CAPITAL STOCK AND CAPITAL CONSUMPTION ESTIMATES BY INDUSTRIES IN THE SWEDISH NATIONAL ACCOUNTS

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This paper gives a general description of the principles and methods in connection with making estimates of capital stock and capital consumption in the Swedish National Accounts, with breakdowns into industries and purposes of government services. The first section of the paper deals with definitions, principles and related questions. The major part of the estimates have been made according to the perpetual inventory method. The principles of this method are summarized. A number of problems relating to price indices are also described, as well as problems of valuation of capital for net worth and capital consumption estimates. The second section describes the methods of estimation and sources of data. The calculations have been made on a level of disaggregation into 41 industries and 13 purposes of government services. Three methods are used, i.e., direct estimates for capital objects, where some form of current stock data has been available, insurance values as proxy for replacement values, and perpetual inventory estimates. Comparisons between estimates according to the various methods are made in a number of cases.

In the third section a few special problems regarding the quality of the estimates and the possibilities of improving the estimates are explored. The main problems refer to the lack of gross fixed capital formation data, in the form of detailed series which are consistent, cover a long period, and are deflated with an adequate set of price indices. The lack of information on survival curves and durabilities of various types of capital objects is also a severe set-back. Direct inventories would improve the level of the estimates, but they would also be difficult and costly to undertake. The change in capital stock would in any case have to be determined on the basis of gross fixed capital formation data.

I. DEFINITIONS, VALUATION PROBLEMS AND THE PRINCIPAL MODEL

1. *Definitions and Problems of Valuation for Productivity Analysis*

The definitions of capital stock and gross fixed capital formation in the Swedish National Accounts virtually correspond to what is recommended in the SNA. There is one major exception, however, which refers to the durability criteria. Consequently, in the Swedish statistical system, for most capital objects a three year criteria is adopted when making a distinction between current and capital expenditures. The concept of capital formation is therefore in principle narrower than that of the SNA, which recommends a one-year criteria. Adopting a three-year criteria has been done more from a practical point of view than on grounds of principle.

The capital stock estimates in the accounts have been constructed chiefly for use in productivity analysis. In this connection interest is focused on capital as a factor of production. However, there has also been some demand for data on capital from the point of view of measuring wealth. These different uses call for separate types of estimates and for different valuations.

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For production analysis, the value of the capital stock as a factor of production has to be included in a production function. For this purpose we have to deal both with the stock of capital objects which exist during the period of measurement, and with physical indicators of how much these objects have been used in production, e.g. in terms of hours for each object or type of objects. It is because we want to aggregate, and cannot use the unweighted number of objects or of object hours as a basis for aggregation, that we run into problems of valuation. There are several options in principle, with various advantages and disadvantages from theoretical points of view. For reasons of symmetry with labour factor services, we think that a market price, such as the rental value of capital factor services, should in principle be used as a weighting base. This principle is chosen also on the assumption that such rental values would best reflect the usefulness of the capital services to the producer. Since such values do not generally exist we think the valuation problem can be formulated in terms of finding the best possible proxy for these rental values.

As such a proxy we have found it expedient and feasible to use the replacement cost of the various types of objects which are included in the capital stock.

2. *The Principal Capital Stock Estimate Model*

The major part of the estimates have been made according to the perpetual inventory method. The principles of this method can be summarized as follows:

(a) Let I_T^i symbolize gross fixed capital formation of a specific type of objects i in a given sector, in the year T.

(b) Let 1_{t-T}^i symbolize the share of I_T^i which still exists at t. $1_{t-T}^i \cdot I_T^i$ gives the purchasers' value of capital objects acquired in T, which still exists at t.

(c) Let e_{t-T}^i express the ratio between the efficiency of the objects i in t as compared with T.

(d) Let P_{t-T}^i express the price change for capital objects of type i purchased at t and T, respectively. For practical reasons these price indices have been put equal to the ones used for deflation of the gross fixed capital formation estimates in the national accounts.

(e) Let d^i express the limit of durability for capital objects i, so that after a period of this length all objects purchased at the beginning of the period have expired. Then

$$K_t^i = \sum_{T=t-d^i}^{t-1} I_T^i \cdot 1_{t-T}^t \cdot e_{t-T}^i \cdot P_{t-T}^i$$

expresses the capital stock of objects i, expressed in terms of volume at time t, used in the specific sector. No reduction has been made in respect of capacity utilization, so that K_t^i expresses available capital stock of type i. If capacity utilization expressed as a percentage is symbolized by U^i, then $\bar{K}_t^i = U^i \cdot K_t^i$ expresses capital stock of type i adjusted accordingly.

(f) If V_t^i expresses the rental value of capital object type i, the production factor value of the total capital stock in the sector can be obtained as

$$\bar{K}_t = \frac{\sum_i V_t^i \cdot \bar{K}_t^i}{\sum_i V_t^i}$$

3. *Price Index Problems*

Due to technical development in the capital goods producing industries, there is a continuous change in the quality of the capital objects produced. This means that a capital object with a given function which is produced in year t often may be different from an object with the same function produced in the base year. It may have better *prestanda*, a longer durability, better precision, lower operating costs etc. Very likely these improvements are reflected in the market prices which can be observed, and the problem rises how to evaluate the effect of these improvements, and adjust the price change observed so that the price change reflected in the price index only refers to pure price movements. The methods used in Sweden to deal with this problem are the following:

(a) The producer of the objects is requested to decide how much of the observed price change which refers to quality change.
(b) The decision on adjustment is made by a central board of index experts and major consumers of price statistics.
(c) In the case of major quality changes the object is temporarily excluded from the index.
(d) In some cases the impact of changes in a number of quality components have been estimated by regression analysis. This is the case for dwellings and ships.
(e) In the case of minor changes in qualit y, the effect is simply disregarded.

It is obvious, however, that many cases of quality change are *de facto* left unadjusted and consequently for this reason there is an upward bias in the price indices of capital goods.

Unfortunately, there is another factor in the making of price indices for capital goods which adds to the uncertainty of indices and probably also to the bias. This is the fact that price measurement for complicated products such as construction, heavy machinery etc, often relies on factor input indices. Even though these are in principle adjusted for productivity changes, it is likely that the adjustments are conservative and that such indices therefore also have an upward bias.

4. *Problems of Valuation of Capital for Net Worth and Capital Consumption Estimates*

Capital stock estimates are also relevant in studies of net worth of different sectors of the economy. The net worth of capital is conditioned by the fact that capital generates income during a future period. The market value of existing capital is influenced by the evaluation on the market of the expected value of future income, as well as the rate of interest which is relevant for discounting the value of future income to the present period. For this reason the net worth value of capital objects depreciates with growing age, regardless of the fact that their capacity to participate in production may not decrease, or may decrease only insignificantly, until at the late stage when they are finally scrapped.

Using the symbols in I.3, the depreciated value of the capital stock of type i in the sector can be written as follows.

$$N_t = \sum_{T=t-d^i}^{t-1} I_T^i \cdot P_t^i \cdot 1_{t-T} \cdot \left\{1 - \frac{t-T}{a_{t-T}}\right\}$$

where the factor a_{t-T} denotes the expected total durability for objects, acquired in year T, and remaining in year t. Consequently the factor $1-(t-T/a_{t-T})$, which has been added, accounts for the assumption of a straight line depreciation during the economic life of the existing objects. It should be noted that in this context there is from the point of view of principle no need to take into account the factor e, which denotes the reduction in production efficiency. The depreciated capital stock estimates calculated according to these principles have been considered also to be valid bases for estimates of capital consumption in the different branches of industry. These estimates were obtained through the identity $A_t = B_t + N_t - N_{t+1}$, where N denotes depreciated capital stock at the beginning of year t and $t+1$, respectively, B_t gross fixed capital formation in year t, and A_t capital consumption in year t. Since, in this connection, all entries have been calculated in fixed prices, price revaluations between the opening and closing capital stock can be disregarded. In the current price estimates, which so far refer to capital consumption only, the figures have simply been reflated with capital object indices for the relevant year.

II. Methods of Estimation and Sources of Data

1. *Introduction*

The first stages in the work consisted of reviewing and assessing the practical possibilities which for the present time exist in measuring real capital stock and capital consumption for different industries in Sweden. It was found that direct estimates, based on some form of inventory, could be made for a few types of capital objects and this method was applied where possible. For some industries, where current data on insured values were available, data for 1968 were also compiled for uninsured assets. For all industries, and all capital types, the perpetual inventory method has also been applied. All three methods have been compared where possible. Some comparable estimates for 1968 are shown in Table 1. The final estimates contain data obtained by the methods of direct estimation and perpetual inventory. The choice of methods, which has been conditioned by the availability of data, implies that the estimates are considered to be fairly reliable as far as trends and year-to-year changes are concerned. The levels of the capital stock are likely to be less reliably estimated.

It should be noted that the perpetual inventory estimates for the different branches in general do not take into account sales of used capital goods between the different branches. This is because of the fact that the basic gross fixed capital formation data generally only reflect acquisitions of newly produced objects.

Capital consumption has been calculated according to the so-called "degressive" method, according to which capital consumption in constant prices can be obtained as the difference between gross fixed capital formation and the annual change in depreciated capital stock values. It was not feasible to base estimates of capital consumption on data on depreciation according to business accounts, since these data are too much influenced by tax considerations and less adequate from a conceptual point of view as used in national accounts.

2. *Classification of Industries and Purposes of Government Services*

One object of the present estimates has been to obtain data for studies of real capital productivity in different industries of the Swedish economy and use these as a complement to studies of labour productivity. To enhance this it has been natural to adapt as much as possible to the classifications in the national accounts estimates of production and employment. These classifications apply on the one hand to industries and on the other to purposes of government services. Unfortunately the statistical basis for gross fixed capital formation estimates—and consequently perpetual inventory estimates—does not admit as much detail in the industrial and purpose breakdowns. The calculations have therefore been made at this less disaggregated level, which gives estimates for 26 industries and 11 purposes of government services. The further disaggregation into 41 industries and 13 purposes has been made by using statistics on expenditures for repair and maintenance as a proxy indicator and assuming proportionality.

3. *Estimates of Real Capital Stock at 1968 Replacement Values*

The three methods mentioned in section II.1 above have been used and the results have been compared where this has been possible.

A. Direct Estimates for Capital Objects, where some form of Current Stock Data has been Available

(a) For fishing, annual estimates of the value of ships and equipment have been available. These data refer to replacement values.

(b) For the shipping industry, stock data relating to number of ships and gross register tonnage figures are available. Data on price per gross register ton have been calculated for 1968, for different types of ships.

(c) From the Board of Aviation, the number of aircraft in different size categories in terms of starting weights are available. The average 1968 price in each category has been calculated.

(d) Data on the number of motor cars, trucks and buses are available from central registers. For buses and trucks, as well as trailers, the data are subdivided according to maximum loading capacity, in terms of persons or metric tons respectively. Motor cars are subdivided according to type and model. From these figures motor cars and trailers owned by households for personal consumption have been excluded. Price data for 1968 have been obtained from price lists, etc.

(e) For residential buildings, data on the capital stock, in terms of number of apartments and subdivided into apartment buildings and family dwellings are available. There is also information given on the size and equipment standard. These data are available in the censuses of housing of 1945, 1960, 1965 and 1970. Average prices for apartments built in 1968 are also available from loan administrative statistics. Using this material, it has been possible to assess the influence on price of various quantity and quality characteristics and estimate the prices per apartment in each of the census years, in terms of the 1968 price level. For the years between censuses, the number of apartments as well as average prices have been intrapolated. For the years after 1970, the capital stock in residential

buildings has been extrapolated by using annual statistics on completions and assumed demolitions. These estimates will have to be revised in the light of the 1975 census data.

(f) For recreational dwellings, stock data for 1963, 1967 and 1970 are available from various sources. For 1970, 1971 and 1972 the number of units, and their sizes, are available according to tax administration records. Other years have been extrapolated or interpolated. Price information for different sizes have been obtained from main contractors.

B. Insurance Values as Proxy for Replacement Values

For mining (ISIC 2), manufacturing (ISIC 3), and electricity, gas and water (ISIC 4), data on insurance values of the capital stock are compiled annually by the CBS. For wholesale and retail trade (ISIC 61 and 62) and financial institutions and insurance (ISIC 81 and 82) a survey was made for 1968. The annual statistics cover the insured value, the own-risk value, and the estimated replacement value for uninsured assets. Data are required for industrial buildings, other construction, machinery and equipment and residential buildings for employees. To evaluate the possibilities of using these data as a basis for capital stock estimates a survey was made in 1968, covering about 30 large and 10 medium-sized manufacturing firms. Information was required concerning type of insurance, reliability of the valuation, dates for available valuation, and the latest updating in the information given to CBS. As regards type of insurance, the survey indicated that all firms used a current valuation type of insurance. Uninsured assets were frequent, mainly in mining, iron and steel, manufacture of metal products, machinery and equipment, chemicals, and electricity, gas and water; they usually applied to building and construction. Machinery and equipment objects were to a large extent insured.

As regards the reliability of valuation most enterprises considered that the valuation probably did not fully cover replacement costs. For old machinery the value was assessed on the basis of current prices, and for new machinery, the prices paid were used. Valuations were currently updated by the insurance companies, by using price indices which were likely to exaggerate price increases, since the quality component was not fully adjusted for. The survey also indicated large differences between different industries with regard to the reliability of valuation. In general, it seemed that time series based on insured values probably would increase somewhat faster than the true replacement values. It was therefore considered necessary to abandon this method for estimations of the year-to-year change in the capital stock, and use the insured values only for reference and for checking.

A comparison between insured values and the final capital stock estimates, which is shown in Table 1, nevertheless indicates a reasonably good correspondence between these types of data.

C. The Perpetual Inventory Method

As has been described in section I, the following types of information are necessary for the perpetual inventory estimation model.

TABLE 1

ESTIMATES OF REAL CAPITAL STOCK AT 1968 REPLACEMENT VALUES ACCORDING TO DIFFERENT METHODS

		Million kronor			
1. Perpetual Inventory (PI) compared with Insurance Values Estimates (IV)		Building and Construction		Machinery, Inventories etc. (Cars Excluded)	
		PI	IV	PI	IV
ISIC	2	1,877	1,815	1,791	1,897
	311+312	4,229	3,040	2,823	3,436
	313+314	687	762	547	669
	32	2,275	2,189	2,766	3,137
	33+34	10,021	7,556	15,050	16,158
	35	3,310	2,477	4,273	4,712
	36+39	2,350	2,251	3,476	3,461
	37	5,424	3,958	8,152	9,655
	38	12,505	10,349	11,808	15,266
	4	34,785	18,519	9,917	5,738
	61+62	10,812	6,634	4,696	3,805
2. Perpetual inventory (PI) compared with Direct Estimates (DE)		PI	DE	PI	DE
ISIC	12	3,063	—	1,344	1,100–1,300
	831 part[1]	200,800	230,922	—	—

[1] Residential buildings only.

(a) Time series for gross fixed capital formation, in different industries and for different objects. The length of the time series is conditioned by the length of life of different types of capital objects.

(b) Price indices, which are adjusted for technical development and other quality effects in the different types of objects.

(c) Survival curves and assumption of durability (length of life).

(d) Benchmark data, indicating the replacement value of capital stock in different industries and for different types of objects. Since this type of information has been only sparsely available, the unreliability of the estimates as regards levels should once more be stressed.

(e) In principle, the model also calls for efficiency and capacity utilization coefficients. These had to be disregarded for statistical reasons.

The national accounts give data on gross fixed capital formation from 1950. These data are given with a classification that virtually corresponds to the ISIC and are subdivided into three categories—buildings and construction, machinery and inventories, and transport equipment. The statistics underlying these series sometimes contain some information with a more strict indication of the type of capital objects.

It has been a strong ambition in the practical application of the method to subdivide the gross fixed capital formation estimates into as many capital objects as possible. This improves precision because it is then to a larger extent feasible to apply more appropriate survival curves and price indices. Further, it is then easier

to adjust the gross fixed capital formation series for objects for which capital stock estimates can be made accurately according to the direct estimation model. This is the case e.g. for trucks, buses and motor cars.

Accordingly, the gross fixed capital formation data for each branch and for each purpose of government services have been subdivided strictly into the following types of object.

Residential building
Non-residential building
Construction
Computers and office machinery
Equipment
Other machinery, specific to each industry
Rolling stock (engines, railroad cars, streetcars)
Ships
Aircraft
Motor cars
Trucks
Buses
Tractors

For the various industries within manufacturing a somewhat less detailed breakdown has been necessary.

The subdivisions into capital types have been estimated on the basis of various methods. Building and construction is in most cases given in the gross fixed capital formation surveys; in other cases tax assessment statistics have been used. Transport equipment has been estimated on the basis of central register data. The subdivision into different types of objects for machinery and equipment is unfortunately rather arbitrary. It should be noted that all residential buildings regardless of sector of ownership have been allocated to the real estate industry (ISIC 831). This has been feasible since, for a number of sectors, these outlays are shown separately from capital expenditures on other objects.

When the series of capital formation was disaggregated into these different types of assets, about 150 series for industries and about 60 for purposes of government services were available from 1950. In view of the long durability of some objects it has been necessary to extend the series. The extensions have been made back to 1830 for building and construction, and to 1890 for machinery and equipment. For building and construction, measured as output from the construction industry, framework estimates have been made on the basis of commodity-flow-based input data. For machinery and equipment, framework estimates also based on commodity flow have been made. Direct information from investors are in some cases available for a number of years back. These types of information have been used in combination, to establish time series for the required period. The basis in some sectors is admittedly very weak, especially for the beginning of the period. It has not been possible to work at the required level of classification and a number of rough approximations have been made. These shortcomings in the estimation model influence the capital stock data up to the early fifties but due to the rapid rate of expansion in gross fixed capital formation in most sectors, the

effect of this unreliability then rather rapidly tapers off and is negligible in the estimates from around 1960.

Constant price data on gross fixed capital formation have been obtained according to the system of deflation in the national accounts. The price indices used in this system should in principle be adjusted for quality change; in practice this adjustment is only made partially. The majority of the indices used are specific price indices. Unit-value-type indices are used only fragmentarily. The deflators which are used for gross fixed capital formation in machinery and equipment in various branches of manufacturing industry are notably weak in respect of adjustments for quality change. For building and construction the index series before 1968 relate to factor inputs; from 1968, however, a number of price indices relating to the output from the building and construction industry have been compiled.

In the years before 1935, the availability of a large variety of price indices gradually diminishes, and for earlier years, the deflation is based on only a few price indices.

Due to the upward bias in the price indices, there will be a downward bias in the deflated figures, implying that old capital is overvalued in relation to new capital. Consequently, the estimated growth of the capital stock implies a downward bias.

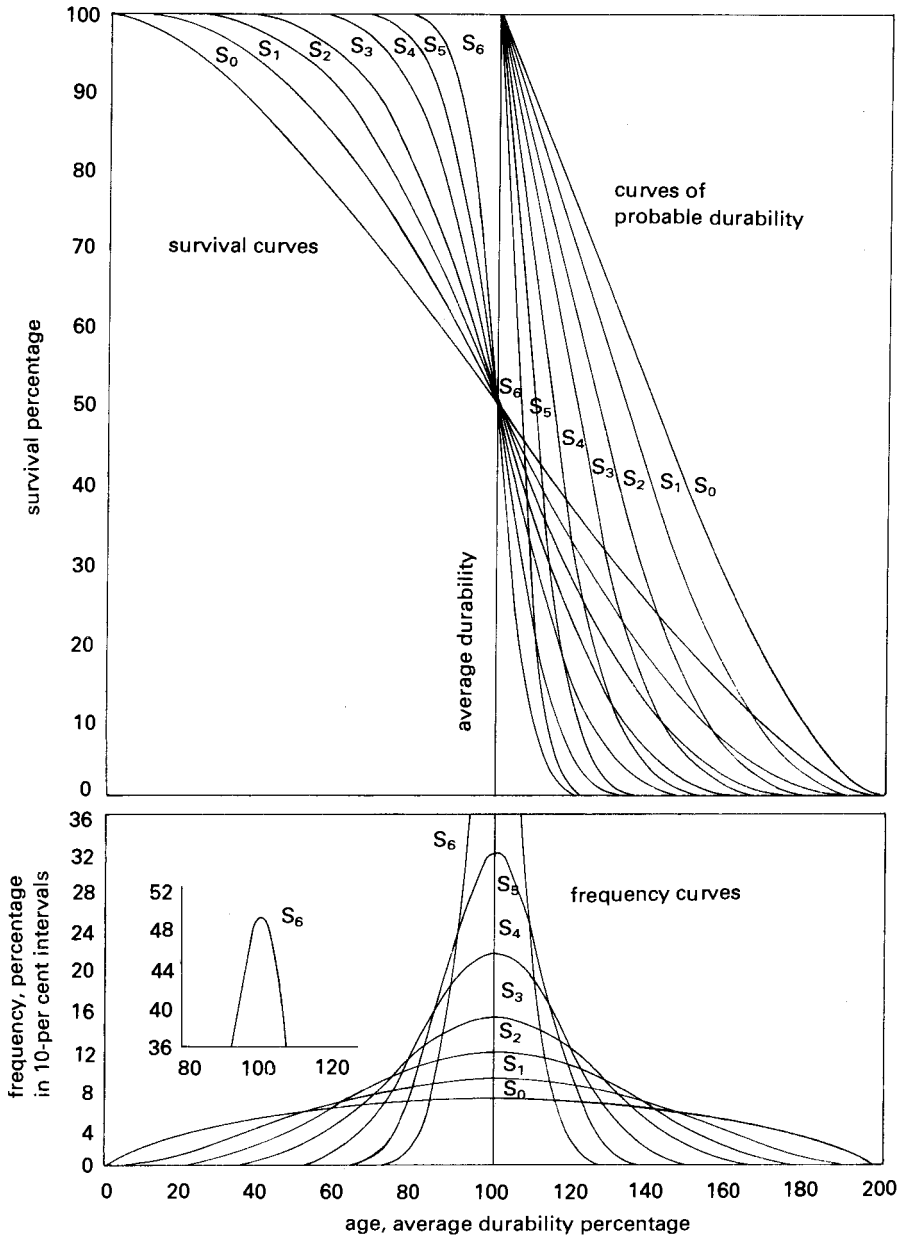
The estimation model given in section I.2 necessitates a series of survival coefficients. The basic problems concern the forms of the survival curves, and whether the survival curves are different during different periods of time. Statistical information which enables calculation of survival curves is very fragmentary. There has been a study concerning machinery in the engineering industry, which shows a fair amount of conformity with the survival curves which were generalized in the Iowa State College investigations during the 1930's. This material has therefore been used also in the present Swedish estimates. In Tables 2 and 3 the construction and the durability assumptions that have been employed are shown. The durability assumptions have been elaborated in earlier investigations and recently checked by branch experts.

There is no empirical basis for assuming that average durability changes over time. This is presumably a shortcoming, since most likely durabilities decrease in periods with rapid technical and economic development. For some types of capital objects, it has been assumed that durabilities decrease somewhat from the beginning of the sixties, and the computer program has been constructed so that modifications of this nature can be introduced at a later stage, where possible.

III. Conclusions Concerning Quality and the Need for Future Improvements

Due to the fact that benchmark data for capital stock estimates do not exist, time series for gross fixed capital formation and price indices have been compiled for very long periods. The high level of ambition in classification detail has necessitated a number of breakdowns based on arbitrary assumptions. Possibly more accurate results would have been obtained if the material had been penetrated more deeply, but this has not been possible with the resources

Symmetric survival curves



Right askew survival curves

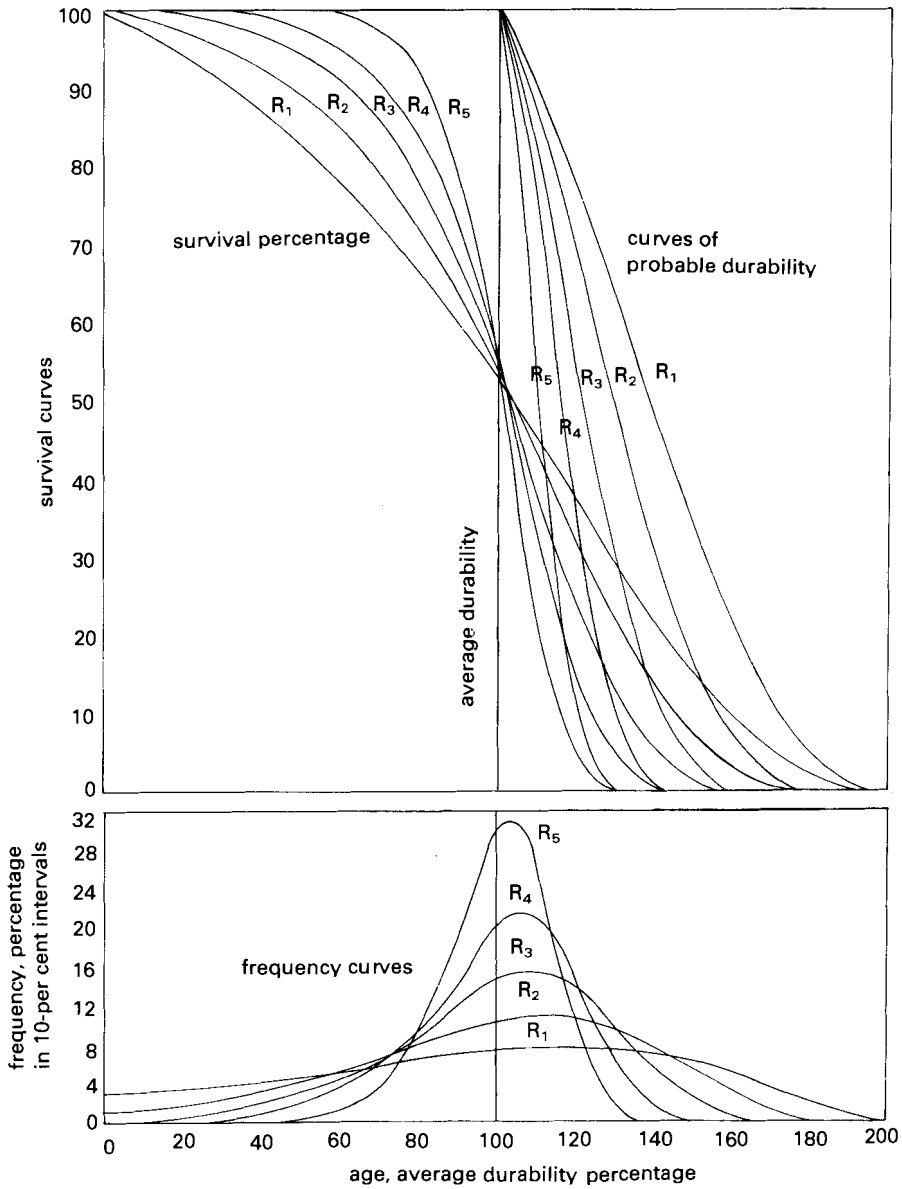


TABLE 3

SURVIVAL CURVES AND AVERAGE DURABILITY USED IN ESTIMATES ACCORDING TO THE PERPETUAL INVENTORY METHOD

Asset	Classification of Activities, ISIC	Curves	Average Durability in Years
Multi-dwelling buildings	831	R_4	75
Small houses	831	R_3	75
Non-residential buildings	11	R_2	80
	7112, 7114, 9513	R_2	60
	3 except 3411, 353	R_3	60
	3411, 63	R_3	65
	353	R_3	70
	5, 61, 62, 713, 9 except 9513	R_3	75
	2, 92	R_4	60
	41, 72, 81, 82, 83	R_4	75
	7111	R_4	80
Roads	all activities	S_3	30–40[2]
Construction except roads	12	S_2	25
	713, 72	S_2	40
	11	S_2	60
	3, 61, 62, 71 except 713 and 7123, 9 except 92	S_2	80
	4103	S_3	30
	4101	S_3	50
	2, 4102, 42, 7123, 92	S_3	80
	7111	R_3	75
Passenger cars	all activities	R_2	2–5[2]
Lorries and trucks	,,	R_2	3–6[2]
Tractors	,,	R_4	15
Buses	,,	R_2	6
Railroad equipment	7111	R_4	35
Aeroplanes etc.	713	R_3	15
Office machinery	all activities	R_3	15
Computers	,,	R_4	10
Other machinery specific to each industry	11	R_2	15
	361, 362, 37, 4102, 42	R_2	35
	61, 62, 63, 7112	R_3	15
	9 (except 9513)	R_3	20
	331, 3513, 355, 3841	S_1	15
	3111, 3112, 3116, 3117, 3118, 32, 35 (except 3513, 353, 355), 39	S_1	20
	38 (except 3841)	S_1	25
	353	S_1	30
	34 (except 3411, 342)	S_1	35
	5	S_2	10
	12, 3113, 3114, 3115, 3119, 3121, 3122, 4103	S_2	20
	72	S_2	15
	3411	S_2	25
	2, 342, 4101	S_2	30
	7123	S_2	40
	369	S_3	30
Other equipment	all activities	R_3	20

[1] For the shape of the curves, see Table 2.

[2] The average durability has been assumed to decrease successively since the fifties.

available, and it is likely that in any case only rather a marginal improvement would have been obtained. The main object of the study—to delineate the theoretical and practical problems in measuring capital stock by industry, and to obtain a set of data with reasonably good quality—has been realized.

The quality of the estimates varies from industry to industry. In general the data on machinery, transport and equipment are more accurate than those on building and construction for the following reasons.

(a) The accumulation covers a lesser number of years.

(b) Price indices for machinery, transport and equipment usually have a larger element of adjustments for quality change than those for construction.

(c) Gross fixed capital formation data on machinery, transport and equipment are easier to obtain correctly periodized than building and construction, which often takes several years to complete.

(d) It is more difficult to ascertain survival curves for building and construction since changes and additions are more frequent than for machinery, transport and equipment.

For the purpose of making capital stock estimates, as well as for national accounting in general, it is necessary to have access to a consistent and complete system of gross fixed capital formation data. The present system used in the Swedish national accounts estimates for this flow covers in principle all sectors, but the basic statistics are nevertheless incomplete and in some respects the various parts are not fully congruent, the one with the other.

It is also necessary to have access to an integrated system of price indices for deflation. Such a system is now being built up from 1968, with a weighting system that in a systematic way utilizes the approximately 1600 commodity accounts in the yearly input–output-tables. Especially for productivity analysis, where capital stock is one component, it is necessary that the problem of adjusting for quality change is dealt with in a consistent and systematic way. In the present system of estimates there is a risk that quality adjustments are dealt with differently in different indices relating to the same commodity (e.g. indices of production and imports, and indices of wholesale prices).

As is obvious, the survival curves have a weak empirical foundation. According to the survey, mentioned in section II, many enterprises appear to have their lists of capital objects in a shape which is not very promising for the purpose of a durability survey. The vast number of objects which exist implies that a durability survey has to be focussed only on some of the most important objects.

The importance of various assumptions concerning average durability and dispersion for the survival curves has been analysed. This has been done for the engineering industry, where the survival curve has been modified in respect of skewness, dispersion and average durability. It was found that the form of the curve has a fairly marginal effect on the results. If average durability for construction decreases from 60 to 50 years, capital stock decreases by 5 percent. An increase to 70 years has an even smaller effect. For machinery the sensitivity is larger, so that a decrease from 25 to 20 years decreases capital stock by 10 percent.

The efficiency factor, as well as the capital utilization factor, have for reasons of lack of data been ignored in the present study. Very likely it is difficult to

delineate and statistically measure changes in efficiency. Capital stock would probably have increased somewhat faster if the efficiency factor had been taken into account.

As regards capacity utilization, this factor was also ignored. It was felt that this factor is more important for short and middle term analysis than for long-term analyses. It would seem possible to introduce estimates of this factor, i.e. based on data from business tendency surveys, but for lack of resources this possibility has not been further explored.

The perpetual inventory method is always unreliable, unless a check can be given on the level of the estimates by using some form of direct inventory. A direct inventory is felt to be very difficult to undertake in view of the heterogeneous character of business accounting in respect of valuation of capital goods, and the burden it would imply for reporting units to extract the proper data from their accounts and lists of inventories. In view of the fact that a direct inventory only gives the benchmark, and that the change in capital stock anyhow has to be determined by adding gross fixed capital formation, and deducting demolitions and scrappings, priority is given to systems of statistics notably for capital formation. High priority is also given to an integrated system of price indices for deflation.