



Statistics Norway
Research Department

*Arvid Raknerud, Dag Rønningen and
Terje Skjerpen*

**Documentation of the capital
database**

A database with data for tangible
fixed assets and other economic data
at the firm level

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1. Introduction¹

This is a documentation of the capital database, which consists of data for tangible fixed assets and other selected economic data for manufacturing joint-stock companies in the period 1993-2002. The main objective of the database is to serve the need for capital data (tangible fixed assets) at the micro level. The manufacturing statistics previously contained data for fire insurance values, which were used as a measure of capital in several studies, see for example Biørn, Lindquist and Skjerpen (1999). Information on fire insurance values are no longer available in the manufacturing statistics.

The accounts statistics in Statistics Norway are based on data from the balance sheet and income statement for all non-financial joint-stock companies. However, the database only includes joint-stock companies in the manufacturing industry. The balance sheet contains information about the value of the stock of tangible fixed assets. However, this value is the book value, i.e. the capital objects are valued at historic cost prices, not at replacement cost. Price changes are therefore not accounted for in these data.

Information about the firms' investments is available in the notes to the annual report, and does not have a standardized form. Thus, the accounts statistics do not contain investment data. The manufacturing statistics in Statistics Norway, on the other hand, include data for investments in tangible fixed assets that may be merged with the firm level data in the accounts statistics.

The database contains computed values of tangible fixed assets in current prices. The method used to calculate the capital values to current prices is described in Raknerud, Rønningen and Skjerpen (2003). In addition, the database consists of some selected variables from the accounts statistics and the manufacturing statistics. Chapter 6 gives an overview of the variables in the database.

2. The accounts statistics

The present format of Statistics Norway's accounts statistics has been in place since 1993. It includes all non-financial joint-stock companies (firms). The firm (enterprise) is defined as "the smallest combination of legal units that is an organizational unit producing goods or services which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources. An enterprise carries out one or more activities at one or more locations"².

¹ We thank Grete Borge from Statistics Norway for help with the translation to English.

² Business register Recommendations manual, European communities, 2003, page 51.

The joint-stock companies have to submit their annual report to the Brønnøysund Register Centre. The accounts statistics consist of information from the balance sheet and income statement in the annual report. Information in the notes of the annual report is not included.

We can divide the stock of tangible fixed assets into two groups; Buildings and land with a long lifetime (40-60 years), and other tangible fixed assets, machines, inventory etc., that are expected to have a considerably shorter lifetime (3-10 years). See Statistics Norway (2000a) for a description of the accounts statistics.

3. The manufacturing statistics

Statistics Norway's manufacturing statistics consist of the establishments in the manufacturing industry. However, manufacturing establishments may be owned by firms outside the manufacturing industry. From 1996, the manufacturing statistics has been constructed at both the establishment level and firm level. We have chosen to use the establishment level files to make the computation basis equal for all years. We aggregate the establishments into firms to get data at the firm level.

For the computation of tangible fixed assets in current prices, investments in tangible fixed assets are collected from the manufacturing statistics. More information about the manufacturing statistics is available in Statistics Norway (2000b).

4. Which firms are included in the database?

The database consists of all joint-stock companies in the manufacturing industry. In 1993, the value added and man-hours worked in these firms represented 65 per cent of the manufacturing industry totals. In 2001, this share was 80 per cent.

5. Computations of tangible fixed assets in current prices

Tangible fixed assets in current prices are computed from book values in the first year, 1993. We assume that the book values in 1993 are equal to the value in current prices, which is a strong assumption and implies that we underestimate the value in current prices. This is particularly important for buildings and land since these objects have a long lifetime. In addition, there was a strong increase in prices of buildings and land in the period prior to 1993. We have not attempted to estimate the size of the underestimation of the capital stock in current prices that follows from this assumption.

Further, we have information about investments in tangible fixed assets per year and book values at the end of the year. With these data we can compute the reduction (depreciation and sale) of the capital value during the year. We calculate a reduction rate, which is the reduction in capital value as a share of the capital stock at the start of the year and investments during the year. Tangible fixed assets in current prices are computed by taking the book value of capital at the start of the year, adding investments and subtracting the reduction in tangible fixed assets, and then adjusting for the price changes of capital during the year. This computed stock of tangible fixed assets is the stock of capital at the start of next year. A detailed description of the method can be found in Raknerud, Rønningen and Skjerpen (2003).

6. Variables in the database

We cannot compute the reduction rate for buildings and land and other tangible fixed assets in 1993, since the computation requires data from 1992, which is not available.

Variable name	Description and source
orgnr	The firm's organisation number (Identification number).
year	Year.
ftype	Type of firm. This is a constructed variable. It has one of the following values: 1 if the firm is operative and has only one establishment (plant). 2 if the firm is operative and has more than one establishment, all of which are in the manufacturing industry. 3 if the firm is operative and there is more than one establishment, and at least one of the establishments is outside the manufacturing industry. "." means that the firm is not operative.

For a few firms, firm type is "not operative" although the firm has data for some or all variables. One reason for this is that there is a discrepancy between the sources used to construct this variable, Statistics Norway's Central Register of Establishments and Enterprises (BoF) and data from the accounts statistics and manufacturing statistics. These differences may be due to activity only in one part of the year in the firm. The firm then has the status not operative in the BoF register.

nace	Nace industry code (Based on NACE Rev. 1 and the UN's ISIC Rev. 2). States which industry the firm belongs to. The variable is taken from the manufacturing statistics.
buildbv	Buildings and land, book values. The variable is taken from the accounts statistics. 1993 - 1995: variable <i>p191</i> 1996: variable <i>p1916</i> 1997 - 2002: variable <i>eiendom</i> .
buildcp	Buildings and land, current prices. Computed variable.
invbuild	Investments in buildings and land. The variable is taken from the manufacturing statistics. 1993 - 1995: variable <i>v119</i> 1996 - 1998: variables <i>v530_A</i> , <i>v540_A</i> , <i>v550_A</i> and <i>v560_A</i> . 1999 - 2002: variables <i>anskbygg</i> , <i>anskgrunn</i> and <i>anskbolig</i>
salebuild	Sales of buildings and land. The variable is taken from the manufacturing statistics. 1993 - 1995: variables <i>v68</i> , <i>v69</i> , <i>v70</i> , <i>v71</i> and <i>v72</i> 1996 - 1998: variables <i>v530_S</i> , <i>v540_S</i> , <i>v550_S</i> and <i>v560_S</i> 1999 - 2002: variables <i>avgangbygg</i> , <i>avgangbolig</i> and <i>avganggrunn</i>
redbuild	Reduction rate for buildings and land. Computed variable.
otfabv	Other tangible fixed assets, book values. The variable is taken from the accounts statistics. 1993 - 1995: variable <i>p181</i> 1996: variable <i>p1856</i> 1997 - 1998: variable <i>maskin</i> 1999 - 2002: variables <i>maskin</i> , <i>skrifly</i> , and <i>driftinv</i> .
otfacp	Other tangible fixed assets, current prices. Computed variable.

invotfa	Investments in other tangible fixed assets. The variable is taken from the manufacturing statistics. 1993 - 1995: variables <i>v117</i> and <i>v118</i> 1996 - 1998: variables <i>v510_A</i> and <i>v520_A</i> 1999 - 2002: variables <i>anskmask</i> , <i>anskskip</i> , <i>anskvarebil</i> and <i>anskkontor</i>
saleotfa	Sales of other tangible fixed assets. The variable is taken from the manufacturing statistics. 1993 - 1995: variables <i>v64</i> , <i>v65</i> , <i>v66</i> and <i>v67</i> 1996 - 1998: variables <i>v510_S</i> and <i>v520_S</i> 1999 - 2002: variables <i>avgangmask</i> , <i>avgangkontor</i> , <i>avgangvarebil</i> and <i>avgangskip</i> .
redotfa	Reduction rate for other tangible fixed assets. Computed variable.
priceindotfa	Price index for new investments in other tangible fixed assets. ³
priceindbuild	Price index for new investments in buildings and land.
priceindtfa	Price index for new investments in tangible fixed assets.
Employed	Number of employed in the firm. The variable is taken from the manufacturing statistics. 1993 - 1995: <i>sysselsatte</i> 1996 - 2002: <i>syss</i>
operinc	Operating income. The variable is taken from the accounts statistics. 1993 - 1995: <i>p901</i> 1996: <i>p9016</i> 1997 - 2002: <i>drinnt</i> .
operexp	Operating expenses. The variable is taken from the accounts statistics. 1993 - 1995: <i>p902</i> 1996: <i>p9026</i>

³ The three price index variables (*priceindotfa*, *priceindbuild* and *priceindtfa*) are at the industry level. The industry classification used is available in the Appendix.

1997 - 2002: *drkost*.

intermgoods	Intermediate goods. Computed variable. Computed as operating expenses less payroll expenses, depreciation, write-downs and rent (intermgoods = operexp - wage - deprec - write-down - rentbuild - rentotfa).
wage	Payroll expense. The variable is taken from the accounts statistics. 1993 - 1995: <i>p500</i> 1996: <i>p5006</i> 1997 - 2002: <i>lonn</i>
deprec	Depreciation of tangible and intangible fixed assets. The variable is taken from the accounts statistics. 1993 - 1995: <i>p708</i> 1996: <i>p7806</i> 1997 - 1998: <i>ordavs</i> 1999 - 2002: <i>avskriv</i>
write-down	Write-downs on tangible and intangible fixed assets. The variable is taken from the accounts statistics. 1993 - 1995: <i>p872</i> 1996: <i>p8726</i> 1997 - 1998: <i>anlavs</i> 1999 - 2002: <i>nskriv</i>
rentbuild	Rent on buildings and land. The variable is taken from the manufacturing statistics. 1993 - 1995: <i>v46</i> 1996 - 1998: <i>leiebygg</i> 1999 - 2002: <i>leiekostbygg</i>
rentotfa	Rent on other tangible fixed assets. The variable is taken from the manufacturing statistics. 1993 - 1995: <i>v47</i> 1996 - 1998: <i>leiemask</i>

	1999 - 2002: <i>leiekostmask</i>
operpr	Operating profit. The variable is taken from the accounts statistics. 1993 - 1995: <i>p905</i> 1996: <i>p9056</i> 1997 - 2002: <i>drres</i>
valuead	Value added at factor prices. Computed variable. Operating income less operating expenses plus depreciation and rent (valuead = operinc - operexp + wage + deprec + write-down + rentbuild + rentotfa).
hours	Man-hours worked. The variable is taken from the manufacturing statistics. 1993 - 1995: <i>v15</i> 1996 - 2002: <i>v180</i>
emplshare	Share of employment for the establishments in the manufacturing industry. Computed variable. The share is 1 for firms in which all the establishments are in the manufacturing industry. For firms with establishments outside the manufacturing industry, the share will be less than 1.

7. Applications

There are many potential applications of the database. It consists of economic data at the firm level, and it is possible to merge the data with other economic as well as non-economic data from other sources. Data from the database can also be merged with individual level data. Moreover, data from the database are well suited for studies of firm behaviour. The identity number is the firm's organisation number.

Raknerud, Rønningen and Skjerpen (2003) and Raknerud and Rønningen (2004) show some potential applications. We have estimated the stock of tangible fixed assets for the whole manufacturing industry and compared the growth in capital intensity with the figures computed with the Perpetual Inventory method (PIM) in the national accounts. We find large differences between the figures resulting from the two methods of computing the stock of tangible fixed assets.

We have also used the database to compute productivity growth for the manufacturing industry and disaggregated industries within the manufacturing industry. The productivity growth figures are very different from those computed by use of national accounts figures. Another difference in our computations is that we use a different method for deflating the data, which also affects the results.

Appendix

Industry classification used for the price indices of new investments in tangible fixed assets.

National accounts code (NR)	Name
8310	Coal mining
8314	Fish and fish products
8315	Meat and dairy products
8316	Other food products
8317	Beverages and tobacco
8318	Textiles and clothing industry
8320	Wood and wood products
8321	Pulp, paper and paper products
8322	Publishing, printing
8324	Basic chemicals
8325	Chemical and mineral products
8327	Basic metals
8330	Machinery and other equipment n.e.c.
8335	Building and repairing of ships
8336	Oil platforms and modules
8337	Furniture and other manufacturing n.e.c.

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