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**Experience with Supply and Use and Input-Output Tables
for Constant price Estimation of Annual National
Accounts in Different Countries.**

by

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I. Abstract

Statistics Norway's has a very long tradition compiling Supply and Use Tables (SUT) and Input/Output Tables (IOT) in current and constant prices integrated in the regular national accounts production process.

***PART I** of this Paper gives an overview of the Norwegian methodology for implementing detailed Supply and Use Tables (SUT) in all types of valuation in current and constant prices, following SNA93/ ESA95 recommendations. The data sources and the technology for compiling the detailed valuation matrices in the SUT frame (VAT, product taxes, product subsidies, trade and transport margins) and the balancing of the product flows in current and constant prices are described. The price or volume indicators required for the constant price compilation are explained and the compilation of a consistent and integrated set of price and volume measures within the framework of SUT.*

The methodology used for compiling annual "Industry format" Input-Output tables (IOT) in current and constant prices by "the market share assumption" is also described. Compilation of tourist satellite accounts integrated in the SUT in current and constant prices is referred to.

***PART II** focuses on experience from introducing Supply and Use Tables in countries with different types of economies and with different types of data sources are described. The goal of these international projects has been to improve the quality of the countries annual national accounts by integrating SUT and IOT in current and constant prices in the ordinary compilation process by an efficient and well-documented production process.*

PART I. METHODOLOGY AND COMPILATION PROCEDURES

1. Supply and Use Tables in current and constant prices

1.1. Functions and methodology

The annual Supply and Use tables (SUT) in current and constant prices serve both statistical and analytical purposes and are fully integrated in the Norwegian National Accounts System.

SUT integrated in the national accounts system have the following methodological advantages:

- *Represent an integral part of and check on the national accounts estimates.*
- *An efficient confrontation of different primary sources*
- *An ideal framework for different value concepts*
- *An important tool for constant price estimates (the double deflation technique) giving balanced SUT in both current and constant prices.*
- *Important for analysing the effect of imports and exports on the economy.*
- *Database for econometric models and economic planning purposes*
- *Database for converting to Industry format Input-Output tables (IOT) in current and constant prices.*

Statistics Norway has a long tradition compiling annual Industry-by-Industry tables based on the assumption of a fixed product sales structure (market share assumption). The Industry-by-Industry tables based on the market share assumption are derived directly with an automatic compilation procedure from the Supply and Use Tables in current or constant prices, without any assumptions about technology and additional data collection. The Industry-by-industry tables are comparable to the current national accounts data on production, employment, capital stocks etc. and to basic statistics in general.

1.2. International recommendations

Integration of Supply and Use tables as well as Input-Output tables in the national accounts work has become a key feature, *ref. SNA 93 chapter XV and European System of Accounts (ESA) 95, chapter 9.*

The ESA95 transmission program requires that the EU Member States deliver:

Supply and Use Tables (SUT) at both current and constant prices of the previous year on an annual basis with a deadline of T+36 months. The Supply table should be at basic value, including a transformation into purchasers' prices, (A60 x P60) and the Use table at basic values, (P60 x A60). Symmetric Input -Output tables (SIOT) at basic values are required only five yearly. The SIOT should be 60 products by 60 products.

According to the revised ESA95 transmission program: No more SIOT tables at constant prices.

Industry by industry tables can be accepted, provided that industry by industry is a good approximation of product by product.

The OECD input-output database, which is closely connected to the STAN (Structural Analysis) industrial database, requires industry-by-industry tables, and in those cases where only product -by-product tables have been reported by countries, they are being converted to industry-by-industry tables. Industry by industry tables are preferred by many users because it is useful for analytical purposes, as it can be related to other kinds of basic industrial information.

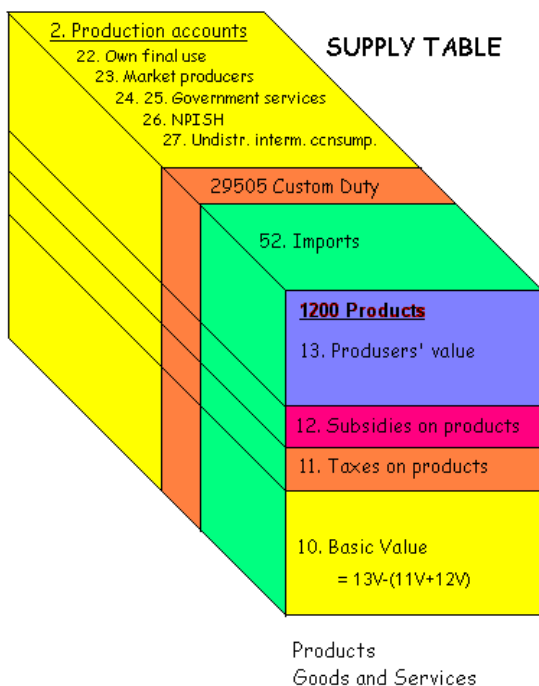
1.3.The design of SUT

By the Norwegian methodology and software called "System of National Accounts- New Technology" (SNA-NT), a documented, verifiable and efficient set-up for compiling national accounts with integrated SUT and IOT in current and constant previous years prices have been created.

This paper gives an overview of the compilation procedure and shows a selection of the equations applied when calculating SUT in current and constant prices. The SNA-NT application will establish, balance and update the detailed Supply and Use Tables (SUT) by all different types of valuation, i.e. for basic values, producers' values, trade margins, transport margins, product taxes, product subsidies, VAT and purchasers' values. The final stage is simultaneous balancing and correcting SUT in both current and constant prices. The structure and dimensions showed on the two next pages are the same for the current price and the constant price versions of SUT.

Finally the conversion to the Norwegian IOT tables, based on the "market share assumption" is described. An aggregated Norwegian IOT table for the year 2002 in 2001 prices are attached.

Norwegian Supply Table



The Supply table is first established in Producers' value.

Time adjusted taxes, allocated to products, are distributed between domestic suppliers and imports of the products.

Time adjusted subsidies, allocated to products, are distributed between domestic suppliers of the products.

Finally, the Supply table is calculated in Basic values

The Supply Table gives detailed information about the supply of products (goods and services) from:

2. Production accounts

Account 22. Production accounts, Own final use
Account 23. Production accounts, Market producers

Account 24. Production accounts, Non-market producers, Central government services

Account 25. Production accounts, Non-market producers, Local Government services

Account 26. Production accounts, Non-market producers, NPISHs

Account 27. Aggregation accounts for trade margins & undistributed intermediate consumption (to facilitate the balancing)

Account 28. Aggregation accounts for fixed capital formation by type of asset.

Account 29. Technical accounts for Custom duty, Import tax and VAT

52. Imports

Account 52. Imports, specified by type of imports

The following account types show which value classes are used for the product flows:

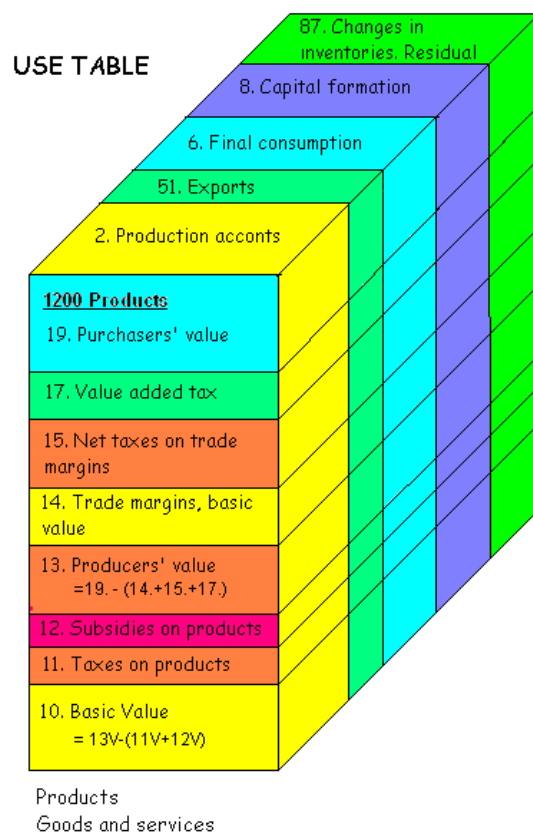
Account type 10. Basic value

Account type 11. Taxes on products (paid by the producers)

Account type 12. Subsidies on products (paid to the producers)

Account type 13. Producers' value

Norwegian Use Table



The Use table in Purchasers' value (19 value is decomposed into the different valuation matrices:

Investment levies (Account type 18)
 Non-refundable VAT (Account type 17)
 Product subsidies to traders (Account type 16)
 Product taxes paid by traders (Account type 15)
 Retail and wholesale margins, basic value (Account 14 R)
 Transport margins (Account type 14T)
 Producers' value (Account type 13)

The producers' value is further decomposed into:

Subsidies on products (Account type 12)
 Taxes on products (Account type 11)
 Basic value (Account type 10)

Balancing and correcting changes in inventories:

In the first phase of the balancing of supply and use of each product at producers' values, the change in inventories is residually determined. The residuals are then corrected to an acceptable level. The corrections are first made manually, based on an evaluation of data and statistical sources and finally by an automatic "RAS" method.

The Use Table gives intermediate use of products by industries and final use, specifying domestic final use and exports:

2. Production accounts

Intermediate use of products:

Account 22. Production accounts, Own final use, specified by industries

Account 23. Production accounts, Market producers, specified by industries

Account 24. 25. Production accounts, Non-market producers, Central and Local government, specified by industries

Account 26. Production accounts, Non-market producers, NPISHs, by industries

Account 27, 28, 29 Aggregation accounts

Final use of products:

Account 51. Exports, specified by type of exports

Account 6. Final consumption expenditure, specified by the COICOP, COFOG and COPNI classifications

Accounts 82-86. Fixed capital formation accounts, specified by industries

Account 87. Change in inventories and Residuals, specified by products

The complete Use table shows the valuation matrices with the product flows:

- Account type 10. Basic value
- Account type 11. Taxes on products (paid by the producers)
- Account type 12. Subsidies on products (paid to the producers)
- Account type 13. Producers' value
- Account type 14R Retail and wholesale margins, basic value
- Account type 14T Transport margins
- Account type 15. Taxes on products (collected by retail or wholesale traders).
- Account type 16. Subsidies on products (paid to wholesale or retail traders)
- Account type 17. Value Added Tax (VAT)
- Account type 18. Investment levies (A special Norwegian tax)
- Account type 19. Purchasers' value

2. CLASSIFICATIONS REQUIRED FOR SUT

2.1. The dimension of SUT in current and constant prices

When starting a SUT project, a set of classification has to be established with Industry codes (aggregates of NACE or ISIC) and Types of final expenditure (based on SNA93/ ESA 95) and Product codes (aggregates of CPA or CPC). The SNA-NT application is flexible concerning how detailed classification to use for compiling SUT. For reporting to international organisations (EU, UN, and OECD) a minimum classification is required for industries (A60 classification of SNA93/EU95), products (P60 classification of SNA93/ ESA95) and types of final expenditure (SNA93/ESA95).

2.2. Classification of Industries in SUT

The classification used should distinguish between "Market producers", "Producers for own final use" and "Other non-market producers". Other non-market producers should be further subdivided between "Producers of central government services", "Producers of local government services" and "Non profit institutions serving households" (NPISH) The industry classification used in the Norwegian National Accounts (NNA) with SUT is an aggregated version of NACE rev.1 with three-digit codes, specifying 200 industries.

2.3. Classification of Products in SUT

An important starting stage for a SUT project is to decide the best product classification to be used. One goal is to specify products to such detail that only one rate for product taxes and product subsidies apply to one type of use of the product. In the Norwegian SUT, about 1200 products, specified by six-digit codes, are defined with a link to the CPA-codes or as aggregates of the CPA-codes. For the NA products, 6-digit codes are required.

When deciding on the product codes, the need for specifications of products in the Tourism Satellite Accounts or other Satellite accounts as Health accounts should also be considered.

3. SUT IN CURRENT PRICES, SOME EQUATIONS

See References to the Document from Statistics Norway "SNA-NT SUT/STARTER" with the complete set of Equations for the current price compilation.

3.1. First stage, establishing the Supply Table (T1) at producers' value (13-value).

The Supply table (T1) is illustrated by matrix H, defined by:

$$H = \left[h_{ip}^v \right] \quad (\text{Eq SUT 1})$$

v represents *Value Classes* (Account type 10, 11, 12, 13)

i represents *Suppliers* (i= d+z)

⇒ d Production and Aggregation accounts (Accounts from 22000 to 29999)

⇒ z Import accounts (Accounts from 52000 to 52900).

p represents *Products* (Accounts from 000000-999999).

H_{ip}^{13} is the matrix defining the product flows (p) from domestic suppliers and imports (i), at producers' values (13-values).

Data have to be loaded into the database with a fixed format. A User's guide describes how input data can be converted from Excel worksheets to the required ASCII (text) files as "CORRT1-FILE"
A CORRT1-file is the file format used for registering values for production and imports (cif), specified by product at producers' values (13-Values).

Supply of specified products: CORRT1-file

CORRT1	SUPP CODE	VALUE/PRODUCT CODE	VALUE
Position	Position	Pos.Position	Position
1 - 6	21-25	29/3031- 36	41 - 51
CORRT1	23211	13XXXXXX	2000
CORRT1	23211	13XXXXXX	4000

Position 1- 6: CORRT1 is a technical name for all records in a CORRT1-file.

Position 21- 25: show 5-digit codes for the Supplying industries (as 23211 for Manufacture of pulp).

Position 29-30 plus 31-36 are 8 digit codes where the first 2-digit codes show type of valuation (13 for producers' value) and the next 6-digits codes show the product codes.

$$\text{Total Domestic Supply: } T = \sum_{d=1}^e T_d \quad (\text{Eq SUT 2})$$

$$\text{Total Import: } T = \sum_{z=1}^y T_z \quad (\text{Eq SUT 3})$$

S is a row vector giving Total Domestic Supply and Imports, classified by Products in the different value classes, defined by:

$$S_P^v = \sum_{d=1}^e h_{dp}^v + \sum_{z=1}^y h_{zp}^v \quad (\text{Eq SUT 4})$$

v represents Value classes. p represents Products,

3.2. Second stage, establishing the Use Table (T2) at purchasers' value (19-value).

The Use Table (T2) without Value added (B_d), can be illustrated by matrix N, defined by:

$$N = \begin{bmatrix} n_{pj}^v \end{bmatrix} \quad (\text{Eq SUT 5})$$

v represents Value Classes (10, 11, 12, 13, 14R, 14T, 17, and 19 values)

p represents Products,

j represents Users (j = d+s):

⇒ d Production accounts

⇒ s Final Users .

Total final use T_s given in T2, will be calculated at purchasers' value (19-value):

$$T_s = \sum_{p=1}^c n_{ps}^{19} \quad (\text{Eq SUT 6})$$

S is a column vector giving Total Use aggregated over Users and classified by Products in the various value classes, defined by:

$$S = \begin{bmatrix} S_p^v \end{bmatrix} = \sum_{j=1}^g n_{pj}^v \quad (\text{Eq SUT 7})$$

Data are loaded into the database with a fixed format. The User's guide describes how input data can be converted from Excel worksheets to the required ASCII (text) files as "CORRT2-FILE"
A CORRT2-file is the file format used for registering absolute values for intermediate use, domestic final consumption and exports (fob) of products at 19 values (purchasers' values).

Use of specified products (absolute values): CORRT2-file

CORRT2	VALUE/PR.	CODE USE	CODE VALUE
<i>Position</i>	<i>Position</i>	<i>Position</i>	<i>Position</i>
<i>1 - 6</i>	<i>19/20 21 -26</i>	<i>31-35</i>	<i>41 - 51</i>
CORRT2	19XXXXXX	23211	400
CORRT2	19XXXXXX	23211	500
CORRT2	19XXXXXX	23211	-8

Position 1- 6: CORRT2 is a technical name for all records in a CORRT2-file.

Position 19-20 plus 21-26 will show 2-digit codes for type of valuation (19 for purchasers' value) and 6-digits product codes (together 8 digit code).

Position 31- 35 will show 5-digit codes for the Users (as 23 for Market production and 211 for Manufacture of pulp).

3.3. Third stage, compiling the other valuation components of the Use table.

From the initial Use Table (T2) with the product flows recorded in Purchasers' values, other valuation components are calculated automatic in the following stages:

Calculating matrix for value added tax VAT (17-Values)

The SNA-NT methodology follows the SNA93 recommendation with "net system of value added tax". Only non-deductible VAT is recorded as theoretical VAT.

M^{17} is the calculated VAT (17-Values), specified by Products and Users.

$$M^{17} = [m_{pj}^{17}] = \begin{bmatrix} \frac{K_{11}}{1+K_{11}} m_{11}^{19} & \dots & \frac{K_{1j}}{1+K_{1j}} m_{1j}^{19} \\ \dots & \dots & \dots \\ \frac{K_{p1}}{1+K_{p1}} m_{p1}^{19} & \dots & \frac{K_{pj}}{1+K_{pj}} m_{pj}^{19} \end{bmatrix} \quad \text{(Eq SUT 8)}$$

where \mathbf{K} gives rates of VAT and is of the same order as the matrix \mathbf{M}^{19} , each element of matrix M^{19} is multiplied by the corresponding element of matrix \mathbf{K} .

The information about the current VAT rates for a year (specified by product and users) have to be recorded from the governments accounts and been expressed as a fixed per cent of the purchasers' value minus VAT: The matrix \mathbf{K} is compiled from information stored in tables showing the following alternative:

- ⇒ Certain products might not to be levied with VAT, regardless of use.
- ⇒ Certain products might have a rate of VAT that differs from the general rate.

In the Norwegian case we find about 400 products on this list of products with non-standard VAT tax rate. Among these are products from Central and Local government. For most of these products, the VAT rate is zero. For some products, as electricity for domestic use, an alternative rate is used in the northern regions of Norway and an average rate has to be estimated.

Calculating matrix for Retail and wholesale trade margins at basic values (14R-Values).

M^{KT} is an auxiliary matrix, defined as Purchasers' value (19) less VAT (17).

$$M^{KT} = M^{19} - M^{17} = M^{13} + M^{14R} + M^{14T} \quad \text{(Eq SUT 9)}$$

Retail and wholesale trade margins are defined as $TRM = \frac{M^{14R}}{M^{13}}$

TRM: The Trade Margin rates is "the total absolute value of retail and wholesale margins (M^{14R}) as a percentage of Producers' values (M^{13}) and is of the same order as M^{KT} ."

File with (14R) FOR TRADE MARGIN RATES (TRM) has to be specified with 4 decimals:

PRODUCT	USER	MARGIN RATE
Position	Position	Position
1 - 6	8 - 12	15 - 20
(6 digits)	(2+3 digits)	0,2600 (Example of presentation of 26,00 %)

A value (trade margin rate) is entered only when the rate is different from zero. The trade margin rates have to be estimated by products and users.

M^{14R} (of dimensions $c \times g$) is the calculated *Retail and wholesale trade margins at Basic Value*, is:

$$M^{14R} = [m_{pj}^{14R}] = \begin{bmatrix} \frac{trm_{11}}{1+trm_{11}+ttm_{11}} m_{11}^{KT} & \dots & \frac{trm_{1j}}{1+trm_{1j}+ttm_{1j}} m_{1j}^{KT} \\ \dots & \dots & \dots \\ \frac{trm_{p1}}{1+trm_{p1}+ttm_{p1}} m_{p1}^{KT} & \dots & \frac{trm_{pj}}{1+trm_{pj}+ttm_{pj}} m_{pj}^{KT} \end{bmatrix} \quad (\text{Eq SUT 10})$$

A similar set of equations are used for compiling thematrix for the Transport margins.

Matrix at producers' values (13-Values) :

$$M^{13} = M^{19} - M^{17} - M^{14R} - M^{14T} \quad (\text{Eq SUT 11})$$

3.4 Balancing the Supply table and the Use Table at producers' values

Matrix N expresses the Use table (T2) without Value added (B_d):

During the procedure of balancing SUT, the matrix N will be split into the matrices M and R, defined by:

$$N = M : R \quad (\text{Eq SUT 12})$$

M is Use in T2, without the accounts for "Change in inventories and Residuals", defined by:

$$M = [m_{pj}^v] \quad (\text{Eq SUT 13})$$

v represents *Value classes*,

p represents *Products*,

j represents *Users, but not Change in inventory/Residuals*

R is Change in inventories and Residuals, specified by products.

Total supply of a product in producers' value: S_p^{13} is calculated in T1 as column sums (row vector),

R^{13} is of dimensions $c \times r$. Change in inventories/residual in producers' values, which results from the balancing of all products. T1 gives Supply of a product in 13 value and T2 gives Use of a product in 13 value.

$$r_{p,87XXX}^{13} = S_p^{13} - \sum_{j=1}^g m_{pj}^{13} \quad (\text{Eq SUT 14})$$

87XXX represents the residual accounts 87000, 87400, 87900 (and part of 27XXX):

87000 Residual - Balancing account for the balancing, in 13-Values, of Supply and Use of goods (products that can be stored)

87400 Residual - Balancing account for the balancing, in 13-Values, of Supply and Use of services (products that can not be stored).(Will be removed during the balancing process)

879XX Residual - Balancing account for the balancing, in 13-Values, of Supply and Use of special specified products, like change in livestock (products that can be stored).

By the automatic product balancing at producers' values, the catalogue which has to be created with classifications for products will automatic decide the allocation of products between the different 87 accounts. Changes in inventories (87-accounts) at basic values (10-Values) and at purchasers' values (19-Values) will always be equal to change in inventories at producers' values (13 values).

3.5. Calculating the complete Use Table with subsidies on products and taxes on products.

Calculating T2. Matrix with product subsidies (12-Values)

M^{13} gives Use of products at producers' values (13-Values) classified by users,

M^{12} is of dimensions (c x g), gives subsidies levied on products (only negative values), (12-Values):

$$M^{12} = [m_{pj}^{12}] = m_{pj}^{13u12} \times \frac{S_p^{12}}{\sum_{j=1}^g m_{pj}^{13U12}} \quad (\text{Eq SUT 15})$$

where S^{12} is a column vector (c x 1) which gives Total absolute values for subsidies classified by products.

M^{13U12} is of dimensions (c x g), decided by:

$$M^{13U12} = [m_{pj}^{13U12}] = \begin{bmatrix} u_{11}^{12} m_{11}^{13} & \cdot & \cdot & u_{1j}^{12} m_{1j}^{13} \\ \cdot & \cdot & \cdot & \cdot \\ \cdot & \cdot & \cdot & \cdot \\ u_{p1}^{12} m_{p1}^{13} & \cdot & \cdot & u_{pj}^{12} m_{pj}^{13} \end{bmatrix} \quad (\text{Eq SUT 16})$$

where U^{12} has the same dimension as M^{13} and the possible values are between 0 and 1000. Every element in matrix U^{12} is multiplied by the corresponding element in matrix M^{13} .

S12 AND U12 ARE TAKEN FROM THE FOLLOWING FILES:

File with Values FOR S12

PRODUCT	VALUE
Position	Position
1 - 6	8 - 14
(6 digits)	Absolute value

Note: S12 specifies total absolute values for product subsidies (registered as negative values), classified by products.

File with Values FOR U12

PRODUCT	USER	VALUE
Position	Position	Position

$\frac{1-6}{(6 \text{ digits})} \quad \frac{8-12}{(2+3 \text{ digits})} \quad \frac{15-17}{(3 \text{ digits})}$

NOTE: Combinations of Product (p) x User (j) where subsidies are not to be calculated, are registered with 0. Combinations of Product (p) x User (j) where subsidies are to be calculated with a reduced rate, are registered with values from 1 to 999. All other combinations of Product (p) x User (j) where no value is registered, will by the SNA-NT software be given a value = 1000.

Value = 0 indicates where subsidies are not to be calculated, and these combinations will be eliminated.

Values from 1 to 999 indicates where subsidies are to be calculated with a different rate than the normal full rate. The value X, where $0 < X < 1000$, indicates the % $((X / 1000) * 100)$ of the the normal full rate.

Value = 1000 indicates where product taxes are to be calculated with the normal full rate.

M^{11} is of dimensions (c x g), gives taxes levied on products (positive values), (11-Values)

The procedure for compiling taxes on products is equal to the methodology described above for subsidies

Calculating T2. Matrix at basic values (10-Values)

Total Use in basic value, classified by product and aggregated over all users, is given by:

$$\sum_{j=1}^g m_{pj}^{10} = \sum_{j=1}^g m_{pj}^{13} + \sum_{j=1}^g m_{pj}^{12} - \sum_{j=1}^g m_{pj}^{11} \quad (\text{Eq SUT 17})$$

3.6. Value added

Domestic Supply specified by Production accounts, T_d is given in T1, defined by equation 2.

Total intermediate consumption of products (p) at purchasers' value (19-Value) to a Production account labelled (d), can be expressed by:

$$\sum_{p=1}^c n_{pd}^{19}, d \in (1, 2, \dots, e) \quad (\text{Eq SUT 18})$$

Value added (B_d), for a Production account at producers' value (13-Value), labelled d, is defined by:

$$B_d = [b_d^{13}] = T_d - \sum_{p=1}^c n_{pd}^{19}, d \in (1, 2, \dots, e) \quad (\text{Eq SUT 19})$$

GDP = Total Value added: $B = \sum_{d=1}^e B_d \quad (\text{Eq SUT 20})$

The total of income components (except operating surplus) for the industry d is given by:

$$I_d = \sum_{k=1}^f i_{kd}, d \in (1, 2, \dots, e) \quad (\text{Eq SUT 21})$$

Operating surplus, D_d , for a Production account labelled d, is given by:

$$D_d = B_d - \sum_{k=1}^f i_{kd}, d \in (1, 2, \dots, e) \quad (\text{Eq SUT 22})$$

k represents Income Components

d represents Production and Aggregation accounts

3.7. Correction runs.

During the process of balancing and correcting the SUT-tables, the persons responsible for the various industries or types of final use, have the possibility to correct their data within the same database on their PC since the SNA-NT interface is a multi user system. Corrections can take place in different ways, either by loading an Excel file in the format "CORR-file" or "TIND-file" or by interactive corrections.

A TIND1-file is used to register value indices for the Supplier industry, without product specification.

TINDT1	Supply code	VALUE/PRODUCTCODE	VALUE
Position	Position	Pos. Position	Position
1 - 6	21-25	29/3031 - 35	41 - 48
TINDT1	23211	13TOTAL	1,1600

The TIND1-file will automatic generate a CORRT1-file where the supply from an industry of all products in the version under compilation are changed proportionally to the supply from that industry in the previous version.

A TIND2-file is used to register value indices for the Users, without product specification.

TINDT2	VALUE/PRODUCT.CODE	USE.CODE	VALUE
Position	Position	Position	Position
1 - 6	19/2021 - 25	31-35	41 - 51
TINDT2	19TOTAL	23211	1,1000

The TIND2-file will automatic generate a CORRT2-file where the use of all products by an industry or a final user in the version under compilation will be changed proportionally to the use of the products the previous version.

Note: Each round of corrections that are carried out results in a new automatic total balancing of the Supply and Use table, calculating revised figures for change in inventories and residuals specified by products.

3.8. A "RAS" method for automatic balancing of residuals for services.

The starting point is a Use table where the Total for each User (e.g. intermediate consumption by industries) is assumed to be correct. The adjustment takes place in several automatic steps. The final result is that the first automatic computed residuals for services will be moved to changes in inventories for goods.

3.9. Update to a new year

After having finalised the first base year SUT in current prices, the updating of SUT to the next year SUT. The SUT will first be updated in current prices. The updating can take place either by using CORR-files or TIND-files.

4. OVERVIEW OF THE METHODOLOGY FOR COMPILING SUT IN CONSTANT PRICES

See References to the Document from Statistics Norway "SNA-NT SUT/constant" with the complete set of Equations for the constant price compilation.

SUT has to be compiled for two years before the constant price compilation converting the current year in the previous years prices can take place.

4.1 International recommendations

Handbook on price and volume measurement in national accounts

Eurostat released "Handbook on price and volume measurement in national accounts" in December 2001. The handbook follows Commission Decision 98/715/EC clarifies ESA-95 and Annex A to the Regulation (EC) No 2223/96 which clarifies the principles for measuring prices and volumes in national accounts concerning recommendations for "best-practice" and definitions on A-, B- and C-methods for different parts of the national accounts system.

The Handbook, describes the importance of constant price compilation within the framework of balanced Supply and Use Tables and states in chapter 2.1.1 the following:

"A simple rule is that total supply (domestic production and imports) and total use (domestic uses and exports) should be equal for each product. Another rule is that total output of an industry should equal its inputs (intermediate consumption plus value added). Compiling one unique measure of GDP volume growth requires full consistency between the concepts of price and volume used within the output approach and the expenditure approach. This should be achieved by using the same accounting framework as used in current prices".

Commission Decision from 17 December 2002

The Commission Decision from 17 December 2002 gives a further clarifying as concerns the principles for measuring prices and volumes. The Decision covers Large equipment, Computers and other information processing equipment, Construction work, Different services, Public administration and defence services, Education, health and social work services and Imports and Exports of goods and services.

4.2. Introduction to the Norwegian constant price methodology

The constant price methodology in the Norwegian national accounts follows the recommendations given in SNA-93 and ESA-95 and the decisions, referred to in chapter 4.1.

The Norwegian methodology is based on the following:

- Annual, balanced Supply and Use Tables (SUT) (complete valuation matrices).
- Detailed distribution by products (detailed flows of goods and services).
- Compilation of each current year in the previous years prices (annual chaining).
- Value added for the different industries, calculated as balancing items (double deflation).

The constant price figures are compiled by deflating the balanced SUT in current prices, by price indices at the product level.

VAT, trade and transport margins and product taxes and product subsidies are compiled in constant prices for the detailed products by user categories, by applying tax rates and trade margins from the previous year. This method corresponds to the method recommended for trade margins in ESA95, paragraph 10.38 and for taxes and subsidies on products and VAT in ESA95, paragraphs 10.50-10.52.

The compilation and balancing of the constant prices SUT lead to simultaneous adjustments of the current price SUT, which then will be balanced again. Further corrections of the price indices to be used, lead to additional adjustments in constant prices SUT until the final SUT in both current and constant prices are acceptable.

The level of details in the balanced SUT at constant prices is similar to the level of details at current prices, and the definitional relationships inherent in the current price SUT are also maintained in the

constant price SUT. An integrated set of value, price and volume measures are compiled within the framework of detailed, annual SUT in current and constant, previous year's prices.

4.3. Overview of the constant price compilation process

Price indices for all products are registered in an "assembling file", called the "SAM catalogue". When all the alternative price indices, specified by products, have been systematised and registered in the "SAM catalogue", the price indices will be drawn from the file according to programmed selection criteria.

Up to 3 different price indices will be used to deflate the corresponding current price figures for a product.

- Use table: Products to exports (FOB value), at purchasers' value.
- Supply table: Products from domestic production, at basic or producers' values.
- Supply table: Products from imports (CIF value), at basic value.

In addition follows a final correction using consumer price indices to deflate goods (not services) for Household consumption at purchasers' value.

The file with "SAM catalogue" with all the available price indices specifies by products will be currently updated showing which price indices are selected for the different versions of the constant price compilation. The final file for each year should be kept to give a complete documentation of all alternative price indices and the price indices used.

Integrated in the deflation process is the compilation of each of the value classes, i.e. subsidies and taxes on products, VAT, trade margins, transport margins, all specified by product and by type of users and also by type of suppliers. The constant price tax and subsidies rates and trade margins are calculated from the SUT of the previous year.

T2. Use table: Products to exports (FOB value). Constant price figures for exports at purchasers' values by the detailed product level are calculated by deflating with the corresponding price indices. Subsequently, constant price figures for exports at basic value are calculated by deducting VAT, trade and transport margins and product taxes in constant prices from purchaser's values and adding product subsidies, all compiled in constant prices. VAT, trade and transport margins and product taxes and product subsidies are compiled in constant prices at detailed product level by applying tax rates and trade and transport margins from the previous year. If there are empty cells in the tax or margin matrices for the previous year, the values for the current year are used as substitutes.

T1. Supply table: Products from domestic production (at basic values)

For each of the products supplied both to the domestic market and to exports, one combined index is used to deflate domestic supply of the product from the various industries. The price index used for all domestic supply of a product at basic value is compiled as a weighted average of the price index for export of the product, calculated at basic value and the price index for domestic production of the product supplied to domestic users, also at basic value. (The compilation can also start from producers' values.

T1. Supply table: Products from imports (CIF value) (at basic value)

Imports of products at basic values are deflated with the corresponding import price indices.

Balancing the Supply table and the Use tables at basic values

The balancing between the Supply table and the Use tables in constant prices is carried out at the detailed product level at basic values:

1. For each product, total domestic use at constant prices is decided as total domestic supply plus imports minus exports at constant prices.

2. For each product, constant price values for the various domestic uses are calculated by distributing total domestic use in constant prices proportionally with the domestic uses in current prices.
3. The result is that at constant prices, the supply and use of each product is balanced at basic values.

Calculating domestic use at purchasers' value

For domestic use, taxes on products, subsidies on products, trade margins, transport margins and VAT at constant prices have to be calculated, specified by products and users, as a supplement to the basic values in order to arrive at the purchaser's values in constant prices. Tax rates and trade margins from the previous year are used. If there are empty cells in the tax or margin matrices, the values from the current year are used as substitutes.

Consumer price indices for household consumption

Household consumption of goods is the only area, except for exports, where price indices are used for deflating purchasers' value directly. The constant price figures for goods to Household consumption are adjusted to reflect the change in the CPI for the goods in question. Following this, the current price basic values are adjusted, in order to retain the price indices in basic value. Finally, the trade margins in current prices are recalculated and the SUT in current prices simultaneously corrected and balanced.

Final corrections of SUT at constant prices

Corrections of the SUT can only be carried through by correcting current price values or by selecting other price indices from the SAM catalogue, not correcting the constant price figures directly. A detailed record of the price indices used will be kept currently updated. When changing the price indices to be used, a new constant price compilation has to be carried through. With the established compilation procedure and the efficiency of the SNA-NT software, a complete correction of SUT in constant prices, using new price indices, and the successive correction of SUT in current prices, only takes 5-10 minutes. During the checking and revision stage, several versions of the balanced SUT with corrected price indices should therefore be compiled.

Checking value added at constant prices

The volume and price developments should be reviewed for both production and intermediate consumption. Particular emphasis should be placed on industries where value added is small compared to output and intermediate consumption. In such cases relatively small errors in the constant price estimates of output and intermediate consumption may result in an obviously incorrect value added at constant prices. Errors may be due to incorrect current values as well as incorrect price indices.

4.4. Shift effects because of price discrimination between different users

"Shift effect" because of price discrimination occurs when a homogenous product is sold at different prices to different users. Experience has shown that for the same product category (1200 NA- CPA products in the Norwegian National Accounts), quality differences will occur between domestically produced product supplied to the domestic market, the same product category supplied to the export market and the same product category imported. All differences in basic prices between imported products, products to the domestic market and products to exports are implicitly assumed to reflect differences in quality. The SNA-NT methodology allows for using three different price indices for the same product category within the three different markets.

4.5. Shift effect because of different rates for product taxes and product subsidies between different users.

Taxes or subsidies on products, which are differentiated according to users, are imposed on a number of products. For these products, the effect of the shift related to the different rates for product taxes (11-

values) and product subsidies (12-values) are calculated. To balance the Supply Table and the Use Table in constant prices in all types of valuation, the differences between the constant price figure for product taxes and subsidies related to products in the Supply table and in the Use table are calculated as correction figures on the Supply side, entered as supply from Account 29900 "Imputed net gain at constant prices because of change in "basic rates".

4.6. Annual chaining

Based on the time series of SUT in both current and the previous years prices, chained Laspeyres volume indices and Paasche price indices can be compiled. Chaining should be compiled for detailed and aggregate series separately, in order to maintain the year-to-year growth rates from the original SUT at all levels of aggregation. Corrections should not be made to impose additivity between detailed series and aggregates.

5. PRICE INDICES AND OTHER DATA INPUT REQUIRED

5.1. Price indices required

For each of the CPA products, three price indices are used during the first stages of the constant price compilation (where relevant):

Use table

- Exports (price indices, purchasers' values), Unit value price indices for homogenous products from foreign trade statistics, other price indices for goods and services.

Supply table

- Domestic production for the domestic market (price indices, for basic or producers' values)
- Imports (price indices, basic values). Unit value price indices for homogenous products from foreign trade statistics, other price indices for goods and services.

Up to 9 different price indices can be registered for each product, distributed by the following main categories:

Category 1 Imports

Category 2 Domestic production to domestic market

Category 3 Exports.

Category 4 Household consumption

All indices have to be recorded with year $t-1=1000$ and without **decimal**.

The price indices selected for each category is used to deflate the corresponding current price figures at the detailed product level. The price indices can be proper price indices or implicit price indices compiled from value and volume indices, unit value price indices and also input price indices.

5.2. The structure of the "SAM catalogue"

Price indices for all products and wage indices are registered in the "SAM catalogue". As a result of each constant price compilation run, an updated "SAM catalogue, with the file name "all-prices.dat" will be automatic produced, containing price indices and as a result of each of the constant price compilation run, automatic calculated input price indices.

The catalogue will contain both price indices, implicit price indices, compiled from value- and volume indices, unit value price indices and as a result of each constant price compilation run, the automatic calculated input price indices.

Statistics Norway has after having completed the SNA93, ESA95 main revision, "SAM-catalogues" for all years back to 1971. This gives a very good overview of the availability of price indices for the different types of products. This also gives a good data source for evaluation of the time series for all the available price indices for one product and also for a group of products.

EXPLANATION OF THE SHORT TEXT IN TABLE 1. THE "SAM catalogue" BELOW.

Category 1. Price indices used for import of commodities and custom duties at basic value (10-values):

IM_I Import price indices (unit value indices) based on the external trade statistics at CIF/basic value (10-value)
 IM_U Imports price indices, other price indices for commodities and services at basic value (10-value)

Category 2. Price indices used for domestic production to the domestic market at basic value (10-value) or at producers' value (13-value)

PRLO Price indices for products at basic value (10-value) compiled as "Input price indices" for the main industry producing the products (automatic compilation based on compensation of employees per hour worked and price indices for intermediate consumption compiled during the constant price compilation process.

PR10 Price indices for products from domestic production to domestic market at basic value (10-value).

PR13 Price indices for products from domestic production to the domestic market at producers' value (13-value).

KP13 Consumer price indices at producers' value (13-value). For some services, the relevant consumer price index is used as a price index for production. If the VAT rate has been changed from the previous year, the price index has to be corrected for this change to be used as price index for the service.

Category 3. Price indices for exports (19-value):

EX_I Export price indices (unit value indices) according to the external trade statistics (19-value. FOB-value, Purchasers' value)

EX_U Export price indices, other price indices for commodities and services. Purchasers' value (19-value)

Category 4. Price indices for household consumption (19-value):

KP19 Consumer price index at purchasers' value (19-value.).

Consumer price indices are used after the first stages of the deflation for correcting the constant price figures for household consumption of goods at purchasers' values (19-values).

THE SAM-catalogue has the following format:

Price indices (price relatives) showing the change from the year t-1 to the year t (t-1=1000)

Table 1. SAM-catalogue, Category 1. (Continue to Category 2)

Position 1-3	Position 8-13	Position 17-20	Position 23	Position 26-29	Position 32
<u>SAM</u> FILE NAME	<u>NA-CPA</u> THE CODE FOR THE PRODUCT	<u>IM I</u> IMPORTS Foreign trade at 10-values Unit value indices etc.	<u>U</u> Select- ion	<u>IM U</u> IMPORTS Goods, Services at 10-values Other price indices	<u>U</u> Select- ion
SAM	XXXXXX	Z1P _p ¹⁰	0/1	ZP _p ¹⁰	0/1
SAM	XXXXXX	Z1P _p ¹⁰	0/1		
SAM	XXXXXX			ZP _p ¹⁰	0/1

Table 1. Continue. SAM-catalogue, Category 2. (Continue to Category 3)

Position 35-38	Posit. 41	Position 44-47	Position 50	Position 53-56	Position 59	Position 62-65	Position 68
PRLO Production at <u>10-values</u> Input price indices compiled automatic	<u>U</u> Select-ion	PR10 Production for domestic use at <u>10-values</u> Producer price indices etc.	<u>U</u> Select-ion	PR13 Production for domestic use <u>13-values</u> Producer price indices etc.	<u>U</u> Select-ion	KP13 Production for domestic use <u>13-values</u> Consumer price indices	<u>U</u> Select-ion
		D1P _p ¹⁰	0/1				
				D1P _p ¹³	0/1		
D1P _p ^{10*}	0/1	D1P _p ¹⁰	0/1			KP	0/1

Table 1. Continue. SAM-catalogue Category 3 and Category 4.

Position 71-74	Position 77	Position 80-83	Position 86	Position 89-92	Position 94
KP19 Household consumption <u>19-values</u> Consumer price indices	<u>U</u> Selection	EX I EXPORTS Foreign trade <u>19-values</u> Unit value indices etc.	<u>U</u> Selection	EX U EXPORTS Goods, services <u>19-values</u> Other price Indices	<u>U</u> Selection
				YP _p ¹⁹	0/1
		Y1P _p ¹⁹	0/1		0/1
KP	0/1			YP _p ¹⁹	0/1

The price indices, which are selected, have to be marked with 1 (shall be used) in the column U (for SELECTION) to the right for each index. All the other indices should be marked with 0, (shall not be used) in the column U (for SELECTION) to the right for each index.

The Use Table in constant prices

THE COMPILATION STAGES FOR THE USE TABLE (T2):

Stage 1. EXPORTS, fob /purchasers' value are compiled at constant, previous years prices
Stage 2-4. From EXPORTS, trade margins and other valuation matrices are deducted and Exports are compiled in basic values, at constant prices.

Stage 5-6 The Supply table, Domestic production and Imports at basic values, compiled at constant prices.

Stage 7. TOTAL USE BY PRODUCTS at basic values are fixed, identical with the compiled TOTAL SUPPLY BY PRODUCTS at basic values (Totals compiled in Supply table are transferred to Use table).

Stage 8. For each of the detailed products, the same price index is used for all domestic use of that product at basic value.

Stage 9. For domestic use by products, constant price figures are compiled for the different valuation matrices and added up to domestic use by products in purchasers' value at constant prices.

Stage 13. Finally: Consumer price indices are used to compile revised constant price figures for household final consumption of goods in purchasers' values.

Stage 14. After the constant price figure for household consumption in purchasers' values has

been revised, follows revision of the valuation matrices and the constant price figures for household consumption in basic values.

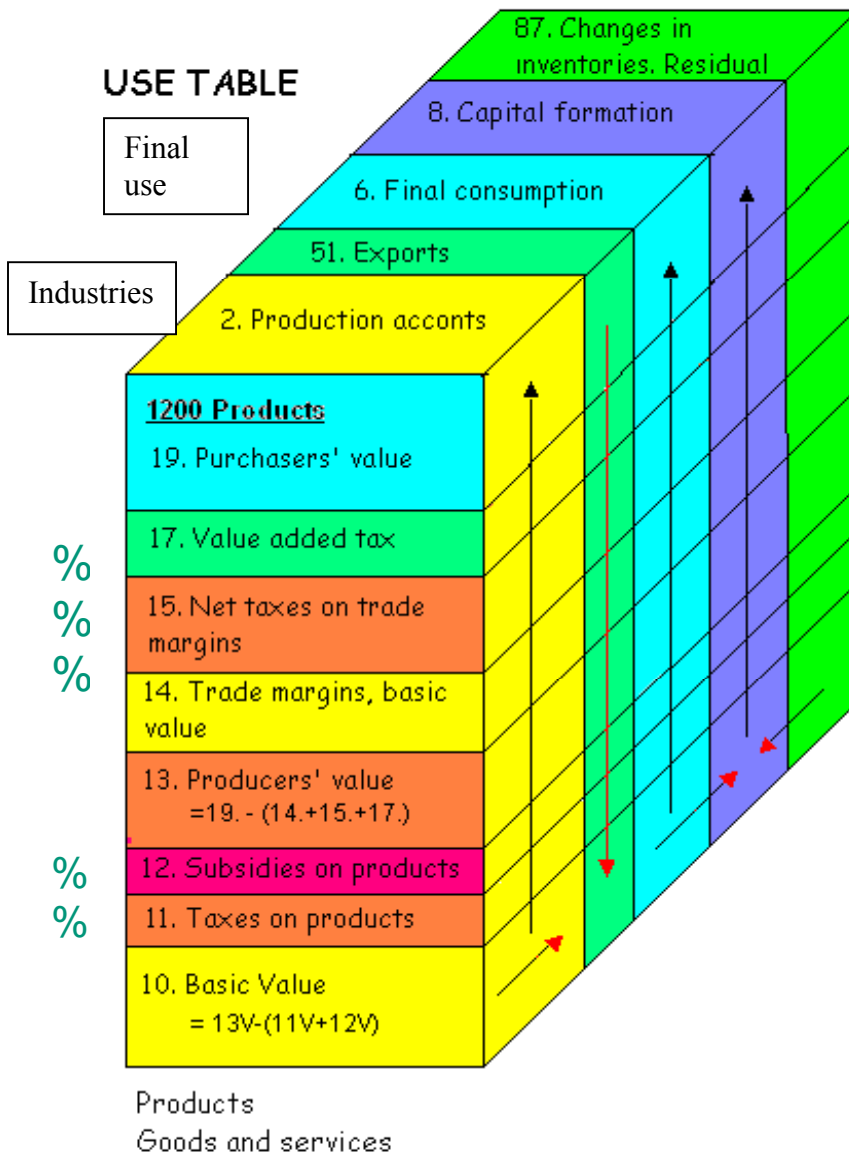
Stage 15. An interactive connection between the constant price SUT and the current price SUT, change the estimated trade margins so the current price figure for household consumption in purchasers values is kept unchanged.

Stage 16. The change of the trade margin matrix in current prices for products to household consumption, leads to a new interactive balancing of the Supply and Use table in current prices.

Stage 17. The revision of the Trade margins in current prices, results in a revision of the production in the Retail and Wholesale industries. The SUT will be balanced with adjusted figures for change in inventories in both current and constant prices.

Stage 18. Value added for all industries are calculated by double deflation,

Stage 19. Gross domestic product at constant prices is calculated by adding net product taxes to gross value added at basic values minus correction for product subsidies.



NA-CPA products

6. USE TABLE. EXPORTS IN CONSTANT PRICES

6.1. Use Table (T2) Deflation of Exports at fob/purchasers' value [STAGE 1].

The first stages of the constant price calculation cover constant price figures for exports in the different types of valuation. Implicit price indices for exports in producers' value and basic value are also calculated. The different STAGES are also described on the previous page.

For exports of goods and services, the constant price figures $Nf_{p,y}^{19}$ are calculated by dividing the current price figures in purchasers' prices with a set of price indices (YP_p^{19}).

Calculation of exports in constant prices $Nf_{p,y}^{19}$: can be expressed by:

$$Nf_{p,y}^{19} = [nf_{p,y}^{19}] = \begin{bmatrix} \frac{I}{YP_l^{19}} n_{l,1}^{19} & \cdot & \cdot & \frac{I}{YP_l^{19}} n_{l,b}^{19} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{I}{YP_c^{19}} n_{c,1}^{19} & \cdot & \cdot & \frac{I}{YP_c^{19}} n_{c,b}^{19} \end{bmatrix} \quad (\text{EqCON 1})$$

where YP_p^{19} is the selected price indices for exported goods and services and of the same dimension as the exports matrix in current prices ($N_{p,y}^{19}$).

p represents Products,

y represents Exports

6.2. Use Table (T2) Deflation of Trade margins and Transport margins on exports [STAGE 2-4].

Trade margins at basic values, is calculated in constant prices for the year t by using the trade margin percentage, the "basic trade margin rates" ($V^{14R/19}$) from year t-1 in current prices. The "basic trade margin rates" are calculated in details for goods specified by the different export accounts.

Calculation of the "basic trade margin rates" $Vf_{p,y}^{14R/19}$ on the basis of T2 from year t-1, can be expressed by:

$$[V_{p,y}^{14R/19}] = \begin{bmatrix} \frac{I}{n_{l,1}^{19}} n_{l,1}^{14R} & \cdot & \cdot & \frac{I}{n_{l,b}^{19}} n_{l,b}^{14R} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{I}{n_{c,1}^{19}} n_{c,1}^{14R} & \cdot & \cdot & \frac{I}{n_{c,b}^{19}} n_{c,b}^{14R} \end{bmatrix} \quad (\text{EqCON 2})$$

where $V_{p,y}^{14R/19}$ calculated for year t-1 in current prices, is identical with $Vf_{p,y}^{14R/19}$ used as "basic trade margins rates" for calculation of the constant price trade margins for the year t.

The trade margin matrix (14R-values) in constant prices can be expressed by:

$$\mathbf{Nf}_{p,y}^{14R} = [nf_{p,y}^{14R}] = \begin{bmatrix} vf_{11}^{14R/19} nf_{11}^{19} & \cdot & \cdot & \cdot & vf_{1b}^{14R/19} nf_{1b}^{19} \\ & & & & \cdot \\ & & & & \cdot \\ & & & & \cdot \\ vf_{c1}^{14R/19} nf_{c1}^{19} & \cdot & \cdot & \cdot & vf_{cb}^{14R/19} nf_{cb}^{19} \end{bmatrix} \quad (\text{EqCON 3})$$

where $\mathbf{Vf}_{p,y}^{14R/19}$ are "Basic trade margin rates" and of the same dimension as N.
Every element in matrices $\mathbf{Nf}_{p,y}^{19}$ is multiplied with the corresponding element in the matrix $\mathbf{Vf}_{p,y}^{14R/19}$.

The matrix for the transport margins (14T-values) is calculated in the same way as the trade margins matrix.

$$\mathbf{Nf}_y^{13}: \text{ is calculated as: } Nf_y^{13} = Nf_y^{19} - Nf_y^{14R} - Nf_y^{14T} \quad (\text{EqCON 4})$$

The rates from year t-1 for product taxes and product subsidies (A^{11}) and (A^{12}) are calculated in relation to the purchasers' values (19-values).

Calculation of basic rates for product taxes $\mathbf{Af}_{p,y11}^{19}$ from the Use table (T2) in current prices from year t-1, is expressed by:

$$[A_{p,y}^{11/19}] = \begin{bmatrix} \frac{1}{n_{l,1}^{19}} n_{l,1}^{11} & \cdot & \cdot & \cdot & \frac{1}{n_{l,b}^{19}} n_{l,b}^{11} \\ & & & & \cdot \\ & & & & \cdot \\ & & & & \cdot \\ \frac{1}{n_{c,1}^{19}} n_{c,1}^{11} & \cdot & \cdot & \cdot & \frac{1}{n_{c,b}^{19}} n_{c,b}^{11} \end{bmatrix} \quad (\text{EqCON 5})$$

where $\mathbf{A}_{p,y}^{11/19}$ calculated for SUT for the year **t-1 in current prices**, is identical with $\mathbf{Af}_{p,y}^{11/19}$ used for calculation of constant price figures for product taxes in the year t.

p represents Products,

y represents Exports (account 51110 to 51999)

Constant price figures for the matrix for exports in 11-values:

$$\mathbf{Nf}_{p,y}^{11} \text{ is expressed by } [nf_{p,y}^{11}] = \begin{bmatrix} af_{l,1}^{11/19} nf_{l,1}^{19} & \cdot & \cdot & \cdot & af_{l,b}^{11/19} nf_{l,b}^{19} \\ & & & & \cdot \\ & & & & \cdot \\ & & & & \cdot \\ af_{c,1}^{11/19} nf_{c,1}^{19} & \cdot & \cdot & \cdot & af_{c,b}^{11/19} nf_{c,b}^{19} \end{bmatrix} \quad (\text{EqCON 6})$$

where $\mathbf{Af}_{p,y}^{11/19}$ is basic rates for product taxes of the same dimension as N.

Every element in the matrix $\mathbf{Nf}_{p,y}^{19}$ is multiplied with the same element in the matrix $\mathbf{Af}_{p,y}^{11/19}$.

The matrix for the product subsidies (12-values) is calculated in the same way as the trade margins matrix (11-values).

Exports in constant prices is calculated in basic value (10-values) as:

$$Nf_y^{10} \quad \text{calculated as} \quad Nf_y^{10} = Nf_y^{13} - Nf_y^{11} - Nf_y^{12} \quad (\text{EqCON 7})$$

6.3. Use Table (T2) Calculation of price indices for Exports at basic values

Price indices for exports at basic value (10-values) are used as input for the constant price calculation of domestic production at basic value.

$N_{p,y}^{10}$ is sum of exports at current prices in 10-values.

$Nf_{p,y}^{10}$ is sum of exports at constant prices in 10-values.

Price indices for exports of each of the products in 10-values, YP_p^{10} is calculated as:

$$YP_p^{10} = \left(\frac{n_{p,y}^{10}}{nf_{p,y}^{10}} \right) \times 100 \quad (\text{EqCON 8})$$

7. SUPPLY TABLE. DOMESTIC PRODUCTION AND IMPORTS IN CONSTANT PRICES

7.1. Supply Table (T1) Introduction

The next stages are the compilation of:

- Constant price figures for imports in basic value and custom duties, see chapter 7.2.
- Constant price figures for total supply of products from domestic production in basic value

7.2. Deflation of Imports and Custom duty in basic value [STAGE 5]

For imports $Hf_{z,p}^{10}$, the constant price figures are calculated by dividing with price indices (ZP_p^{10}) for products from imports. Calculation of $Hf_{z,p}$ is expressed by:

$$[hf_{z,p}^{10}] = \begin{bmatrix} \frac{I}{ZP_l^{10}} h_{l,l}^{10} & \dots & \frac{I}{ZP_c^{10}} h_{l,c}^{10} \\ \dots & \dots & \dots \\ \frac{I}{ZP_l^{10}} h_{\bar{e},l}^{10} & \dots & \frac{I}{ZP_c^{10}} H_{\bar{e},c}^{10} \end{bmatrix} \quad (\text{EqCON 9})$$

where ZP_p^{10} is the price indices for imports of goods and services and of the same dimension as H.

$p = \text{products}$.

$Z = \text{imports}$

7.3. Deflation of Domestic production in basic value [STAGE 6]

Domestic production in constant prices expressed by Hf_{dp}^{10} is calculated by dividing the figures in current value in 10-value, with a set of price indices, marked with DP_p^{10} .

The price index for a product from domestic production in basic value (10-values) (DP_p^{10}) is calculated as a weighted average of the price index for the product from domestic production to domestic use DIP_p^{10} and the price index for the product to exports, all in basic value YP_p^{10} .

NOTE: To be able to calculate the weighted price index DP_p^{10} , the domestic production of each product, in current prices, is by an automatic compilation split between:

- Domestic production of the product in basic value delivered to exports (without re-exports): N_{py}^{10} .
- Domestic production of the product in basic value delivered to the domestic market: $(H_{dp}^{10} - N_{py}^{10})$

The automatic compilation is based on the following assumptions:

The first assumption is that all exports are preliminary supplied from domestic producers. If the export of a product is larger than total domestic production, the rest of the export must have been supplied from other sources (reduction of inventories or imports). In these cases, the assumption is that all domestic production of the products is for exports.

The following alternative equations are used for the weighted price index if domestic production (H_{dp}^{10}) greater than exports (N_{py}^{10}) (The normal case):

Domestic production (in 10-value) supplied to exports (without re-exports) N_{py}^{10}

Domestic production (in 10-value) supplied to the domestic market: $(H_{dp}^{10} - N_{py}^{10})$

$$DP_p^{10} = \frac{h_{dp}^{10}}{\frac{h_{dp}^{10} - n_{p,y}^{10}}{DIP_p^{10}} + \frac{n_{p,y}^{10}}{YP_p^{10}}} \quad (\text{EqCON 10})$$

$H_{d,p}^{10}$ = total domestic production of the product p in basic value

$N_{p,y}^{10}$ = total exports of the product p i basic value

DIP_p^{10} = producer price index (calculated for basic value) for domestic supply to the domestic market in basic value, YP_p^{10} = export price index in basic value

8. BALANCING SUPPLY AND USE OF PRODUCTS

8.1. Balancing Supply and Use of products in basic values [STAGE 7]

From the Supply table T1 in constant prices, , total supply of a product p, expressed in basic value (10-value, is shown as: Sf_p^{10}

Sf^{10} is a row vector, calculated as total supply in constant prices, specified by products and calculated in basic value (10-value).

Row vector Sf^{10} in the Supply table (T1) is identical to column vector Sf^{10} in the Use table (T2).

$$N_p = D_p : N_{p,y} \quad (\text{EqCON 11})$$

D_p is a matrix, expressing domestic use of products p as intermediate input to the industry and aggregation accounts (d) and to the domestic final use accounts (s).

$N_{p,y}$ is a matrix, expressing supply of products (p) to exports (y).

8.2. Compiling constant price figures for the different domestic use in basic values [STAGE 8]

NOTE: In T2, total domestic use of a product in constant prices in 10-values is calculated as the difference between total supply of the product in constant prices and exports of the product in constant prices.

For every product, this can be expressed by:
$$\sum_{d+s=l}^{e+\bar{U}} df_{p,d+s}^{10} = Sf_p^{10} - \sum_{y=l}^b nf_{py}^{10} \quad (\text{EqCON 12})$$

To decide the constant price figures for the different domestic use of a product, the total domestic use of the product calculated in constant prices Df_p^{10} , is distributed between the different domestic users in the same proportion as the domestic use of the product in current prices.

Constant price figures for the domestic use of the product p to the Users d+s, in basic values (10-values) is calculated as :

$$df_{p,d+s}^{10} = d_{p,d+s}^{10} \times \frac{\sum_{d+s=1}^{e+\tilde{U}} df_{p,d+s}^{10}}{\sum_{d+s=1}^{e+\tilde{U}} d_{p,d+s}^{10}} \quad (\text{EqCON 13})$$

p represents products,

d+s represents domestic users (account 22000 to 26999 and 61000 to 87999)

This implies that in basic value (10-value), the same price index is used to deflate all domestic use of a product, inclusive change in inventories of that product !

When the basic price values in the SUT have been deflated and balanced, a constant price calculation is conducted for trade and transport margins, product taxes and subsidies and VAT, to be able to calculate purchasers' prices at constant prices.

9. COMPILING THE COMPLETE DOMESTIC USE TABLE IN ALL TYPES OF VALUATION IN CONSTANT PRICES

9.1. Domestic Use, Constant price figures for Trade and Transport margins [STAGE 9.1]

Basic value of trade margins in constant prices in the year t is calculated in the Use table (T2) by using the –“Trade margin rates” ($V^{14/10}$) from year t-1, computed for all products by category of use.

Note: Trade margins will normally not appear for services.

Calculation of “Trade margin rates” $V_{pj}^{14R/10}$ from T2 in current prices from the year t-1, is expressed by:

$$[V_{p,d+s}^{14R/10}] = \begin{bmatrix} \frac{1}{d_{1,1}^{10}} d_{1,1}^{14R} & \cdot & \cdot & \frac{1}{d_{1,d+s}^{10}} d_{1,d+s}^{14R} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{1}{d_{p,1}^{10}} d_{p,1}^{14R} & \cdot & \cdot & \frac{1}{d_{p,d+s}^{10}} d_{p,d+s}^{14R} \end{bmatrix} \quad (\text{EqCON 14})$$

where $V_{p,y}^{14R/10}$ calculated for t-1 in current prices, is identical with the “Trade margin rates” $V_{p,y}^{14R/10}$, used for the calculation of Constant price figures for Trade margins in the year t.

p represents Products,

d+s represents Domestic users

Constant price figures for the trade margin matrix, 14R-values, $Df_{p,d+s}^{14R}$ is calculated as :

$$Df^{14R} = [df_{p,d+s}^{14R}] = \begin{bmatrix} v_{1,1}^{14R/10} df_{1,1}^{10} & \cdot & \cdot & v_{1,d+s}^{14R/10} df_{1,d+s}^{10} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ v_{p,1}^{14R/10} df_{p,1}^{10} & \cdot & \cdot & v_{p,d+s}^{14R/10} df_{p,d+s}^{10} \end{bmatrix} \quad (\text{EqCON 15})$$

where V is Trade margin rates and of the same dimension as D.

Every element in the matrix D is multiplied with the corresponding element in the matrix V

p represents Products,

d+s represent Domestic users

For every element in the trade margin matrix, the result is that the volume change for the trade margins is the same as the volume change for the elements in basic value.

Constant price figures for transport margin (14T-values) are calculated in the same way as the trade margins.

9.2. Domestic use. Constant price figures for product taxes, product subsidies and VAT. [STAGE 9.2]

When the basic price values in the SUT have been deflated and balanced, a constant price calculation is conducted for trade margins, product taxes, product subsidies and VAT, o be able to calculate purchasers' values at constant prices.

Constant price figures for product taxes and product subsidies are calculated in the User table in T2 by multiplying "basic rates" from year t-1 for product taxes ($A^{11/10}$) and for product subsidies ($A^{12/10}$) with the constant price figures for product flows, calculated in basic values (10-value).

Calculation of basic rates for product taxes $A_{p,11}^{10}$ on the basis of T2 in current prices from year t-1, is expressed by:

$$[A_{p,d+s}^{11/10}] = \begin{bmatrix} \frac{1}{d_{1,1}^{10}} d_{1,1}^{11} & \cdot & \cdot & \frac{1}{d_{1,d+s}^{10}} d_{1,d+s}^{11} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{1}{d_{p,1}^{10}} d_{p,1}^{11} & \cdot & \cdot & \frac{1}{d_{p,d+s}^{10}} d_{p,d+s}^{11} \end{bmatrix} \quad (\text{EqCON 16})$$

where $A_{p,y}^{11/10}$ calculated for **t-1 in current prices**, is identical with $A_{p,y}^{11/10}$ which are the "basic rates" used for Calculation of constant price figures for product taxes in year t.

p represents Products,

d+s represents Domestic users

Constant price figures for the product tax matrix in 11-values, $Df_{p,d+s}^{11}$, is calculated as:

$$Df^{11} = [df_{p,d+s}^{11}] = \begin{bmatrix} a_{11}^{11/10} df_{11}^{10} & \cdot & \cdot & a_{1,d+s}^{11/10} df_{1,d+s}^{10} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ a_{p1}^{11/10} df_{p1}^{10} & \cdot & \cdot & a_{p,d+s}^{11/10} df_{p,d+s}^{10} \end{bmatrix} \quad (\text{EqCON 17})$$

where $Af_{p,d+s}^{11/10}$ is basic rates for product taxes and of the same dimension as D.

Every element in the matrix $Df_{p,d+s}^{11}$ is multiplied with the corresponding element in the matrix $Af_{p,d+s}^{11/10}$.

Basic rates for product subsidies $Af_{p,d+s}^{12/10}$ (negative figures) and constant price figures for the matrix $Df_{p,d+s}^{12}$ (negative figures) are calculated in the same way as the product taxes. By replacing 11 for 11-values with 12 for 12-values in Equation 49 and Equation 50 above, we get **Equations 51** and **Equation 52**, expressing the calculation of the product subsidy matrix in 12-values, $Df_{p,d+s}^{12}$.

Domestic use at producers' value, in constant prices, Df^{13} is decided as:

$$Df^{13} = Df^{10} + Df^{11} + Df^{12} \quad (\text{EqCON 18})$$

"Basic rates" from year t-1 for product taxes and product subsidies related to trade margins $Af_{p,d+s}^{15/10}$ and $Af_{p,d+s}^{16/10}$, are also calculated in relation to the 10-values.

Domestic use at purchasers' value, in constant prices, Df^{19} is compiled as:

$$Df^{19} = Df^{13} + Df^{14R} + Df^{14T} + Df^{17} \quad (\text{EqCON 19})$$

Sf_p^{11} , Sf_p^{12} , Sf_p^{14R} , Sf_p^{14T} , Sf_p^{17} are decided as the row totals in T2, The row totals in T2 are transferred to T1 to decide the column totals in T1.

10. COMPILING THE COMPLETE SUPPLY TABLE IN CONSTANT PRICES

10.1. Supply Table, Constant price figures for Product taxes, Product subsidies and for Purchasers' value. [STAGE 11.1]

The 11-values and 12-values in constant prices are calculated in T1 by using the "basic rates" from year t-1. The "basic rates" for Product taxes ($A^{11/10}$) and for product subsidies ($A^{12/10}$), are multiplied with the constant price figures for the matrix for suppliers by products in basic values (10-values).

The calculation of the product tax matrix (11- values) in constant prices, is expressed by Hf_{dp}^{11} :

$$Hf^{11/10} = [hf_{dp}^{11/10}] = \begin{bmatrix} a_{11}^{11/10} hf_{11}^{10} & \cdot & \cdot & a_{1p}^{11/10} hf_{1p}^{10} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ a_{d1}^{11/10} hf_{d1}^{10} & \cdot & \cdot & a_{dp}^{11/10} hf_{dp}^{10} \end{bmatrix} \quad (\text{EqCON 20})$$

A is the "basic rates" and of the same dimension as H.

Every element in the matrix H is multiplied with the corresponding element in the matrix A.

Basic rates for product subsidies ($A^{12/10}$) (negative figure) and constant price figures for the matrix Hf_{dp}^{12} (negative figures) are calculated in the same way as the product taxes. By replacing 11 for 11-values with 12 for 12-values in Equation 209 above, we get the Equation expressing the calculation of the product subsidy matrix in 12-values, Hf_{dp}^{12} .

$$Hf^{13} \text{ is decided as:} \quad Hf^{13} = Hf^{10} + Hf^{11} + Hf^{12} \quad (\text{EqCON 21})$$

10.2. Supply Table, Constant price figures for Import taxes [STAGE 11.2]

Constant price figures for taxes on imports is calculated in T1 by multiplying "basic rates" from year t-1 for import taxes ($A_{29506,p}^{11/10}$), with the Constant price figures for Imports ($Hf_{z,p}^{10}$) plus Custom duty ($Hf_{29505,p}^{10}$) in basic value (10-values).

Calculation of "basic rates" for import taxes $A_{29506,p}^{11/10}$, based on T1 in current prices from year t-1, can be expressed by:

$$[A_{29506,p}^{11/10}] = \frac{I}{\sum_{z=1}^b h_{z,p}^{10} + h_{29505,p}^{10}} h_{29506,p}^{11} \quad (\text{EqCON 22})$$

where $A_{29506,p}^{11/10}$, calculated for t-1 in current prices, is identical with $A_{29506,p}^{11/10}$, which is the "basic rates" to be used for the calculation of constant price figures for taxes on imports in year t.

29506 represents supplier of import tax

p represents Products,

Calculation of import tax in constant prices can expressed by $Hf_{29506,p}^{11/10}$ as:

$$Hf_{29506,p}^{11} = \left[\sum_{z=1}^b hf_{z,p}^{10} + hf_{29505,p}^{10} \right] af_{29506,p}^{11/10} \quad (\text{EqCON 23})$$

where $A_{29506,p}^{11/10}$ is import tax and of the same dimension as $Hf_{29506,p}^{11}$

10.3. Balancing constant price figures for product taxes (11-values) and product subsidies 12-values) as calculated in T1 and T2 [STAGE 12.1].

The constant price figures for Sf_p^{11} and Sf_p^{12} distributed by products in T2, can be different from Sf_p^{11} , Sf_p^{12} distributed by products) in T1.

Basic values are more homogeneous than producers' and purchaser's values because taxes and subsidies related to products will for most products be differentiated according to who buys the products. Taxes or subsidies on products, which are differentiated according to users, are imposed on a number of products.

The differences compiled between the constant price figure for product subsidies (Sf_p^{12}) distributed by products in the Supply table and in the Use table are also calculated as correction figures on the Supply side allocated to Account 29900 "Imputed net gain at constant prices because of change in "basic rates". The supply in T1 from account 29900 to the 11-values (taxes on products) and 12- values (subsidies on products) expressed by $H_{29900,p}^v$, is calculated as:

$$hf_{29900,p}^v \equiv Sf(T2)_p^v - Sf(T1)_p^v \quad \text{(EqCON 24)}$$

(T2) represents the row total S, calculated in T2

(T1) represents the column total S, calculated in T1.

v represents 11- and 12- values

p represents Products

10.4. Transferring constant price figures for trade and transport margins and related taxes and VAT calculated in T2 to T1 [STAGE 12.2].

The constant price figures for Sf_p^{14R} , Sf_p^{14T} , Sf_p^{17} , decided as row totals (distributed by products) in T2, are transferred to column totals (also distributed by products) in T1

Sf_p^{14R} , Sf_p^{14T} , Sf_p^{17} decided as the column totals in T1, decide the constant price figures for the 14R-values, 14T-values, 17-values distributed by products in T1.

Sf_p^{14R} : Sum Trade margins in constant prices, calculated in T2, gives total constant price figures for total supply of trade margins in T1, calculated in 14R-values (Sf_p^{14R}), specified by products.

Sf_p^{14R} decided as the column total in T1, specified by products, also decide the supply from the Aggregation accounts, specified by products, as trade margins in constant prices:

$Hf_{27500,p}^{14R}$ (27500 x 14RXXXXXX).

Sf_p^{14T} : Sum Transport margin in constant prices, calculated in T2, gives total constant price figures for total supply of transport margins in T1, calculated in 14T-values (Sf_p^{14T}), specified by products.

Sf_p^{14T} decided as the column total in T1, specified by products, also decide the total supply from Aggregation account, specified by products, as transport margins in constant prices:

$Hf_{27600,p}^{14T}$ (27600 x 14TXXXXXX).

Sf_p^{17} : Sum value added tax (VAT) in constant prices, calculated in T2, gives for products Constant price figures for 17-values (Sf_p^{17}).

Sf_p^{17} is decided as the column totals in T1 and also as supply from the Aggregation accounts from not industry distributed taxes $Hf_{29501,p}^{17}$ (29501 x 17XXXXXX).

11. CORRECTION OF HOUSEHOLD CONSUMPTION WITH THE CONSUMER PRICE INDICES

11.1 Correction in constant prices (STAGE 13 - 17)

For Household consumption of goods price indices are inserted in the final stages of the compilation for deflating purchasers' value directly. When the Use table (T2) has been compiled in all types of valuation, inclusive purchasers' values, an automatic correction is carried through for the constant price figures for Household consumption to reflect the change in CPI for goods compared with change in the already used price indices. Following this, the current price basic values are adjusted, in order to preserve the price indices in basic value. Finally, the trade margins in current prices are recalculated and the SUT in current prices simultaneously corrected and balanced.

Constant price figures for products (goods) supplied to Household consumption, calculated in purchasers' values (19-values), $Nf^{(19 \times 61)}$ is revised by deflating the values in current prices with price indices from the consumer price index series (KP_p). The revised constant price figures $Nf^{(19 \times 61)*}$ are calculated by dividing with a set of price indices (KP_p), specified for certain products (goods) supplied to Household consumption. Calculation of $Nf^{(19 \times 61)*}$ can be expressed by:

$$Nf^{19*} = [nf_{p,y}^{19*}] = \begin{bmatrix} \frac{1}{KP_p^{19}} n_{1,1}^{19} & \cdot & \cdot & \frac{1}{KP_p^{19}} n_{1,b}^{19} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{1}{KP_c^{19}} n_{c,1}^{19} & \cdot & \cdot & \frac{1}{KP_c^{19}} n_{c,b}^{19} \end{bmatrix} \quad (\text{EqCON 25})$$

where KP_p^{19} is the price indices for products to Household consumption.

p represents Products, but only for goods (product no 011111-366377)
y represents Household consumption (account 61011- account 61992)

The change of 19-values in constant prices $Nf^{(19 \times 61)}$ for Household consumption, results in the percentage same correction in $Nf^{(\hat{A} \times 61)}$, $\hat{A} = 18-, 17-, 16-, 15-, 14R-$ and $14T$ -values.

$$Nf^{\hat{e}*} = [nf_{p,y}^{\hat{e}*}] = \left(\frac{nf_{p,y}^{19*}}{nf_{p,y}^{19}} \right) \times nf_{p,y}^{\hat{e}} \quad (\text{EqCON 26})$$

where $Nf^{(\hat{A} \times 61)*}$ is the new, changed matrices
 13-values are calculated as follows:

$$Nf^{13*} = Nf^{19*} - Nf^{17*} - Nf^{14T*} - Nf^{14R*} \quad (\text{EqCON 27})$$

The corrections in constant price figures for $Nf^{(13 \times 61)}$, gives the same percentage corrections in $Nf^{(0 \times 61)}$ $\emptyset = 12-, 11-$ values.

$$Nf^{\hat{u}*} = [nf_{p,j}^{\hat{u}*}] = \left(\frac{nf_{p,j}^{13*}}{nf_{p,j}^{13}} \right) \times nf_{p,j}^{\hat{u}} \quad (\text{EqCON 28})$$

where $Nf^{(0)*}$ is the new, changed matrices.

11.2 Correction in current prices

Note: The earlier accepted figures for Final household consumption in current prices in 19-values $N^{(19 \times 61)}$, will not be changed

The figures for household consumption in constant prices in basic values (10-values) have been revised. To retain the price indices used for the constant price compilation, the figures for household consumption in current prices in basic values (10-values) are revised as follows:

$$N^{10*} = [n_{p,y}^{10*}] = \left(\frac{nf_{p,y}^{10*}}{nf_{p,y}^{10}} \right) \times n_{p,y}^{10} \quad (\text{EqCON 29})$$

The total figures for product taxes (11-values) and product subsidies (12-values) in current prices are fixed.

To avoid correcting other items than household consumption, the 11- and 12-values are not changed in current prices. Revised $N^{(10 \times 61)}$ (10-values) will therefore result in the same revision of $N^{(13 \times 61)}$ (13-values)

$$N^{13*} = N^{10*} + N^{11} + N^{12} \quad (\text{EqCON 30})$$

Revised figures for household consumption in current prices in 13-values, will by the new balancing in current prices, give new figures for change in inventories in 13-values and also in 10- and 19-values.

This revision of change in inventories will only occur for goods and should be acceptable.

To keep the 19-values constant in current prices, the corrections of 13-values in current prices will give the opposite revision of the 14R-values!

Revised trade margins (14R-value) give a corresponding correction in T1 in current prices for production of trade margins (27500 x 14RXXXXXX). A difference arises as "change in inventories" between sum trade margins from the account 27500 (sum 14R-values) and production supplied from retail and wholesale trade to account 27500. This difference has to be removed.

To avoid a complete new balancing process for all the valuation matrices, the 17-values in current prices are not changed.

$$\text{Revised figures for } N^{(14R \times 61)} * \quad N^{14R*} = N^{19} - N^{17} - N^{14T} - N^{13*} \quad (\text{EqCON 31})$$

Remember: The earlier accepted figures for Final household consumption in current prices in 19-values $N^{(19 \times 61)}$, have not been changed !

12. INDUSTRY FORMAT INPUT-OUTPUT TABLES.

The SNA-NT application contains procedures for converting the Supply table (Suppliers x Products) and the Use table (Products x Users), at basic value, to an "Industry format" Input-Output table (IOT) by distributing the supply and use of products.

For each product, domestic use of the product (intermediate consumption, final consumption, capital formation, changes in inventories) and exports will be linked directly to the domestic suppliers (industries) of the product and to import of the product.

By "the market share assumption", the Norwegian principle is the assumption that export of a product primarily is supplied from domestic industries. Distribution of the exports of a product by supplying industries, are assumed proportional to the different industries production of the product. Imports, custom duty and the remaining part of domestic production of the product is then subsequently distributed proportional to the different domestic users of the product. This means that the same import

share applies to all domestic use categories of a product, and that all industries that supply a product, have the same market share for all types of use of that product.

In the SUT, imports are distributed by the NA-CPC product classification and not by an industry classification. In the IOT tables, imports distributed by the product classification can also be allocated to the same NA-ISIC industry classification that is used for domestically produced products.

In the IOT tables, import can also be split into the two main categories: "Imports of competitive products" and "Imports of non-competitive products". and further distributed by industries.

13. Tourist Satellite Accounts

Within the standardised concepts and standards in the SNA93, important economic transactions, such as transactions related to tourism cannot easily be identified. Satellite accounts were introduced in SNA93 to expand the analytical capacity of national accounting for selected areas in a flexible manner, without overburdening or disrupting the central system.

For countries where income from tourism is important for the economy, the classifications introduced for the National Accounts with SUT should illuminate transactions related to tourism. Both industries and products of particular interest for tourism should be detailed in the National Accounts classification for the country.

The methodology of the Norwegian Tourism Satellite Accounts follows the recommendation given in the manual "Tourist Satellite Account (TSA): Recommended Methodological Framework (2001), developed by Eurostat, OECD, UN and the World Tourism Organisation (WTO). The TSA focuses on the concept of the *visitor* and on measuring her or his demand for goods and services.

By the SNA-NT methodology, the Tourism Satellite Accounts are directly diverted from the SUT. The accounting structure and methodology is fully integrated into the National Account's SUT format. Non-resident tourism consumption and Resident tourism consumption are separated from Final domestic household consumption expenditure and specified by products and COICOP.

From other business expenditure, business and professional travelling have been specified to be able to reallocate this current expenditure to tourism consumption expenditure in the Tourism Satellite Accounts.

The Tourism Satellite Accounts in SUT format will be an aggregated version of the more detailed SUT with estimates for tourism consumption according to purpose and spread by products used for tourism consumption. The SUT format can also be converted into an "Industry format" Input-Output Table (IOT). Based on the IOT, the contribution of tourism consumption to GDP and employment can be calculated. The IOT can also be used to study the direct effects on the economy of changes in tourism demand (given the assumption of a stable relationship between different industries, import and final demand).

PART II. EXPERIENCE FROM INTRODUCING SUPPLY AND USE TABLES IN DIFFERENT TYPES OF ECONOMIES.

1. Norwegian experience with computerised compilation of national accounts with detailed SUT.

Already in the 1960s, Norway had built up high level of expertise using computers for compiling the national accounts and balancing the supply and use of about 1700 commodities. This led to visits for studying the Norwegian national accounts and cooperation with several other countries.

Norwegian statisticians have also a long tradition giving technical assistance in national accounts to different developing countries. Statistics Norway had a large economic planning project in Jamaica in the early 1980s, where also development of Supply and Use (SUT) and Input-output tables (IOT) were an important component. The first SUT/IOT for Jamaica was published in 1984 and also updated in 1994. In the years 1984-1990 short and long term visits to Zimbabwe for developing national accounts with SUT also gave valuable experience in transferring technical knowledge to other statistical offices.

As part of these projects, the SNACZ software (developed for running under DOS on PCs) for compiling SUT and I/O tables for developing countries was developed in the 1980s for Jamaica and adapted for Zimbabwe. The SNACZ software was also used for compiling the updated SUT/IOT for Jamaica in 1994.

When SNA93/ESA 95 was implemented in Norway in 1995, the long tradition using computerised routines for compiling SUT, including the experience from developing and using the SNACZ software, was taken advantage of when designing the new SNA-NT application as a portable and flexible software, see ANNEX.

2. Co-operation with the statistical offices in Bulgaria, Slovenia and the Czech Republic.

Under the ESA 95 Regulation, all EU Member states and candidate countries are obliged to compile annual Supply and Use tables (SUT) in current and constant (previous years) prices.

From the first meetings with national accountants from the CEEC-s in the early 1990s, Statistics Norway has had a special contact with the statistical offices in Bulgaria, Hungary, the Czech Republic (at that time part of Czechoslovakia) and Slovenia (at that time part of Yugoslavia). We participated in workshops and seminars in these countries and invited study groups to visit Statistics Norway. A result of these contacts are the current National Accounts projects for developing and improving National accounts with Supply and Use Tables (SUT) and Input-Output Tables (IOT) in current and constant prices in Bulgaria, in the Czech Republic and in Slovenia.

These projects became feasible by financing from Eurostat to Statistics Norway, as "Phare" grants, for the years 2003, 2004 and 2005. The emphasis has been to provide technical support to establish an efficient production process and software solution, and also to provide practical training in the use of the Norwegian software SNA-NT.

The Phare project had the following defined Phases: SUT1, SUT2 and SUT3. Eurostat required Terms of reference (TOR) for each action, a detailed report after each action and a final report. For these international projects the reports were very important since Eurostat gave comments or acceptance after each activity.

A significant amount of time was dedicated to the explanation and discussion of the requirements concerning metadata and statistical data and the work involved to prepare the data in the format required as input into the SNA-NT software. An important part of the SUT-project involves customising the SNA-NT classifications to meet the needs of the different countries. Significant effort went into establishing the level of classification necessary for analysis of industries, types of final use and products. The requirements of the European Union were also discussed and incorporated into the Supply and Use Table design, namely reporting to Eurostat aggregated SUT comprised of 60 specified industries (aggregated level of NACE) and 60 specified products (aggregated level of CPA).

Another important topic was to discuss and explain how the experience and the data from the existing Supply and Use table in current prices for the three countries could be utilised when establishing the more detailed Supply and Use Table for the selected first year 2000 for Bulgaria and 2001 for Slovenia and the Czech Republic, using the SNA-NT software.

By end of the project in 2005, Bulgaria, have the SNA-NT software system for the production of SUT in current use. Training have been given to cover the methodology and the working routines for updating the SUT in current prices from the base year to the following year and compiling the SUT in constant prices of the previous year using the SNA-NT system.

NSI, Bulgaria

Year 2000 is the first reference year for a fully detailed and balanced SUT including detailed valuation matrices. The following have been achieved:

Production accounts split between market and non-market production and production for own final use;

Detailed specification by 118 industries and 880 products and all required final demand categories.

Established a new procedure and infrastructure for establishing, balancing and updating detailed SUT

Enabled to identify transactions subject to non-deductible VAT and introduced a detailed breakdown by rate of VAT.

Year 2000 is updated to 2001 and compiled in constant 2000 prices.

The first preliminary results are analysed and compared with earlier compiled constant price figures

Important for the constant price compilation are:

Have established a Price catalogue for analysing the different price indices for a product

Constant price compilation in basic prices.

Balancing constant figures for supply and use of products at basic value.

Value added in constant prices by double deflation.

For Slovenia and the Czech Republic similar results have been achieved.

The two countries have a more aggregated SUT and have compiled SUT in current prices for the years 2000 and 2001 and the year 2001 in constant 2000 prices, using the SNA-NT methodology. The results are being analysed.

3. Technical assistance to the National Statistical Office in Malawi and Eritrea.

3.1. Institutional cooperation between the National Statistical Office and the Ministry of Economic Planning and Development in Malawi and Statistics Norway.

The goal of the Institutional co-operation project is to contribute to poverty reduction and increased welfare of the population of Malawi by efficient fact-finding policy planning in order to implement the Malawi Poverty Reduction Strategy Paper (MPRSP).

Within the co-operation project, the objective of the National Accounts project is to strengthen the compilation of the National Accounts for Malawi. The first milestone is improving the quality and use of the national accounts by adopting UN's SNA 93 with integrated annually Supply and Use Tables (SUT). Improved quality, coverage and timeliness of the national accounts system should also give a much better basis for the economic and social policy planning in the Ministry of Finance and the Ministry of Economic Planning and Development.

The scope of the benchmark SUT for 2002 have to be considered carefully, regarding the level of detail for industries, final use and products.

The introduction of the new methodology for the year 2002 in 2004/2005 with new data sources and a more detailed classifications for industries and products, also required an efficient and partly automatic compilation methodology. Excel worksheets are used to prepare the interlinked input tables and also for preparing reports and tables. The final balancing, constant price compilation and updating will be conducted by the SNA-NT software. Results will be taken out in different prepared Excel tables.

Important actions have been:

Establish an industry classification based on ISIC 3.1 which is relevant for Malawis economy.

Create a new product classification based on CPC and establish the link between the product classification and the HS used in the import and export statistics.

The list of products have also to be relevant and manageable for compiling price indices or quantity indices.

Training has been given to explain how to use available economic statistics in Malawi.

The first benchmark year is 2002

Update the SUT from the year 2002 to the year 2003 in current prices in 2005 (preliminary and final data) and then compile the SUT for 2003 in 2002 prices. In February/March 2005 when the input data for the first reference year 2002 are established.,

Constant price figures will be calculated in the prices of the previous year and chain price indices will be compiled. The methodology to compile chain price indices is new for the Malawi government, but has been accepted since it is the recommended methodology in SNA93 and also for the European countries.

Improved methodology based on new data sources will probably require backwards revision at an aggregated level of the time series for some years before 2002. Comparable time series in constant prices are very important for analysing the economic development but difficult to compile for a country as Malawie.

The present status is a detailed plan for finalising the SUT for the year 2002 during the year 2005 and to start the updating to the year 2003 in current and constant prices in the year 2005.

Important data sources are:

Government accounts (minus National road authority, Malawi Revenue Authority and University of Malawi

Integrated Household Survey II (2004 april/2005 march), Cover household consumption and production in informal small scale market producers.

AES 2002 - Annual Economic Survey cover 330 big enterprises

Gemini 2000 cover micro and small scale companies

Third round crop estimation --> main agriculture products

3.2. Institutional cooperation between the National Statistical Office in Eritrea and Statistics Norway.

The goal of this project is to introduce an efficient production process for compiling national accounts for Eritrea. Result of the project will be an established production process for compiling annually updated and timely SUT, utilizing all available data sources in Eritrea.

Important existing data sources are Production data for agriculture, Household income and expenditure survey, the External trade statistics, Government accounts from the Ministries and Finance data for large enterprises and banks.

For developing new statistics the planned Central Register of Enterprises will play a very important role. The register will be updated from other registers (Inland revenue tax Register and the Register of Employers.

For a country like Eritrea, it is important to specify production for own final use. Homegrown food should be estimated at producer's value.

The plan is that the ongoing work in NSO in Eritrea will result in the first Supply and Use table for the year 2003 during the end of 2005. Very important is the updating to the next year and establishing a reliable constant price routine for the national accounts, using unit value indices from import and exports and consumer price indices.

ANNEX System of National Accounts New Technology (SNA-NT)

SNA-NT is a client-server application developed for compiling the National Accounts. The main functionality of SNA-NT application was developed between 1994 and 1997, using Microsoft Visual C++. For Data Management, SNA-NT uses the Oracle Relational Data Base Management System. During 1998 to 2000 SNA-NT was updated as needed for new Oracle versions, changed user requirements and with an improved graphical user interface.

The SNA-NT is developed as a Multi-User system consisting of one central Database Server and one or multiple SNA-NT Application clients connected to the Database Server. It is also possible to install both the Database Server and the SNA-NT Application on a stand alone PC as a Single User system. This is useful for training and demonstration of the SNA-NT methodology.

Each user of SNA-NT is connected via a client PC. The client PC requires Windows 2000 or Windows XP with Oracle Client software installed. The user interface consists of a number of dialog boxes. The calculations that take place are described in detail in the SNA-NT Handbooks: SNA-NT "SUT / Starter" and SNA-NT "SUT/ Constant Prices". The "SNA-NT User Guide" describes the operation.

Microsoft Excel is used to prepare input tables and SUT and IOT tables at different levels of aggregation.

Several versions of the Supply and Use tables and Input-Output tables are stored in the same database, identified by different Oracle data accounts. For each year there will be a set of at least four accounts:

- Supply and Use Tables in current prices, Supply and Use Tables in constant prices
- Input-Output Tables in current prices, Input-Output Tables in constant prices

The current version of SNA-NT offers the following functionality related to Supply and Use and Input-Output tables:

- SUT in current prices
 - Batch establishing of the SUT
 - Batch correction/updating of the SUT
 - Interactive correction/updating of the SUT
 - Automatic balancing of supply and use of services (simplified RAS)
 - Predefined reports
 - Export of data to Excel
- SUT in constant prices
 - Batch establishing of the SUT
 - Predefined reports
 - Export of data to Excel
- IOT in current and constant prices
 - Automatic transformation of SUT to Industry X Industry IOT
 - Aggregation of IOT
 - Calculation of inverse matrix
 - Export of data to Excel

References

Statistics Norway. Documents 2005/5 National Accounts Supply and Use tables in Current Prices "SNA-NT SUT/STARTER".

Statistics Norway. Documents 2005/4 National Accounts Supply and Use tables in Constant Prices "SNA-NT SUT/CONSTANT" for.

Statistics Norway. Documents 2005/6 "SNA-NT User's guide for Supply and Use tables in Current and Constant Prices.

NOS National Accounts 1995-2002. Production, Uses and Employment with Input-output table 2000 at basic values and Inverse matrix 2000 at basic value.-

Annually input-output tables for Norway at the Website: <http://www.ssb.no/emner/09/01/nr/>

Norwegian Input-output matrix, Year 2002 in 2001-prices 1000 NOK (GVA mill)

Suppliers		Users																			
Aggregated to 2 digit NACE		01	02	05	11	10,13,14	15,16	17	18	19	20	21	22	23							
01	700995	59058	6700	5938	1034	15513141	89489	8308	251	6076	2190	30255	657								
02	346742	820040	391	1493	270	2958	200	100	10	2002756	610771	3177	110								
05	26145	3	1312277	294	150	12140916	35	12	2	174	278	591	53								
11	6119	309	25266	11047762	82314	755920	12564	2566	4937	92266	74542	7812	21283619								
10,13,14	19664	70	1234	286766	391352	72136	1138	291	240	17933	14101	10324	668								
15,16	4165799	1591	4464176	824454	60334	27335923	20606	6338	83918	91115	64757	156183	12942								
17	8757	2148	104716	91405	6558	36233	225281	74034	203	6969	7395	12533	660								
18	2514	287	8988	101254	4413	19919	1298	5007	187	3993	2702	5047	247								
19	202	22	668	5818	248	1147	65	317	9273	273	165	389	47								
20	8163	334	25371	66510	5994	115624	2881	1512	1272	2904435	229089	20145	1386								
21	61360	161	286744	49164	12171	827723	14035	2589	758	20007	1992207	2315718	880								
22	28572	2066	39312	404894	41803	364864	15196	5851	1658	61477	74177	4511018	11072								
23	253981	45632	278693	211328	43803	137939	5553	2630	1022	16264	26533	21192	547778								
24	594702	740	160131	730047	73186	479169	41780	2928	3097	190547	366811	123850	19578								
25	71901	1440	213571	87564	12434	679057	29041	4078	560	31584	40475	84331	1621								
26	19447	458	22176	431775	21168	183284	4266	1135	950	77632	18305	24556	2030								
27	3571	1681	7439	128248	10824	66648	24056	1453	681	80549	33586	125982	1389								
28	46472	19547	179114	712315	53166	516858	60766	3952	2669	133227	60002	54351	2019								
29	59208	39662	297345	655062	80787	368033	14975	2637	1877	66606	122455	112269	3415								
30,31	22895	14332	45435	231830	29138	135577	4701	2074	653	33079	40648	37923	1435								
32	2691	1285	5510	33757	3874	26034	1296	277	158	5897	5602	12411	822								
33	10509	6962	21716	122920	15957	79013	2691	601	411	13773	21980	23211	1024								
34	754	213	980	27617	2412	19670	1264	386	213	3852	2919	15910	368								
35	13942	5622	1047830	5372387	79473	662500	13190	2577	4532	87250	63439	33634	1586								
36	4816	1287	29091	85507	7647	78808	5740	1039	764	25799	10756	32104	1612								
37	831	79	7098	50290	3683	52901	2170	523	159	5142	442704	19532	1074								
40,41	432973	19017	93875	240598	169904	829831	39754	7532	4493	225626	1138181	170259	221601								
45	734181	84742	205150	62142	86849	545388	19305	4856	308	135183	129363	67654	146691								
50	159230	22266	101961	134272	47135	660437	39397	11305	2983	135715	81691	141731	53922								
51	501813	52574	571393	1678155	241347	3654066	214532	58548	19900	730676	493732	838887	293458								
52	314428	32376	364285	573468	127961	2130335	136987	37546	11014	445936	290521	511580	196326								
55	9884	877	3607	665888	23622	382658	14946	6495	1130	54410	52577	240821	12295								
601	794	63	355	30062	5995	30973	889	241	119	5448	8508	6486	729								
602	87979	7509	77439	184071	143900	868237	43097	11124	3241	187161	240742	146357	48902								
603	153229		15875	78169	12445	220464	10933	1209	1352	37446	93878	28351	204838								
61	23221	2964	119954	1448204	60545	305685	14029	3594	1080	63839	87696	73107	14031								
62	7825	2006	1745	955161	58938	375004	13362	5222	706	62268	115779	224923	26494								
63	134614	9316	126334	242087	394194	1716926	73856	17230	5550	382563	600949	190885	55402								
64	165313	5583	147426	718098	190349	1216565	57252	23370	3549	245731	358773	2053778	77149								

65	3639	3687	5739	156138	87541	452380	19626	6534	1456	93086	139690	315889	25922
66	121733	324	27667	33891	10029	103383	7545	2792	658	20877	18052	79956	2760
67	932	466	678	36064	18348	103273	4322	1526	296	21316	34157	72381	6525
70	1889	2508	267	327152	62579	967215	82964	30596	7448	192823	108421	787955	11921
71	24170	11922	20958	1312948	101243	310333	17071	3306	1812	62009	41364	210493	3751
72	22552	3999	51430	1118202	45061	977934	29175	13409	2899	100102	101164	441225	30333
73	2133	2639	2354	260590	35429	214905	9035	3243	605	41935	68379	149240	14573
74	374081	5293	389803	4951998	200727	1845681	66678	26307	5430	280345	388955	1072808	85727
75	2036	10694	5601	1280215	28009	226612	8150	3565	510	33613	66202	140550	20879
80	947	4941	2590	527025	13045	105256	3787	1655	236	15649	30775	65336	9679
85	240990	3214	261091	337733	10170	89112	8913	1241	331	14779	22065	78638	5608
90	2315	122	6588	200991	6773	164531	4512	2198	474	15554	15327	72602	4812
91	1069	535	777	41351	21039	118417	4956	1749	340	24441	39164	82992	7483
92	2724	822	5448	198138	26316	236970	8248	3342	680	35911	51134	951158	11231
93,95	158	24	374	11671	1042	12571	400	173	36	1620	2085	6546	498
Acquisitions less sales of used fixed capital formation													
Imports	2036318	153978	2245181	8558886	786218	13469577	914478	361498	97206	2801985	3290444	3508638	1389065
Investment levy	1000	18000	76000	18000	7000	39000	1000			4000	9000	4000	5000
Consumption in Norway of non-residents													
VAT	72000			14000	0	10000				2000	2000	12000	
Product taxes on imports, customs duties	22115	62	8337	18220	718	544363	643	134	61	1078	502	1842	29
Other net product taxes	414963	79448	48746	9013	49336	-1979077	2881	-755	642	3200	20141	-76516	-7726
Intermediate consumption, purchaser's value (sum of rows)	12554000	1567000	13581000	48189000	4118000	91621000	2467000	784000	297000	12457000	12470000	20467000	24878000
Final uses, purchaser's value													
Gross Value added	10352	5204	11344	309321	3196	25784	1499	400	165	6048	6705	15277	1546
Production, basic value	22906000	6771000	24925000	357510000	7314000	117405000	3966000	1184000	462000	18505000	19175000	35744000	26424000
Transposed sum of rows	22906000	6771000	24925000	357510005	7314008	117405001	3965999	1183998	461998	18505007	19175005	35743982	26423991

24	15725	2011	5908	2541	5579	9876	2729	3012	3662	1501	7163	9522	286	26031	284875	25127	128690
	791	311	2514	1280	29238	1624	511	511	762	300	1604	612	50	8300	53461	2766	8931
	494	78	226	336	189	407	128	105	151	75	381	134	25	296	1030	508	649
	819324	29630	324169	385630	352552	265751	130679	55599	95056	39216	430162	83406	24802	2429	77263	5500	6945
	781613	7119	551567	531531	17578	18530	6239	4265	5588	1862	21844	14602	895	7932	841510	13012	86259
	507386	35013	188863	217459	219675	238184	99852	67669	82488	32727	306509	89870	15218	43150	707842	161497	979589
	16863	4460	8165	18812	10980	17943	8802	3204	6920	4506	37737	135513	1527	18555	103898	25965	39083
	10641	1611	5354	12672	9356	11283	2835	2193	3138	3095	13516	3087	651	19642	63388	13419	56825
	520	131	215	853	477	762	169	165	466	225	736	124436	48	1383	3518	885	2900
	78370	7978	38570	42986	43755	39440	16740	8015	7744	14013	98025	450163	172678	47513	6810774	26083	277358
	153886	14205	60149	28124	32165	61361	13761	9822	6852	5208	20922	32430	2492	12625	55743	15776	361223
	170160	32860	89359	106274	105879	159040	53055	45164	59039	26894	166820	58611	8023	314019	430860	969054	3658212
	129413	10231	51334	140502	23966	24536	115299	4417	2935	4398	31677	11488	8434	145163	437536	120633	345214
	2555389	495536	154862	317800	274634	279621	174169	49708	60505	45549	463803	148577	19366	40147	877566	99311	470591
	166067	167517	48773	31197	61700	102091	58970	12023	26611	43068	69667	116631	87047	40445	837658	36147	210297
	114733	46368	683479	138028	191705	118100	106767	17672	27727	47329	140698	37210	8847	26395	5022207	30361	159668
	84565	48784	133266	2785427	1209382	911688	318172	69172	27201	455902	1126091	115762	10088	23367	321418	51682	299812
	200487	41540	192302	170674	818631	1048979	143461	59295	115119	74290	3878992	101998	10426	137636	3219591	137606	348471
	215564	38586	93078	177670	365779	2290210	54016	31468	62775	57587	2384160	49032	20622	68482	1017169	199758	313611
	98309	12179	33778	276866	93913	137258	552149	59257	211855	30093	638008	23075	7438	191791	1816062	35610	80742
	25795	2411	6775	65202	50336	190479	144024	1058022	251078	9970	31716	4498	1141	3117	127673	9114	53135
	43530	6494	22006	35507	22949	43170	16115	16743	189178	5722	172933	9511	3960	19671	194750	27673	122622
	12103	2884	5544	7731	9231	87315	5454	4995	2979	164748	13975	5343	733	2317	36183	1915289	48685
	412756	28342	228052	264758	316223	294227	112826	54406	85531	32846	7792991	79116	15478	11307	463821	22594	100992
	39744	5010	19568	24769	35399	35262	18169	9255	9863	4495	150375	312636	2072	38336	524825	41612	233976
	19598	15503	8405	733714	286870	14433	8807	3702	6080	3496	15580	7344	364011	18260	139592	25242	156257
	1220854	98831	193631	3042550	200017	207840	72016	28763	37890	96258	227662	86470	45441	2187716	547311	253197	681335
	328276	33737	161656	360443	79816	92368	21371	16458	13367	30687	112855	31926	17252	1028677	30195264	140033	1022227
	263807	72411	109881	299930	159212	314659	113069	87432	112719	63413	341774	85438	33315	377109	1882674	458401	912486
	1715218	398435	635376	1763338	932074	1817877	688109	532055	672589	355661	2073478	501623	160548	387731	4785735	934217	1758858
	931705	251953	313229	1063208	484792	1099467	407621	320239	406866	224294	1227719	292808	100778	267705	2880128	619370	948646
	149263	30490	66658	81115	69594	130936	43011	39270	54026	19374	123199	65839	7034	227177	206930	254347	911729
	18162	2148	9506	11552	7970	8949	3767	2059	3352	1589	10802	3612	852	1576	27838	6138	83123
	445303	90519	197657	387421	153577	295020	114666	83371	106259	64082	297680	107420	34219	61057	1466754	186079	1759419
	138206	23159	68520	269600	56673	44833	20651	6115	10376	20744	59988	17964	7844	32686	45630	66460	185215
	151183	29544	73295	125953	57250	99850	38591	25667	33577	21464	106863	37396	12459	22503	201101	70456	665322
	205929	31568	87889	155402	71023	154705	51907	33263	69021	29608	167334	43954	11133	48945	553297	104604	1124947
	932302	166417	466383	703954	258886	403744	167920	116561	128576	94006	349578	205387	62691	63135	991441	340490	4954528
	625350	117494	312574	442380	286107	579525	188333	145404	253423	108921	591076	192462	33309	572613	1210160	473213	2626508

246093	41493	119440	173323	110273	220120	71080	54953	76784	41022	223276	71596	15702	150038	503014	288844	396665
29592	14132	20033	17975	39559	51667	20043	19117	19746	10657	62150	23038	3802	34177	139382	213620	438818
60470	9535	27715	41231	23137	49878	15723	12925	18477	9197	46868	16400	3051	36401	126200	62294	79542
198608	150081	162091	83595	430353	492568	204462	207560	190754	104619	644051	242764	38157	308593	1345982	2541215	5454682
83914	26542	72998	83940	122491	161299	61082	29745	29661	31935	255208	47374	23846	71088	1566489	247409	476644
323119	54793	120131	164560	123632	242183	81089	64164	98998	42488	239209	125593	15349	972868	1503136	376418	2059839
129580	19988	55694	86828	48756	105528	33615	27282	41337	19273	104760	33417	6363	62613	282627	181203	255318
867013	135755	360776	508483	324493	670756	216570	179452	258518	119971	650743	270570	39884	1037977	4826052	1000723	3389362
129348	19350	49398	100830	49904	116107	37175	22914	55508	20879	133421	27497	6621	40658	1259150	410961	574427
60090	8994	22976	46806	23183	53911	17258	10659	25738	9696	61884	12799	3076	11224	182742	190093	265662
46311	8254	21541	34017	30649	59361	20017	18464	23284	9245	94644	25549	2251	29336	220111	119339	201530
51414	8133	19473	24354	19178	37647	12411	9203	15621	6355	36942	20952	2079	107630	518861	461897	946688
69338	10932	31778	47277	26530	57191	18025	14821	21186	10544	53741	18804	3498	79740	144701	71428	91203
107583	16962	46286	66180	40828	85618	27375	21666	33111	15366	81999	33887	5071	117103	331822	123839	357557
4981	786	2065	2827	1879	3855	1244	970	1516	680	3705	1722	224	7066	18428	5705	22250
9045148	1871914	2516037	17149566	4039585	9045700	3618846	2898883	2881255	2050989	11835529	2570978	951319	1729371	14531238	5247952	5761367
17000	2000	6000	25000	5000	8000	1000	1000	2000	4000	10000	3000	193000	692000	222000	388000	388000
6000	2000	4000	3000	5000	8000	2000	2000	4000	1000	8000	2000	43000	1892000	23000	27000	27000
7044	1277	698	2166	1907	2626	747	366	584	807	2798	884	193	4854	15629	2692	10278
4970	-1419	74334	-147	3531	-31358	-15692	-15460	-21422	-7939	136979	-11730	8281	358324	677960	234139	799088
25287000	4805000	9386000	33887000	12875000	23092000	8539000	6667000	7030000	4740000	38392000	7234000	2442000	11942000	100242000	19944000	48181000
12148	2500	5186	10623	9642	13060	4544	2971	3796	2545	17137	4468	1886	30980	56345	20863	66300
37435000	7305000	14572000	44510000	22517000	36152000	13083000	9638000	10826000	7285000	55529000	11702000	4328000	42922000	156587000	40807000	114481000
37434962	7304998	14572005	44509980	22517008	36152013	13082986	9637997	10825992	7284999	55529003	11702006	4327999	42921986	156587000	40807003	114481027

52	81721	129497	601	603	61	62	63	64	65	66	67	70	71	72	73	74	
	3178	3758	110	4812	110	2427	110	13061	4621	2385	853	2085	7147	3789	361	1394	20500
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	5828	6909	310	116598	262354	6377	38705	302861	115441	1011	174	236	10288	1746	52393	942	12330
	52843	5518	1889	6369	8594	2141	2105	28433	7400	4037	2630	1336	110369	2230	25113	2317	22241
	601792	3888182	21242	104413	143751	185520	31566	351797	120533	42677	24759	13012	124523	36549	301850	27113	325529
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	2668695	246777	31484	196803	39181	102145	25265	705741	860577	141514	70302	85080	1260188	537309	351448	193616	2917444
	192393	94777	9843	1823641	6794	1682835	6988	575238	150366	54585	4964	333	222793	26304	16060	6953	259194
	326506	233844	6976	127221	100459	125379	20891	205940	81382	20940	12636	8814	218044	23962	105050	22329	330098
	107910	26783	4041	69485	4015	19695	2069	70086	31204	10999	3138	6766	184770	25386	11126	13025	133665
	105706	106670	4326	24590	38135	9911	7302	264509	34451	6943	3609	1916	429484	11690	44984	8996	84842
	197930	19656	8631	16909	10488	28514	4223	392175	22853	15341	7903	5155	30629	18226	83299	9168	97864
	334982	68267	18482	78210	63519	248419	13639	486017	100625	38053	6347	7159	150252	102680	56201	32153	333884
	262792	80255	9221	98382	37936	480988	13036	209923	360586	100822	7738	2915	151872	336733	111524	36270	370019
	49136	37179	20392	50478	14657	32773	4862	86193	60707	39774	3910	4707	46228	81293	27679	6990	84398
	34447	9271	2188	7692	3066	3374	1245	16310	12862	4662	1258	634	8582	8213	16708	1795	27407
	76248	13279	2138	20186	10258	65421	3591	57460	26737	21061	3970	1932	23021	37716	33735	16877	526769
	23415	8877	3706	19927	3935	870	885	20463	9233	2074	785	388	5853	4188	32458	975	23217
	64062	24469	106630	113806	228460	1110564	152619	376644	432961	16436	2518	1179	22576	57765	90953	3687	58983
	157158	62051	3327	18458	12155	10193	3049	56966	59814	10135	3173	4130	250114	31748	68191	22917	289316
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17983	179955	1783	2689	38	1428	1419	14647	3923	6099	2355	1869	21942	3190	18354	2776	39007
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8059	50531	855	1031	9	3873	135	7308	2222	237	61	156	5493	2872	945	1833	18087
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39874	19487	1566	17984	21831	31726	7753	18130	28114	38307	2428	3209	111745	5245	19402	5056	62401
74890000	41827000	4171000	42913000	23513000	101715000	20182000	62482000	73330000	58241000	9858000	6457000	163850000	13802000	39228000	9427000	121722000
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Final consum Final consump.													
75	80	85	90	91	92	93,95	FISIM	Exports	expenditure of household and NPISH	Gross Fixed Capital form	Changes in inventories	Production at basic value	Sum
39472	26913	78044	1037	5544	10707	5087	587	322000	4694891	194000	124808	22906000	
3286	2898	12199	613	3781	2286	3488	3488	170000	486081	146000	1966943	6771000	
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3592	4430	21305	745	2179	3445	1218	1218	307498610	296518	13926601	-1722215	357510005	
75247	4662	8585	1458	3467	76545	1547	1547	2792162	70995	8726	255221	7314008	
392328	131371	1434547	15866	38574	90323	18010	18010	21178358	43760533	234447	2421033	117405001	
25828	13922	130370	15880	14885	76765	8400	8400	907378	1069473	367231	-21752	3965999	
13491	6805	30725	22448	5000	13098	8391	8391	296439	321499	7918	-175338	1183998	
458	519	3082	1556	53	549	581	581	248590	76295	1021	-43294	461998	
22116	76148	55130	2436	7472	77099	14163	14163	2096780	541327	7155	1386210	18505007	
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1382340	1655024	720385	83632	1127479	902440	137625	137625	649980	6551166	36587	18396	35743982	
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85536	96475	1449630	32951	25629	53769	57742	57742	21841913	1930245	134228	-180236	37434962	
33436	67300	98462	72554	19949	21364	17205	17205	1919329	692434	110394	69462	7304998	
216460	72040	41172	12083	5648	18913	6198	6198	1119580	621612	224554	3310919	14572005	
65769	15093	100545	9540	37753	25681	9460	9460	36941388	167594	81151	-2391199	44509980	
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1775250	60983	176794	29682	33035	69349	37478	37478	13894193	804433	5764926	1553848	36152013	
114497	34431	101455	9580	18369	47852	19188	19188	4918649	439076	859815	964387	13082986	
42302	4274	11676	1455	2746	6240	1948	1948	3491770	583710	2796687	385754	9637997	
279601	21808	267291	5649	13684	14345	7917	7917	2823392	159507	3161647	1620322	10825992	
18746	1653	19387	959	35522	11688	876	876	3684479	392029	412233	143254	7284999	
138423	12192	53276	5033	38315	17988	6070	6070	11795597	764030	18248838	3763175	55529003	
46140	12132	134147	2963	78204	70401	10711	10711	2348696	3338051	2379226	381669	11702006	
53253	23614	45182	56084	6909	11217	5321	5321	188219	140751	8271	876553	4327999	
880701	858575	785793	62519	301704	394604	202387	202387	10183935	11095333	1302347	5	42921986	
11855178	823552	1350868	470607	123077	518509	121464	121464	864367	1809842	82040829	75981	156587000	
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431136	488176	1407173	87458	215152	390715	118052	118052	9930746	31055320	4756113	-4	748900025	
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