11, 12, 13, 14, 15, 16, 17

Flags from 11 to 17 are all referred to missing observations. The first digit (1) of the flag means missing observation, and the second digit provides the reason for the missing observation, according to the list in Figure 4.45.

These flags are used when the collector could not observe the price of a specific elementary item, and therefore the price has to be estimated. For the time being, repeating the price of the previous period of data collection is the approach adopted to estimate the price in case of missing observation. For products for which prices are collected twice a month, this implies:

- a) for the first data collection, repeating the second price observed in the previous month;
- b) for the second data collection, repeating the first price observed in the current month.

Also in the case of missing observation for the first data collection or the second or for both, the user will find the two possible cases illustrated for Flag=00 (Price of 2nd data collection equal to price of 1st data collection; Price of 2nd data collection different from price of 1st data collection) and he/she will follow the instructions given before.

To manage the insertion of missing observations either for the first or the second data collection, the user has to select one of the flags using the scrolling menu in the form in Figures 4.45 (for the first data collection) and 4.46 (for the second data collection), according to the reason for missing observation.

Figure 4.45

00	no flag	nf
11	no collected data: collector has not carried out the collection	ncdc
12	no collected data: temporary closing	ncdtc
13	no collected data: definitive closing	ncddc
14	no collected data: item temporarily not available	ncdita
15	no collected data: item definitively not available	ncdida
16	no collected data: item under observation by municipality	ncdium
17	no collected data: item under observation by Statistical Agency	ncdiuS

Figure 4.46

00	no flag	nf
11	no collected data: collector has not carried out the collection	ncdc
12	no collected data: temporary closing	ncdtc
13	no collected data: definitive closing	ncddc
14	no collected data: item temporarily not available	ncdita
15	no collected data: item definitively not available	ncdida
16	no collected data: item under observation by municipality	ncdium
17	no collected data: item under observation by Statistical Agency	ncdiuS
21	substitution: observed price for previous month	soppm
22	substitution: estimated price for previous month	seppm
23	substitution: fictitious (updating information)	sfu

No cell will be enabled, the application will show automatically in the cell Price the previous data collection price and the functions Process and Cancel data will be enabled (Figure 4.47 for the first data collection; Figure 4.48 for the second data collection).

Figure 4.47

00	no flag	nf
11	no collected data: collector has not carried out the collection	ncdc
12	no collected data: temporary closing	ncdtc
13	no collected data: definitive closing	ncddc
14	no collected data: item temporarily not available	ncdita
15	no collected data: item definitively not available	ncdida
16	no collected data: item under observation by municipality	ncdium
17	no collected data: item under observation by Statistical Agency	ncdiuS
21	substitution: observed price for previous month	soppm
22	substitution: estimated price for previous month	seppm
23	substitution: fictitious (updating information)	sfu

Figure 4.48

The screenshot shows a data entry interface with the following fields and controls:

- 2nd Col.** Price: 3,00; Repeat button
- Coll. Quantity: 1000
- Flag: 11; Substitution: ; Quantity:
- Max R of C +/-: 10; Average price: 0,00; Base: 0,00; Index: 0,0000; Rate of change: 0,00
- Collector: 101; surC101; Note:
- Buttons: Process, Cancel data, Enter
- Bottom navigation: Find series, navigation arrows, Back

FLAG = 21, 22, 23

Flags from 21 to 23 are all referred to cases of substitution of elementary items. The first digit (2) of the flag means substitution, and the second digit identifies the price entered for the previous month price of the new item (1= observed price; 2= estimated price; 3= the event of updating an information regarding variety or brand previously missing). The meaning of the flags are again available in the form in Figure 4.49.

In the case of bimonthly products, mainly vegetables and fruits, the substitution of a specific item is due to a change in at least one of the three aspects that identify each single elementary item:

- variety; the variety for which the price was collected until the previous month is no longer available or it has lost the requisite of "more sold" variety;
- quantity;
- outlet; the outlet where the price collection was carried out has definitively closed. Therefore a substitution is necessary for all the products available in the outlet closed.

The substitution can be necessary also because the old elementary item has lost the requisite of being the more sold item.

Concerning the first data collection, three types of substitution are available (brand is not relevant for products for which prices are collected bimonthly) and the user has to select one of the flags (21, 22 or 23). The cell Price and the cells Variety, Collection Unit and Quantity in the frame Substitution will be enabled (Figure 4.49).

Figure 4.49

Then the user has to proceed in the following three ways, depending on the kind of substitution to be carried out (variety, collection unit or quantity collected)

a. Variety substitution

- selecting variety in the frame Substitution (19), the cell Variety (5) in the box list above and the cells 1st PreSub Price and 2nd PreSub Price for the new variety prices of the previous month will be enabled (Figure 4.50);

Figure 4.50

- selecting the new variety (Figure 4.51). If the new variety has not been inserted using the function available in Tables management, it can be entered using the links to the forms that allow the user to insert a new (N./) variety or collection unit or to edit (/E.) one of them.

Figure 4.51

Coll. Unit	Variety	Product
n.p		
n.p	000001	01.01.07.01.10
new	000002	01.01.07.01.10

- entering price in the cell Price (15);

- entering the new variety prices for the two data collections of the previous month in the cells 1st and 2nd PreSub Price;
- if the price of the 2nd data collection is equal to the price of the first one, clicking Process.

An automatic control on missing values is carried out by the procedure, that provides the following possible error messages: a missing price for the first collection of the current month (Figure 4.52) or for the previous month (1st and 2nd PreSub Price, Figures 4.53 and 4.54), a missing selection in the frame Substitution (Figure 4.55) when the user has not chosen the aspect for which he/she is carrying out the substitution; a missing substitution (Figure 4.56) when the user has forgotten to select the new variety.

Figure 4.52

The screenshot shows a software interface with a Microsoft Access error dialog box. The dialog box has a blue title bar with 'Microsoft Access' and a red close button. It contains a yellow warning triangle icon and the text 'Insert at least one price!' with an 'OK' button below it. In the background, the interface has two main sections: '1st Col.' and '2nd Col.'. The '1st Col.' section includes '1st PreSub Price' (0,00), '2nd PreSub Price' (0,00), 'Off. Quantity' (1000), 'Coll. Quantity' (1000), 'Price' (0,00), 'Repeat' button, 'Flag' (21), 'Substitution' dropdown, 'Unit of Measure' (gr), and checkboxes for 'Unit' and 'Quantity'. The '2nd Col.' section includes 'Price' (0,00), 'Repeat' button, 'Coll. Quantity' (1000), 'Flag' (00), 'Substitution' dropdown, and a 'Quantity' checkbox.

Figure 4.53

The screenshot shows a software interface with a Microsoft Access error dialog box. The dialog box has a blue title bar with 'Microsoft Access' and a red close button. It contains a yellow warning triangle icon and the text 'Insert first previous price' with an 'OK' button below it. In the background, the interface has two main sections: '1st Col.' and '2nd Col.'. The '1st Col.' section includes '1st PreSub Price' (0,00), '2nd PreSub Price' (0,00), 'Off. Quantity' (1000), 'Coll. Quantity' (1000), 'Price' (3,00), 'Repeat' button, 'Flag' (23), 'Substitution' dropdown, 'Unit of Measure' (gr), and checkboxes for 'Unit' and 'Quantity'. The '2nd Col.' section includes 'Price' (3,00), 'Repeat' button, 'Coll. Quantity' (1000), 'Flag' (00), 'Substitution' dropdown, and a 'Quantity' checkbox.

Figure 4.54

The screenshot shows a software interface with a Microsoft Access error dialog box. The dialog box has a blue title bar with 'Microsoft Access' and a red close button. It contains a yellow warning triangle icon and the text 'Insert second previous price' with an 'OK' button below it. In the background, the interface has two main sections: '1st Col.' and '2nd Col.'. The '1st Col.' section includes '1st PreSub Price' (3,00), '2nd PreSub Price' (0,00), 'Off. Quantity' (1000), 'Coll. Quantity' (1000), 'Price' (3,00), 'Repeat' button, 'Flag' (23), 'Substitution' dropdown, 'Unit of Measure' (gr), and checkboxes for 'Unit' and 'Quantity'. The '2nd Col.' section includes 'Price' (3,00), 'Repeat' button, 'Coll. Quantity' (1000), 'Flag' (00), 'Substitution' dropdown, and a 'Quantity' checkbox.

Figure 4.55

Product: 01.01.07.01.10 Boranija
Variety: 000001 n.p.
Coll. Unit: 000000 NP

1st Col. 1st PreSub Price: 0,00 2nd PreSub Price: 0,00 Off. Quantity: 1000 Coll. Quantity: 1000
Price: 3,00 Repeat
Flag: 21 Substitution: Variety Collection Unit Quantity

2nd Col. Price: 3,00 Repeat
Flag: 00 Subst Coll. Quantity: 1000
Quantity

Max R of C +/-: 10 Average price: 0,00 Base: 0,00 Index: 0,0000 Rate of change: 0,00

Figure 4.56

Product: 01.01.07.01.10 Boranija
Variety: 000001 n.p.
Coll. Unit: 000000 NP

1st Col. 1st PreSub Price: 0,00 2nd PreSub Price: 0,00 Off. Quantity: 1000 Coll. Quantity: 1000
Price: 3,00 Repeat
Flag: 21 Substitution: Variety Collection Unit Quantity

2nd Col. Price: 3,00 Repeat
Flag: 00 Subst Coll. Quantity: 1000
Quantity

Max R of C +/-: 10 Average price: 0,00 Base: 0,00 Index: 0,0000 Rate of change: 0,00

- if the price of the second data collection is different from the price of the first one, the user has to select flag 00 in the cell Flag of the second data collection (Figure 4.42).

The cell Price (20) for the second data collection will be enabled (Figure 4.43).

- The user has to enter the price of the second data collection in the cell Price (20) and then click Process (32);

if the user selects Process without inserting any price, the procedure displays the same warning message as in Figure 4.38.

Clicking Process, the base (27) for the elementary series is recalculated by the following algorithm:

$$\checkmark \text{ Bbn} = \text{round} ((\text{Pbn} / \text{Pbo} * \text{Bbo});2)$$

where

Bbn = calculation base average price referred to the official quantity for the new item

Bbo = calculation base average price referred to the official quantity for the old item

Pbn = previous month average price for the new item

Pbo = previous month average price for the old item.

After clicking Process, micro index (28) and rate of change (29) with respect to the previous month are calculated adopting the formulae [3] and [4];

- a control function is activated: if the rate of change is out of a predefined interval (25) an explanatory note (31) is required (Figure 4.40).

The results of the data process are shown in the cells of the mask.

- If the data entered present mistakes, or if for any reason the user wants to cancel them, he/she can click Cancel data and restart the data entry;
- if the data entered are valid, the user can store them clicking Enter;

As soon as the data entry is finalised, the functions Process, Cancel data and Enter are disabled.

b. Collection Unit substitution

- selecting collection unit in the frame Substitution (19): the cell Collection unit (6) in the box list above and the cells 1st PreSub Price and 2nd PreSub Price for the new collection unit prices of the previous month will be enabled;
- selecting the new collection unit. If the new collection unit has not been inserted using the function available in Tables management, the user can enter it using the links to the forms that allow the user to insert a new (N./) variety or collection unit or to edit (/E.) one of them;
- entering price in the cell Price (15);
- entering the new collection unit prices for the two data collections of the previous month in the cells 1st and 2nd PreSub Price;

For the subsequent steps, the user can consult the instructions described for variety substitution, making reference to collection unit.

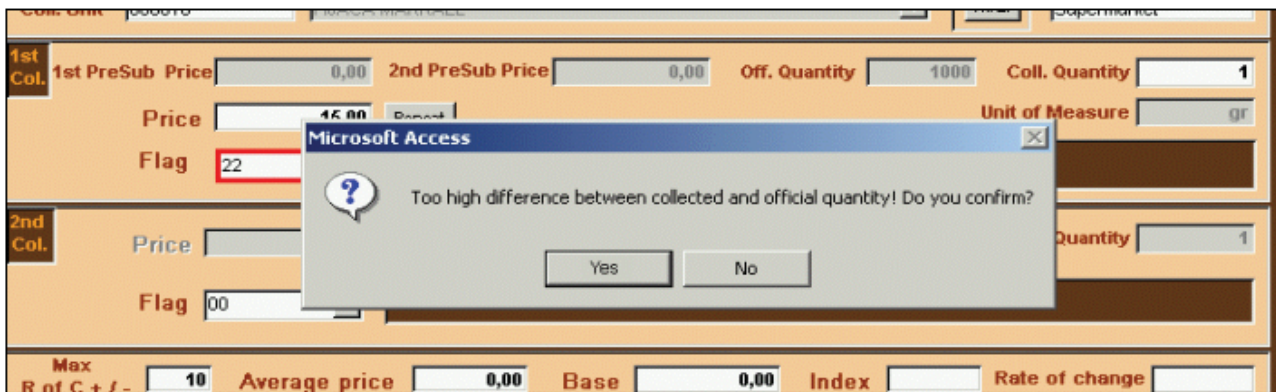
c. Quantity substitution

- selecting quantity in the frame Substitution (19);
- entering the new quantity in the cell Coll. Quantity (14);
- entering price in the cell Price;

For the subsequent steps, the user can consult the instructions described for variety substitution, except for the calculation of the new base that, when only quantity changes, is not carried out (for bimonthly products micro indices are calculated on the basis of average price referred to the official quantity).

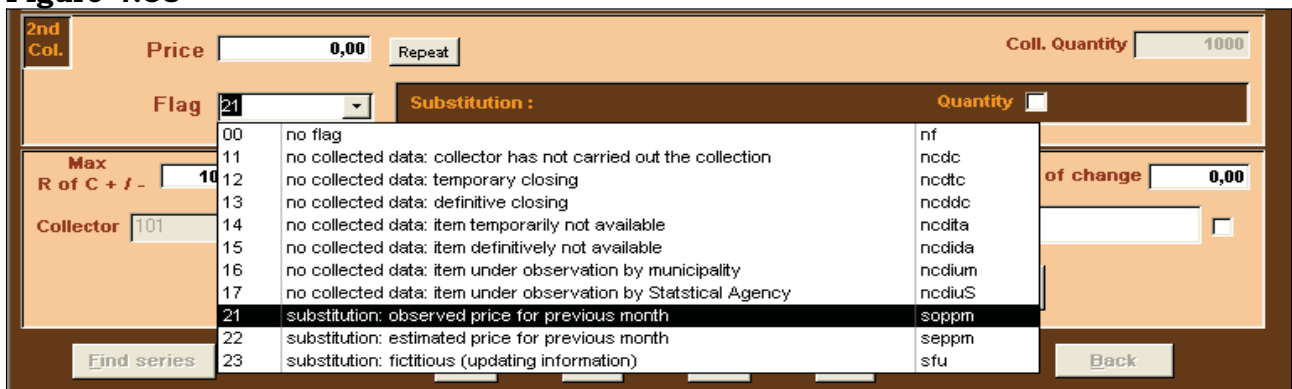
An automatic control is carried out by the procedure exclusively for the substitutions for quantity collected: if the new quantity is about ten times or the tenth part of the official one, it will be pointed out and a confirmation of the value entered will be asked (Figure 4.57).

Figure 4.57



Concerning the second data collection, only the quantity substitution is available (as it was chosen to allow the other substitutions exclusively for the first data collection) and the user has to select one of the flags (21, 22 or 23). The cell Price and the cell Quantity in the frame Substitution will be enabled (Figure 4.58).

Figure 4.58



- entering the new quantity in the cell Coll. Quantity for the second data collection (22);
- entering price in the cell Price for the second data collection;
- clicking Process;
- the average price for the current month is automatically calculated with reference to the official quantity and a new base is not calculated;
- for the subsequent steps, the user can consult the instructions described for variety substitution for the first data collection.

4.4 Check¹⁰

Clicking the Check button in the Microdata management (Figure 4.1), the form in Figure 4.59 will appear. This form allows to carry out controls on microdata entered before storing them. In fact the results obtained by control functions warn the user about errors or outliers, that can be adjusted using the Edit function illustrated before. The tables resulting from the check functions have to be sent by the local offices to the central offices in Sarajevo and Banja Luka and by the Brcko statistical Agency to BHAS, to allow central offices to ask for further checks, even in the field (see paragraph 1.19 in volume 1). As soon as the adjustments are finalized, the user can store the month for which data have been processed and start entering data for a new month.

Figure 4.59

The screenshot shows a web-based form titled "CHECK". At the top right, it displays "July 2006". Below this, there are two main panels: "Monthly" (selected with a radio button) and "Bimonthly". Each panel contains a list of control functions with checkboxes. The "Monthly" panel has 7 options, and the "Bimonthly" panel has 8 options. At the bottom of the form, there are two buttons: "Display" and "Back".

¹⁰ Stefania Occhiobello, ISTAT, Division for Price Statistics and Foreign Trade, Price Statistics Section

Description

- 1 current year and month for which data are being processed;
- 2 box to select the collection frequency (monthly or bimonthly);
- 3 box to select the typology of check for products for which prices are collected monthly;
- 4 box to select the typology of check for products for which prices are collected bimonthly;
- 5 Display check button;
- 6 Back, to go back to the previous mask;

Use

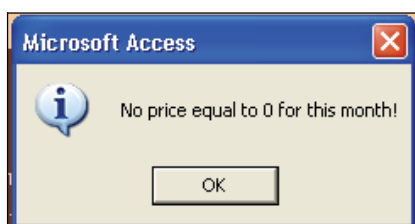
The Check function allows the user to carry out several controls on entered microdata. Selecting one of the checks available in the dedicated box (3 for monthly products, 4 for bimonthly products), and then the Display button, printable reports will appear. At present, the available controls (Figure 4.59) are the following:

a. Prices equal to 0 (available for monthly and bimonthly products)

The microdata for the current month have to be entered completely. The user cannot store the month if any price has not been entered. This check function allows the user to detect possible elementary items with price equal to 0 in the current month, so that he/she can finalize the data entry.

- If data entry has been correctly executed and no price is missing, a message box (Figure 4.60) will appear.

Figure 4.60



- In case the data entry has been carried out forgetting the registration of one or more prices, the procedure will show, in a printable table (Figure 4.61 for monthly and Figure 4.62 for bimonthly products), the elementary items for which prices have not been entered with reference to the month in question. A report with all the information of the series that have the price equal to 0 will be shown. The acronym of this type of error is **PZ** (**P**rice **Z**ero) and it is highlighted in yellow colour;

- on the basis of the report obtained the user can select exactly the elementary items for which prices have not been entered, and insert the missing prices using the Data Entry function.

Figure 4.61

Year 2005		Month 1		MONTHLY MICRODATA CHECK												Biieliina				
Price equal 0																				
Prod Code	description	Series	Collunit	Variety	Brand	Error Outlier	Ed. Price	Prev.Pri.	Price	ProdubP	Ed.%	Prev.Base	Base	Flag	Substitution				Rate	
															V	B	C	Q	Quant.	Rate
01.01.01.01.01	Phmac, phama	1	000009	000001	00011	PZ	0,00		0,00	0	0	0	0	00	No	No	No	No	1000,00	
01.01.01.01.01	Phmac, phama	2	000010	000001	00011	PZ	0,00		0,00	0	0	0	0	00	No	No	No	No	1000,00	
01.01.01.01.01	Phmac, phama	3	000011	000001	00011	PZ	0,00		0,00	0	0	0	0	00	No	No	No	No	1000,00	

Figure 4.62

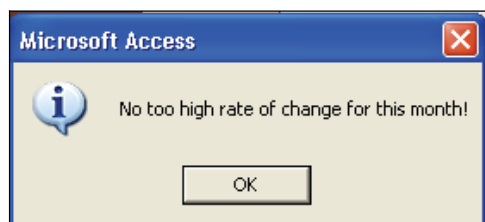
Year 2005		Month 1		BIMONTHLY MICRODATA CHECK												Priedor					
Price equal 0																					
Prod Code	description	Series	Collunit	Variety	Error Outlier	PriceLr	PriceRr	AgPr.	PreSP1r	PreSP2r	Pre.Base	Base	Flag1r	Flag2r	V	C	Q1r	Q2r	Rate of Ch		
01.01.04.02.0	Mikram,	1	000089	000001	PZ	0,00	0,00	0,00	0,00	0,00	0	00	00	00	No	No	No	No	1000,00	1000,00	0
01.01.04.02.0	Mikram,	2	000140	000001	PZ	0,00	0,00	0,00	0,00	0,00	0	00	00	00	No	No	No	No	1000,00	1000,00	0

b. Too high rate of change (available for monthly and for bimonthly products).

As illustrated in § 3.1, each product of the basket has its own maximum rate of change: it indicates the range of tolerance of the percentage difference between the current month price entered and the price of the previous month. If the current price entered is out of this range, the procedure warns the user (see § 4.1 and 4.2) and asks for a note to explain a possible too large variation. This check function highlights all the elementary items for which a too high rate of change is calculated compared to the previous month.

- if no price shows a rate of change out of the predefined range of tolerance for each product, the following message box (Figure 4.63) will appear;

Figure 4.63



- otherwise, the elementary items that show a rate of change out of the predefined range of tolerance for each product are listed in a report (Figure 4.64 for monthly and Figure 4.65 for bimonthly products) that provides several information on them. The acronym for this type of warning is **RC** (**R**ate of **C**hange) and it is highlighted in pink colour.

Figure 4.64

Year 2005		Month 1		MONTHLY MICRODATA CHECK												Bielina				
Too high rate of change																				
Prod Code	description	Series	Coll unit	Variety	Brand	Error Outlier	Ed. Price	Prev. Pri.	Price	PreSubP	Ed. %	Prev. Base	Base	Flg	Substitution				Rate of Ch	
															V	B	C	Q	Quant.	
04.05.04.01.01	Dive sa ogre	1	000000	000001	999999	EC	0,00	35,00	111,00	0	0	35,00	35	00	No	No	No	No	1,00	217,14

Figure 4.65

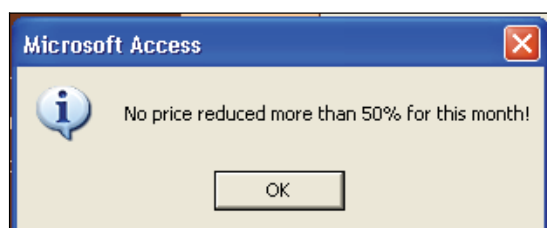
Year 2005		Month 1		BIMONTHLY MICRODATA CHECK												Priedor								
Too high rate of change																								
Prod Code	description	Series	Coll unit	Variety	Brand	Error Outlier	Priod1r	Priod2r	AvgPr.	PreSP1r	PreSP2r	PreBase	Base	Flg1r	Flg2r	Substitution				Rate of Ch				
																V	C	Q1r	Q2r	Q1r	Q2r	Quant.		
01.01.07.01.10	Bomarijs	2	000000	000001		EC	10,00	10,00	10,00	0,00	0,00	3,00	3	00	00	No	No	No	No	1000,00	1000,00			233,33

c. Temporary reductions of price greater than 50% compared to the purchase price (available only for monthly products).

This check function highlights possible outliers in the reduced prices entered. The threshold adopted is 50%: all the reduced prices that represent a reduction greater than 50% compared to the full price are listed.

- If no reduced price presents a reduction greater than 50% compared to the full price, the following message box (Figure 4.66) will appear;

Figure 4.66



- Otherwise, the elementary items that show reduced prices that represent a reduction greater than 50% compared to the full price are listed in a report (Figure 4.67 for monthly and Figure 4.68 for bimonthly products) that provides several information on them. The acronym for this type of warning is **RP (Reduced Price)** and it is highlighted in orange colour (Figure 4.67).

Figure 4.67

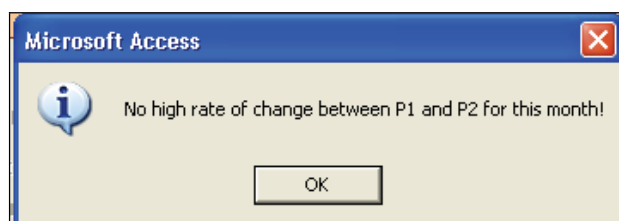
Year 2005		Month 1		MONTHLY MICRODATA CHECK												Bielina					
Price reduced more than 50%																					
Prod Code	Product	Series	Coll unit	Variety	Brand	Error Outlier	PreVEPr	Ed. price	Prev. Pri.	Price	PreSubP	Ed. %	Prev. Base	Base	Flg	Substitution				R	
																V	B	C	Q	Quant.	
01.01.02.01.01	Trnace mazo za	1	000002	000001	999999	EC	8,2	7,38	8,20	8,20	0	10	8,20	8,2	43	No	No	No	No	1000,00	
01.01.02.01.02	Trnace mazo od	1	000002	000001	999999	RP	9,5	4,28	9,50	9,50	0	35	9,50	9,5	43	No	No	No	No	1000,00	

d. Too high rate of Change between P1 and P2 (available only for bimonthly products).

This check function allows the user to detect possible outliers in each price observed for products for which prices are collected bimonthly; it carries out a control in terms of rate of change between the second and the first data collection (this is why this function is available only for bimonthly products).

- If no price observed in the second collection shows a rate of change greater than $\pm 10\%$ with respect to the prices observed in the first data collection, the following message box (Figure 4.68) will appear:

Figure 4.68



- Otherwise, the elementary items that show prices observed in the second collection with a rate of change greater than $\pm 10\%$ are listed in a report (Figure 4.69) that provides several information on them. The acronym for this type of warning is **FS (First - Second)** and it is highlighted in orange colour.

Figure 4.69

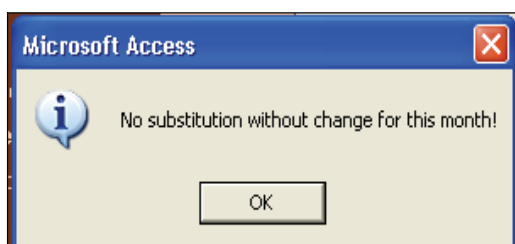
Year 2005		Month 3		BIMONTHLY MICRODATA CHECK										Sarajevo								
										Too high rate of change between P1 and P2												
Prod Code	description	Series	Collunit	Variety	Error		Price1r	Price2r	AvgPr.	PreSP1r	PreSP2r	Pre.Ease	Base	Flag1r	Flag2r	Substitution				Rate of Ch		
					Outlier	FS										V	C	Q1r	Q2r		Q1r	Q2r
01.01.07.02.01	Krompir	3	000017	000001	EC	FS	0,44	0,50	0,58	0,00	0,00	0,58	0,58	00	00	No	No	No	No	1000,00	1000,00	14
01.01.07.02.01	Krompir	4	000018	000001	EC	FS	0,44	0,50	0,58	0,00	0,00	0,44	0,44	00	00	No	No	No	No	1000,00	1000,00	14

e. Substitution without change (available for monthly and bimonthly products).

As illustrated in § 4.1 and 4.2, the substitution of elementary items implies entering, for the substituting item, the price referred to the previous month. In order to avoid an excessive amount of estimates of this price (that, if estimated, is equal to the price for the new item in the current month) this check function allows the user to detect all the elementary items for which there is a flag of substitution but the index calculated is equal to the index of the previous month (that is, the price of the previous month for the substituting item has been entered equal to the price of the current month). The aim of this check function is to limit unjustified persistence in the temporal profile of micro indices.

- If all the elementary items for which substitutions have been carried out show a variation with respect to the previous month, the following message box (Figure 4.70) will appear:

Figure 4.70



- Otherwise, all the elementary items for which there is a flag of substitution but the index calculated is equal to the index of the previous month are listed in a report (Figure 4.71 for monthly and Figure 4.72 for bimonthly products) that provides several information on them. The acronym for this type of warning is **NS (No Substitution)** and it is highlighted in clear blue colour.

Figure 4.71

Year 2005		Month 1		MONTHLY MICRODATA CHECK										Substitution without change				Bielina		
Prod Code	description	Series	Collunit	Variety	Brand	Error Outlier	Est. Price	Prev. Pri.	Price	PreSubP	Est %	Prev. Base	Base	Flg	Substitution				Quant.	Exc.
01.01.02.01.03	Telce mac o ra	1	000002	000001	002057	NS	0,00	10,50	10,30	10,5	0	10,50	10,5	22	No	Si	No	No	1000,00	0

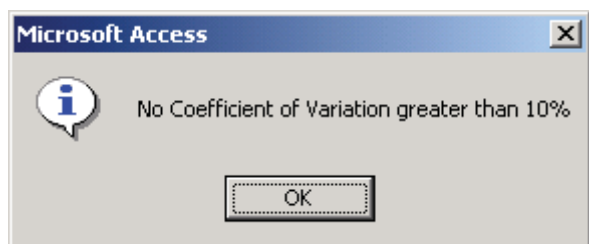
Figure 4.72

Year 2005		Month 3		BIMONTHLY MICRODATA CHECK										Substitution without change				Saraievo			
Prod Code	description	Series	Collunit	Variety	Error Outlier	Price1r	Price2r	AvgPr.	PreSP1r	PreSP2r	PreBase	Base	Flg1r	Flg2r	V	C	Q1r	Q2r	Q1r	Q2r	Rate of Ch
01.01.04.02.05	Mikrom,	1	000014	000001	NS	4,00	4,00	4,00	4,00	4,00	4,00	4	23	23	Si	No	No	No	1000,00	1000,00	0

f. Coefficient of variation (available only for bimonthly products)

This function allows the user to detect possible mistakes or outliers. It is measured as the ratio between the standard deviation and the mean calculated on the two current month prices and the second period price of the previous month. If the value is greater/lower than a fixed percentage a message box will appear (Fig. 4.73).

Figure 4.73



The acronym for this type of warning is **CV** (Coefficient of **V**ariation) and it is highlighted in green colour (Fig. 4.74).

Figure 4.74

Year 2006		Month 3		BIMONTHLY MICRODATA CHECK												Brcko							
Coeff. of variability																							
Prod Code	description	Series	Collunit	Variety	Error Outlier	PrevP2r Offic.O.	Price1r Offic.Q.	Price2r Offic.Q.	PreSP1r	PreSP2r	Pre.Base	Base	Flag1r	Flag2r	Substitution				Coeff of var				
															V	C	Q1r	Q2r		Q1r	Q2r		
.01.04.02.05.	Mileran,	1	000155	000002	CV	NS	FS	4,00	5,00	5,00	2,00	2,00	4,00	5	21	00	\$1	No	\$1	No	400,00	400,00	0,101

g. Statistics

This function allows the user to resume the main information concerning the data entered for the month in question. The list of information available in the current release of the procedure is displayed in Figures 4.75 and 4.76. Displaying statistics could be very useful to understand immediately (before carrying out the checks illustrated above) the main problems affecting the month for which data have been processed.

Figure 4.75

Monthly Statistics		Bielina	2005	1
Description	Total			
Recordcount	1174			
Price equal 0	1170			
Too hight rate of change	1			
Rate of change equal 0	1173			
Substitution	1			
Substitution without change	1			
Reduction price	2			
Reduction greater than 50%	1			
No collected data	0			

Figure 4.76

Bimonthly Statistics		Sarajevo	2005	3
Description	Total			
Record count	224			
Price equal 0	0			
Too high rate of change	41			
Too high rate of change p 1/p2	51			
Rate of change equal 0	149			
Substitution	0			
Substitution without change	0			
No collected data	48			

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h. Rate of change <>0 (available for monthly and for bimonthly products).

This check function exports in an Excel file all the elementary items for which a rate of change is calculated with respect to the previous month. Together with the list of elementary items, the rates of change are shown.

- Figure 4.77 shows the Excel file produced by clicking on the Display button.

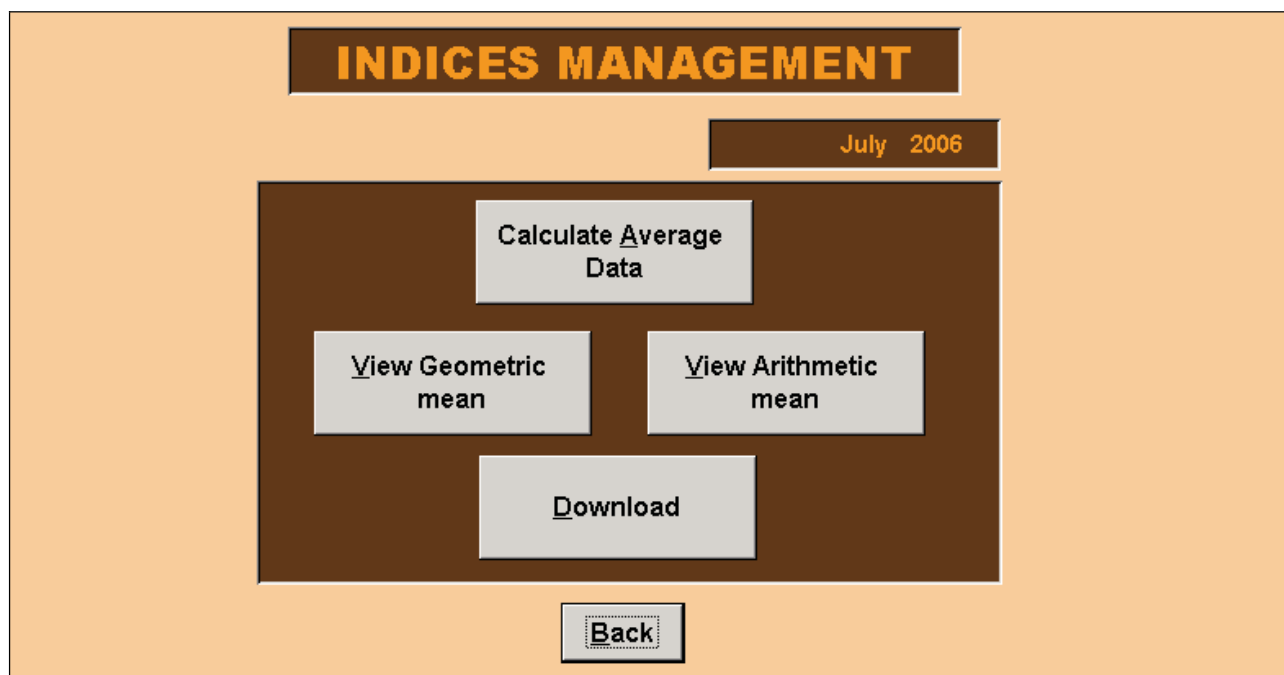
Figure 4.77

A	B	C	D	E	F	G	H
Town	Month	Prod	Desc Prod	Coll Unit	Price	Variation	
103	6	01.01.01.02.01.01	Pšenicno brašno, bijelo	HELJIC	1,54	12,40	
103	6	01.01.01.02.01.01	Pšenicno brašno, bijelo	HOŠE KOMERC-prodavnica AS	1,35	4,60	
103	6	01.01.01.02.01.01	Pšenicno brašno, bijelo	INTEREX	1,32	1,50	
103	6	01.01.01.02.02.01	Pšenicno brašno, crno	INTEREX	0,95	9,20	
103	6	01.01.01.02.03.01	Kukuruzno brašno	DOBRINJA	1,00	4,10	
103	6	01.01.01.02.03.01	Kukuruzno brašno	MERKATOR	1,10	5,70	
103	6	01.01.01.02.03.01	Kukuruzno brašno	MIG	1,10	10,00	
103	6	01.01.01.02.04.04	Preradevine od žitarica-Cornfleks	DOBRINJA	2,75	5,70	
103	6	01.01.01.02.04.05	Preradevine od žitarica-Musli	DOBRINJA	2,00	-6,10	
103	6	01.01.01.03.01.01	Polubijeli hljeb	INTEREX	0,65	8,30	
103	6	01.01.01.03.01.01	Polubijeli hljeb	MERKATOR	0,70	7,60	
103	6	01.01.01.03.02.01	Bijeli hljeb	INTEREX	0,67	3,00	
103	6	01.01.01.04.01.02	Industrijski rolat	DOBRINJA	1,08	8,00	
103	6	01.01.01.04.04.01	Slano trajno pecivo	DOBRINJA	0,50	-5,60	
103	6	01.01.01.04.04.01	Slano trajno pecivo	INTEREX	0,45	-6,20	
103	6	01.01.01.04.04.01	Slano trajno pecivo	ROBOT HRASNO	0,43	-8,50	
103	6	01.01.01.05.02.01	Tjestenina (makaroni, špageti i sl.)	ROBOT HRASNO	2,02	1,00	

5. Module 1 - Average data¹¹

Clicking the Average Data button of the General Menu (Chapter 2, Figure 2.1), the form in Figure 5.1 will appear. From this form the user is able to start the steps that are necessary to calculate the town indices at every level of aggregation, either taking into account the temporary reductions of prices or not.

Figure 5.1



Clicking the Calculate Average Data button, the procedure calculates the average data, that are the indices for the representative positions and average prices calculated as geometric mean of the elementary prices observed. If some prices were not inserted for the current month an error message (Figure 5.2) will be displayed, giving the possibility to list and view the missing prices.

Figure 5.2



Clicking the Download button in the form in Figure 5.1, the user can download the average data (indices for the representative positions and average prices calculated as geometric mean) that will participate in the calculation of the consumer price indices for their respective entity and for the whole country and the message box in Figure 5.3 will be displayed.

¹¹ Giuliano Gialli, ISTAT, Division for Price Statistics and Foreign Trade, Price Statistics Section

The average data are downloaded in a .txt file, in the same directory where back-end and front-end have been installed (Figure 5.4). The first part of the file name describes the code and name of the town, the second one the month and the year to which data are referred.

Figure 5.3



Figure 5.4



Clicking the View geometric mean button in the form in Figure 5.1, the form in Figure 5.5 will appear. This form allows the user to select a representative position (clicking Find record) and to scroll the time series (starting from December of the previous year) of a set of information concerning the representative position selected, either taking into account temporary reductions of prices or not. The set of available information consists of the average base price of the base period and the average price of the current period, both calculated as geometric mean of the elementary prices observed, of the indices in base December of the previous year=100, of the rates of change with respect to the previous month, of the amount of elementary observations that participate in the calculation of the average price and in the calculation of the indices and of the base of calculation of the indices.

The user can also move forward or backward by representative position codes, using the arrows beside the Find record button. Therefore he/she can save in Excel file the data displayed by clicking on the Excel icon.

Clicking on View arithmetic mean in the form in Figure 5.1, an Excel file (Figure 5.6) will display the arithmetical mean of the quotations in order to keep for a while a continuity with the retail prices index.

Figure 5.5

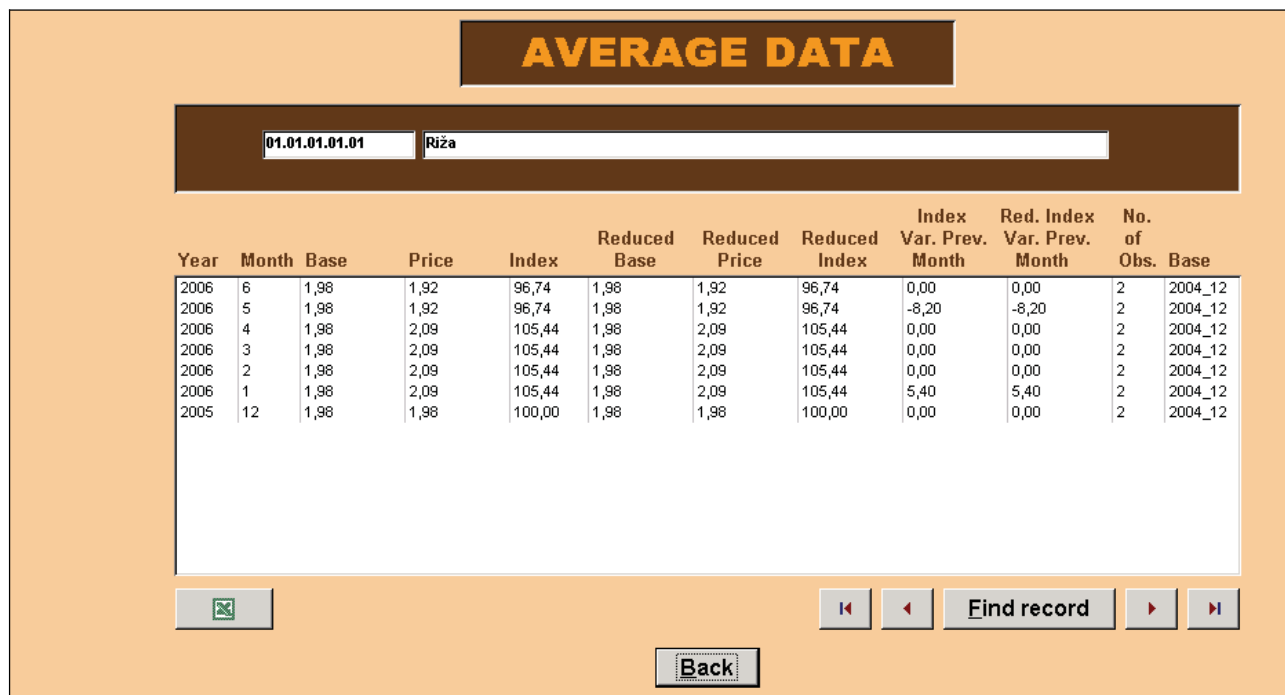


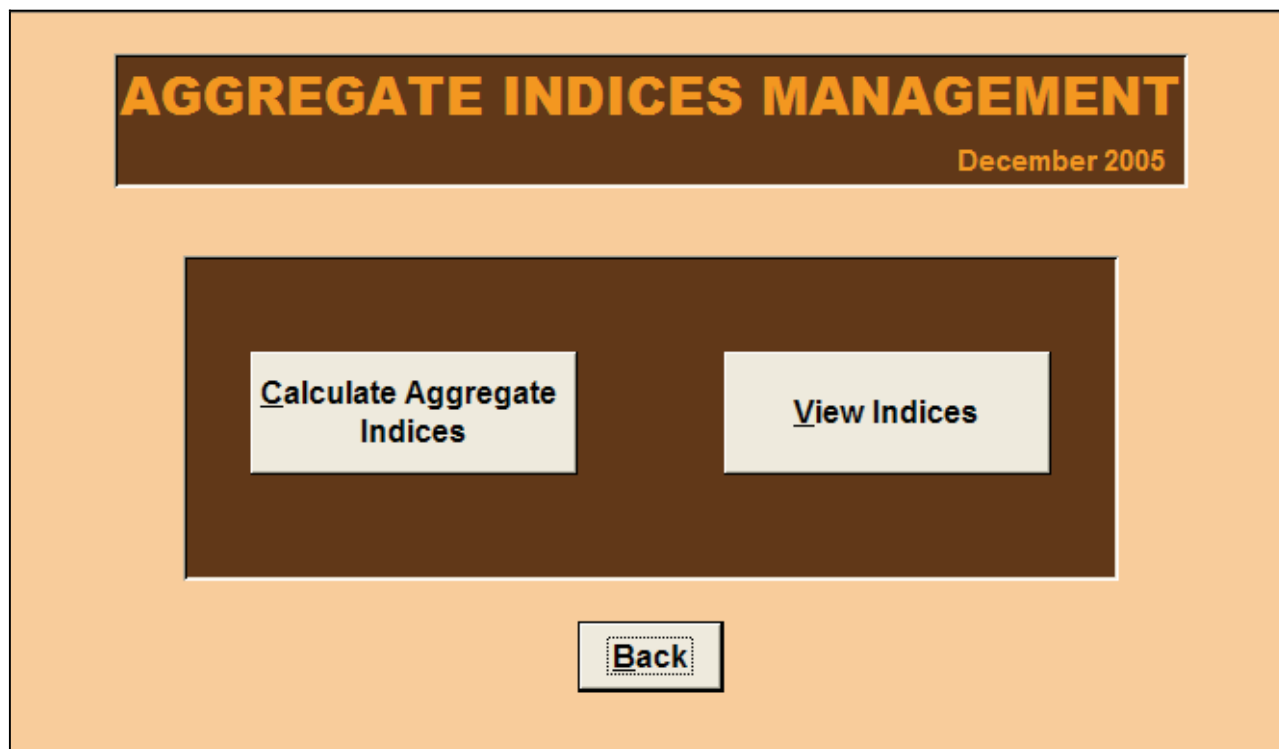
Figure 5.6

	A	B	C	D	E	F	G	H	I	J	K	L
	Product	Year	Month	Price	Base	Index	Reduced Price	Reduced Base	Reduced Index	Index Var	Red. Index Var	Observations Number
2	01.01.01.01.01	2006	1	2,11	2,03	103,94	2,11	2,03	103,94	3,90	3,90	8
3	01.01.01.01.01	2006	2	2,11	2,03	103,94	2,11	2,03	103,94	0,00	0,00	8
4	01.01.01.01.01	2006	3	2,10	2,03	103,45	2,10	2,03	103,45	-0,40	-0,40	8
5	01.01.01.01.01	2006	4	2,11	2,03	103,94	2,11	2,03	103,94	0,40	0,40	8
6	01.01.01.01.01	2006	5	2,10	2,03	103,45	2,10	2,03	103,45	-0,40	-0,40	8
7	01.01.01.01.01	2006	6	2,10	2,03	103,45	2,10	2,03	103,45	0,00	0,00	8
8	01.01.01.02.01	2006	1	1,25	1,23	101,63	1,25	1,23	101,63	1,60	1,60	8
9	01.01.01.02.01	2006	2	1,23	1,23	100,00	1,23	1,23	100,00	-1,60	-1,60	8
10	01.01.01.02.01	2006	3	1,23	1,23	100,00	1,23	1,23	100,00	0,00	0,00	8
11	01.01.01.02.01	2006	4	1,25	1,23	101,63	1,25	1,23	101,63	1,60	1,60	8
12	01.01.01.02.01	2006	5	1,27	1,23	103,25	1,27	1,23	103,25	1,60	1,60	8
13	01.01.01.02.01	2006	6	1,31	1,23	106,50	1,31	1,23	106,50	3,10	3,10	8
14	01.01.01.02.02	2006	1	0,78	0,75	104,00	0,78	0,75	104,00	4,00	4,00	3
15	01.01.01.02.02	2006	2	0,79	0,75	105,33	0,79	0,75	105,33	1,20	1,20	3
16	01.01.01.02.02	2006	3	0,79	0,75	105,33	0,79	0,75	105,33	0,00	0,00	3
17	01.01.01.02.02	2006	4	0,79	0,75	105,33	0,79	0,75	105,33	0,00	0,00	3
18	01.01.01.02.02	2006	5	0,79	0,75	105,33	0,79	0,75	105,33	0,00	0,00	3
19	01.01.01.02.02	2006	6	0,81	0,75	108,00	0,81	0,75	108,00	2,50	2,50	3

6. Module 1 – Macrodata management¹²

Clicking the Average data button of the General Menu (Chapter 2, Figure 2.1), the form in Figure 6.1 will appear. This is a crucial form as it is the form that allows the user to carry out in a simple way the calculation of the town aggregate indices. Really, the user is able to calculate all the aggregate indices either in base December of the previous year or in reference base (2005=100), either taking into account temporary reductions of prices or not, by clicking on Calculate Aggregate Indices.

Figure 6.1



At the end of the calculations, the message box in Figure 6.2 will be displayed.

Then clicking the View Indices button, the form in Figure 6.3 will appear: selecting the sort of indices the user wants to be displayed (in the box on the left) and then clicking on Show Indices, the table in Figure 6.4 will be displayed (the example is referred to indices in reference base 2005=100 for a single town). All the indices from the representative positions to the general ones are displayed starting from first index that has been calculated (in 2006 it is January 2005 for the indices in base 2005=100 and December for the indices in base December 2005=100).

The table displayed is already an Excel file (Figure 6.5) that is available in the directory where the procedure runs.

¹² Antonella Simone, ISTAT, Division for Price Statistics and Foreign Trade, Price Statistics Section

Figure 6.2

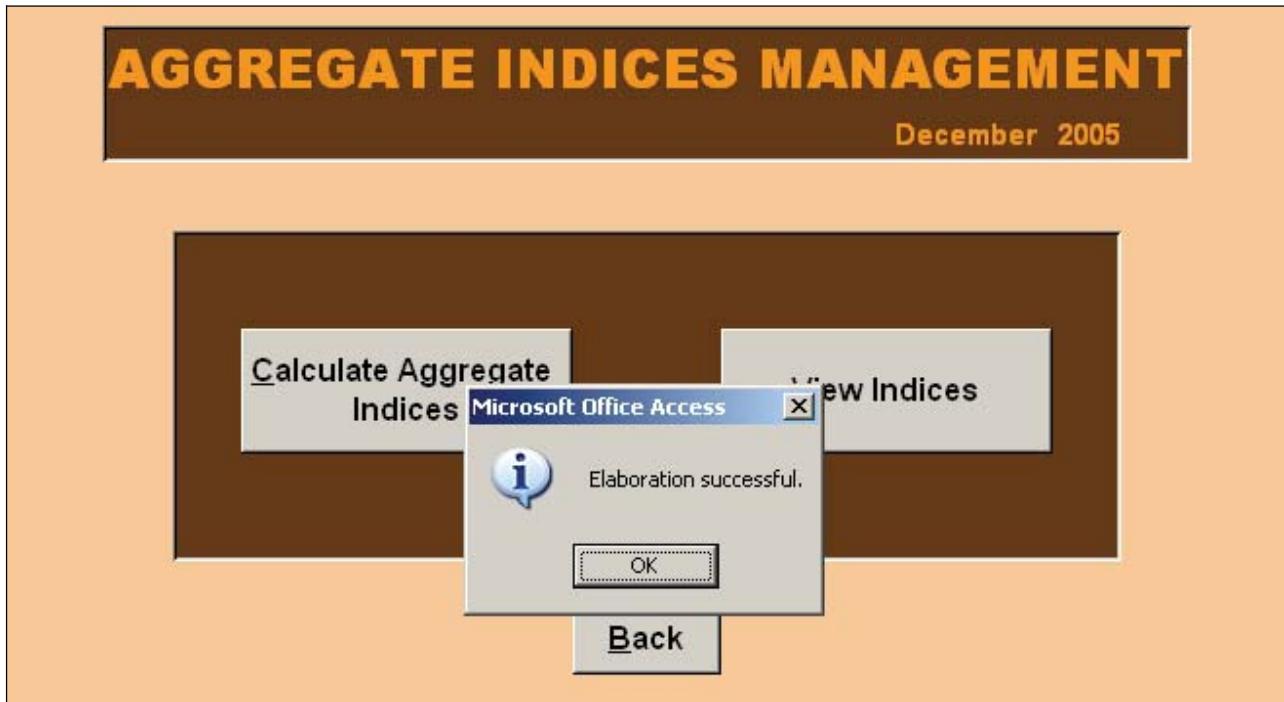


Figure 6.3

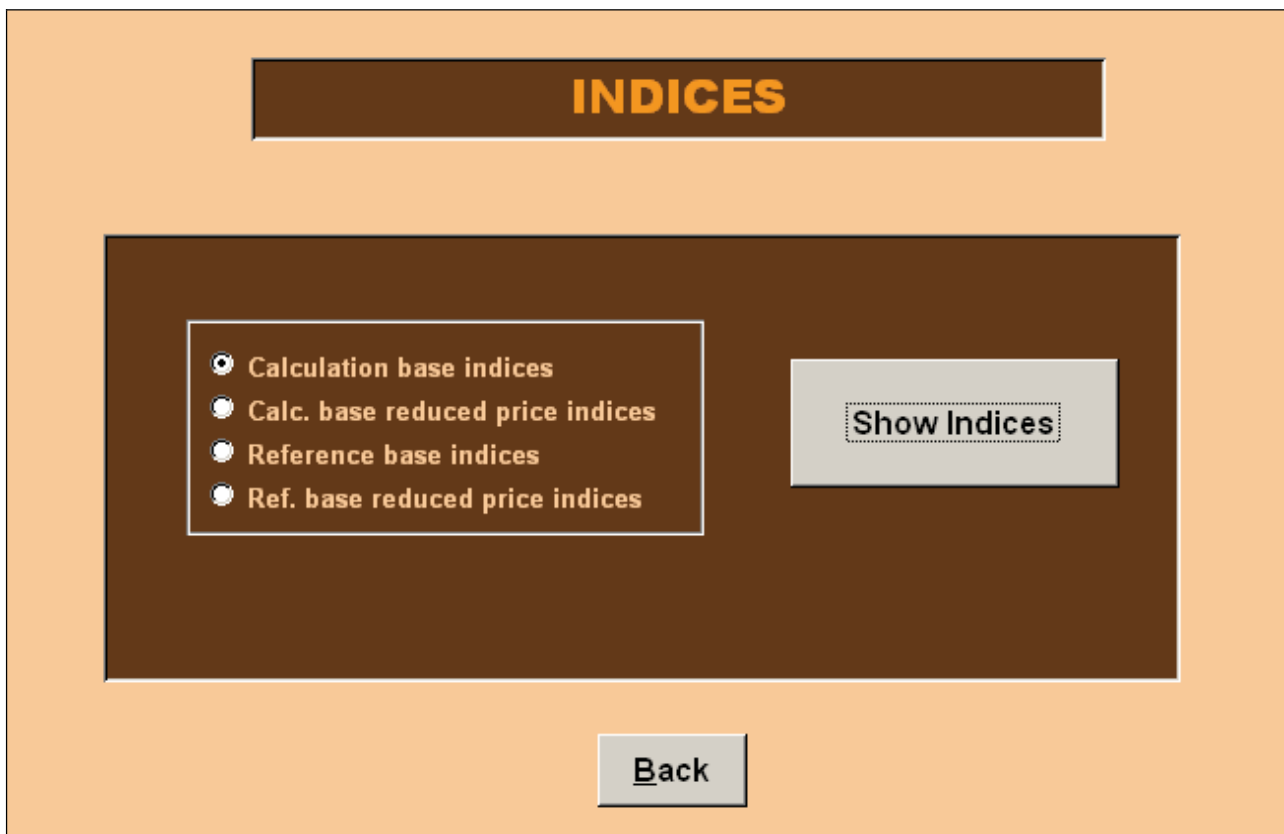
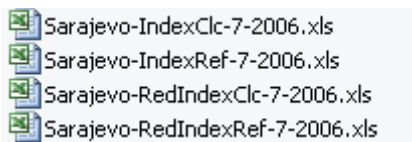


Figure 6.4

Entity Code	Town Code	Town	Synthesis Code	Synthesis Description	Synthesis Type Description	Base	200501	200502
1	103	Sarajevo	00	General Index	General Index	Ref	99,04	99,07
1	103	Sarajevo	01	BEVERAGES	Division	Ref	99,18	99,10
1	103	Sarajevo	01.01	Food	Group	Ref	99,53	98,96
1	103	Sarajevo	01.01.01	Bread and cereals	Class	Ref	97,96	98,05
1	103	Sarajevo	01.01.01.01	Rice	Voice Of Product	Ref	97,67	97,67
1	103	Sarajevo	01.01.01.01.01	Riža	Representative Position	Ref	97,67	97,67
1	103	Sarajevo	01.01.01.02	products	Voice Of Product	Ref	98,80	99,10
1	103	Sarajevo	01.01.01.02.01	Pšenicno brašno, bijelo	Representative Position	Ref	95,75	96,21
1	103	Sarajevo	01.01.01.02.02	Pšenicno brašno, crno	Representative Position	Ref	106,06	106,06
1	103	Sarajevo	01.01.01.02.03	Kukuruzno brašno	Representative Position	Ref	99,03	99,03
1	103	Sarajevo	01.01.01.02.04	Cereal grain products	Representative Position	Ref	98,33	98,81
1	103	Sarajevo	01.01.01.03	Bread	Voice Of Product	Ref	95,66	95,66
1	103	Sarajevo	01.01.01.03.01	Polubijeli hljeb	Representative Position	Ref	97,30	97,30
1	103	Sarajevo	01.01.01.03.02	Bijeli hljeb	Representative Position	Ref	94,74	94,74
1	103	Sarajevo	01.01.01.03.03	Kifla (pecivo)	Representative Position	Ref	98,28	98,28
1	103	Sarajevo	01.01.01.04	Other bakery products	Voice Of Product	Ref	99,67	99,51
1	103	Sarajevo	01.01.01.04.01	sweet biscuits and pastry products	Representative Position	Ref	99,42	99,14

Figure 6.5

The structure of the file names in Figure 6.5 is the following:

Geographical reference – Index sort of indices-m-yyyy.xls

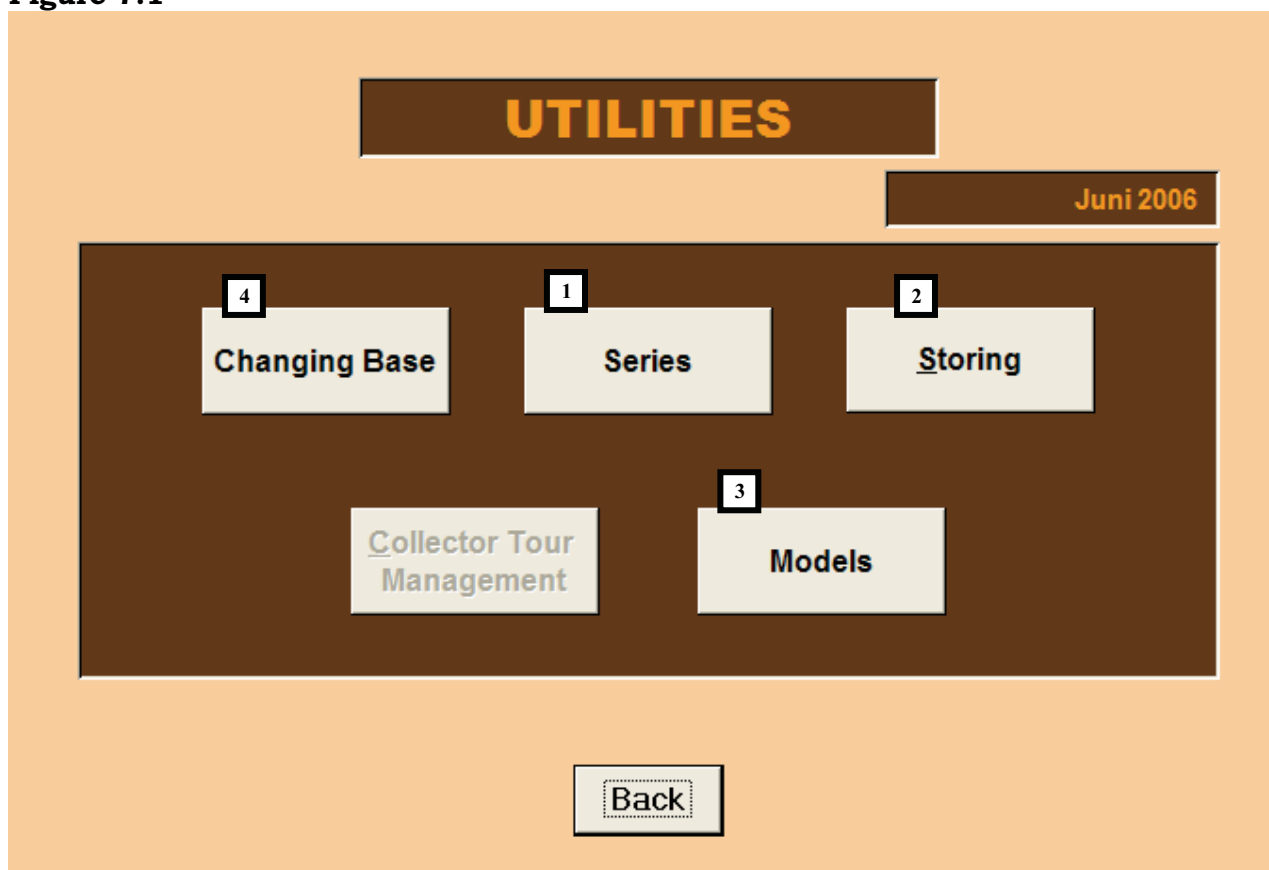
where:

- geographical reference= town name (i.e. Sarajevo);
- sort of indices= Clc (indices in base December of the previous year=100 without temporary reductions of prices), RedClc (indices in base December of the previous year=100 with temporary reductions of prices), Ref (indices in base 2005=100 without temporary reductions of prices), RedRef (indices in base 2005=100 with temporary reductions of prices);
- m= month to which the indices elaborated are referred;
- yyyy= year to which the indices elaborated are referred.

7. Module 1 - Utilities¹³

Clicking the Utilities button in the General Menu, the form in Figure 7.1 will appear. It allows the user to manage series (1), to store all the data that have been processed and the results of the calculation for the month in question (2), to print the questionnaires (3) for the data collection in the field, and to build (4) a new empty database to start the collection for a new year. The utility Collector tour management has to be implemented.

Figure 7.1



7.1 Series

Clicking the Series button in Utilities, the form in Figure 7.2 will appear. This form allows the user to manage single series. A series is represented by the observations collected over time for one product in one collection unit¹⁴. The product code, together with the collection unit code and the series number identify univocally the elementary observation.

In December the local collection plans are defined for each town that participates in the survey. The main rule is that during the year the collection plan is invariable, except

¹³ Antonella Simone, ISTAT, Division for Price Statistics and Foreign Trade, Price Statistics Section

¹⁴ "The mix of information regarding product, outlet, variety, brand and package identifies exactly the single item for which prices have to be collected monthly or bimonthly" (Handbook for consumer price data collection in BiH). The concept of series is the time point of view to look at each single item.

for necessary substitutions that are managed, keeping the total amount of elementary observations (series) fixed.

Therefore, the functions that are enabled by this form have to be managed very carefully, only for specific reasons and with clear and specific aims:

- inserting new series in order to enhance the local collection plans in view of the change of base that is carried out yearly. These new series do not participate in the current calculation of the indices (deactivated);
- after collecting and storing the data of December, managing the yearly change of base deactivating the series that have to be deleted from the local data collection (this option can also be reversed, activating again the series if a mistake has been done).

Figure 7.2

The image shows a dialog box titled "CHOOSE OPTION" with a light orange background. Inside, there are two columns of radio button options. The left column contains "Monthly" (labeled 1) and "Bimonthly" (labeled 2). The right column contains "Act./Deact." (labeled 3) and "Insert" (labeled 4). At the bottom, there are two buttons: "Ok" (labeled 5) and "Back" (labeled 6).

Description

- 1 Check box to manage monthly series.
- 2 Check box to manage bimonthly series.
- 3 Check box to manage the activation or deactivation of a series.
- 4 Check box to manage the insertion of a series.

Use

Selecting different couples of options allows to manage two main types of functions:

INSERTING NEW SERIES

Selecting Monthly (1) and Insert (4), the form in Figure 7.3 will appear. The forms and options for bimonthly series will not be illustrated (except for the cells for the two prices

and quantities collected), as they are the same as monthly series. Therefore the user who wants to manage the insertion of a bimonthly series can make reference to the description of the form to insert monthly series.

Figure 7.3

Description

- 1 Municipality code and description;
- 2 product code and description;
- 3 variety code and description;
- 4 collection unit code and description;
- 5 brand code and description;
- 6 collector code and name;
- 7 collected price;
- 8 collected reduced price (if available);
- 9 percentage of reduction (if available);
- 10 collected quantity;
- 11 button to insert series;
- 12 new series number;
- 13 back.

Use

The combo boxes in the form in Figure 7.3 allow the user to select the information concerning municipality (1), product (2), variety (3), collection unit (4), brand (5) and collector (6). Then he/she has to enter the collected price (7, compulsory data); moreover, if collected, the user can also insert the reduced price or the percentage of reduction, or both of them.

For bimonthly products the compulsory data is the price of the first data collection (Figure 7.4): if the price of the second data collection is not inserted, the price of the first one will be automatically carried forward, whereas if neither the first nor the second collected quantities are inserted, the official quantity is assumed as default quantity for the two data collections.

Figure 7.4

The screenshot shows a data entry form with a dark brown background. It contains several input fields and a button. The fields are labeled: Price1r (0,00), Quantity 1r (0,00), Price 2r (0,00), Quantity 2r (0,00), Avg Price (0,00), and New Series. A large grey button labeled 'Insert series' is positioned to the right of the input fields.

Also for monthly products the default quantity is the requested quantity (10), but it can be changed if the collected quantity is different from the requested one.

As soon as all the information is entered the user can store the new series, clicking on Insert series (11). If the series already exists a message box (Figure 7.5) will appear.

Figure 7.5

The screenshot shows a data entry form with a dark brown background. The form is divided into two sections. The top section contains dropdown menus for Varieties (000001, Variety 1), Coll.Unit (000002, DOBRINJA), Brand (000002, 12-16), and Collector (103, Dautović). The bottom section contains input fields for Price (10,00), Red Price (0,00), Red % (0), and Quantity (1000,00), along with a 'New Series' field containing the value '9' and an 'Insert series' button. A Microsoft Access error message box is overlaid on the form, displaying the text 'Series already existing!' and an 'OK' button.

The message box in Figure 7.5 appears only if all the information entered is the same as an already existing series. A new series, referred to a product for which an elementary item has been already selected in that collection unit, means that the new series differs from the old one only in brand or variety. This case is possible when an outlet captures a big amount of consumer demand, so that it is preferable to collect prices for two elementary items (e.g. package of 500 grams of short pasta of Buitoni and package of 500

grams of short pasta of Barilla) referred to the same product (soup pasta made of white flour with eggs, code 01.01.01.05.02) in the same outlet. If the user wants to insert a series referred to the same product in the same outlet, but for a different brand or variety, the procedure asks to confirm this insertion through the message box in Figure 7.6.

Figure 7.6

If the insertion is confirmed by clicking OK in message in Figure 7.6 or the series inserted is a really new one, the message box in Figure 7.7 will appear and the procedure will automatically spread for the previous months the price entered and the index (that will be equal to 100) until December of the previous year.

Figure 7.7

Controls on the inserted price will be carried out: if the possible reduced price is greater than the full purchase price, an error message (Figure 7.8) will appear and the cell of the reduced price (Figure 7.9) of the new series will be automatically selected to adjust the mistake.

Figure 7.8

The screenshot shows a software form with several input fields and a dialog box. The form fields are: Coll.Unit (000006), Brand (000004), Collector (102), and a dropdown menu (MERKATOR). Below these are fields for Price (5,00), Red Price (7,00), Red % (7), Quantity (1000,00), and New Series (9). An "Insert series" button is located between the Quantity and New Series fields. A "Microsoft Office Access" dialog box is overlaid on the form, displaying a yellow warning triangle and the text "Price reduction greater than price!". The dialog box has an "OK" button.

Figure 7.9

The screenshot shows the same software form as in Figure 7.8, but with the "Red Price" field (7,00) highlighted with a black selection box. The "Insert series" button and other fields remain visible.

In case of inconsistency between the possible reduced price and the percentage of reduction an error message (Figure 7.10) will appear, and the percentage of reduction will be selected to be modified (Figure 7.11).

Figure 7.10

The screenshot shows the software form with a "Data error!" dialog box overlaid. The dialog box has a red "X" icon and the text "Data error!". The form fields are: Coll.Unit (000006), Brand (000004), Collector (102), and a dropdown menu (MERKATOR). Below these are fields for Price (5,00), Red Price (4,00), Red % (7), Quantity (1000,00), and New Series (9). An "Insert series" button is located between the Quantity and New Series fields.

Figure 7.11

The screenshot shows the same software form as in Figure 7.10, but with the "Red %" field (7) highlighted with a black selection box. The "Insert series" button and other fields remain visible.

ACTIVATING/DEACTIVATING SERIES

Selecting Monthly (1) and Act./Deact. (3) in the form in Figure 7.2, the form in Figure 7.12 will appear. The forms and options for bimonthly series will not be illustrated, as they are the same as for monthly series (except for the display of the two prices and quantities collected). Therefore, the user who wants to manage the activation or

deactivation of a bimonthly series can make reference to the description of the form for monthly series.

Figure 7.12

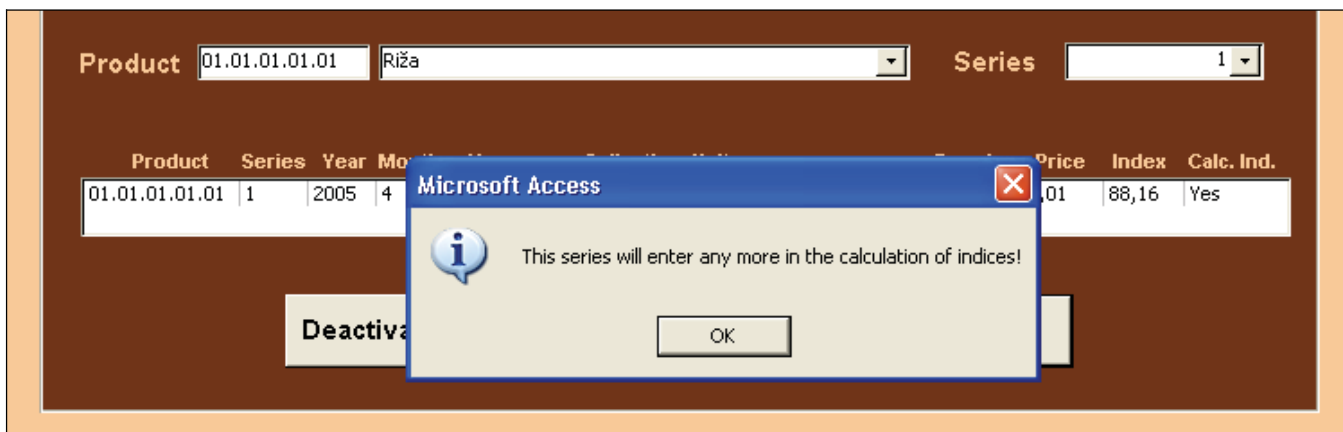
Product	Series	Year	Month	Var.	Collection Unit	Brand	Price	Index	Calc. Ind.
01.01.01.01.01	9	2005	4	000001	000005 VILNED	000004	5,00	100,00	NoNew

Since the local sample is invariable during the year, by default a new series inserted does not participate in the calculation of product elementary index, unless it is expressly activated. Therefore the default value (1) is NoNew (No for not in calculation, New for new series), which means that a new series has been created but it does not participate in the calculation of the product index (it is deactivated).

Usually the task of activating or deactivating a series must be carried out at the end of the year, after the current data collection for December during the yearly change of base, when it is possible to revise, in addition to the basket of products and the structure of the weights, also the local sample.

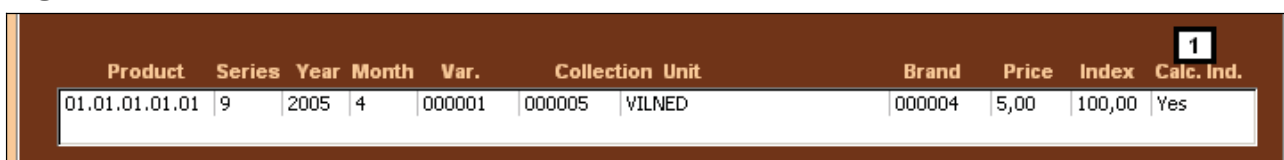
For example, if a series inserted during the year with the default value (NoNew) has to be activated in order to participate in the calculation of the indices during the new year, the user can make it active, clicking the button Activate series (2). The message box in Figure 7.13 will appear.

Figure 7.13



The value (1 in Figure 7.14) will become Yes.

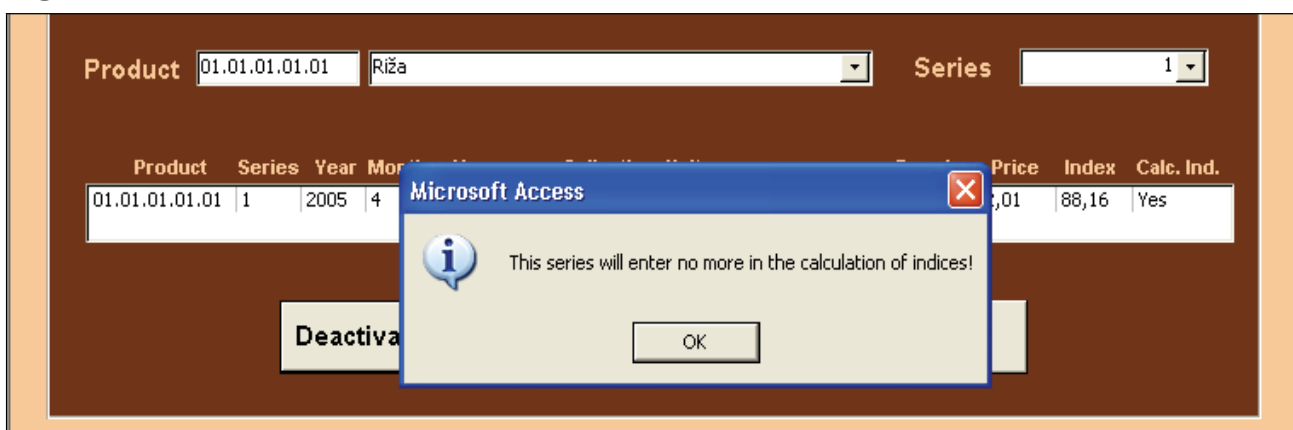
Figure 7.14



Otherwise if, for example, an elementary item is no longer available or it has been substituted for another item in an outlet with a wider demand and the user wants to cancel the series, he/she can deactivate it clicking the button Deactivate series (2). In this case the series is not deleted physically but only logically; this means that in Data Entry the price needs to be repeated every month, until the end of the current year.

The deactivation of a series implies that it will not participate any more in the calculation of indices, as shown in Figure 7.15. This is the reason why the deactivating function is to be used managing the yearly change of base, only after the collection and storage of the data of December.

Figure 7.15



The new value (1, Figure 7.16) will become NoDel (No for not in calculation, Del for logically deleted).

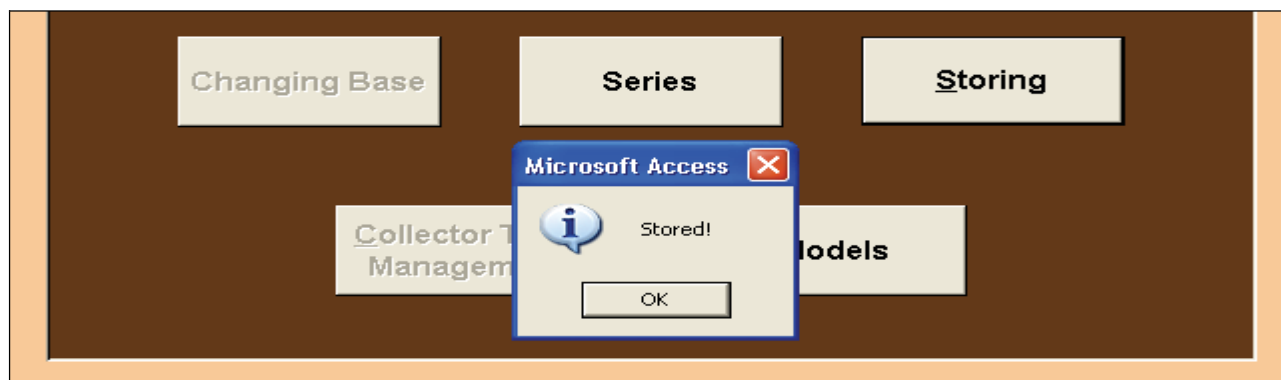
Figure 7.16

Product	Series	Year	Month	Var.	Collection Unit	Brand	Price	Index	Calc. Ind.	
01.01.01.01.01	9	2005	4	000001	000005	VILNED	000004	5,00	100,00	NoDel

7.2 Storing

Selecting Storing (2) in the form in Figure 7.1, all data of the month in question (micro, average and aggregate data calculated) will be stored (Figure 7.17) and the data entry will be set up for the following month.

Figure 7.17



This step has to be carried out every month at the end of the data entry, after correction of possible errors in the microdata (the user can detect them using the options Check or Reporting) and after the calculation of average and aggregate data. It is evident that the user has to carry out the necessary adjustments of the microdata before storing them, because the procedure does not allow to edit micro data for a stored month.

If a collected price has not been entered and one or more prices are equal to 0 in the current month, calculation of average data will not be possible, and clicking on Storing the message box in Figure 7.18 will appear.

Figure 7.18



Therefore the user, through the function Check in Microdata management (see Chapter 4), can detect the prices equal to 0 both for monthly and bimonthly products and finalise the data entry and subsequent steps.

7.3 Models

Selecting Models (3) in the form in Figure 7.1, the form in Figure 7.19 will appear.

Figure 7.19

The screenshot shows a web form titled "MODELS". The form is contained within a light orange border. At the top center of the form is a dark brown header with the word "MODELS" in orange. Below the header is a white box with a dark brown border. Inside this box, on the left, is a dark brown box titled "Choose model". This box contains two radio buttons: "1 Monthly" and "2 Bimonthly". To the right of the "Choose model" box are two radio buttons: "3 Collection unit" (with a dropdown menu) and "4 All Collection unit". Below these options is a "Display" button. At the bottom of the form, outside the white box, is a "Back" button.

Description

- 1 Check box to manage models of monthly products;
- 2 check box to manage models of bimonthly products;
- 3 check box to manage the selection of a specific collection unit;
- 4 check box to select all collection units.

Use

Selecting different couples of options the user can manage two types of questionnaires:

- the questionnaire to collect monthly data (next page). Each questionnaire is referred to a single item and it shows the information concerning product, variety, brand and collection unit (besides information regarding the town where prices are collected, the collector in charge of the collection for that single item, etc.);
- the questionnaires to collect bimonthly data (following page). Also these questionnaires show the information as in the questionnaires for monthly products.

STATISTICAL INSTITUTE

CONSUMER PRICE SURVEY

TOWN CODE/NAME: **103 Sarajevo**

COLLECTOR: **101**

OUTLET CODE: **000001**

OUTLET TYPE: **02**

OUTLET NAME : **AS**

PRODUCT CODE: **01.01.01.01.01**

SERIES : **1**

PRODUCT DESCRIPTION: **Rice**
Rice, not husked

Notes:

Unit value: **gr**

Official quantity: **1000**

Brand: **001048 ZLATO POLJE**

- 1. Substitution.....
- 2. Substitution.....
- 3. Substitution.....

Variety: **000000**

- 1. Substitution
- 2. Substitution
- 3. Substitution

Collected quantity: **1000**

1. Substitution:2. Substitution:3. Substitution.....

2005.

Months	Collected price	Changes				Flags	Previous price	Reduced price	% reduction	
		Brand	Variety	Quantity	Outlet					
12	December	1,19	441	0	1000,00	1	0	0,00	1,19	0,00
1	January	1,10	441	0	1000,00	1	0	0,00	0,00	0,00
2	February									
3	March									
4	April									
5	May									
6	June									
7	July									
8	August									
9	September									
10	October									
11	November									
12	December									

STATISTICAL INSTITUTE

CONSUMER PRICE SURVEY FOR FRESH VEGETABLES AND FRUITS

TOWN CODE/NAME: **103 Sarajevo**

COLLECTOR: **102**

OUTLET CODE : **000015**
 OUTLET NAME: **GREEN MARKET CIGLANE**

OUTLET TYPE: **06**

PRODUCT CODE : **01.01.04.02.05**
 PRODUCT DESCRIPTION: **Whipped cream**
Home-made and Industrial

SERIES: **1**

Notes:

Unit value: **gr**

Official quantity: **1000**

Variety: **000001 Variety 1**

- 1. Substitution.....
- 2. Substitution.....
- 3. Substitution.....

Collected quantity:**1000** 1. Substitution:2. Substitution:.....3. Substitution:

.2005.

Months	Collected prices		Flags	Changes				Previous prices		
	First period	Second period		Outlet	Variety	Quantity first	Quantity second	First period	Second period	
12	December	6,00	6,00	0	15	1	1000,00	1000,00	0,00	0,00
1	January	6,00	14,00	0	15	1	1000,00	1000,00	0,00	0,00
2	February									
3	March									
4	April									
5	May									
6	June									
7	July									
8	August									
9	September									
10	October									
11	November									
12	December									

The questionnaires have to be printed at the beginning of the year, after the yearly change of base so that collection books (one for each outlet) for collectors can be prepared.

Anyway, if during the year substitutions of collection units are carried out, it is possible to display and print again the questionnaires selecting the new collection unit in the check box (3) and then clicking the Display button (Figure 7.19).

7.4 Changing base

The Changing Base operations have to be carried out at the end of the year after the finalisation, in December of the current year, of the data collection, average data and indices calculation and data validation on the base of the sample selected in December of the previous year.

At present, the best way to proceed is:

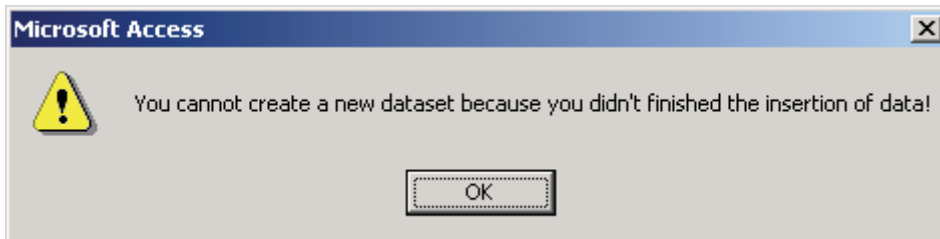
- after validation and storage of the data of December of the current year, to make a backup of the back-end, in order to store the microdata and the calculation indices (the indices in reference period base will remain available also in the back-end for the new year);
- in the back-end that will be used for the new year, to make all the changes in terms of elementary items sample, that are necessary to allow the sample plan at town level to be representative of the changes in trading distribution and in consumer behaviour;
- to click the Changing Base button in the Utilities menu; the form in Figure 7.20 will appear. Clicking on Store and Create New Dataset (1), a new dataset for the successive year will be created. The function Rebuild Database will be further implemented and it will allow to restore the old dataset. Clicking on button (1) some checks will be run.

Figure 7.20



If data entry for the current year is not complete, the message in Figure 7.21 will appear. In this case the data entry needs to be finalised (and the average data calculation and validation) either in the back-end for the new year or in the backed up back-end.

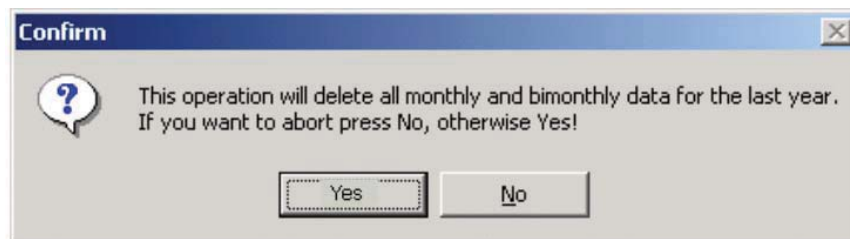
Figure 7.21



If the procedure goes on, the message shown in Figure 7.22 warns the user that Store and Create New Dataset is not a reversible operation (therefore it is strictly recommended to make a backup of the back-end before clicking the button in Figure 7.20).

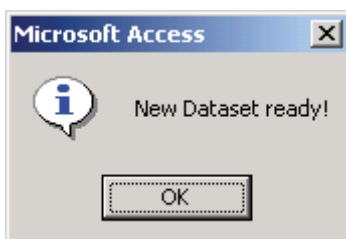
Clicking on Yes, the back-end will be reset and all the microdata inserted during the year just finished will be deleted.

Figure 7.22



When the process ends, the message in Figure 7.23 will appear, and it will be possible to start the data entry for the new year.

Figure 7.23



8. Module 1 - Reporting¹⁵

Clicking on the Reporting button in the General Menu, the form Reporting (Figure 8.1) will appear.

Figure 8.1



From this form the user can access the display of monthly and bimonthly microdata. To view data the user can choose between two options: clicking on Display, a report (Figure 8.2 and 8.3) will appear; it is not modifiable but can be exported in rtf format (Microsoft Word) (in Excel it will lose the correct format). The report will show: Product, Variety, Brand, Collection unit, Municipality and all the information about previous months prices, bases, possible pre-change prices, indices, etc.

¹⁵ Antonella Simone, ISTAT, Division for Price Statistics and Foreign Trade, Price Statistics Section

Figure 8.2

MONTHLY ELEMENTARY DATA

Product: 01.01.01.01.01.01 Pirinač, glaziran

Series: 1

Variety: 000001 Okruglo zmo
 Brand: 002377 FRUCTA PAK
 Collection Unit 000004 DO"ŽARATEKS"
 Municipality: 10162 Brcko

Month	Year	Variety	Brand	Price	Base	Price	PreCh	Index	Quant	Flag	Note	Red. Perc.	Red. Pric	Red.Inde	Red. Base	IndClc
7	2006	000001	002377	0,0000	0,0000	0,0000	0,0000	0,0000	1000,00	00	No	0	0,0000	0,0000	0,0000	Yes
6	2006	000001	002377	1,1900	1,1200	0,0000	106,2500	106,2500	1000,00	00	No	0	0,0000	106,2500	1,1200	Yes
5	2006	000001	002377	1,1900	1,1200	0,0000	106,2500	106,2500	1000,00	00	No	0	0,0000	106,2500	1,1200	Yes
4	2006	000001	002377	1,1900	1,1200	0,0000	106,2500	106,2500	1000,00	00	No	0	0,0000	106,2500	1,1200	Yes
3	2006	000001	002377	1,1900	1,1200	0,0000	106,2500	106,2500	1000,00	00	No	0	0,0000	106,2500	1,1200	Yes
2	2006	000001	002377	1,1900	1,1200	0,0000	106,2500	106,2500	1000,00	00	No	0	0,0000	106,2500	1,1200	Yes
1	2006	000001	002377	1,1900	1,1200	0,0000	106,2500	106,2500	1000,00	00	No	0	0,0000	106,2500	1,1200	Yes
12	2005	000001	002377	1,1200	1,1200	0,0000	100,0000	100,0000	1000,00	00	No	0	0,0000	100,0000	1,1200	Yes

Figure 8.3

BIMONTHLY ELEMENTARY DATA

Product: 01.01.04.02.05.05 Mileram, doamći i industrijski

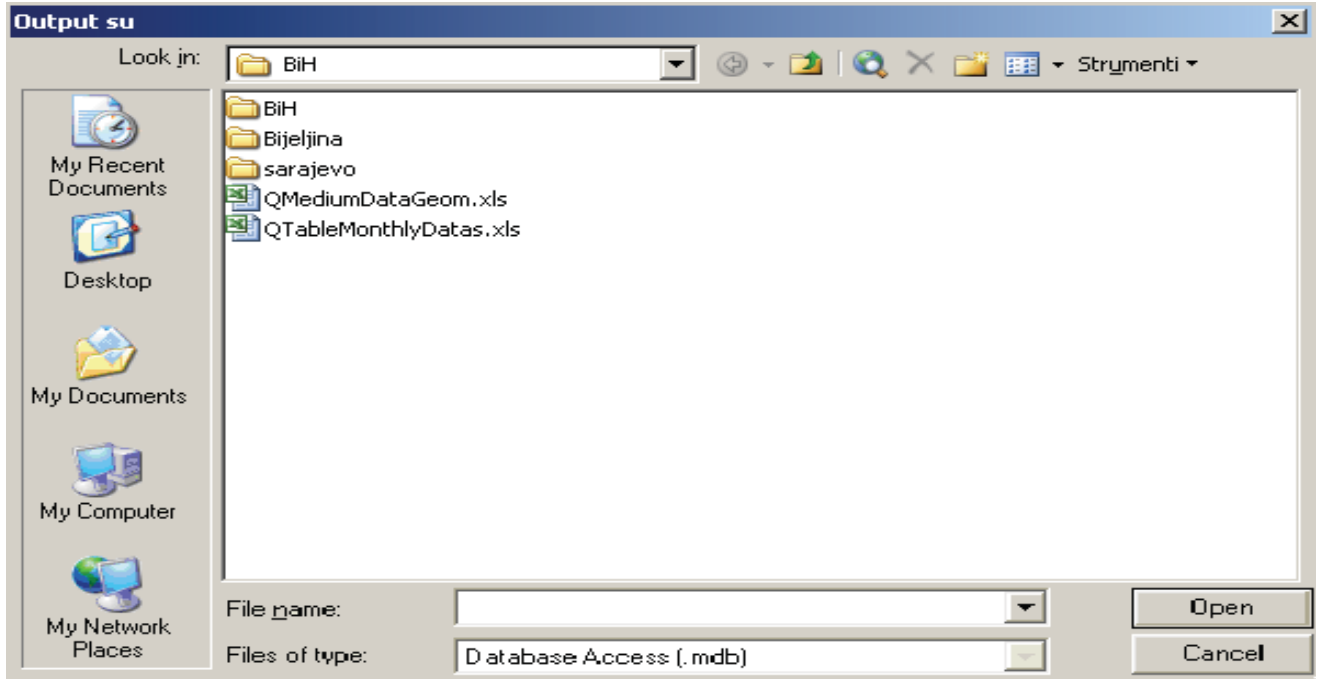
Series: 1

Variety: 000001 Domaći
 Collection Unit 000002 MGS"CENTAR"
 Municipality: 10162 Brcko

Month	Year	Variety	Price1	Price2	Avg Price	Base	PreChal	Pr	PreCha2	Pr	Index	Quant1	Quant2	Flag1	Flag2	Note	IndClc
12	2005	000001	3,0000	2,8000	2,8000	2,8000	0,0000	0,0000	100,0000	1000,00	1000,00	00	00	No	Yes		
7	2006	000002	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000	400,00	400,00	00	00	No	Yes		
6	2006	000002	2,0000	2,0000	5,0000	5,0000	0,0000	0,0000	100,0000	400,00	400,00	00	00	No	Yes		
5	2006	000002	2,0000	2,0000	5,0000	5,0000	0,0000	0,0000	100,0000	400,00	400,00	00	00	No	Yes		
4	2006	000002	2,0000	2,0000	5,0000	5,0000	0,0000	0,0000	100,0000	400,00	400,00	00	00	No	Yes		
3	2006	000002	2,0000	2,0000	5,0000	5,0000	2,0000	2,0000	100,0000	400,00	400,00	21	00	No	Yes		
2	2006	000001	2,0000	2,0000	4,0000	4,0000	0,0000	0,0000	100,0000	500,00	500,00	00	00	No	Yes		
1	2006	000001	2,0000	2,0000	4,0000	4,0000	2,0000	2,0000	100,0000	500,00	500,00	21	00	No	Yes		

The second option is to click "Save on a file" (Figure 8.4); a window will appear asking the path for saving an Excel file, always named "QTableMonthlyDatas" or "QTableBimonthlyDatas", depending on monthly or bimonthly data.

Figure 8.4



Once the path is given, the file will be automatically opened. It will show the same data as in the previous report but will give the possibility to manipulate them through formulae or different types of analysis (Figure 8.5).

Figure 8.5

	A	B	C	D	E	F	G	H	I	J	
	Municipality	Municipality Desc	Town	Town Desc	Prod Code	Prod Desc	Series	Year	Month	Var Code	Var
1	10880	N.SARAJEVO	103	Sarajevo	01.01.01.01.01	Riža	1	2005	1	000000	Generic
3	10880	N.SARAJEVO	103	Sarajevo	01.01.01.01.01	Riža	1	2005	2	000000	Generic
4	10880	N.SARAJEVO	103	Sarajevo	01.01.01.01.01	Riža	1	2005	3	000000	Generic
5	10880	N.SARAJEVO	103	Sarajevo	01.01.01.01.01	Riža	1	2005	4	000000	Generic
6	10880	N.SARAJEVO	103	Sarajevo	01.01.01.01.01	Riža	1	2005	12	000000	Generic
7	10871	N.GRAD	103	Sarajevo	01.01.01.01.01	Riža	2	2005	1	000000	Generic
8	10871	N.GRAD	103	Sarajevo	01.01.01.01.01	Riža	2	2005	2	000000	Generic
9	10871	N.GRAD	103	Sarajevo	01.01.01.01.01	Riža	2	2005	3	000000	Generic
10	10871	N.GRAD	103	Sarajevo	01.01.01.01.01	Riža	2	2005	4	000000	Generic
11	10871	N.GRAD	103	Sarajevo	01.01.01.01.01	Riža	2	2005	12	000000	Generic
12	10901	S.GRAD	103	Sarajevo	01.01.01.01.01	Riža	3	2005	1	000000	Generic
13	10901	S.GRAD	103	Sarajevo	01.01.01.01.01	Riža	3	2005	2	000000	Generic
14	10901	S.GRAD	103	Sarajevo	01.01.01.01.01	Riža	3	2005	3	000000	Generic
15	10901	S.GRAD	103	Sarajevo	01.01.01.01.01	Riža	3	2005	4	000000	Generic
16	10901	S.GRAD	103	Sarajevo	01.01.01.01.01	Riža	3	2005	12	000000	Generic
17	10839	CENTAR	103	Sarajevo	01.01.01.01.01	Riža	4	2005	1	000000	Generic
18	10839	CENTAR	103	Sarajevo	01.01.01.01.01	Riža	4	2005	2	000000	Generic
19	10839	CENTAR	103	Sarajevo	01.01.01.01.01	Riža	4	2005	3	000000	Generic
20	10839	CENTAR	103	Sarajevo	01.01.01.01.01	Riža	4	2005	4	000000	Generic

9. Module 2 - Calculating aggregate indices¹⁶

9.1 Starting the procedure

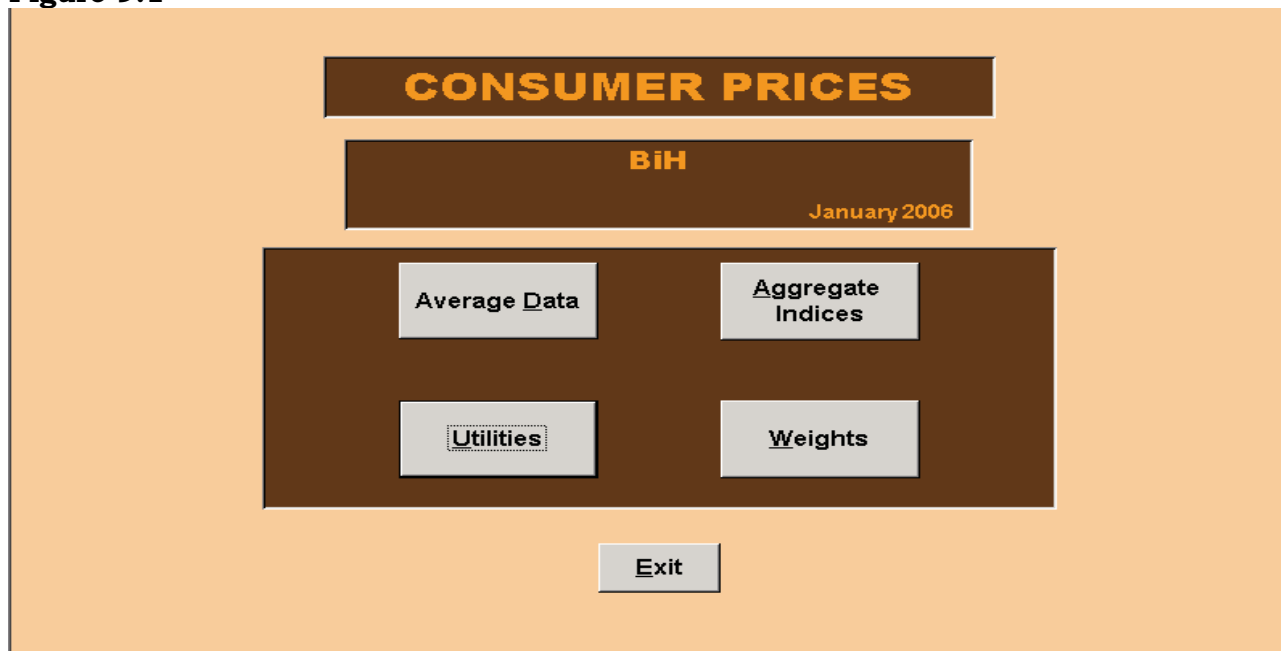
To start the procedure the user has to double-click on the file “Cpi.mdb” in the directory where the procedure is installed. All the instructions given in the following pages work both for the calculation of the BiH aggregate indices and for the calculation of the aggregate indices for the entities. Therefore, if not otherwise specified, the following instructions concern the calculation of Consumer Price (CP) indices at entity level and at level of Bosnia Herzegovina.

9.2 The introducing form

The first menu available in the procedure to calculate the aggregate indices is the form in Figure 9.1 that shows the reference month of the data that are being elaborated. From here the user is able to:

- access the steps to load and display the representative position indices and the average prices coming from the towns where data collection is carried out (Average Data);
- calculate and download the aggregate indices (Aggregate Indices);
- use different Utilities;
- display and download the Weights used to calculate the aggregate indices.

Figure 9.1

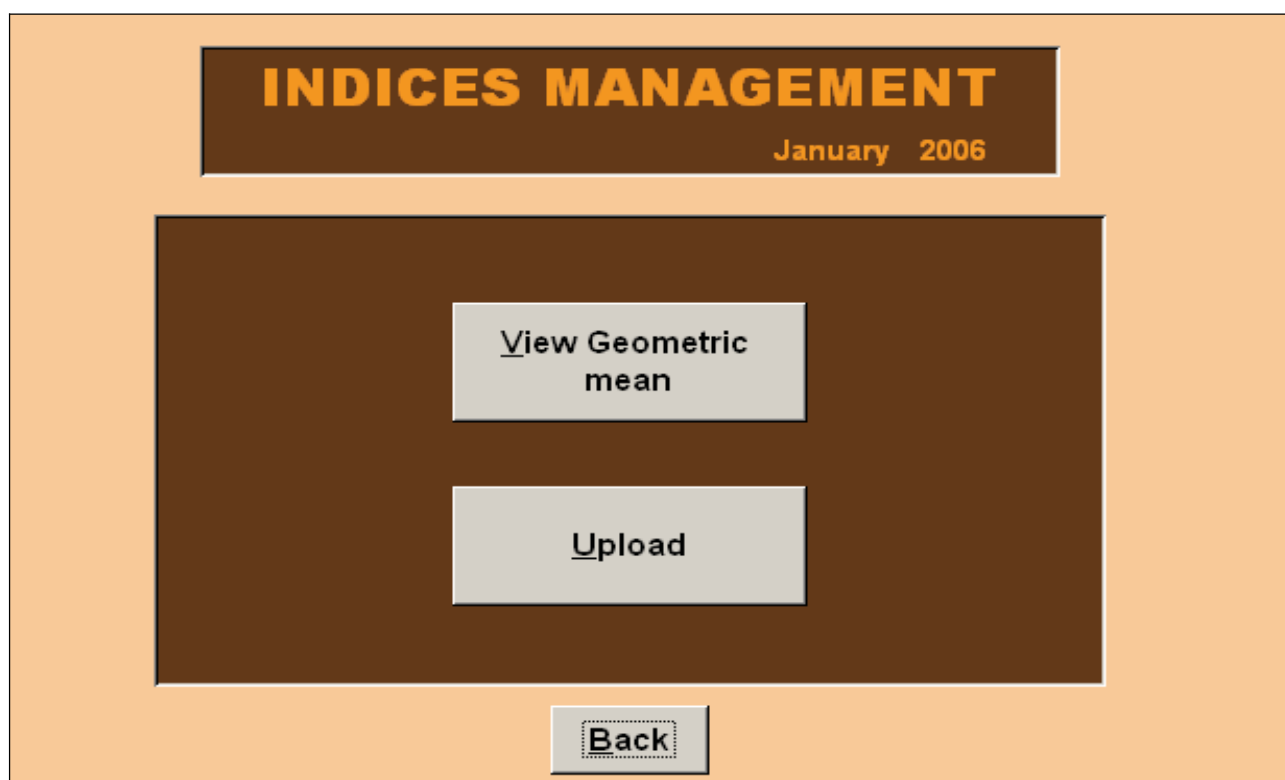


¹⁶ Federico Polidoro, Antonella Simone, ISTAT, Division for Price Statistics and Foreign Trade, Price Statistics Section

9.3 Average data

Clicking the Average data button, the form in Figure 9.2 will appear. From this form the user starts the steps that are necessary to calculate the indices at every level of aggregation. In particular, clicking the Upload button the user can upload the average data (indices for the representative positions and average prices calculated as geometric mean) coming from all the towns that participate in the calculation of the consumer price indices.

Figure 9.2



To be uploaded, the average data coming from the towns have to be copied in the same directory where back-end and front-end have been installed (Figure 9.3).

Clicking the Upload button (Figure 9.2) the form in Figure 9.4 will appear. From here the user is able to select the towns for which he wants to load the average data (indices for the representative positions and average prices calculated as geometric mean) in the data base. At entity level, in order to calculate the aggregate indices it is compulsory to load the average data of all the towns of the entity, whereas at country level, the procedure calculates the indices even though the data of a given town are not available (the procedure calculates the indices without an estimate algorithm for the missing towns, only using the partial information available). Once the average data for one town are loaded, the message box in Figure 9.5 will be displayed.

Figure 9.3

Indirizzo X:\BiH\State-Entity06\BHA06			
Nome	Dimensione	Tipo	Data ultima modifica
102-Mostar-12-2005.txt	51 KB	File TXT	12/06/2006 14.44
103-Sarajevo-1-2006.txt	51 KB	File TXT	12/06/2006 15.22
103-Sarajevo-12-2005.txt	51 KB	File TXT	12/06/2006 15.22
104-Tuzla-1-2006.txt	51 KB	File TXT	12/06/2006 15.24
104-Tuzla-12-2005.txt	51 KB	File TXT	12/06/2006 15.24
105-Zenica-1-2006.txt	50 KB	File TXT	12/06/2006 15.25
105-Zenica-12-2005.txt	50 KB	File TXT	12/06/2006 15.24
106-Brcko-1-2006.txt	49 KB	File TXT	12/06/2006 14.41
106-Brcko-12-2005.txt	49 KB	File TXT	12/06/2006 14.40
2101-Banja Luka-1-2006.txt	51 KB	File TXT	12/06/2006 14.33
2101-Banja Luka-12-2005.txt	51 KB	File TXT	12/06/2006 14.33
2102-Bijeljina-1-2006.txt	48 KB	File TXT	15/06/2006 15.53
2102-Bijeljina-12-2005.txt	49 KB	File TXT	12/06/2006 14.38
2103-Trebinje-1-2006.txt	46 KB	File TXT	12/06/2006 15.23
2103-Trebinje-12-2005.txt	46 KB	File TXT	12/06/2006 15.23
2104-Doboj-1-2006.txt	48 KB	File TXT	15/06/2006 15.48
2104-Doboj-12-2005.txt	49 KB	File TXT	12/06/2006 14.42
2105-Prijedor-1-2006.txt	48 KB	File TXT	12/06/2006 16.45
2105-Prijedor-12-2005.txt	49 KB	File TXT	12/06/2006 16.45
2106-East Sarajevo-1-2006.txt	49 KB	File TXT	12/06/2006 14.43
2106-East Sarajevo-12-2005....	49 KB	File TXT	12/06/2006 14.43
CPI.mdb	5,200 KB	Applicazione Micros...	13/07/2006 15.46
CPI.mdb	2 KB	Collegamento	14/06/2006 16.01
CPI_be.mdb	52,292 KB	Applicazione Micros...	13/07/2006 14.20
Protetto.mdw	120 KB	Informazioni gruppo...	01/04/2005 10.29

Figure 9.4

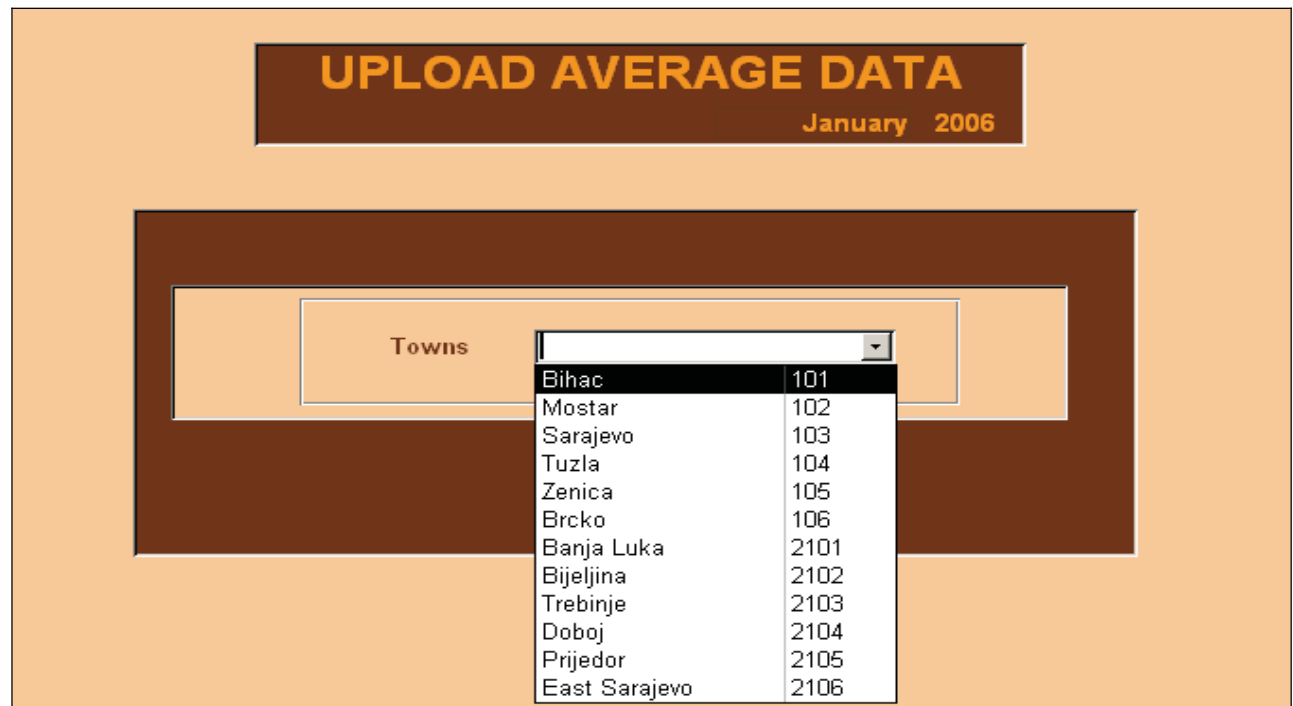
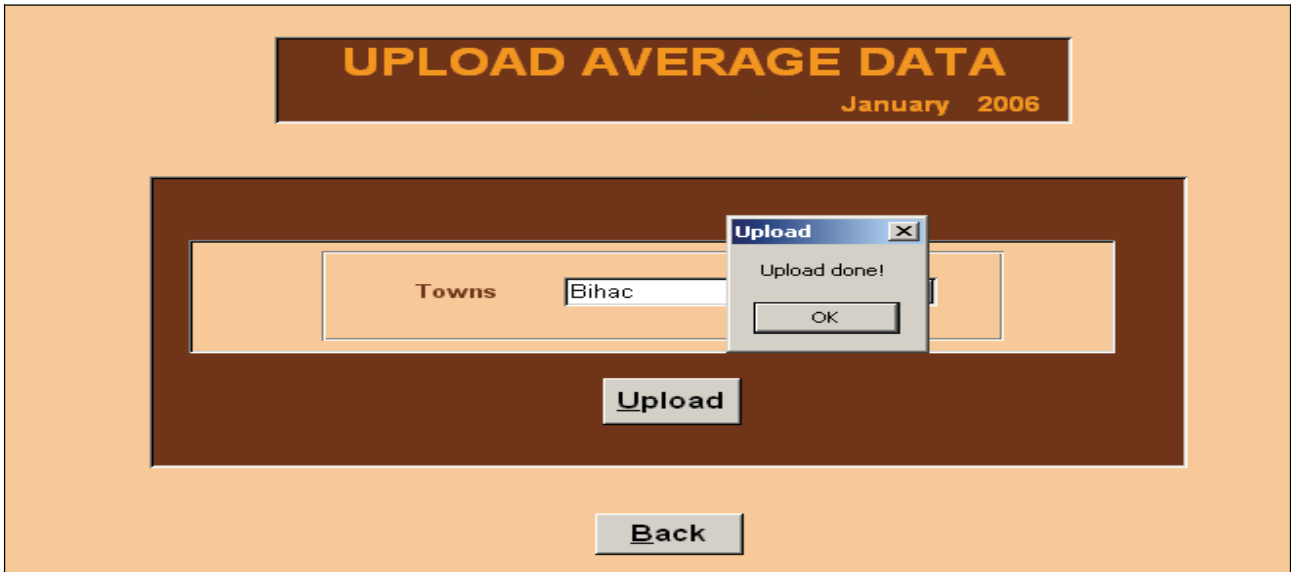


Figure 9.5



Clicking the View geometric mean button (Figure 9.2) the form in Figure 9.6 will appear. This form allows the user to select a representative position (clicking Find record) and to scroll the time series (starting from December of the previous year) of a set of data concerning the representative position selected either taking into account temporary reductions of prices or not: average (geometric mean) base price and average (geometric mean) current price, indices, rates of change with respect to the previous month and the base of calculation of the indices. The user can also go forward or backward by representative position codes, using the arrows near the Find record button. The data displayed can be saved in an Excel file by clicking on the Excel icon.

Figure 9.6

Towns	Year	Month	Base	Price	Reduced Index	Reduced Base	Reduced Price	Index	Index Var. Prev. Month	Red. Index Var. Prev. Month	No. Obs.	Base
101	2006	1	1,9800	2,0900	105,4300	1,9800	2,0900	105,4300	5,40	5,40	2	2004_12
101	2005	12	1,9800	1,9800	100,0000	1,9800	1,9800	100,0000	0,00	0,00	2	2004_12
102	2006	1	2,9400	3,0900	105,1100	2,9400	3,0900	105,1100	5,10	5,10	3	2004_12
102	2005	12	2,9400	2,9400	100,0000	2,9400	2,9400	100,0000	0,00	0,00	3	2004_12
103	2006	1	1,9800	2,0700	104,5400	1,9800	2,0700	104,5400	4,50	4,50	8	2004_12
103	2005	12	1,9800	1,9800	100,0000	1,9800	1,9800	100,0000	0,00	0,00	8	2004_12
104	2006	1	1,6700	1,7500	104,7800	1,6700	1,7500	104,7800	4,70	4,70	6	2004_12
104	2005	12	1,6700	1,6700	100,0000	1,6700	1,6700	100,0000	0,00	0,00	6	2004_12
105	2006	1	1,4200	1,4900	105,2500	1,4200	1,4900	105,2500	5,20	5,20	5	2004_12
105	2005	12	1,4200	1,4200	100,0000	1,4200	1,4200	100,0000	0,00	0,00	5	2004_12
106	2006	1	1,2200	1,2600	103,2700	1,2200	1,2600	103,2700	3,20	3,20	3	2004_12
106	2005	12	1,1400	1,1400	100,0000	1,1400	1,1400	100,0000	0,00	0,00	3	2004_12
2101	2006	1	2,1700	2,2600	103,9400	2,1700	2,2600	103,9400	3,90	3,90	5	2004_12

9.4 Aggregate Indices

Clicking the Aggregate Indices button (Figure 9.1), the form in Figure 9.7 will appear. This is a crucial form since it allows the user to carry out in a simple way the very calculation of the aggregate indices. Actually, the user is able to calculate all the aggregate indices either in base December of the previous year or in reference base (2005=100), taking into account temporary reductions of prices or not, by clicking on Calculate aggregate Indices. At the end of the processing, that takes some minutes, the message box in Figure 9.8 will be displayed. Then clicking on View Indices, the form in Figure 9.9 will appear: selecting the sort of indices the user wants to be displayed (in the box on the left) and then clicking Show Indices, the table in Figure 9.10 will be displayed (the example refers to indices in reference base 2005=100 for the country level). All the indices from the representative positions to the general one are displayed: for calculation indices they are displayed starting from January of the current year, whereas for reference indices starting from the same month of the previous year. The table is already an Excel file that can be saved with the filenames that are listed in Figure 9.11.

Figure 9.7

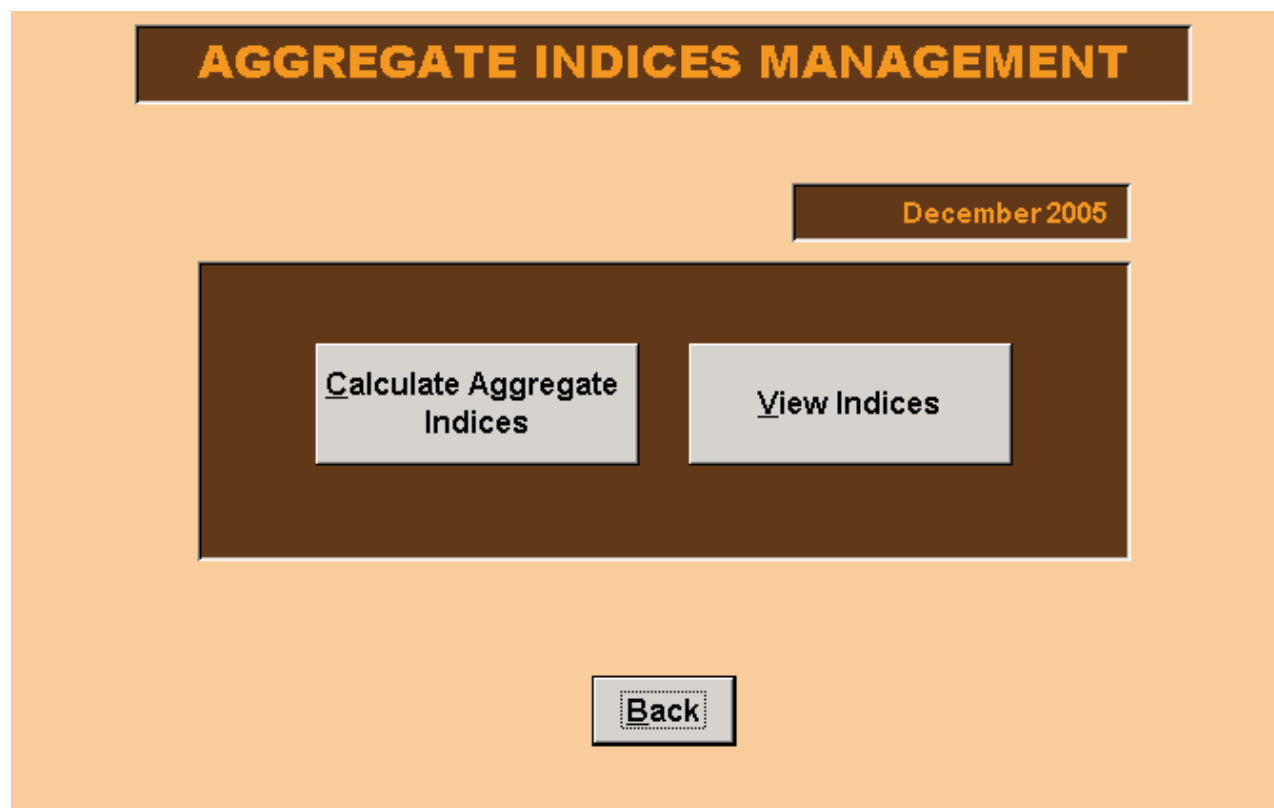


Figure 9.8

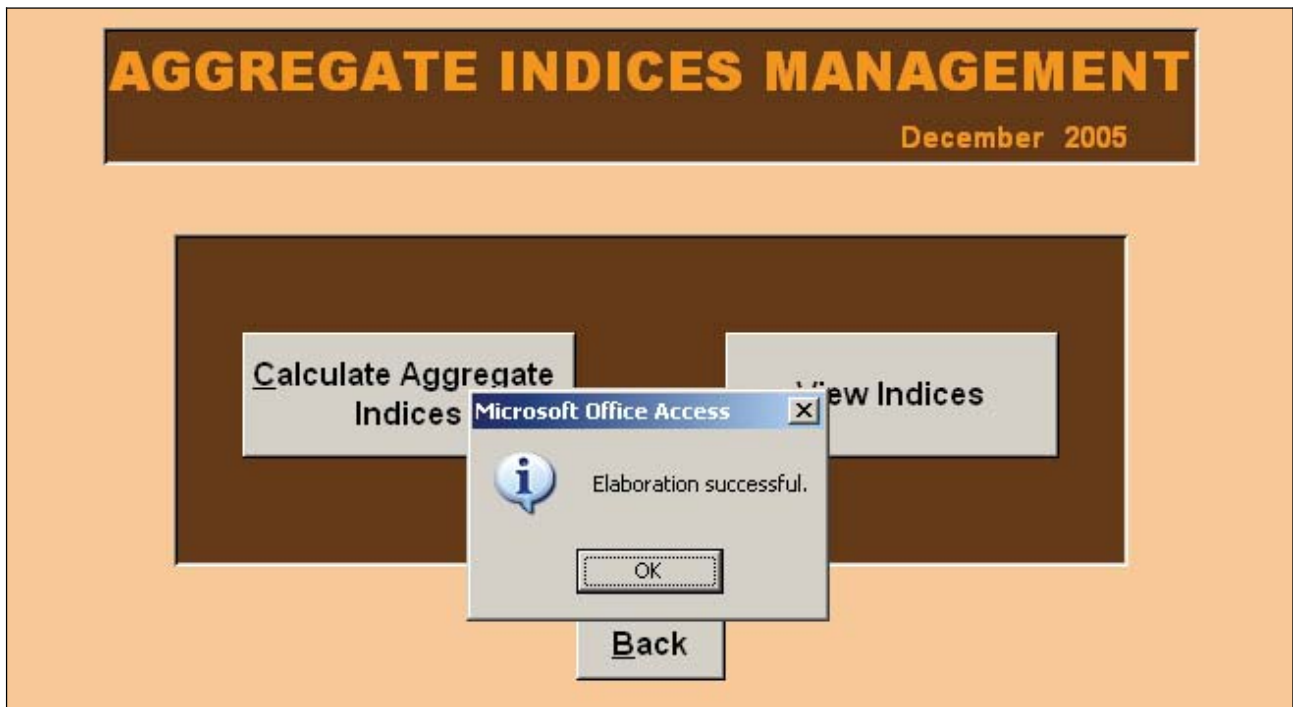


Figure 9.9

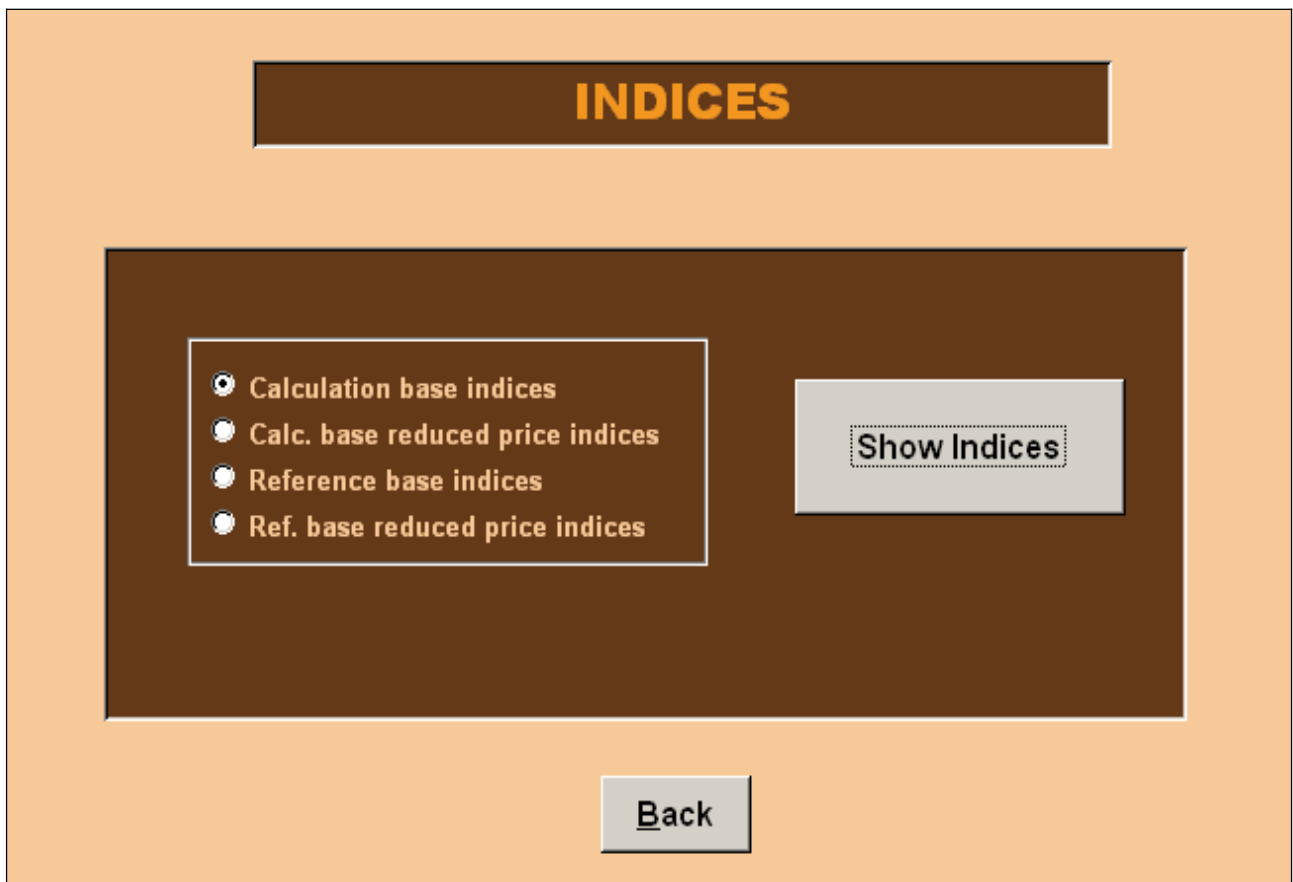
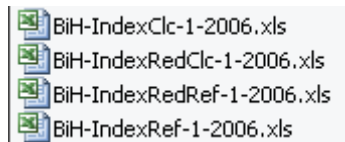


Figure 9.10

Entity Code	Town Code	Town	Synthesis Code	Synthesis Description	Synthesis Type Description	Base	200501	200501
0	000	BiH	00	General Index	General Index	Ref	98,95	99,1
0	000	BiH	01	ALCOHOLIC	Division	Ref	98,52	99,1
0	000	BiH	01.01	Food	Group	Ref	98,82	99,1
0	000	BiH	01.01.01	Bread and cereals	Class	Ref	100,14	99,1
0	000	BiH	01.01.01.01	Rice	Voice Of Product	Ref	99,11	99,1
0	000	BiH	01.01.01.01.01	Riža	Representative Position	Ref	99,11	99,1
0	000	BiH	01.01.01.02	other cereals products	Voice Of Product	Ref	99,96	99,1
0	000	BiH	01.01.01.02.01	Pšenicno brašno, bijelo	Representative Position	Ref	99,76	99,1
0	000	BiH	01.01.01.02.02	Pšenicno brašno, crno	Representative Position	Ref	100,30	100,1
0	000	BiH	01.01.01.02.03	Kukuruzno brašno	Representative Position	Ref	100,32	100,1
0	000	BiH	01.01.01.02.04	Cereal grain products	Representative Position	Ref	99,41	99,1
0	000	BiH	01.01.01.03	Bread	Voice Of Product	Ref	99,79	99,1
0	000	BiH	01.01.01.03.01	Polubijeli hljeb	Representative Position	Ref	99,10	98,1
0	000	BiH	01.01.01.03.02	Bijeli hljeb	Representative Position	Ref	100,03	99,1
0	000	BiH	01.01.01.03.03	Kifla (pecivo)	Representative Position	Ref	100,78	100,1
0	000	BiH	01.01.01.04	Other bakery products	Voice Of Product	Ref	101,88	100,1
0	000	BiH	01.01.01.04.01	pastry products	Representative Position	Ref	100,42	100,1

Figure 9.11



The structure of the filenames in Figure 9.11 is the following:

Geographical reference – Indexsortofindices-x-yyyy.xls

where

- geographical reference= BiH, Federation of Bosnia Herzegovina, Republika Srpska;
- sort of indices= Clc (indices in base December of the previous year=100 without temporary reductions of prices), RedClc (indices in base December of the previous year=100 with temporary reductions of prices), Ref (indices in base 2005=100 without temporary reductions of prices), RedRef (indices in base 2005=100 with temporary reductions of prices);
- x= month to which are referred the indices elaborated;
- yyyy= year to which are referred the indices elaborated.

9.5 Utilities

Clicking the Utilities button (Figure 9.1), the form in Figure 9.12 will appear for the Federation (for Republika Srpska and the country see § 9.7). The function available in this form is the function of storing: after checking the aggregate indices and possibly requesting further checks on the prices collected, clicking the Storing button the user can store the results of the elaboration carried out for the month in question, so as to make the procedure ready for the preprocessing of the next month.

Figure 9.12



As soon as the storing function has been finalised the message box in Figure 9.13 will be displayed, and the data of a new month can be processed. At country level, if the user calculates the aggregate indices using the data of a subset of towns, he/she has not to consolidate the results.

Figure 9.13



9.6 Weights

Clicking the Weights button (Figure 9.1), the forms in Figure 9.14 (at country level) and in Figure 9.15 (at entity level) will appear.

Figure 9.14

The screenshot shows a web interface titled "WEIGHTS" in orange text on a dark brown background. Below the title is a list of eight radio button options, each with a label: "Weights to calculate Entity product index", "Weights to calculate Entity all items index", "Weights to calculate BiH product index", "Weights to calculate BiH all items index", "Weights to calculate Entity product reduced index", "Weights to calculate Entity all items reduced index", "Weights to calculate BiH product reduced index", and "Weights to calculate BiH all items reduced index". To the right of the list is a grey button labeled "Show Weights". At the bottom center is another grey button labeled "Back".

Figure 9.15

The screenshot shows a web interface titled "WEIGHTS" in orange text on a dark brown background. Below the title is a list of four radio button options, each with a label: "Weights to calculate Entity product index", "Weights to calculate Entity all items index", "Weights to calculate Entity product reduced index", and "Weights to calculate Entity all items reduced index". To the right of the list is a grey button labeled "Show Weights". At the bottom center is another grey button labeled "Back".

Selecting the sort of weights the user wants to be displayed (box on the left) and then clicking the Show weights button, the weights selected will be displayed.

The weights to calculate entity representative position indices (either taking into account or not the temporary reductions of prices) are based on the estimates of the canton/region population, and they are the same for all the representative position, and different for each town. The other weights are based on household consumption expenditure.

9.7 Inserting missing indices

This paragraph is dedicated to the elaboration of the aggregate indices for Republika Srpska. In 2006 in Republika Srpska prices referred to the representative position 07.03.03.01.01 (“Tickets for air”) were not collected. Really, one of the crucial starting point of the reorganization of the consumer price survey in Bosnia Herzegovina has been the adoption of an unique basket of products for the entire country and for each entity. Therefore the missing data have to be estimated for the representative position 07.03.03.01.01 (“Tickets for air”). It was chosen to carry out the estimate at level of average data and to adopt as estimate the average price and the indices (with and without temporary reductions of prices) calculated for the Federation. Therefore the procedure at entity level (for Republika Srpska) and at country level, allows to insert the missing indices, transmitted by FIS to RSIS and BHAS. Missing indices are inserted clicking the button Calculate aggregate Indices (Figure 9.7): if the missing indices have not yet been inserted, the form and the message box in Figure 9.16 will appear. Clicking Yes in the message box, the form in Figure 9.17 will appear: the user is able to insert the missing indices and click the button Insert (after clicking Insert, the form in Figure 9.18 will appear).

Figure 9.16

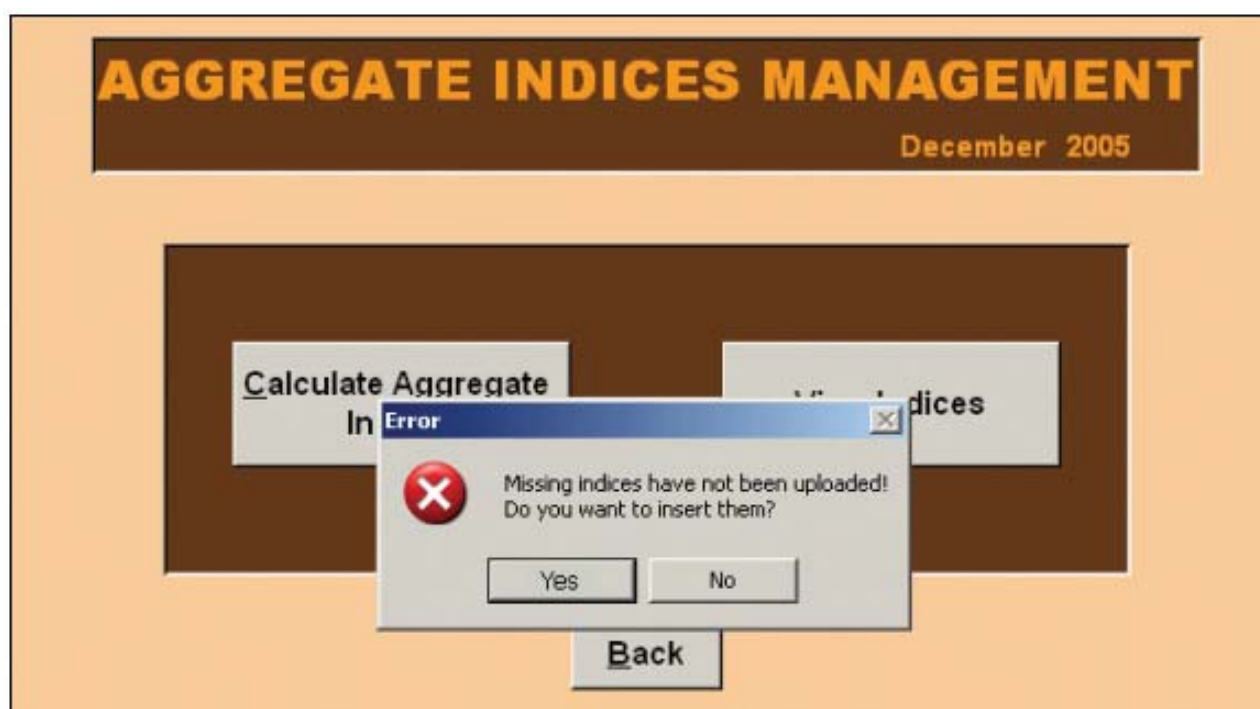


Figure 9.17

The screenshot shows a web form titled "INSERT MISSING INDEX" with the date "December 2005". The form has a "Repr. Position" field with the value "07.03.03.01.01" and a dropdown menu showing "Tickets for air". Below this, there are two input fields labeled "Index" and "Red Index", both containing the value "0,0000". To the right of these fields is a grey "Insert" button.

Figure 9.18

This screenshot shows the same "INSERT MISSING INDEX" form as Figure 9.17, but with a modal dialog box overlaid. The dialog box is titled "Microsoft Office Access" and contains the text "Indices inserted!" with an "OK" button. The "Index" and "Red Index" fields now contain the value "100,0000". The "Insert" button is partially obscured by the dialog box.

If the user notices that the indices entered are wrong or he/she receives revised data, e.g. because a further check in the field has been carried out, it is possible to edit the indices inserted, clicking the Utilities button in the General menu (Figure 9.1): the form in Figure 9.19 will appear (at country and Republika Srpska level). The storing function has been already described in § 9.5. As for the editing function, clicking on Edit missing indices the form in Figure 9.20 will appear: if the user inserts a value of the indices outside an established range, the procedure will display a warning message (Figure 9.21).

Figure 9.19



Figure 9.20

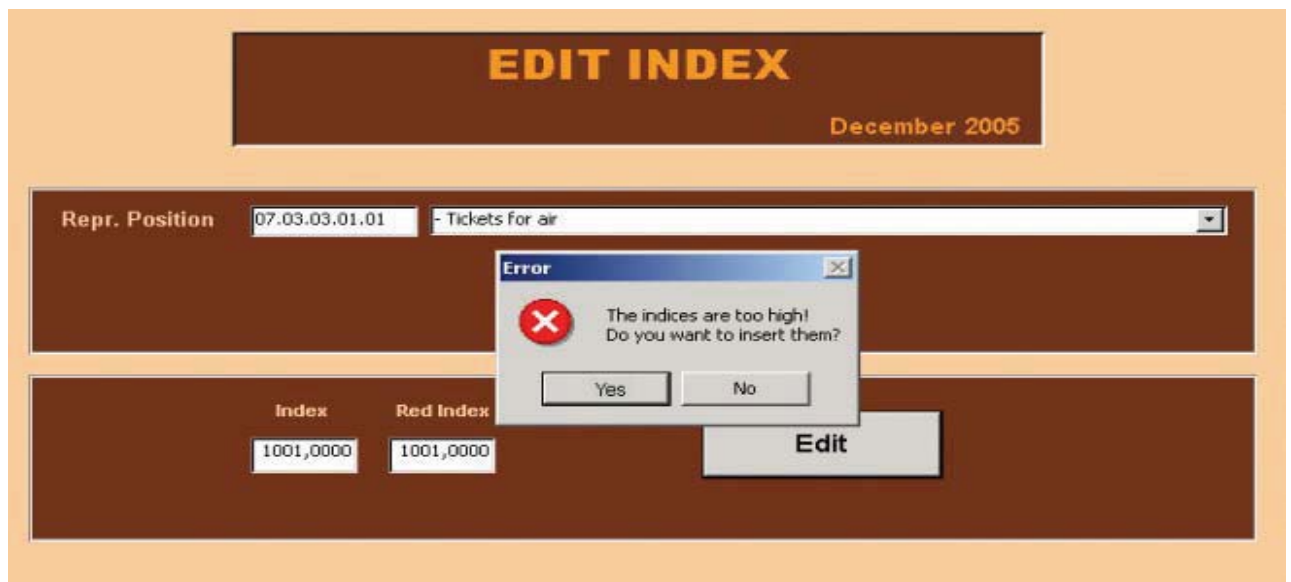
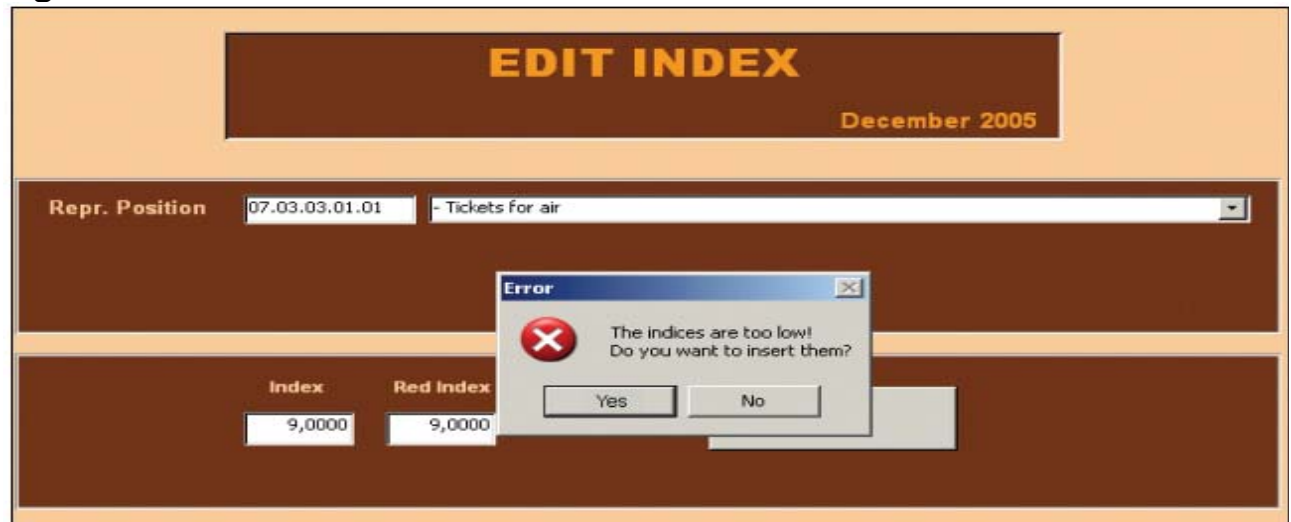
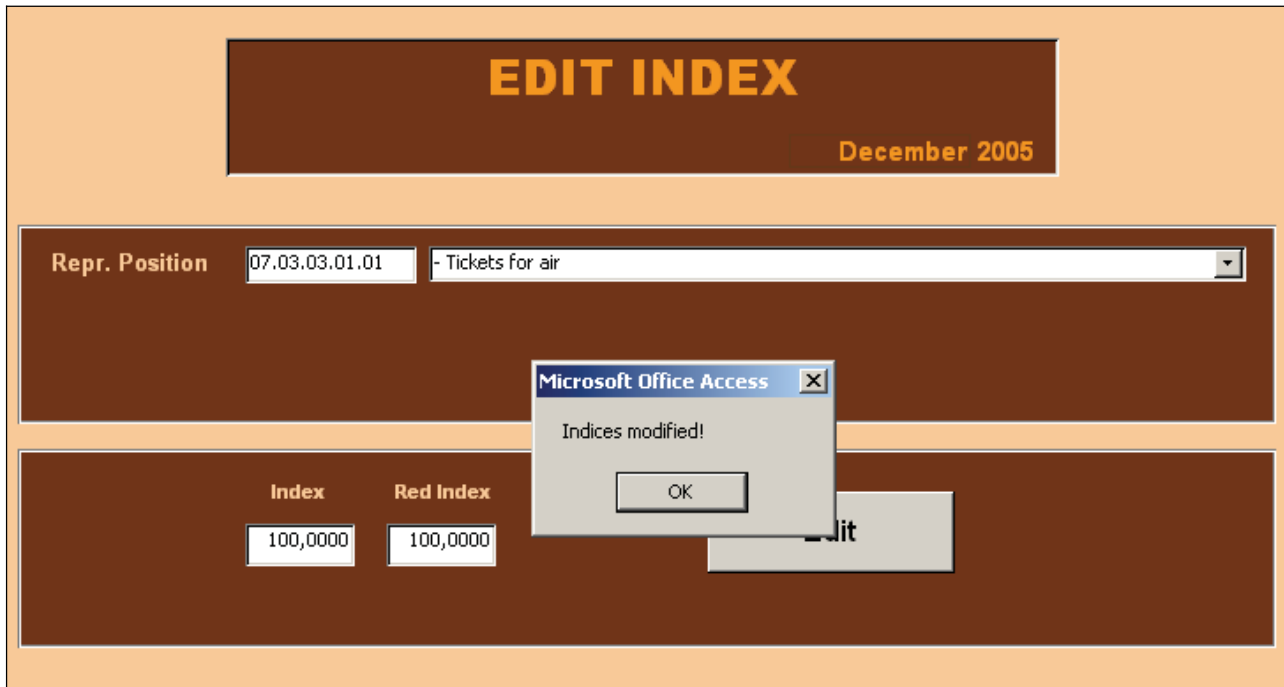


Figure 9.21



When the user is sure that the indices are correct, he/she can click Edit and the indices will be changed (Figure 9.22). At this step the user is able to calculate the aggregate indices for Republika Srpska and for Bosnia Herzegovina as a whole and to store the results of the processing, after checking them as usual (§ 5).

Figure 9.22



Glossary

Aggregate indices: indices that are calculated by weighted averages of the elementary indices and that are referred to hierarchical positions starting from the heading of products.

Aggregation (of indices): the combination of related categories, usually within a common branch of a hierarchy, to provide information at a broader level to that at which detailed observations are taken.

Average data: values that are calculated on the basis of the elementary prices collected. They are either average prices or average indices referred to a specific product. In general, for BiH CPI they are calculated as geometric mean. The average data are calculated by the Module 1 of the procedure at town level and used for the calculation of the aggregate indices at town, entity and country level.

Base period: the period of time for which data used as the base of an index number, or other ratio, have been collected.

Base price: the price of a reference period.

Basket of product: the selection of products purchased by households in monetary transaction. It is selected in order to represent the prevalent consumer behaviour in terms of final monetary expenditure.

Brand: it allows to identify the producer of each products.

Calculation base indices: the indices that are calculated on base December of the previous year as index reference period.

Chain indices: the indices that have been linked adopting a common index reference period for the calculation indices that are based on December of the previous year.

Checks: specific controls on prices and indices that allow the user to detect possible mistakes in the microdata.

Collection unit: the elementary unit (outlet) where prices are collected.

Collection unit zone: it indicates whether the Collection Unit is located in a peripheral or central zone.

Collection unit type: the trading typology to which the Collection Unit belongs (supermarket, hypermarket, discount etc.).

Elementary item: the elementary product that has been identified by the collector selecting a specific variety, a specific brand and a specific packaging. Each elementary item has a corresponding quotation.

Flags: qualitative indicators concerning observed prices.

Frequency: the rate at which elementary prices are collected. For BiH CPI and HICP the frequencies of data collection are monthly or twice a month (bimonthly).

Hierarchy: the classification structure by which consumer price indices are classified. It presents a pyramidal structure, starting from the most detailed level to the aggregate level.

Index reference period: the period for which the index base is set to 100. BiH consumer price indices are calculated either on base December of the previous year (Calculation indices) or on base 2005 (Reference Indices) that is the common base that allows to carry on the comparison between different years.

Microdata: the elementary prices collected.

Macrodata: the aggregate indices obtained by Laspeyres formula.

Models: the questionnaires to be filled with the observed prices.

Pre substitution price: the previous month price of the elementary item replacing the old item.

Price reference period: the period in which base prices are valued. In general for BiH CPI this period is December of the previous year.

Quantity collected: the specific quantity at which the product is sold. The quantity collected is expressed by different units of measure.

Rate of change: the rate of change in a specified time reference period compared to the values at the beginning of the period or at a specified earlier time reference. In general for the consumer price indices the most important rates of change that are calculated are the rates of change of the current month compared to the previous one or to the same month of the previous year (the latter is the measure of the inflation that is commented and analysed).

Reference base indices: the indices that are calculated on base 2005. They are obtained chaining the calculation base indices.

Reporting: a formatted list of information such as prices, indices, etc.

Series: a set of regular time-ordered observations of prices taken at successive periods of time (monthly or bimonthly). It is referred to an elementary item.

Storing: the working step to hold data for preserving them from changes. This step is carried out at the end of the validation process of micro and macro data.

Unit of measure: the actual unit in which the associated values are measured and by which the quantity collected of each product is expressed.

Variety: it defines the variety as a more detailed description of the particular item selected in an outlet by the price collector within the item specification provided by the National Statistical Institute. For fresh fruits and vegetables varieties are the natural ones, whereas for appliances varieties are represented by the technical characteristics of the products.

Weight reference period: the period from which the expenditures for weights are obtained.

Weights: coefficients that express the relevance of a product in the basket and by which the aggregate indices are calculated starting from the elementary indices by weighted averages. The weights are based on the data concerning the Household Final Monetary Consumption Expenditure or on the data on population that have been estimated on the base of the HBS survey carried out in 2004.

