# Chapter 5. GDP by the expenditure approach

## 5.0 Introduction

For 1995, the calculation of expenditure-based GDP can be summarised as in the table below:

**Table 108 GDP, expenditure approach, 1995**

| | Value, DKK million | % of GDP |
|---|---|---|
| Total final consumption expenditure | 769 850 | 76 |
| Household final consumption expenditure | 501 364 | 50 |
| NPISH final consumption expenditure | 8 187 | 1 |
| General government final consumption expenditure | 260 299 | 26 |
| Gross capital formation | 198 596 | 20 |
| Gross fixed capital formation | 187 858 | 19 |
| Changes in inventories | 9 298 | 1 |
| Acquisitions less disposals of valuables | 1 440 | 1 |
| Exports of goods and services | 357 454 | 35 |
| Imports of goods and services | 316 144 | 31 |
| | | |
| GDP | 1 009 756 | |

The table shows that private final consumption expenditure in Denmark made up roughly half of GDP in 1995, general government final consumption expenditure a good quarter, gross capital formation around one-fifth and net exports the final 4%. Exports of goods and services accounted for 35% and imports 31%.

## 5.1 Reference framework - business register, population register

The reference framework for that share of the expenditure-based GDP estimate where the statistical unit is enterprises is the business register, which was discussed in Section 1.3.1. For that share of the calculations where the statistical unit is households, the relevant reference framework is the total population divided by household. This framework is found in the *Forbrugsundersøgelse*, [abbreviated to FU, the household budget survey], which is an important source for the calculation of private consumption. The Central Population Register (CPR) was discussed in Section .4.1.1 Here, therefore, we need only to discuss households as a reference framework.

The CPR lists all persons resident in Denmark. The question is how the population of households resident on the economic territory can be derived from a register whose statistical unit is individuals. The basis is the address information in the CPR. A household in the population statistics is all persons at the same address (in the same dwelling) regardless of family ties. All persons in the CPR belong to a household, those who have no address being allocated by convention to an administrative address. 5.119 million out of a total population of 5.251 million at the beginning of 1995 lived in households complying with the international guidelines for the delimitation of a household as an economic entity, i.e. a group of persons living together and pooling a large share of their income and expenditure. The remaining persons lived in various kinds of collective household (those living in residential homes, long-term patients in hospitals, prisoners, etc.). When figures from the FU are used, they have to be corrected for persons in collective households, since the population of households included in the survey covers only the economic entities mentioned.

The CPR does not, of course, include persons who have illegally taken up residence in Denmark and were not previously registered whilst legally in the country. Lenient treatment where immigration is concerned means that few people are refused a residence permit and high social benefits are paid to legal immigrants, so it may be assumed that the population of illegal foreigners without a CPR number is for the time being so vanishingly low that it is not a problem from the point of view of statistics.

## 5.2 Principles underlying the estimate

### 5.2.1 Valuation

In most cases where the final demand components are estimated directly from the point of view of the purchaser, the observed value level is purchasers' prices including non-refundable VAT, as required by the ESA 95. In these cases, there is no need to process primary data to obtain value levels.

In those cases where the expenditure components are calculated from the supply side, using the commodity flow method, domestic supply is initially broken down at basic price level. Wholesale and retail margins are then added in, along with taxes on products other than VAT less subsidies, and non-refundable VAT, and hence the expenditure (use) component is estimated at purchasers' prices including non-refundable VAT.

## 5.2.2 Most important sources

### 5.2.2.1 Statistical sources for the individual final expenditure components

The most important sources for the estimate of the components of expenditure-based GDP are as follows:

Household final consumption expenditure:

Retail trade statistics (level of retailable consumption)
The FU [household budget survey] (structure of retailable consumption, services)
VAT statistics
Surveys of housing rentals
Housing surveys (housing stock, stratified)
Energy statistics (electricity, gas, district heating)
Statistics on financial institutions (financial services)
Statistics on public finances (user payments to public institutions)
Tax statistics ( quantities of goods on which excise duties are levied)
Output-based estimate (hotels and restaurants)
Motor vehicle statistics (households' acquisitions of new cars)
Balance of payments statistics (tourist revenue and expenditure)

Final consumption expenditure in NPISHs:

ERE [establishment-related employment statistics] estimates of total wages and salaries
Accounts of the largest trade union in the country

Gross fixed capital formation:

Agricultural statistics
Public finance statistics
Accounting statistics for industries where public corporations predominate
Register of buildings and dwellings (BBR)
Index of construction costs
Industrial commodity statistics
Product statistics for the IT industries
External trade statistics
Questionnaire-based accounting statistics
Specific industry statistics
Media statistics
Register of motor vehicles
Register of vessels
Register of aircraft

Acquisitions less disposals of valuables:

Industrial commodity statistics
External trade statistics
Household budget survey (FU)

Changes in inventories:

Questionnaire-based accounting statistics
Tax accounting statistics
Accounting statistics for industries where public corporations predominate
Specific industry statistics, including agricultural statistics
Energy statistics
Agricultural statistics

Imports and exports of goods and services:

External trade statistics (Intrastat and Extrastat)
Balance of payments statistics
Settlements statistics from the *Nationalbank*
VAT statistics
Accounting statistics for sea water transport.

#### 5.2.2.2 Reasons for the choice of source: competing information

##### 5.2.2.2.1 Information on the same variable from different points of view

In only three areas is there any real competition as regards information on the same variables for the estimate of expenditure-based GDP. One of these areas is household final consumption, where for many items there is information available in both the FU and other sources. The second area is imports and exports, where information on external trade transactions is available from Danmarks Statistik's external trade statistics and information on payments for imports and exports of goods and services can be found in the settlements statistics of *Danmarks Nationalbank*. Below, we discuss the reasons for Danmarks Statistik's choice of source in these two fields. The third area is the general comparison of direct information from the expenditure side and information based on the domestic supply of goods and services using the commodity flow method.

##### 5.2.2.2.2 Choice between the household budget survey (FU) and information from other sources

It is widely known that information in consumer surveys is surrounded by a good deal of uncertainty as regards items based on households' own accounting, i.e. in general small items of expenditure, as opposed to those items where an interviewer notes expenditure as evidenced by supporting documents, which are typically the larger items. When the survey is processed, everything possible is done to eliminate any bias resulting from differential non-response. However, it must be admitted that there is a good deal of uncertainty surrounding the figures which households themselves have recorded.

Against this background, the main rule in the Danish national accounts has been that wherever possible the FU has been replaced by other information to *determine levels*, but it is widely used to determine the structure of expenditure – for the breakdown of food consumption into individual foodstuffs, for example. In various important cases, the FU is the only available source, but in the

vast majority of such cases the items concerned are consumption items where, firstly, an interviewer has recorded expenditure from the household's supporting documents and, secondly, the expenditure concerned is common to virtually all households. These two circumstances are characteristic of those items in the survey which can be determined with a good deal of certainty. The fact that an interviewer has seen the supporting documents – telephone bills, for example – rules out the risk of items being forgotten, and the fact that this is general, recurrent expenditure for almost all households means that the sampling uncertainty for the items in question is relatively low. In these cases, FU figures are quite justifiably used to determine levels in the national accounts.

For retailable consumption, i.e. that share of private final consumption which passes through retail trade, the FU figures are replaced by retail sales figures which must be considered a much better statistical source for determining levels of private consumption. But this source is not sufficiently detailed to enable it to be used as the basis for the breakdown of expenditure into the national accounts consumption groups. The survey figures are therefore used to divide the aggregate groups from retail statistics into the detailed consumption groups. For this breakdown, the FU figures for the consumption of alcohol and tobacco etc. are replaced by figures based on tax/duty-adjusted quantities. For these expenditure items, the FU figures are known to be very much underestimated. In this way, total retailable consumption is calibrated to retail sales.

For energy products and acquisitions of motor vehicles, there is special information available based on physical data. In these cases, the FU figures are replaced either when the initial estimates of private consumption of the expenditure components in question are made , or later during the balancing process. The FU figures for the consumption of hotel and restaurant services are also known to be seriously underestimated. For these groups, the initial household consumption estimate is therefore based on supply, i.e. sales in hotels and restaurants, the starting point being that share of the supply which was allocated to household consumption in the most recent final national accounts. A detailed description of sources and methods underlying the initial estimates for the individual consumption groups can be found in Section 5.7.2 and Section 5.7.3..

#### 5.2.2.2.3 Choice between external trade statistics and settlements statistics from the Nationalbank

It is only for export and import totals that there is a choice between these two sources. Settlements statistics contain no information on codes for the goods to which the payments refer, and therefore cannot compete with the detailed external trade statistics.

Payments for goods during a given period cannot, of course, be taken as an expression of exports and imports of goods during that same period compiled in line with the rules on periodisation in the ESA 95, i.e. on a transactions basis or complying with the change of ownership principle. Trade credits play an important part in external trade, and the transaction date and payment date will only exceptionally coincide. Settlements statistics do, however, include information on both payment and transaction dates, so it is possible to estimate payments for exports and imports on a transactions basis. Until 1992, there was generally a close agreement between the periodised settlements statistics and external trade statistics after the former had been corrected for services connected with goods, i.e. a correction to c.i.f. values for imports and fob values for exports. Since 1992, the correlation has been less good, and in some periods there have been sizeable differences. Since 1992, both external trade statistics and settlements statistics have been radically reorganised – external trade in connection with the change to Intrastat as from 1 January 1993.

Because the two sets of statistics did not tally, in 1999-2000 Danmarks Statistik and the *Nationalbank* did a great deal of work together to sort out the problems. The most important new initiative to

emerge is a comparison at *individual respondent level* of returns to Intrastat, the quarterly VAT returns relating to EU trade and returns to the *Nationalbank* settlements statistics. The outcome of all this investigative work was published in the report "*Forbedring af udenrigshandels- og betalingsstatistikken. Afgivet til Økonomiministeren den 30. juni 2000*" ["Improvement of external trade and settlements statistics. Submitted to the Minister for Economic Affairs on 30 June 2000".] One of the conclusions is that there is no reason to doubt the accuracy of Danmarks Statistik's external trade statistics as regards the final estimates of imports and exports used for the definitive national accounts. Consequently, for the national accounts estimate it was decided to continue to base the national accounts figures for imports and exports of goods on external trade statistics.

#### 5.2.2.2.4 Estimates of acquisitions less disposals versus the commodity flow method

All components of expenditure-based GDP can in principle be estimated in two ways, directly using information on the expenditure (uses) side (purchaser's side) to calculate acquisitions less disposals and indirectly on the basis of supplies of products to the domestic market, using estimated shares of supplies to the individual final demand components to calculate final uses from the resources side. One of the ssrongest cross-checks for the compilation of national accounts consists in comparing information from purchasers on their acquisitions less disposals of the individual products or groups of products with information on the sellers' side on supplies to the domestic market. This last figure will typically be calculated from information on sales from domestic producer units in conjunction with export and import information.

Since the Danish national accounts are adjusted in a detailed product balance system, there is a systematic confrontation in connection with the balancing. In the vast majority of cases, the initial estimates for the final demand components are compiled as direct estimates from the expenditure side.

However, there are as yet no independent expenditure-based estimates of the economy's total capital formation in machinery and equipment. For this final demand component, the initial estimate is produced as an indirect calculation using the commodity flow method. Consequently, there is no comparison of supply and use information on capital formation in machinery when the balancing takes place. The reasons why the indirect method of estimating capital formation in machinery is assumed to be better than the direct method and should in all circumstances be the logical preference were discussed in Section 5.10.1.

#### 5.2.2.2.5 Independence of the other methods of calculating GDP

Other than for those areas of the economy (general government, owner-occupied dwellings etc.), where the output- and expenditure-based calculations cannot by definition be independent, in Denmark's case the two GDP measures are largely independent of one another prior to balancing. The most important exception is the estimate of the household consumption of hotel and restaurant services, which, as already mentioned, is calculated from the supply side. The fact that capital formation in machinery is calculated by the commodityflow method only implies dependence on output-based GDPto a minor extent , as is shown by the fact that around 40% of capital formation in machinery and equipment is made up of imports (direct requirements). Imports account for over 50% of goods flows at basic price level.

Again ignoring those areas of the economy where the calculations from the expenditure side and from the income side by definition give the same result, these two estimates must be considered to be completely independent with the exception of the estimate of gross operating surplus and mixed income for hotel and restaurant services.

## 5.3 Transition from business accounts and administrative concepts to the ESA 95 national accounts concepts

In household and business accounts, purchases of goods and services are recorded in terms of purchasers' prices including non-refundable VAT. Refundable VAT is not included in the acquisition prices on which information is available, and no corrections therefore have to be made for treatment of VAT which is different from the ESA 95 net system.

Various acquisitions which the national accounts treat as gross fixed capital formation are included in business accounts as current operating expenditure in the form of intermediation consumption or wages and salaries which are not capitalised. Examples would be consumables and purchased as well as own-produced software. The corrections which have to be made to bring business accounts into line with national accounts concepts were described in Section 3.3, as part of the description of the output-base estimate of GDP. The corrections on the expenditure side are a mirror image of the corrections to output value (e.g. own-produced software) and intermediate consumption (consumables and purchased software) in the output-based estimate. The logical corrections to the output, expenditure and income sides are made simultaneously for the intermediate system, as described in Section 3.3.

## 5.4 Direct versus indirect methods of estimation

By far the largest share of expenditure-based GDP is calculated using a direct estimate of purchasers' acquisitions less disposals. The most important exceptions are capital formation in machinery and household consumption of hotel and restaurant services, along with user payments to government institutions, which are calculated indirectly from the supply side.

## 5.5 Direct estimates of levels as opposed to projections

By far the largest share of expenditure-based GDP is calculated directly in terms of levels. The most important exception is the consumption of dwelling services (actual and imputed rentals) where levels are calculated every fourth year, in line with the periodicity in the virtually exhaustive surveys of household rents, and a projection using price and quantity indicators in the period between two benchmarks. Another important exception relates to allowances for the hidden economy, which are based on a calculation of levels for years 1992-1994 and then generally projected using relevant indicators. The above two components accounted for around 9.8% of GDP in 1995.

## 5.6 Most important exhaustiveness initiatives

As regards the legitimate (as opposed to the black) economy excluding fringe benefits, the most important steps taken are corrections and supplements to the sources underlying the calculations of private consumption. Retail sales statistics do not cover all branches of retail trade. In the national accounts calculations, these statistics are therefore supplemented by VAT statistics to ensure that the whole of retail trade is covered. Retail trade statistics do not cover the sales of "new" enterprises, either, i.e. those set up after the sample was last renewed (it changes every two years). In the national accounts calculations, a correction is made for the resulting undervaluation of retail sales by adding the estimated sales of new retail enterprises, the estimated figures being based on statistics on new businesses, which include information on their sales.

Additions for fringe benefits and the black economy were discussed in Section 1.7.

## 5.7 Household final consumption expenditure

### 5.7.1 Calculation of independent initial estimates, expenditure approach

If an initial expenditure-based estimate of GDP is to be produced which is as independent as possible of the output- and income-based estimates, household final consumption expenditure has to be calculated directly on an expenditure basis, both because this demand component is the largest final use item and because the commodityflow method in the case of household consumption has limited autonomy vis-à-vis the output approach ,since most products used for private consumption are produced in Denmark and also have other uses.

In the Danish national accounts, initial estimates of household final consumption are calculated in a special system referred to as the "consumption system", as described below.

### 5.7.2 Statistical sources

The consumption system uses various sources to provide information on household final consumption expenditure. The two most important are:

- the retail sales index [Danish abbreviation DOI], which contains information on levels of sales to private individuals, and
- the household budget survey [Danish abbreviation FU].

Although the first of these sources is officially referred to as the "retail sales index" (DOI), it is in fact a monthly estimate of the level of retail sales. To calculate the index, we first of all gross up sales in the sample to the total population of retail trade enterprises.

The DOI breaks down retail sales into three categories, namely

- sales to private individuals;
- sales to (market producer) enterprises;
- sales to (non-market) public institutions.

This breakdown is important, since only sales to private individuals are relevant to the estimate of household final consumption. If the only sales known were total sales in retail enterprises, the calculation would be less reliable. The minor share of sales reported as being to private individuals but which are actually to sole proprietorships and should therefore not be included are assumed for practical purposes to offset the minor share of sales from manufacturing and wholesale enterprises to private individuals, which should be included in the estimate of household final consumption.

The main idea behind the calculation system is a breakdown of final consumption into groups by purpose/product, each group being calculated on the basis of the most reliable of the available sources, but in a way which seeks to make optimum use of all the available information. The basic breakdown of final consumption is into retailable and non-retailable consumption. The former is that share of the final consumption of goods which involves retail trade. In this context, retail trade is taken to exclude motor vehicles etc. and energy goods, which are not covered by the DOI.

Sales to private individuals as taken from the DOI statistics are normally considered the best source of information on household final consumption expenditure. In particular, this source is not subject to the same sampling uncertainty and problems with the treatment of tourist expenditure and other possible skewness as the FU. It should be stressed here that the DOI sample coverage is up to around 75% of basic turnover in the population, so sampling uncertainty is extremely low. The problem is, however, that the breakdown of goods in statistics on retail sales is at present not very detailed. As from January 1995, the DOI has consistently broken down sales into three main groups of goods:

1. food, beverages and tobacco and convenience goods (FD);
2. clothing etc. (B);
3. other consumer goods (A)

and, from the basic DOI information, this breakdown can be extrapolated back to January 1994. No more detailed breakdown of goods is planned.

For the national accounts, target totals have to be worked out at a much more detailed level. The next stage is therefore to use the FU to split the main groups of goods into subgroups. There are exceptions here, however, in cases where the FU is known to paint a misleading picture of consumption. Here, the view is taken that the FU is essentially more reliable as a distribution key than as an estimate of levels.

For non-retailable consumption, i.e. other goods and all services, the preferred source is in general the FU with a number of corrections. In cases where the FU is known to cause problems, supply statistics are used, i.e. supplies of certain product balances and the commodity flow method or, alternatively, the balanced consumption group as in the provisional national accounts, which likewise means use of the commodity flow method.

Table 109 shows the sources for the calculation of the initial estimates for each of the 72 consumption groups in the national accounts' most detailed consumption grouping. "DOI" stands for retail sales statistics, "FU" for the uncorrected household budget survey, "FU corr." for the household budget survey with certain - in most cases conceptual - corrections, "FU + product" means the household budget survey plus a product balance, "supply" means supply-side estimates using the commodity flow method, "FNR" refers to the balanced values from the latest provisional national accounts, "BB" stands for balance of payments statistics, "FD" for food, beverages and tobacco and convenience goods in the retail sales index, "B" for clothing and footwear in the index and "A" for other groups of goods in the index.

**Table 109 Statistical sources for the national accounts estimates of household final consumption expenditure***

| COICOP-Consumption group 72-grouping | Source | Retailable/ non-retailable consumption | Group of goods in the retail sales index | Value DKK million |
|---|---|---|---|---|
| 1110 Bread and cereals | DOI | Retail | FD | 10 040 |
| 1120 Meat | DOI | Retail | FD | 16 299 |
| 1130 Fish | DOI | Retail | FD | 2 686 |
| 1141 Eggs | DOI | Retail | FD | 950 |
| 1142 Milk, cream, yoghurt etc. | DOI | Retail | FD | 4 970 |
| 1143 Cheese | DOI | Retail | FD | 3 250 |
| 1150 Butter, oils and fats | DOI | Retail | FD | 2 035 |
| 1160 Fruit and vegetables except potatoes | DOI | Retail | FD | 8 039 |
| 1171 Potatoes etc. | DOI | Retail | FD | 1 679 |
| 1181 Sugar | DOI | Retail | FD | 442 |
| 1182 Ice-cream, chocolate, etc. | FNR | Retail | FD | 8 835 |
| 1190 Food products n.e.c. | DOI | Retail | FD | 2 541 |
| 1210 Coffee, tea and cocoa | DOI | Retail | FD | 2 993 |
| 1220 Mineral waters, soft drinks and juices | FNR | Retail | FD | 5 384 |
| 2110 Wine and spirits | FNR | Retail | FD | 6 278 |
| 2130 Beer | FNR | Retail | FD | 6 883 |
| 2210 Tobacco | FNR | Retail | FD | 12 023 |
| 3110 Garments and clothing materials etc. | DOI | Retail | B | 20 983 |
| 3140 Laundry, dry cleaning etc. | FU-corr. | Non-retail | | 433 |
| 3200 Footwear | DOI | Retail | B | 4 877 |
| 4100 Actual rentals for housing | Supply | Non-retail | | 31 934 |
| 4200 Imputed rentals for housing | Supply | Non-retail | | 60 623 |
| 4300 Regular maintenance and repair of the dwelling | FU | Non-retail | | 6 222 |
| 4410 Refuse collection etc. | FU | Non-retail | | 3 550 |
| 4430 Water supply and sewerage services | FU+product | Non-retail | | 5 622 |
| 4510 Electricity | FU | Non-retail | | 11 693 |
| 4520 Gas | FU-corr. | Non-retail | | 2 751 |
| 4530 Liquid fuels | FU-corr. | Non-retail | | 5 038 |
| 4540 Hot water, steam etc. | FU-corr. | Non-retail | | 10 292 |
| 5100 Furniture, furnishings, carpets etc. | DOI | Retail | A | 10 721 |
| 5200 Household textiles | DOI | Retail | A | 2 979 |
| 5310 Major household appliances | DOI | Retail | A | 4 121 |
| 5330 Repair of major household appliances | FU | Non-retail | | 449 |
| 5400 Glass, tableware and household utensils | DOI | Retail | A | 3 112 |
| 5500 Tools and equipment for house and garden | DOI | Retail | A | 2 144 |
| 5610 Non-durable household goods | DOI | Retail | FD | 3 693 |
| 5620 Domestic services and home care services | Supply | Non-retail | | 2 024 |

* The English version of this classification comes from Danmarks Statistik - cf. Section 10.2, for example.

| COICOP-Consumption group 72-grouping | | Source | Retailable/ non-retailable consumption | Group of goods in the retail sales index | Value DKK million |
|---|---|---|---|---|---|
| 6111 | Medical and pharmaceutical products | DOI | Retail | A | 3 864 |
| 6112 | Therapeutic appliances and equipment | DOI | Retail | A | 2 140 |
| 6200 | Out-patient services | FU corr. | Non-retail | | 5 087 |
| 6300 | Hospital services | Supply | Non-retail | | 985 |
| 7100 | Purchase of vehicles | FU | Non-retail | | 29 333 |
| 7210 | Maintenance and repairs of motor vehicles | FU corr. | Non-retail | | 12 715 |
| 7220 | Fuels and lubricants | FU corr. | Non-retail | | 13 049 |
| 7240 | Other services in respect of personal transport equipment | Supply | Non-retail | | 4 104 |
| 7300 | Transport services | FU corr. | Non-retail | | 8 554 |
| 8100 | Communications | FU corr. | Non-retail | | 8 558 |
| 9110 | Radio and television sets etc. | DOI | Retail | A | 4 519 |
| 9120 | Photographic equipment etc. | DOI | Retail | A | 777 |
| 9130 | Data processing equipment | DOI | Retail | A | 4 454 |
| 9140 | Recording media for pictures and sound | DOI | Retail | A | 2 021 |
| 9150 | Repair of a/v and data-processing equipment | FU | Non-retail | | 465 |
| 9200 | Other major durables for recreation and culture | DOI | Retail | A | 2 388 |
| 9300 | Other recreational items and equipment | DOI | Retail | A | 10 149 |
| 9400 | Recreational and cultural services | FU-corr. | Non-retail | | 15 300 |
| 9510 | Books, newspapers and periodicals | DOI | Retail | A | 7 604 |
| 9530 | Stationery and drawing materials etc. | DOI | Retail | A | 1 164 |
| 9600 | Package holidays | FU | Non-retail | | 4 397 |
| 9700 | Education | Supply | Non-retail | | 3 656 |
| 9810 | Catering | Supply | Non-retail | | 24 247 |
| 9820 | Accommodation services | Supply | Non-retail | | 2 885 |
| 9911 | Hairdressing salons etc. | FU corr. | Non-retail | | 3 976 |
| 9912 | Appliances, articles and products for personal care | DOI | Retail | FD | 7 216 |
| 9921 | Jewellery, clocks and watches | DOI | Retail | A | 1 299 |
| 9922 | Other personal effects | DOI | Retail | A | 2 017 |
| 9931 | Retirement homes, day-care centres etc. | Supply | Non-retail | | 1 425 |
| 9932 | Kindergartens, crèches etc. | Supply | Non-retail | | 5 504 |
| 9940 | Insurance | Supply | Non-retail | | 8 996 |
| 9950 | Financial services n.e.c. | Supply | Non-retail | | 7 610 |
| 9960 | Other services n.e.c. | FU+product | Non-retail | | 3 537 |
| 9980 | Consumption of non-residents on the economic territory | BB | Non-retail | | -20 888 |
| 9990 | Consumption of residents in the ROW | BB | Non-retail | | 19 666 |
| | | | | | |
| Total | | | | | 501 364 |

### 5.7.3 Methods of calculation

The calculation system described below works out initial estimates for household final consumption excluding fringe benefits (company cars, canteen subsidies, etc.) and excluding most transactions in the black economy. The initial estimates for household final consumption included in the national accounts before the balancing are obtained by adding fringe benefits and certain corrections for the black economy, which are calculated in special systems, to these initial estimates.

The DOI value level is purchasers' prices including VAT, i.e. the value relevant to household final consumption. Consequently, no value correction is needed.

It is useful to break down the calculation process into a number of steps:

**Step 1: Definition of the three main groups of goods on the basis of the national accounts consumption groups**

The following links were adopted between the national accounts consumption groups defined by purpose - c.f. Section 10.2 - and the DOI main groups of goods:

**Table 110 Breakdown of retailable consumption into main groups of goods**

| DOI main group of goods | NR consumption groups covered |
|---|---|
| Food, beverages and tobacco, convenience goods | 1110-2210; 5610; 9912 |
| Clothing etc. | 3110; 3200 |
| Other consumer goods | 5100; 5200; 5310; 5400; 5500; 6111; 6112, 9110; 9120; 9130; 9140; 9200; 9300; 9510; 9530; 9921; 9922 |

**Step 2: Adding to the DOI retail branches not covered (other than the motor vehicles group) and deducting goods used as inputs in construction**

The DOI does not cover all retail trade branches other than the motor vehicles group and energy. As a first step, the missing DK-NACE retail branches are identified and their VAT sales are input into the calculation system's input data sheet. VAT sales multiplied by one plus the VAT rate are as a general rule assumed here to be equivalent to DOI sales to private consumers. There are, however, a number of important exceptions. For the very large branch 52.48.65, retail trade in PCs, office machinery and software, it is assumed that 85% of VAT sales are to private consumers. This percentage was based on the high level of household consumption of PCs which emerged from the FU over a number of years, an item which is subject to a great deal of sampling uncertainty in any given year. The percentage may if necessary be revised later in the light of the supply and use balancing.

Apart from retail trade proper, the DOI covers all turnover in bakers' shops, i.e. both retail sales and sales of own products. The sales figures thus do not need any correction. Nursery gardens, however, are not covered and are consequently covered via VAT statistics, with 90% of sales assumed to be for

household consumption. The same applies to electrical installation businesses, where 10% of VAT sales are assumed to be household consumption.

The retail sales index covers builders' supplies and paint and wallpaper shops. Most sales in these units are goods which are inputs in construction and do not go to household consumption. 5% of sales are assumed to be goods for private consumption and 95% to be inputs in construction, and the latter share, including VAT, is deducted from sales to private consumers as shown in the retail sales index. However, with these percentages it should be remembered that all materials for the repair and maintenance of buildings in the Danish national accounts are channelled through the special materials industry 450004, as described in Section 3.12. That share of expenditure on materials which goes to ordinary minor repairs and maintenance work, which in the case of dwellings which are let are normally the responsibility of the tenants, and the corresponding share for owner-occupiers, are lumped together under consumption in households under the product balance "building repairs".

**Step 3: Special treatment for pharmacies**

In the case of pharmacies, only that share of expenditure on medicines which is paid by households should be included in the consumption system. The share paid by government is recorded in health insurance statistics and deducted from VAT sales, so that a figure corresponding to the DOI's "sales to private consumers" is obtained and included in retail sales of other consumer goods.

**Step 4: Retail sales index sales: correction for new businesses**

At present, the retail sales index does not include sales in businesses started after the year in which the sample was drawn, normally year t-2. Sales in businesses which have ceased trading are not counted, either. Consequently, the retail sales index includes a systematic underestimate which becomes greater the further back the year in which the sample was drawn. A correction is made for this using raising factors based on annual statistics on business start-ups. The grossing up naturally accumulates for each year after the DOI sample. Work is currently being done to improve the DOI by correcting for sales in new businesses. Once this improvement filters through, the consumption system's grossing up will cease. In general, adjustments will be made whenever the DOI is based on a new sample. For 1995, the sampling base is 1993.

**Step 5: Correction for in-flight and airport duty-free sales**

The DOI does not cover duty-free shops at airports or sales on Danish ferries or during flights. In-flight and airport sales of goods for resale are calculated in a calculation system for industries covered by accounting statistics for industries where public corporations predominate and recorded in the "handelud" spreadsheet. Such sales of goods for resale are included in total in retail sales. The figures are grossed up using a factor of 1.15 to cover duty-free sales on Danish ferries, mainly those on the Rødby-Puttgarden route. There is, of course, no VAT added to such sales when the retail turnover is calculated.

**Step 6: Correction for filling station sales of goods not connected with the motor trade**

The DOI does not cover sales of food, beverages and tobacco etc. at filling stations. Sales of goods not related to motor vehicles are calculated in the spreadsheet for the "motor vehicle group", i.e. DK-

NACE 50. The figure for sales of goods from kiosks etc. at filling stations is input into the input data sheet, with sales divided into 80% for the main group of food, beverages and tobacco and convenience goods and 20% for other consumer goods.

**Step 7: Grossing up the household budget survey**

For any given year, the FU is grossed up by the national accounts division using the method recommended by the primary statistics division. The Danish FU includes a correction for differential non-response in the individual strata, which would appear to be extremely reliable compared with corrections in other countries. The reason is that in Denmark it is possible to collect income information relating to households in the sample from register data, thus ensuring that all income groups are correctly represented in the grossing up. In some countries, it is apparently not possible to correct for the fact that high income households have a greater non-response rate than the average, which can lead to a downward bias in the household budget surveys. Denmark would not appear to have any such bias.

**Step 8: National accounts coding of the FU and extra grossing up**

A key is established to convert from the FU product codes to the national accounts consumption groups. The grossedup FU is aggregated to consumption groups. A correction is also made for definitional differences between the national accounts and the FU (insurance, gambling, etc.). There is then an extra grossing up to correct for any skew in the FU's average household size and persons not living in households. The correction factor is calculated as the average number of persons in the country in the reference year divided by the number of persons covered by the FU. The correction factor for 1995 was 1.04. This extra grossing up is not without its problems, but the national accounts experience has been positive. The resulting figures must be seen as being the best possible expression of household consumption including consumption in small non-profit institutions with no paid employees, which are lumped together with households.

**Step 9: Incorporating final and provisional national accounts consumption**

For the final years, the relevant parts of the SUMTA (the supply and use table aggregated over products) are copied into the input data spreadsheet. For the provisional years, the figures from the latest publication are input.

**Step 10: Creating a distribution basis for the DOI, supplemented and corrected, and for the FU**

For each of the three main groups of goods, the initial estimate is equal to the value of retail sales to private consumers taken from the DOI as supplemented and corrected. Within each of the main groups of goods, the totals are distributed over the individual consumption groups in proportion to the FU distribution, but five groups where the FU figures are systematically skew are not included. These are 1182 chocolate and confectionery, 1220 mineral waters and soft drinks, 2110 wine and spirits, 2130 beer and 2210 tobacco products. The distribution basis is set up for the FU and the DOI to exclude these five groups. The FU figures are grossed up/down so that the totals match the supplemented and corrected DOI.

Figures are added for farmers' consumption of own products and direct sales to private consumers in consumption groups 1120 meat, 1141 eggs and 1142 milk, cream, yoghurt, etc. The source is agricultural statistics. The consumption of own products by other economic operators, as assessed for tax purposes, is considered to be covered via the DOI's VAT-based grossing up. During a subsequent step, there is an allowance for fringe benefits and the black economy.

**Step 11: Consumption groups 1182, 1220, 2110, 2130 and 2210 are considered a priori to be equal to the values in the provisional national accounts**

The initial estimate for the five consumption groups which are exceptions is taken to be equal to the values in the latest provisional national accounts, which are considered to be the best possible supply-side estimate using the commodity flow method.

**Step 12: Correction of the FU for gifts when the FU is used as a distribution key**

The FU includes an item of around DKK 3 billion for gifts, with no further details. When the FU is used as a distribution key, this amount is divided into clothing, other recreational items and equipment, jewellery, clocks and watches, other personal effects, stationery and drawing materials etc. A similar correction is made for expenditure on heating when there are communal boilers in blocks of flats etc. and for the difference in the treatment of package (charter) tours.

**Step 13: Input of selected values from the calculations for selected industries**

For various consumption groups, the best initial estimate is obtained by using supply values either directly or as a supplement to the FU. The relevant data are input into the PRIMSTAT worksheet.

**Step 14: Input of keys for distribution of the consumption of non-residents on the economic territory (tourist income)**

The consumption groups for which the target total is calculated on the basis of the FU have to be corrected for the fact that the FU does not include purchases by foreign tourists in Denmark. The distribution key is that used for the calculation of input/output multipliers.

**Step 15: Calculation of levels for all consumption groups each year**

The levels for the current year are then calculated on the basis of the sources quoted on the worksheet. When the FU is used for insurance and for entertainment etc. (betting, lottery), a correction is made to bring the figures into line with the national accounts definitions.

**Step 16: Balancing correction based on experience**

Finally, the values obtained by Step 15 for the individual consumption groups are multiplied by a set of factors which are determined by experience with the balancing of the national accounts during previous years, typically based on experience with year t-1. When the initial estimates are made, account is taken of any known bias in the estimate of the individual consumption groups based on

sources from the expenditure (uses) side. If, for example, the first of the consumption groups, 1110, bread and cereals, was adjusted in the latest final national accounts to a value which was two percent above the initial estimate, the level obtained from Step 15 is multiplied by a factor of 1.02 when the final initial estimate is worked out for household consumption of group 1110.

### 5.7.4 Balancing in the framework of the national accounts product balance system

The initial estimates described above for household consumption are included with all the other initial estimates for the supply and use components in the balancing of the national accounts. In Denmark's case, supply and use or, equivalently, GDP as compiled from the output and expenditure angles - are balanced in a very detailed product balance system covering around 2 750 products, just under 1 300 of which were used for household consumption in 1995.

In most cases, the balancing process means that the initial estimates for consumption have to be amended. Overall, the balancing of national accounts for the benchmark year 1992 led to an upward adjustment of around 1.5% over the initial estimate. For that share of consumption which involves retail trade (retailable consumption), there is an upward adjustment of 1.5% compared with the initial estimate in the final balanced values taken together are fixed for the benchmark year 1992. For 1995, which is generally used as an illustration in the GNI documentation, the initial estimates and the finally adjusted values can be seen in Table 111, which also shows the values according to the grossed up FU for 1995.

**Table 111 Initial estimates and adjusted values for household consumption divided by COICOP consumption group and values according to the 1995 household budget survey (FU)**

| COICOP- | | Initial | Balanced | Grossed up | National accounts/FU |
|---|---|---|---|---|---|
| consumption group | | estimate | national | household | |
| 72 grouping | | DKK mill. | accounts | budget | (2)/(3) |
| | | | DKK mill. | survey (FU) | |
| | | | | DKK mill. | |
| | | (1) | (2) | (3) | (4) |
| 1110 | Bread and cereals | 10 084 | 10 040 | 10 444 | 0.96 |
| 1120 | Meat | 16 425 | 16 299 | 15 177 | 1.07 |
| 1130 | Fish | 2 658 | 2 686 | 2 603 | 1.03 |
| 1141 | Eggs | 972 | 950 | 908 | 1.05 |
| 1142 | Milk, cream, yoghurt etc. | 5 039 | 4 970 | 4 856 | 1.02 |
| 1143 | Cheese | 3 302 | 3 250 | 3 444 | 0.94 |
| 1150 | Butter, oils and fats | 2 058 | 2 035 | 1 925 | 1.06 |
| 1160 | Fruit and vegetables except potatoes | 8 095 | 8 039 | 8 118 | 0.99 |
| 1171 | Potatoes etc. | 1 619 | 1 679 | 1 897 | 0.88 |
| 1181 | Sugar | 450 | 442 | 378 | 1.17 |
| 1182 | Ice-cream, chocolate, etc. | 8 895 | 8 835 | 7 112 | 1.24 |
| 1190 | Food products n.e.c. | 2 674 | 2 541 | 1 539 | 1.65 |
| 1210 | Coffee, tea and cocoa | 3 021 | 2 993 | 2 838 | 1.05 |
| 1220 | Mineral waters, soft drinks and juices | 5 443 | 5 384 | 4 426 | 1.22 |
| 2110 | Wine and spirits | 6 317 | 6 278 | 6 389 | 0.98 |
| 2130 | Beer | 6 857 | 6 883 | 4 051 | 1.70 |
| 2210 | Tobacco | 12 103 | 12 023 | 9 437 | 1.27 |
| 3110 | Garments and clothing materials etc. | 21 127 | 20 983 | 21 175 | 0.99 |
| 3140 | Laundry, dry cleaning etc. | 534 | 433 | 711 | 0.61 |
| 3200 | Footwear | 4 817 | 4 877 | 4 834 | 1.01 |
| 4100 | Actual rentals for housing | 31 911 | 31 934 | 34 165 | 0.93 |
| 4200 | Imputed rentals for housing | 60 623 | 60 623 | 47 940 | 1.26 |
| 4300 | Regular maintenance and repair of the dwelling | 5 890 | 6 222 | 8 443 | 0.74 |
| 4410 | Refuse collection etc. | 3 622 | 3 550 | 3 022 | 1.17 |
| 4430 | Water supply and sewerage services | 5 596 | 5 622 | 6 808 | 0.83 |
| 4510 | Electricity | 11 628 | 11 693 | 10 810 | 1.08 |
| 4520 | Gas | 2 826 | 2 751 | 3 145 | 0.87 |
| 4530 | Liquid fuels | 5 053 | 5 038 | 3 850 | 1.31 |
| 4540 | Hot water, steam etc. | 10 151 | 10 292 | 11 324 | 0.91 |
| 5100 | Furniture, furnishings, carpets etc. | 10 796 | 10 721 | 11 250 | 0.95 |
| 5200 | Household textiles | 3 028 | 2 979 | 2 498 | 1.19 |
| 5310 | Major household appliances | 4 188 | 4 121 | 4 376 | 0.94 |
| 5330 | Repair of major household appliances | 492 | 449 | 237 | 1.89 |
| 5400 | Glass, tableware and household utensils | 3 144 | 3 112 | 2 868 | 1.09 |
| 5500 | Tools and equipment for house and garden | 2 114 | 2 144 | 2 626 | 0.82 |
| 5610 | Non-durable household goods | 3 903 | 3 693 | 4 279 | 0.86 |
| 5620 | Domestic services and home care | 2 005 | 2 024 | 1 477 | 1.37 |

| | | | | | |
|---|---|---|---|---|---|
| | services | | | | |
| 6111 | Medical and pharmaceutical products | 3 833 | 3 864 | 3 797 | 1.02 |
| 6112 | Therapeutic appliances and equipment | 2 023 | 2 140 | 1 800 | 1.19 |
| 6200 | Out-patient services | 5 462 | 5 087 | 4 148 | 1.23 |
| 6300 | Hospital services | 985 | 985 | 331 | 2.98 |
| 7100 | Purchase of vehicles | 29 810 | 29 333 | 29 810 | 0.98 |
| 7210 | Maintenance and repairs of motor vehicles | 12 741 | 12 715 | 11 714 | 1.09 |
| 7220 | Fuels and lubricants | 12 407 | 13 049 | 14 094 | 0.93 |
| 7240 | Other services in respect of personal transport equipment | 4 311 | 4 104 | 1 377 | 2.98 |
| 7300 | Transport services | 8 678 | 8 554 | 9 050 | 0.95 |
| 8100 | Communications | 10 018 | 8 558 | 11 005 | 0.78 |
| 9110 | Radio and television sets etc. | 4 552 | 4 519 | 3 816 | 1.18 |
| 9120 | Photographic equipment etc. | 615 | 777 | 362 | 2.15 |
| 9130 | Data processing equipment | 4 296 | 4 454 | 2 606 | 1.71 |
| 9140 | Recording media for pictures and sound | 2 022 | 2 021 | 2 947 | 0.69 |
| 9150 | Repair of a/v and data-processing equipment, etc. | 479 | 465 | 228 | 2.04 |
| 9200 | Other major durables for recreation and culture | 2 409 | 2 388 | 1 338 | 1.79 |
| 9300 | Other recreational items and equipment | 10 143 | 10 149 | 10 583 | 0.96 |
| 9400 | Recreational and cultural services | 16 769 | 15 300 | 14 677 | 1.04 |
| 9510 | Books, newspapers and periodicals | 7 592 | 7 604 | 7 808 | 0.97 |
| 9530 | Stationery and drawing materials etc. | 1 146 | 1 164 | 1 198 | 0.97 |
| 9600 | Package holidays | 4 397 | 4 397 | 6 008 | 0.73 |
| 9700 | Education | 3 656 | 3 656 | 1 871 | 1.95 |
| 9810 | Catering | 24 247 | 24 247 | 15 808 | 1.53 |
| 9820 | Accommodation services | 2 927 | 2 885 | 2 357 | 1.22 |
| 9911 | Hairdressing salons etc. | 4 103 | 3 976 | 3 758 | 1.06 |
| 9912 | Appliances, articles and products for personal care | 7 051 | 7 216 | 6 833 | 1.06 |
| 9921 | Jewellery, clocks and watches | 1 069 | 1 299 | 1 451 | 0.90 |
| 9922 | Other personal effects | 2 031 | 2 017 | 1 103 | 1.83 |
| 9931 | Retirement homes, day-care centres etc. | 1 425 | 1 425 | 0 | |
| 9932 | Kindergartens, crèches etc. | 5 504 | 5 504 | 4 718 | 1.17 |
| 9940 | Insurance | 8 977 | 8 996 | 9 992 | 0.90 |
| 9950 | Financial services n.e.c. | 7 610 | 7 610 | 2 649 | 2.87 |
| 9960 | Other services n.e.c. | 3 612 | 3 537 | 2 746 | 1.29 |
| 9980 | Consumption of non-residents on the economic territory | -20 888 | -20 888 | | |
| 9990 | Consumption of residents in the ROW | 19 666 | 19 666 | | |
| | | | | | |
| Total | | 505 139 | 501 364 | | |
| | | | | | |
| Total excluding consumption groups | | | | | |
| 4200, 9931, 9980 and 9990 | | 444 313 | 440 538 | 415 428 | 1.06 |

The table shows that, with the balancing for 1995, there was a total downward adjustment of household consumption by DKK 3 775 million or 0.75%. This adjustment is within the normal range.

As regards the comparison of household consumption in the national accounts and the grossed up household budget survey (FU), the general impression is that the two estimates are very similar for all consumption groups where, a priori, there must be expected to be a good match, because the FU has the same definitions as the national accounts and low sampling uncertainty for the items in question, especially expenditure which the vast majority of households incur in each accounting period and where there is no particular bias. For groups 1182 ice-cream, chocolate and confectionery, 1220 mineral waters and soft drinks, 2110 wine and spirits, 2130 beer and 2210 tobacco, along with 9810 catering, the FU is known normally to have a marked downward skew.

The comparisons of the national accounts and the FU at a higher level of aggregation are highly problematic owing to the above bias for certain consumption groups and to definitional differences. Nevertheless, some countries frequently compare household budget surveys with national accounts at a more highly aggregated level. For this reason, an aggregate comparison is also shown in the table. Corrections have to be made at least for the different treatment of owner-occupied housing and expenditure on retirement homes etc, plus tourist income and expenditure, which are not covered by the FU. The aggregate comparison excluding these items shows that national accounts figures for household final consumption expenditure are 6% higher than the extra grossed-up figures from the FU.

## 5.8 NPISH final consumption expenditure

On the expenditure side, all the non-market output of NPISHs is allocated to final consumption expenditure in a special column in the supply and use tables. The sources and methods for this component have therefore already been described in detail in the chapter on GDP as calculated using the production approach, more specifically Section 3.1.2.4.3.

## 5.9 Government final consumption expenditure

This can be divided into three parts:

- transfers in kind of market goods and services
- transfers in kind of non-market goods and services
- collective consumption expenditure in government non-market producer units.

1) refers to goods and services which general government purchases on the market and makes available to households. According to the ESA 95, such purchases are not included in intermediate consumption or the output value of general government but are allocated directly to final uses as individual consumption of market goods and services paid for by government. This is logical, since the products purchased by government non-market producers are not processed further before being made available to households. In the vast majority of cases, they are supplied directly from the market producer - a general practitioner, for example - to the recipient households. In Denmark's case, almost all transfers in kind of market products are health insurance benefits. The values are taken directly from government accounts which have 100% coverage, and must be considered to be totally reliable.

2) consists of the output of government, individual non-market services less sales income in non-market government units which produce the products in question for government individual consumption plus the value of own-produced software in those units. The sources and methods for estimating output value were described in Section 3.1.2.2.1 as part of the description of the output-based estimate of GDP and Section 4.12 referring to the consumption of fixed capital. Reference should therefore be made to these sections. Information on sales income can be taken directly from government accounts. The value of own-produced software is based on total wages and salaries for highly qualified computer staff assumed to be working on the development of software and large databases. A mark-up factor is applied to total wages and salaries to cover intermediate consumption and the consumption of fixed capital.

3) consists of the output of government non-market services used for collective, i.e. non-individualisable, government consumption, minus sales income in the non-market government units which produce the products in question for collective government consumption, plus the value of the software produced in those units. The sources and methods for estimating the output value were described in Section 3.1.2.2.1 as part of the description of the output-based estimate of GDP and Section 4.12 referring to the consumption of fixed capital. Reference should therefore be made to these sections. Information on sales income can be taken directly from government accounts. The value of own-produced software is based on total wages and salaries for highly qualified computer staff assumed to be working on the development of software and large databases. A mark-up factor is applied to total wages and salaries to cover intermediate consumption and the consumption of fixed capital.

The breakdown of total government final consumption expenditure into the three components can be seen in Table 112.

**Table 112 Breakdown of government final consumption expenditure into individual and collective consumption**

| Type | DKK million |
|---|---:|
| Transfers in kind of market products | 13 131 |
| Transfers in kind of non-market products | 160 902 |
| Collective consumption expenditure | 86 265 |
| Total government consumption expenditure | 260 299 |

It can be seen that individual consumption accounted for 67% of total government consumption expenditure.

## 5.10 Acquisitions less disposals of tangible fixed assets

### 5.10.1 Introduction

This component of final expenditure is estimated in the Danish national accounts in the following breakdown:

**Table 113 Gross fixed capital formation in tangible assets, by type**

| Type | DKK million |
|---|---|
| Machinery and equipment | 60 370 |
| Transport equipment | 22 266 |
| Buildings | 64 807 |
| *of which* | |
| Dwellings | 39 664 |
| Non-residential buildings | 25 143 |
| Structures | 23 882 |
| Livestock | 91 |
| **Total** | **171 416** |

All of these with the exception of machinery and equipment, a few types of transport equipment and major repairs to buildings are estimated using the expenditure approach, for new construction (buildings), either from accounting statistics with very detailed coverage of actual observations or from an exhaustive register of buildings (the BBR). Capital formation in machinery and equipment is estimated from the supply side using the commodity flow method. As the questionnaire-based accounting statistics are expanded to cover virtually all industries with market producer units, it will become possible to estimate capital formation in machinery directly via expenditure as well. There are strong indications, however, that this type of direct expenditure estimate based on accounting statistics for non-government units other than agriculture has a downward bias owing to incomplete coverage of new enterprises, which may have relatively few sales and relatively little employment but a great deal of capital formation during the start-up phase. Even after the introduction of a direct estimate of capital formation in machinery and equipment which is expenditure-based, it seems likely that the initial estimate for this component will still be supply-based, since this method must be considered better, statistically speaking, owing to the well-known start-up bias. Where capital formation in machinery is concerned, the questionnaire-based accounting statistics have an important part to play, however, in the breakdown by industry of the economy's total capital formation in machinery.

## 5.10.2 Expenditure-based estimates

For the economy as a whole, acquisitions less disposals of tangible fixed assets are, as already mentioned, estimated directly from the expenditure point of view, with the exception of machinery and equipment, a few types of transport equipment and major repairs to buildings.

Transport equipment

The initial estimate prior to balancing for acquisitions less disposals of motor vehicles is based on the Vehicle Statistics Register, which in turn is based on the Register of Motor Vehicles. Similarly, the estimate of capital formation in ships and aircraft is based on register information for each individual vessel and each individual aircraft. Only capital formation in railway rolling stock, containers and other types of transport equipment - less important types - is estimated from the supply side using the commodity flow method. In 1995, capital formation in transport equipment covered 57 products in the supply and use tables.

Dwellings

The construction of new dwellings is estimated from the number of square metres of activity in the exhaustive Register of Buildings and Dwellings (BBR). "Square metres of activity" means the number of square metres constructed on average in the calendar year (quarter). The capital formation is therefore counted as and when the building progresses and not on the completion date. The square metres of activity are calculated from information in the BBR on dates when the individual buildings are started and completed. There are four types of new housing construction in the calculation, each with an average price per square metre - a "standard square metre". The calculation is stratified into two geographical areas, the Copenhagen region and the rest of the country. The square metre prices are noticeably higher in the Copenhagen region than elsewhere. The benchmark for these prices is 1993, when a committee under Danmarks Statistik, which included experts from the Ministry of Housing and *Statens Byggeforskningsinstitut* [Danish Building and Urban Research] and financial institutions specialising in the financing of buildings examined all available sources which provided information on housing construction costs. The 1993 benchmark prices are projected to the current year using changes in the index of construction costs for housing reduced by 1% for productivity increases which, by their very nature, will not be captured in an input-based building costs index. The productivity correction factor is based on a comparison of the benchmark figures for years 1969, 1979 and 1993 with changes in the building costs index for housing construction in the intervening periods.

Major repairs to dwellings are calculated as 55% of the total supply of construction and civil engineering repairs which relate to dwellings. The remaining 45% refer to ordinary repairs and maintenance which are not counted as capital formation. All repairs and maintenance are estimated from the supply side, whereas the percentage for major repairs is expenditure-based, using the FU. The value of major repairs includes materials for own major repairs to dwellings.

Table 114 shows the calculation of the main components of capital formation in housing construction. It shows the value of new construction and major repairs excluding hidden construction activity, estimated at basic prices. Total capital formation in housing construction also includes taxes/subsidies on products excluding VAT, VAT, hidden construction activity plus transfer costs relating to housing, which have to be allocated to capital formation (estate agents, lawyers, stamp duties, government sales income connected with court rulings).

**Table 114 Calculation of capital formation, housing construction**

| Housing construction | Square metres of activity: 1000 $m^2$ | | Standard price (before deduction for deductible VAT) DKK/$m^2$ | | Value of new construction, basic price DKK 1000 | | |
|---|---|---|---|---|---|---|---|
| 1995 | Copen-hagen region: | Rest of Den-mark | Copenhagen region: | Rest of Den-mark | Copenhagen region: | Rest of Denmark | Whole country |
| Single-family houses: | 215.6 | 825.0 | 7 833 | 7 266 | 1 374 678 | 4 878 659 | 6 253 336 |
| Garages and carports | 94.1 | 388.1 | 2 349 | 2 179 | 179 975 | 688 463 | 868 438 |
| Multi-family houses | 238.6 | 214.5 | 9 811 | 9 102 | 1 904 881 | 1 589 030 | 3 493 910 |
| Weekend cottages etc. | 23.3 | 164.3 | 6 532 | 6 343 | 123 830 | 831 834 | 955 664 |
| Total excl. major repairs and hidden economy | | | | | 3 583 363 | 7 987 986 | 11 571 349 |
| Major repairs to dwellings | | | | | | | 17 411 410 |
| Incl. major repairs | | | | | | | 28 982 759 |

Private non-residential construction

This is calculated in the same way as housing construction. The value of new construction is calculated by multiplying standard square metre prices according to the 1993 benchmark by square metres of activity. For private non-residential building, too, account is taken of productivity increases when projecting square metre prices on the basis of the construction costs index.

**Table 115 Calculation of capital formation, private non-residential construction**

| Private non-residential construction | Square metres of activity: 1000 $m^2$ | | Standard price (before deduction for deductible VAT) DKK/$m^2$ | | Value of new construction, basic price DKK 1000 | | |
|---|---|---|---|---|---|---|---|
| 1995 | Copen-hagen region: | Rest of Den-mark | Copenhagen region: | Rest of Denmark | Copenhagen region: | Rest of Denmark | Whole country |
| Farm buildings | 39.7 | 1 319.0 | 1 800 | 1 820 | 57 393 | 1 926 532 | 1 983 925 |
| Factories, workshops | 91.4 | 864.7 | 4 680 | 4 384 | 343 191 | 3 042 946 | 3 386 137 |
| Offices, shops | 203.5 | 458.1 | 8 231 | 7 502 | 1 344 407 | 2 758 522 | 4 102 929 |
| Other private property | 33.8 | 164.9 | 8 609 | 7 834 | 233 607 | 1 037 137 | 1 270 744 |
| Total, excl. major repairs | | | | | 1 978 598 | 8 765 137 | 10 743 735 |
| Major repairs to private non-residential premises | | | | | | | 4 077 623 |
| Incl. major repairs | | | | | | | 14 821 358 |

Total capital formation in private non-residential construction is obtained by adding non-refundable VAT plus ownership transfer costs.

Public construction for commercial use

This component of capital formation is calculated from accounting statistics for industries where public corporations predominate. In these statistics, the information on new capital formation is divided by type of investment using a breakdown by DK-NACE industry and subsector.

Public construction for non-commercial purposes

Capital formation in buildings by government non-market producer units is estimated from the OIMA system (the calculation system for government non-market activity), which is in turn based on the national accounts estimate of the general government sector in the DIOR database. The information on new capital formation in the OIMA is broken down by type of investment with the help of the breakdown of capital formation by DK-NACE industry and subsector.

Table 116 shows the result of the calculations of public commercial and non-commercial construction up to the estimate of the use of the two products at basic price level.

**Table 116 Capital formation, government commercial and non-commercial construction**

| **Product number** | **U454012** | **U454013** |
|---|---|---|
| Text<br>1000 DKK | **Government commercial construction** | **Government non-commercial construction** |
| Capital formation | 1 120 613 | 7 239 839 |
| Of which: Stamp taxes | 4 393 | 29 929 |
| Lawyers | 12 685 | 86 420 |
| Real estate dealing | 7 344 | 50 031 |
| Total trading costs | 24 422 | 166 380 |
| Purchasers' price incl. VAT | 1 096 191 | 7 073 459 |
| Of which: VAT | 61 619 | 1 277 042 |
| Taxes | -966 | 13 974 |
| Basic price | 1 035 538 | 5 782 443 |

Private structures

Capital formation is calculated in this case from the expenditure side, as the total value of all new civil engineering structures, according to whatever sources are available. The calculation is the same as that used to work out target totals for capital formation divided by industry. It is assumed that there are no net product taxes and VAT levied on private structures. Table 117 shows the values for 1995 and the sources used.

**Table 117 Calculation of capital formation in private structures**

| DKK 1000 | Capital formation, private structures | Source |
|---|---|---|
| Agriculture (soil improvement, etc.) | 103 000 | Agricultural statistics |
| Extraction of crude oil and natural gas | 1 969 590 | Specific industry statistics for industry 110000 |
| Accounting statistics | 457 377 | Calculation of capital formation on the basis of accounting statistics |
| Other private structures, horticulture, forestry | 2 445 | Other measures for capital formation matrices |
| Total | 2 532 412 | |

Public commercial structures, plus public non-commercial structures other than military installations for capital formation

Capital formation in structures in public corporations and in the general government sector, like the values for new building, comes from accounting statistics for industries where public corporations predominate and the OIMA new capital formation figures (OIMA: the national accounts calculation system for general government based on the DIOR database). This capital formation can be seen in Table 118.

**Table 118 Public capital formation in structures other than military**

| **Product number** | | **U454022** | **U454023** |
|---|---|---|---|
| Text<br>1000 DKK | | **Public commercial structures** | **Public non-commercial structures** |
| Capital formation = purchasers' price incl. VAT | | 17 468 293 | 3 108 647 |
| Of which: | VAT | 1 159 750 | 595 407 |
| | Taxes | 0 | -422 203 |
| Basic price | | 16 308 543 | 2 935 443 |

Military capital formation

The information on military building and civil engineering work comes from extracts from public accounts. Out of a total value in purchasers' prices including non-refundable VAT of DKK 1 124 million in 1995, DKK 570 million is allocated to capital formation while the remaining DKK 554 million is counted as intermediate consumption in general government under industry 752002, the provision of services to the community [literally "defence, police and the administration of justice"], since these are ordinary repairs and maintenance or weapons systems which should not count as capital formation, according to the ESA 95.

Livestock

The relatively minor item "changes in agricultural livestock" is explained in the section on agricultural statistics.

### 5.10.3 Estimates using the commodity flow method

The initial estimate for total capital formation in machinery and equipment in the economy is normally based on the value in the latest version of the provisional national accounts for the reference year. These provisional accounts also compare supplies and uses of products, albeit using much more approximate methods than in the final national accounts. The latest value for total capital formation in machinery and equipment in the provisional national accounts may therefore be considered a good supply-side approximation of total investments in machinery.

If there are major differences between total supply and use of products taken together at macro level when the initial estimates are compared for the final national accounts, the provisional accounts total may, however, be amended even at this initial stage.

The initial value for total capital formation in machinery based on the provisional national accounts is then divided up over the 670 or so products which have uses in this category of capital formation, on the basis of the composition of products in the latest final year (t-1), with technical coefficients referring to constant price figures. Next, supplies of each of the products are compared with uses and the difference between the initial estimates at product level is divided proportionally over the various uses of the products, although a few uses are not included in the proportional distribution. The supply of products side is considered to be an extremely reliable estimate and is not normally amended. The result of this systematic and fully automated application of the commodityflow method after the proportional distribution mentioned is the initial estimate for total capital formation in machinery which is then included in the balancing process, together with the initial estimates for all the other supply and use components.

The initial estimate of total capital formation in machinery for 1995 can be seen in Table 119.

**Table 119 Initial estimate of capital formation in machinery and equipment**

| | DKK million |
|---|---|
| Initial value based on provisional national accounts | 63 878 |
| Result of automatic commodity-flow method (2-step RAS method) | 63 729 |
| Initial estimate for the manual balancing of supplies and uses | 63 729 |
| Balanced value | 60 370 |

The relatively large balancing correction downwards in 1995 must be seen against the fact that capital formation in structures was adjusted upwards from the provisional national accounts' values for that same year. As discussed in Section 3.12.3, the dividing line between capital formation in machinery and in civil engineering work is often drawn according to the terms of delivery of major structures such as power stations. Larger investments in structures will therefore normally go hand in hand with larger inputs of machinery and parts for that machinery in civil engineering, with a correspondingly lower volume allocated directly to final uses in the capital formation in machinery and equipment category.

A few, minor components of transport equipment, such as railway rolling stock and containers, are also estimated from the supply side. The sources for the estimate of domestic supply are industrial commodity statistics and external trade statistics.

Finally, as already mentioned, major repairs to buildings are estimated from the supply side on the basis of total resources of repairs to buildings and structures. The calculation of this resource was described in Section 3.12.3.

## 5.10.4 Breakdown by industry of total capital formation in the economy, divided by type

### 5.10.4.1 Capital formation divided by industry

There is considerable user interest in the breakdown of gross fixed capital formation by industry, and we therefore describe below the sources and methods used for this breakdown, even though it is not directly relevant to GNI.

### 5.10.4.2 Government non-commercial capital formation

OIMA (the calculation system for government non-market activity) based on the DIOR database determines the totals, divided by investment into "new capital formation" and "capital formation in existing buildings and structures". Figures are also received for capital formation in software, divided by industry. The OIMA capital formation is transferred to the intermediate system using MLS codes:

6100: New fixed capital formation
6321: Purchases minus sales of existing buildings and structures.

The worksheets with the detailed breakdown of capital formation into DK-NACE industries and subsectors (integrated county, municipal authority and central government, non-integrated county, municipal authority and central government, funds etc.) are received every year from the Public Finances and Prices Division. No detailed (or even provisional) breakdown of the individual subsectors' capital formation into buildings and structures, machinery and equipment etc. is produced annually, but such a breakdown is available for the year 1995. The figures in a full breakdown are matched with the final OIMA system figures in the national accounts' 130-industry breakdown. Figures for purchases minus sales of existing buildings and structures in a breakdown by industry are included.

### 5.10.4.3 Public corporations' capital formation

A worksheet containing the results of statistics for industries where public corporations predominateis received from the Public Finances and Prices Division. This sheet also supplies input data for various of the national accounts' industry-specific calculations and for the capital formation figures for buildings and structures which are used to work out the value of new buildings and new structures in public enterprises in the construction system.

The worksheet includes capital formation in buildings, structures, machinery and equipment and transport equipment plus software, divided by DK-NACE industry. With the help of an extract from accounting statistics for industries where public corporations predominate, it is also possible to produce a separate estimate for that share of the capital formation which relates to purchases minus sales of existing buildings and structures. Various changes have had to be made to the sheet's investment figures on the basis of other sources. Investments in supplies of electricity are divided up into buildings, structures and machinery. In addition, substantial sales of existing electricity power stations have been taken out or, more accurately, offset against new capital formation, since it must be assumed that there has been asymmetrical recording of the amount as a result of structural changes in the branch. In addition, capital formation in the supply of gas and in railways is adjusted to the national accounts' own breakdowns by kind on the basis of the accounting information of the enterprises concerned.

#### 5.10.4.4 Industries covered by the questionnaire-based accounting statistics

In 1995, the general, questionnaire-based accounting statistics covered 130 national accounts industries from 140009 to 370000. The statistics are now exhaustive in this field, i.e. they assign accounting figures to all units in the industries in question. They are available as either firm or workplace statistics. For national accounts purposes, the two sets are processed so that all the capital formation information used is allocated to workplaces, and it is this information which is used to compile capital formation by function. With the processing of accounting statistics, information on capital formation is transferred to the intermediate system, in a breakdown by MLS code:

6110: Purchases of intangible assets (in firm statistics only)
6121: Purchases of existing buildings
6123: Construction of new buildings
6124: Rebuilding and improvements to buildings
6125: New layout and rebuilding of roads, harbours, etc.
6134: Purchases of plant and machinery and equipment (operating resources)

6210: Disposals of intangible assets (in firm statistics only)
6221: Sales of existing buildings (including land value)
6223: Sales of existing roads, harbours, etc.
6234: Sales of plant and machinery and equipment (operating resources).

Under the items relating to the enterprises' ordinary operations, there is now a separate item for purchases from current expenditure, so that it is no longer necessary to calculate the following item in the former manufacturing system separately:

7025: Expenditure on consumables etc.

There is also information on purchases and sales of unbuilt land which are not included in gross capital formation, under the codes:

6122: Purchases of unbuilt land
6222: Sales of unbuilt land.

The items for acquisitions and disposals of intangible fixed assets cover licences, trademarks, sole agencies, software, goodwill and capitalised development, rationalisation and research etc., in other words a mixture of figures which have to be included in gross capital formation and figures which

should not be included. This makes these accounting items less useful for measuring capital formation.

For those industries covered by the questionnaire-based accounting statistics, i.e. in the 1995 national accounts' 130 industries from 140009 to 370000, the initial estimates of capital formation are divided into buildings, structures, machinery, equipment and transport equipment etc. plus software on the basis of information in the intermediate system. As a default hypothesis, we assume that the land value makes up 20% of the total value of the existing buildings and structures items under codes 6121, 6221, 6263 and 6226. Consumables are corrected as before in the intermediate system for that share which is transferred to current intermediate consumption.

There are a few problems with use of the questionnaire-based accounting statistics in that the figures for disposals of machinery, equipment and transport equipment have been improbably large in some industries in relation to new acquisitions. Closer scrutiny has shown that the accounting statistics figures for disposals have in many cases been the acquisition values of the equipment disposed of. In such cases, there has been no correction for the cumulative depreciation on the items disposed of, an item which in many accounts occurs in the section with the depreciation for the year. Ideally, accounting statistics should show the actual selling price. However, it may be difficult to see this in many accounts and it may in any case be assumed that the selling price - especially for equipment which has worn out - is usually closer to the book value of the items disposed of than to their acquisition value. The differences between the actual selling price and the book value of disposals should be entered under secondary income/expenditure, an item which has seldom tallied with the very high disposal values. The division of Danmarks Statistik which is responsible for accounting statistics is currently attempting to overcome this problem.

To the extent that disposals have been put at an unreasonably high level in those enterprises for which there were reporting forms or accounts, these high figures have had an effect on the standard figures used for the construction of the corresponding accounting items for enterprises known solely from VAT returns, and for this reason the level has been incorrect in these units, too.

For the national accounts calculations, it was decided to use the accounting statistics values for acquisitions but to correct the values for disposals in certain industries. In the capital formation system, the corrections are input at the level of the 130 national accounts industries with no breakdown by sector. Owing to the methods used to work out the initial estimates for aggregate capital formation in machinery, buildings and structures, the problem does not affect these totals - and thus GNI - but only the breakdown of capital formation by industry.

A further problem is that start-ups are seldom included in the statistics on the basis of reporting forms or accounts. In such cases, information on capital formation is normally compiled from VAT information using standard accounting ratios based on enterprises which have been operating normally throughout the period in question. As already mentioned, capital formation must be expected to be underestimated in respect of businesses which have just started up.

Attempts have been made to correct for this undervaluation with the help of statistics on start-ups. Information is available in VAT statistics for the first four quarters of the lifetime of each new business. Since the figures from the statistics for start-ups are received in a breakdown by quarter, it has been possible each quarter to separate out the share of VAT sales and purchases which relates to start-ups, and to compare that with the share of other enterprises in each branch at the 130-industry level. With this exercise, therefore, an enterprise set up in the previous calendar year can be picked out as a "start-up" in from one to three quarters of the current year, depending on when it started up, but included as a non start-up during the rest of the year. This should not lead to any serious problems with the calculation. It is now assumed that the share of VAT purchases in excess of the "normal", which can be calculated using the VAT purchases/VAT sales share in non start-ups, should be taken to be capital formation which was not included in the accounting statistics' calculations based on standard figures. It has been decided that all the extra amount added to capital formation should be counted as capital formation in machinery, equipment and transport equipment. With the balancing in mind, it seems likely that capital formation in machinery and equipment, in particular, should be marked up, to avoid too large a share for private services, and one important concern was to allocate the addition to the accounting statistics' capital formation figures to industries which do in fact include start-ups.

The above problem of undervaluation is, once again, not directly relevant to the estimate of GNI, since the initial estimate for the economy as a whole is based on building register data in the case of buildings and on supplies in the case of machinery and equipment.

The reporting forms for the questionnaire-based accounting statistics explicitly state that if, in the accounting year, new financial leasing contracts have been entered into, the acquisition price of the goods leased should be reported, regardless of whether or not that price has been capitalised. It could therefore be argued that the previous correction for financial leasing is no longer necessary for industries covered by accounting statistics.

However, the reporting form includes a few additional questions for enterprises which have financial leasing contracts still in force. They refer to the total expenditure on financial leasing in the accounting year and a breakdown of the above-mentioned acquisition price into real estate, technical plant and machinery and other plant, machinery and equipment. But very few firms answer all these questions, and this raises doubts about how the enterprises have actually treated equipment which has been the subject of financial leasing.

For the national accounts calculations, it was decided to assume that accounting practice is tending towards capitalising equipment leased under a financial leasing contract, but that this is a gradual development, and that many enterprises have in fact reported their capital formation according to their own accounting practice. For this reason, it was decided to scale down the intermediate system's leasing correction in areas where questionnaire-based accounting statistics are used. In 1995, the reclassification was thus cut back to 2/3 of the level which would have resulted from previous practice, with a full reduction for financial rental payments under current non-financial operating expenditure. In the following two years, the correction is scaled down to 1/2 and 1/3 respectively of the initial 1992 level, which included a full correction. A comparison of the rental payments calculated for financial leasing contracts and the calculated *total* rental payments in the accounts, which must include operational leasing, would speak in favour of this reduction.

In 1995, it was initially assumed that the addition to capital formation as a result of the different treatment of equipment leased under financial leasing contracts should be roughly the same as the correction of gross rentals. This assumes that the number of new leasing contracts increases evenly over time (which is not the same as saying that the need for the correction declines).

Other than in the area covered by questionnaire-based accounting statistics, the previous calculation with the 1992 benchmark was continued without any reduction in the size of the leasing correction.

#### 5.10.4.5 Other sources of information on industries

There are independent sources of information on capital formation in a few other private industries such as branch 110000: extraction of crude petroleum and natural gas. In this case, the total value of target total module (MTM) code 2058: mineral exploration, is determined at the same time, including the enterprises' own output. Agricultural capital formation is taken from agricultural statistics. In a few other cases, the initial estimates from the previous calculation system are adopted - for capital formation in horticulture and forestry, for example. Finally, capital formation in 651000: monetary intermediation, 652000: other financial intermediation, 660102: life insurance and pension funding and 660300: non-life insurance is worked out from the accounting figures for those industries. The final value of capital formation in the 65-66 branches was not available, however, when the capital formation targets for 1995 were originally set.

#### 5.10.4.6 Capital formation in construction, broken down by industry

Capital formation in buildings in government non-market services, public corporations, agriculture and industries covered by the questionnaire-based accounting statistics is worked out in the systems which process the capital formation in question - cf. above. Within these areas, capital formation is normally retained as calculated, with the estimated breakdown into new building and purchases less sales of existing buildings.

Total building is estimated in the construction and civil engineering system, the basis for government commercial and non-commercial building being the information on capital formation compiled for the calculation system for capital formation in a breakdown by industry. The calculation of the output value of construction and civil engineering ignores, of course, that share of capital formation accounted for by purchases and sales of existing buildings. Capital formation in industry 702009, dwellings, is fixed as the value calculated in the construction and civil engineering system.

All that remains is then to divide up the rest of private non-residential building among those industries which do not have accounting-based target totals for capital formation in construction. To this end, the register of buildings and dwellings is compared with the business register to give an overview of the square metres of floor space added during the year for new non-residential buildings, divided by category of building and national accounts' 130 industries.

The value of these square metres of floor space is calculated using average prices for each type of building according to the construction and civil engineering system, with VAT added in line with the VAT regulations used elsewhere in the national accounts. The value thus calculated does not include any estimate for the value of any major repairs by the industries concerned. The estimated breakdown of the value of the building by industry is used primarily for a proportional breakdown of the residual value of new building which could not be allocated by industry on the basis of better sources.

It would have been desirable to be able to produce similar estimates for purchases less sales of buildings from previous years, but the attempt showed that (at that time, at any rate) there were too

many unrelated reasons for differences between opening and closing figures in the register. One particular problem is that there always appear to be a good number of incorrect records relating to property which existed when the register was set up and that no distinction can be made between corrections of such errors and other reasons for changes in the industries' stocks of buildings. It has not yet been possible, either, to make a distinction between the reclassification of enterprises and genuine acquisitions/disposals of real estate. With future calculations of capital stock in mind, further thought can be given to this question.

Net purchases and net sales of existing buildings on Danish territory should be the same. (At present, in line with the calculations of construction and civil engineering, all change of ownership costs are for practical reasons assigned to new building). For the time being, it has been decided to work only with purchases or sales of existing buildings in those industries where the figures can be based on sources. However, it was decided to allocate the residual to industry 702040, the letting of non-residential buildings.

As was the case with buildings, capital formation in structures in government non-market services, public enterprises, agriculture and industries covered by accounting statistics is worked out in the systems which process the capital formation in question. We assume here that there is normally no capital formation in structures other than in industries for which it can be compiled from a specific source. One exception is branch 702040, the letting of non-residential buildings, to which is allocated the residual of investment/disinvestment in existing structures, since, as for buildings in the strict sense, we are constrained by the rule that used structures may not appear or disappear through purchases/sales between industries. The value of new structures is thus determined from the expenditure side, and it is the systems for the compilation of capital formation in a breakdown by industry which supply the final figures for capital formation in structures for the calculation of the output value of construction and civil engineering.

Initial estimates for capital formation in construction and civil engineering in a breakdown by industry are obtained as the sum of the initial estimates for buildings and structures.

#### 5.10.4.7 Capital formation in transport equipment, broken down by industry

Motor vehicles

Briefly, the method is as follows: information is received from vehicle statistics on opening and closing stocks of motor vehicles recorded in the central register of motor vehicles, and these figures are then divided up by type of vehicle, size category and year of first registration. Next, by matching with the business register, the national accounts' 130 branch codes are added to the vehicles in the industries to give a division into the 130 industries/households, albeit with an undistributed remainder which the National Accounts Division itself has to divide up to ensure that the system tallies. The figures correspond to those used in the "vehicle distribution system", which breaks down by industry those inputs which relate to the operation of motor vehicles, with one change, namely that stocks are calculated as at the end of one year/beginning of the next, so that the change can be calculated for all subgroups. On the basis of assumptions about average prices for the individual categories and survival and depreciation profiles, initial breakdowns are calculated for changes in terms of each vehicle product number divided over the 130 national accounts industries plus private final consumption. From this, we pick out that share of "departures" which may be assumed to be due to "departures" from the total stock, and the remainder is assumed to be investment/disinvestment. The initial estimates in basic prices are supplied with margins, taxes and VAT. These are adjusted to the balanced supply and use tables (SUTs) so that the estimated value matches the value in the supply information. The figures for all capital formation in vehicles are then summed to give the contribution of vehicles to the capital formation target totals for transport equipment.

Other transport equipment
Supply of other transport equipment: railway rolling stock, containers, ships and aircraft.
For other types of transport equipment counted as capital formation, the supply is calculated by product number on the basis of the sources used for the compilation of the supply and use tables (SUTs). The SUT balances for ships and, over the last few years, railway rolling stock as well, plus larger aircraft, are compiled as predetermined values which are retained for the balancing of the SUT. Here, information on the individual deliveries is used, and in a few cases changes in inventories have been specifically calculated imputed (2064 changes in inventories) to produce a match between the supply and use information.

On the basis of a few relatively simple assumptions about which industries invest in the various types of transport equipment and parts etc., the contribution of these products to the target totals for capital formation in transport equipment can be worked out. When these figures are combined with the targets for capital formation in motor vehicles, we get the column showing the initial estimates for target total code 2052 capital formation, transport equipment.

#### 5.10.4.8 Capital formation in machinery and equipment, broken down by industry

For government non-market services, public corporations, industries included in the questionnaire-based accounting statistics, agriculture, the extraction of oil and gas, financial services and insurance, once again capital formation in machinery and equipment and transport equipment - taken together - is calculated from accounting statistics information - cf. above. For each of these industries, targets can be set for MTM code 2050, capital formation, machinery and equipment, by deducting the initial estimates for MTM code 2052, capital formation, transport equipment.

This leaves various industries for which there is no accounting information on capital formation in machinery and equipment. In this case, a first estimate is calculated as an addition to the targets worked out for capital formation in construction and civil engineering and transport equipment. The additions are adjusted in the light of employment in the industries, and we look at the share of value added and gross operating surplus/mixed income accounted for by capital formation.

## 5.11 Acquisitions less disposals of intangible fixed assets

### 5.11.1 Introduction

Gross fixed capital formation in intangible assets covers three types, as shown in Table 120. Software is by far the most important.

**Table 120 Gross fixed capital formation in intangible assets, by type**

| **Type** | **DKK million** |
|---|---|
| Exploratory drilling | 271 |
| Software and large databases | 14 978 |
| *of which* | |
| Purchased software etc. | 8 689 |
| Own-produced software etc. | 6 290 |
| Entertainment, literary or artistic originals | 1 193 |
| **Total** | **16 442** |

## 5.11.2 Exploratory drilling

In Denmark's case, the only expenditure on mineral exploration at present is on exploratory drilling in the North Sea oil and gasfields. All concession-holders have to supply accounts to the Danish supervisory authorities, containing information on expenditure on items such as exploratory drilling. The national accounts estimate is based on this exhaustive accounting information.

## 5.11.3 Software and large databases

### 5.11.3.1 Purchased software and large databases

In the Danish national accounts, capital formation in purchased software is estimated from the supply side using the commodity flow method. There is at present no reliable, exhaustive estimate from the expenditure side. The few indications that there are on the expenditure side - in business accounts, for example - suggest values which are unrealistically low, no doubt because, in accordance with so-called prudent accounting practices, enterprises only capitalise expenditure on software in exceptional cases, unless it is preinstalled and is thus part of total expenditure on purchased hardware.

For 1995, the value of the economy's total capital formation in purchased software and large databases is calculated at 70% of domestic VAT sales in DK-NACE industry 722000, software consultancy and supply. The remaining 30% of domestic VAT turnover in the industry is assumed to refer to components of sales which must not be capitalised, primarily consultancy services connected with the routine operation of computer systems and ordinary repairs and maintenance.

In the final national accounts for 1996, capital formation in purchased software and large databases was estimated from the supply side at DKK 7 092 million. As from reference year 1996, there is available a new, robust statistical source, namely the product statistics for the IT industries, which give a detailed breakdown by product of turnover in the industries from which it is possible to produce a more accurate supply-based estimate. The article by Esben Dalgaard: "Estimating Gross Fixed Capital Formation in Software", Proceedings from the Workshop on the Implementation of ESA 95: Achieving Comparability in Practice, Copenhagen June 7-9 1999, pp. 167-183, Statistics Denmark and Eurostat 1999 (Annex 9), shows that on the basis of the new product statistics, and depending on assumptions about the type of consultancy services and software sales through wholesale trade etc., the plausible range of values for GFCF in software is DKK 6 466 million to DKK 9 974 million.

This maximum value assumes that 100% of consultancy services in NACE 7220 are capitalised and that all domestic sales of software through wholesale trade go to capital formation, which is too much, of course. The lower limit is based on the assumption that one-third of consultancy services and domestic sales through wholesale trade are capitalised. In both cases, 100% of domestic sales of the "software" product from the genuine IT industries, i.e. those in the product statistics other than wholesale industries, go into the amount calculated for capital formation. In 1996, this was DKK 4 493 million. The value of capital formation in purchased software in the final national accounts for 1996 can be interpreted as being in line with the assumption that approximately half of consultancy services are installation costs etc. which have to be capitalised and that the other half is current operating expenditure.

#### 5.11.3.2 Own-produced software

Own-produced software etc. accounted for 42% of total capital formation in software and databases in 1995.

Like purchased software and large databases, own output is calculated from the supply side, more specifically from total wages and salaries which in each of the national accounts' 130 industries are considered to relate to own output of software.

Total wages and salaries are compiled from Danmarks Statistik's salary statistics, i.e. the statistical system which provides information on wage and salary levels and changes divided by job category. These statistics cover all workplaces with ten or more employees. There is no grossing up for wages and salaries in small units with fewer than ten employees, since it is considered unlikely that such small workplaces would produce their own software.

The starting point is total wages and salaries according to the statistics on employees in ISCO group 213, computing professionals. ISCO is the international classification of occupations. It is thus assumed that wages and salaries in the category of computer specialists with the highest level of education is the best possible estimate of total wages and salaries connected with the in-house development of software and large databases. Obviously, even the most highly educated computer specialists do some work other than producing software and large databases in house, and this other activity is therefore implicitly considered to offset that share of wages and salaries which goes to the less well qualified computer staff on the operating side and which, insofar as it relates to own output of software and large databases, should be included.

The value of own-produced software is calculated for all industries as ISCO 213 total wages and salaries multiplied by a mark-up factor of 2.46 or, to put it another way, total wages and salaries are grossed up by 146%. This factor is based on accounting ratios in the tax-based accounting statistics for the relevant industry group. It covers intermediate consumption (including overheads at firm level), the consumption of fixed capital, other taxes on production, net, and net operating surplus. At present, the factor is fixed but it will be revised for reference year 1999, when the questionnaire-based accounting statistics are extended to cover DK-NACE industry 7220.

### 5.11.4 Entertainment, literary or artistic originals

As might be expected, there are no statistical sources providing information on the value of original works produced in any given year. The national accounts calculation is therefore based on economic theory, according to which the value of the originals in question is equal to the discounted value of future royalty incomes which they will earn. International manuals, too, recommend this valuation.

The problem is that the future royalties are not, of course, known. Denmark is in a favourable situation compared with other countries in that information on current income from royalties is available every year in statistics on culture. In the national accounts, the value of the originals created in year t is determined as the value of the royalties received by the artists in question in year t. The reasoning behind this simple convention is as follows: since there is no information on future royalty earnings, it is assumed that in the long term royalties actually increase rather faster than the economy as a whole, since leisure activities have income elasticity greater than one. More specifically, the future real growth rate is taken to be equal to the real rate of interest, which likewise is normally

greater than the growth rate of the economy. With these assumptions, the equilibrium value of the originals created in any given year may be estimated as the income from royalties in the same year.

The value thus calculated for 1995 was DKK 1 193 million.

## 5.12 Additions to the value of non-produced non-financial assets

There are two groups in this category of product transactions:

P.5131 Major improvements to non-produced non-financial assets
P.5132 Costs of ownership transfer for non-produced non-financial assets

P.5131
In Denmark's case, this category covers only soil improvement work in agriculture (drainage etc.), information on which is available from agricultural statistics. In 1995, the value was DKK 103 million. This component of capital formation is calculated together with capital formation in structures, and is covered by capital formation in private structures as shown in Table 117 above.

P.5132
This heading covers the costs of transfers of ownership (estate agents, lawyers, stamp duties, public sales income relating to courts of law) of land and natural resources etc. Since the costs of transferring the ownership of land can seldom be estimated independently of the costs of transferring the ownership of the buildings and installations on that land, the aggregate costs of transferring the ownership of land and real estate are considered to be part of gross fixed capital formation in buildings and structures as described in Section 5.10. The transfer of ownership costs for land and real estate included in the estimate of gross fixed capital formation in 1995 can be seen in Table 121.

**Table 121 Costs of ownership transfer included in gross fixed capital formation**

| **Type** | **DKK million** |
|---|---:|
| Courts of law, public sales income | 98 |
| Stamp taxes | 571 |
| Lawyers | 1 824 |
| Estate agents | 2 850 |
| **Total** | **5 343** |

## 5.13 Changes in inventories

### 5.13.1 National accounts principles versus the principles in business accounts

The principles underlying the national accounts' treatment of changes in inventories as compared with the estimates in business accounts were discussed in the sources and methods documentation, Sections 1.3.9.1.4 and 3.3.1.2. The section below will therefore be more technical and include an example of the national accounts' calculations of inventories. As already mentioned, for a correct estimate of GDP, it has to be possible to split changes in inventories (reported at market prices on the respective dates) between the start and end of the period in question into product transactions in national accounts terms and revaluations (plus, in some cases, other volume changes). In the national accounts, changes in inventories (product transactions) are posted to the capital account whereas revaluations go to the revaluation account. It is also important to ensure that the estimate of changes in inventories at industry level is consistent with the estimate based on special information on the individual products.

A similar problem occurs with splitting the changes in financial balance sheets between the start and the end of the period into financial transactions, other volume changes (e.g. losses on loans) and revaluations. In the financial national accounts, the split is essential for a correct estimate of financial transactions and thus the sectors' net lending/net borrowing, from the financial point of view.

### 5.13.2 Opening and closing stocks

The estimate of changes in inventories can be divided into:

- changes estimated on the basis of the change in inventories during the year, according to accounts. These changes occur under MTM codes 2060 (raw materials), 2061 (wholesaling), 2062 (retailing) and 2065 (finished goods and work in progress);

- changes which are calculated regularly on the basis of special information relating to changes in stocks of individual goods, mainly under MTM code 2063.

Changes which are calculated from special information on any given year or introduced at the time of the actual balancing are entered under MTM code 2064.

### 5.13.3 Accounting figures underlying the calculation of inventories broken down by industry

Questionnaire-based accounting statistics

For 1995, the old accounting statistics for manufacturing were replaced by the new, general questionnaire-based accounting statistics, coverage of which will be extended over time to more and more private urban industries. In 1995, the new accounting statistics covered the same ground as the previous manufacturing statistics, i.e. DK-NACE industries in divisions 14 to 36, plus construction and civil engineering in division 45, retail trade with the exception of vehicles etc. and repair work in division 52.

The general questionnaire-based accounting statistics are also different from the old accounting statistics for manufacturing in that they are exhaustive in their own area, meaning that they include all smaller enterprises in the manufacturing branches ("craft industries" in the previous calculations), including the former "craft branches" within manufacturing. As far back as the changeover to DK-NACE industries in the accounting statistics for manufacturing in 1993, coverage was extended to include publishing other than the publishing of sound recordings 221110-221340 and 221500. The general questionnaire-based accounting statistics from 1995 onwards also cover 158120 bakers' shops, 221400 publishing of sound recordings, 2851 the surface treatment of metals, 285200 mechanical engineering on a contract basis, 291120 the repair of marine engines, repair of agricultural and forestry machinery, 316220 workshops engaged in electrical engineering, 361120 upholstery of chairs and seats and 361490 varnishing etc. of furniture. The recycling branches 371000 and 372000 are now also included.

In the accounting statistics, all the firms and workplaces in the statistics are assigned the accounting figures which come from the reporting forms, or the tax accounts for firms not covered by the sample. In cases where there are neither reporting forms nor tax accounts, the missing accounting figures are calculated with the help of "standard ratios" compiled with reference to units for which the data are known. This therefore applies to a large number of small units which are known from VAT statistics only. By grossing up, therefore, the accounting statistics' inventories cover all firms and workplaces in the accounting statistics' industries and there should be no need for the figures to be grossed up any further. The connection between the inventory items in the questionnaire-based accounting statistics and the intermediate system codes can be seen in Table 122.

**Table 122 Connection between the questionnaire-based accounting statistics (RS) and the intermediate system (MLS)**

| Item in RS | Text | MLS-code | MLS-code |
|---|---|---|---|
| | | Opening | Closing |
| 43. | Raw materials, ancillary materials, fuel and packaging | 5060 | 6060 |
| 44. | Work in progress | 5065 | 6065 |
| 45. | Finished goods, of which | | |
| | 87./88. Goods for resale | 5061/5062 | 6061/6062 |
| | Remainder: finished goods | 5065 | 6065 |
| 46 | Ongoing work for account of others | 5065 | 6065 |

The primary statistics processing throws up problems such as the lack of concordance between manufacturing/trading activity and the incidence of finished goods and stocks of goods for resale. For the national accounts calculations, there is a (computerised) reallocation of inventories in such units which appear to be incorrectly allocated. The inventories from the accounting statistics thus revised are then transferred to the intermediate system.

Tax accounting statistics

For 1995, it is primarily the important wholesale stocks which are covered by this accounting statistics source. Since the input data for the tax accounting system include information on closing stocks only, opening stocks have to be based on the closing figures from the previous year. Some improbable changes in the inventories of the individual branches are thus unavoidable, most of them arising from a change in the delimitation or branch allocation of units from one year to the next. Since it is not possible in the tax accounting system to trace these changes back to the individual enterprises, a number of estimated corrections have to be made in the breakdowns of opening stocks, where possible in the form of switches from one industry to another or one sector to another within the same industry. The corrected inventories are supplied to the intermediate system in the usual form.

Industry-specific accounting statistics

To the extent that inventory data are calculated in A-files, the national accounts changes in inventories are calculated in a breakdown by product outside the central inventory calculation system. The resulting aggregate changes in inventories are transferred to the intermediate system under the codes for changes in inventories only, i.e. 206x, and no stocks are input into the system. In 1995, there were only 2063 changes in inventories in agriculture, 011109, which were transferred to the intermediate system file. Thus any changes in inventories in other industries, where the calculations are based on industry-specific accounting statistics, are ignored unless they come under 2063 or 2064 inventories.

### 5.13.4 Intermediate system: breakdown of inventories by good

The intermediate system software collects data on the industries' inventories at the level of DK-NACE industry/sector and intermediate system codes. For the calculation of changes in inventories in the intermediate system, opening and closing stocks are needed at average prices for the year, and this in turn requires a complete breakdown of inventories by good. The system for the goods breakdown is therefore part of the system for producing the intermediate system, as well as being part of the system for the breakdown of accounting figures by product.

In the national accounts, there may in principle be inventories of raw materials in all industries, not only manufacturing but also in trade, even, or construction and civil engineering and service industries. But at present inventories of finished goods occur only in manufacturing, whilst inventories of goods for resale, as a result of the definition by activity of the trading industries, occur only in wholesale and retail trade industries. The intermediate system inventories are broken down by sector.

The breakdown by product of the industries' inventory totals is based on the product composition in the balanced supply and use tables for the previous year. The main rule is that for each of the intermediate system's inventory totals there is a column or a combination of columns from the previous year's supply and use matrix. From each of these columns, those products are selected which can go into the inventories in question, i.e. negative SUT values (scrap, disinvestment or negative consumption) are omitted and services, for example, or expenditure on advertising or electricity are not included in the basis for the distribution. The only records in the SUT columns which are extracted for the breakdown of wholesale and retail inventories are those which include wholesale or retail margins. Each inventory total at DK-NACE industry/sector level is then divided up by product

in proportion to the selected values from an SUT column or with weighted values from more than one SUT column.

The breakdown by product of the intermediate system inventory totals is at MLS code/DK-NACE industry/sector level, whilst the supply and use matrices (SUTs) contain only breakdowns by commodity number/target total module code/industry. For the breakdown of inventories of raw materials and finished goods, the calculation is based on an SUT for the previous year, which is grossed up to include breakdowns for all DK-NACE industries, with the national accounts industry breakdown used for all sub-industries. For inventories of finished goods, raw materials and goods for resale, the same breakdown by product is used for each sector represented in the industry.

Totals for inventories of finished goods are broken down as the output of the industry at basic prices. The raw materials totals are broken down as the input of the industry at purchasers' prices excluding VAT. As a general rule, wholesale inventories are divided on the basis of the composition of inputs at basic prices for the types of industry which may be assumed to buy the goods in question. However, there are various branches whose inventories of goods for resale cannot be divided up in this way, and for most of these fixed breakdowns have been laid down. Inventories of retail goods are likewise divided using the composition of basic prices plus wholesale margins for consumption groups, with the individual groups weighted using a key corresponding to the key for the conversion from retail trade branch to consumption group used in the consumption and retail trade margin systems.

**Table 123 Method for the breakdown of inventories by product**

| Type of inventory | MLS codes, value level | National accounts industries | Broken down as previous year's SUT |
|---|---|---|---|
| Finished products | 5065/6065 basic prices | All | National accounts industry output |
| Raw materials | 5060/6060 purchasers' prices excl. VAT | All | National accounts industry intermediate consumption |
| Wholesale | 5061/6061 basic prices | Main rule | Input in national accounts industry acc. key |
| | | Included in manuf. | Output in national accounts branch |
| | basic prices | | |
| | | Included in construction and civil engineering | Input in national accounts branch(es) acc. key |
| | basic prices | | |
| | | 5001010-501020, 512100-513100, 513700-513890, 515100 | Fixed breakdowns by product number. Assumed covered by energy system. |
| Retail | 5062/6062 basic prices + wholesale margin | All except 524890 | Consumption group(s) acc. key |

Danmarks Statistik has produced for internal use a technical documentation note on the keys used for the breakdowns.

For various industries such as agriculture and those which consist solely of general government, industry target totals are not used for inventories. For agriculture, changes in inventories are covered by the special calculation of agricultural inventories (2063 inventories) at product level.

### 5.13.5 Calculation of national accounts changes in inventories

For each type of inventory, changes in inventories in the business accounts are calculated as the value of closing stocks minus the value of opening stocks, estimated according to the enterprises' own accounting principles, which means that opening and closing stocks are calculated at different price levels. In the national accounts, changes in inventories should be estimated at the average prices for the year. Ideally, changes in inventories should be monitored throughout the year and all changes split into revaluations (holding gains) and national accounts changes in inventories. Normally, a reasonable approximation of the correct change can be produced by converting the value of both opening and closing stocks to the average prices for the year using the ratio of the year's average price to the price on the date of the inventory estimate. The national accounts change in inventories is then calculated as the difference between closing and opening stocks, at the average prices for the year (ignoring sporadic instances of inventory values being written up or down for reasons other than price changes).

The method used has been unchanged since the benchmark years 1988-92. The price indices used for the conversion of inventories to the average prices for the year are now in every case the "NF index" which can be found for all product numbers in the inventory calculations and is based predominantly on the wholesale price index. As the end-of-year index , 2/3 of the December index + 1/3 of the following January index is used. No different treatment is attempted for inventories estimated according to different accounting principles.

Opening and closing stocks are converted to average prices for the year for all combinations of product number/target total module code/DK-NACE industry/sector following the breakdown of inventory totals by product. The national accounts change in inventories is calculated as closing stocks minus opening stocks for each of these combinations.

Goods which appear in 2063-inventories and energy goods are also included in the breakdown by product of inventories of raw materials, since inventories in the accounts include such stocks. When the changes in inventories columns are worked out in the SUTs, it is assumed that these goods are covered in full by 2063 changes in inventories, and they are therefore omitted from the other changes in inventories, although they are, of course, included in the intermediate system figures for national accounts changes in inventories by MLS industry/sector.

The difference between the MLS industries' (i.e. the detailed DK-NACE industries') national accounts and business accounts changes in inventories is transferred to the intermediate system as a "price correction" under MLS codes 2098 referring to inventories of raw materials and 2099 for inventories of goods for resale. These items are used here to switch from business accounts to national accounts intermediate consumption and consumption of goods for resale.

**Table 124 Comparison of changes in inventories in business accounts and national accounts, DK-NACE industries: examples**

| MLS code | DK-NACE | Sector | Opening 1000 DKK | Closing 1000 DKK | Change 1000 DKK | Increase in inventories 1000 DKK | Price correction 1000 DKK |
|---|---|---|---|---|---|---|---|
| 2060 | 014110 | S11 | 24 999 | 31 160 | 6 161 | 4 870 | -1 291 |
| 2060 | 014110 | S14 | 78 513 | 95 341 | 16 828 | 12 846 | -3 982 |
| 2060 | 014120 | S11 | 7 536 | 7 733 | 197 | -144 | -341 |
| 2060 | 014120 | S14 | 5 062 | 5 580 | 518 | 278 | -240 |
| 2060 | 014190 | S11 | 8 281 | 28 421 | 20 140 | 19 241 | -899 |
| 2060 | 014190 | S14 | 948 | 1 533 | 585 | 527 | -58 |
| 2060 | 014200 | S11 | 29 446 | 26 626 | -2 820 | -4 066 | -1 246 |
| 2060 | 014200 | S14 | 8 494 | 11 457 | 2 963 | 2 506 | -457 |
| 2060 | 020100 | S11 | 12 994 | 28 647 | 15 653 | 15 477 | -176 |
| 2060 | 020100 | S14 | 68 265 | 62 140 | -6 125 | -6 870 | -745 |
| 2060 | 020200 | S11 | 3 382 | 9 667 | 6 285 | 6 235 | -50 |
| 2060 | 020200 | S14 | 1 648 | 1 787 | 139 | 121 | -18 |
| 2060 | 050100 | S11 | 24 792 | 16 468 | -8 324 | -9 754 | -1 430 |
| 2060 | 050100 | S14 | 2 514 | 5 450 | 2 936 | 2 705 | -231 |
| 2060 | 050200 | S11 | 220 974 | 220 227 | -747 | -15 246 | -14 499 |
| 2060 | 050200 | S14 | 65 536 | 68 472 | 2 936 | -1 434 | -4 370 |
| 2060 | 103000 | S11 | 10 322 | 10 004 | -318 | -446 | -128 |
| 2060 | 103000 | S14 | 57 | 54 | -3 | -2 | 1 |
| 2060 | 120000 | S11 | 50 | 46 | -4 | -7 | -3 |
| 2060 | 141110 | S14 | 170 | 157 | -13 | -10 | 3 |
| 2060 | 141120 | S11 | 50 | 46 | -4 | -7 | -3 |
| 2060 | 141120 | S14 | 23 | 13 | -10 | -11 | -1 |
| 2060 | 141200 | S11 | 45 127 | 52 576 | 7 449 | 6 817 | -632 |
| 2060 | 141200 | S14 | 1 221 | 1 070 | -151 | -163 | -12 |
| 2060 | 142100 | S11 | 36 947 | 39 672 | 2 725 | 2 248 | -477 |
| 2060 | 142100 | S14 | 4 322 | 3 986 | -336 | -381 | -45 |
| 2060 | 142200 | S11 | 597 | 553 | -44 | -49 | -5 |
| 2060 | 142200 | S14 | 217 | 201 | -16 | -15 | 1 |
| 2060 | 143000 | S11 | 11 527 | 10 674 | -853 | -978 | -125 |
| 2060 | 144000 | S11 | 12 583 | 12 891 | 308 | 154 | -154 |
| 2060 | 145000 | S11 | 27 469 | 25 435 | -2 034 | -2 351 | -317 |
| 2060 | 151110 | S11 | 623 533 | 420 558 | -202 975 | -221 594 | -18 619 |
| 2060 | 151110 | S14 | 221 | 241 | 20 | 15 | -5 |

**Table 125 Examples of the calculation of inventories. Inventories of raw materials in DK-NACE industry 050200: fish hatcheries and fish farms, divided by sector. 1000 DKK.**

| PROD. N$^{O}$ | 130 INDUST. N$^{O}$ | DK-NACE INDUST. | SEC. | OPEN. | CLOS. | AVER. FOR THE YEAR | OPENING STOCK | CLOS. STOCK | CHGE | OPEN. STOCK | CLOSING STOCK | CHGE | PRICE COR. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 030101 | 050000 | 050200 | S11 | 92.49 | 89.96 | 89.96 | 7 564 | 7 539 | -25 | 7 357 | 7 539 | 182 | 207 |
| 030103 | 050000 | 050200 | S11 | 99.77 | 96.13 | 97.34 | 416 | 414 | -2 | 406 | 419 | 13 | 15 |
| 050800 | 050000 | 050200 | S11 | 80.76 | 99.43 | 96.29 | 275 | 274 | -1 | 328 | 265 | -63 | -62 |
| 051103 | 050000 | 050200 | S11 | 90.86 | 107.34 | 104.82 | 52 910 | 52 732 | -178 | 61 039 | 51 493 | -9 546 | -9 368 |
| 051105 | 050000 | 050200 | S11 | 93.4 | 90.26 | 90.78 | 12 193 | 12 152 | -41 | 11 851 | 12 222 | 371 | 412 |
| 230903 | 050000 | 050200 | S11 | 98.77 | 100.74 | 99.11 | 49 774 | 49 605 | -169 | 49 945 | 48 802 | -1 143 | -974 |
| 271005 | 050000 | 050200 | S11 | 71.89 | 70.4 | 72.27 | 739 | 736 | -3 | 743 | 756 | 13 | 16 |
| 271007 | 050000 | 050200 | S11 | 79.24 | 77.18 | 77.18 | 64 | 64 | 0 | 62 | 64 | 2 | 2 |
| 271011 | 050000 | 050200 | S11 | 86.7 | 87.45 | 85.1 | 34 | 34 | 0 | 33 | 33 | 0 | 0 |
| 271012 | 050000 | 050200 | S11 | 77.43 | 84.14 | 78.37 | 56 984 | 56 792 | -192 | 57 676 | 52 896 | -4 779 | -4 587 |
| 271019 | 050000 | 050200 | S11 | 104.2 | 104.11 | 97.35 | 29 | 29 | 0 | 27 | 27 | 0 | 0 |
| 271021 | 050000 | 050200 | S11 | 107.6 | 110.22 | 109.99 | 10 842 | 10 805 | -37 | 11 085 | 10 782 | -302 | -265 |
| 271101 | 050000 | 050200 | S11 | 86.75 | 85.66 | 77.02 | 169 | 169 | 0 | 150 | 152 | 2 | 2 |
| 283905 | 050000 | 050200 | S11 | 96 | 101.33 | 98.33 | 85 | 84 | -1 | 87 | 82 | -6 | -5 |
| 391703 | 050000 | 050200 | S11 | 112.2 | 127.34 | 122.39 | 122 | 122 | 0 | 133 | 117 | -16 | -16 |
| 391707 | 050000 | 050200 | S11 | 99.31 | 110.94 | 107.14 | 389 | 387 | -2 | 420 | 374 | -46 | -44 |
| 391711 | 050000 | 050200 | S11 | 110.1 | 119.28 | 118.6 | 133 | 133 | 0 | 143 | 132 | -11 | -11 |
| 391713 | 050000 | 050200 | S11 | 104.3 | 109.32 | 107.08 | 54 | 54 | 0 | 55 | 53 | -3 | -3 |
| 391900 | 050000 | 050200 | S11 | 105.6 | 111.75 | 109.48 | 22 | 22 | 0 | 23 | 22 | -1 | -1 |
| 392301 | 050000 | 050200 | S11 | 97.49 | 106.15 | 104.78 | 3 323 | 3 312 | -11 | 3 571 | 3 269 | -302 | -291 |
| 392303 | 050000 | 050200 | S11 | 109.6 | 104.06 | 116.32 | 25 | 24 | -1 | 27 | 27 | 0 | 1 |
| 392313 | 050000 | 050200 | S11 | 113.8 | 115.33 | 119.2 | 11 612 | 11 573 | -39 | 12 160 | 11 961 | -198 | -159 |
| 560705 | 050000 | 050200 | S11 | 132.1 | 121.78 | 130.93 | 4 734 | 4 718 | -16 | 4 692 | 5 072 | 380 | 396 |
| 560801 | 050000 | 050200 | S11 | 98.49 | 98.16 | 97.93 | 5 092 | 5 075 | -17 | 5 063 | 5 063 | 0 | 17 |
| 560805 | 050000 | 050200 | S11 | 98.45 | 98.14 | 97.91 | 271 | 270 | -1 | 270 | 269 | 0 | 1 |
| 560900 | 050000 | 050200 | S11 | 99.86 | 99.02 | 98.41 | 94 | 94 | 0 | 93 | 93 | 1 | 1 |
| 950700 | 050000 | 050200 | S11 | 79.85 | 74.15 | 74.62 | 3 025 | 3 014 | -11 | 2 827 | 3 033 | 206 | 217 |
| | 050000 | 050200 | S11 | | | | 220 974 | 220 227 | -747 | 230 266 | 215 017 | -15 246 | -14 499 |

| PROD. N° | 130 INDUST. N° | DK-NACE INDUST. | SEC. | OPEN. | CLOS. | AVER. FOR THE YEAR | OPENING STOCK | CLOS. STOCK | CHGE | OPEN. STOCK | CLOSING STOCK | CHGE | PRICE COR. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 030101 | 050000 | 050200 | S14 | 92.49 | 89.96 | 89.96 | 2 243 | 2 344 | 101 | 2 182 | 2 344 | 162 | 61 |
| 030103 | 050000 | 050200 | S14 | 99.77 | 96.13 | 97.34 | 123 | 129 | 6 | 120 | 131 | 11 | 5 |
| 050800 | 050000 | 050200 | S14 | 80.76 | 99.43 | 96.29 | 81 | 85 | 4 | 97 | 82 | -14 | -18 |
| 051103 | 050000 | 050200 | S14 | 90.86 | 107.34 | 104.82 | 15 693 | 16 395 | 702 | 18 103 | 16 010 | -2 093 | -2 795 |
| 051105 | 050000 | 050200 | S14 | 93.4 | 90.26 | 90.78 | 3 616 | 3 778 | 162 | 3 515 | 3 800 | 285 | 123 |
| 230903 | 050000 | 050200 | S14 | 98.77 | 100.74 | 99.11 | 14 763 | 15 423 | 660 | 14 813 | 15 173 | 361 | -299 |
| 271005 | 050000 | 050200 | S14 | 71.89 | 70.4 | 72.27 | 219 | 229 | 10 | 220 | 235 | 15 | 5 |
| 271007 | 050000 | 050200 | S14 | 79.24 | 77.18 | 77.18 | 19 | 20 | 1 | 19 | 20 | 1 | 0 |
| 271011 | 050000 | 050200 | S14 | 86.7 | 87.45 | 85.1 | 10 | 11 | 1 | 10 | 11 | 1 | 0 |
| 271012 | 050000 | 050200 | S14 | 77.43 | 84.14 | 78.37 | 16 901 | 17 658 | 757 | 17 104 | 16 446 | -658 | -1 415 |
| 271019 | 050000 | 050200 | S14 | 104.2 | 104.11 | 97.35 | 9 | 9 | 0 | 8 | 8 | 0 | 0 |
| 271021 | 050000 | 050200 | S14 | 107.6 | 110.22 | 109.99 | 3 215 | 3 359 | 144 | 3 287 | 3 352 | 65 | -79 |
| 271101 | 050000 | 050200 | S14 | 86.75 | 85.66 | 77.02 | 50 | 52 | 2 | 44 | 47 | 2 | 0 |
| 283905 | 050000 | 050200 | S14 | 96 | 101.33 | 98.33 | 25 | 26 | 1 | 26 | 25 | 0 | -1 |
| 391703 | 050000 | 050200 | S14 | 112.2 | 127.34 | 122.39 | 36 | 38 | 2 | 39 | 37 | -3 | -5 |
| 391707 | 050000 | 050200 | S14 | 99.31 | 110.94 | 107.14 | 115 | 120 | 5 | 124 | 116 | -8 | -13 |
| 391711 | 050000 | 050200 | S14 | 110.1 | 119.28 | 118.6 | 40 | 41 | 1 | 43 | 41 | -2 | -3 |
| 391713 | 050000 | 050200 | S14 | 104.3 | 109.32 | 107.08 | 16 | 17 | 1 | 16 | 17 | 0 | -1 |
| 391900 | 050000 | 050200 | S14 | 105.6 | 111.75 | 109.48 | 7 | 7 | 0 | 7 | 7 | 0 | 0 |
| 392301 | 050000 | 050200 | S14 | 97.49 | 106.15 | 104.78 | 985 | 1 030 | 45 | 1 059 | 1 017 | -42 | -87 |
| 392303 | 050000 | 050200 | S14 | 109.6 | 104.06 | 116.32 | 7 | 8 | 1 | 7 | 9 | 2 | 1 |
| 392313 | 050000 | 050200 | S14 | 113.8 | 115.33 | 119.2 | 3 444 | 3 598 | 154 | 3 606 | 3 719 | 112 | -42 |
| 560705 | 050000 | 050200 | S14 | 132.1 | 121.78 | 130.93 | 1 404 | 1 467 | 63 | 1 392 | 1 577 | 186 | 123 |
| 560801 | 050000 | 050200 | S14 | 98.49 | 98.16 | 97.93 | 1 510 | 1 578 | 68 | 1 501 | 1 574 | 73 | 5 |
| 560805 | 050000 | 050200 | S14 | 98.45 | 98.14 | 97.91 | 80 | 84 | 4 | 80 | 84 | 4 | 0 |
| 560900 | 050000 | 050200 | S14 | 99.86 | 99.02 | 98.41 | 28 | 29 | 1 | 28 | 29 | 1 | 0 |
| 950700 | 050000 | 050200 | S14 | 79.85 | 74.15 | 74.62 | 897 | 937 | 40 | 838 | 943 | 105 | 65 |
| | 050000 | 050200 | S14 | | | | 65 536 | 68 472 | 2 936 | 68 288 | 66 854 | -1 434 | -4 370 |

## 5.13.6 Inventories calculated from information on products - 2063 inventories and energy inventories

Special 2063 inventories are calculated for a small number of national accounts product numbers, all of them agricultural products and including a few pre-processed ones regularly calculated from information on the individual goods (excluding some specific changes in inventories which, by tradition, are entered under MTM code 2064).

**Table 126 Increases in inventories calculated from information on products**

| CODE: 1000 DKK | 2063 | PRODUCT-N° | CODE | Purchasers' prices incl. VAT |
|---|---|---|---|---|
| Bovine animals, live, other than for breeding | | V010203 | 2063 | -16 200 |
| Pigs, live | | V010300 | 2063 | -51 700 |
| Meat of bovine animals, fresh/refrigerated | | V020100 | 2063 | 63 878 |
| Poultry, especially offal, fresh/refrigerated | | V020701 | 2063 | 9 690 |
| Cheese | | V040601 | 2063 | 40 873 |
| Wheat, wheat and rye mixed seed | | V100100 | 2063 | -427 173 |
| Rye | | V100200 | 2063 | 244 846 |
| Barley | | V100300 | 2063 | 701 176 |
| Oats | | V100400 | 2063 | -6 636 |
| Maize | | V100500 | 2063 | -3 225 |
| Mink, beaver, fox and seal fur | | V430101 | 2063 | 19 265 |
| **Increase in inventories, special products** | | **Total** | **2063** | **574 794** |

The calculation of 2063 changes in inventories is based on information on inventories in *physical units*, in contrast to the general method which is based on information on the *value* of inventories at industry level.

For those products included in the energy system, changes in inventories are calculated in the Environment and Energy Division in connection with the estimate of energy balances. The starting point here is information from *Energistyrelsen* [the Danish Energy Agency] on volumes and prices of the individual goods. Changes in inventories divided by product are received from the Environment and Energy Division, with no indication as to where in the inventories and industries the changes occur. As for the 2063 changes in inventories, the 2064 changes are based on information on physical quantities.

**Table 127 Increases in inventories from the energy system**

| CODE: 1000 DKK | 2064 | PRODUCT-N° | CODE | Purchasers' prices incl. VAT |
|---|---|---|---|---|
| Hard coal and hard coal briquettes | | V270100 | 2064 | 459 640 |
| Coke and semi-coke of coal | | V270400 | 2064 | -5 090 |
| Petroleum oils and crude oils | | V270900 | 2064 | 94 715 |
| Kerosene-type jet fuel and medium oil | | V271001 | 2064 | 12 021 |
| Aviation spirit and motor spirit | | V271005 | 2064 | 105 456 |
| Coloured fuel | | V271007 | 2064 | -171 |
| Light oil, special spirits | | V271009 | 2064 | -46 440 |
| Petroleum, medium oils | | V271011 | 2064 | 13 474 |
| Gas-oil, except for processing | | V271012 | 2064 | -642 269 |
| Fuel oils other than for further processing | | V271019 | 2064 | -79 269 |
| Fuel oils etc. for processing | | V271023 | 2064 | 212 451 |
| Natural gas, propane, butane, etc. | | V271101 | 2064 | 33942 |
| Natural gas, high-pressure, export (III) | | V271106 | 2064 | 16 824 |
| Petroleum coke | | V271301 | 2064 | -10 821 |
| Bitumen, asphalt, natur. bituminous | | V271400 | 2064 | -17 705 |
| Wood waste and scrap | | V440101 | 2064 | 23 349 |
| **Increase in energy inventories** | | **Total** | **2064** | **170 107** |

## 5.13.7 Special changes in inventories - other 2064 inventories

The other 2064 changes in inventories are also compiled for individual goods, but in principle should not be produced on a regular basis as results from national accounts subsystems. It is debatable whether this is the case with all products occurring here. The estimate of 2064 changes in inventories for ships has gradually become an ongoing process. However, more often than not changes in inventories are either introduced with the balancing or their actual figure is not finally fixed until that point, and cannot be worked out from the accounting sources. Some of these changes may, however, occur within inventories covered by the accounts. In 1995, there were unusually few national accounts product numbers with 2064 inventories.

**Table 128 Increases in inventories, other special inventories**

| CODE: 2064<br>1000 DKK | PRODUCT-N° | CODE | Purchasers' prices incl. VAT |
|---|---|---|---|
| Coffee, not roasted, not decaffeinated | V090101 | 2064 | 215 000 |
| Unmanufactured tobacco | V240101 | 2064 | -150 000 |
| Mink, beaver, fox and seal furs | V430101 | 2064 | 418 031 |
| Telephone sets | V851701 | 2064 | -200 000 |
| Railway coaches etc, self-propelled | V860300 | 2064 | -1 526 875 |
| Motor vehicles, new | V870303 | 2064 | -1 335 936 |
| Motor vehicles, used | V870305 | 2064 | -200 000 |
| Tankers | V890103 | 2064 | -2 351 |
| Cargo ships etc. | V890107 | 2064 | 47 982 |
| Warships | V890601 | 2064 | -151 237 |
| **Increase in other special inventories** | **Total** | **2064** | **-2 885 386** |

Initially, 2064 changes in inventories are worked out by linkage with the supply and use tables (SUTs) with no breakdown by sector or industry. As regards the institutional accounts, however, a breakdown by sector is necessary, and these changes in inventories are subsequently broken down (somewhat roughly) by industry and sector.

## 5.13.8 Correlation between changes in inventories calculated on the basis of either inventory totals broken down by industry or information on individual products

The table below outlines how national accounts changes in inventories are obtained. Since the purpose here is to show where there is a possible overlap between changes calculated from different sources, the aggregate inventory calculations are divided up into 2060-, 2061-, 2062- and 2065-inventories on the one hand and 2063- and 2064- inventories on the other.

**Figure 12 Correlation between changes in inventories broken down by industry and information on individual products**

| Industries<br><br>Products | Industries where changes in inventories are calculated on the basis of inventories in accounts | Industries where changes in inventories cannot be calculated from inventories in accounts | Changes in inventories divided by product |
|---|---|---|---|
| Products for which changes in inventories are worked out using a breakdown of changes in inventories in the accounts | These are obtained as the difference between opening and closing stocks as broken down in the accounts, calculated in average prices for the year. There may be 2064-changes in inventories here, in which case there are balancing corrections to the changes in inventories originally calculated. | Only 2063- or 2064- changes in inventories can occur here. | *Here, changes in inventories broken down by product are obtained as the sum of the changes in inventories divided up over the individual industries + any 2063- and 2064- changes in inventories.* |
| Products for which the aggregate change in inventories is calculated in terms of goods (2063- and 2064-inventories) | These are calculated on the basis of the breakdown of inventories but at the same time are included in those changes in inventories which are calculated on the basis of information on goods. To avoid double counting, they are omitted when the aggregate change in inventories is worked out in a breakdown by product. They are, however, included in the calculation of the industries' national accounts changes in inventories and the change from business accounting to national accounts consumption. | This area is covered in full by changes in inventories calculated on the basis of information on goods, even though these are not available in a breakdown by industry.<br>It covers items such as stocks of energy in energy supply and transport industries, which are calculated in A-files. | Total changes in inventories for goods where changes are calculated on the basis of information by good. |
| Changes in inventories broken down by industry. | Total changes in inventories calculated from inventories in the business accounts plus any additions (2064). | *These changes in inventories are included in the totals compiled at goods level with no breakdown by industry.* | National accounts aggregate changes in inventories. |

The first column in the table shows the changes in inventories according to the intermediate system, broken down by good according to the "inventory breakdown system". The national accounts aggregate changes in inventories are obtained as the sum of these changes excluding those goods for which all changes are determined in terms of goods as 2063- or 2064-inventories. Implicitly, the value of the overlap between the two calculations is also estimated in the inventory breakdown system. It is the cells (row 4, column 2) and (row 3, column 4) for which information is available before the start of the balancing.

It is clear that the calculation of the overlap will be somewhat uncertain. There is also normally a certain amount of uncertainty about the figures in the accounting statistics which refer to inventories. If the calculated inventory data conflict with other information when the product balances are balanced, it may therefore in many cases be reasonable to amend the aggregate changes in inventories[8].

## 5.14 Valuables

Acquisitions less disposals of valuables are estimated from the supply side using the commodity flow method. Table 129 shows net acquisitions of valuables divided into those products which were included in this capital accumulation category in 1995.

**Table 129 Acquisitions less disposals of valuables**

| Product n° | Text | DKK million |
|---|---|---|
| V570201 | Kelem and similar hand-woven rugs | 178 |
| V711301 | Articles of jewellery of silver | 255 |
| V711303 | Articles of jewellery of precious metals | 216 |
| V711401 | Articles of silversmiths' wares | 172 |
| V711403 | Articles of goldsmiths'/silversmiths' wares of precious metals | 11 |
| V711600 | Goods of natural pearls/cultured pearls | 1 |
| V711700 | Imitation jewellery n.e.c. | 93 |
| V970101 | Paintings, drawings and pastels | 251 |
| V970200 | Original engravings, prints or lithographs | 68 |
| V970300 | Original sculptures or statuary | 331 |
| V970601 | Antiques of an age exceeding 100 years | -135 |
| | | |
| **Total** | | **1 440** |

## 5.15 Exports of goods

Goods accounted for DKK 284 491 million, or 80%, of the DKK 357 454 million total exports of goods and services in 1995.

In the national accounts, exports of goods are based directly on Danmarks Statistik's estimates of external trade. External trade statistics are described in greater detail in Section 11.3. The estimates use one method for EU trade (Intrastat) and a different one for trade with non-EU countries (Extrastat).

The statistics have the same geographical coverage as the national accounts and are grossed up to cover all external trade in goods regardless of any administrative threshold values for the reporting of EU trade to the Intrastat system. EU trade not reported is estimated on the basis of the quarterly VAT returns on all EU trade. The primary statistics do not therefore need to be grossed up for use in the national accounts. The value levels in external trade statistics are f.o.b. for exports and c.i.f. for imports, as required by the ESA 95.

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8 The balancing, however, normally complies with the principle that there has to be a counterpart entry to corrections to inventories in other changes in inventories which may reasonably be considered to have taken place within the same enterprise. There are only a few exceptions, most often the introduction of 2064 changes in inventories in the goods in question.

Since the external trade statistics in the national accounts take precedence over *Danmarks Nationalbank's* estimates of settlements for the import and export of goods - after they have been assigned to the transaction date, corrected to the same economic area and valued f.o.b. or c.i.f. - without the difference being set off against services or any other item on the balance of payments current account, it is clear that the official balance of payments surplus according to national accounts is not the same as the surplus according to the *Nationalbank's* settlements statistics. The implicit assumption is therefore that the *Nationalbank* settlements statistics for exports and imports of goods do not capture all cross-border transactions involving changes of ownership of goods, or possibly include a certain amount of transit trade which should not be included in external trade estimated in line with the general trade principle, as required by the ESA 95.

## 5.16 Exports of services

Exports of services accounted for DKK 72 963 million, or 20%, of the DKK 357 454 million total exports of goods and services in 1995.

The source for the estimate of the services export total is *Danmarks Nationalbank's* settlements statistics, which are based on the mandatory payment returns which all "currency residents", i.e. persons resident according to the *Lov om valutaforhold* [Foreign Currency Act] are obliged to submit. The currency provisions in this Act refer to a threshold value for payments below which no payment returns have to be submitted. In 1995, the threshold was DKK 60 000, i.e. so low that almost all transactions in goods and services other than tourist income and expenditure and the like gave rise to a payment return from the resident unit which made or received the payment. Tourist income and expenditure are covered directly by the returns sent to the *Nationalbank* by the financial institutions.

The *Nationalbank* has ordered the monetary institutions [commercial banks] to collect the information and pass it on to the *Nationalbank*. The information is confidential and is used for statistical purposes only. Since the commercial banks through which settlements are routed ensure that the payment returns are sent to and collected from their customers, the settlements statistics have no noticeable non-response problems. The returns for settlements statistics have to report the purpose to the commercial bank, using a specific code. The breakdown by purpose of settlement (4-digit code) has been much more detailed since 1998 and more satisfactory from the point of view of a product breakdown than was the case in 1995. The new coding designation makes it possible to produce a more detailed breakdown of imports and exports of services by type than was previously the case. The rules valid in 2001 for returns to *Danmarks Nationalbank* settlements statistics were published in the *Nationalbank* publications "*Udlandsbetalinger – Formålskoder*", in June 1998, and "*Udlandsbetalinger – Indberetningsforskrifter*" in October 1998.

Resident units which make or receive payments via banks in the rest of the world are likewise obliged to submit payment returns. Compliance is ensured by legislation under which "currency residents" have to notify the *Nationalbank* when they open accounts in foreign banks etc. It is obvious that this requirement, and the penalties which go with it, increase the *Nationalbank's* chances of monitoring movements.

The statistical challenge arising from the use of settlements statistics for the estimate of *aggregate* exports/imports of services lies in ensuring that the definition of what constitutes an export or an import of services remains consistent with the external trade statistics and national accounts estimates of exports of goods f.o.b. and imports of goods c.i.f. Since the payments in the settlements statistics are coded as goods or services depending on whether transport and insurance services are invoiced

separately or not, it is clear that the settlements statistics' delimitation of external trade in goods/services will not tally with the national accounts' definitions. When settlements statistics are used for national accounts, therefore, a correction is made to exports and imports of services as estimated in the settlements statistics to bring the latter into line with the estimate of exports of goods f.o.b. and imports of goods c.i.f.

This f.o.b./c.i.f. correction uses the "correction percentage method", i.e. a correction percentage is used for exports of goods to estimate the related services reported for settlements statistics together with the payments for the goods, because the delivery terms have given the customer more transport and insurance than would correspond to f.o.b. delivery conditions. The opposite occurs on the imports side, where some transport and insurance services crop up in the settlements statistics as imports of services even though the services in question are already included in the imports of goods when these are estimated c.i.f.

The correction percentages for 1995 are fixed by comparing external trade statistics exports and imports with the settlements statistics' payments for goods, assigned to the transaction date, excluding the Faeroes and Greenland, over a fairly long period. The correction percentages are fixed so that the balance of goods and services over time will, as far as possible, be the same in both estimates, with the constraint that the percentages estimated have to be compatible with information from external trade statistics on delivery terms for exports and imports of goods. More specifically, the f.o.b. correction percentage for exports for 1995 was fixed at 3.08 and the c.i.f. correction percentage for imports at 0.39.

Exports of services are then calculated by adding an amount of DKK 8 453 million to the settlements statistics' estimate of payments for services. This figure is 3.08 % of exports of goods according to external trade statistics, less exports to the Faeroes and Greenland and less exports of ships and aircraft. The amount is the amount estimated for transport and insurance services linked to Denmark's exports of goods which is in excess of f.o.b. delivery terms and which, in the settlements statistics, is included in the payments for goods. These services have to be treated as exports of services in the national accounts.

Similarly, imports of services are calculated by subtracting DKK 972 million from the settlements statistics estimate of payments for services. This is 0.39% of imports of goods according to external trade statistics, less imports from the Faeroes and Greenland and less imports of ships and aircraft. The amount is the amount estimated for transport and insurance services linked to Denmark's imports of goods which the settlements statistics fail to include in the c.i.f. delivery terms for imports of goods and which are included as payments for services in the settlements statistics. These services have to be treated as imports of goods in the national accounts.

The correction percentage method can be interpreted as Denmark's implementation of the f.o.b./c.i.f. corrections described in Tables 3.4 and 3.5 in the ESA 95 on the basis of the statistical sources available in Denmark. If countries have no settlements statistics, their method is likely to be very different from Denmark's, since the basis will be questionnaire surveys, for example.

The breakdown of aggregate exports and imports of services in the national accounts product balances for services uses both the information on kind found in the settlements statistics purpose codes and other statistical sources such as the transport statistics estimates of the foreign freight income of Danish vessels and expenditure in foreign ports. VAT statistics are also used - a source which is particularly useful on the exports side, since they contain information on tax-free export sales for each of the most detailed DK-NACE industries.

## 5.17 Imports of goods

Goods accounted for DKK 256 522 million, or 81%, of total imports of goods and services in 1995 (DKK 316 144 million).

Reference should be made to Section 5.15, since sources and methods are the same for imports as for exports of goods.

## 5.18 Imports of services

Imports of services accounted for DKK 59 622 million, or 19%, of the total imports of goods and services in 1995 (DKK 316 144 million).

Reference should be made to Section 5.16, since the sources and methods are the same for imports as for exports of services.