

Statistics Denmark

# Transformation of Danish Capital Stock figures into NACE rev. 2 Standard

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### 1. Introduction

This paper describes how Capital Stock figures with a break down on NACE rev. 1 industries are transformed into figures following NACE rev. 2 standard. The work on transforming the Capital Stock figures is part of the EUROSTAT grant agreement No 20102.2009.001-2009.360.

The level of detail on industries correspond to level A\*64 for the Capital Stock figures. They cover the period 1966 to 2010 even though the grant only supports transformation of figures for the period 2000 to 2007. The transformed figures will be published by 15th September 2011 together with the rest of the annual Danish National Accounts with break down on new industries (NACE rev. 2).

#### 1.1 Current calculation procedure

It is useful to have a quick overview of the procedure used for compiling Capital Stocks according to NACE rev. 1 standard. The calculations of Capital Stocks are split in 3 parts;

- Part 1: Current and constant 2000-prices
- Part 2: Previous years prices and chain indices
- Part 3: Revaluations

The first part, compilations at current and constant 2000-prices must be completed before the next parts can begin.

At the first part of the calculation, Capital Stock at current and constant 2000 prices, Statistics Denmark use different procedures depending on type of assets. The choice of procedure depends on the available sources. The following table shows which procedures that are used.

**Table 1:** Calculation approach by type of asset

ESA code	Type of asset	Approach
AN.1111	Dwellings	Direct estimation
AN.1111	Costs of ownership transfer on Dwellings	PIM
AN.11121	Non-residential buildings	Benchmark and PIM
AN.11121	Costs of ownership transfer on non-res. build.	PIM
AN.11122	Other structures	PIM
AN.11131	Transport equipment	Direct estimation
AN.11132	Other machinery and equipment	PIM
AN.1114	Cultivated assets	PIM
AN.1121	Mineral exploitation	PIM
AN.1122	Computer software	PIM
AN.1123	Entertainment, literary or artistic originals	PIM

Each type of assets is compiled independently at current and constant 2000-prices. As a consequence each type of assets is also transformed independently into NACE rev. 2 at current and constant 2000-prices.

Capital Stock figures at previous year's prices and chain indices are compiled by the same approach regardless of type of assets. Previous years prices are compiled by using matching price indices at the level of (sector), asset, industries and products. Price indices are derived using figures at current and constant 2000-prices. Chain indices are calculated and published with break down on industries.

The chain indices had, until now, values at current prices for year 2000 as point of departure. Indices for subsequent years are compiled by using the growth rates. The growth rates for year  $t+1$  are compiled as the increase in the values for year  $t+1$  at previous years prices compared to the values for year  $t$  at current prices.

Figures at previous year's prices and chain indices have been transformed to NACE rev. 2 by applying the same approach for all types of assets. The point of departure for the chain indices has been changes for the transformed figures to values at current prices for year 2005 instead of year 2000 in the old calculations. The transformed figures have break down on (new) industries.

Calculation of revaluations – nominal, neutral and real – is the last part of the calculations of Capital Stocks. Nominal revaluations are calculated as a residual. Neutral revaluations are calculated by inflating the Capital Stock with an average price index. Real revaluations are calculated as a residual between nominal and neutral revaluations. Revaluations are published with break down on industries.

### 1.1.1 Publication and level of detail

Today, Capital Stocks are published with a break down on 53 industries in accordance with the NACE rev. 1 classification and 9 types of assets. The transformed figures contain a break down on 69 industries which can be aggregated to level A\*64. A break down on institutional sectors is also available. Published figures cover the period 1966 to 2010.

### 1.1 Restrictions regarding the transformation

The Capital Stocks is transformed under some conditions. They can be summarized as:

- **Unchanged sector totals;** the sums for the institutional sectors at current prices must not be changed. The assets are classified by a new classification of industries but the “owners” (the sectors) are in principle the same. The sums for S11, S12, S13 and S14+S15 should remain unchanged.
- **Unchanged sums for assets;** The sums for respectively machinery and equipment, transport equipment, dwellings, non-residential buildings, other structures, live stocks, software, mineral exploitation and originals should remain unchanged for all variables (Consumption of Fixed Capital (CFC), Net Stock, Gross Stock, Other Changes in Volume and Revaluations).
- **Data file with break down on old and new industries;** a set of data which show the bridge between NACE rev. 1 and NACE rev. 2 should be compiled. This should be done for all variables (Gross Stock, Net Stock, CFC and Other Changes in Volume) except Revaluations.
- **The accounting restrictions should remain respected;** a basic accounting restriction between the Net Stock at the beginning of a year and the end of year (beginning of next year) should continue to exist. The accounting restriction is: *net stock (ultimo) = net stock (primo) + GFCF – CFC + Other changes in volume + nominal revaluations.*
- **Reliable figures;** the transformed Capital Stock data should be reliable at the level of industries.

The transformation of the Capital Stock figures fulfills all the conditions mentioned above.

The compilation of revaluations by industries was done only for new industries; a data file was not derived with a bridge between old and new industries. Since revaluations are compiled as a residual, the Capital Stock figures with break down on new industries were used to compile the revaluations at the level of industries.

During the compilation of the transformed data, some errors in old data was found, most notable that some published figures for revaluations by industries was incorrect, including the total. This will be corrected when the new figures are published by 15<sup>th</sup> September 2011. Chapter 5 contains a list of errors which will be corrected.

## 2. PIM-approach

At Statistics Denmark, the following types of asset are compiled by PIM: Machinery and Equipment, Other Structures, Software, Originals, Mineral Exploitation and Costs of Ownership Transfer for buildings. All types of capital stocks compiled by PIM are transformed into NACE rev. 2 by the same approach. The approach can be summarized in the following steps:

- (1) Adjustment to original micro data (by product and industry) at constant 2000-prices
- (2) Automatic balancing of micro data at constant 2000-prices to match published figures
- (3) Transformation of micro data at constant 2000-prices to NACE rev. 2 standard
- (4) Inflate balanced micro data at constant 2000-prices into current prices
- (5) Automatic balancing of micro data at current prices to match published figures
- (6) Calculate break down by institutional sector
- (7) Final balancing, if required

Costs of ownership transfer for buildings are not balanced etc., in the transformation process they are only subject to step 1, 3 and 4 mentioned above.

### 2.1 Transformation of figures at constant prices (step 1 – 3).

In the following an example will show the basic feature of the approach (step (1) to (3)) used for transforming capital stock figures at constant 2000-prices. The idea behind the approach is to use information from the transformed GFCF figures to transform the Capital Stock figures.

The example is at constant prices of year 2000. The basic idea is to construct a file at micro level (product, industry) which keeps the following conditions:

- The values macro levels (by industry) match the published figures for all variables (Gross Stock, Net Stock and Consumption of Fixed Capital).
- The accounting restriction between stocks and flows is respected at micro level.
- The break down on products and industries should match the transformed GFCF data.

In the example Other Changes in Volume is ignored because these occur very rarely.

The original output file from the calculation of Capital Stock has the following format; column 1 show the year the GFCF take place, column 2 show observation year, column 3 show the baseyear, column 4 show the type of asset, column 5 show the type of product, column 6 show the value of the investment, column 7 show the value of the gross stock and column 8 show the value of the net stock. In other words, it is possible to follow the investment, gross stock and net stock across time. The investment has break down on industry and type of product.

The following table shows a constructed example of the output file from the Capital Stock calculation. Investment is 100 for product V84000 (computers) in year 1995 in industry 27009. The type of asset is 2050 which is the code for Machinery and Equipment.

**Table 2:** Output file from capital stock estimations

Year of investment	Year of observation	Baseyear	Asset	Product	Industry	GFCF	Gross Stock	Net stock
					NACE 1. rev	middle of year	begining of year	begining of year
1995	1995	2000	2050	V840000	27009	100,0	0,0	0,0
1995	1996	2000	2050	V840000	27009	100,0	100,0	95,0
1995	1997	2000	2050	V840000	27009	100,0	99,0	80,0
1995	1998	2000	2050	V840000	27009	100,0	95,8	50,0
1995	1999	2000	2050	V840000	27009	100,0	81,9	20,0
1995	2000	2000	2050	V840000	27009	100,0	23,3	5,0
1995	2001	2000	2050	V840000	27009	100,0	0,0	0,0

The service live is (assumed) rather short since the investment from year 1995 has been written down to zero at the beginning of year 2001. The value of the net stock is equal to 95 by the beginning of 1996. The difference between the initial investment of 100 at year 1995 and the value of the net stock at beginning of year 1996, 95, is consumption of fixed capital which can be calculated to 5 (=100–95) in this case.

For machinery and equipment there are approximately 300 different products and 57 industries in the old calculation of capital stocks. This gives the possibility of up to 15.900 calculations as in the example shown in table 2 for each year of investment. The first year of investment in the calculation of Capital Stocks for Machinery and Equipment is 1947 and the last year is 2009 which give the possibility of up to 1.060.200 calculations of the type shown in table 2. To simplify, only one calculation is shown in the example, and in a constructed short version with a very short service life.

The next step is to add a column for consumption of fixed capital (CFC) with a break down on year of investment and year of observation. In the current calculations CFC is not calculated with a break down on year of investment. The second task is to set GFCF to zero in the years after the year where the investment takes place. Table 3 show the output file with the changed column for investment the added column of consumption of fixed capital.

Measured by industries, the figures in the output file are not equal to the published figures. Some minor adjustments are made to the totals (year of observation and industry), primarily because of the need to include predetermined values in the capital stock calculations. Predetermined valued are usually given at the level of industry. If, for example, the sum of CFC for one industry in the output file is not equal to the predetermined value for that particular industry then the published figures is set to equal the predetermined value. The figures in the original output file are not changed in the standard PIM-calculations.

**Table 3:** Adjusted output file.

Year of investment	Year of observation	Baseyear	Asset	Product	Industry	GFCF	Gross Stock	Net stock	CFC
					NACE 1. rev	middle of year	begining of year	begining of year	middle of year
1995	1995	2000	2050	V840000	27009	100,0	0,0	0,0	5,0
1995	1996	2000	2050	V840000	27009	0,0	100,0	95,0	15,0
1995	1997	2000	2050	V840000	27009	0,0	99,0	80,0	30,0
1995	1998	2000	2050	V840000	27009	0,0	95,8	50,0	30,0
1995	1999	2000	2050	V840000	27009	0,0	81,9	20,0	15,0
1995	2000	2000	2050	V840000	27009	0,0	23,3	5,0	5,0
1995	2001	2000	2050	V840000	27009	0,0	0,0	0,0	0,0

With an adjusted output file compiled, the next step is to bring the figures at micro level in identity with the published figures at macro level. Since the original output file is not changed when predetermined values are included, a balancing procedure is needed for the data at micro level.

**Table 4:** Balanced output file.

Year of investment	Year of observation	Baseyear	Asset	Product	Industry	GFCF	Gross Stock	Net stock	CFC
					NACE 1. rev	middle of year	begining of year	begining of year	middle of year
1995	1995	2000	2050	V840000	27009	100,0	0,0	0,0	5,0
1995	1996	2000	2050	V840000	27009	0,0	100,0	95,0	15,0
1995	1997	2000	2050	V840000	27009	0,0	100,0	80,0	30,0
1995	1998	2000	2050	V840000	27009	0,0	99,0	50,0	34,0
1995	1999	2000	2050	V840000	27009	0,0	65,6	16,0	15,0
1995	2000	2000	2050	V840000	27009	0,0	4,7	1,0	1,0
1995	2001	2000	2050	V840000	27009	0,0	0,0	0,0	0,0

The balancing is done automatically by a computer program. It starts in year 1966, the first year with published figures, and move onwards year-by-year to 2010, the last year with published figures. The program secures that the accounting restriction between flows and stocks are respected and the data at micro level add up to the published sums (by NACE rev. 1 industries) at macro level.

In the example values for CFC needs to change for the year 1995 and year 2000 in order to match published values at macro level. In practice, all products (with a few exceptions) which occur in an industry which needs balancing is adjusted. For the year 1995 CFC is revised upward from 30 to 34. Since CFC has gone up for the year 1995, the net stock has to be revised downward at the beginning of the year 1996 by -4. Subsequently, the gross stock is also revised by the same ratio as the revision in the net stock.

If some conditions are present the computer program cannot change a variable. For example, the last year of the asset in service, the CFC cannot be changed if the accounting restriction is already respected, because the net stock should be zero by the end of the service life of the asset. Second, if the accounting restriction is not respected at the end of service life of the assets, the computer program will change CFC in order to respect the accounting restriction.

Then the output file is balanced, the next step is to transform the data into NACE rev. 2 standards.

The transformation of the balanced output file into figure in with break down on industries in accordance with NACE rev. 2 is done by using information from Statistics Denmark's Linked Investment Matrices. As part of the transformation of the Danish National Accounts to NACE rev. 2 Linked Investment Matrices for the period 1993 to 2007 has been compiled. The Linked Investment Matrices show the bridge between NACE rev. 1 and NACE rev. 2 at the level of products and industries.

Table 5 shows how the bridge between NACE rev. 1 (in Danish called DB03) and NACE rev. 2 (in Danish called DB07) looks in principle for one product. In this case the investment of 100 in year 1995 in industry 27009 (NACE rev. 1) is split into 2 new industries 24000 and 25000 (NACE rev. 2.) by respectively 60 and 40.

**Table 5:** Distribution key – bridge between NACE rev. 1 and NACE rev. 2.

Year of investment	Base-year	Asset	Product	Industry	Industry	GFCF	GFCF
				NACE 1. rev	NACE 2. rev	middle of year	middle of year
1995	2000	2050	V840000	27009	24000	100	60
1995	2000	2050	V840000	27009	25000	100	40

The distribution key is used to transform the balanced output file at micro level. This transformation is labeled **micro transformation** because it is done at the level of products and industries. It is only possible to make micro transformation of the Capital Stocks which can be attributed to investment for the period 1993 to 2007, because Linked Investment Matrices between NACE rev. 1. And NACE rev. 2 only exists for this period.



Capital Stocks, which can be attributed to investment prior to 1993, are transformed by using the investment matrix from 1993 at the level of industries and ignoring the product dimension. This process can be labeled **macro transformation** of the Capital Stocks. Macro transformation is also used for Capital Stocks which can be attributed to investment taking place after 2007. In this case the linked investment matrix for 2007 is used.

**Table 6:** Transformed output file

Year of investment	Year of observation	Baseyear	Asset	Product	Industry	Industry	GFCF	Gross Stock	Net Stock	CFC
					NACE 1. rev	NACE 2. rev	middle of year	begining of year	begining of year	middle of year
1995	1995	2000	2050	V840000	27009	28001	60,0	0,0	0,0	3,0
1995	1996	2000	2050	V840000	27009	28001	0,0	60,0	57,0	9,0
1995	1997	2000	2050	V840000	27009	28001	0,0	60,0	48,0	18,0
1995	1998	2000	2050	V840000	27009	28001	0,0	59,4	30,0	20,4
1995	1999	2000	2050	V840000	27009	28001	0,0	39,3	9,6	9,0
1995	2000	2000	2050	V840000	27009	28001	0,0	2,8	0,6	0,6
1995	2001	2000	2050	V840000	27009	28001	0,0	0,0	0,0	0,0
1995	1995	2000	2050	V840000	27009	29004	40,0	0,0	0,0	2,0
1995	1996	2000	2050	V840000	27009	29004	0,0	40,0	38,0	6,0
1995	1997	2000	2050	V840000	27009	29004	0,0	40,0	32,0	12,0
1995	1998	2000	2050	V840000	27009	29004	0,0	39,6	20,0	13,6
1995	1999	2000	2050	V840000	27009	29004	0,0	26,2	6,4	6,0
1995	2000	2000	2050	V840000	27009	29004	0,0	1,9	0,4	0,4
1995	2001	2000	2050	V840000	27009	29004	0,0	0,0	0,0	0,0

Table 6 shows the output file after it has been transformed by using the transformation key shown in table 5. All variables going into the new industry 29004 is calculated with the ratio 40 / 100 and all variables going into the new industry 28001 is calculated by using the ratio 60 / 100. Both ratios come from the distribution key.

Since the Capital Stock has been broken down to the level of industries, product, year of observation and year of investment the same ratio can be used for all the years and the accounting restriction is still respected. The main reason why the Capital Stock has been broken down to this micro level is the possibility to transform the figures by a constant ratio.

## 2.2 Transformation of figures at current prices (step 4 – 5).

When the transformed output file is compiled (a constructed minor extract is shown in table 6), the next step is to inflate the figures into current prices. Price indices for GFCF are available at the level of product and industry (NACE rev. 1) and this information is used to compile values at current prices.

Figures for CFC at constant 2000-prices for year  $t$ , with a break down on products and industries (NACE 1. Rev and NACE rev. 2), are inflated by using the corresponding price index for GFCF for year  $t$  with a break down on products and industries (NACE rev. 1). It is assumed that the price index for a product in the old industry, which is split into 2 or more new industries, can be used for the product in all the new industries. In the example (table 5), it is assumed that the price index for the new industry 28001 and 29004 is the same.

Figures for the Gross Stock (and the Net Stock) at beginning of year  $t$  with a break down on products, industries (NACE rev. 1 and NACE rev. 2) is inflated by using the corresponding weighted price indices for GFCF for year  $t$  and  $t-1$  with a break down on products and industries (NACE rev. 1). Again, it is assumed that the price index for a product in an old industry, which is split into 2 or more industries, can be used for the product in all the new industries.

The results of these calculations are unbalanced figures at current prices with a break down on (assets), products and industries (NACE rev. 1 and NACE rev. 2).

The figures for CFC, Gross Stock and Net Stock compiled at current prices inflated by the above mentioned approach does not always match the figures published at the level of industries (NACE rev. 1). This is mainly because of incorporation of predetermined figures in the Capital Stock compilations. The next step is to balance the figures; this is simply done by adjusting the figures at detailed level in proportional to published figures at the level of industries (NACE rev. 1).

### **2.3 Break down on institution sector (step 6)**

In the calculation of Capital Stocks with a breakdown on institution sector, balanced figures (from step (3) and step (5)) at current and constant 2000-prices and with break down on industries (NACE rev. 1 and NACE rev. 2) was used as a starting point. The product and year of investment dimension was removed from the data.

The first part of the calculations of the break down on institutional sectors was done by using the ratios from the break down on sectors from the old compilations. A data file exists with break down on industries (NACE rev. 1) and sectors which are in consistency with the published figures. This approach secure that the aggregates for the different sectors is unchanged.

A special calculation of the Capital Stocks for General Government (S13) with a break down on industries (NACE rev. 1 and NACE rev. 2) was derived in advance. These values was subsequently incorporated in the calculations as predetermined values for the relevantly industries. Figures for the other sectors were adjusted such that the aggregates for all the sectors were unchanged.

By combining these 2 calculations, figures for CFC, Gross Stock and Net Stock with break down on industries (NACE rev. 1 and NACE rev. 2), institutional sectors and year of observation, was compiled.

#### **2.4 Final manual balancing (step 7)**

The calculations until this step have been mostly automatic. And for most of the industries and sectors the results looks reliable and fulfill the accounting requirements. However, for a few industries the results needed adjustment in order to look reasonable. In most cases, the industries which required additional manual balancing were industries which contain some general government activity.

The manual balancing complete the compilation of the Capital Stock figures. The result is a data file containing figures for the Gross Stock, Net Stock, Consumption of Fixed Capital and Other Changes in Volume at current and constant prices with break down on industries (NACE rev. 1 and NACE rev. 2) and sectors.

### **3. Direct measurement approach**

Statistics Denmark currently uses direct measurement to calculate Capital Stocks for Dwellings, Transport Equipment, Non-Residential Buildings (Benchmark and PIM) and Live Stocks. In this chapter it is described how Capital Stocks are currently calculated at current and constant 2000 prices and how these figures are transformed into the NACE rev. 2 standard. The break down on institutional sectors is derived in the same way as the Capital Stock compiled by PIM, see chapter 2.3 for a short description.

#### **3.1 Dwellings**

Compilation of Capital Stock for Dwellings by NACE rev. 1 is done by calculating the value of the Gross Stock as a product of the stock of houses by its relevant price. The values of the Net Stock and the Consumption of Fixed Capital (CFC) are derived by assuming depreciation rates and survival and mortality functions. The results are adjusted to the existing Gross Fixed Capital Formation (GFCF) series.

Separate figures are estimated for Costs of Ownership Transfer which are added to the previously estimated Capital Stocks and CFC for dwellings. The value of GFCF concerning Costs of Ownership Transfer is estimated from the Investment Matrices. A PIM-estimation, using assumptions on service life and survival patterns, is carried out for the Gross and Net Stocks as well as of the CFC derived from Costs of Ownership Transfer. (See chapter 2 for a description of the transformation method used for Costs of Ownership Transfer)

Compilation is done first at constant prices and inflated to current prices by using relevant price indexes.

With the NACE rev. 1 classification, all Dwellings were classified in only one industry, but with the new NACE rev. 2 classification, Dwellings are divided into two industries; “renting of residential buildings” and “owner-occupied dwellings”.

Information to break dwellings down into the new industries was found in the Register for Buildings and Dwellings (Bygnings- og Boligregistret (BBR) in Danish) that classifies dwellings, among other things, by its use. When estimating the break down into sectors, it was assumed that the non-financial corporations can only hold those dwellings classified in the industry “renting of residential buildings”.

The breakdown into the two new industries was done at the dwelling-type level (farm houses, detached, terraced or semi-detached houses, multi-storey houses, students residences, holiday cottages and garden houses, garages, carports and other residential buildings) measured in squared meters.

Due to the information available, a specific yearly breakdown could be done for the period 1993-2010. For the previous years (1966-1992) a constant breakdown was assumed.

### **3.2 Transport equipment**

Compilation of Capital Stock for Transport Equipment is done first by type of transport equipment (vehicles, ships, planes and trains) with break down on NACE rev. 1. Data from different official registers, as well as relevant prices, are used to calculate the value of the Gross Stock. The values of the Net Stock and the Consumption of Fixed Capital are then derived by assuming depreciation rates and survival and mortality functions. The results are adjusted to the existing Gross Fixed Capital Formation series.

Compilation is done first at current prices and deflated to constant prices by using relevant price indexes.

All types of transport equipment were classified into new industries independently for the year 2007 and afterwards summed up.

When each transport equipment type was transformed into NACE rev. 2 industries, they were summed up and the breakdown for the whole stock of Transport Equipment in 2007 could be calculated. A bridge between NACE rev. 1 and NACE rev. 2 of the Capital Stock for Transport Equipment was calculated for 2007 and applied to the rest of the period.

The results were adjusted to the existing NACE rev. 2 based GFCF series.

#### **Vehicles**

The stock of vehicles in the motor register could be classified by NACE rev. 1 and NACE rev. 2 industries using data from Business Register (Erhvervsregister in Danish) from the 1<sup>st</sup> January 2007 on, so it was possible to get a specific breakdown by both classifications from that time on. For the previous years the same breakdown into new industries was assumed.

#### **Planes**

Breakdown into industries is done manually by looking at the type of plane and its owner and use. It was therefore possible to establish a bridge between NACE rev.1 and NACE rev. 2.

#### **Ships**

Breakdown into industries is done manually by looking at the type of ship and its owner and use. It was therefore possible to establish a bridge between NACE rev.1 and NACE rev. 2.

## **Trains**

All trains belong to only one industry, “land transport and transport via pipelines”. A simple 1:1 transformation was done.

Data files for 2007 with a break down on both NACE rev. 1 and NACE rev. 2 could be produced for every type of transport equipment type. Therefore a bridge between NACE rev. 1 and NACE rev. 2 of the whole Capital Stock for Transport Equipment could be calculated too and it was applied to the rest of the period.

### **3.3 Non-residential buildings**

Compilation of Capital Stock for Non-Residential Buildings is done by using a combination of the values for a 1995 benchmark and the PIM method.

Separate figures are estimated for Costs of Ownership Transfer which are added to the previously estimated Capital Stocks and CFC for Non-Residential Buildings. The value of GFCF concerning Costs of Ownership Transfer is estimated from the Investment Matrices. PIM-estimation, using assumptions on service life and survival patterns, is carried out for the Gross and Net Stocks as well as of the CFC derived from Costs of Ownership Transfer. (See chapter 2 for a description of the transformation method used for Costs of Ownership Transfer.)

Compilation is done first at constant prices and inflated to current prices by using relevant price indexes.

The first year when it was possible to classify the stock of Non-Residential Buildings by NACE rev. 2 industries was 2007. So for this year, and at the most possible detailed level (measured in square meters and divided by building type and use (as for example industry buildings, offices or hotels)), a relation between NACE rev. 1 and NACE rev. 2 industries was calculated and applied to the whole period.

The results were adjusted to the existing NACE rev. 2 based GFCF series.

### **3.4 Livestock**

For livestock, consumption of fixed capital is assumed to be zero. All belongs to one old industry, “Agriculture and horticulture” and is transformed into one new NACE rev. 2 based industries, a straight forward reclassification.

#### 4. Previous year's prices and chain index

The old Capital Stock figures at previous year's prices and chain indices are compiled by the same approach regards of type of assets. This implies that the transformation into NACE rev. 2 industries is also done by the same approach for all types of assets.

At first, it was considered to transform the old Capital Stock figures at the level of asset, sector<sup>1</sup>, industries and products. However, because of lack of time available, the transformation was done at the level of assets, sector and industries – the product dimension was ignored.

The old Capital Stock figures at previous year's prices are compiled by recalculate current price figures into previous year's prices. This is done by using a suitable choice of price indices. The old figures are at previous year's prices by NACE rev. 1 industries (and sectors) are transformed into new industries (and sectors) by using distribution keys showing which new industries an old industry should be split into.

The transformed Capital Stock for Net Stock, Gross Stock and Consumption of Fixed Capital at current prices, with break down on assets, industries (NACE rev. 1 and NACE rev. 2) and sectors, was used as distribution keys for all years<sup>2</sup>.

By applying this approach, it is assumed that the price index for one old industry, which is split into 2 or more new industries, can be used for all the new industries which the old industry is split into.

The results of the calculation are values for the Gross Stock, Net Stock and Consumption of Fixed Capital with break down on sector and old and new industries. Furthermore, the figures at previous year's prices were directly balanced.

The new values at previous years prices and current prices, with break down on industries (NACE rev. 2), was used to compile chain indices. The starting point (reference year) is year 2005, compared to year 2000 in the old calculations.

All the calculations of previous year's prices and chain indices were done automatically.

Even though the figures at previous years were directly balanced, a manual inspection of the results was made. Some minor changes were done.

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<sup>1</sup> In the calculation of previous year's prices a break down only exist on 2 sectors; General Government (S13) and all other sectors (S11+S12+S14+S15).

<sup>2</sup> One exception from this rule; Consumption of Fixed Capital for year 2001 was transformed by using CFC at constant 2000-prices for this year. The exception was made to secure that CFC at the level of industries at constant 2000 prices and previous year's prices are identical for year 2001.

## 5. Revisions and other issues

During the compilation of the transformed data, some errors in old data was found, most notable that some published figures for revaluations by industries was incorrect, including the totals. Further, during the inspection of transformed data by the new industries, in a few places the figures was close to the boundary of being reliable and should be revised when possible. Below is a list of errors which will be corrected by the 15<sup>th</sup> September 2011 publication or issues which should be looked at during the next major revision of the Danish National Account, which is expected to take place in 2014.

1. The totals for sectors S11, S13 and S14 at constant 2000-prices are changed after the transformation of the Capital Stock figures. Variables by sector at constant 2000 prices were not published before the transformation and will not be published at 15<sup>th</sup> September 2011.
2. For Machinery and equipment and nominal revaluations, the published sums for ICT and non-ICT respectively is changed for the year 2002, the combined value is also changed.
3. An error in the old published total for real revaluations by sectors for year 2006 was discovered. The error will be corrected at the 15<sup>th</sup> September 2011 publication.
4. Because the sums for Net Stock and CFC for the sector S11, S13 and S14 at constant 2000-prices has been changed during the transformation, real revaluations by sector is also changed. This impacts the published figures for the period 1990 to 2009. The sum for all sectors combined is unchanged (except year 2006, se point 3 above).
5. The real revaluations by industries contain errors for the period 1966 to 1989 and for the period 2001 to 2006. The errors will be corrected at the 15<sup>th</sup> September 2011 publication.
6. The transformation of the old industry 75000 *Public Administration*, into 3 new industries 63800 *Renting of non-residential buildings*, 84101 *Rescue services etc. (market)* and 84202 *Public Administration etc.* has created some strange looking time series for the new industry 84101 *Rescue services etc. (market)*<sup>3</sup> for some years and for same type of assets. The figures should be made more reasonable at the next major revision of the national account data in 2014.
7. The new industry 2000 *Forestry* has positive CFC for General Government for all years except 1993 to 2000. The time series for 2000 *Forestry* should be made more reasonable at the next major revision of the national account data in 2014.

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<sup>3</sup>All market activity from the old industry 75000 *Public Administration* goes into 84101 *Rescue services* and all the non-market activity goes into 68300 *Renting of non-residential buildings* or 84202 *Public Administration etc.* The break down on market and non-market activity market was not intended for publication.



## 6. Results

The following tables show the results in current prices for Net Stock and Consumption of Fixed Capital of the whole Capital Stock (sum of all assets) classified both by NACE rev. 1 (level A17) and NACE rev. 2 (level A64). The shown data corresponds to the year 2005 for CFC and for beginning of the year 2005 for Net Stock.

NACE rev. 2. A64	NACE rev. 1. A19	Net Stock, mill. DKK.
V01	YA	201.066
V02	YA	3.530
V80_82	YA	7.689
V03	YB	9.924
V23	YC	475
VB	YC	68.989
V01	YD	2.055
V10_12	YD	76.844
V13_15	YD	9.892
V16	YD	9.500
V17	YD	9.329
V18	YD	11.694
V19	YD	9.700
V20	YD	20.409
V21	YD	29.172
V22	YD	16.903
V23	YD	15.796
V24	YD	5.852
V25	YD	21.111
V26	YD	13.107
V27	YD	7.598
V28	YD	37.545
V29	YD	3.516
V30	YD	3.490
V31_32	YD	20.279
V33	YD	4.894
V37_39	YD	1.167
V58	YD	9.358

NACE rev. 2. A64	NACE rev. 1. A19	Net Stock, mill. DKK.
V59_60	YD	166
V95	YD	854
V36	YE	10.578
VD	YE	190.310
VF	YF	46.411
V45	YG	30.376
V46	YG	87.809
V47	YG	57.275
V95	YG	752
VI	YH	31.293
V49	YI	113.021
V50	YI	107.152
V51	YI	19.583
V52	YI	98.963
V53	YI	11.671
V61	YI	75.928
V79	YI	1.193
V93	YI	620
V64	YJ	38.599
V65	YJ	8.491
V66	YJ	7.921
V02	YK	34
V33	YK	24
V58	YK	1.885
V59_60	YK	20
V62_63	YK	19.991
V64	YK	5.839
V69_70	YK	11.004

NACE rev. 2. A64	NACE rev. 1. A19	Net Stock, mill. DKK.
V71	YK	10.405
V72	YK	7.898
V73	YK	3.548
V74_75	YK	3.046
V77	YK	24.244
V78	YK	1.592
V80_82	YK	7.849
V95	YK	362
VL	YK	2.098.052
VP	YK	43
VL	YL	6.934
VO	YL	244.753
V69_70	YM	228
VP	YM	121.068
V31_32	YN	136
V74_75	YN	789
V86	YN	68.542
V87_88	YN	61.403
V37_39	YO	80.168
V58	YO	61
V59_60	YO	6.903
V62_63	YO	199
V74_75	YO	83
V78	YO	79
V79	YO	139
V80_82	YO	66
V90_92	YO	42.522
V93	YO	26.118
V94	YO	23.418
V96	YO	5.520
VP	YO	174

NACE rev. 2, A64.	NACE rev. 1, A17.	Consumption of Fixed Capital, Mill. DKK
V01	YA	10.993
V02	YA	274
V80_82	YA	492
V03	YB	1.065
V23	YC	45
VB	YC	4.973
V01	YD	101
V10_12	YD	5.881
V13_15	YD	874
V16	YD	750
V17	YD	859
V18	YD	1.319
V19	YD	780
V20	YD	1.827
V21	YD	2.454
V22	YD	1.562
V23	YD	1.479
V24	YD	575
V25	YD	1.992
V26	YD	1.445
V27	YD	770
V28	YD	3.677
V29	YD	327
V30	YD	367
V31_32	YD	1.944
V33	YD	449
V37_39	YD	77
V58	YD	1.017
V59_60	YD	17
V95	YD	75
V36	YE	523
VD	YE	9.290
VF	YF	5.308
V45	YG	2.996
V46	YG	9.823
V47	YG	5.956
V95	YG	116
VI	YH	2.619
V49	YI	9.794
V50	YI	8.426
V51	YI	3.608
V52	YI	3.692
V53	YI	1.061
V61	YI	7.774

NACE rev. 2, A64.	NACE rev. 1, A17.	Consumption of Fixed Capital, Mill. DKK
V79	YI	179
V93	YI	43
V64	YJ	4.785
V65	YJ	1.183
V66	YJ	1.107
V02	YK	5
V33	YK	9
V58	YK	440
V59_60	YK	3
V62_63	YK	4.689
V64	YK	392
V69_70	YK	1.585
V71	YK	1.886
V72	YK	802
V73	YK	650
V74_75	YK	527
V77	YK	3.458
V78	YK	337
V80_82	YK	1.125
V95	YK	120
VL	YK	60.244
VP	YK	7
VL	YL	449
VO	YL	12.731
V69_70	YM	23
VP	YM	7.076
V31_32	YN	13
V74_75	YN	83
V86	YN	4.278
V87_88	YN	3.090
V37_39	YO	3.709
V58	YO	9
V59_60	YO	773
V62_63	YO	30
V74_75	YO	10
V78	YO	11
V79	YO	17
V80_82	YO	4
V90_92	YO	4.074
V93	YO	1.964
V94	YO	3.362
V96	YO	797
VP	YO	11