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The Treatment of Costs of Ownership Transfer in the Danish National Accounts

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1. Introduction

1.1 Preface

This paper describes the way in which costs of ownership transfer¹ for buildings are treated in the Danish national accounts. The methodological treatment of cost of ownership transfer for buildings is put into perspective, with regard to the current international discussion about changes in the international national accounts manual. Furthermore, attention is focused on the compilation of statistics on building stocks in the national accounts, and how these are related to the existing market prices. The paper is structured in the following way:

Section 1: Introduction with a description of the terms applied.

Section 2: Treatment of trading profits derived from the sale of buildings in the national accounts (scope and sources)

Section 3: Statistics on stocks for building values (including trading profits)

Section 4: Development in the building stock vs. development in real property prices

Section 5: International discussion on the treatment of Cost of ownership transfer on non-financial assets.

1.2 Usage of terms

It may at first be appropriate to give a brief description of the terms applied in the paper and their interdependence in order to prevent any

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^{*} The views expressed in this paper are those of the author. They do not necessarily represent the views of Statistics Denmark.

¹ The paper only deals with cost of ownership transfer for real property. The general treatment of cost of ownership transfer is not discussed.

misunderstanding. The meanings of the terms applied in the paper are fully consistent with the general usage of the terms in the national accounts.

Gross fixed capital formation **Gross fixed capital formation** comprises increases in stocks. Capital formation is indicated by means of “acquisitions, net”, i.e. any sales have been deducted, implying that the value of capital formation indicates the total increase in stocks. With respect to dwellings and non-residential buildings of which an aggregation has been undertaken for all industries, it must be assumed that net purchases and sales are diminishing, as removals of dwellings and non-residential buildings abroad² cannot be assumed.

Gross stock **Gross stock of fixed capital** comprises the value of all capital goods estimated at re-acquisition prices for new capital goods. Subsequently, the age dimension is not taken into account in the statistics on gross stocks, as capital equipment of similar quality, but with a different remaining economic life, is estimated in the same way. The gross stock at constant prices can be considered to be a summary measurement of the productive capacity of fixed capital.

Net stock **Net stock of fixed capital** means the value of all capital goods for which adjustments have been made with respect to the decrease in value that has taken place due to physical, as well as technical and economic deterioration. That is, the net stock is estimated at the written-down re-acquisition prices. The net stock represents that part of national wealth, which is invested in fixed assets.

Consumption of fixed capital **Consumption of fixed capital** (depreciations) is a measurement of the decrease in value that has taken place due to physical as well as technical deterioration of fixed assets. It should be noted that consumption of fixed capital in the national accounts is distinguished from the concept depreciations used in company accounts. The reason for this distinction is that depreciations in company accounts can also contain an element of revaluation as a result of price changes.

Other volume changes **Other volume changes** are, similar to consumption of fixed capital, considered to be a flow. The functions of other volume changes differ. An important function is to register the effects of unusually unexpected events, which influence the economic advantages associated with assets (in the present context, fixed capital). Subsequently, unexpected losses are not covered by consumption of fixed capital, but are registered as other volume changes.

Revaluation **Revaluation** is the measurement of the change in the price of a given quantity of an asset. A declining price for an asset will be reflected in a negative revaluation of the asset and a holding loss for the owner of the asset. Increasing prices will have the opposite effect.

² Purchases of Danish properties by foreign residents do not imply that these purchases are registered as negative investments. Provided that the assets remain on Danish soil, they will still be registered as Danish fixed assets. With respect to the national accounts, the foreign residents will be registered as owners (via a financial claim) of a fictitious company, which then again is the owner of the property.

In terms of bookkeeping, there is the following relationship between a given flow aggregate over a period and the net stock at the beginning and at the end of this period:

$$(2) \text{ Net stock, end-year} = \text{net stock, beginning of year} \\ + \text{capital formation} \\ - \text{depreciations} \\ + \text{other volume changes} \\ + \text{revaluations}$$

Definition of value of real property, buildings and land

Value of real property: The market price for real property comprising land and building(s).

Value of buildings: The value of capital goods for the building stock is measured by means of the written-down acquisition price as new (net stock) at current prices.

Value of land: The value of the land itself, excluding any buildings and constructions. This value is, in practice, estimated as the difference between the market price for real property and the value of building.

Again, the relationship between the aggregates can be expressed by means of the following equation:

$$(3) \text{ Value of real property} = \text{value of buildings} + \text{value of land}$$

2. Trading profits derived from the sale of buildings in the national accounts

Theory

In the national accounts, the cost of ownership transfer for dwellings and buildings is treated as an investment and not as intermediate consumption or final private consumption expenditure. Consequently, the investment value of a newly constructed building intended for office use is equal to the costs involved in constructing an office building and any cost incurred by the purchaser and buyer in connection with the sale of the office building. The reason why cost of ownership transfer is treated as an investment is that the purchaser must pay interest on the total value involved in acquiring the office building which, as a matter of fact, also includes the cost of ownership transfer.

All incurred costs of ownership transfer regarding buildings are treated as an investment. Table 1 shows the level of the costs at current prices, covering the period 1993 - 2000.

Table 1: Costs of ownership transfer, current prices (DKK 1,000's)

	1993	1994	1995	1996	1997	1998	1999	2000
Total costs of ownership transfer	4 328 942	4 716 360	5 440 796	5 815 278	6 385 152	7 484 335	8 106 648	8 490 630
S752310 Law courts, pub. sales revenue	180 000	180 000	195 558	113 390	108 633	128 996	131 390	145 217
T703110 Real estate agents	1 686 386	2 406 248	2 849 901	3 090 562	3 472 882	4 007 286	4 680 063	4 897 491
T741100 Legal activities	2 462 556	2 130 112	2 395 337	2 611 326	2 803 637	3 348 053	3 295 195	3 447 922

Sources The following sources are applied in the national accounts when cost of ownership transfer is estimated:

- For law courts, pub. sales revenue (S752310) – which comprises stamp duty in connection with the sale of buildings – information from the Danish finance act is available with respect to the scope.
- Real estate agents (T703110) are available as turnover in the sectors, which are engaged in "Development and selling of real estate (70.11.00)", "Buying and selling of own or leased real estate (70.12.00)", "Estate agents(70.31.10)" and "Allocation of housing (70.31.20)". This information is known from the accounts statistics.
- Legal activities (T741100) are available as turnover in the sector "Legal activities (74.11.00)". The information is known from the accounts statistics.

All costs of ownership transfers concerning trade in "real properties" – built-up as well as not built-up - are ascribed to investments in buildings. This is a simplified assumption.

2.1 Other investments in buildings

In addition to knowing the value of the cost of ownership transfer, it is, of course, necessary to know the scope of (new) investments in the buildings, as well as the costs on major repairs and maintenance, when total investments in buildings³ are to be estimated. Together, they constitute total investments in buildings.

3. Capital stock statistics for buildings

The statistics on capital stock for buildings are compiled in accordance with the international standards laid down in the international National Accounts Manual (SNA93), the joint European national accounts manual (ESA95) and the OECD manual for compiling statistics on capital stock (Measuring Capital – OECD Manual, 2001).

In accordance with the definitions in the above-mentioned manuals, the Danish national accounts have published figures on the building stock since 2001. The latest release of statistics in December 2003 comprises the most recently published figures on the period from the beginning of 1966 to the beginning of 2003. The stocks and flows are distributed by the 53 industry groupings in the national accounts. Furthermore, there is a split-up of the following types of capital: 1) Machinery and Equipment, 2) Transport equipment, 3) Dwellings, 4) Non-residential buildings, 5) Civil engineering projects, 6) Livestock, 7) Software, 8) Entertainment, literary or artistic originals and 9) Mineral exploration.

Compilation of values for dwellings and non-residential buildings

The value of dwellings and non-residential buildings is, in practice, estimated separately, but there are only minor differences in methodology, as the same primary statistical data are used. Consequently, the description given below will be focussed on an overall description of the compilation method for buildings.

³ A supplement for "black" building activities is also made. Black building activities are not registered via the official sources.

The value of buildings The total value for buildings is given by conducting an aggregation of 2 sub-components:

$$(4) \text{ Total building value} = \text{Direct estimated value of stock of buildings} \\ + \text{Stock value for cost of ownership transfer}$$

Direct estimated value of stock of buildings

Gross stock is estimated by means of direct statistics on stocks The stock of dwellings and non-residential buildings is estimated by means of the direct statistics on stocks. The principle of direct statistics on stocks is that physical statistics on stocks are available for dwellings and non-residential buildings, given by the number of square metres. If this information is combined with the construction price per square, the gross stock value for buildings can be estimated. The gross stock value for a building thus indicates the price for constructing a similar building as new.

The net stock for properties is arrived at by deducting the accumulated consumption of fixed capital from the gross stock for all buildings, which are still included in the gross stock. The depreciations are arrived at by making assumptions about economic lives (59 to 75 years), depreciation profiles and survival functions, whereby the annual consumption of fixed capital can be estimated.

Stock value for cost of ownership transfer

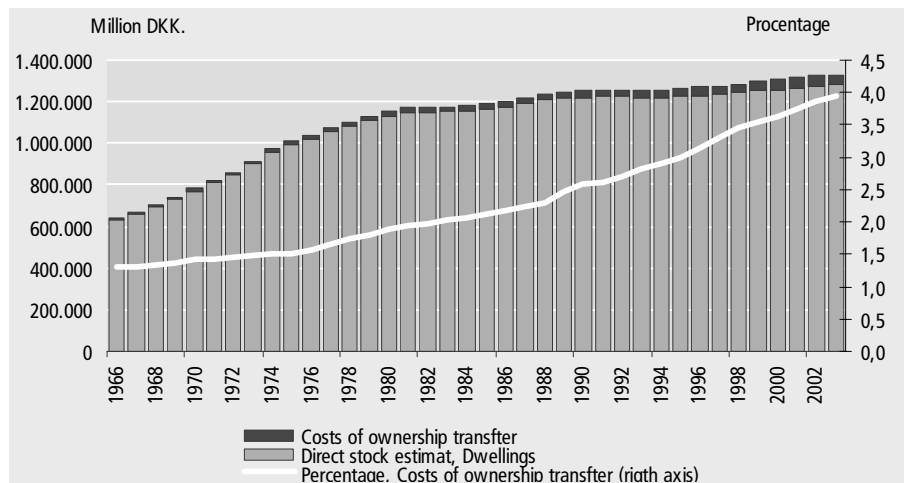
PIM – Perpetual Inventory Method – is used for estimating the stock value of cost of ownership transfer. PIM is the standard method used in estimating stocks, when only the level of investments is known, but no sources for direct stock estimates are available. In addition to knowing the investments, assumptions about economic lives, depreciation profiles and survival functions must also be undertaken. The underlying idea of PIM is to continuously keep track of increases (investments) and decreases (depreciations). Depreciations are compiled on the basis of the scope of previous investments, assumptions about economic lives for investments, depreciation profiles and survival curves.

Economic life The economic life for cost of ownership transfer depends on the number of times the building is sold. Cost of ownership transfer must be depreciated over the period in which a building is expected to be owned by the persons who pay for the cost of ownership transfer. The economic life is fixed at 30 years in the Danish estimates.

3.1 Results

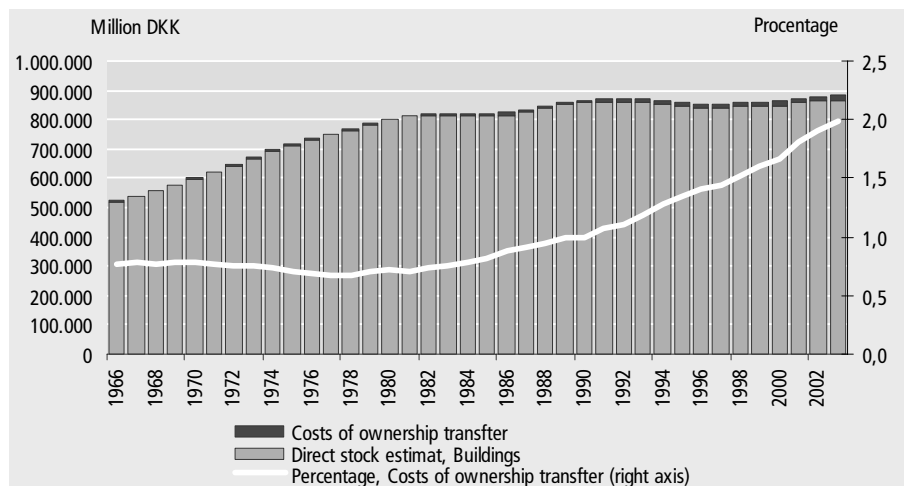
Figure 1 shows the level of the direct estimated stock as well as the supplement for cost of ownership transfer, which together make up the value of the dwellings. The cost of ownership transfer given as a percentage of the total stock value is shown by the right-axis.

Figure 1: Net stock for dwellings, at constant 1995 prices



It can be seen from figure 1 that there was, especially in the 1970's, a considerable growth in the dwelling stocks in Denmark. From the 1980's, this growth has dampened down. During the period, the share of cost of ownership transfer of the total stock value has steadily increased. This must be seen in relation to an increasing extent of trade in dwellings.

Figure 2: Net stock for non-residential buildings, at constant 1995 prices



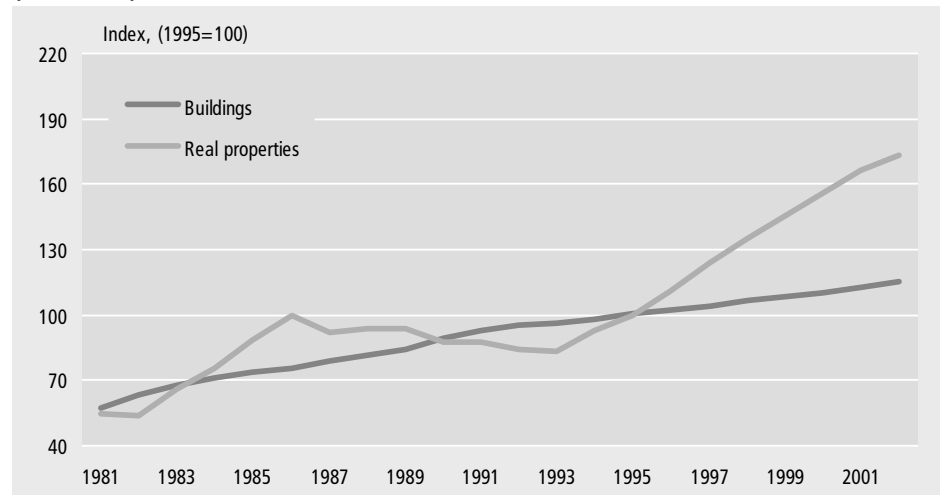
The greatest growth in the total stock of non-residential buildings can be seen in the period from 1966 to 1980, and subsequently the level of non-residential buildings is reasonably steady. There is a slight fall in the share of cost of ownership transfer until 1980, which is then followed by a sharp increase. The figure indicates that the period 1980 – 2003 is not influenced by newly constructed buildings, but by trade in existing non-residential buildings. This can be seen from the circumstance that there is an increase in the share of cost of ownership transfer for the total stock, while the level of total stock remains steady.

4. Written-down acquisition prices for buildings and market prices for real properties⁴

It is the net stock value of buildings that appear in the Balance Sheets. Balance Sheets measure the value of all assets (and liabilities and net worth) for a country. For this reason, the net stock of buildings is often interpreted as the market value of buildings. However, the net stock of buildings is compiled by using written-down values of past gross fixed capital formation – revalued by using the price development in construction prices – which do not necessarily reflect market prices for real property, since the construction prices do not necessarily follow the price development for real properties (buildings and land combined). All speculative changes in prices are implicitly set on land. This may not be the truth at every point of time.

The development in prices for, respectively, real properties and buildings is shown in the figure 3. It appears that the price development for buildings (measured by means of the implicit price index of investments in buildings) can vary substantially from the price development for real properties. Thus, the price development for buildings is considerably lower than the rate of price increases for real properties during the period 1993 and onwards. In the period where the rate of price increases for real properties is lower than the rate of price increases for buildings, losses can, however, be incurred if investments are made in real properties.

Figure 3: Index of price developments for buildings and real properties (1995=100).



Note: Indices of price increases for real properties are calculated on the basis of all traded real properties in a given year, while price indices of buildings comprise the entire stock of buildings. Although there may be some composition effects, it is indisputable that the price development for real properties and buildings are not coincident.

Significant restraints in the rules for taxation applying to real properties and a general economic decline in the period from 1986 and up to 1993 implied that there were a considerable number of announcements of forced sales of real property and declining prices for real property over the period. Furthermore, there were clear indications that direct losses were incurred in

⁴ This section builds mainly on Gysting *et al.* (2004B).

connection with building new real properties in relation to the price at which they could immediately after construction be sold.

Statistics Denmark plans to revise the method for estimating net stock for buildings by using written down acquisition price and introducing some element of market prices from trade with real properties. A satisfying new method has not yet been found.

5. International discussion on the treatment of Costs of ownership transfer on non-financial assets⁵

The aim of this section is to describe the ongoing debate and the final recommendation by the *Canberra II group on measurement of non-financial assets*⁶ regarding the treatment of cost of ownership transfer and to illustrate the suggested treatment with an example.

Valuation When an asset is valued, it is useful to split the values into different sets of prices:

Acquisition price: The price the purchaser pays for the asset. This includes the cost of ownership transfer paid by the buyer on acquisition.

Disposal price: The price the buyer pays to the seller for the asset. This is the “market price” of the asset.

Realisable price: The money the seller receives after deduction of all cost of ownership transfer the seller must pay.

Canberra II group’s final recommendation

The Canberra II group had decided to recommend that all cost of ownership transfer on non-financial assets should be capitalized and written down during the lifetime of the asset or during the time the owner holds the asset depending on the type of cost of ownership transfer. Cost of ownership transfer includes:

- Cost of ownership transfer at acquisition, i.e. transport cost, brokerage payments and installation cost.
- Cost of ownership transfer at disposal, i.e. transport cost, brokerage payments and de-installation cost.
- Terminal cost.

All cost of ownership transfer at acquisition should be written down during the period the owner holds the asset. All ownership transfer cost at disposal should be written down during the period the owner holds the asset. This implies that the consumption of fixed capital occurs before the investment.

⁵ This section builds mainly on Harrison (2004).

⁶ The international manual on National Accounts – System of National Accounts 1993 – is up for revision. A revised edition should be ready in 2008. The Canberra II group is a working group which is nominated to investigate and suggest changes to the manual regarding non-financial assets. The groups’ recommendations will not necessarily be implemented; they must also be approved by the Advisory Expert Group (a group selected to judge all proposed changes to the manual) and in the end by the UN Statistical Commission.

Table 2: Treatment of costs of ownership transfer

Period	0	1	2	3	4	5	6	7	8	9	10	11	Total
Balance Sheet value of asset, beginning of period	0,0	110,0	94,5	79,0	63,5	48,0	57,5	41,0	24,5	8,0	-8,5	0,0	
Gross fixed capital formation													
<i>Initial owner of the asset</i>													
Disposal price for producer of asset						-48,0							
Cost of ownership transfer on acquisition	100,0												
Cost of ownership transfer on disposal						5,0							
<i>Second owner of the asset</i>													
Disposal price for initial seller of asset						48,0							
Cost of ownership transfer on acquisition						20,0							
Terminal cost											25,0		
Total Gross Fixed Capital Formation	110,0	0,0	0,0	0,0	0,0	25,0	0,0	0,0	0,0	0,0	25,0		160
Consumption of fixed capital													
<i>Initial owner of the asset</i>													
Initial value		10,0	10,0	10,0	10,0	10,0							50
Cost of ownership transfer on acquisition	2,0	2,0	2,0	2,0	2,0	2,0							10
Cost of ownership transfer on disposal	1,0	1,0	1,0	1,0	1,0	1,0							5
Terminal cost		2,5	2,5	2,5	2,5	2,5							12,5
<i>Second owner of the asset</i>													
Initial value							10,0	10,0	10,0	10,0	10,0		50
Cost of ownership transfer on acquisition							4,0	4,0	4,0	4,0	4,0		20
Terminal cost							2,5	2,5	2,5	2,5	2,5		12,5
Total Consumption of fixed capital		15,5	15,5	15,5	15,5	15,5	16,5	16,5	16,5	16,5	16,5		160

In the example assume no changes in nominal prices for the asset and use a simplified method for estimation of consumption of fixed capital.

Terminal cost should be written down during the total service life of the asset, even though the investment is in the end of written down period⁷.

Alternative views

The alternative approach – supported by some members of the Canberra II group - for treatment of cost of ownership transfer was that all cost of ownership transfer should be treated as current cost at the time they occur. A clear majority did not, however, support this view.

A numerical example

To understand the recommended treatment, it might be useful with an numerical example: Assume an asset has a service life of 10 years and cost the initial buyer 100 and the initial buyer has 10 for cost of ownership transfer (i.e. transport cost) at acquisition. After 5 years, the initial buyer sells the asset for 48 and at a cost of 5 at disposal. The new buyer pays 48 to the old owner for the asset and has 20 for cost of ownership transfer at acquisition. At the end of the service life of the asset, the new owner has a terminal cost of 25.

If we look at the values of the asset at the end of period 5, when the asset is transferred to the second owner, then the acquisition price for the second owner is 68 (=48+20), the disposal price is 48 for both the seller and purchaser and the realisable price for the seller is 43 (=48-5).

Table 2 illustrates the suggested treatment of cost of ownership transfer.

Please note that the value of the asset is negative in the beginning of period 10. This is explained by the large terminal cost the owner is forced to pay at the end of period 10. Any potential buyer of the asset would require an amount for taking over the obligation to abolish the asset.

⁷ As a late night compromise, it was decided that termination cost could be written off as consumption of fixed capital immediately if the cost was either not anticipated or could not be predicted with reasonable accuracy.

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