

Statistics Norway
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Documents

**National Accounts Supply and
Use Tables (SUT) in Constant
Prices**

SNA-NT "SUT/CONSTANT"

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PART I. INTRODUCTION

1. MAIN OBJECTIVE

1.1. Background

The Supply and Use Tables (SUT) serve both statistical and analytical purposes and should be fully integrated in the National Accounts system for a country, ref. SNA 93 chapter XV and ESA 95 chapter 9 and 10.

The document SNA-NT "SUT/STARTER" gives a detailed description of "What happens in the black box" during the execution of the SNA-NT software for compiling Supply and Use Tables (SUT).

SNA-NT "SUT/STARTER" also explains the structure of the SUT with types of accounts and classifications. The different stages of the compilation process are explained by the equations applied when the SUT are compiled, revised and updated.

The SUT is first compiled in current prices and then converted to constant prices (prices of the previous year). This document SNA-NT "SUT/CONSTANT" gives a detailed description of the compilation procedure and the equations applied when calculating SUT in constant prices. The final stage is simultaneous balancing of SUT in both current and constant prices. The structure and dimensions of SUT are the same for the current price and the constant price versions.

1.2. International recommendations

The ESA95 transmission program

The ESA95 transmission program requires that the EU Member States compile Supply and Use Tables at both current and constant prices on an annual basis.

"Real GDP" as the growth of the volume of GDP.

In July 1997, the European Council agreed on the so-called "Stability and Growth Pact". The Member States had to commit themselves to keep their government deficit below 3 % of GDP. Countries may have a higher deficit in cases of severe recessions as annual fall in real GDP of at least 2 %. Change in "Real GDP" must be understood as change of the volume of GDP.

<i>This means that GDP in constant prices are used for administrative purposes in EU.</i>

Commission Decision 98/715/EC of 30 November 1998.

Commission Decision 98/715/EC clarifies ESA-95 and Annex A to the Regulation (EC) No 2223/96 as concerns the principles for measuring prices and volumes in national accounts. It introduces the A/B/C classification for methods. A methods are the most appropriate methods; B methods are those methods which can be used when an A method cannot be applied. C methods should not be used.

Handbook on price and volume measurement in national accounts

Following the work in several Task forces, Eurostat released "Handbook on price and volume measurement in national accounts" in December 2001. The handbook follows earlier decisions and regulations 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".

The Handbook also refers to Eurostat's "The ESA 95 Input-Output Manual -Compilation and Analysis." The preliminary version from September 2002 gives in chapter 9 "Supply and use tables at constant prices", a description of constant price compilation within the framework of balanced Supply and Use Tables.

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.

2. THE NORWEGIAN APPROACH FOR CONSTANT PRICE COMPILATION OF ANNUAL DETAILED SUPPLY AND USE TABLES.

2.1. Introduction to the constant price methodology

The constant price methodology in the Norwegian national accounts follows the recommendations given in SNA-93 and ESA-95 and in the newer recommendations and decisions, referred to in chapter 1.

Important conditions for the Norwegian methodology are:

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

Supply and Use Tables (SUT) are compiled at both current and previous year's prices in the following value classes:

- Basic values
- Taxes on products (paid by the producers)
- Subsidies on products (paid to the producers)
- Producers' values
- Retail and wholesale trade margins at basic values
- Transport margins
- Taxes on products (collected by wholesale or retail traders)
- Subsidies on products (paid to wholesale and retail traders)
- Value Added Taxes, not refundable
- Investment Taxes (A special Norwegian tax)
- Purchasers' prices

By an integrated procedure, the first step is the compilation and balancing of the current price SUT. 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 ESA95¹, paragraph 10.38 and for taxes and subsidies on products and VAT in 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.

2.2. The "assembling file" called the "SAM catalogue".

Price indices for all products are registered in an "assembling file", called the "SAM catalogue", see chapter 4. 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. 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.

2.3. Overview of the constant price compilation process

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

¹ "The European System of Accounts ESA 1995"

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.

2.4. 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. Since there might be three different qualities of the same NA-CPA product in the three different markets, the SNA-NT system allows for using three different price indices for the same product category within the three different markets.

Problems related to price discrimination for the detailed products within the domestic market, where homogenous products are sold at different prices to different users, are assumed to be of little importance for transactions recorded in basic value. Basic values are more homogeneous than producers' and purchasers' values because taxes and subsidies related to products will often be differentiated according to who buys the products. Price discrimination is therefore not recorded for shift between transactions in basic values within the domestic market.

2.5. Shift effect because of differences in the 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".

<i>Note: Shift effect is only introduced for 11-and 12- values !</i>
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2.6. 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.

PART II. REQUIREMENTS FOR INPUT DATA FOR THE CONSTANT PRICE COMPILATION

3. PRICE INDICES AND OTHER DATA INPUT REQUIRED

3.1. Price indices required

For each of the NA-CPA products, three price indices are used 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.

The three price indices listed above are used to deflate the corresponding current price figures at the detailed product level. By using all available data sources, price indices have to be recorded for all products in these three different markets. 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.

A special problem is associated with quality changes over time. Adjustments for the changes in quality of products should be made as far as possible, so that the "pure" price development is reflected by the price indices used for deflation. Changes in the quality of products over time have to be recorded as changes in the volume component.

3.2. Price indices for Exports at purchasers' value and Imports at basic value

3.2.1 Exports and imports of goods

In Statistics Norway, for exports and imports of goods, unit value price indices for ordinary products have for many years been based on the customs declarations. Through a variance analysis of the price fluctuations on the most detailed commodity level (i.e. HS extended by 2 extra digits for specific Norwegian purposes), price-homogenous commodities are identified. The unit-value indices for these commodities should in principle be acceptable. A price index for a commodity is based on a collection of prices on specimen products, i.e. price homogenous customs tariff commodities. Thus the price-homogenous "HS-8" commodities are interpreted as specimen products for NA-CPA products.

For imports and exports of commodities that have poor coverage of specimen products, special export and import price indices should be calculated. These problems are especially related to Data processing equipment, Other ICT products and Capital goods where special capital goods projects are important.

NOTE: The price index selected for constant price calculation of an imported product is also used for calculation of the constant price figure for Custom duty of the same product.

3.2.2. Exports and imports of services

For exports and imports of services, the price indices should reflect the actual prices paid for these services.

For the expenditure of domestic residents abroad, the CPIs for the foreign countries visited, should be used, adjusted for exchange rate differences.

3.3. Price indices for Market producers

Price indices have to be calculated or estimated for all products supplied by the market producers. The price indices can be based on the PPI, CPI, unit value indices based on volume indicators and also for some services where no relevant price or volume information exists, input price indices.

Producer Price indices (PPI) is mainly based on questionnaires from surveys where the prices are defined at factory (ex works), i.e. sales price at the factory gate to the domestic market. The price index for a product can be registered for domestic production to domestic use at basic values or at producers' values. If the price indices are registered for producers' values, they will be automatically corrected to basic values during the deflation process.

During the calculation, the price index for a product from domestic production, which is registered at basic value, is by the SNA-NT software, automatically calculated as the weighted average of the price index for the product at basic value to domestic use and the price index for the product at basic value to exports. The combined index for the product is used to deflate domestic supply of that product from the various industries supplying that product.

Similarly, the price index for a product from domestic production, which is registered at producers' value, is automatically calculated as the weighted average of the price index for the product at producers' value to domestic use and the price index for the product at producers' values to exports. The combined index for the product is used to deflate domestic supply of that product from the various industries supplying the product.

Consumer price indices are acceptable price indices for service industries, supplying services to the households. The indices have to be corrected for change from the previous year in VAT rates. By registering the consumer prices for producer's values, the price indices will be automatically corrected to basic values.

Unit value indices

When the product specification is so detailed that the products can be regarded as homogeneous products, unit value indices can be used. Unit value indices should be acceptable for deflating some agricultural, forestry and fishing products and also mining products.

Input price indices have to be used for some of the business service industries, where no available price indices or good volume indicators exist. The SNA-NT software has an automatic procedure for compiling the input price indices for the different industries after Paasche formula, by weighting price indices for intermediate consumption and the wage indices for compensation of employees for the different industries. Detailed price indices are available for intermediate consumption for the different industries (automatically compiled during the deflation process). For the current year absolute figures for compensation of employees for each industry have to be registered and also a wage index calculated as change in per cent for compensation of employees per hour worked, see chapter 4.3.

3.4. Constant price compilation for Non-market producers

Input price indices as a weighted cost index

At current prices, the production of non-market activities (central and local government and NPISHs) is compiled from the input side by summing up the associated costs: intermediate consumption, compensation of employees and consumption of fixed capital. On the output side the government production comprises of products for government fees and government consumption. For the constant price calculation government

consumption has of technical reasons been split between special products for consumption of fixed capital and products for government consumption (excl. consumption of fixed capital).

The compilation of non-market activities at constant prices is similarly conducted, from the input side. Input price indices are calculated after Paasche formula, automatic weighting price indices for intermediate consumption and wage indices calculated for compensation of employees per hour worked, see chapter 4.3.

The wage indices, calculated for the government employees should be adjusted for changes in quality of the labour force or the level of skill over time. The variables used could be type of job and educational background of the employees.

In Statistics Norway the constant price figures for Consumption of fixed capital is calculated by a PIM model, based on the price indices calculated during the deflation process for gross fixed capital formation for the relevant industry. Constant price figures for consumption of fixed capital for the Government are therefore posted directly on the output side of the Governments accounts (and automatic included in the total production), see chapter 4.4.

3.5. Balancing the Supply Table and the Use Table at basic values and compiling SUT in the different types of valuation.

Constant price values for the various domestic uses are calculated by distributing total domestic use of a detailed product in constant prices proportionally with the domestic uses in current prices, i.e. all domestic use of a product gets the same price index at basic values.

Note: This ensures that the supply and use of each product in constant prices will balance at basic values.

The constant price domestic uses in purchasers' value are calculated by applying tax rates and trade margins from the previous year to the product flow at basic prices. If there are empty cells in the tax or margin matrices, the values from the current year are used.

3.6. Constant price compilation of the Aggregation accounts

The calculation of input price indices and prices on products supplied from "Aggregation accounts" are computerised. Detailed input price indices are compiled automatically during the deflation process as weighted cost indices, see chapter 10.1.

3.7. Balancing the aggregation accounts in constant prices for Trade margins and Transport margins.

Retail and wholesale trade margins (14R-value) in constant prices for year t is calculated in the Use table T2 by using the previous year's trade margin rates.

"Trade margin rates" from year t-1 is calculated in the Use table (T2) for Products distributed by Users, by compiling the trade margin rates (14R-values) from the base year t-1 in proportion to 10-values (basic values) from year t-1. We get as a result that the volume change for the basic trade margin is proportional to the volume change for the basic value of the product, Change in the trade margin percentages in current prices for a commodity supplied to a certain user, will by this result in a change in the price component and not in the volume component for the retail and wholesale trade industries production. If larger resources are required from the trade and transport industries to bring the goods to the final users, without any improvement in the quality from the users point of view, this will represent a productivity loss, which is allocated to the trade industry.

Final automatic corrections adjust the price change for products for "Household final consumption in purchasers value (19-value) to the consumer price indices. On the basis of this, the trade margins in constant prices are

automatically adjusted, normally reduced. There has also in many retail industries been deterioration in the service given to the customers due to greater competition, requiring reduction in overheads and costs.

The constant price figures for trade margins by products, in basic values, are transferred to the Supply table (T1) as supply from account 27500 Aggregation account for trade margins.

In the Supply table (T1), the constant price figures for trade margin by products, in basic values, are distributed between the main industries supplying the trade margin services in current prices (retail trade industry and wholesale industry and other industries supplying the trade margin services).

NOTE: In the first stage of the compilation process, price indices have to be registered for all trade margin products. For the two main products "510100 Trade margin on wholesale trade" and "521100 Trade margin on retail trade" the constant prices figures will be automatic corrected during the compilation process balancing the "Aggregation accounts". This means that the production values at constant prices for the wholesale and retail trade margins are calculated from the Use Table, see chapter 10.4.

Note: If the main products for Trade margins have other codes than 510100 Trade margin on wholesale trade" and "521100 Trade margin on retail trade", the codes have to be changed in the data or in the SNA-NT program.

"Transport margin rates"

Transport margins (14T-values) in constant prices for year t is calculated in the Use table T2 by using the previous year's transport margin rates.

The same methodology and compilation procedure is used for transport margins. The transport margins (14T-values) in constant prices for year t are calculated in the Use table T2 by using base year's transport margin rates.

Note: The supply of transport margins at constant prices is not estimated separately, but aggregated up from the Use table, see chapter 10.5.

3.8. Constant price compilation of Product taxes and Product subsidies.

Based on the tax matrices from the Supply and Use table in current prices for the previous year (t-1), a set of "basic-rates " is calculated for the Supply table and another set for the Use table.

Product taxes, product subsidies and VAT in the Use table (T2)

"Basic-rates" for all Products x Domestic User combinations are calculated by computing product taxes, product subsidies, VAT and Investment taxes (11-, 12-, 15-, 16-, 17- and 18-values) in relation to 10-values (basic values).

Product taxes, product subsidies in the Supply table (T1)

If the price indices are registered for basic values (10 values), the **"Basic-rates"** for all Supply x Product combinations are calculated by computing 11- and 12- values in relation to 10-values.

If the price indices are registered for producers' values (13-values), the **"Basic-rates"** for all Supply x Product combinations are calculated by computing 11- and 12- values in relation to 13-values.

3.9. Constant price compilation of Household final consumption at purchaser's values

Household final consumption is the only area, except exports, where price indices for purchasers' values (19-values) are used.

The constant price figures are adjusted to reflect the change in the CPI for the goods in question. 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 Supply and Use tables in current prices revised and balanced.

The structure of the constant price calculation system establishes the same trade-margin percentages as in the base year (i.e. previous year) for the commodity flow balances at the cell level.

The deflation process is conducted in an automated way within the framework of a computerised system. Manual checks of the results are conducted by comparisons with other statistical sources until the results are considered to be final. An automatic procedure has been designed, which automatically makes adjustments for changes in the trade margin percentages at current and constant prices of household consumption. The adjustments reflect the change in the CPI for the goods in question compared with the change in the used producer price indices, see chapter 12.

4. ORGANISATION OF REQUIRED DATA INPUT

4.1. Introduction

The coding system used is a countries national accounts adaptation of CPA (or CPC), called NA-CPA (or NA-CPC). For all NA-CPA products, all relevant price indices, unit value price indices and implicit price indices have to be transferred from Excel files or other data files to the format required for the constant price compilation. All indices are registered as price indices with the previous year =1000.

4.2. Price indices for imports, domestic production to the domestic market and to exports

The price indices should first be stored in a separate folder. All price indices from different files are brought together into one catalogue, the "SAM catalogue". In order to load the price indices into the "SAM catalogue", all the price index files have to be combined into one large file, called e.g. all_prices.dat. This gives the "SAM catalogue" with a listing of all relevant price indices for each product. The file name for the "SAM catalogue" should be Y---.sam. The first character in the file name should be the year the data refer to, e.g. Y=1 for 2001 and the file ending should be .sam (for the file type).

For each of the NA-CPA products (in Norway 1200 products) where there are figures in current prices, at least one price index for domestic production to the domestic market, one import price index and one export price index have to be listed in the "SAM catalogue".

Up to 9 different price indices can be registered for each product, distributed by the following three 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 "SAM catalogue" will not show if a price index for a product is derived from value- or volume indices.

The annual "SAM catalogue" should give a complete overview of all existing annual price information at detailed NA-CPA product level, available each year. For each NA-CPA product, there have to be at least one price index for domestic production to the domestic market and where it is relevant, one import price index and one export price index.

4.3. Wage indices for calculation of input price indices for different industries

For all industries where input prices are compiled, the following information has to be recorded in a separate database table:

- The code for the industry
- Compensation of employees per hour worked, change in per cent from previous year, specified by industry
- Compensation of employees, million NOK, specified by industry

It might be practical to register these data for all industries since compensation of employees also later is required as a component of value added

From each of the aggregation accounts, only one product is supplied. For the product from an "Aggregation account", an input price index will be calculated automatic by the SNA-NT software, based on the prices calculated during the deflation process for the products delivered to the aggregation account registered in the Use table.

4.4. The structure of the "SAM catalogue"

The assembling file called the "SAM -catalogue" gives valuable information about all available price indices for each product and is an excellent tool for comparisons purposes. The "SAM catalogue" also gives an overview of the price indices used during the balancing process. When the different price indices for a specific NA-CPA product (e.g. imports) show large deviations from the traditionally chosen index, the price indices not usually used for a specific NA-CPA product, can be used for controlling/adjusting the traditionally chosen index.

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.

After the main revision of the Norwegian national account, "SAM-catalogues" with price indices directly estimated or indirectly estimated have been stored in files called "valgind-YYYY-endelig.txt " for each year from 1971 onwards.

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 the 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 at FOB-value. 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)

A	B	C	D	E	F
Position	Position	Position	Position	Position	Position
1-3	8-13	17-20	23	26-29	m23
<u>SAM</u>	<u>NA-CPA</u>	<u>IM I</u>	<u>U</u>	<u>IM U</u>	<u>U</u>
FILE	THE CODE	IMPORTS	Select-	IMPORTS	Select-
NAME	FOR THE	Foreign trade	ion	Goods, Services	ion
	PRODUCT	at 10-values		at 10-values	
		Unit value		Other price	
		indices etc.		indices	
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)

G Position 35-38	H Posit. 41	I Position 44-47	J Position 50	K Position 53-56	L Position 59	M Position 62-65	N Position 68
PRLO Production at <u>10-values</u> Input price indices compiled automatic	U Select-ion	PR10 Production for domestic use at <u>10-values</u> Producer price indices etc.	U Select-ion	PR13 Production for domestic use <u>13-values</u> Producer price indices etc.	U Select-ion	KP13 Production for domestic use <u>13-values</u> Consumer price indices	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.

O Position 71-74	P Position 77	Q Position 80-83	R Position 86	S Position 89-92	T Position 94
KP19 Household consumption <u>19-values</u> Consumer price indices	U Selection	EX I EXPORTS Foreign trade <u>19-values</u> Unit value indices etc.	U Selection	EX U EXPORTS Goods, services <u>19-values</u> Other price Indices	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 have to be written without decimal point, e.g. 1055 for the index 105,5, with the year $t-1 = 1000$.

The "SAM catalogue" can be established as an Excel file "Corrcards.xls. From the "SAM catalogue", for each NA-CPA product, one index has to be selected where it is relevant, for each of the three main categories: Products from imports, Products from domestic production to the domestic market and Products to exports.

The price indices, which are selected, have to be marked with 1 (shall be used) in the column U (for UTVALG = 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 UTVALG = SELECTION) to the right for each index.

4.5. Consumption of fixed capital for central and local government in current and constant prices for calculation of input price indices for government

For each of the government production accounts the constant price figures for consumption of fixed capital are also used when compiling the price index. Consumption of fixed capital (CFC) for the central and local government, distributed by industries, has to be recorded as separate products.

In the Norwegian case, CFC is calculated in both current and constant prices in a PIM model (not part of SNA-NT) after the first version of SUT has been compiled in current and constant prices.

The constant price CFC figures are entered directly in the constant price compilation of SUT as a final step.

The CFC in central and local government, distributed by industries, are recorded in the following format:

Filename	The code for the government industry	Producer's Value	Codes for the NA-products	Values (million NOK)
CAPSTANT1	24751	13	751061	
CAPSTANT1	24752	13	752061	
CAPSTANT1	24800	13	758061	
CAPSTANT1	24XXX	13	XXXXX	
CAPSTANT1	25751	13	751081	
CAPSTANT1	25800	13	800081	

CAPSTANT1 shows that the data are posted in T1 as Supply of one CFC product from each government industry. The supply of each CFC product is distributed by the users in T2 in proportion to the current price CFC data.

PART III. CONSTANT PRICE COMPILATION, EXPLAINED BY THE COMPLETE SET OF EQUATIONS

5. SUT FORMAT IN CONSTANT PRICES, ILLUSTRATED BY SYMBOLS

5.1. Schematic outline of the Supply Table in constant prices.

Figure 1. COMPLETE SUPPLY TABLE (T1) IN CONSTANT PRICES

Suppliers specified by detailed NA-CPA- products in all the different value classes											
T1	10-VALUE	11-VALUE	12-VALUE	13=10+11+12	14R-VALUE	14T-VALUE	15-VALUE	16-VALUE	17-VALUE	18-VALUE	
SUPPLY of PRODUCTS	Basic value	Taxes on products	Subsidies on products	Producers\ value	Trade margin Basic value	Transport margin	Product taxes paid by traders	Product subsidies paid to traders	VAT Non deductible.	Taxes on investment	Total production
<u>Production Industries</u> 22,23,24,25,26	Hf _{di} ¹⁰	Hf _{di} ¹¹	Hf _{di} ¹²	Hf _{di} ¹³							Tf _{di}
<u>Aggregation accounts</u> 27XXX	Hf _{da} ¹⁰			Hf _{da} ¹³							Tf _{da}
27500, 27600					Hf _{da} ^{14R}	Hf _{da} ^{14T}	Hf _{da} ¹⁵	Hf _{da} ¹⁶			Tf _{da}
28XXX				Hf _{da} ¹³							Tf _{da}
29501 VAT									Hf _{da} ¹⁷		Tf _{da}
29502 Invtax										Hf _{da} ¹⁸	Tf _{da}
29505 Duty	Hf _{da} ¹⁰			Hf _{da} ¹³							
29506 Taximp		Hf _{da} ¹¹		Hf _{da} ¹³							
52XXX	Hf _{z1} ¹⁰	Hf _{z1} ¹¹	Hf _{z1} ¹²	Hf _{z1} ¹³							Tf _{z1}
Imports	Hf _{z2} ¹⁰	Hf _{z2} ¹¹	Hf _{z2} ¹²	Hf _{z2} ¹³							Tf _{z2}
SUM	Sf10'	Sf11'	Sf12'	Sf13'	Sf14R'	Sf14T'	Sf15'	Sf16'	Sf17'	Sf18'	Sf19'

NOTE: In the Supply table, shown in Figure 1, the rows and columns have been transposed compared with the format shown in table 15.1 in SNA 93. The format in Figure 1 confirms with the Matrix presentation given in table 2.5 in SNA 93 and with the simplified combined Supply and Use table, shown in Table 9.3 in ESA 95

NOTE: Figure1:

The last notation, which should have been p for products, is simplified by writing e.g. Hf_{di}¹⁰ for Hf_{di,p}¹⁰.

A value in constant prices is expressed by "f" attached to a formula.

We use the expression equations and refer to the equations number for constant prices (EqCON x) when referring to the equations but also when referring to different definitions and formula used in the constant price compilation.

The format of the Supply Table in constant prices is identical with the format of the Supply Table in current prices.

The Supply table T1 in constant prices can be illustrated by matrix Hf, defined by:

$$Hf = [hf_{i,p}^v], \quad \begin{array}{l} v \in \{1,2,\dots,a\} \\ i \in \{1,2,\dots,b\} \\ p \in \{1,2,\dots,c\} \end{array} \quad (\text{EqCON 1})$$

v represents *Value Classes* (Account type 10, 11, 12, 13, 14R, 14T, 15, 16, 17, 18)

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

d=Production and Aggregation accounts

⇒ di Production accounts, industries (Accounts from 22XXX to 26XXX)

⇒ da Aggregation accounts (Accounts from 27XXX to 29XXX)

z= Imports accounts (Accounts from 52000 to 52900)

⇒ z1 Imports, external trade (Account 52110)

⇒ z2 Imports other goods and services (Accounts from 52120-52XXX)

p represents *Products* (Accounts from 000001-999999).

- The maximum number of value classes in the Supply Table : a = 10, (Includes 10-, 11-, 12-, 13-, 14R-, 14T-, 15-, 16-, 17-, 18- values as in the Norwegian national accounts (NNA))
- Number of Production and Aggregation accounts, e (= 200 in NNA).
- Number of Imports accounts, y (= 25 in the NNA)
- Number of Products, c (= 1200 in NNA)

Tf_d equals total Supply from a Production or Aggregation account at constant prices, labelled d, defined in T1 by:

$$Tf_d = \sum_{p=1}^c hf_{dp}^{13} + \sum_{p=1}^c hf_{dp}^{14R} + \sum_{p=1}^c hf_{dp}^{14T} + \sum_{p=1}^c hf_{dp}^{15} + \sum_{p=1}^c hf_{dp}^{16} + \sum_{p=1}^c hf_{dp}^{17} + \sum_{p=1}^c hf_{dp}^{18}, d \in (1,2,\dots,e) \quad (\text{EqCON 2})$$

d represents Production or Aggregation accounts

p represents Products

Total Domestic Supply in constant prices: $Tf = \sum_{d=1}^e Tf_d$ (EqCON 3)

Tf_z equals Supply of Products from Imports at constant prices, defined in T1 by

$$Tf_z = \sum_{p=1}^c hf_{zp}^{13}, z \in (1,2,\dots,y) \quad (\text{EqCON 4})$$

Total Imports in constant prices: $Tf = \sum_{z=1}^y Tf_z$ (EqCON 5)

Sf is a row vector giving Total Domestic Supply and Imports in constant prices, specified by Products in the different value classes, defined by:

$$Sf_P^v = \sum_{d=1}^e hf_{dp}^v + \sum_{z=1}^y hf_{zp}^v \quad (\text{EqCON 6})$$

v represents *Value classes*.

d represents Production and Aggregation accounts

5.2. Schematic outline of the Use Table in constant prices.

Figure 2. COMPLETE USE TABLE (T2) in constant prices.

NA-CPA-PRODUCTS	INTERMEDIATE AND FINAL USERS					
<i>SPECIFIED BY DIFFERENT VALUE CLASSES</i>	2XXXX Production accounts Intermediate cons, Value added	6X, 8X Final domestic use	51110 Exports Goods	51XXX Exports Services		
10. Basic value	Nf_{di}^{10} Nf_{da}^{10}	Nf_{s1}^{10} Nf_{s2}^{10}	Nf_{y1}^{10}	Nf_{y2}^{10}		Sf^{10}
11. Taxes on products	Nf_{di}^{11} Nf_{da}^{11}	Nf_{s1}^{11} Nf_{s2}^{11}	Nf_{y1}^{11}	Nf_{y2}^{11}		Sf^{11}
12. Subsidies on prod.-	Nf_{di}^{12} Nf_{da}^{12}	Nf_{s1}^{12} Nf_{s2}^{12}	Nf_{y1}^{12}	Nf_{y2}^{12}		Sf^{12}
13. Producers' value = 10val. +11val. +12val.	Nf_{di}^{13} Nf_{da}^{13}	Nf_{s1}^{13} Nf_{s2}^{13}	Nf_{y1}^{13}	Nf_{y2}^{13}		Sf^{13}
14R. Retail and wholesale margins, Basic value	Nf_{di}^{14R} Nf_{da}^{14R}	Nf_{s1}^{14R} Nf_{s2}^{14R}	Nf_{y1}^{14R}			Sf^{14R}
14T. Transport margins	Nf_{di}^{14T} Nf_{da}^{14T}	Nf_{s1}^{14T} Nf_{s2}^{14T}	Nf_{y1}^{14T}			Sf^{14T}
15. Taxes on products, collected by traders	Nf_{di}^{15} Nf_{da}^{15}	Nf_{s1}^{15} Nf_{s2}^{15}	Nf_{y1}^{15}			Sf^{15}
16. Subsidies on products, paid to traders	Nf_{di}^{16} Nf_{da}^{16}	Nf_{s1}^{16} Nf_{s2}^{16}	Nf_{y1}^{16}			Sf^{16}
17. Value added tax	Nf_{di}^{17} Nf_{da}^{17}	Nf_{s1}^{17} Nf_{s2}^{17}	Nf_{y1}^{17}	Nf_{y2}^{17}		Sf^{17}
18. Tax on investment	Nf_{di}^{18} Nf_{da}^{18}	Nf_{s1}^{18} Nf_{s2}^{18}	Nf_{y1}^{18}			Sf^{18}
Intermediate input and final use at purchasers' values	Nf_{di}^{19} Nf_{da}^{19}	Nf_{s1}^{19} Nf_{s2}^{19}	Nf_{y1}^{19}	Nf_{y2}^{19}		Sf^{19}
Value added at producers' value or basic value	Bf_d'					
	Tf_d'		Tf_s'	Tf_y'		
	<i>Output at producers'' or basic values</i>					

Note: Value added is not part of the Use table (T2), as T2 is stored in the database, but has to be calculated.

NOTE: In figure 2, the last notation, which should have been p for products, is simplified by writing e.g.

$Nf_{di, p10}$ like Nf_{di}^{10} .

The complete Use table (T2) without value added in constant prices (Bfd), is defined by the matrix Nf :

$$Nf = [nf_{p,j}^v], \quad \begin{array}{l} v \in \{1,2,\dots,a\} \\ p \in \{1,2,\dots,c\} \\ j \in \{1,2,\dots,g\} \end{array} \quad (\text{EqCON 7})$$

v represents Value classes

p represents Products,

j represents Users = *d* + *s* + *y*

d represents Production- and Aggregation accounts;

di represents production accounts for industries,

da represents aggregation accounts

s represents final domestic use

s1 represents household final consumption expenditure (account 61XXX)

s2 represents final use excl. household consumption and exports

y represents Exports (account 51XXX);

y1 represents exports (external trade of goods) (account 51110),

y2 represents exports of other goods and services (accounts 51XXX excl. 51110)

Maximum number of **V**, value classes in the Use Table : **a** = 10, (10-, 11-, 12- 13-, 14-, 15-, 16-, 17-, 18-, 19-values).

- Number of **P**, Products, **c** (= 1200 in the NNA)
- Number of **J**, Users (Production, Aggregation and Final use accounts), **g** (= 715 in NNA).
- Number of **d**, production and aggregation accounts: **e** (= 275 in the NNA).
- Number of **s**, domestic, final user accounts, **u** (= 434 in the NNA).
- Number of **y**, export accounts: **b** (= 6 in the NNA).

The total of products in constant prices, as intermediate input into Production and Aggregation accounts (**d**), in purchasers' value (19-values), is expressed by:

$$Tf_d = \sum_{p=1}^c nf_{pd}^{19}, \quad d \in (1,2,\dots,e) \quad (\text{EqCON 8})$$

Value added in constant prices (Bf'_d) (specified by production- and aggregation accounts) is calculated in the Use table T2, as:

$$.Bf'_d = [bf'_d] = Tf_d - \sum_{p=1}^c nf_{pd}^{19} \quad d \in (1,2,\dots,e) \quad (\text{EqCON 9})$$

p represents Products,

d represents Production- and Aggregation accounts

Note: For the Aggregation accounts 27XXX and 28XXX, the Value added in constant prices, expressed by Bf'_d, should always be zero, but the figures have to be checked!

Total domestic final use in constant prices T_{fs} is decided in T2 as sum final use in 19-values in constant prices.

$$Tf'_s = \sum_{p=1}^c nf_{ps}^{19}, s \in (1, 2, \dots, u) \quad (\text{EqCON 10})$$

p represents products

s represents domestic final use accounts

Total exports in constant prices T_{fy} is decided in T2 and is identical with sum exports in 19-values:

$$Tf'_y = \sum_{p=1}^c nf_{py}^{19}, y \in (1, 2, \dots, b) \quad (\text{EqCON 11})$$

p represents products,

y represents Exports

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

$$Sf = [sf_p^v] = \sum_{j=1}^g nf_{pj}^v, \quad \begin{matrix} v \in \{1, 2, \dots, a\} \\ p \in \{1, 2, \dots, c\} \end{matrix} \quad (\text{EqCON 12})$$

v represents Types of valuation,

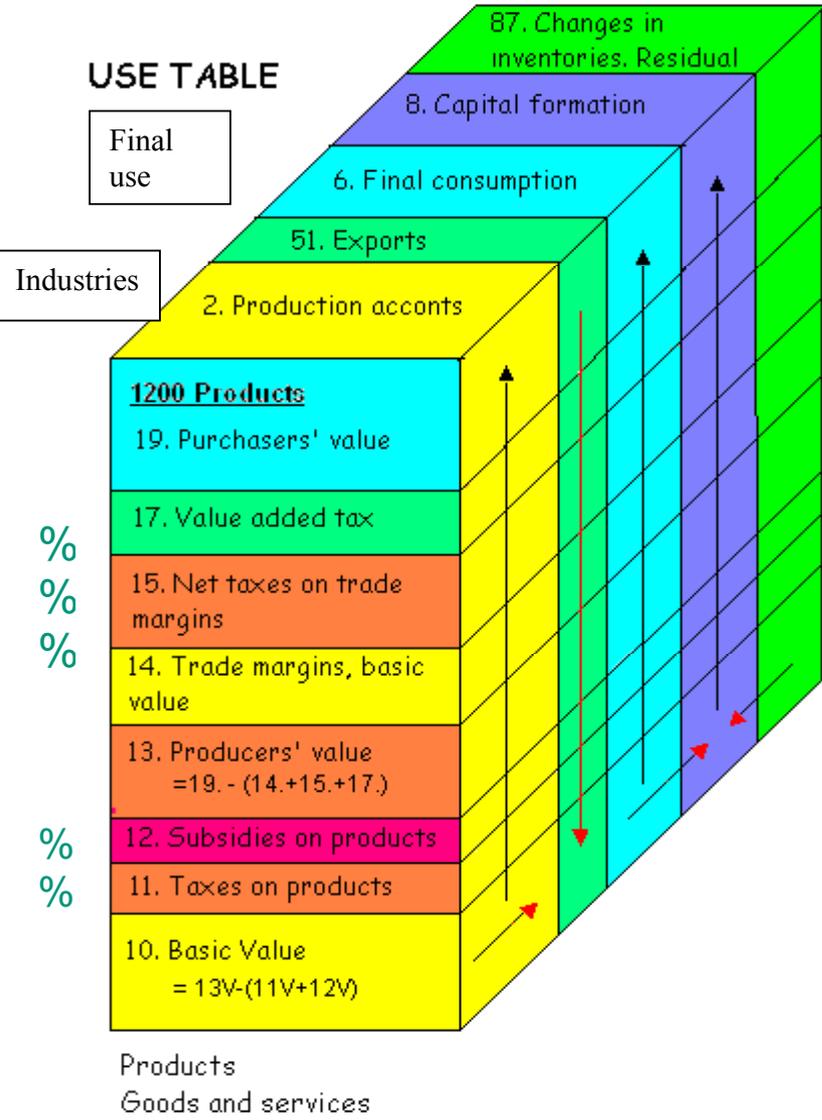
p represents Products,

j represents Users

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 (T2). 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:

$$Nf_{p,y}^{19} = [nf_{p,y}^{19}] = \begin{bmatrix} \frac{1}{YP_p^{19}} n_{1,1}^{19} & \cdot & \cdot & \frac{1}{YP_p^{19}} n_{1,b}^{19} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{1}{YP_c^{19}} n_{c,1}^{19} & \cdot & \cdot & \frac{1}{YP_c^{19}} n_{c,b}^{19} \end{bmatrix} \quad (\text{EqCON 13})$$

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 Export from external trade (account 51110) and other exports of goods and services (account 51120-51999)

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

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" $V_{p,y}^{14R/19}$ on the basis of T2 from year t-1, can be expressed by:

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

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

p represents Products,

y represents Exports (account 51110 to 51999)

$$\mathbf{Nf}_{p,y}^{14R} = [nf_{p,y}^{14R}] = \begin{bmatrix} vf_{11}^{14R/19} nf_{11}^{19} & \cdot & \cdot & vf_{1b}^{14R/19} nf_{1b}^{19} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ vf_{c1}^{14R/19} nf_{c1}^{19} & \cdot & \cdot & vf_{cb}^{14R/19} nf_{cb}^{19} \end{bmatrix} \quad (\text{EqCON 15})$$

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

where $\mathbf{Vf}_{p,y}^{14R/19}$ are "Basic trade margin rates" and of the same dimension as N.

Every element in matrices $\mathbf{Nf}_{p,y}^{14R}$ 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:

$$[v_{p,y}^{14T/19}] = \begin{bmatrix} \frac{1}{n_{1,1}^{19}} n_{1,1}^{14T} & \cdot & \cdot & \frac{1}{n_{1,b}^{19}} n_{1,b}^{14T} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{1}{n_{c,1}^{19}} n_{c,1}^{14T} & \cdot & \cdot & \frac{1}{n_{c,b}^{19}} n_{c,b}^{14T} \end{bmatrix} \quad (\text{EqCON 16})$$

and

$$[nf_{p,y}^{14T}] = \begin{bmatrix} vf_{11}^{14T/19} nf_{11}^{19} & \cdot & \cdot & vf_{1b}^{14T/19} nf_{1b}^{19} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ vf_{c1}^{14T/19} nf_{c1}^{19} & \cdot & \cdot & vf_{cb}^{14T/19} nf_{cb}^{19} \end{bmatrix} \quad (\text{EqCON 17})$$

6.3. Use Table (T2) Deflation of Product taxes and Product subsidies related to exports. [STAGE 3]

The routines for constant price calculation of taxes and subsidies for exports are in general as for domestic use. Exports will normally have no VAT, but for some products, there might be product taxes or subsidies on exports.

Constant price calculation follows for product taxes (15-values) and product subsidies (16-values) associated to trade margins (14-values) and for product subsidies (12-values) and product taxes (11-value).

Product taxes attached to trade margins are calculated in T2 by using product taxes from year t-1, ($A^{15/19}$) multiplied with constant price figures for product flows in purchasers' value (19-value). "Basic rates" from year t-1 for product taxes attached to trade margins ($A^{15/19}$), is calculated in relation to 19-values.

Calculation of product taxes rates $A_{p,y}^{15/19}$ based on T2 in current prices from year t-1 is expressed by:

$$[A_{p,y}^{15/19}] = \begin{bmatrix} \frac{1}{n_{1,1}^{19}} n_{1,1}^{15} & \cdot & \cdot & \frac{1}{n_{1,b}^{19}} n_{1,b}^{15} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{1}{n_{c,1}^{19}} n_{c,1}^{15} & \cdot & \cdot & \frac{1}{n_{c,b}^{19}} n_{c,b}^{15} \end{bmatrix} \quad (\text{EqCON 18})$$

where $A_{p,y}^{15/19}$ calculated for year t-1 in current prices, is identical with $A_{p,y}^{15/19}$ that is the basic rates for calculation of constant price figures for product taxes in year t.

p represents Products,

y represents Exports (account 51110 - 51999)

Constant price figures for the product taxes paid by traders on exports in 15-value, $N_{p,y}^{15}$ is decided by:

$$N_{p,y}^{15} = [nf_{p,y}^{15}] = \begin{bmatrix} af_{1,1}^{15/19} nf_{1,1}^{19} & \cdot & \cdot & af_{1,b}^{15/19} nf_{1,b}^{19} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ af_{c,1}^{15/19} nf_{c,1}^{19} & \cdot & \cdot & af_{c,b}^{15/19} nf_{c,b}^{19} \end{bmatrix} \quad (\text{EqCON 19})$$

where $A_{p,y}^{15/19}$ is the "basic rates" and of the same dimension as N.

Each element in the matrix $N_{p,y}^{15}$ is multiplied with the corresponding element in the matrix $A_{p,y}^{15/19}$.

p represents Products,

y represents Exports (account 51110 to account 51999)

Constant price figures for product subsidies (16-values) are calculated in the same way as for the product taxes.

$$[A_{p,y}^{16/19}] = \begin{bmatrix} \frac{1}{n_{1,1}^{19}} n_{1,1}^{16} & \cdot & \cdot & \frac{1}{n_{1,b}^{19}} n_{1,b}^{16} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{1}{n_{c,1}^{19}} n_{c,1}^{16} & \cdot & \cdot & \frac{1}{n_{c,b}^{19}} n_{c,b}^{16} \end{bmatrix} \quad (\text{EqCON 20})$$

$$[nf_{p,y}^{16}] = \begin{bmatrix} af_{1,1}^{16/19} nf_{1,1}^{19} & \cdot & \cdot & af_{1,b}^{16/19} nf_{1,b}^{19} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ af_{c,1}^{16/19} nf_{c,1}^{19} & \cdot & \cdot & af_{c,b}^{16/19} nf_{c,b}^{19} \end{bmatrix} \quad (\text{EqCON 21})$$

After having calculated trade margins (14R-values), transport margins (14T-values), product taxes related to trade margins (15-values) and product subsidies related to trade margins (16-values) in constant prices, constant price figures for exports in producers' value (13-values) will be calculated expressed by Nf_y^{13} .

$$Nf_y^{13}: \text{ is calculated as: } Nf_y^{13} = Nf_y^{19} - Nf_y^{14R} - Nf_y^{14T} - Nf_y^{15} - Nf_y^{16} \quad (\text{EqCON 22})$$

Following this, also the constant price figures for the matrices for exports in 12-value, 11-values and 10-values are calculated.

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 $Af_{p,y}^{11/19}$ from the Use table (T2) in current prices from year t-1, is expressed by:

$$[A_{p,y}^{11/19}] = \begin{bmatrix} \frac{1}{n_{1,1}^{19}} n_{1,1}^{11} & \cdot & \cdot & \frac{1}{n_{1,b}^{19}} n_{1,b}^{11} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{1}{n_{c,1}^{19}} n_{c,1}^{11} & \cdot & \cdot & \frac{1}{n_{c,b}^{19}} n_{c,b}^{11} \end{bmatrix} \quad (\text{EqCON 23})$$

where $A_{p,y}^{11/19}$ calculated for SUT for the year t-1 in current prices, is identical with $Af_{p,y}^{11/19}$ 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:

$$Nf_{p,y}^{11} \text{ is expressed by } [nf_{p,y}^{11}] = \begin{bmatrix} af_{1,1}^{11/19} nf_{1,1}^{19} & \cdot & \cdot & af_{1,b}^{11/19} nf_{1,b}^{19} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ af_{c,1}^{11/19} nf_{c,1}^{19} & \cdot & \cdot & af_{c,b}^{11/19} nf_{c,b}^{19} \end{bmatrix} \quad (\text{EqCON 24})$$

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

Every element in the matrix $Nf_{p,y}^{19}$ is multiplied with the same element in the matrix $Af_{p,y}^{11/19}$.

p represents Products,

y represents Exports (account 51110 to account 51999)

Calculation of basic rates for product taxes $Af_{p,y}^{11}$ from the Use table (T2) in current prices from year t-1, is expressed by:

Basic rates for products subsidies $Af_{p,y}^{12/19}$ (negative figures) and Constant price figures for the matrix for exports i 12-values $Nf_{p,y}^{12}$ (negative figure) is calculated as for product taxes.

By substituting 11 for 11-values with 12 for 12-values in the equation 23 and 24 above, the equations (EqCON 25) and (EqCON 26) will describe the calculation of product subsidies $Nf_{p,y}^{12}$.

Exports in constant prices, calculated in basic value (10-values) is expressed by:

$$Nf_y^{10} \quad \text{calculated as} \quad Nf_y^{10} = Nf_y^{13} - Nf_y^{11} - Nf_y^{12} \quad (\text{EqCON 27})$$

6.4. Use Table (T2) Calculation of price indices for Exports in producers' values and basic values [STAGE 4]

Price indices for exports in 13-values and 10-values are used for the constant price calculation of domestic production, as described in chapter 7.3 and 7.4 .

$N_{p,y}^{13}$ is sum of exports of goods at current prices in 13-values

$Nf_{p,y}^{13}$ is sum of exports of services at constant prices in 13-values

Price indices for exports of each of the products in 13-values, YP_p^{13} is calculated as:

$$YP_p^{13} = \left(\frac{n_{p,y}^{13}}{nf_{p,y}^{13}} \right) \times 100 \quad (\text{EqCON 28})$$

$N_{p,y}^{10}$ 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:

$$YP_p^{10} = \left(\frac{n_{p,y}^{10}}{nf_{p,y}^{10}} \right) \times 100 \quad (\text{EqCON 29})$$

7. SUPPLY TABLE (T1). 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 or in producers' value, see chapter 7.3 and 7.4.

For domestic production deflation can start either from basic values (10-values) or producers' values (13-values) depending on the type of price indices available.

The calculation of domestic supply of products in constant prices are done either for:

- the matrix with supply of products in basic values (10-values), expressed by Hf^{10}

OR:

- the matrix with supply of products in producers' value (13-values), expressed by Hf^{13} ;
- the matrix of product taxes and subsidies for products 12- and 11-values, expressed by Hf^{12} and Hf^{11} ;
- the matrix of products in basic values (10-values), expressed by Hf^{10} ;

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

For other imports (other goods and services) (account 52XXX x 10XXXXXX) $Hf_{z,p}^{10}$, the constant price figures are calculated by dividing with price indices (ZP_p^{10}) for products from imports. Calculation of $Hf_{z,p}^{10}$ is expressed by:

$$[hf_{z,p}^{10}] = \begin{bmatrix} \frac{1}{ZP_1^{10}} h_{1,1}^{10} & \dots & \frac{1}{ZP_c^{10}} h_{1,c}^{10} \\ \dots & \dots & \dots \\ \frac{1}{ZP_1^{10}} h_{z,1}^{10} & \dots & \frac{1}{ZP_c^{10}} H_{z,c}^{10} \end{bmatrix} \quad (\text{EqCON 30})$$

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

p = products.

Z = imports (account 52110 to account 52999)

Every element in the matrix H is divided with the corresponding element in the matrix ZP.

NOTE: Figures for CUSTOM DUTY distributed by NA-CPA-products are taken from the External trade statistics. (account 29505 x 10XXXXXX). $Hf_{29505,p}^{10}$ is calculated in constant price by dividing with the same

set of price indices (ZP_p^{10}) by products as used for the constant price compilation for the same products from imports.

Calculation of $Hf_{29505,p}$, is expressed by:

$$[hf_{29505,p}^{10}] = \left[\frac{1}{ZP_l^{10}} h_{29505,l}^{10} \cdot \cdot \cdot \frac{1}{ZP_c^{10}} h_{29505,c}^{10} \right] \quad (\text{EqCON 31})$$

where ZP_p^{10} is the price indices for imported products and of the same dimension as H.

$p = \text{products}$.

29505 = account for CUSTOM DUTY

Every element in the matrix H is divided with the corresponding element in the matrix ZP.

7.3. Deflation of Domestic production in basic value [STAGE 6.1]

For products where the selected price indices for domestic production to domestic use in the "SAM catalogue" are for basic values (DIP_p^{10}), the constant price calculation start with 10-values. This will always be the case for those industries where input price indices are used and also for the "Aggregation accounts".

Domestic production in constant prices expressed by Hf_{dp}^{10} (Accounts 22XXX - 26XXX) 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:

Alternative 1

For product P: Domestic production ($H_{d,p}^{10}$) greater than exports $N_{p,y}^{10}$ (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: $(H_{d,p}^{10} - N_{py}^{10})$

$$DP_p^{10} = \frac{h_{dp}^{10}}{\frac{h_{dp}^{10} - n_{p,y}^{10}}{DIP_p^{10}} + \frac{n_{p,y}^{10}}{YP_p^{10}}} \quad (\text{EqCON 32})$$

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

Alternative 2

For product P: Domestic production $H_{d,p}^{10}$ less than exports $N_{p,y}^{10}$ (The special case):

$$DP_p^{10} = YP_p^{10} \quad (\text{EqCON 33})$$

Constant price compilation of domestic production $H_{d,p}^{10}$ can be expressed by:

$$[hf_{dp}^{10}] = \begin{bmatrix} \frac{1}{DP_l^{10}} h_{l,i}^{10} & \cdot & \cdot & \frac{1}{DP_c^{10}} h_{i,c}^{10} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{1}{DP_l^{10}} h_{e,l}^{10} & \cdot & \cdot & \frac{1}{DP_p^{10}} H_{e,c}^{10} \end{bmatrix} \quad (\text{EqCON 34})$$

DP is calculated as the average price index for domestic produced products and of the same dimension as H. The elements in the matrix H in current prices are divided with the corresponding elements in the matrix DP.

7.4. Deflation of Domestic production from producers' value [STAGE 6.2]

For products where the selected price indices for domestic production to domestic use in the "SAM catalogue" are for producers' values (DIP_p^{13}), the constant price calculation start with 13-values.

Domestic production in constant prices expressed by Hf_{dp}^{13} (Accounts 22XXX - 26XXX) is calculated by dividing the figures in current value in 13-value, with a set of price indices, marked with DP_p^{13} . The price index DP_p^{13} has to be compiled for each product supplied from domestic production (Account 22XXX - 26XXX) in producers' value (13-values).

The price index for a product from domestic production in producers' value (13-values) (DP_p^{13}) is calculated as a weighted average of the price index for the product from domestic production to domestic use DIP_p^{13} and the price index for the product to exports, all in producers' value YP_p^{13} . Calculation of price indices for exports in 13-values (YP_p^{13}), is described in chapter 6.5.

To be able to calculate the weighted price index DP_p^{13} , the total domestic production in current prices is split between:

- Domestic production in producers' value to exports (without re-exports): N_{py}^{13} .
- Domestic production in producers' value supplied to the domestic market: $(H_{dp}^{13} - N_{py}^{13})$

When calculating these figures, an automatic assumption is made about how much of the total exports of every product are supplied from domestic production. 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 as 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:

ALTERNATIVE 1

For product P: Domestic production ($H_{d,p}^{13}$) greater than exports $N_{p,y}^{13}$ (The normal case):

Domestic production (in 13-value) supplied to the domestic market: ($H_{d,p}^{13} - N_{p,y}^{13}$)

Domestic production (in 13-value) supplied to exports (without re-exports) $N_{p,y}^{13}$

$$DP_p^{13} = \frac{h_p^{13}}{\frac{h_p^{13} - n_{p,y}^{13}}{D} IP_p^{13} + \frac{n_{p,y}^{13}}{YP_p^{13}}} \quad \text{(EqCON 35)}$$

$H_{d,p}^{13}$ = total domestic production of product p

$N_{p,y}^{13}$ = total exports of product p

DIP_p^{13} = producer price index for supply to the domestic market

YP_p^{13} = price index for exports

ALTERNATIVE 2

For product P: Domestic production ($H_{d,p}^{13}$) less than total exports $N_{p,y}^{13}$:

$$DP_p^{13} = YP_p^{13} \quad \text{(EqCON 36)}$$

Domestic production in constant prices, expressed by Hf_{dp} (Account 22XXX - 26XXX) is calculated by dividing the figures in current prices, in 13-values, with a set of price indices, marked with DP_p .

Calculation of Hf_{dp} can be expressed by:

$$[hf_{dp}^{13}] = \begin{bmatrix} \frac{1}{DP_i^{13}} h_{1,l}^{13} & \cdot & \cdot & \frac{1}{DP_c^{13}} h_{1,c}^{13} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{1}{DP_i^{13}} h_{e,l}^{13} & \cdot & \cdot & \frac{1}{DP_p^{13}} H_{e,c}^{13} \end{bmatrix} \quad \text{(EqCON 37)}$$

where DP is the calculated price indices for domestic produced products and of the same dimension some H.

Every element in the matrix H i current prices is divided with the corresponding element in the matrix DP.

7.5. Constant price figures for Product taxes and Product subsidies (11- and 12-values)

To be able to balance T1 and T2, constant price figures have to be compiled in 10-values for all products.

For products where the selected price indices in the "SAM catalogue " are for basic values, the constant price figures are compiled directly in basic values.

For the products where constant price figures first are calculated for 13-values, constant price figures for 11-values (product taxes) and 12-values (subsidies) have to be calculated first to get 10-values for these products.

Constant prices for 11-and 12-values are calculated from 13-values. Product taxes and subsidies in constant prices are calculated in T1 by multiplying the "basic rates" from year t-1 for product taxes ($A^{11/13}$), and for product subsidies ($A^{12/13}$) with the Constant price figures for supply of products in producer's value (13-values).

Calculation of basic rates for product taxes $A_{d,p}^{11/13}$, based on T1 in current prices from year t-1, is expressed by:

$$[A_{d,p}^{11/13}] = \begin{bmatrix} \frac{1}{h_{1,l}^{13}} h_{1,l}^{11} & \cdot & \cdot & \frac{1}{h_{1,c}^{13}} h_{1,c}^{11} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{1}{h_{e,l}^{13}} h_{e,l}^{11} & \cdot & \cdot & \frac{1}{h_{e,c}^{13}} h_{e,c}^{11} \end{bmatrix} \quad (\text{EqCON 38})$$

where $A_{d,p}^{11/13}$ calculated for **t-1 in current prices, is identical with $A_{d,p}^{11/13}$** , which is the basic rates, used for calculation of constant price figures for product taxes for the year t.

d represents Domestic producers (account 22XXX to account 26XXX)
p represents Products,

REMEMBER: Calculation of 12-and 11- values will only be done at this stage for the products where the constant price figures for 13-values have been calculated first, i.e. for those products where 13-values are selected from the "SAM catalogue". (For products where 10-values are selected, the constant price figures are already calculated. This direct calculated constant price figures in 10-values will be kept.

$$\mathbf{Hf}_{d,p}^{11} \text{ is calculated as : } Hf^{11} = [hf_{dp}^{11}] = \begin{bmatrix} a_{1l}^{11/13} hf_{1l}^{13} & \cdot & \cdot & a_{1c}^{11/13} hf_{1c}^{13} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ a_{el}^{11/13} hf_{el}^{13} & \cdot & \cdot & a_{ec}^{11/13} hf_{ec}^{13} \end{bmatrix} \quad (\text{EqCON 39})$$

where A is the product tax matrix rates from year t-1, with the same dimension as H.
 Every element in the matrix $Hf_{d,p}^{11}$ is multiplied with the corresponding element in the matrix $A_{d,p}^{11/13}$.

d represents Domestic producers (account 22XXX to 26XXX)
p represents Products,

The "Basic rate" for product subsidies $\mathbf{Af}_{d,p}^{12/13}$ (negative figures) and Constant price figures for the matrix for domestic supply in 12-values $\mathbf{Hf}_{d,p}^{12}$ (negative figures) are calculated in the same way as for product taxes.

$$\mathbf{Hf}_{d,p}^{12} \text{ is calculated as : } Hf^{12} = [hf_{dp}^{12}] = \begin{bmatrix} a_{11}^{12/13} hf_{11}^{13} & \cdot & \cdot & a_{1c}^{12/13} hf_{1c}^{13} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ a_{e1}^{12/13} hf_{e1}^{13} & \cdot & \cdot & a_{ec}^{12/13} hf_{ec}^{13} \end{bmatrix} \quad (\text{EqCON 40})$$

where A is the product subsidy matrix rates from year t-1 and of the same dimension as H.

Every element in the matrix $\mathbf{Hf}_{d,p}^{13}$ is multiplied with the corresponding element in the matrix $\mathbf{Af}_{d,p}^{12/13}$.

Production in constant prices, in basic value (10-values) is expressed by \mathbf{Hf}^{10} .

$$\mathbf{Hf}^{10} \text{ is decided as the difference: } Hf^{10} = Hf^{13} - Hf^{11} - Hf^{12} \quad (\text{EqCON 41})$$

8. BALANCING T1 AND T2 IN BASIC VALUE IN CONSTANT PRICES

8.1. Balancing Supply and Use 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}

\mathbf{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^{d0} in the Use table (T2).

$$N_p = D_p : N_{p,y} \quad (\text{EqCON 42})$$

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:
$$\sum_{d+s=1}^{e+\tilde{U}} df_{p,d+s}^{10} = Sf_p^{10} - \sum_{y=1}^b nf_{py}^{10} \quad (\text{EqCON 43})$$

NOTE: 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 :

$$df_{p,d+s}^{10} = d_{p,d+s}^{10} \times \frac{\sum_{d+s=1}^{e+\tilde{U}} df_{p,d+s}^{10}}{\sum_{d+s=1}^{e+\tilde{U}} d_{p,d+s}^{10}} \quad (\text{EqCON 44})$$

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” ($V^{14R/10}$) 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:

$$[V_{p,d+s}^{14R/10}] = \begin{bmatrix} \frac{1}{d_{1,1}^{10}} d_{1,1}^{14R} & \cdot & \cdot & \frac{1}{d_{1,d+s}^{10}} d_{1,d+s}^{14R} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{1}{d_{p,1}^{10}} d_{p,1}^{14R} & \cdot & \cdot & \frac{1}{d_{p,d+s}^{10}} d_{p,d+s}^{14R} \end{bmatrix} \quad (\text{EqCON 45})$$

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 :

$$Df^{14R} = [df_{p,d+s}^{14R}] = \begin{bmatrix} v_{1,1}^{14R/10} df_{1,1}^{10} & \cdot & \cdot & v_{1,d+s}^{14R/10} df_{1,d+s}^{10} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ v_{p,1}^{14R/10} df_{p,1}^{10} & \cdot & \cdot & v_{p,d+s}^{14R/10} df_{p,d+s}^{10} \end{bmatrix} \quad (\text{EqCON 46})$$

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.

$$[V_{p,d+s}^{14T/10}] = \begin{bmatrix} \frac{1}{d_{1,1}^{10}} d_{1,1}^{14T} & \cdot & \cdot & \frac{1}{d_{1,d+s}^{10}} d_{1,d+s}^{14T} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{1}{d_{p,1}^{10}} d_{p,1}^{14T} & \cdot & \cdot & \frac{1}{d_{p,d+s}^{10}} d_{p,d+s}^{14T} \end{bmatrix} \quad (\text{EqCON 47})$$

$$Df^{14T} = [df_{p,d+s}^{14T}] = \begin{bmatrix} v_{1,1}^{14T/10} df_{1,1}^{10} & \cdot & \cdot & v_{1,d+s}^{14T/10} df_{1,d+s}^{10} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ v_{p,1}^{14T/10} df_{p,1}^{10} & \cdot & \cdot & v_{p,d+s}^{14T/10} df_{p,d+s}^{10} \end{bmatrix} \quad (\text{EqCON 48})$$

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 $A_{p, ill}^{10}$ on the basis of T2 in current prices from year t-1, is expressed by:

$$[A_{p,d+s}^{11/10}] = \begin{bmatrix} \frac{1}{d_{1,1}^{10}} d_{1,1}^{11} & \cdot & \cdot & \frac{1}{d_{1,d+s}^{10}} d_{1,d+s}^{11} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{1}{d_{p,1}^{10}} d_{p,1}^{11} & \cdot & \cdot & \frac{1}{d_{p,d+s}^{10}} d_{p,d+s}^{11} \end{bmatrix} \quad (\text{EqCON 49})$$

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, $\mathbf{Df}_{p,d+s}^{11}$, is calculated as:

$$Df^{11} = [df_{p,d+s}^{11}] = \begin{bmatrix} a_{11}^{11/10} df_{11}^{10} & \cdot & \cdot & a_{1,d+s}^{11/10} df_{1,d+s}^{10} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ a_{p1}^{11/10} df_{p1}^{10} & \cdot & \cdot & a_{p,d+s}^{11/10} df_{p,d+s}^{10} \end{bmatrix} \quad (\text{EqCON 50})$$

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

Every element in the matrix $\mathbf{Df}_{p,d+s}^{11}$ is multiplied with the corresponding element in the matrix $\mathbf{Af}_{p,d+s}^{11/10}$.

Basic rates for product subsidies $\mathbf{Af}_{p,d+s}^{12/10}$ (negative figures) and constant price figures for the matrix $\mathbf{Df}_{p,d+s}^{12}$ (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, $\mathbf{Df}_{p,d+s}^{12}$.

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

$$Df^{13} = Df^{10} + Df^{11} + Df^{12} \quad (\text{EqCON 53})$$

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

Basic rates for product taxes $\mathbf{Af}_{p,d+s}^{15/10}$ related to trade margins and constant price figures for the matrix $\mathbf{Df}_{p,d+s}^{15}$ are calculated as for product taxes $\mathbf{Af}_{p,d+s}^{11/10}$. By replacing 11 for 11-values with 15 for 15-values in Equation 49 and Equation 50 above, we get **Equations 54** and **Equation 55**, expressing the calculation of the product taxes related to trade margins in 15-values, $\mathbf{Df}_{p,d+s}^{15}$.

Basic rates for product subsidies $\mathbf{Af}_{p,d+s}^{16/10}$ related to trade margins (negative figures), and constant price figures for the matrix $\mathbf{Df}_{p,d+s}^{16}$ is calculated in the same way as for product taxes $\mathbf{Af}_{p,d+s}^{11/10}$. By replacing 11 for 11-values with 16 for 16-values in Equation 49 and Equation 50 above, we get **Equations 56** and **Equation 57**, expressing the calculation of the product subsidies related to trade margins in 16-values, $\mathbf{Df}_{p,d+s}^{16}$.

Basic rates for value added tax (A2¹⁷) and constant price figures for the matrix $\mathbf{Df}_{p,d+s}^{17}$ are calculated in the same way as for product taxes. By replacing 11 for 11-values with 17 for 17-values in Equation 49 and Equation 50 above, we get **Equations 58** and **Equation 59**, expressing the calculation of the VAT matrix in 17-values, $\mathbf{Df}_{p,d+s}^{17}$.

Basic rates for investments tax (A2¹⁸) and constant price figures for the matrix $\mathbf{Df}_{p,d+s}^{18}$ are calculated in the same way as for product taxes. By replacing 11 for 11-values with 18 for 18-values in Equation 49 and Equation 50 above, we get **Equations 60** and **Equation 61**, expressing the calculation of the $\mathbf{Df}_{p,d+s}^{18}$.

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

$$Df^{19} = Df^{13} + Df^{14R} + Df^{14T} + Df^{15} + Df^{16} + Df^{17} + Df^{18} \quad (\text{EqCON 62})$$

$Sf_p^{11}, Sf_p^{12}, Sf_p^{14R}, Sf_p^{14T}, Sf_p^{15}, Sf_p^{16}, Sf_p^{17}, Sf_p^{18}$ are decided as the row totals in T2, see chapter 5.2, figure 2. The row totals in T2 are transferred to T1 to decide the column totals in T1, see chapter 5.1, figure 1.

10. BALANCING THE CONSTANT PRICE FIGURES FOR THE "AGGREGATION ACCOUNTS"

10.1. Balancing aggregation accounts 27015 - 27292 and 28111 - 28990 in constant prices. [STAGE 10].

Each of the "Aggregation accounts " will receive the detailed products allocated to the accounts, but by an automatic procedure only supply one "Aggregation product". As an example account 27015 will only supply the product 000015.

The accounts for undistributed intermediate consumption 27015 to 27299 will supply products with the codes 000015-000299 (products for intermediate consumption)

The accounts for capital formation by type 28111 to 28990 will supply products with the codes 008111 to 008990 (capital types for GFCF)

During the automatic deflation process, constant price figures are calculated for the intermediate input to the aggregation accounts in the Use table (T2). The total constant price figure for input is aggregated and transferred to the Supply table T1 as production in 13- values in constant prices, expressed by:

$$Hf_{ds,ps}^{13} = \sum_{p=1}^n df_{p,ds}^{19} \quad (\text{EqCON 63})$$

ps represents products from the aggregation accounts (000015 - 000299 or 008111 - 008990)

p represents ordinary products

ds represents Aggregation accounts (27015 - 27299 or 28111 - 28990)

The supply of each aggregation product is equal to total use in T2.

There are no exports or import of these products.

To decide constant price figures for the different domestic uses of an "aggregation" product, total domestic use compiled in constant prices Df_{ps}^{13} , is distributed in proportion to the domestic use of the product in current prices.

Constant price figures for domestic use of products ps to the users, d+s, in 13-values, is decided as:

$$df_{ps,d+s}^{13} = d_{ps,d+s}^{13} \times \frac{\sum_{d+s=1}^{e+\bar{U}} df_{ps,d+s}^{13}}{\sum_{d+s=1}^{e+\bar{U}} d_{ps,d+s}^{13}} \quad (\text{EqCON 64})$$

(3)

ps represents products from aggregation accounts (000015 - 000299 or 008111 - 008990)
d+s represents domestic users (27015 - 27292 or 28111 - 28990)

10-values are decided identical to 13-values. Finally 17-and 18-values are calculated with the rates from year t-1, as decided in equation 58 - 61. For these accounts 19-values are decided as the total of the 13-, 17- and 18-values.

10.2. Products with the code 009100 - 009990 (transactions in used capital goods):

These products exist only in the Use tale T2 as products delivered to the accounts for capital investment and to exports.

Price indices for these products are assumed to be the same as the price indices for similar new capital (008111-008990) products. They may be registered in the "SAM catalogue", but it is more convenient to use the "cost indices catalogue", see the Users' guide. The constant price figures have to be compiled on the Users side because the total on the users side cannot be transferred from the Supply side as for other products.

Constant price figures for the use of these products is decided as:

$$df_{ps,s}^{13} = \frac{d_{ps,s}^{13}}{dp_{ps}^{13}} \quad (\text{EqCON 65})$$

s represents users (51xxx, 61xxx and 82000 to 87999)
ps represents aggregation products (009xxx)
dp represents price indices for the aggregation products

10-and 19-values are identical with 13-values. There are no product taxes or margins on these products.

10.3. Balancing the technical accounts 27500 Trade margins in constant prices

The trade margins at basic values (14R-values), product taxes collected by the traders (15-values) and product subsidies paid to the traders (16-values) are calculated in constant prices in the Use table (T2), specified by products and users, see chapter 9.

These values Sf_p^{14R} , Sf_p^{15} , Sf_p^{16} are aggregated by users, but specified by products, and transferred to T1 with the supplier code 27500.

Sf_p^{14R} is identical with the column totals in T1 and also identical with the supply in basic value (10-values) from the aggregation account for trade margins $Hf_{27500,p}^{14R}$ (27500 x 14RXXXXXX).

Sf_p^{15} is identical with the column totals in T1 and also identical with the product taxes (15-values) paid by the trade industry allocated from the aggregation account for trade margins $Hf_{27500,p}^{15}$ (27500 x 15XXXXXX).

Sf_p^{16} is identical with the column totals in T1 and also identical with the product subsidies (16-values) paid to the trade industry allocated to the aggregation account for trade margins $Hf_{27600,p}^{16}$ (27600 x 16XXXXXX).

In T2 the account 27500 receives the following products:

Norwegian case:

510100 Trade margin on wholesale trade services

521100 Trade margin on retail trade services

Slovenian case:

511000 Trade margin on wholesale trade services

521000 Trade margin on retail trade services

Bulgarian case

506000 Trade margin on motor vehicles

510000 Trade margin on wholesale trade services

528000 Trade margin on retail trade services, except motor vehicles

Aggregation account 27500 is balanced in constant prices by an automatic adjustment of 27500 in T2, to ensure that the sum of 27500 at basic values (10-values) in T2 is equal to the sum of Trade margins (14R-values) in T1. This is done by proportional adjustment of the main trade margin products delivered to account 27500, as registered in the SNA-NT software for each country .

The account 27500 might also receive other products as in the Norwegian case:

401035 Sale of electrical energy to the household

401036 Sale of electrical energy to other industries

501000 Trade margin on motor vehicles

505000 Trade margin on fuel

These products are not changed during this balancing process in constant prices

The sum of 11-values in T2 is made equal to the sum of 11-values in T1, by proportional adjustment. The same is done for 12-values. The 13- and 19-values are calculated by summation.

In T1:

The Norwegian case:

The constant price figures for the supply from industry 23510 of the wholesale margin product 510100 and from the industry 23521 of the retail trade margin product 521100 in 10-values are corrected and set equal to the use of the same in account 27500 in T2. 11-values and 12-values are added in order to get 13-values.

The Slovenian case:

The constant price figures for the supply from industry 23510 of the wholesale margin product 511000 and from the industry 23521 of the retail trade margin product 521000 in 10-values are corrected and set equal to the use of the same in account 27500 in T2. 11-values and 12-values are added in order to get 13-values.

The Bulgarian case:

The constant price figures for the supply from industry 23500 of the product 506000 *Trade margin on motor vehicles* and from the industry 23510 of the product 510000 *Trade margin on wholesale trade services* and from the industry 23520 of product 528000 *Trade margin on retail trade services, except motor vehicles all* in 10-values are corrected and set equal to the use of the same in account 27500 in T2. 11-values and 12-values are added in order to get 13-values.

10.4. Balancing the technical accounts 27600 Transport margins in constant prices

In the Norwegian case , the aggregation account for transport margins only covers transport of electricity and transport of oil and gas by pipelines. This two different transport margins are balanced separately:

Transport of electricity

The transport margin for electricity in constant prices is balanced in a similar way as for trade margins. The starting point is 14T-value on the electricity products 40101x in T2. These are summed by products and transferred to T1 with the supplier code 27600. Account 27600 is balanced by automatic adjusting the use of the product 401040 in 27600 in T2, to ensure that the sum of 10 values in T2 is equal to the sum of the 14T-values in T1. The supply of the product 401040 "Rent of transmission of electricity" from the supplying industry in T1 in 10-value, is set equal to the use of the same product in 27600 in T2.

Transport of oil and gas by pipeline

This is balanced in a different way than electricity, to keep the constant price figure for the transport margins from the supply side, which is based on a tonkm calculation.

The starting point is the constant price value delivered by the pipeline industry as product 603013 "Transport margins for oil" and product 603014 "Transport margins for gas". In the Use table (T2) these two products are delivered to the aggregation account 27600.

In T1, the transport margin (14T-values) for oil and gas (111010 Crude oil and 111020 Natural gas) supplied by account 27600 is set equal to the value of the pipeline services delivered to 27600.

14T-values for oil and gas in T2 are set equal to the value in T1. For gas the entire transport margin is related to exports. For oil, the transport margin is distributed proportionally between exports and use in refineries. Purchaser's values (19-values) for oil and gas in T2 are calculated by adding 10-values and 14T-values.

The Slovenian case

The transport margins at basic values (14T-values) are calculated in constant prices in the Use table (T2), specified by products and users, see chapter 9.

These values Sf_p^{14T} are aggregated by users, but specified by products, and transferred to T1 with the supplier code 27600.

Sf_p^{14T} is identical with the column totals in T1 and also identical with the supply in basic value (10-values) from the aggregation account for transport margins $Hf_{27600,p}^{14T}$ ($27600 \times 14TXXXXXX$).

The starting point is 14T-values in T2, which are calculate based on the transport margins for the previous year. These are summed by product and transferred to T1 with the supplier code 27600.

27600 is balanced by adjusting the use of 27600 in T2, to ensure that the sum of 10-value v in T2 is equal to the sum of 14T-value in T1. This is done by proportional adjustment of three main transport margin products, 602500, 631200 and 63400 delivered to 27600.

The supply of the transport margin products 602500, 631200 and 63400. (from industry 23604, 23631 and 23634, respectively) in 10-values in T1 is set equal to the use of the same in 27600 in T2. 11-value and 12-value are added in order to get 13-value.

The Bulgarian case

The transport margins at basic values (14T-values) are calculated in constant prices in the Use table (T2), specified by products and users, see chapter 9.

These values Sf_p^{14T} are aggregated by users, but specified by products, and transferred to T1 with the supplier code 27600.

Sf_p^{14T} is identical with the column totals in T1 and also identical with the supply in basic value (10-values) from the aggregation account for transport margins $Hf_{27600,p}^{14T}$ (27600 x 14TXXXXXX).

The starting point is 14T-values in T2, which are calculate based on the transport margins for the previous year. These are summed by product and transferred to T1 with the supplier code 27600.

27600 is balanced by adjusting the use of 27600 in T2, to ensure that the sum of 10-value v in T2 is equal to the sum of 14T-value in T1. This is done by proportional adjustment of two main transport margin products, 602600 and 610003 delivered to 27600.

The supply of the transport margin products 602600, 610003 (from industry 23602 and 23610 respectively) in 10-values in T1 is set equal to the use of the same in 27600 in T2. 11-value and 12-value are added in order to get 13-value.

11. COMPILING THE COMPLETE SUPPLY TABLE T1 IN CONSTANT PRICES

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

For the products where the constant price compilation have started with basic values (10-values), constant price figures will be compiled for Product taxes (11-values) and Product subsidies (12-values) in this stage to complete T1 in all types of valuation in constant prices.

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} :

$$Hf^{11/10} = [hf_{dp}^{11/10}] = \begin{bmatrix} a_{11}^{11/10} hf_{11}^{10} & \cdot & \cdot & a_{1p}^{11/10} hf_{1p}^{10} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ a_{d1}^{11/10} hf_{d1}^{10} & \cdot & \cdot & a_{dp}^{11/10} hf_{dp}^{10} \end{bmatrix} \quad (\text{EqCON 66})$$

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 66 above, we get **Equations 67**, expressing the calculation of the product subsidy matrix in 12-values, Hf_{dp}^{12} .

Hf^{13} is decided as:
$$Hf^{13} = Hf^{10} + Hf^{11} + Hf^{12} \quad (\text{EqCON 68})$$

11.2. 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 $Af_{29506,p}^{11/10}$, based on T1 in current prices from year t-1, can be expressed by:

$$[A_{29506,p}^{11/10}] = \frac{1}{\sum_{z=1}^b h_{z,p}^{10} + h_{29505,p}^{10}} h_{29506,p}^{11} \quad (\text{EqCON 69})$$

where $A_{29506,p}^{11/10}$, calculated for t-1 in current prices, is identical with $Af_{29506,p}^{11/10}$, 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:

$$Hf_{29506,p}^{11} = \left[\sum_{z=1}^b hf_{z,p}^{10} + hf_{29505,p}^{10} \right] af_{29506,p}^{11/10} \quad (\text{EqCON 70})$$

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

11.3. 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.

To balance the Supply Table and the Use table in constant prices in all types of valuation, the differences between the constant price figures compiled for product taxes (Sf_p^{11}) distributed by products in the Supply table and in the Use table are calculated as correction figures on the Supply side as supply from Account 29900 "Imputed net gain at constant prices because of change in "basic rates".

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:

$$hf_{29900,p}^v \equiv Sf(T2)_p^v - Sf(T1)_p^v \quad (\text{EqCON 71})$$

$(T2)$ 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

NOTE: The shift effect in account 29900 is only recorded for taxes on products as 11-values and subsidies on products as 12-values

11.4. 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^{15} , Sf_p^{16} , Sf_p^{17} and Sf_p^{18} 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^{15} , Sf_p^{16} , Sf_p^{17} and Sf_p^{18} decided as the column totals in T1, decide the constant price figures for the 14R-values, 14T-values, 15-values, 16-values, 17-values and 18-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^{15} : Sum product taxes related to trade margins in constant prices, calculated in T2, gives for every product, sum constant price figures for 15-values (Sf_p^{15}).

Sf_p^{15} decided as the column total in T1 and also as supply from the Aggregation accounts like column totals in T1 and also as total supply from the Aggregation account for taxes related to trade margins: $Hf_{27500,p}^{15}$ (27500 x 15XXXXXX).

Sf_p^{16} : Sum subsidies related to trade margins in constant prices, calculated in T2, gives for every product sum Constant price figures for 16-values (Sf_p^{16}).

Sf_p^{16} is decided as the column totals in T1 and also as total supply from the Aggregation account for subsidies related to trade margins $Hf_{27500,p}^{16}$ (27500 x 16XXXXXX).

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).

Sf_p^{18} : Sum investment tax (Norwegian case) in constant prices, calculated in T2, gives for products Constant price figures for 18-values (Sf_p^{18}).

Sf_p^{18} is decided as the column totals in T1 and also as supply from the Aggregation accounts for investment tax $Hf_{29502,p}^{18}$ (29502 x 18XXXXXX).

12. CORRECTION OF HOUSEHOLD CONSUMPTION WITH THE CONSUMER PRICE INDICES

12.1 Correction in constant prices (STAGE 13 - 17)

Household consumption of goods is the only area, except exports, where 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 19-values, an automatic correction is carried through for the constant price figures for Household consumption in 19-values 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), $Nf^{(19x61)}$ 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 $Nf^{(19x61)*}$ are calculated by dividing with a set of price indices (KP_p), specified for certain products (goods) supplied to Household consumption. Calculation of $Nf^{(19x61)*}$ can expressed by:

$$Nf^{19*} = [nf_{p,y}^{19*}] = \begin{bmatrix} \frac{1}{KP_p^{19}} n_{1,1}^{19} & \cdot & \cdot & \frac{1}{KP_p^{19}} n_{1,b}^{19} \\ & \cdot & \cdot & \cdot \\ & \cdot & \cdot & \cdot \\ \frac{1}{KP_c^{19}} n_{c,1}^{19} & \cdot & \cdot & \frac{1}{KP_c^{19}} n_{c,b}^{19} \end{bmatrix} \quad (\text{EqCON 72})$$

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 $Nf^{(\hat{A} \times 61)}$, $\hat{A} = 18-, 17-, 16-, 15- 14R- \text{ and } 14T\text{-values}$.

$$Nf^{\hat{e}*} = [nf_{p,y}^{\hat{e}*}] = \left(\frac{nf_{p,y}^{19*}}{nf_{p,y}^{19}} \right) \times nf_{p,y}^{\hat{e}} \quad (\text{EqCON 73})$$

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

$$Nf^{13*} = Nf^{19*} - Nf^{18*} - Nf^{17*} - Nf^{16*} - Nf^{15*} - Nf^{14T*} - Nf^{14R*} \quad (\text{EqCON 74})$$

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

$$Nf^{\hat{u}*} = [nf_{p,j}^{\hat{u}*}] = \left(\frac{nf_{p,j}^{13*}}{nf_{p,j}^{13}} \right) \times nf_{p,j}^{\hat{u}} \quad (\text{EqCON 75})$$

where $Nf^{\hat{O}*}$ is the new, changed matrices.

To balance the Supply Table and the Use Table in constant prices in all types of valuation, the differences between the revised constant price figure for product taxes and subsidies related to products in the Supply table and in the Use table are calculated as correction to the figures on the Supply side allocated to Account 29900 "Imputed net gain at constant prices because of change in "basic rates".
 10-values are identical to 13 – 11 – 12 values!

12.2 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:

$$N^{10*} = [n_{py}^{10*}] = \left(\frac{nf_{py}^{10*}}{nf_{py}^{10}} \right) \times n_{py}^{10} \quad (\text{EqCON 76})$$

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)

$$N^{13*} = N^{10*} + N^{11} + N^{12} \quad (\text{EqCON 77})$$

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 15-, 16-, 17- and 18-values in current prices are not changed.

$$\text{Revised figures for } N^{(14R \times 61)} * N^{14R*} = N^{19} - N^{18} - N^{17} - N^{16} - N^{15} - N^{14T} N^{13*} \quad (\text{EqCON 78})$$

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

13. BALANCING THE CONSTANT PRICE FIGURES FOR THE CONSUMPTION OF FIXED CAPITAL FOR THE GOVERNMENT

Consumption of fixed capital (CFC) for the central and local government, distributed by industries are recorded as separate products. The constant price CFC figures are entered directly in the constant price compilation of SUT as a final step, see chapter 4.4 for the format for the CAPSTANT1-file.

To decide constant price figures for the different domestic users, which are the government consumption accounts, total domestic use compiled in constant prices Df_{ps}^{d3} , is distributed in proportion to the domestic use of the consumption of fixed capital products in current prices.

This is expressed by: Constant price figures for domestic use of the products ps to the users, $d+s$, in 13-values, decided as:

$$df_{ps,d+s}^{13} = d_{ps,d+s}^{13} \times \frac{\sum_{d+s=1}^{e+\dot{U}} df_{ps,d+s}^{13}}{\sum_{d+s=1}^{e+\dot{U}} d_{ps,d+s}^{13}} \quad (\text{EqCON 79})$$

ps represents Consumption of fixed capital (CFC) accounts (XXX061-XXX081)

d+s represents government consumption accounts (account 64XXX and 65XXX)

For consumption of fixed capital CFC), 10-values are identical to 13-values and 19 values

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