5. The expenditure approach

5.0 GDP according to the expenditure approach

For 2003, the calculation of expenditure-based GDP can be summarised as in table 5.1 below:

Table 5.1 GDP, expenditure approach, 2003

	Value, DKK million	% of GDP
Total final consumption expenditure	1 038 178	74
Household final consumption expenditure	656 340	47
NPISH final consumption expenditure	10 602	1
General government final consump. expenditure	371 236	27
Gross capital formation	274 962	20
Gross fixed capital formation	269 835	19
Changes in inventories	3 210	-
Acquisitions less disposals of valuables	1 917	-
Exports of goods and services	635 114	45
Imports of goods and services	547 565	39
GDP	1 400 689	

The table shows that household final consumption expenditure in Denmark made up a little less than half of GDP in 2003, general government final consumption expenditure a good quarter, gross capital formation one-fifth and net exports the final 6%. Exports of goods and services accounted for 45% and imports 39%.

5.1 The reference framework

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

Household final consumption expenditure:
Retail trade statistics, DOI (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)

Supply side estimates
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

Gross fixed capital formation:
Agricultural statistics
Public finance statistics
Accounts statistics for industries predominated by public corporations
Register of buildings and dwellings (BBR)
Index of construction costs
Product statistics for the IT industries
ICT expenditure
External trade statistics
Industrial accounts statistics
Specific industry statistics
Media statistics
Register of motor vehicles
Register of vessels
Register of aircrafts

Acquisitions less disposals of valuables:
Industrial commodity statistics
External trade statistics
Household budget survey (FU)

Changes in inventories:
Industrial accounts statistics
SLS-E 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
Accounts statistics for sea water transport.

For some consumption groups of household final consumption expenditure, more than one source is available. In these cases, an assessment of which source is the most reliable for estimating the variable (consumption group) has been made. The assessment mainly relates to whether the consumer survey (FU) should be replaced by another source.

It is widely known that information in consumer surveys is surrounded by a good deal of uncertainty when it comes to 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 FU figures are therefore used to divide the aggregate groups from retail sales 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.

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.

5.2 Valuation

When 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 all other cases, for example when a final demand component is estimated from the supply side, it is ensured

that proper trade margins, product taxes and -subsidies and VAT are included. This is typically done as part of setting up product balances.

5.3 Transition from private accounting and administrative concepts to ESA95 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, which is consistent with the ESA 95 net VAT 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 as well as purchased and own-produced software. The corrections which have to be made to bring business accounts into line with national accounts concepts were described in Chapter 3 as part of the description of the output-based 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 chapter 3.

For import and export of services, 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, 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. For a more detailed description, please see section 5.16.

5.4 The roles of direct and indirect estimation methods

By far the largest share of expenditure-based GDP is calculated using a direct estimate. The most important exceptions are household consumption of hotel and restaurant services, dwelling services, consumption in NPISH, which are all calculated indirectly from the supply side.

Other than for those areas of the economy (general government, owner-occupied dwellings, NPISH), where the output- and expenditure-based calculations cannot by definition be independent, GDP from the production side and GDP from the expenditure side are largely independent of one another prior to balancing.

Acquisitions less disposables can in principle be estimated in two ways, either directly using information on the expenditure (uses) side (purchaser's side) or indirectly on the basis of supplies of products to the domestic market, using estimated shares of supplies to the final demand components to calculate final uses from the resources side.

In the Danish national accounts, the initial estimates for the final demand components are compiled as direct estimates from the expenditure side.

Since the Danish national accounts are adjusted in a detailed product balance system, there is a systematic confrontation in connection with the balancing. One of the strongest 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.

5.5 The roles of benchmarks and extrapolations

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 4-5 years, 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 the year 2004 and then generally projected forwards using relevant indicators and backwards using the old series.

5.6 The main approaches taken with respect to exhaustiveness

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 household consumption expenditure. Retail sales statistics do not cover all industries 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, as described in section 5.7.

The calculations of fringe benefits and the black economy are discussed in chapter 7.

5.7 Household final consumption expenditure

5.7.1 Statistical sources

Various sources are used 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 turnover index" (DOI), it is in fact a monthly estimate of the level of retail turnover. To calculate the index, turnover in the sample is grossed up to cover the total population of retail trade enterprises. The national accounts uses the DOI levels for compiling household consumption expenditure.

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 expenditure. 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 also should be included in the estimate of household final consumption expenditure.

The main idea behind the calculation system is a breakdown of household consumption expenditure 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 available information. The basic breakdown of household consumption expenditure is into retailable and non-retailable consumption expenditure. The former is the share of final consumption expenditure of goods, which involves retail trade. In this context, retail trade excludes motor vehicles etc. and energy goods, which are not covered by the DOI.

Sales to private individuals as taken from the DOI 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 87% of basic turnover in the population, so sampling uncertainty is rather low. Since January 2002, the sample has been renewed by approximately 1/3 every year. The breakdown of goods in DOI is not very detailed. DOI breaks 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)

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. The view taken here is that the FU is essentially more reliable as a distribution key than as an estimate of levels. There are exceptions, however, where the FU is known to give a misleading picture of consumption expenditure.

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 early versions of the provisional national accounts.

The detailed calculations of household consumption expenditure as described in this section are already made for the provisional accounts for 2003, year t, calculated in year t+2 (the final accounts are calculated in year t+3), because sources are available at this early stage. The target totals compiled in year t+2 are then part of the balancing of the provisional accounts. These balanced values from the provisional accounts are then used as target totals in the final accounts. The remaining part of section 5.7 describes the calculation for the provisional accounts calculated in year t+2.

Table 5.2 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. The following abbreviations are used:

DOI: Retail turnover index.
FU: Uncorrected household budget survey
FU corr: Household budget survey with certain - in most cases conceptual – corrections
FU + product: Household budget survey plus a product balance
Supply: supply-side estimates using the commodity flow method
FNR: Balanced values from the latest provisional national accounts, in this case calculated in year t+1
BB: Balance of payments statistics
FD: Food, beverages and tobacco and convenience goods in the DOI
B: Clothing and footwear in the DOI
A: Other groups of goods in the index
Energy: The energy sub-system which compiles supply and use of energy products.
Telephone: Telephone interviews

Table 5.2 Statistical sources for the national accounts estimates of household final consumption expenditure

COICOP-		**Source**	**Retailable/**	**Group of**	**Value**
Consumption group			**non-retailable**	**goods in DOI**	**DKK million**
72-grouping			**consumption**		
1110	Bread and cereals	DOI	Retail	FD	11 083
1120	Meat	DOI	Retail	FD	17 245
1130	Fish	DOI	Retail	FD	2 992
1141	Eggs	DOI	Retail	FD	1 119
1142	Milk, cream, yoghurt etc.	DOI	Retail	FD	5 892
1143	Cheese	DOI	Retail	FD	3 935
1150	Butter, oils and fats	DOI	Retail	FD	2 176
1160	Fruit and vegetables except potatoes	DOI	Retail	FD	10 017
1171	Potatoes etc.	DOI	Retail	FD	1 539
1181	Sugar	DOI	Retail	FD	436
1182	Ice-cream, chocolate, etc.	FNR	Retail	FD	10 032
1190	Food products n.e.c.	DOI	Retail	FD	3 059

1210	Coffee, tea and cocoa	DOI	Retail	FD	2 570
1220	Mineral waters, soft drinks and juices	FNR	Retail	FD	6 490
2110	Wine and spirits	FNR	Retail	FD	8 331
2130	Beer	FNR	Retail	FD	5 349
2210	Tobacco	FNR	Retail	FD	14 284
3110	Garments and clothing materials etc.	DOI	Retail	B	26 368
3140	Laundry, dry cleaning etc.	FU-corr.	Non-retail		547
3200	Footwear	DOI	Retail	B	5 666
4100	Housing	Supply	Non-retail		39 937
4200	Imputed rentals for housing	Supply	Non-retail		81 117
4300	Regular maintenance and repair of the dwelling	FU	Non-retail		5 269
4410	Refuse collection etc.	FU	Non-retail		3 906
4430	Water supply and sewage services	Energy	Non-retail		8 712
4510	Electricity	Energy	Non-retail		16 816
4520	Gas	Energy	Non-retail		4 663
4530	Liquid fuels	Energy	Non-retail		3 929
4540	Hot water, steam etc.	Energy	Non-retail		15 533
5100	Furniture, furnishings, carpets etc.	DOI	Retail	A	14 727
5200	Household textiles	DOI	Retail	A	3 130
5310	Major household appliances	DOI	Retail	A	5 782
5330	Repair of major household appliances	FU	Non-retail		676
5400	Glass, tableware and household utensils	DOI	Retail	A	4 203
5500	Tools and equipment for house and garden	DOI	Retail	A	3 423
5610	Non-durable household goods	DOI	Retail	FD	3 471
5620	Domestic services and home care services	FU	Non-retail		2 782
6111	Medical and pharmaceutical products	DOI	Retail	A	5 208
6112	Therapeutic appliances and equipment	DOI	Retail	A	2 823
6200	Out-patient services	FU corr.	Non-retail		7 097
6300	Hospital services	Supply	Non-retail		2 167
7100	Purchase of vehicles	FNR	Non-retail		24 451
7210	Repair and mainten. of motor vehicles	FU corr.	Non-retail		15 263
7220	Fuels and lubricants	Energy.	Non-retail		17 878
7240	Other serv. related to personal transport	FU corr.	Non-retail		7 021
7300	Transport services	FU corr.	Non-retail		7 683
8100	Communications	FU corr.	Non-retail		13 728
9110	Radio and television sets etc.	DOI	Retail	A	4 962
9120	Photographic equipment etc.	DOI	Retail	A	1 178
9130	Data processing equipment	DOI	Retail	A	6 996
9140	Recording media for pictures and sound	DOI	Retail	A	2 996
9150	Repair of a/v and computer	FU	Non-retail		898
9200	Other major durables for recreation and culture	DOI	Retail	A	2 801
9300	Other recreational items and equipment	DOI	Retail	A	14 455
9400	Recreational and cultural services	FU corr.	Non-retail		23 381
9510	Books, newspapers and periodicals	DOI	Retail	A	9 248
9530	Stationery and drawing materials etc.	DOI	Retail	A	1 414
9600	Package holidays	Teleph.	Non-retail		5 716
9700	Education	Supply	Non-retail		5 157
9810	Catering	FNR	Non-retail		28 696

9820	Accommodation services	FNR	Non-retail		3 164
9911	Hairdressing salons etc.	FU corr.	Non-retail		5 399
9912	Articles and products for personal care	DOI	Retail	FD	8 311
9921	Jewellery, clocks and watches	DOI	Retail	A	1 746
9922	Other personal effects	DOI	Retail	A	2 744
9931	Retirement homes, day-care centres etc.	Supply	Non-retail		3 601
9932	Kindergartens, crèches etc.	Supply	Non-retail		9 788
9940	Insurance	Supply	Non-retail		16 393
9950	Financial services n.e.c.	Supply	Non-retail		32 327
9960	Other services n.e.c.	FU+product	Non-retail		4 477
9980	Consumption. of non-residents on the economic territory	BB	Non-retail		-35 316
9990	Consumption of residents in the ROW	BB	Non-retail		35 286
Total household consumption expenditure					**656 340**

5.7.2 Methods of calculation

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

When describing the calculations, it is useful to make a breakdown into a number of steps:

Step 1: Link between the three main groups in DOI and the national accounts consumption groups

It is necessary to create a link between the three main groups from the DOI and the national accounts consumption groups. The following links were adopted between the national accounts consumption groups defined by purpose - c.f. Section 10.3 - and the DOI main groups of goods:

FD: Food, beverages and tobacco, convenience goods:

1110 Bread and cereals
1120 Meat
1130 Fish
1141 Eggs
1142 Milk, cream, yoghurt etc.
1143 Cheese
1150 Butter, oils and fats
1160 Fruit and vegetables except fruit
1171 Potatoes etc.
1181 Sugar
1182 Ice-cream, chocolate etc.
1190 Food products n.e.c.
1210 Coffee, tea and cocoa
1220 Mineral waters, soft drinks and juices

2110 Wine and spirits
2130 Beer
2210 Tobacco
5610 Non-durable household goods
9912 Articles and products for personal care

B: Clothing
3110 Garments and clothing materials etc.
3200 Footwear

A: Other consumer goods
5100 Furniture, furnishings, carpets etc.
5200 Household textiles
5310 Major household appliances
5400 Glass, tableware and household utensils
5500 Tools and equipment for house and garden
6111 Medical and pharmaceutical products
6112 Therapeutic appliances and equipment
9110 Radio and television sets etc.
9120 Photographic equipment etc.
9130 Data processing equipment
9140 Recording media for pictures and sound
9200 Other major durables for recreation and culture
9300 Other recreational items and equipment
9510 Books, newspapers and periodicals
9530 Stationery and drawing materials etc.
9921 Jewellery, clocks and watches
9922 Other personal effects

Step 2: Adding retail trade industries not covered by DOI and deducting goods used as input in construction

The DOI does not cover all retail trade industries (outside the motor vehicle group and energy). As a first step, the missing DK-NACE retail trade industries are identified and their VAT sales are used instead. VAT sales multiplied by one plus the VAT rate is as a general rule assumed to be equivalent to DOI sales to private consumers. The following detailed NACE industries are used:

523200 Retail sale of medical and orthopaedic goods
524450 Retail sale of articles for lighting
524540 Retail sale of musical instruments
524620 Retail sale of building materials
524630 Retail sale of paint and wall paper
524835 Art shops and galleries
524865 Retail sale of computers and standard software
524870 Retail sale of telecommunications equipment
524885 Retail sale of pet animals
524895 Sex shops
524899 Retail sale of other goods
526210 Retail sale of fruit and vegetables via stalls and markets

526290 Other retail sale via stalls and markets
526300 Other non-store retail sale
453100 Installation of electrical wiring and fittings
011220 Nurseries

The major part of these industries are used in full, however there are some exceptions as described below:

For the very large industry 524865 Retail sale of computers and standard software, it is assumed that only 85% of VAT sales are to private consumers. This percentage is 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.

For 011220 Nursery gardens, 90% of VAT sales are assumed to be for household consumption expenditure. The same applies to electrical installation businesses, where 10% of VAT sales are assumed to be household consumption expenditure. Unlike nurseries and electrical installation businesses, the DOI covers all turn over in bakers' shops, i.e. both retail sales and sales of own products. No correction is therefore necessary for bakers' shops.

The DOI covers "do-it-yourself centres" (DIY centres) and paint and wallpaper shops. Most sales in these units, however, are goods used for input in construction and not household consumption expenditure. Only 5% of sales are assumed to be household consumption expenditure and the remaining 95% to be input in construction. The latter share, including VAT, is deducted from sales to households as consumers according to DOI on the basis of VAT sales in 524620 retail sale of building materials and 524630 Retail sale of paint and wall paper. However, with these percentages it should be remembered that all materials for repair and maintenance of buildings in the Danish national accounts are channelled through the special materials industry 450004, as described in Section 3.12. The share of expenditure on materials, which goes to ordinary minor repair and maintenance of dwellings, and which is normally the responsibility of tenants, and the corresponding share for owner-occupiers, are lumped together under consumption in households under the product balance "building repairs".

Step 3: DOI correction for new businesses
The DOI does not include turnover in new businesses started in the current year. Sales in businesses which have ceased trading are not counted either. Consequently, the DOI includes a systematic underestimate. A correction is using grossing factors based on annual statistics on business start-ups.

Step 4: Correction for filling station sales of goods not connected with 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 5: 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. The reason is that in Denmark it is possible to use income information from register data relating to households in the sample, thus ensuring that all income groups are correctly represented in the grossing up.

Step 6: 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 and the grossed up 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 skewness 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 “extra grossed up FU” is used as the only source and without any further adjustments for consumption groups:

4300	Regular repair and maintenance of dwellings
4410	Refuse collection
5330	Repair of major household appliances
5620	Domestic and homecare services
9150	repair of a/v and computers

Step 7: Creating a distribution basis for the DOI, supplemented and corrected, and for the FU

For each of the three main groups of goods in DOI, 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 as shown in step 1 in proportion to the FU distribution (the extra grossed up FU from step 8), 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 8: Consumption groups 1182 chocolate and confectionary, 1220 mineral waters and soft drinks, 2110 wine and spirits, 2130 beer, 2210 tobacco and 7100 purchase of vehicles

The goods covered by these consumption groups are all imposed by product taxes, and information about the taxed quantities combined by the tax rules are the basis for the estimates of household consumption.

The initial estimates for the six consumption groups are equal to the values in the provisional national accounts calculated in year t+1. When the provisional accounts are less detailed, they are broken down to the detailed final accounts consumption groups using the latest final year.

Step 9: Allocation of consumption of non-residents (tourist income)

When the target totals are calculated on the basis of the FU, purchases by foreign tourists in Denmark is not included in the consumption expenditure on the economic territory. In order to incorporate this expenditure in the relevant consumption groups a correction is made on the basis of input/output multipliers. The following consumption groups based on the FU are corrected for tourist expenditure:

3140	Laundry, dry cleaning etc.
6200	Out-patient services
7210	Repair and maintenance of motor vehicles
7300	Transport services
8100	Communications
9400	Recreational and cultural services
9911	Hairdressing salons etc.

Step 10: Consumption groups estimated from the supply side

For various consumption groups, the best initial estimate is obtained by using supply values either directly or as a supplement to the FU. The following consumption groups are covered by supply side estimates:

4100	Housing
4200	Imputed rentals
6300	Hospitals
9700	Education
9931	Retirement homes, day-care centres etc.
9932	Kindergardens, Creches etc.
9940	Insurance
9950	Financial services (both directly paid services and FISIM)
9960	Other services (partly)

Step 11: Water and energy

Initial estimates for consumption groups:

4430	Water supply and sewage services
4510	Electricity
4520	Gas
4530	Liquid fuels
4540	Hot water, steam etc.
7220	Fuels and lubricants

are obtained from product balances for energy products compiled in the special “energy sub system”. For 4430 Water supply and sewage services an additional value for sewage service from the supply side is added.

Step 12: Package holidays
The calculation of consumption group 9600 Package holidays is based on Statistics Denmarks' statistics on business trips and holidays which is based on telephone interviews and is grossed up to cover the total population.

Step 13: Tourist expenditure and –income
Consumption groups 9980 Consumption of non-residents on the economic territory and 9990 Consumption of residents in the ROW, which is the same as tourist income and – expenditure, are based on the settlements statistics as described in chapters 5.16 and 5.18.

Step 14: Inclusion of fringe benefits and black economy
After the above described calculations, fringe benefits and expenditure on black activities are added to relevant consumption groups. The calculation of fringe benefits and the black economy are described in chapter 7. It must be noted, that illegal activity are not added to household consumption expenditure. Illegal activity is only included as an explicit correction to GDP and GNI for the fourth own resource purposes.

Step 15: Balancing correction based on experience
Finally, the values 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 from balancing the previous year. 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 12 is multiplied by a factor of 1.02 when the final initial estimate is worked out for household consumption of group 1110.

Step 16: Balancing in the provisional accounts calculated in year t+2
The final target totals are then used for compiling the provisional accounts for year t in year t+2. These balanced household consumption expenditure figures are then used as target totals when balancing the final national accounts in year t+3.

5.7.3 Balancing in the framework of the national accounts product balance system

The target totals as described above for household consumption expenditure are included with 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 2 350 products.

Table 5.3 shows the target totals, the balanced values from the preliminary accounts, the balanced values from the final national accounts and values from the FU.

Table 5.3 Initial estimates and adjusted values for household consumption by consumption group (COICOP) and values according to the 2003 household budget survey (FU)

COICOP-	Initial est. for prelim.	Balanced preliminary	Balanced final	Grossed up	National accounts/ FU
consumption group	accounts	national	national	household	
72 grouping	DKK mill.	accounts	accounts	budget	(3)/(4)
		DKK mill.	DKK mill.	survey (FU)	
				DKK mill.	
	(1)	(2)	(3)	(4)	(5)
1110 Bread and cereals	11 135	11 135	11 083	12 463	0.89
1120 Meat	17 326	17 326	17 245	16 218	1.06
1130 Fish	3 215	3 215	2 992	3 173	0.94
1141 Eggs	1 159	1 159	1 119	1 080	1.04
1142 Milk, cream, yoghurt etc.	5 950	5 950	5 892	5 781	1.02
1143 Cheese	3 961	3 961	3 935	3 953	1.00
1150 Butter, oils and fats	2 249	2 249	2 176	1 806	1.21
1160 Fruit and vegetables except potatoes	9 853	9 853	10 017	11 737	0.85
1171 Potatoes etc.	1 539	1 539	1 539	1 699	0.91
1181 Sugar	435	435	436	404	1.08
1182 Ice-cream, chocolate, etc.	10 339	10 339	10 032	8 401	1.19
1190 Food products n.e.c.	3 161	3 161	3 059	2 264	1.35
1210 Coffee, tea and cocoa	2 556	2 556	2 570	2 095	1.23
1220 Mineral water, soft drinks and juices	6 887	6 887	6 490	4 942	1.31
2110 Wine and spirits	9 284	9 284	8 331	9 136	0.91
2130 Beer	5 264	5 264	5 349	3 271	1.64
2210 Tobacco	14 104	14 104	14 284	10 234	1.40
3110 Garments and clothing materials etc.	26 419	26 419	26 368	24 619	1.07
3140 Laundry, dry cleaning etc.	555	555	547	710	0.77
3200 Footwear	5 807	5 807	5 666	5 169	1.10
4100 Actual rentals for housing	40 613	40 613	39 937	50 797	0.79
4200 Imputed rentals for housing	82 470	82 470	81 117	53 654	1.51
4300 Regular maint. and rep. of dwellings	5 615	5 615	5 269	12 170	0.43
4410 Refuse collection etc.	3 928	3 928	3 906	8 258	0.47
4430 Water supply and sewerage services	9 567	8 831	8 712	8 145	1.07
4510 Electricity	17 275	16 875	16 816	15 272	1.10
4520 Gas	4 679	4 679	4 663	2 659	1.75
4530 Liquid fuels	4 182	4 582	3 929	3 893	1.01
4540 Hot water, steam etc.	15 197	15 397	15 533	23 904	0.65
5100 Furniture, furnishings, carpets etc.	15 109	15 109	14 727	13 432	1.10
5200 Household textiles	3 233	3 233	3 130	3 382	0.93
5310 Major household appliances	5 952	5 952	5 782	6 167	0.94
5330 Repair of major household appliances	680	680	676	119	5.66
5400 Glass, tableware and househ. utensils	4 477	4 477	4 203	3 741	1.12
5500 Tools and equip. for house and garden	3 589	3 589	3 423	4 242	0.81
5610 Non-durable household goods	3 633	3 633	3 471	4 662	0.74
5620 Domestic and home care services	2 722	2 722	2 782	4 797	0.58
6111 Medical and pharmaceutical products	5 329	5 329	5 208	5 421	0.96
6112 Therapeutic appliances and equipment	2 871	2 871	2 823	2 613	1.08
6200 Out-patient services	6 958	6 958	7 097	8 077	0.88
6300 Hospital services	2 150	2 150	2 167	159	13.61
7100 Purchase of vehicles	25 252	25 360	24 451	26 593	0.92
7210 Mainten. and repair of motor vehicles	16 281	15 681	15 263	11 591	1.32

7220 Fuels and lubricants	18 110	18 402	17 878	18 892	0.95
7240 Other services related to personal transport equipment	7 073	7 073	7 021	2 945	2.38
7300 Transport services	8 038	8 038	7 683	10 609	0.72
8100 Communications	12 977	12 977	13 728	14 682	0.94
9110 Radio and television sets etc.	4 317	5 099	4 962	4 296	1.16
9120 Photographic equipment etc.	1 064	1 300	1 178	892	1.32
9130 Data processing equipment	6 028	6 228	6 996	4 848	1.44
9140 Record. media for pictures and sound	2 690	2 990	2 996	3 328	0.90
9150 Repair of a/v and data processing equipment, etc.	900	900	898	231	3.89
9200 Other major durables for recreation and culture	2 611	2 811	2 801	2 726	1.03
9300 Other recreational items and equipment	14 595	14 595	14 455	15 812	0.91
9400 Recreational and cultural services	22 842	22 842	23 381	16 703	1.40
9510 Books, newspapers and periodicals	9 329	9 429	9 248	7 791	1.19
9530 Stationery and drawing materials etc.	1 424	1 424	1 414	1 185	1.19
9600 Package holidays	4 964	5 716	5 716	8 004	0.71
9700 Education	5 103	5 114	5 157	2 628	1.96
9810 Catering	27 318	28 911	28 696	20 440	1.40
9820 Accommodation services	3 261	3 261	3 164	5 296	0.60
9911 Hairdressing salons etc.	5 534	5 234	5 399	5 543	0.97
9912 Appliances, articles and products for personal care	8 435	8 435	8 311	8 756	0.95
9921 Jewellery, clocks and watches	1 974	1 824	1 746	2 392	0.73
9922 Other personal effects	2 829	2 829	2 744	2 288	1.20
9931 Retirem. homes, day-care centres etc.	3 663	3 663	3 601	338	10.64
9932 Kindergartens, crèches etc.	9 769	9 769	9 788	6 788	1.44
9940 Insurance	16 240	16 700	16 393	19 460	0.84
9950 Financial services n.e.c.	34 726	32 377	32 327	1 576	20.51
9960 Other services n.e.c.	4 583	4 583	4 477	1 582	2.83
9980 Consumption of non-residents on the economic territory	-35 316	-35 316	-35 316		
9990 Consumption of residents in the ROW	35 480	35 480	35 286		
Total	**663 359**	**664 621**	**656 340**		

The table shows that for 2003 the first balancing resulted in an upward adjustment of 1 262 mill. DKK and the second balancing, which was part of balancing the final accounts, resulted in a subsequent downward adjustment of 8 281 mill. DKK.

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.

5.8 NPISH final consumption expenditure

Non-market output of NPISHs is produced in industry 910000 Activities of membership organisations and 853209 Social institutions for adults and is allocated to final consumption expenditure in a special column in the supply and use tables. As NPISH final consumption expenditure is calculated from the supply side, sources and methods for this component have already been described in chapter 3, more specifically sections 3.1.5.3, 3.20 and 3.21.

5.9 Government final consumption expenditure

Government final consumption expenditure can be split into:

1) Individual consumption expenditure
2) Collective consumption expenditure

1) Individual consumption expenditure
Individual consumption expenditure consists of:

- Social benefits in kind (D.631) and
- Transfers of individual non-market goods or services (D.632).

Social benefits in kind refers to goods and services which general government purchases on the market and makes available to households. According to 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 fully reliable.

Transfers of individual non-market goods or services consists of output of government, individual non-market services less sales income from these individual services less the value of own-produced software in those units. The sources and methods for estimating output were described in Section 3.1.3.1 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 is 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.

2) Collective consumption expenditure
Collective consumption expenditure consists of output of government non-market services used for collective, i.e. non-individualisable, government consumption, minus sales income from these collective services minus the value of the software produced in those units. The sources and methods for estimating the output value were described in Section 3.1.3.1 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 split between transfers of individual non-market goods or services and government collective consumption expenditure is based on the COFOG classification as defined in ESA95 Paragraph 3.85.

The relationship between government output and government final consumption expenditure by sub-sector is shown in table 5.4.

Table 5.4 Relationship between general government output and final consumption expenditure by sub-sector. 2003

DKK million	S.1311	S.1313	S.1314	S.13, total
+ Compensation of employees	65 432	184 567	2 472	252 471
+ Consumption of fixed capital	11 059	15 648	-	26 707
+ Intermediate consumption	42 116	74 610	846	117 573
+ Other taxes on production and –subsidies, net	651	-3 562	1	-2 910
= Output	119 258	271 264	3 319	393 841
+ Social benefits in kind	-	20 075	-	20 075
+ Income from sales	-16 153	-25 755	-7	-41 914
+ Own account software	-424	-342	-	-766
= Consumption expenditure	102 681	265 243	3 312	371 236

Note: S.1311: Central government, S.1313 Local government, S.1314 Social security funds

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 the following product breakdown:

Table 5.5 Gross fixed capital formation in tangible assets, by type

Type	**DKK million**
Machinery and equipment	75 138
Transport equipment	31 666
Buildings	108 659
of which	
Dwellings	68 054
Non-residential buildings	40 605
Structures	27 104
Livestock	-19
Total	**242 547**

As far as possible all of these are estimated using the expenditure approach. Since the industrial accounts statistics in 1999 was extended to cover most industries with market producer units, it has been possible to estimate capital formation in tangible fixed assets in most industries with a distribution by buildings, structures and a residual consisting of machinery, transport- and other equipment. The estimates from the uses side are confronted with the available information on the domestic supply of investment goods by product in an "investment matrix" framework similar to the framework used in supply and use matrices. A more comprehensive description of the methods used in the compilation of investment matrices can be found in 5.10.4 below. The first version of the investment matrices for 2003 was compiled for the preliminary annual accounts. During this process decisions were made on investment in those industries where investment data are scarce. Such initial estimates may be adjusted before the balancing of supply and use tables begins. Hence there is no clear borderline between supply side and uses side based estimates.

During the recent years widening of the scope of the industrial accounts statistics have led to estimates of GFCF in machinery, equipment and major building repairs that have gradually changed from supply side estimates to estimates that are mainly based on information from the uses side.

The estimates for construction of new buildings are based on either accounting statistics with very detailed coverage of actual observations or a calculation based on the exhaustive register of buildings (the BBR) and prices pr square meter for the different types of buildings.

The statistical sources for agriculture, certain industries dominated by a few big units and government or government controlled units can be assumed to contain very reliable estimates of GFCF. For all industries covered by the industrial accounts statistics the same kind of information is available. It should however be taken into account that GFCF-estimates are often less reliable than other estimates based on the industrial accounts statistics. Annual GFCF-figures tend to be more volatile than for instance the figures for intermediate consumption. Fluctuations in reported

figures will be reflected in the grossed up values, adding to uncertainties in the GFCF-estimates of industries for which the investment figures are only partially based on questionnaires or published annual reports. Furthermore the methods used in grossing up will tend to underestimate investment in newly started enterprises that have not yet supplied questionnaires or annual reports to accounts statistics. During the start-up phase such enterprises will often have comparatively small sales and employment, but considerable capital formation can take place in the same period.

Even after the introduction of a direct estimate of capital formation in machinery and equipment which is expenditure-based, it seems likely that the estimate for this component will still to some degree need to be adjusted to take into account the supply of investment goods.

5.10.2 Subsystems for calculating GFCF by product

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 big ships and aircraft is based on register information for each individual vessel and each individual aircraft. Capital formation in small ships, boats and aircraft, railway rolling stock, containers and other types of – less important types of - transport equipment is estimated from the supply side using the commodity flow method. In 2003, capital formation in transport equipment covered 61 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 dates back to 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.

The initial estimate for capital repairs of buildings has been calculated as:

a share of the total value of repair and maintenance production in construction enterprises
+ the value of materials used in connection with black economy or own account construction
+ the value of work in the hidden economy
+ an imputed value of gross value added in own account GFCF

An initial estimate for total professional repair and maintenance of buildings including capital repairs was calculated from the number of workers and self employed persons working in repair and maintenance activities according to employment statistics for construction and estimated turnover pr. employed person. This calculation is actually done on quarterly data in the system for quarterly accounts. In 2003 the annual total value was DKK 46 019 million. This figure is divided into three parts. Based on the household budget survey grossed up to the total population 2,3% was considered household final consumption in consumption group (GOFOG) 4300. As initial estimate of ordinary repair and maintenance was originally chosen as 41,9% of the total and the residual, 55,8%, was considered capital repairs[18].

The value of materials used for black production and own account GFCF in dwellings is calculated as 62,6% of the estimated capital repairs produced by construction enterprises based on the household budget survey values for 2003.

Table 5.6 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 5.6 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		
2003	Copen-hagen region:	Rest of Den-mark	Copenhagen region:	Rest of Den-mark	Copenhagen region:	Rest of Denmark	Whole country
Single-family houses:	378.5	1796.1	8 933	8 283	2 764 416	12 164 068	14 928 484
Garages and carports	108.0	518.5	2 680	2 485	236 671	1 053 324	1 289 995
Multi-family houses	242.7	418.2	11 666	10 801	2 315 297	3 693 323	6 008 620
Weekend cottages etc.	51.8	277.9	7 450	7 100	315 640	1 613 448	1 929 088
Total excl. major repairs and hidden economy					5 632 024	18 524 163	24 156 187
Major repairs to dwellings							25 535 409
Incl. major repairs							49 691 596

[18] In principle the percentage for ordinary repair and maintenance is a weighted value of a percentage for dwellings based on the household budget survey and a percentage for buildings in other industries based on industrial accounts statistics. This percentage had been calculated annually for the years 1994 to 2002. However the figure for 2003 seemed to be out of line with earlier years due to some incredible low figures in the household budget survey and it was decided to use the 2002 relations for the 2003 calculation.

During the manual balancing process the value of capital repairs can be influenced by adjustments to the use of ordinary repair and maintenance to the extent that the total for professional repair and maintenance including capital repairs are found so reliable, that redistribution between ordinary repair and capital repair is found to be the most feasible solution.

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 5.7 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		
2003	Copen-hagen region:	Rest of Den-mark	Copenhagen region:	Rest of Denmark	Copenhagen region:	Rest of Denmark	Whole country
Farm buildings	75.2	2 021.3	2 108	2 131	127 342	3 459 340	3 586 682
Factories, workshops	79.4	670.5	5 495	5 144	350 302	2 769 110	3 119 412
Offices, shops	258.0	787.2	9 658	8 801	2 000 403	5 562 692	7 563 095
Other private property	74.9	189.9	10 105	9 189	608 074	1 401 539	2 009 613
Total, excl. major repairs					3 086 121	13 192 681	16 278 802
Major repairs to private non-residential premises							7 727 790
Incl. major repairs							24 006 592

Total capital formation in private non-residential construction is obtained by adding non-deductible 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 5.8 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 5.8: Capital formation, public commercial and non-commercial construction of buildings

Product number	U454012	U454013	U454015
Text 1000 DKK	Public commercial construction	Government non-commercial construction	Buildings for military GFCF
Capital formation	2 739 383	10 187 444	206 181
Of which: Stamp taxes	5 143	59 317	0
Lawyers	6 830	82 218	0
Real estate dealing	21 207	272 775	0
Total trading costs	33 180	414 310	0
Purchasers' price incl. VAT	2 706 203	9 773 134	206 181
Of which: VAT	207 225	1 925 773	40 627
Taxes	7 659	1 829	0
Basic price	2 491 319	7 845 532	165 554

Private structures

Capital formation is here calculated from the expenditure side, as the total value of all new civil engineering structures, according to whatever sources are available. In practice almost all investment in such structures is covered either by agricultural statistics, by surveys of investment in extraction of crude oil and gas or by the industrial accounts statistics. The calculation is the same as that used to work out target totals for capital formation by industry. It is assumed that there are no net product taxes and VAT levied on private structures. Table 5.9 shows the values for 2003 and the sources used.

Table 5.9: Calculation of capital formation in private structures

DKK 1000	Capital formation, private structures*	Source
Agriculture (soil improvement, etc.)	104 000	Agricultural statistics
Extraction of crude oil and natural gas	5 258 444	Specific industry statistics for industry 110000
Accounting statistics	224 094	Calculation of capital formation on the basis of accounts statistics
Other private structures, horticulture, forestry	152 967	Other measures for capital formation matrices
Total	5 739 505	

*) Small differences to values shown in the process tables appear as a result of investment/disinvestment in existing structures.

Public commercial structures, plus public non-commercial structures

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 5.10.

Table 5.10: Public capital formation in structures.

Product number	U454022	U454023	U454025
Text 1000 DKK	Public commercial structures	Government non-commercial structures	Structures for military GFCF
Capital formation = purchasers' price incl. VAT	16 226 928	4 916 732	220 430
Of which: VAT	922 774	908 188	43 246
Taxes	0	-3 209	0
Basic price	15 304 154	4 011 753	177 184

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-deductible VAT of DKK 646 million in 2003, DKK 396 million is allocated to capital formation while the remaining DKK 250 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 based on accounts statistics adjusted with regard to domestic supply of inv. goods.

In 2003 around 70% of the investment in machinery and equipment[19] took place in industries covered either by surveys and censuses, accounts statistics, or administrative records. To provide an initial estimate for total investment from the uses side these sources had to be supplemented by estimates based on more or less reliable extrapolations from previous years' figures. A complete version of 2003 investment estimated from the uses side was for the first time put together to be used in the compilation of the provisional annual accounts published in 2005. In the framework of the preliminary accounts the first estimate from the uses side is confronted with domestic supply of products typically used for investment purposes, albeit using much more approximate methods than in the final national accounts. The figures for GFCF by industry in machinery and equipment used in the provisional annual accounts will reflect the result of this comparison as well as other balancing considerations. A preliminary investment matrix showing GFCF by product and by industry is then compiled based on the preliminary values for GFCF by industry and each industry's distribution by product from the previous year inflated to prices of the actual year.

[19] Most sources for investment by industry do not distinguish between investment in machinery, equipment and transport equipment. It is thus necessary to estimate the value of investment in "machinery and equipment" as the difference between the total and the estimated investment in transport equipment that has been compiled from other sources.

The final annual accounts use the estimates prepared for the provisional accounts as the starting point for its estimates of GFCF in machinery and equipment. Where updated information on investment by industry has become available, the provisional figures are replaced by the newer values. If major differences between total supply and use of products in the economy appear at the macro level, total investment may also be adjusted even at this initial stage. It is usually assumed that such adjustments should only affect estimates of investment in industries with less reliable information. It follows that the need for credible estimates for GFCF in the affected industries in practice puts some limits on the size of acceptable adjustments.

A new initial investment matrix is prepared using similar procedures as in the preparation of the provisional annual accounts[20]. This matrix is usually described as the "vertically distributed" investment matrix. It provides an initial estimate of investment by products from the uses side, and it is used as the starting point for the balancing process described in chapter 6.1. In practice investment in machinery and equipment will include approximately 670 of the 2.350 products from the supply and use matrices.

The initial estimate of total capital formation in machinery for 2003 can be seen in Table 5.11.

Table 5.11: Initial estimate of capital formation in machinery and equipment

	DKK million
Value from provisional national accounts	77 206
Initial value based on adjusted provisional national accounts	77 206
Balanced value	75 138

It can be seen that in 2003 the target for total investment in machinery and equipment was not changed before the manual balancing of the supply and use tables.

During the balancing of the SUTs the total was corrected downward by more than 2 billion DKK. The correction was partly due to a reduction of production and investment in windmills[21] compared to the initial assumption, but it should also be seen in context with the fact that capital formation in structures and repair and maintenance of buildings were both adjusted upwards from the provisional national accounts' values for that same year. A larger production value in construction will usually require larger inputs of materials, equipment, components and engineering services whose alternative use is GFCF in machinery and equipment.

[20] Certain cells of the investment matrix may however have been set to a "predetermined" value in cases where specific knowledge is available.

[21] Windmills are partly treated as structures (the foundations) and partly as machinery (generators and wings).

5.10.4 Breakdown of GFCF by industry and type (“Investment matrices”)

5.10.4.1 GFCF 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 may not always seem directly relevant to GNI. The methods used for estimation of GFCF from the uses side will, however, influence total output of a number of important products that are mainly used, and directly or indirectly they will affect the size of total gross value added.

Industries with general government non-market activity
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 was available for the year 1995. These breakdowns have been projected to the following years using series on most detailed level available from the division of government finances as basis for the extrapolation. 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.

Industries covered by corporations controlled by government
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.

Industries covered by the industrial accounts statistics
In 2003 the industrial accounts statistics covers national accounts' 130 industries 140000-370000, 450000-550000, 602223-640000, 701109 and 710000-740000. The statistics are now exhaustive in this field, i.e. they assign accounting figures to all units in the industries in question. The information is available as firm and/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)
6140: Prepayments and plant and machinery under construction.

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 acquisitions of equipment recorded as current expenditure:

7025: Expenditure on acquisitions of equipment, expensed

While most of this expenditure is considered GFCF, a small share (12% in 2003) is treated as intermediate consumption in accordance with the small tools rule.

The industrial accounts statistics also contains information on purchases and sales of unbuilt land which are not included in gross capital formation, coded:

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

Through the recent years a growing share of total GFCF of big manufacturing enterprises have been recorded as plant and machinery under construction and coded 6140. At the time when these investment projects are eventually finished the notes of the accounts show how the value is transferred from plant and machinery under construction to the headings that are used to distinguish between buildings, structures or machinery and equipment, but this information is usually not available at the time of investment, and to make things even worse, to avoid double counting of the same investments these transfers are never recorded in the industrial accounts statistics. In 2003 it

has been necessary to divide this investment evenly between buildings and machinery/equipment. Within a few industries plant and machinery under construction has accounted for a large share of investment. In some cases it has been necessary to split investment coded as 6140 manually after further inquiries into the matter. An example is DK/NACE industry 6100: Sea transport, where most of 6140 was found to represent ships under construction.

For those industries covered by industrial accounts statistics, i.e. in the 2003 national accounts' 130 industries 140000-370000, 450000-550000, 602223-640000, 701109 and 710000-740000, 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. Acquisitions of equipment expensed in the accounting period are corrected as before in the intermediate system for that share which is transferred to current intermediate consumption.

A problem in the industrial accounts statistics 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 employment or VAT information using standard 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. 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 accounts statistics' capital formation figures to industries which do in fact include start-ups.

According to new legislation that came into force January 1st 2002, financial leasing contracts must now be shown as capital formation in business accounts. From 2003 it can be assumed that all business accounts follow principles that are similar to the national accounts concepts. As a consequence the correction for differences in concepts has been phased out, 2002 being the last year affected by old accounting practices.

Industries covered by other sources

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

5.10.4.2 GFCF by industry and type

Buildings and other structures
Capital formation in buildings in government non-market services, public corporations, agriculture and industries covered by the industrial accounts 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 construction of buildings 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.

The residual of private non-residential building is allocated to the (now relatively few) industries which do not have accounts-based target totals for capital formation in construction. The initial targets are here based on any kind of available information and if necessary on more or less well founded extrapolations from the values in previous years.

Net purchases and net sales of existing buildings on Danish territory should add up to the same total value. (At present, in line with the calculations of construction and civil engineering, all change of ownership costs are for practical reasons distributed together with construction of new buildings). Purchases or sales of existing buildings are as a general rule shown 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.

Transport equipment

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.

Machinery and equipment
For government non-market services, public corporations, industries included in the industrial accounts 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 (transaction-) code 2050, capital formation, machinery and equipment, by deducting the initial estimates for MTM (transaction-) code 2052, capital formation, transport equipment.

This leaves a few industries for which there is no accounting information on capital formation in machinery and equipment. In some cases it has been necessary to calculate a first estimate as an addition to the targets worked out for capital formation in construction, 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.

The new survey of Danish ICT-expenditure from 2003
A new statistical source that shows outlays for IT related purposes by industry has become available for the first time in 2003. The questionnaire based statistic on Danish business ICT-expenditure examines ICT expenditure in enterprises and in the public sector (state and municipalities). Its total population consists of 17,000 private enterprises from the business register with at least 10 full-time employees. The majority of industries dominated by private enterprises including the financial sector are included in the population. The criterion of industries for being selected is, that they are included in the industrial accounts statistics and/or that the industries are presumed to have substantial ICT expenditure. However, some industries are excluded: Agriculture, fishing and mining and electricity, gas, heat and water supply. The survey includes the majority of the institutions in the state and the municipalities. Ministerial departments, major agencies and universities are included in the coverage of the state.

The survey include questions on the cost of hardware, pre-packaged and customised software, other ICT (telecommunication equipment, audio and video equipment and other ICT equipment), ICT services and external ICT training.

The national accounts division has had access to a file from the ICT-expenditure survey containing answers from individual enterprises. The results from the survey were grossed up to cover all units covered by the industrial accounts statistics and distributed by workplaces by methods like those used to distribute other accounts information that are only available on the enterprise level. The results were used to distribute computer hardware, telecommunications and other ICT-equipment by industry in the investment matrix for machinery and equipment[22]. The product categories used in the survey are not completely comparable to the product classifications used in supply and use tables and investment matrices, but can with some caution be translated into aggregates of national accounts products. It seems evident that survey data are undervalued in some industries, and the information is of cause not exhaustive as some important areas are left out. Information on investment in General Government is not available with a break down by industry, and the investment is probably also somewhat underestimated here. Nevertheless it seems that for the year 2003 it has been possible to construct a distribution of hardware by industry that is considerably

[22] It was also used to distribute software in the investment matrix for GFCF in software and ICT-services as input in the use matrix.

more reliable than in earlier years. As GFCF in ICT equipment is an important part of investment in machinery and equipment, particularly in some service industries, this must be considered a major improvement.

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 5.12. Software is by far the most important.

Table 5.12: Gross fixed capital formation in intangible assets, by type

Type	DKK million
Exploratory drilling	954
Software and large databases	24 827
of which	
Purchased software etc.	12 951
Own-produced software etc.	11 876
Entertainment, literary or artistic originals	1 507
Total	**27 288**

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 gas-fields. 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

Purchased software and large databases
In the Danish national accounts, total capital formation in purchased software is estimated from the supply side using the commodity flow method. A new statistical source based on questionnaires, the statistic on ICT-expenditure, shows outlays on hardware, software and IT-services for private enterprises with at least 10 full-time employees as well as state and municipalities. Results are for the first time available for 2003 and they have as far as possible been used to distribute purchased software by industries in the investment matrix subsystem. While this represents a huge step forward, the available information on expenditure from the uses side still does not cover all industries and still seems to underestimate the cost of software in a number of industries.

Current practice in Danish business accounts seems to contain purchases of software under various headings: To the extent that the software is capitalized the correct solution should be to show it as

investment in intangible fixed assets, but some software will probably still be included as part of tangible fixed assets, especially when software and hardware are purchased together. Some GFCF in software can be found in business accounts among acquisitions of equipment etc. that are treated as current expenses or written down during the accounting year, and some software may even be included in other categories of intermediate consumption. A description of the conversion from business accounts data to the concepts used in the national accounts can be found in 3.321 above.

To the extent that purchases of software fulfil the criterion in the small tools rule in ESA95, it is correct to treat the purchases as current expenditure. The same applies to the purchases of software that are not intended to be used repeatedly for instance because it is input in production of other products (that may be electronic equipment or software systems in the case where some programming is outsourced).

Estimating investment in software from accounts statistics have not yet been feasible. In accounts statistics the information on 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 fixed capital formation and figures which should be excluded. In practice this information is useless without further specification.

Since 1996 the product statistics for the IT industries give a detailed breakdown by product of turnover in the IT-industries. The turnover in each of the industries is broken down into software and different types of IT-services. A considerable share of this turnover is in fact trade in hardware and standard software. The trade activity is separated out and treated as wholesale or retail trade and the production is converted into trade margins. On the other hand some production of software is by-product in wholesale trade, renting of machinery and equipment and in telecommunications and this production is included in the supply.

Estimates of imports and exports are based on information from foreign trade statistics of software packages etc. that is considered goods and from foreign trade in services, based on information used in the compilation of balance of payments. Here imports and exports of licences and royalties have been included as software when imported or exported by Danish firms belonging to the IT-industries or wholesale of software.

In the final national accounts for 2003, total capital formation in purchased software and large databases has been estimated from the commodity-flow as DKK 12 951 million. This figure includes standard software as well as some IT-services (planning, programming, adjustment, installation etc.) that should be included as a part of the GFCF in software. As illustration simplified product balances are shown for software excluding own account (but including value of recorded media) and the relevant IT-services that include production of customised software and tailoring of software to specific needs.

Software excluding own account. Mio. DKK. 2003

Software

Supply	**Basic price**
Domestic production	9.398
Imports	4.269
Total supply	13.667

Use	**Basic price**	**Wholesale trade margin**	**Retail trade margin**	**Net tax on products**	**VAT**	**Purchasers' price**
Intermediate consumption	3.939	47	48	0	4.034	4.130
Household final consumption	1.541	641	446	0	2.628	3.244
Investment in software	6.260	1.514	287	0	8.060	8.332
Change in inventories	36	10	0	0	46	46
Eksports	1.891	3	0	0	1.894	1.894 0
Total use	13.667	2.215	781	0	16.662	17.646

Software programming, consultancy etc.

Supply	**Basispris**
Domestic production	16.184
Imports	3.478
Total supply	19.662

Use	**Basic price**	**Wholesale trade margin**	**Retail trade margin**	**Net tax on products**	**VAT**	**Purchasers' price**
Intermediate consumption	8.487	0	0	0	669	9.157
Household final consumption	26	0	0	0	6	32
Investment in software	4.456	0	0	0	163	4.619
Eksports	6.693	0	0	0	0	6.693
Total use	19.662	0	0	0	838	20.500

Software and large databases produced at own account

Own-produced software etc. accounted for 11.856 mill. DKK or 53% of total GFCF in software and databases in 2003.

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 Statistic Denmark's salary statistics, i.e. the statistical system which provides information on wage and salary levels and changes by job category. This statistics cover all workplaces with ten or more employees. A new version of the system for compilation of own-account software was introduced with the data revision published in 2005. For all years starting in 1995 the information on wages and salaries was made available to the national accounts division on a more detailed level than before. In the new system the employment figures

used for calculation of the value of own-account software are grossed up to cover the economy as a whole[23].

Since 1995 the starting point is total wages and salaries according to the statistics on employees in DISCO groups 213, computing professionals, and in 3121, programmers. DISCO is the Danish implementation of ISCO, the international classification of occupations. It is thus assumed that wages and salaries in the category of 50% of DISO 2131 "database administrator, IT consultant, systems analyst", 100% of DISCO 2132, "systems programmer", 20% of DISCO 2139, "applications consultant", and 100% of DISCO 3121, "applications programmer". In this way it is taken into consideration, that some of the people with the highest education are usually working as executives or as consultants and analysts who are involved in decision making with respect to choice of software systems or even in research and development. The inclusion of ordinary application programmers in the calculation is an important improvement, as most of the coding of computer programs has actually been done by people in this group[24].

According to international recommendations only half of the work time of the selected people is considered production of software for GFCF, as no better estimate exist. It is furthermore as in the earlier calculations assumed that only 25% of this time is spent on production of own-account software in DK/NACE industry 722000 is production of own-account software because the programmers of this industry produces most of the customised software sold to other units. In the near future it may probably be possible to refine the calculations as the assumptions on the man-hours used in own account production can be compared with results from a new statistical source, the survey of Danish ICT-expenditure[25].

In 2003 the total wages and salaries of the people in question working in market production are multiplied by a mark-up factor of 2.356 or, to put it another way, total wages and salaries are grossed up by 135.6%. Since 1999 this factor is based on accounting ratios in the published industrial accounts statistics for industry 720000 adjusted for that part of the activity that is considered trade in hardware or software. The mark-up is now calculated annually as the relation between total production value (including an estimated value of its own-account software) at basic prices and the wages and salaries relating to this production. It covers intermediate consumption (including overheads at firm level), the consumption of fixed capital, other taxes on production, net, and net operating surplus. For own-account production of software in non-market activities a reduced mark-up factor of 2.1713 is used, that is output is grossed up by 117,13% in 2003, as no mark-up for net operating surplus is applied for non market activity.

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[23] Previously there was no grossing up for wages and salaries in small units with fewer than ten employees. Only the wages and salaries for ISCO-group 213 were used in the calculation, while the wages and salaries of the majority of applications programmers, who have for a long time been classified in a subgroup of ISCO 312 were excluded due to the fact that their education for many years did not have status as high level education in Denmark. On the other hand no deduction was made for other work than development of software for GFCF.

[24] It must be emphasised that groups DISCO 3122, IT-operators, or DISCO 3129, programming of industrial robots are not included in the calculations as these people are working with the operating of computers or computerized systems and they are usually not writing computer programs.

[25] The questionnaire used in the new survey of ICT-expenditure that for the first time was collected for the year 2003 contains questions on the numbers of man-hours used for production of own-account software broken down by production of software for internal use and production of originals of standard software. When the figures for the national accounts of 2003 had to be prepared it was not possible to enquire further into the reliability of the first results from this survey or to investigate the possibilities for use of this source in the estimation of own-account software.

The total value of own-account software calculated in the new system is not significantly different from the result of the system used before 1995. The effect of using 50% of the grossed up values for wages and salaries excluding some people with higher education and including applications programmers seems to roughly net out compared to a calculation based on 100% of people with higher education alone without grossing up. However the distribution by industries that are needed for the investment matrix system seems more plausible.

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. It has therefore been necessary to base the national accounts calculation on the assumption that the value of the originals in question is equal to the discounted value of future royalty incomes which they will earn.

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 from culture and entertainment is available in annual statistics. In the national accounts the simple assumption is chosen, to use the value of royalties received by the artists in question in year t as a proxy for the value of originals created 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 increases somewhat 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 2003 was DKK 1 507 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 2003, the value was DKK 104 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 2003 can be seen in Table 5.13.

Table 5.13 Costs of ownership transfer included in gross fixed capital formation

Type	**DKK million**
income	161
Stamp taxes	1 577
Lawyers	2 163
Estate agents	7 164
Total	**11 065**

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 chapters 1 and 3. The section below is 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.

The calculation of changes in inventories can be divided into:

- changes calculated on the basis of the change in inventories during the year, according to accounts. These changes occur under MLS 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 MLS 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 MLS code 2064.

5.13.2 Accounting figures underlying the calculation of inventories broken down by industry

Industrial accounts statistics

From 1995, the old accounting statistics for manufacturing was replaced by the new industrial accounts statistics, whose coverage have be extended over time to more and more private urban industries. In 2003 Industrial accounts statistics covers DK-NACE industries 140000-370000, 450000-550000, 602223-640000, 701109 and 710000-740000.

In the industrial accounts statistics, all the firms and workplaces in the statistics are assigned the accounting figures which come from questionnaires, annual reports or the tax accounts for firms not covered by the sample. In cases where neither annual accounts, questionnaires nor tax accounts are collected, 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 industrial accounts statistics and the intermediate system codes can be seen in Table 5.14.

Table 5.14: Connection between the industrial accounts statistics and the intermediate system (MLS)

ts	Text	MLS-code Opening	MLS-code Closing
44	Raw materials, ancillary materials, fuel and packaging	5060	6060
45	Work in progress	5065	6065
46	Finished goods	5065	6065
47	Goods for resale	5061/5062	6061/6062

The primary statistics processing throws up problems such as the lack of concordance between manufacturing/trading activity and the incidence of finished goods and inventories 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.

SLS-E statistics

Changes in inventories in industries still based on the SLS-E statistics in 2003 have generally only comparatively small inventories of materials used for intermediate consumption. 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 collected in sub-systems using industry specific accounting statistics, the national accounts changes in inventories are calculated 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 2003, 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.

5.13.3 Breakdown of inventories by product

The intermediate system 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. Inventories of finished products and work in progress occur in manufacturing and a few service industries, 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 5.15: 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 manufacturing basic prices		Output in national accounts branch
	Included in construction and civil engineering basic prices		Input in national accounts branch(es) acc. key
	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.

5.13.4 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 producer 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 5.16: 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	60 508	59 267	-1 241	-2 609	-1 367
2060	014110	S14	48 607	68 569	19 962	19 055	-912
2060	014120	S11	12 333	17 260	4 927	4 663	-262
2060	014120	S14	6 557	7 030	473	328	-142
2060	014190	S11	10 895	7 306	-3 589	-3 883	-294
2060	014190	S14	1 986	2 215	229	186	-41
2060	014200	S11	30 049	19 253	-10 796	-11 562	-768
2060	014200	S14	20 088	12 556	-7 532	-8 047	-516
2060	020200	S11	10 014	16 906	6 892	6 853	-40
2060	020200	S14	7 204	5 132	-2 072	-2 228	-158
2060	050100	S11	1 814	3 560	1 746	1 748	1
2060	050100	S14	191	3 748	3 557	3 556	-1
2060	050200	S11	216 395	269 195	52 800	52 693	-106
2060	050200	S14	71 665	71 325	-340	-369	-28
2060	103000	S11	12 681	12 758	77	-215	-291
2060	103000	S14	10	11	1	0	0
2060	112000	S11	21 085	11 045	-10 040	-10 789	-753
2060	112000	S14	44	22	-22	-22	-1
2060	141110	S11	4 432	5 681	1 249	1 161	-87
2060	141110	S14	143	155	12	6	-3
2060	141120	S11	22	24	2	2	0
2060	141120	S14	0	0	0	0	0
2060	141200	S11	13 776	12 314	-1 462	-1 792	-329
2060	141200	S14	947	1 018	71	50	-20
2060	142100	S11	45 002	102 003	57 001	56 666	-331
2060	142100	S14	5 119	5 530	411	296	-113
2060	142200	S11	89	97	8	7	-2
2060	142200	S14	12	12	0	0	0
2060	143000	S11	74	80	6	8	0
2060	143000	S14	8	8	0	1	0
2060	144000	S11	9 508	14 432	4 924	4 765	-158
2060	144000	S14	0	0	0	0	0
2060	145000	S11	8 142	10 787	2 645	2 488	-156
2060	145000	S14	0	0	0	0	0
2060	151110	S11	26 707	31 572	4 865	5 413	548
2060	151110	S14	25	22	-3	-2	0

Table 5.17: 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.

Product N^{O}	130-Indust. N^{o}	DK-NACE indust.	Sect.	Opening Price index 2003-pr. = 100	Closing Price index 2003-pr. = 100	Opening stock	Closing stock	Change without price-correction	Opening stock, 2003-prices	Closing stock, 2003-prices	Change in national accounts	Price correction
V030100	050000	050200	S11	130.92	88.13	12 171	9 303	-2 868	9 360	10 556	1 196	4 064
V050800	050000	050200	S11	102.67	95.10	57	55	-2	57	58	1	3
V051103	050000	050200	S11	97.33	100.32	36 701	36 841	140	37 703	36 725	-978	-1 118
V051105	050000	050200	S11	104.71	94.14	4 947	4 713	-234	4 936	5 006	70	304
V230903	050000	050200	S11	102.98	100.86	60 677	58 612	-2 065	58 897	58 111	-786	1 279
V271005	050000	050200	S11	90.49	97.16	221	390	169	246	401	155	-14
V271007	050000	050200	S11	98.01	97.07	33	32	-1	33	33	0	1
V271011	050000	050200	S11	95.65	91.27	16	16	0	19	18	-1	-1
V271012	050000	050200	S11	90.65	98.24	67 231	125 715	58 484	74 278	127 971	53 693	-4 791
V271019	050000	050200	S11	99.80	91.70	21	21	0	22	23	1	1
V271021	050000	050200	S11	97.89	100.59	2 193	2 169	-24	2 241	2 156	-85	-61
V271101	050000	050200	S11	86.32	89.43	658	636	-22	768	711	-57	-35
V391704	050000	050200	S11	98.34	98.62	1 020	1 005	-15	1 039	1 019	-20	-5
V391711	050000	050200	S11	99.35	100.45	121	120	-1	123	119	-4	-3
V391713	050000	050200	S11	99.35	100.45	47	47	0	48	47	-1	-1
V391900	050000	050200	S11	99.30	99.58	27	26	-1	27	26	-1	0
V392302	050000	050200	S11	99.72	100.44	8 179	8 084	-95	8 202	8 049	-153	-58
V392304	050000	050200	S11	102.27	96.85	21	20	-1	22	21	-1	0
V560700	050000	050200	S11	98.77	97.27	6 696	6 505	-191	6 790	6 687	-103	88
V560801	050000	050200	S11	102.21	100.45	12 315	11 912	-403	12 045	11 858	-187	216
V560805	050000	050200	S11	102.21	100.45	9	9	0	9	9	0	0
V560900	050000	050200	S11	102.21	100.45	46	44	-2	45	44	-1	1
V611000	050000	050200	S11	99.60	99.89	1 115	1 100	-15	1 118	1 101	-17	-2
V950700	050000	050200	S11	109.35	108.20	1 872	1 818	-54	1 708	1 680	-28	26
	050000	050200	S11			216 394	269 193	52 799	219 736	272.429	52 693	-106

Product NO	130-Indust. No	DK-NACE indust.	Sect.	Opening Price index 2003-0pr = 100	Closing Price index 2003-pr. = 100	Opening stock	Closing stock	Change without price-correction	Opening stock, 2003-prices	Closing stock, 2003-prices	Change in national accounts	Price correction
V030100	050000	050200	S14	130.92	88.13	4 031	2 465	-1 566	3 017	2 797	-220	1 346
V050800	050000	050200	S14	102.67	95.10	19	14	-5	19	15	-4	1
V051103	050000	050200	S14	97.33	100.32	12 155	9 761	-2 394	12 494	9 730	-2 764	-370
V051105	050000	050200	S14	104.71	94.14	1 638	1 249	-389	1 615	1 327	-288	101
V230903	050000	050200	S14	102.98	100.86	20 095	15 530	-4 565	19 538	15 397	-4 141	424
V271005	050000	050200	S14	90.49	97.16	73	103	30	81	106	25	-5
V271007	050000	050200	S14	98.01	97.07	11	9	-2	10	9	-1	1
V271011	050000	050200	S14	95.65	91.27	5	4	-1	5	4	-1	0
V271012	050000	050200	S14	90.65	98.24	22 265	33 309	11 044	24 450	33 907	9 457	-1 587
V271019	050000	050200	S14	99.80	91.70	7	6	-1	8	7	-1	0
V271021	050000	050200	S14	97.89	100.59	726	575	-151	743	572	-171	-20
V271101	050000	050200	S14	86.32	89.43	218	168	-50	249	188	-61	-11
V391704	050000	050200	S14	98.34	98.62	338	266	-72	344	270	-74	-2
V391711	050000	050200	S14	99.35	100.45	40	32	-8	41	32	-9	-1
V391713	050000	050200	S14	99.35	100.45	16	12	-4	16	12	-4	0
V391900	050000	050200	S14	99.30	99.58	9	7	-2	9	7	-2	0
V392302	050000	050200	S14	99.72	100.44	2 709	2 142	-567	2 719	2 133	-586	-19
V392304	050000	050200	S14	102.27	96.85	7	5	-2	7	5	-2	0
V560700	050000	050200	S14	98.77	97.27	2 217	1 724	-493	2 236	1 772	-464	29
V560801	050000	050200	S14	102.21	100.45	4 079	3 156	-923	3 993	3 142	-851	72
V560805	050000	050200	S14	102.21	100.45	3	2	-1	3	2	-1	0
V560900	050000	050200	S14	102.21	100.45	15	12	-3	15	12	-3	0
V611000	050000	050200	S14	99.60	99.89	369	291	-78	370	291	-79	-1
V950700	050000	050200	S14	109.35	108.20	620	482	-138	569	445	-124	14
V030100	050000	050200	S14	130.92	88.13	4 031	2 465	-1 566	3 017	2 797	-220	1 346
	050000	050200	S14			71 665	71 324	-341	72 551	72 182	-369	-28

5.13.5 Calculation of changes in inventories using information on products

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 MLS code 2064).

Table 5.18 Increases in inventories calculated from information on products

CODE: 2063 1000 DKK	PRODUCT-N°	MLS CODE	Purchasers' prices incl. VAT
Bovine animals, live, other than for breeding	V010203	2063	-213 111
Pigs, live	V010300	2063	8 400
Poultry, especially offal, fresh/refrigerated	V020700	2063	-31 124
Butter and other fats from milk	V040500	2063	9 633
Cheese	V040601	2063	111 401
Wheat, wheat and rye mixed seed	V100100	2063	57 358
Rye	V100200	2063	-35 296
Barley	V100300	2063	-216 866
Oats	V100400	2063	-16 492
Maize	V100500	2063	290
Millet, other grain	V100800	2063	3 316
Mink, beaver, fox and seal fur	V430101	2063	-2 300
Increase in inventories, special products	**Total**	**2063**	**-324 691**

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 for energy are based on information on physical quantities.

Table 5.19: Increases in inventories from the energy system

CODE: 2064 1000 DKK	PRODUCT-N°	MLS CODE	Purchasers' prices incl. VAT
Hard coal and hard coal briquettes	V270100	2064	-56 858
Brown coal, lignite	V270200	2064	-113
Coke and semi-coke of coal	V270400	2064	8 573
Petroleum oils and crude oils	V270900	2064	101 477
Kerosene-type jet fuel and medium oil	V271001	2064	-633 210
Aviation spirit and motor spirit	V271005	2064	687 659
Coloured fuel	V271007	2064	-171
Light oil, special spirits	V271009	2064	220 117
Gas-oil, except for processing	V271012	2064	733 326
Fuel oils other than for further processing	V271019	2064	23 914
Fuel oils etc. for processing	V271023	2064	-6 712
Natural gas, propane, butane, etc.	V271101	2064	19 105
Natural gas, high-pressure, export (III)	V271106	2064	45 974
Petroleum coke	V271301	2064	11 385
Bitumen, asphalt, natur. bituminous	V271400	2064	-105 521
Increase in energy inventories	**Total**	**2064**	**1 049 116**

5.13.6 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 some 2064 changes in inventories for ships and railway rolling stock 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.

Table 5.20: Increases in inventories, other special inventories

CODE: 2064 1000 DKK	PRODUCT-N°	MLS CODE	Purchasers' prices incl. VAT
Raw milk	V040107	2064	-500 000
Beer	V220300	2064	500 000
Difference between Foreign trade and BOP	U000003	2064	1 052 545
Tubes for oil and gas pipelines, seamless	V730601	2064	-400 000
Shavers, knives, blades	V821200	2064	-318 407
Parts for electric motors	V850300	2064	-1 017 075
Electric cells and batteries	V850600	2064	-126 065
Railway carriages, self propelled	V860300	2064	271 938
Motor vehicles, min. 10 persons.	V870200	2064	-96 819
Increase in other special inventories	**Total**	**2064**	**-633 883**

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.

5.13.7 Relation between changes in inventories calculated based on inventory totals broken down by industry and info. on individual products

Table 5.21 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.

Table 5.21 Relation between changes in inventories broken down by industry and information on individual products

Industries 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 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, chan. in invent. broken down by product are obtained as the sum of the changes in invent divided over the individual industries + any 2063- and 2064- chang. in invent.*
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 incl. in those changes in inv. which are calc. on the basis of information on goods. To avoid double counting, they are omitted when the aggr. change in invent. is worked out in a breakdown by product. They are, however, incl. in the calc. of the industries' national acco. changes in invent. and the change from business accoun. 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. 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 aggr. changes in invent..

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. The system used for distribution of accounts statistics' inventories by products has some built in "handles" that are used to adjust the changes inside the overlap to the changes that are calculated as 2063- or energy inventory changes while keeping the values of opening and closing stocks equal to their values from accounts statistics. There is, however, also 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 still in some cases be reasonable to amend the aggregate changes in inventories[26].

5.14 Acquisitions less disposals of valuables

Acquisitions less disposals of valuables are estimated from the supply side using the commodity flow method. Table 5.22 shows net acquisitions of valuables divided into those products which were included in this capital accumulation category in 2003.

Table 5.22 Acquisitions less disposals of valuables

Product n^{o}	**Text**	**DKK million**
V570201	Kelem and similar hand-woven rugs	11
V710206	Diamonds, unfitted	113
V711301	Articles of jewellery of silver	266
V711303	Articles of jewellery of precious metals	419
V711401	Articles of silversmiths' wares	105
V711403	Articles of goldsmiths'/silversmiths' wares of precious metals	11
V711600	Goods of natural pearls/cultured pearls	0
V711700	Imitation jewellery n.e.c.	186
V711800	Coins	4
V970100	Paintings, drawings and pastels, collages etc.	387
V970200	Original engravings, prints or lithographs	160
V970300	Original sculptures or statuary	304
V970600	Antiques of an age exceeding 100 years	-49
Total		**1 917**

[26] 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.

5.15 Exports of goods

Goods accounted for DKK 425 357 million, or 67%, of the DKK 635 114 million total exports of goods and services in 2003.

In the national accounts, exports of goods are based directly on Statistics Denmark'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. Therefore the primary statistics do not 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.

Export and import in the external trade statistics only include goods that cross the border. As the criteria in ESA95 is change of ownership, a correction of the external trade figures regarding transactions involving changes of ownership of goods, which do not cross the border, is needed. The settlements statistics from the central bank (Danmarks Nationalbank) is used as basis for an estimation of the value of this correction.

5.16 Exports of services

Exports of services accounted for DKK 209 757 million, or 33%, of the DKK 635 114 million total exports of goods and services in 2003.

The dominant 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. As payments below DKK 100 000 are not reported, and only summary information is reported for payments below DKK 250000 an estimation to fill this gap is included in the settlements statistics.

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 rules valid in 2003 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 other trade-related 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 account for the trade-related services coded as trade in goods in the settlement statistics.

This correction for trade-related services uses the "correction percentage method", i.e. a correction percentage is used for exports of goods to estimate the related services. The correction percentages are fixed by comparing external trade statistics exports and imports with the settlements statistics' payments for goods, over a fairly long period. The correction percentages used in 2003 were calculated in the late nineties

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 and the account statistics for shipping. 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. The total values of import end export of services resulting form introducing these sources will differ from the totals calculated directly from the settlement statistics, but the balance of import and export is not changed.

5.17 Imports of goods

Goods accounted for DKK 373 072 million, or 68%, of total imports of goods and services in 2003 (DKK 547 565 million).

Reference should be made to Section 5.15, since sources and methods are the same for imports as for exports of goods, except for procurements, for which the source is the account statistics for shipping.

5.18 Imports of services

Imports of services accounted for DKK 174 494 million, or 32%, of the total imports of goods and services in 2003 (DKK 547 565 million).

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