ERETES (*)





ERETES technical team

INSEE
INSTITUT NATIONAL DE LA STATISTIQUE ET DES ÉTUDES ÉCONOMIQUES

(*) Equilibre Ressources Emplois – Tableau Entrées Sorties

ERETES

- ERETES is a software package that provides assistance in compiling National Accounts compliant with the international standards (SNA 1993 and SNA 2008) until the milestone 5 of their implementation.
- Exists in french, english and spanish.
- Is installed in more than twenty five countries or sites (in Africa, South America, Mediterranean, Caribbean, Pacific countries…).
- ERETES was developed under a cooperation project by the European Union (Eurostat) and France (INSEE) twenty years ago and these co-owners support it since then (hotline, maintenance, funding of new developments).
- ERETES is a system that is continuously updated.
  - Regarding IT, INSEE financed in 2016 a new version based on the Progress DBMS 64-bits called Open Edge to secure the future but the present version Progress 32-bits is already in use and works with all Windows OS
  - At present, a feasibility study is conducted, in the framework of the Pan African Statistics Program financed by the EU, to propose improvement scenarios to answer new needs : functionalities, technologies, ergonomics

ERETES

- The package is composed of:
  - The main module: a database and a set of tools to help the national accountants team to build yearly national accounts
  - Additional modules :
    - The SERIE module, to store yearly series of accounts, to produce aggregates at prices of a fixed reference year and to produce tables for dissemination purposes
    - The ICP module, to answer to the International Comparison Programme questionnaire for purchasing power parities
- Its key strengths are:
  - a great flexibility of uses and an easy customization
  - a high degree of completeness and security level
  - a significant contribution to capacity building

ERETES - functionalities of the main module

- Database
  - To load and store the data in the system
- Working tables
  - To compare, to complete the data
  - With many tools to facilitate the compilation
- Synthesis tables
- Editing tables
  - To analyse and publish the results

ERETES – functionalities of the main module

- An integrated help
  - User manual
  - SNA concepts
- A notepad

ERETES - approach

- An integrated approach
  - Whatever the National Accounts scope chosen, the data processing is done simultaneously on the different dimensions you decided to compile :
    - industry
    - industry and product
    - industry, product and institutional sector
- An iterative process
  - From the sources to the aggregates
  - Alternation of centralized phases of analyse and decentralized phases where each accountant of the team works on the working tables he is in charge of, until the synthesis

ERETES offers a great flexibility of uses

According to :

- the scope chosen for the accounts
- the context in which it is implemented

ERETES offers a great flexibility of uses

- Each country chooses the scope of its goods and services accounts
  - Compile only industry accounts and the production approach of the GDP
  - Compile (also) SUB by product and the expenditure approach of the GDP
    - SUT every year or every four or five years
    - SUT only at current prices or both at current and constant prices

ERETES offers a great flexibility of uses

- Each country chooses the scope of its institutional sectors accounts
  - Compile the IEAT until generation of income accounts (milestone 3)
  - Compile the IEAT until capital accounts (milestone 4)
  - Compile the IEAT until financial accounts (milestone 5)

Customisation of ERETES

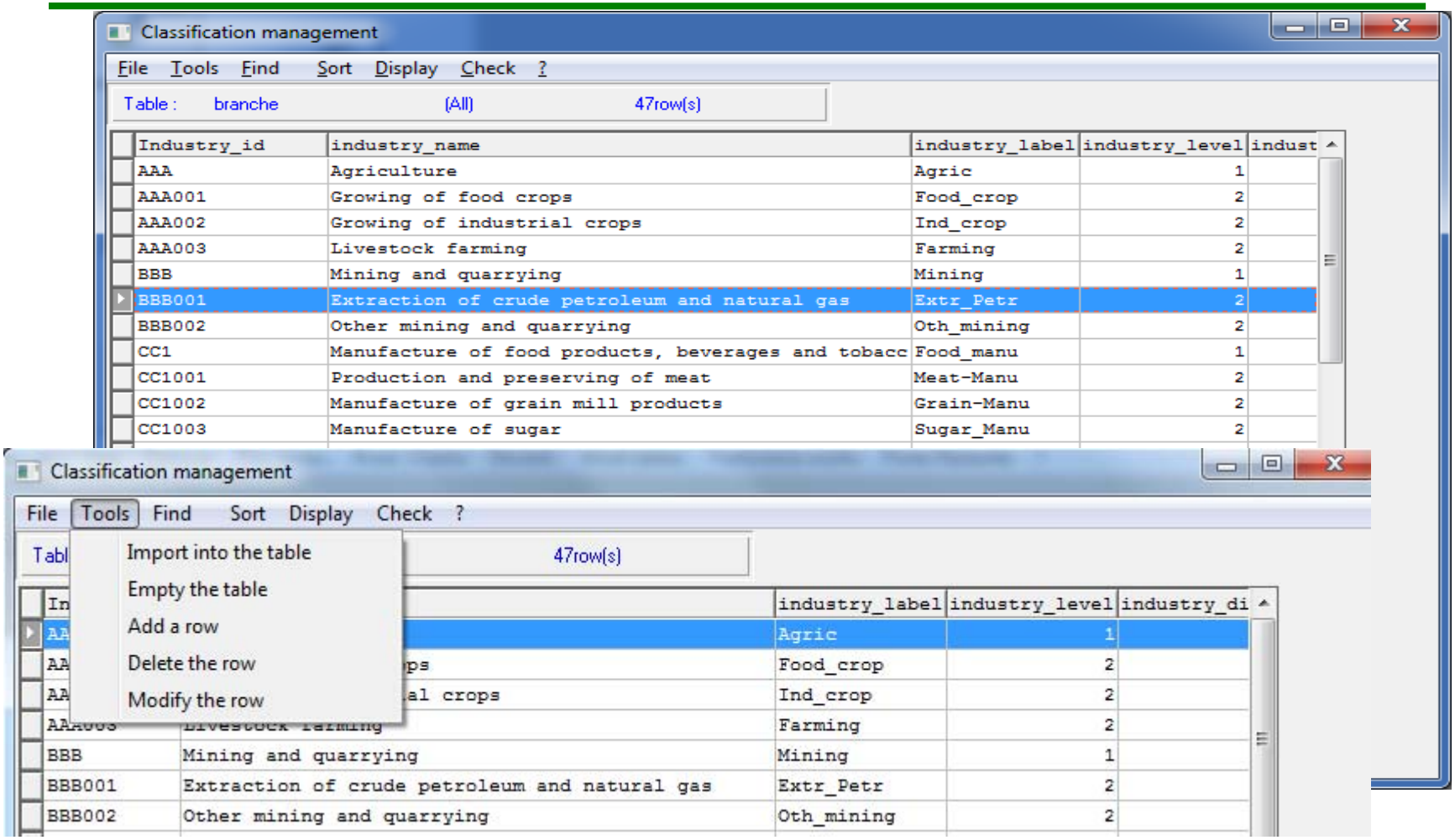
- Main « customisable » classifications :
  - Product
  - Industry
  - Source
  - Production Mode

  - Sector
  - Transaction

  by default, official SNA classification, but can be detailed

- No need of an IT expert support : customisation can be done by a basic user with the help of the classification management tool

Customisation of ERETES : example Industry



All the data are stored in the same database

Advantage : no inconsistency between

- disjointed files (spreadsheet)
- disjointed databases dedicated to goods and services accounts on one side and institutional sectors accounts on other side

Same format for all data

- value
- transaction
  - principal / secondary
  - product origin
  - work duration
  - type of job
- valuation mode
- industry
  - production mode
- product
- debtor sector
- creditor sector
- methodological attribute
- status
  - source
- campaign
- time reference
- asset qualifier

Industry and production mode

The production mode is one of the specific attributes of ERETES

- It was designed to help the accountants to implement the industry accounts
- A production mode aggregates units whose economic behavior is close according to their :
  - formal or informal nature
  - public or private ownership
  - size
- The accountant builds his industry account visualizing the data of each production mode and the relative economic ratios and making adjustments mode by mode

Methodological attribute

The methodological attribute is one of the specific attributes of ERETES

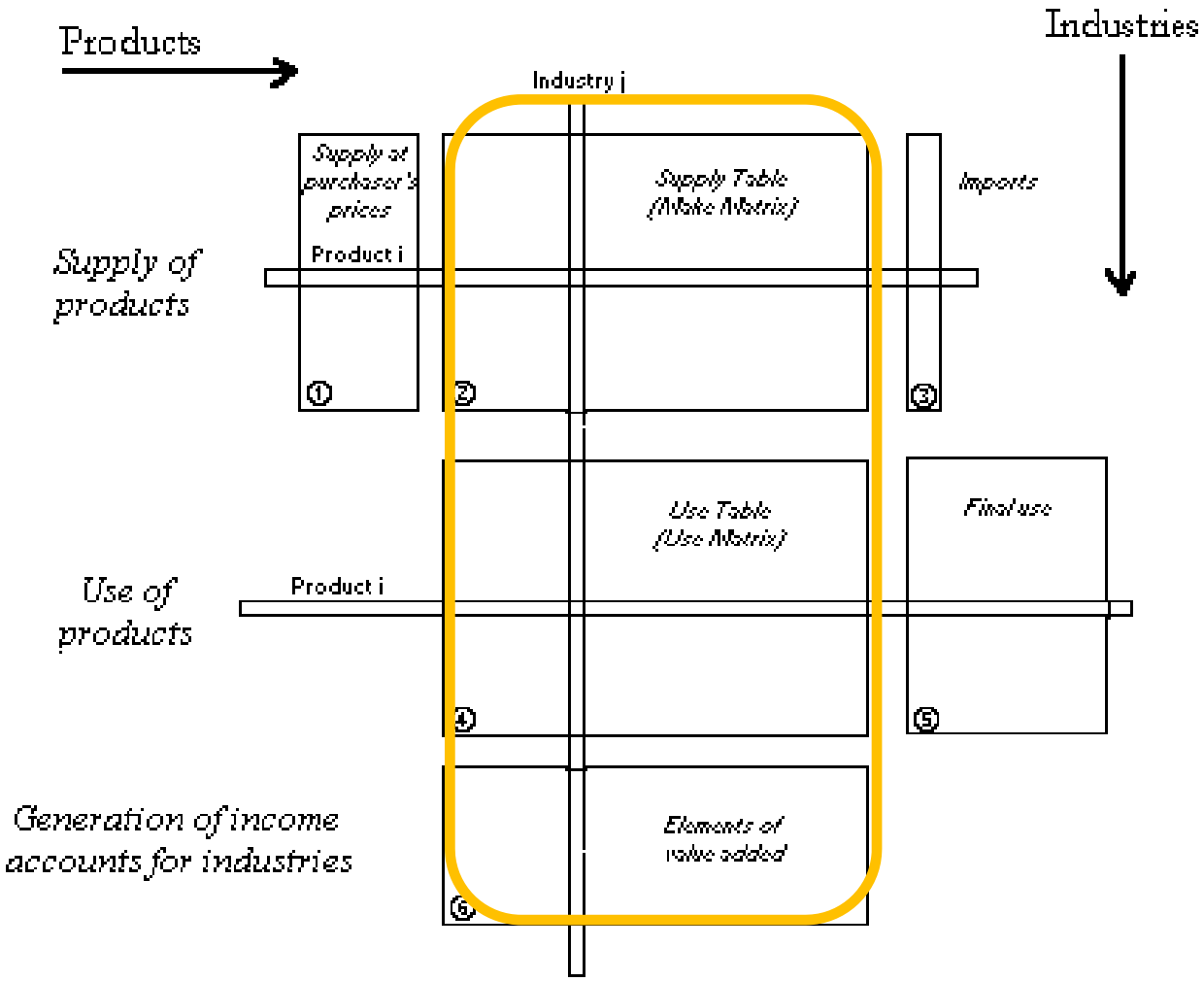
- The structure of the database must allow to store concurrent valuations of the same flow :
  - if these valuations differ because they are the reflection of the points of view of different actors concerned by this flow, we need an attribute to specify that : it is called « methodological attribute »

The status of value allows a memory of the adjustments

- Problem : many adjustments can be done on a set of data and it could be difficult to follow them

- Solution : the status of value
  - First step : you enter data from statistical sources
  - Other steps : you adjust them making decisions in the work tables or during reconciliation tasks focused on a transaction
  - Different status of value correspond to these steps so you can keep the memory of the value in the initial source and the changes made in the other steps

ERETES work tables to compile the SUT : industry account



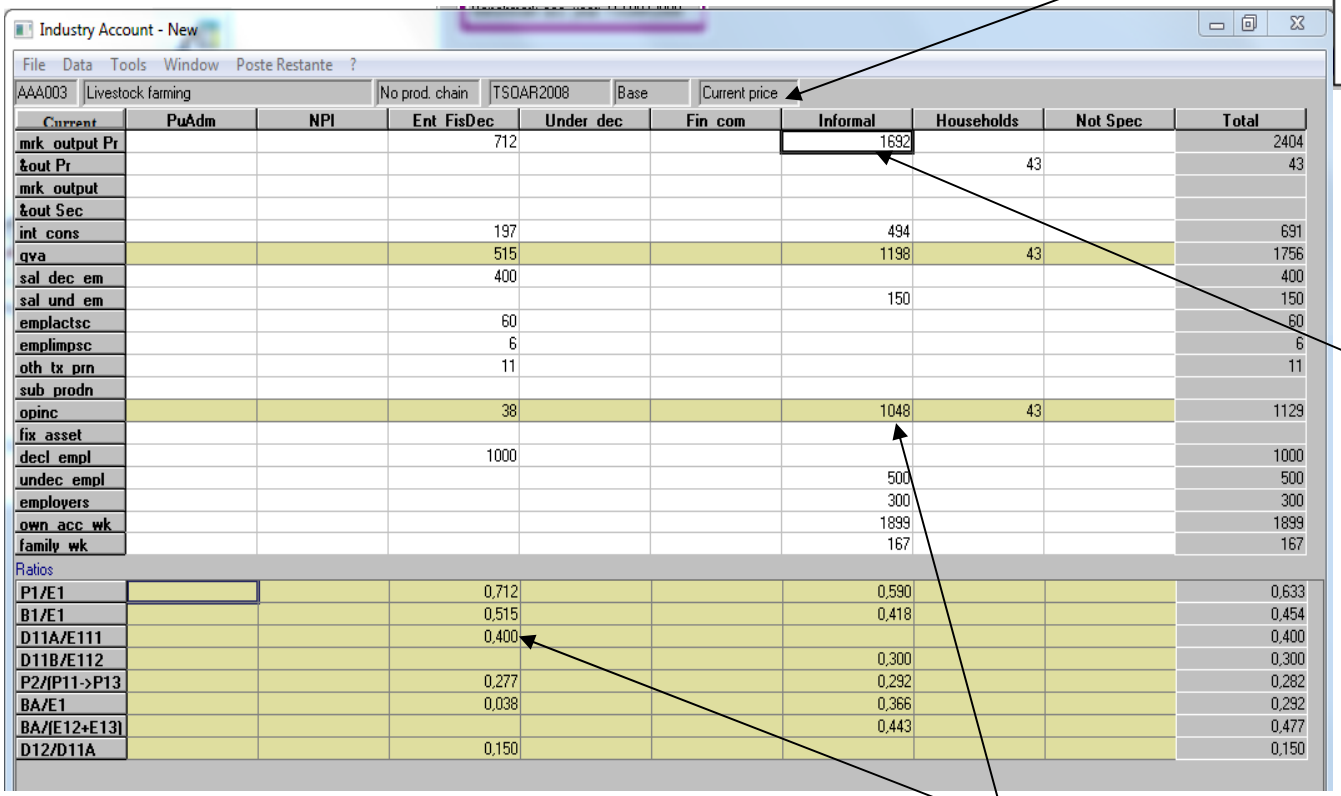
Industry accounts work table

Aims :

- Synthesize the whole information linked to an industry of the classification.
- Analyze, reconcile and validate these data from a statistical and economic point of view : relevancy of the value added, the operating income, the different ratios available (storing employment data in the database is very useful)
- Estimate the GDP by the Production approach

Industry accounts work table

The data are displayed in a worktable designed with in row : the transactions and in columns : the production modes.



Industry Account - New

File Data Tools Window Poste Restante ?

AAA003 | Livestock farming | No prod. chain | TSOAR2008 | Base | Current price

Current	PuAdm	NPI	Ent_FisDec	Under_dec	Fin_com	Informal	Households	Not Spec	Total
mrk_output Pr			712			1692			2404
&out Pr							43		43
mrk_output									
&out Sec									
int_cons			197			494			691
gva			515			1198	43		1756
sal_dec_em			400						400
sal_und_em						150			150
emplactsc			60						60
emplimpsc			6						6
oth_tx_prn			11						11
sub_prodn									
opinc			38			1048	43		1129
fix_asset									
decl_empl			1000						1000
undec_empl						500			500
employers						300			300
own_acc_wk						1899			1899
family_wk						167			167
Ratios									
P1/E1			0,712			0,590			0,633
B1/E1			0,515			0,418			0,454
D11A/E111			0,400						0,400
D11B/E112						0,300			0,300
P2/(P11->P13			0,277			0,292			0,282
BA/E1			0,038			0,366			0,292
BA/(E12+E13)						0,443			0,477
D12/D11A			0,150						0,150

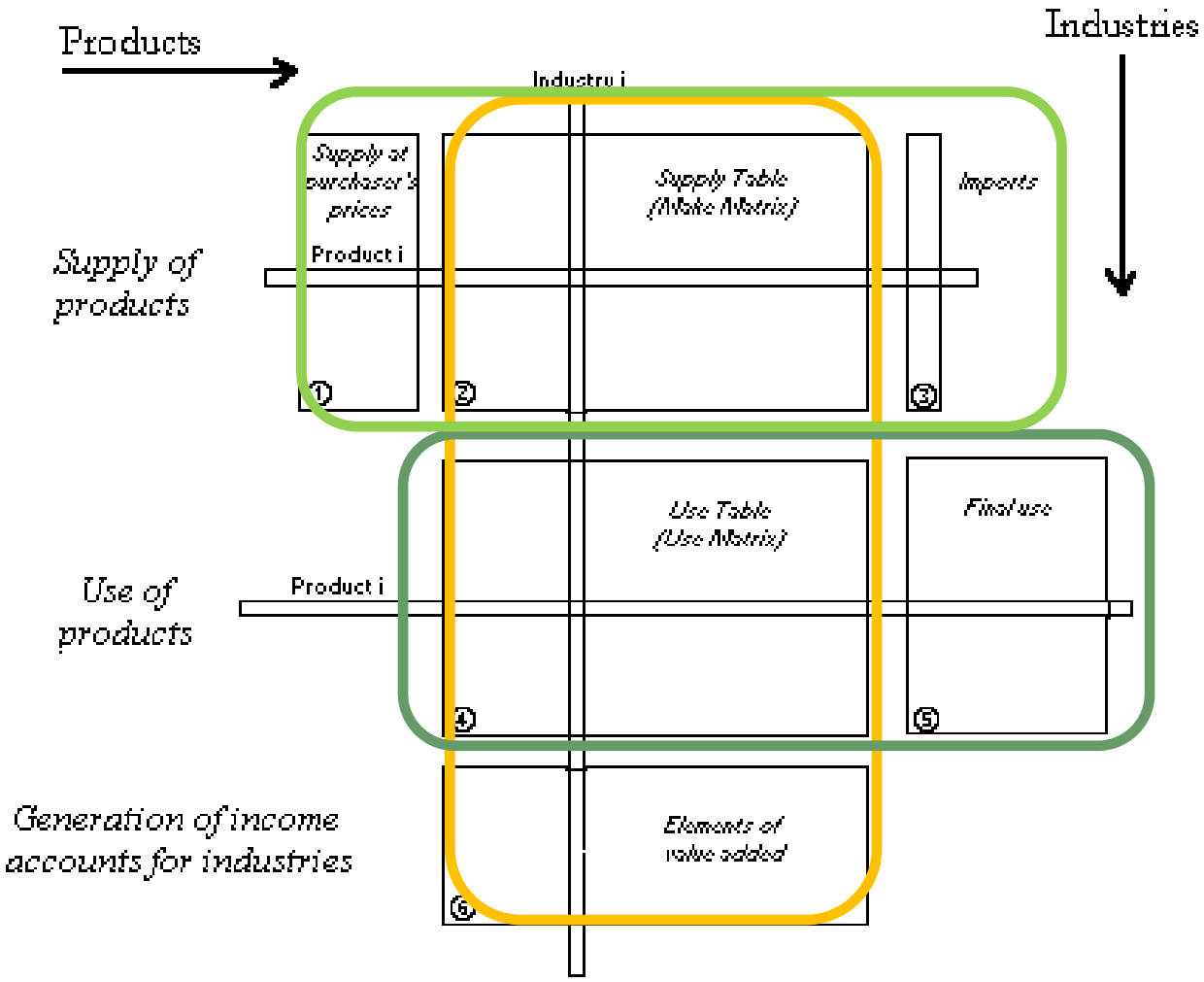
Characteristics of the account studied
This heading reminds the main criteria characterizing the industry account :

- Code and name of the industry,
- Existence of an associated production chain,
- Label of the accounting year,
- Year currently on screen (current or previous),
- Valuation type.

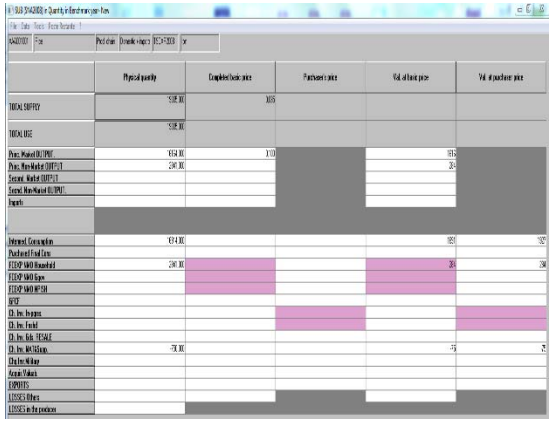
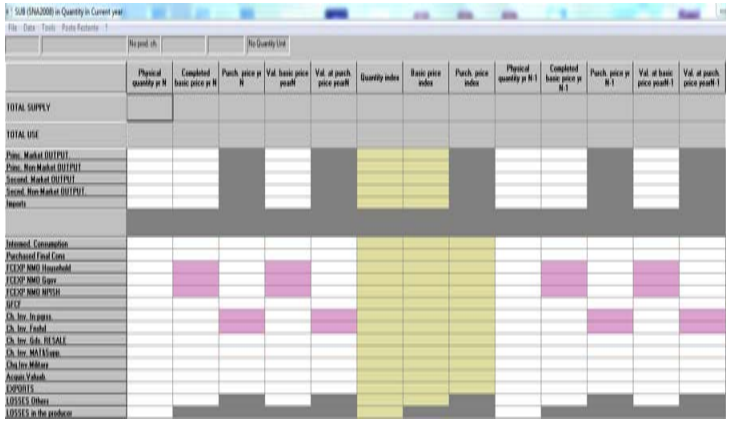
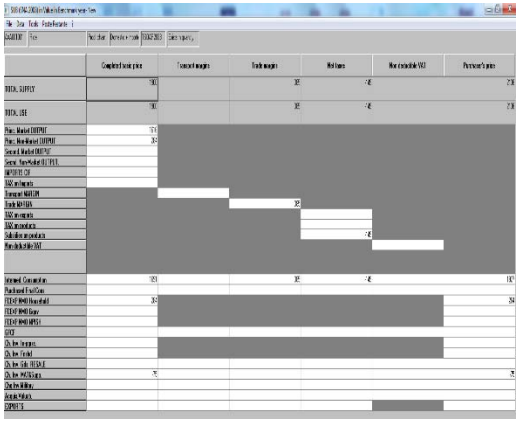
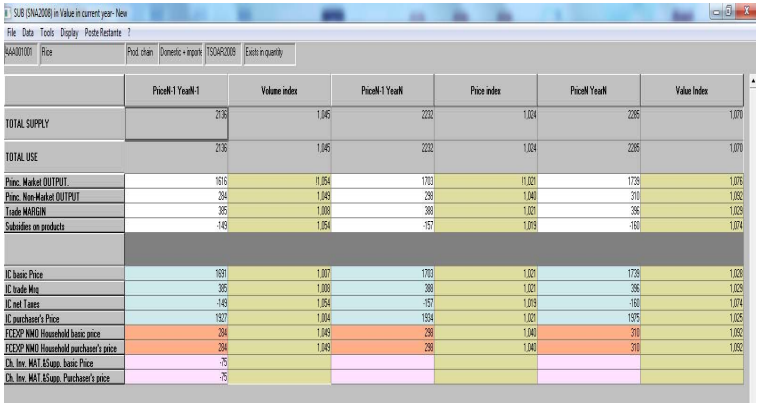
Work matrix
This matrix includes, in rows, the operations and in columns, the production modes. The last column is the total in row.
White central cells are inputable.

Ratios table
These ratios are automatically calculated depending on the data of the matrix.
They are indicators to check the data consistency.

ERETES work tables to compile the SUT : Supply and Use Balance



Supply and Use Balance work tables

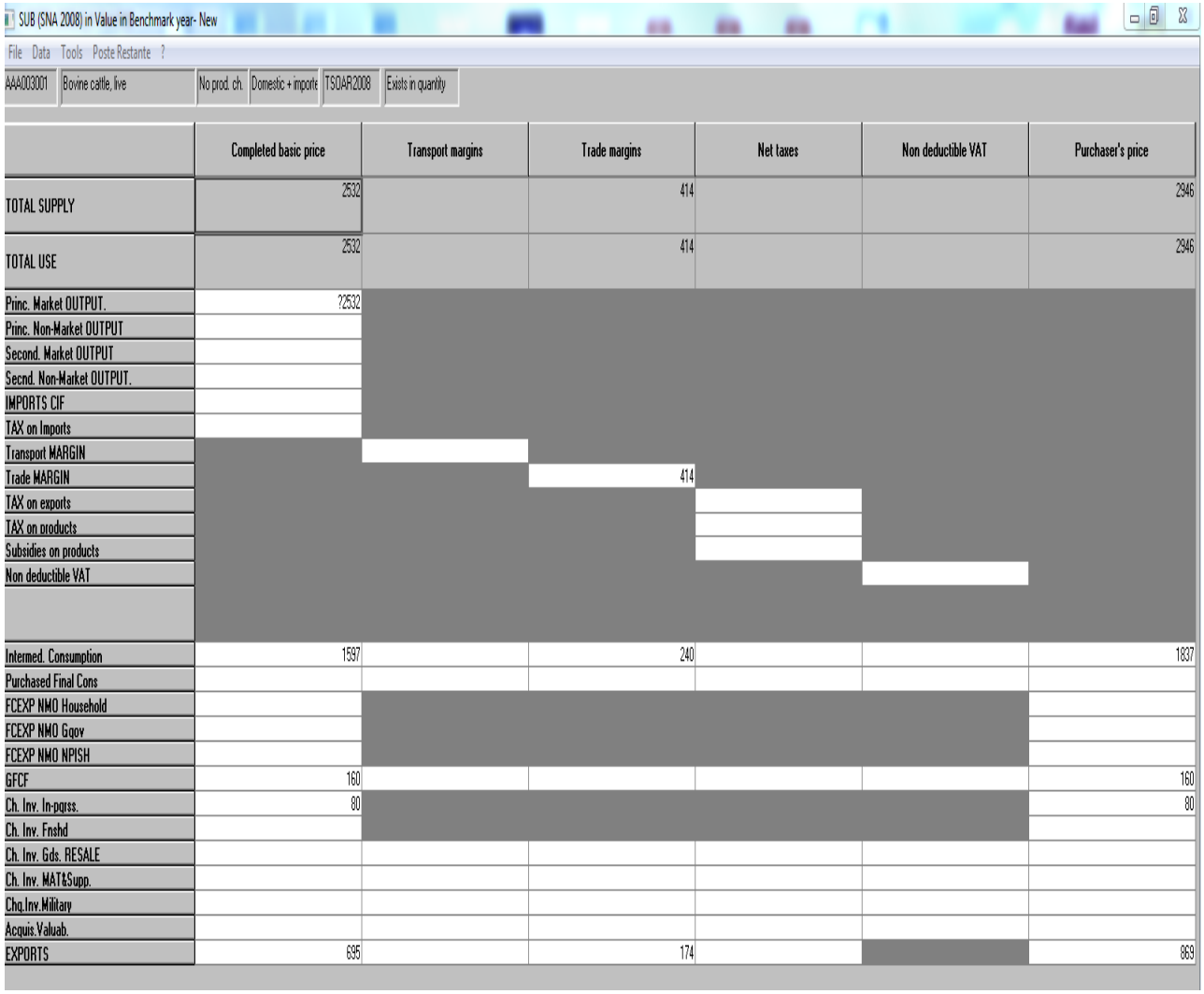
	Benchmark year	Current year
Quantity		
Value		

Supply and Use Balances in value

Aims :

- Synthesize the whole information linked to a product of the classification
- Balance supply and use
  - Benchmark year at price n
  - Current year at price n (and at price n-1 optional)
- Estimate the GDP by the Expenditure approach

Supply and Use Balance value / benchmark year



SUB (SNA 2008) in Value in Benchmark year- New

File Data Tools Poste Restante ?

AAA003001 | Bovine cattle, live | No prod. ch. | Domestic + importe | TSOAR2008 | Exists in quantity

	Completed basic price	Transport margins	Trade margins	Net taxes	Non deductible VAT	Purchaser's price
TOTAL SUPPLY	2532		414			2946
TOTAL USE	2532		414			2946
Princ. Market OUTPUT.	2532					
Princ. Non-Market OUTPUT						
Second. Market OUTPUT						
Secnd. Non-Market OUTPUT.						
IMPORTS CIF						
TAX on Imports						
Transport MARGIN						
Trade MARGIN			414			
TAX on exports						
TAX on products						
Subsidies on products						
Non deductible VAT						
Intermed. Consumption	1597		240			1837
Purchased Final Cons						
FCEXP NMO Household						
FCEXP NMO Gqov						
FCEXP NMO NPISH						
GFCF	160					160
Ch. Inv. In-pgrss.	80					80
Ch. Inv. Fnshd						
Ch. Inv. Gds. RESALE						
Ch. Inv. MAT&Supp.						
Chg.Inv.Military						
Acquis.Valuab.						
EXPORTS	695		174			869

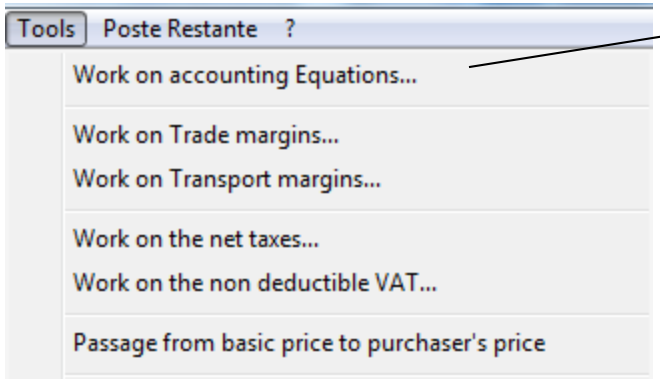
6 Columns
1 valuation mode by column.

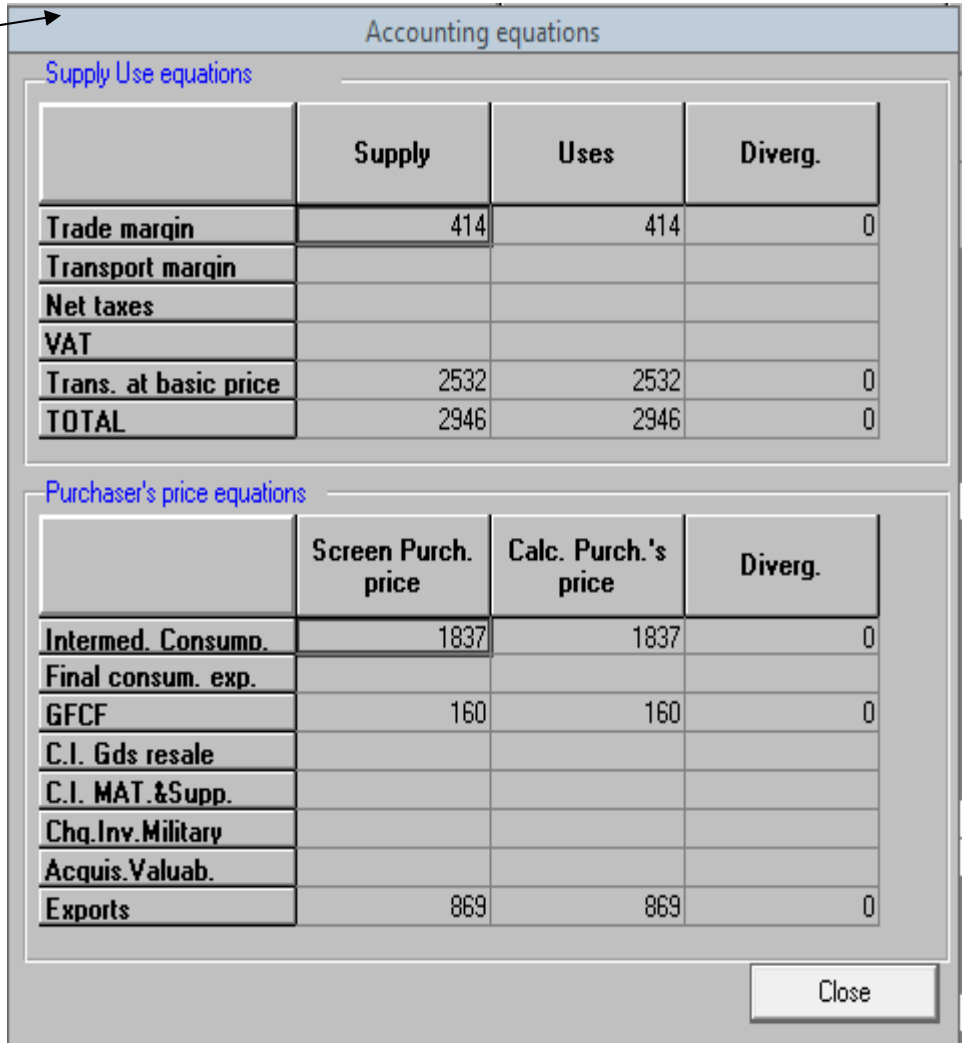
12 transactions in supply

~~**11 transactions in use**~~

13 for SNA 2008

SUB value / benchmak year : tools



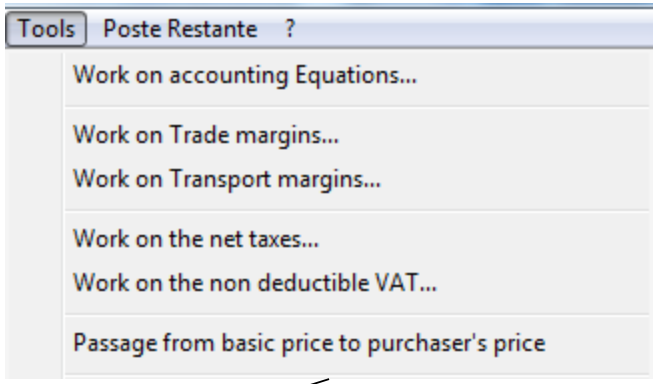


This tool allows to ckeck :

-for each valuation mode the balance between supply and uses

- for each use the balance between the purchaser price on the screen and the purchaser price calculated summing the basic price, the taxes and margins on the screen

SUB value / benchmak year : tools



This tool helps to calculate :

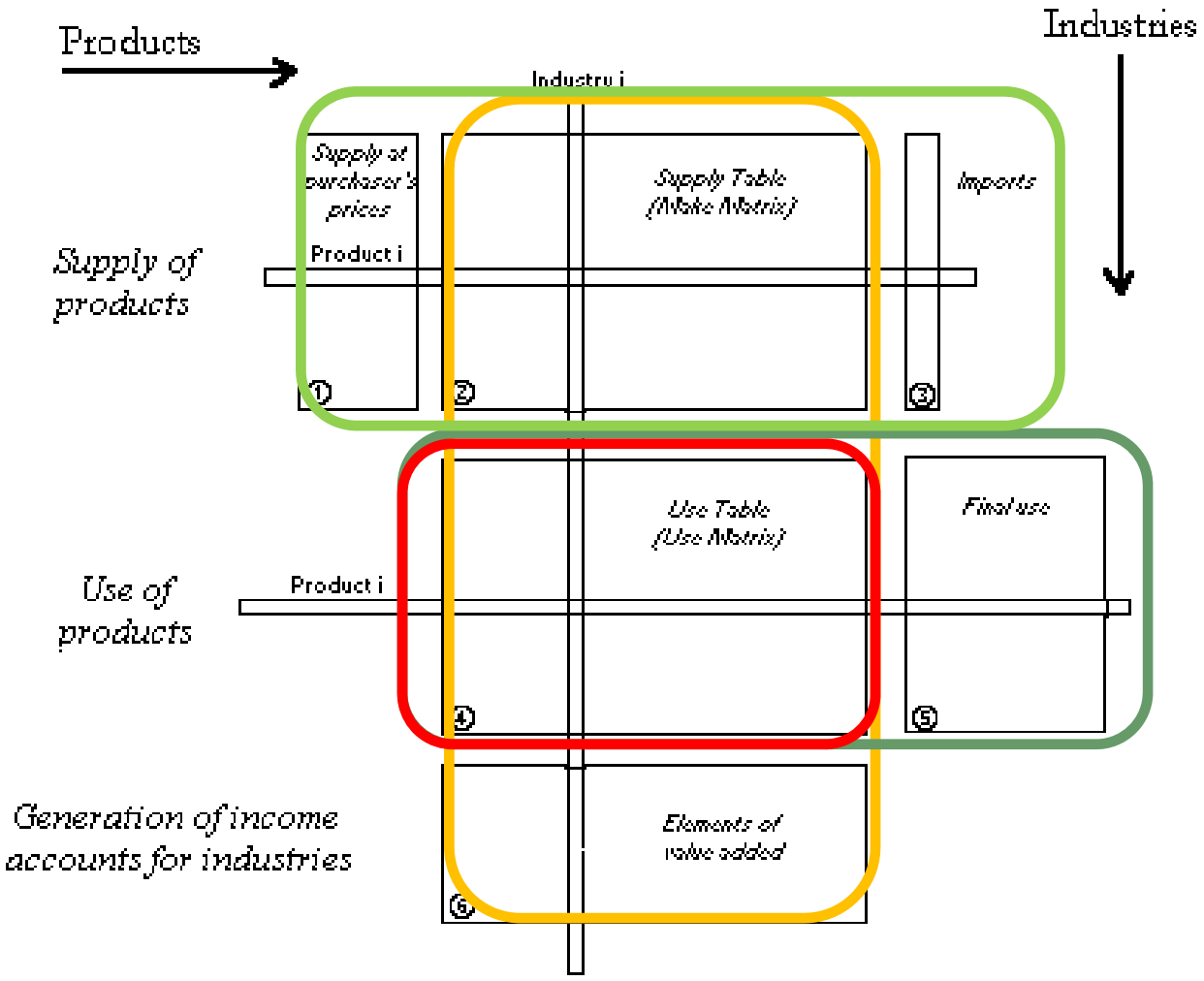
-for each use the different elements : taxes and margins between basic price and purchaser price

- you visualize the different assumptions and choose the one that suits you

Row :Intermed. Consumption

	Completed basic price	Transport	Trade margins	Net taxes	Non deductible VAT	Purchaser's price
Screen values	1597	0	240	0	0	1837
Stored Rates		0,000	0,150	0,000	0,000	
Computation from basic price	1597	0	240	0	0	1837
Computation from purchaser's price	1597	0	240	0	0	1837
Proposed rates		0,000	0,000	0,000	0,000	
Corresponding values (/basic price)	1597	0	0	0	0	1597
Corresponding Values (/purchaser's price)	1837	0	0	0	0	1837
Suggested values (basic price)	1597	0	240	0	0	1837
Corresponding Rates (/basic price)		0,000	0,150	0,000	0,000	
Suggested values (/purchaser's price)	1597	0	240	0	0	1837
Corresponding Rates (/purchaser's price)		0,000	0,150	0,000	0,000	

ERETES work tables to compile the SUT : IC Matrix



IC matrix – projection of IC

If you have chosen to compile both Industry Accounts and Supply an Use Balances you can go even further to ensure consistency between :

• the intermediate consumption of the industries (demand of IC)

• the intermediate consumption of the products (supply of IC on the market)

- for a benchmark year with the IC matrix
- for a current year with the projection of IC tool and the IC matrix

IC matrix

methodological attribute = 1 demand of IC by industries

methodological attribute = 2 supply of IC on the market by products

				INDUSTRY	AAA	BBB	CC1	CC2
				IC Not alloctd.	0	0	0	0
				Total demand	2591	940	7584	3583
				Total Supply				
				Diverg. s/d indu	2591	940	7584	3583
PRODUCT	IC Not alloctd.	Total products	Diverg s/d product					
AAA		6178					?6178	
	6178	6178	0					
BBB		3236					?25	
	3236	3236	0					
CC1		463			?282		?181	
	463	463	0					
CC2		2851				5		?2548
	2846	2846	5					
CC3		8922			?1731	?358	?61	?142
	8577	8577	345					
CC4		7077			?81	?173	?454	?469
	7374	7374	-297					
DE0		1533			?10	?16	?53	?27
	1586	1586	-53					
FFF		329						

The IC matrix allows to compare :

-the total of the demand of IC of all industries for a product (example CC3 = 8922)

-the supply on the market of IC for the same product (example CC3 = 8577)

In that case, the accountant decides if he will modify the SUB increasing the supply or the Industry accounts decreasing the demand of one or several industries

Projection of IC

A benchmark year is generally chosen according to the availability of a structural business survey which is the base of the implementation of a complete SUT in particular a detailed IC matrix.

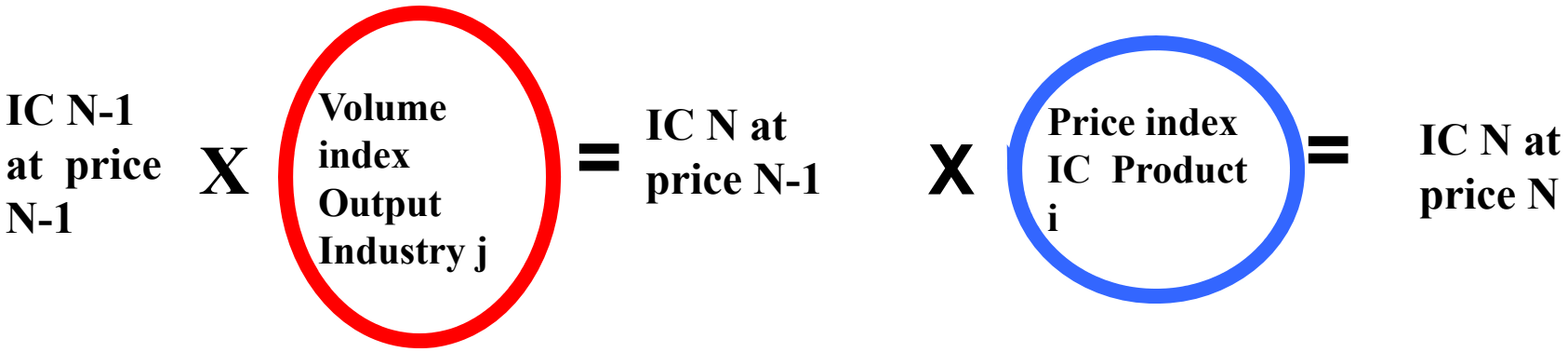
This IC matrix gives for each industry a structure of the IC, describes its productive process.

These productive processes are stable over the medium term. It is called the asumption of the technical coefficients time-stability.

Projection of IC

For current years, if you implement Industry accounts and SUB, you can use this structure to propose an updated vector of IC for each industry (it is called projection of IC)

For each cell IC of industry j in product i:



From Industry j accounts

From Product i SUB

IC matrix - current year context

You compare the IC vectors of the industries from the projection of IC tool and the IC by products on the market

Use Matrix - New

File Data Tools Cell Phase Poste Restante ?

TSOAR2009 | current year | current price | Domestic + imported

				INDUSTRY	AAA	BBB	CC1	CC2	CC3	CC4	DE0	FFF	GGG	HHH
				IC Not alloctd.	0	0	0	0	0	0	0	0	0	
				Total demand	2505	1058	8214	4031	4501	1761	1174	5138	3207	22
				Total Supply										
				Diverg. s/d indu	2505	1058	8214	4031	4501	1761	1174	5138	3207	22
PRODUCT	IC Not alloctd.	Total products	Diverg s/d product											
AAA		6626					6626							
	6562	6562	64											
BBB		3548					28		2883			637		
	3505	3505	43											
CC1		506			307		199							
	470	470	36											
CC2		3208				6		2867	36					
	3039	3039	169											
CC3		9587			1561	402	68	162	60	23	218	2330	119	11
	9982	9982	-395											
CC4		8022			90	195	519	529	471	436	729	1220	1335	3
	8779	8779	-757											
DE0		1705			10	17	59	29	18	807		427	11	
	1751	1751	-46											
FFF		342												
	363	363	-21											
GGG														
HHH		1162										20	697	1
	1153	1153	9											
KKK		2706			35	277	285	163	331	240	27	251	236	3
	2615	2615	91											
OOO														
PQO														
SER		4124			502	161							809	2
	4114	4114	10											
XMC														

totals

	Unallocated total	Allocated total	Grand total
Demand	0	41536	41536
Supply	42333	0	42333
Diverg.	-42333	41536	-797

Close

ERETES projection of IC tool : more information

- proposes for each pair industry * production mode the relevant method according to the information available for the year n:

If the total of IC is not available : Leontiev method

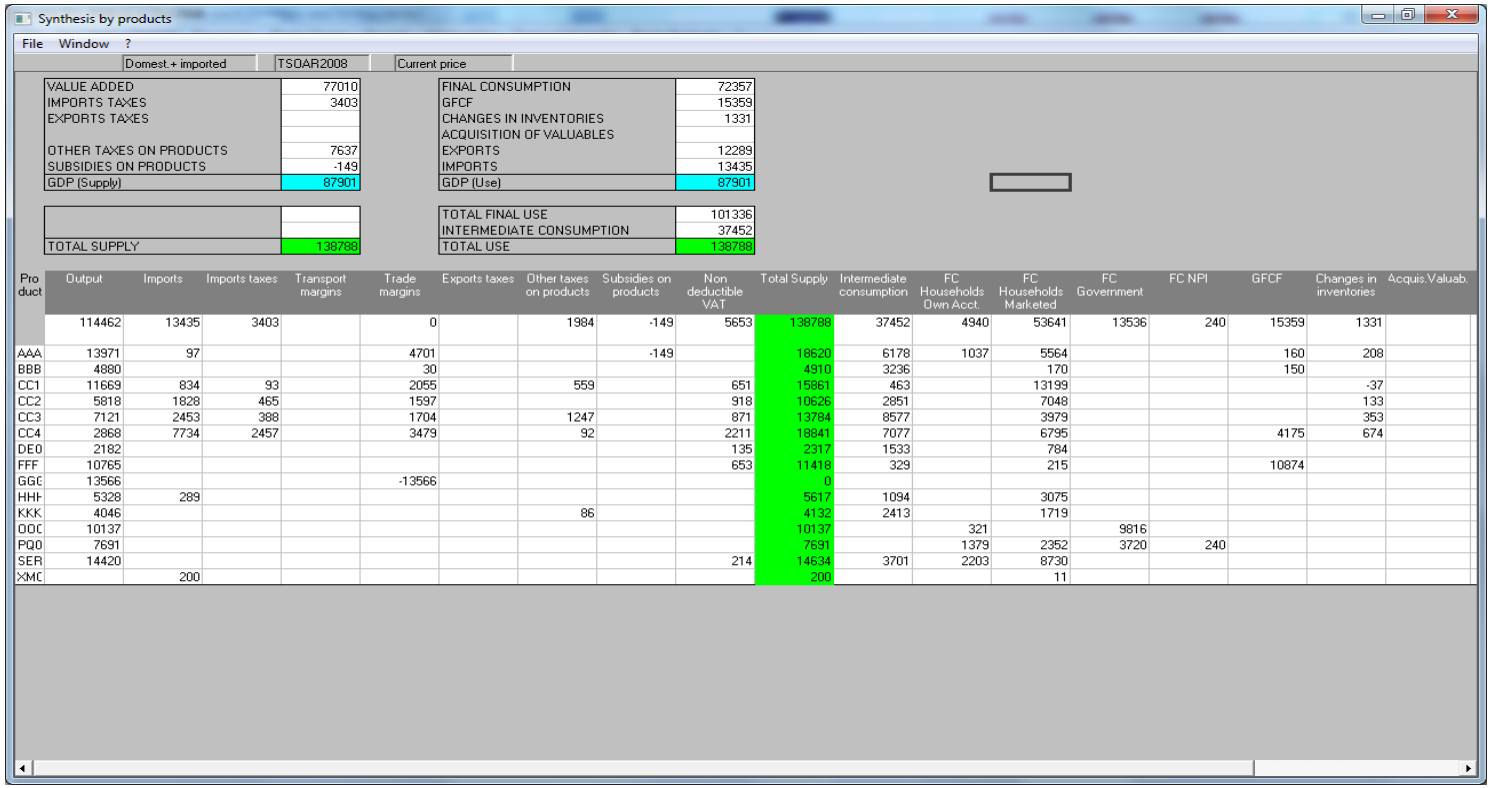
If the total of IC is available : Deflate method

- respects the cells with a particular status: source data, pre-arbitrated data, fixed cells (a file manages the memory of the cells to which this status has been given during the previous projections)

- allows to calculate a complementary price index that must be applied to the non-fixed cells to take into account the fixed cells particular price indexes while respecting the price index of IC supply in the SUB of the product.

ERETES goods and services synthesis tables

- Synthesis by products (level 1):



Synthesis by products

File Window ?

Domest.+ imported | TSOAR2008 | Current price

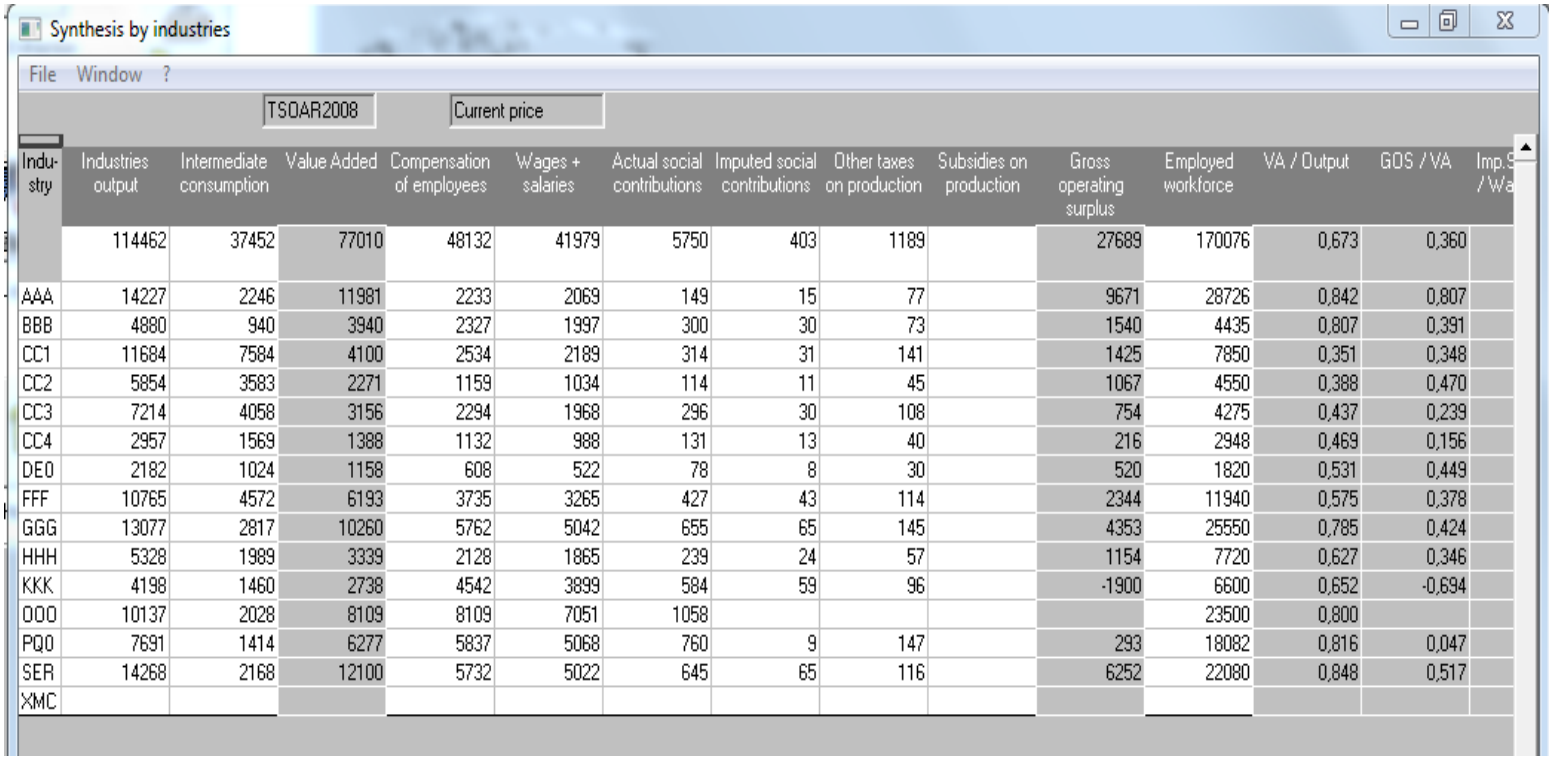
VALUE ADDED	77010	FINAL CONSUMPTION	72357
IMPORTS TAXES	3403	GFCF	15359
EXPORTS TAXES		CHANGES IN INVENTORIES	1331
		ACQUISITION OF VALUABLES	
OTHER TAXES ON PRODUCTS	7637	EXPORTS	12289
SUBSIDIES ON PRODUCTS	-149	IMPORTS	13435
GDP (Supply)	87901	GDP (Use)	87901
		TOTAL FINAL USE	101336
		INTERMEDIATE CONSUMPTION	37452
TOTAL SUPPLY	138788	TOTAL USE	138788

Product	Output	Imports	Imports taxes	Transport margins	Trade margins	Exports taxes	Other taxes on products	Subsidies on products	Non deductible VAT	Total Supply	Intermediate consumption	FC Households Own Acct.	FC Households Marketed	FC Government	FC NPI	GFCF	Changes in inventories	Acquis.Valuab.
	114462	13435	3403		0		1984	-149	5653	138788	37452	4940	53641	13536	240	15359	1331	
AAA	13971	97			4701			-149		18620	6178	1037	5564			160	208	
BBB	4880				30					4910	3236		170			150		
CC1	11669	834	93		2055		559		651	15861	463		13199				-37	
CC2	5818	1828	465		1597				918	10626	2851		7048				133	
CC3	7121	2453	388		1704		1247		871	13784	8577		3979				353	
CC4	2868	7734	2457		3479		92		2211	18841	7077		6795			4175	674	
DE0	2182								135	2317	1533		784					
FFF	10765								653	11418	329		215			10874		
GGC	13566				-13566					0								
HHH	5328	289								5617	1094		3075					
KKK	4046						86			4132	2413		1719					
OOC	10137									10137		321		9816				
PQ0	7691									7691		1379	2352	3720	240			
SER	14420								214	14634	3701	2203	8730					
XMC		200								200			11					

INSEE

ERETES goods and services synthesis tables

- Synthesis by industries (level 1):



Synthesis by industries

File Window ?

TSOAR2008 | Current price

Indu-stry	Industries output	Intermediate consumption	Value Added	Compensation of employees	Wages + salaries	Actual social contributions	Imputed social contributions	Other taxes on production	Subsidies on production	Gross operating surplus	Employed workforce	VA / Output	GOS / VA	Imp.S / Wa
	114462	37452	77010	48132	41979	5750	403	1189		27689	170076	0,673	0,360	
AAA	14227	2246	11981	2233	2069	149	15	77		9671	28726	0,842	0,807	
BBB	4880	940	3940	2327	1997	300	30	73		1540	4435	0,807	0,391	
CC1	11684	7584	4100	2534	2189	314	31	141		1425	7850	0,351	0,348	
CC2	5854	3583	2271	1159	1034	114	11	45		1067	4550	0,388	0,470	
CC3	7214	4058	3156	2294	1968	296	30	108		754	4275	0,437	0,239	
CC4	2957	1569	1388	1132	988	131	13	40		216	2948	0,469	0,156	
DE0	2182	1024	1158	608	522	78	8	30		520	1820	0,531	0,449	
FFF	10765	4572	6193	3735	3265	427	43	114		2344	11940	0,575	0,378	
GGG	13077	2817	10260	5762	5042	655	65	145		4353	25550	0,785	0,424	
HHH	5328	1989	3339	2128	1865	239	24	57		1154	7720	0,627	0,346	
KKK	4198	1460	2738	4542	3899	584	59	96		-1900	6600	0,652	-0,694	
OOO	10137	2028	8109	8109	7051	1058					23500	0,800		
PQ0	7691	1414	6277	5837	5068	760	9	147		293	18082	0,816	0,047	
SER	14268	2168	12100	5732	5022	645	65	116		6252	22080	0,848	0,517	
XMC														

ERETES implementation : key strengths

ERETES :

- stores and secures all the data in a single and consistent database from the sources to the aggregates and for the entire scope of your National Accounts
- involves all the accountants team and promote a teamwork structured by the tool
  - according to the breakdown of tasks each one is responsible for a set of work tables
  - each one has access to all the data generated by the other members of the team and the persons responsible for the synthesis

ERETES implementation : key strengths

ERETES :

- facilitates the assimilation of the National Accounts compilation methods as
  - the team follows the same structured process year after year (phases – tools)
  - it offers the possibility to consult both general documentation on national accounts (help) and specific one written by the team during the former campaigns (notepad)
  - it keeps the memory of reconciliations

ERETES implementation : key strengths

ERETES provides tools :

- to edit immediately a SUT and an IEAT compliant this the SNA 2008 and customized according to your own classifications
- to build and to edit time series
- to modify the classifications of your database to :
  - adapt it to specific issues (provisional accounts)
  - feed the edition of the MORES of the ICP

ERETES implementation : key strengths

- The use of ERETES is very flexible
  - A very complete set of work tables and tools is available
  - But it is not mandatory to use all of them
- Nothing is automatic in ERETES
  - It is a toolkit not but in no case a black box
  - The national accountant always takes the final decision

ERETES implementation : steps and support

When a country decides to use ERETES this implementation is conducted in the framework of a project and the support of an expert of the package is provided

- The first step is the identification phase :
  - Analysis of the statistical information available, of the methods used up to now to compile National Accounts
  - Detailed presentation of the tool
  - Choice of the scope of the accounts

ERETES implementation : steps and support

- The first step is the identification phase :
  - Choice of the new benchmark year as the implementation is generally linked to the initialization of a new serie
  - But the implementation can also be conducted in other contexts in particular building an ERETES database in which data previously elaborated with other tools are loaded
  - According to the context, decisions on the appropriate support and the implementation schedule are taken

ERETES implementation : steps and support

- Step 2 - installation :
  - Software installation
  - Loading of the local classifications prepared by the team
  - Initialization of a new accounting year
  - Support to prepare the formatting and loading of statistical sources

ERETES implementation : steps and support

- Step 3 - Processing statistical sources :
  - Validation of choices regarding data organization : agregation of individual data, for some transactions is it more useful to load amounts or rates ?
  - Detailed review of the data prepared by the team : in particular the methological attribute, support to use the interface « scan » an Excel file
  - Loading data in the database

ERETES implementation : steps and support

- Step 4 - Preliminary pre-reconciliation
  - First check of the consistency between sources transaction by transaction
  - Additional treatments if necessary (examples)
    - transform data at producer price into data at basic price
    - transform data based on cash accounting into data on accrual basis
    - check the consistency of the rates of taxes or social contributions with the legislation

    ….

ERETES implementation : steps and support

- Step 5 – Assimilation by all the team members of how to use the work tables :
  - Industry accounts
  - Supply and use balance
  - Whom to whom matrix (distributive and financial transactions)

ERETES implementation : steps and support

- Step 6 – Synthesis
- Reconciliation of the IC matrix
- Last checks of the consistency of the institutional sectors accounts
- Post-synthesis :
  - Launching the editions of the SUT and the IEAT
  - Data preparation to start the accounts of the following year

ERETES implementation : steps and support

- Step 7 – Working on a current year needs to assimilate specific tables and tools :
- SUB : current year version
- IA : production account at current price and constant price
- Projection of IC tool

After this last step, the team has a full mastery of all tools and their use in the compilation process.

ERETES implementation : training

The ERETES community provides :

- A set of exercices to familiarize your accountants team with the package it is called « testset »
- 3 levels of the testset are available (basic – advanced – expert) to organize trainings with progressive difficulty
- The testset can be used during the support provided at each step or during specific training sessions
- A pool of african experts have been trained to conduct these trainings – the Pan African Statistic program supported this initiative





Thank you for your attention

ERETES technical team

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