

Description of Danish Practices in Retail Trade Statistics.

1. Statistical units and reporting units

Units and population

The enterprises in the Retail Trade Index are all legal units. In the Central Business Register of Statistics Denmark (CBR) the legal units are known by their CVR-number. Those units, who have their main or secondary activity within the sectors of retail trade, constitute the population. The total number of enterprises in the sectors of the retail trade is estimated to be approximately 31,000. Those 31,000 enterprises are delimited to approximately 8,000 enterprises with a turnover in excess of DKK 2,5 mil¹. From this population a sample is made, which is used as a frame for the calculations of the Retail Trade Index.

2. Data items and their definitions

Variables

In the survey the enterprises are asked about their sales, VAT included, to private households. Sale to private households is defined as retail trade.

Statistical aims

In the national publications, the index for each sector of retail trade is stated as turnover index. For the three main commodity groups, a deflated turnover index and seasonally adjusted index is also stated.

Sectors of retail trade are grouped according to “Danish Industrial Classification of All Economic Activities 2003” (DB03); the codes are shown in parentheses. A complete description of the sectors is given in DB03. The shift from DB93 to DB03 from 1 January 2003 has caused some minor changes to a few sectors.

The delimitation of the population is based on the Central Business Register of Statistics Denmark and DB03. The starting point is enterprises with their main activities within retail trade. In addition, the enterprises with their main activity outside retail trade but with their second line of business within retail trade are included. For the latter a recalculation is carried out, so that only the part of the turnover connected to the retail trade is included. Furthermore, bakers are also included in the retail trade statistics, even though their sector in the trade classification belongs to the production industry.

The total turnover of the sectors included in the Retail Trade Index accounts for approximately 96 per cent of the total turnover in the whole retail trade sector. Some retail trade sectors are not included in the statistics, partly due to insignificant sales and partly due to some specific conditions in certain sectors.

Since the survey is compulsory and the reminding procedure is intensive, the response rate is approximately 99 per cent, measured on turnover in final figures.

¹ This reduction is made in order to curtail the administrative burden for the smaller enterprises.

3. Data sources and data collection methods

The Retail Trade Index is based on telephoned or written response by the enterprises in the sample.

The Retail Trade Index began as a voluntary survey. Legal authority to collect the data is currently given by the Act on Statistics Denmark (Lov om Danmarks Statistik), Section 8.

The lifetime burden on the average respondent was for the year 2003 equivalent to 2.9 years of work.

Coverage

The total number of enterprises in the population is estimated to be approximately 8000. From this population a sample is selected that is used as a basis for calculating the indices. This sample comprises units in the population, which generate annual turnovers for at least DKK 2.5 million, VAT included. The sample covers approximately 36 per cent of the enterprises and approximately 87 per cent of the total turnover from all the enterprises with turnover of at least DKK 2.5 million in the sectors of retail trade.

Sample/size class

In the sample, all enterprises with annual sales in excess of DKK 20 million, VAT included, are included. The remaining enterprises are chosen optimally. The population is divided into 4 size classes. The size classes are: DKK 2.5-5 million, 5-10 million, 10-20 million and beyond 20 million. Among the enterprises with less than DDK 20 million in annual turnover, the size of the sample is determined by the turnover index. The units with retail trade as their secondary line of business are chosen based on their share of the total turnover within the sector of retail trade. The limit of DDK 2.5 million in annual turnover for participating in the sample has been chosen to curtail the burden of the respondent for small enterprises.

The total selected sample consisted per 1 January 2005 of 3.300 enterprises. Each year the sample is renewed by approximately 1/3 of the enterprises with an annual turnover between DDK 2.5-20 million. Hence, it is assured that the size of the sample is kept at the same level and the sample gives an accurate picture of the retail trade sector. This method implies that some enterprises can be exempted from the sample for some period.

Collecting/measuring

The reported figures of the turnover are either typed in by telephone or obtained through submission of completed questionnaires by the enterprises. The questionnaires are posted at the end of the period for which data are submitted. If the questionnaires have not been returned within a few days after the deadline, a reminder is sent, together with a new deadline. If this deadline is exceeded as well, the enterprise is reminded by telephone. Completion of the questionnaires is mandatory. However, some enterprises do not fulfil their duty. In those cases Statistics Denmark sends a registered letter, stressing out that their turnover must be reported within a week. Otherwise, Statistics Denmark will notify the police.

In the questionnaire, each enterprise is asked about their turnover, VAT included, to private households. Turnover to private households is defined as retail trade. This includes repairs undertaken at the premises of the enterprise; for instance, the repairs of watches are also included in

the total turnover for the watch and clock stores.

Supermarkets, discount stores and department stores sell a very wide variety of goods. In order to be able to estimate and publish the Turnover Index, which is divided into three main commodity groups: "Food and Other Basic Commodities", "Clothing etc." and "Other Consumption Goods", the enterprises in these sectors are requested to report the turnovers for those three main commodity groups separately. If the enterprise is unable to submit accurate figures, it is requested to estimate the sales stemming from each group.

The submitted data undergo an error probability control. If the reported turnover deviates considerably from earlier records then the enterprise in question is asked to investigate the correctness of the returned turnover figures. It is assumed that not all errors in submitted forms are detected, and therefore the statistic is a subject to some uncertainty.

Maintenance of the sample

Due to the intensive reminder procedure, only a very limited number of enterprises in the sample do not return the completed questionnaires.

The sample is renewed each year by refreshing one third of the sample. Hence, it is possible to update changes in the structure and in the development in the population's turnover. Furthermore, the annual renewal keeps the size of the sample at the same level and insures that a level break will not occur in the enumerated turnover.

The survey is based on a sample and thus some uncertainty is attached to the results. For the whole retail trade sector, however, the uncertainty is considered to be small, since the coverage is extensive. A risk of a higher uncertainty is taking place in those sectors, where the coverage is not always as extensive. The monthly estimation of development in turnover in each sector of retail trade will therefore carry some uncertainty, especially in sectors that mostly consist of enterprises with an annual turnover of less than DKK 2.5 mill. Uncertainty caused by wrongly reported figures and misunderstandings are sought minimized by different means of probability control of the submitted figures.

Basic material is kept and stored for approximately two years (in both paper and electronic form).

Good experience with the data collection

5 different ways to report the turnover (fax, reporting by telephone registering service, reporting by calling directly by telephone, e-mail, the free post service), makes it easy to report.

Difficulties with data collection

It takes time to sort out the reported figures reported by letters or fax. Delays or missing post is also a problem.

4. Indices and performance indicators

The Retail Trade statistics is published both as a turnover index and as a deflated turnover index. The turnover index shows the development in the turnover in current prices. Thus it includes both the development in volume and in price. The turnover index is published for all 49 sectors of the retail trade and for the 3 main commodity groups: "Food and Other Basic Commodities", "Clothing etc." and "Other Consumption Goods". The deflated turnover index, corrected for the development in prices, is a quantity index that shows the development in the volume of sales. The turnover index

is deflated with the weighted consumer price index. For more detailed information one can contact the person responsible for "Prices and Consumption" in the Department of Economic Statistics. Deflated turnover indices are not published for all sectors of the retail trade, but only for the whole retail trade and the three main commodity groups. The indices for the three main groups and the whole retail trade are also seasonally adjusted. This adjustment takes into account certain public holidays (e.g. Easter) as well as the number of trading days in each month. So far it is not possible to correct for all types of trading day effects.

Calculation method

The enumeration is based on the reported turnovers and the VAT-turnovers submitted to VAT Statistics. Information about VAT-turnovers is received every 3 month from the Central Business Register of Statistics Denmark. VAT-turnovers are used both to determine the optimal sample allocation and to improve the accuracy of the estimates.

The estimated Retail Trade Index is an expression for the development in the retail trade for enterprises with an annual turnover in excess of DDK 2.5 mil. This development is also assumed to express the development in total retail trade.

The total estimated turnover is calculated as a sum of each sectors estimated turnover. The Retail Trade Index, based on the estimated turnover is calculated for every sector in retail trade, and for the total retail trade. Formulas for these calculations can be seen in Statistical News, *Service sector 2002:48*. No absolute figures for the retail trade are published.

Anyone interested in the absolute turnover figures for each sector or for the total retail trade, is referred to the statistics over business units registered for VAT settlement, published with industrial distribution.

The seasonal adjustment of the indices for the tree main commodity groups, the index for the total retail trade, and indices for the sectors that are sent to EUROSTAT, is performed by the use of X-12 ARIMA, with the user surface Demetra. The seasonal adjusted series are corrected in such a way, that the annual sum of the seasonally adjusted series equals the annual sum of the original series. If detailed information on the seasonal adjustment is needed, one can contact the person responsible for this statistics or the Methodological Unit of Statistics Denmark.

The figures in the publication *News from Statistics Denmark* are based on a high percentage of reported turnovers; hence, there are only minor differences between the provisional and the final figures that are published in the *Statistical News* articles.

Good experiences within the calculation

This year the software package CLAN (the collection of SAS macros) is used to estimate the turnovers. CLAN being a very flexible SAS tool, estimates population totals and what is most important, it calculates the corresponding standard error of the estimates. Therefore, it has become easier to judge and improve the quality of the estimates.

Apart from the results that are written to the existing Excel files, the SAS program also produces different output tables on the estimates in the SAS output window. Those tables are very relevant in order to control the quality of the index. It makes it easy for instance to check whether all the respondents actually have responded. At the very end of the program, there is an additional program that can be run in order to view changes in the responded turnover within the selected sector from the previous month. Thus all tables in the SAS output windows are successfully used for analyses of the estimates within the selected sectors, as they contain the current results of all the necessary calculation and data treatment. In addition, in the Excel output tables, the direct estimates, the ratio

estimates and the estimates based on changes from the previous month, are shown together with their coefficient of variation for each sector.

The difficult issues within the calculation

One of the major issues within the calculation is that the Central Business Register of Statistics Denmark updates only every 3^d month. It implies that we receive the information about the VAT turnover with an average delay of 3 months. Such a delay in the update of the auxiliary variable can cause an overestimation for instance in cases of mergers among larger enterprises in the sectors of the retail trade.

5. Distributive trade statistics and compilation of the national accounts

Other business trend statistics also show the development in the retail trade. Below is given a brief description of the relationship between the Retail Trade Index and a number of other statistics, which can be used to assess the retail trade development.

VAT statistics

Besides being an all-inclusive statistic, the VAT statistic is different from the Retail Trade Index statistic in the sale and unit concepts that are used. In the VAT statistic, the total turnover is the total domestic turnover for the enterprises that have retail trade as their main activity. While the Retail Trade Index only covers the turnover to private individuals. In the Retail Trade Index the enterprises with the retail trade as their secondary activity are also included. The VAT statistics are based on current payments of VAT. This means that changes in population have in principle an immediate effect on the figures in the VAT statistic. The same is not the case with the Retail Trade Index.

Consumption of goods in the National Accounts Statistics

The Quarterly National Accounts state private consumption including the households' consumption of certain types of products, for which development in turnover are included in the Retail Trade Index. In the National Accounts Statistics, figures are stated regarding the quarterly development in consumption by product type.

Other statistics

Apart from the above-mentioned statistics, which can be used to assess the development in the total retail trade, a number of other statistics partly cover household consumption:

- For the purpose of business trend valuations, monthly statistics are made for sales of newly registered motor vehicles, based on information from the Central Register of Motor Vehicles.
- Annual statistics based on samples are made for sales in a number of service trades (for example retail trade in personal computers, etc., wholesale sales of office machines, etc.)

A number of associations within the retail trade prepare statistics on developments in sales based on data from their own members.

Forms of dissemination

Current publications: News from Statistics Denmark, Service sector (Statistical News) and Main Indicators.

Yearbooks: Statistical Yearbook.

Statistics Denmark's StatBank Denmark at www.statistikbanken.dk

ANNEX.

Statistics Denmark

Some additional issues regarding service assignments in statistic production, Retail Trade Index

Generally about statistics:

Monthly enumeration.

49 sectors of retail trade. Enterprises with turnover in excess of DKK 2, 5 million, VAT included.

	Service assignments	Description	Resources (work hours per year)
1	<p>Selection of the sample</p> <ul style="list-style-type: none"> - Who selects the sample 	<ul style="list-style-type: none"> • Selection of the sample is made by The Department of Methods 	
2	<p>Preannouncements</p> <ul style="list-style-type: none"> - Does the enterprises receive announcements about participation in the sample in advance 	<ul style="list-style-type: none"> • No enterprises are contacted in advance. • Otherwise, we are following the policies of Statistics Denmark regarding the enterprises that participate in more than five different statistics. 	
3	<p>Information to enterprises</p> <ul style="list-style-type: none"> - Who prepares the information - Who is the information sent to - If everyone receives the same information - What kind of information is sent 	<ul style="list-style-type: none"> • There are 2 kinds of questionnaires, which are sent to different sectors. 90 % of respondents have to report only one figure for their turnover. The remaining 10 % must split their turnover into 3 main commodity groups: food, clothing and other consumption goods. • Every year with the renewal of the sample, the questionnaire, the information folder, the introduction letter, the advertising paper that tells about the opportunities to use the telephone for reporting the turnover and an example of the statistic we publish are sent to respondents. The content of the introduction letter depends on whether the enterprise is new in the sample or is already familiar with the procedure. The following month only the questionnaire, the information folder and the result of statistic are sent to the respondent. The questionnaire, the free envelope and an example of the published statistics are sent every last working day of the reference period (a month). 	

4	<p>Procedure of sending the questionnaires</p> <ul style="list-style-type: none"> - Who prints the questionnaires - Who puts the questionnaires into the envelopes - Who fulfils the questionnaires with the key data (addresses, journal number, etc.) 	<ul style="list-style-type: none"> • Questionnaires are fulfilled with the key data automatically. The data comes from our own respondent-register (Oracle-database). • Packing and sending the envelopes takes place externally (Handicappers Enveloping Bureau). 	<p>Printing the questionnaires: 100</p>
5	<p>Data collection and registration</p> <ul style="list-style-type: none"> - How can the data be collected - When is the collected data registered - How is the collected data registered - How is the data registered - What IT-systems are used - Whether the questionnaires being sort before putting in archive 	<ul style="list-style-type: none"> • App. 25 % of the respondents respond by using the telephone reporting system. Others use either fax, mail, post or call directly to us. • Registration of the data, manual setting in and searching for the inaccuracy occurs simultaneously. • Oracle is used. 	<p>Post receiving and sorting: 300</p> <p>Manual setting the figures in: 1000</p>
6	<p>Scanning</p> <ul style="list-style-type: none"> - Are the questionnaires made appropriable for scanning 	<p>Questionnaires are made appropriable for scanning. As soon as the scanning program is adjusted, the reported turnover will be scanned.</p>	
7	<p>Answering the questions from the respondents</p> <ul style="list-style-type: none"> - Typical questions - Who answers the questions - Can the enterprise get a permanent respite 	<ul style="list-style-type: none"> • The typical questions are: why has the enterprise to report and whether the frequency of reporting can be reduced. • The persons who collect all the data are also the contact persons who answer all the questions. • It is possible to achieve the respite. 	<p>Answering the questions: 50</p>

8	Reminder procedure <ul style="list-style-type: none"> - How many enterprises have to be reminded - What is the reminder procedure - Who is reminded and after what criteria 	<ul style="list-style-type: none"> • 1. Reminder: pr. letter (the deadline is 1 week) thereafter, large enterprises are reminded through the telephone before the calculation of the index. • Only if the respondent has not answered within the 3 month, he is reminded with a registered letter. Afterwards the police are noticed. • There are app. 300 registered letters a year. (After the 1. quarter app. 281 registered letters are usually sent, mostly because the new respondents don't know that this reporting is statutory). 	150
9	Police cases <ul style="list-style-type: none"> - How many police cases a year 	<ul style="list-style-type: none"> • 5- 10 police cases a year. 	50
10	Micro search for inaccuracy (the individual respondents) <ul style="list-style-type: none"> - The absolute /probable inaccuracy - Electronic control - Manuel control - How the inaccuracy is corrected (respondent contact) - The share of inaccuracy - Control of all the respondents 	<ul style="list-style-type: none"> • There is an automatic control when using the telephone reporting system. The figures that are not proved automatically have to be checked manually (it is usually about 30 % of the telephone response). • If there is found an inaccuracy then the respondent is contacted by the telephone. • When the inaccuracy is corrected, the explanation note about the correction is made. • When the data is registered, both electronic and manual control is performed. 	Control and correction of the inaccuracy: 650
11	Macro check (control of the results) <ul style="list-style-type: none"> - Control after the enumeration 	<ul style="list-style-type: none"> • The enumeration is made twice a month. After 30 days the provisional figures are published and after 50 days –the final figures are published. • There is made a visual control of the calculated indices. 	
12	Reporting back to enterprises <ul style="list-style-type: none"> - Statistics is send back 	<ul style="list-style-type: none"> • Enterprises receive no receipt. • Statistics is send to all enterprises. 	
13	Register update <ul style="list-style-type: none"> - Update 	<ul style="list-style-type: none"> • The respondent register updates by changes in key data. • Information about the sectors-, address- and cvr- change is reported further to the 14. Department (National Accounts) and to the Central Business Register of Statistics Denmark (CBR). • Sectors changes are reported to CBR. 	Current update of CBR: 400

The Estimation Procedure

1. Estimation of the turnover

Every month the total retail trade turnover Y is estimated. Generally, it can be estimated with the direct estimate:

$$\hat{Y}^{direct(t)} = \sum_h \frac{N_h}{m_h} \sum_{i \in s_h} y_i^{(t)} = \sum_h \hat{Y}_h^{direct(t)},$$

where the population size in stratum h^2 is given as N_h . The number of respondents in stratum h is given as $m_h \leq n_h$, where n_h is the number of sampled elements in stratum h . The value of m_h can change during the year due to nonresponse.

The estimate of Y can be improved by using auxiliary information. In our case the information of the VAT-turnover (which is received from the Central Business Register of Statistics Denmark (CBR)) can be used advantageously to improve the accuracy of the estimates of the target variable. With only one numerical auxiliary variable, the ratio estimator is the obvious choice of estimator in the estimation process. The ratio estimator is a special case of the regression estimator. The use of this auxiliary information is justified when the auxiliary variable correlates with the variable of interest – the turnover y . This is indeed the case in the retail trade. Denoting the auxiliary variable as X , the ratio estimate of the turnover is defined as:

$$\hat{Y}^{ratio(t)} = \sum_g \frac{X_g^{pop(t)}}{\hat{X}_g^{(t)}} \hat{Y}_g^{(t)},$$

where

$$\hat{Y}_g^{(t)} = \sum_h \frac{N_h}{n_h} \sum_{i \in s_{gh}} y_i^{(t)}$$

and

$$\hat{X}_g^{(t)} = \sum_h \frac{N_h}{n_h} \sum_{i \in s_{gh}} x_i^{(t)}$$

are the direct estimates of the turnover and the VAT-turnover, respectively, in sector g of the retail trade at time period t . The expression

$$X_g^{pop(t)} = \sum_{i \in U_g} x_i^{(t)}$$

is the population total of the VAT-turnover in sector g at time period t . As we receive the information from the CBR every 3 month, and thus only have information about the quarterly VAT-turnover for each enterprise in the sectors of the retail trade, the variable x_i^t is the average annual VAT-turnover for each enterprise and is calculated from the four latest available 3-months periods.

² The detailed description of the definition of the stratum is given below in the section "Stratified sample".

1.2. Estimation of the index

The Retail Trade Index at time period t is defined by the turnover at time t with the turnover in some basis period. At present, the basis period is the year 2000; the turnover in the basis period is defined as the simple average of the 12 monthly turnovers in the basis year. The retail trade index is thus estimated by

$$\hat{I}_t = 100 \times \frac{\hat{Y}^{ratio(t)}}{Y_0},$$

where Y_0 is the average turnover in the basis period. The above expression for the index is in the literature referred to as a ‘direct index’. Alternatively, the index at time t can be written as a ‘chain index’, whose estimate is given by

$$\hat{I}_t = \hat{I}_{t-1} \times \frac{\hat{Y}^{ratio(t)}}{\hat{Y}^{ratio(t-1)}},$$

that is, by the (estimated) index in the previous period multiplied by the change between the estimated turnovers in two month $t_1 = t - 1$ and $t_2 = t$:

$$\hat{I}^{1,2} = \frac{\hat{Y}^{ratio(t_2)}}{\hat{Y}^{ratio(t_1)}}.$$

Especially when dealing with a rotating panel design, the latter way of estimating the index is very useful. At present, the chain index is used.

2. Stratification

There are 49 sectors in the retail trade, the indices for which are estimated every month for a national publication. Furthermore, indices of 14 additional sectors are calculated on behalf of EUROSTAT. The strata h in the sample are determined as follows: Sector of retail trade x size class (the level of annual VAT-turnover³), where size classes are: DKK 2.5-5 million, 5-10 million, 10-20 million and more than 20 million (see Table 1 for an overview over size classes). The VAT-turnover for the previous point in time⁴ determines the class size of each enterprise k . The average⁵ VAT-turnover for each enterprise serves furthermore as auxiliary information in the estimation process and is denoted by the variable named x .

Each stratum h is a combination of both the size class and the sector, so as there are (49+14) sectors and four size classes, there are in principle (49+14)*4=252 in all. In reality, there are defined 2 extra strata. Those two extra strata include enterprises with retail trade as their secondary activity (B-enterprises) and the kind of enterprises that have a network of stores and report the turnover for all those stores as an aggregate single figure (F-enterprises). It is important to single those two types of enterprises out in separate strata, because they are treated differently in the estimation process. For each enterprise $k \in U$ the corresponding stratum is known.

Table 1. Overview of size classes.

Size class	Total VAT-turnover according to register (x_i)
1	Annual sales btw. DKK 2.5-5 millions
2	Annual sales btw. DKK 5-10 millions
3	Annual sales btw. DKK 10-20 millions
4	Annual sales in excess of DKK 20 millions

³ VAT-turnover (or total sales) is the turnover that enterprises report to VAT Statistics. The turnover that is reported to Retail Trade statistics is called for “turnover”.

⁴ Usually the last year

⁵ Annual turnover divided by 12 to estimate the average turnover per month.

3. Sampling procedure

The sample S is a rotating panel sample. The total sample size is about 3000 enterprises. Every January 1/3 of the enterprises is refreshed. Every January, both enterprises in the old sample, as well as the newly included enterprises are observed. In the period of February to December, only the new sample is observed (those who remained in the sample and the newly selected enterprises).

Enterprises in size class 4 (with an annual VAT-turnover of DKK 20 million or more) are all included in the sample. They are not replaced, as they all participate every year. The same is true for the enterprises with the retail trade as a secondary activity (B-enterprises) and the enterprises that report as a network (F-enterprises). The B-enterprises are included in the sampling frame U if the share of their total VAT-turnover within the retail trade is above the cut-off of DKK 2.5 million. All B-enterprises in the frame U participate in the sample.

The sample is drawn using the stratified simple random sampling (STSI) with an optimal design, where the optimal allocation is based on the observations from the last year prior to the new sampling year.

3.1 Optimal allocation (Neyman allocation)

The key ingredient in the optimal allocation is the product $N_h S_h$, where N_h is the population size in stratum h , and S_h is the stratum standard deviation of the variable Z on which is optimized.

As we estimate the *index* of the retail trade turnover, the optimization of the sample should be performed with respect to the index I . However, the index is not linear: The index I cannot be found as the sum of the estimated strata indices, that is,

$$\hat{I} \neq \sum_h \hat{I}_h$$

and therefore Neyman's formulas cannot be used directly. In addition, since the chain index is used in the estimation process, we wish to optimize on changes in the index from one month to the next instead of on its absolute value. Moreover, when estimating month-to-month changes, the gain of using auxiliary information and the ratio estimator in the estimation process is small, compared to the direct estimator. Therefore, the sample is optimized on the quantity

$$\hat{I}^{2,1,direct} \frac{\hat{Y}^{direct(t_2)}}{\hat{Y}^{direct(t_1)}}.$$

This is equivalent to optimizing on the variable

$$e_i^{2,1} = y_i^{(t_2)} - I^{2,1} y_i^{(t_1)},$$

as explained in Houbiers and Fangel (2004). Overall, the quantity S_h in Neyman's formula is given by

$$(S_h)^2 = \frac{1}{n_h - 1} \sum_{i \in S_h} (e_i^{2,1} - \bar{e}^{2,1})^2,$$

where

$$\bar{e}^{2,1} = \frac{1}{n_h} \sum_{i \in S_h} e_i^{2,1}$$

is the stratum average of $e^{2,1}$, which generally is non equal to zero.

As the new sample has to be drawn only once a year, the average value of the standard deviation $\sqrt{\bar{S}_h^2}$ over the 12 months (11 month to month changes) in the past year is calculated:

$$\bar{S}_h = \frac{1}{11} \sum_{t=1}^{11} S_h^{(t,t-1)}.$$

Thus, the optimisation strategy for this sample is the following:

- The strata corresponding to size class 4, the B- and the F-enterprises:

$$n_h^{opt} = N_h$$

- The strata corresponding to size classes 1,2,3:

$$n_h^{opt} = \min \left(N_h, \max \left(\tilde{n} \frac{N_h \bar{S}_h}{\sum_h N_h \bar{S}_h}, 3 \right) \right),$$

where \tilde{n} is adjusted such that the total sample size is equal to n . It follows from the formulas that the sample size n_h in stratum h is larger when stratum h contains more elements N_h , and/or when S_h is larger, that is, when the variability of the residuals in stratum h is larger. In practice, for strata containing 3 or less enterprises, the whole stratum is observed.

List Over Sectors of the Retail Trade.

Classifications. In the national publication, the following classifications of sectors of retail trade are used:

- Grocer's shops (52.11.10)
- All-nights shops (52.11.20)
- Supermarkets (52.11.30)
- Discount stores (52.11.40)
- Retail sale of fruit and vegetables (52.21.00)
- Retail sale of meat and meat products (52.22.00)
- Retail sale of fish, game, crustaceans and molluscs (52.23.00)
- Bakers' shops and retail sale of bread, cakes and flour confectionery (15.81.20 and 52.24.10)
- Retail sale of chocolate and sugar confectionery (52.24.20)
- Retail sale of alcoholic and other beverages (52.25.00)
- Retail sale of tobacco products (52.26.00)
- Retail sale of cheese (52.27.10)
- Retail sale of other specialised stores with food (52.27.30 and 52.27.90)
- Variety and department stores (52.12.10 and 52.12.20)
- Dispensing chemists (52.31.00)
- Perfumery shops (52.33.10)
- Chemists (not licensed to dispense medicine) (52.33.20)
- Retail sale of textiles (52.41.00)
- Retail sale of ladies' clothing (52.42.10)
- Retail sale of men's clothing (52.42.20)
- Retail sale of men's and ladies' clothing (52.42.30)
- Retail sale of baby articles and children's clothing (52.42.40)
- Retail sale of footwear (52.43.10)
- Retail sale of leather goods (52.43.20)
- Retail sale of furniture (52.44.10)
- Retail sale of furnishing fabrics (52.44.30)
- Retail sale of kitchen utensils, glass and china (52.44.40)
- Retail sale of electric household appliances (52.45.10)
- Retail sale of radio- and television goods (52.45.20)
- Retail sale of records, CDs, cassettes, etc. (52.45.30)
- Retail sale of musical instruments (52.45.40)
- Retail sale of hardware (52.46.10)
- Retail sale of building materials (52.46.20)
- Retail sale of paints and wallpaper (52.46.30)
- Retail sale of books, newspapers and stationery (52.47.00)
- Retail sale of carpets (52.48.01)
- Retail sale of watches and clocks (52.48.05)
- Retail sale of watches, clocks and jewellery (52.48.10)
- Retail sale of jewellery (52.48.15)
- Retail sale of glasses (52.48.20)
- Retail sale of photographic equipment (52.48.25)
- Gifts shops (52.48.30)
- Retail sale of sports goods (52.48.45)
- Retail sale of toys and games (52.48.50)
- Retail sale of bicycles and mopeds (52.48.60)
- Retail sale of computers, standard software and office machinery (52.48.66 and 52.48.67)
- Retail sale of telecommunications equipment (52.48.70)

- Florist's shops and retail sale of plants and seeds (52.48.75 and 52.48.80)
- Retail sale via mail order houses (52.61.00)

Groupings are made by use of DB03; the codes are shown in parentheses. A complete description of the sectors exists in "Danish Industrial Classification of All Economic Activities 2003" (DB03), Statistics Denmark 2003. The shift from DB93 to DB03 from the 1 of January 2003 has caused minor changes to a few series.

For the national publication the following grouping of main commodities are used:

Food and Other Basic Commodities cover the total turnover at grocers and shops with specialised sales within food and other basic commodities, inclusive department of food in supermarkets, discount stores, and department stores.

Clothing etc. consists of the turnover in stores with specialised sales within clothing, footwear and textiles inclusive supermarkets, discount stores, and department stores sales of these goods.

Other Consumption Goods cover the turnover mainly for stores with sales of equipment for home and leisure together with the supermarkets, discount stores, and department stores sales of these goods.

In Eurostat publications, another grouping of the sectors are used and the following sectors are included:

52.32.00, 52.44.50, 52.48.35, 52.48.40, 52.48.55, 52.48.85, 52.48.90, 52.48.99, 52.50.10, 52.50.20, 52.50.90, 52.62.10, 52.62.90, 52.63.00