STATISTICS DENMARK

Documentation of statistics for Indices of Average Earnings for the Private Sector 2016

Statistics Denmark
Sejrøgade 11
DK 2100 København Ø

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1 Introduction

The purpose of the index of average earnings is to indicate trends in earnings for different industries in the private sector exclusive of enterprises categorised as public administration or -services (state, regional or municipal). The index of average earnings was first published for the first quarter of 1994 under the name *the index of average earnings in the private sector". Since then the index has been published based on the Danish Industrial Classification of 1996 (DB96), Danish Industrial Classification of 2003 (DB03) and since the third quarter of 2008 based on the Danish Industrial Classification of 2007 (DB07). Moreover, the index of average earnings replaced the index of hourly earnings for workers in manufacturing industry and the index of monthly earnings for salaried employees in manufacturing industry, which were discontinued at the end of 1997.

2 Statistical presentation

The index of average earnings comprises all employees, salaried employees (white collar employee or officials) and wage-earners (blue collar workers) as well as apprentices and young people under 18 years employed in a business enterprise with 10 or more persons in the private sector. The entire private sector is covered by the indices, including e.g. employees in private schools and private hospitals. Still, the index does not include enterprises belonging to either the agriculture or fisheries industries. In accordance with the nomenclature DB07 (Danish Industrial Classification 2007), the the index is broken down by industry and since the third quarter of 2008 published at the most detailed level according to the 36-grouping in DB07. For a period between the first quarter of 2005 and the second quarter of 2008, the indices were only published at the 10-grouping level.

2.1 Data description

The index of average earnings shows the development of the total wage per hour in private and public enterprises with at least 10 employees, divided into different industries. The index of average earnings covers the total wage paid inclusive of both the employer's and employee's contributions to the pension scheme, but exclusive of holiday payments and other irregular payments, such as bonuses. The total wage paid is, as a principle, measured against the number of hours actually worked.

2.2 Classification system

The index is published to show data on average earnings for different groups of industry in accordance with Statistics Denmark's 10- and 36-standard groupings of industries, see Danish Industrial Classifications 2007.

2.3 Sector coverage

The sector *Corporations and Organizations* covers all private and public enterprises not belonging to the sector *Public Administration, Central Government*.

2.4 Statistical concepts and definitions

Wage: Remuneration paid in cash by the employer to the employee for work done.

Payments for holidays: Extra payments paid by the employer to the employee for holidays. The payment is often computed as a fraction of the monthly wages.

Wages and Salaries: Information on wages and salaries for all employees working in the public sector.

Payments for pension schemes: Payments for pension schemes

Irregular Payments: Payments received on an irregular basis , including e.g. bonuses, regulation of wage, compensation for not holding vacation, etc.

Enterprise: An enterprise is a company or organisation involved in economic activity e.g. by producing and selling products.

2.5 Statistical unit

The counting unit is the individual employment in a public or private enterprise - not belonging to the sector public administration, central government - with ten employees or more.

2.6 Statistical population

Employees in private corporations and organisations.

2.7 Reference area

The index of the average earnings of Corporations and Organisations covers workers employed in enterprises and local units based in Denmark.

2.8 Time coverage

First quarter of 2005 to second quarter of 2014.

2.9 Base period

First quarter 2005 is the base period, where the value of the index is equal to 100.

2.10 Unit of measure

The unit of measure is the index points.

2.11 Reference period

The census date is a pay period (month or 2-week period) in the second month of a quarter.

2.12 Frequency of dissemination

The statistics are published quarterly.

2.13 Legal acts and other agreements

According to the Act on Statistics Denmark, section 8, all businessmen shall supply information about e.g. wages when requested by Statistics Denmark. Information obtained from the quarterly data collection with respect to earnings and hours of work is used in the statistics on earnings and employment compiled by the EU. In particular reference is made to the Regulation (EC) No 450/2003 of the European Parliament and of the Council concerning the labour cost index.

2.14 Cost and burden

The system for data collection in the field of earnings statistics is set up as a generally integrated system, which is designed to supply data for official national statistics, for EU statistics and for statistics on earnings and labour costs, compiled by other international organisations. The overall response burden is thus reduced by setting up a system designed to supply data for a variety of statistics. When work on setting up the new system for data collection was being conducted, great emphasis was widely attached to make use of existing administrative data stored by the business enterprises as well as to explore, as far as possible, the potentials of the latest computer technology for efficient and rational collection and reporting of data. The response burden for both collection of the quarterly index of earnings and the yearly structure of earnings statistics was calculated to be DKK 6.3 million according to an analysis performed by AMVAB.

2.15 Comment

For further information, visit the subject page on Earnings and labour costs or contact Statistics Denmark.

3 Statistical processing

Data are collected from the private enterprises and organisations that are included in the sample and cover the second month of the quarter in question. To start with, a rough search for errors is performed on the data. Then, the change in the average earnings per hour from the previous quarter is calculated for each enterprise. Only enterprises where data exists for both quarters are included in the computations. The average hourly wage per observations in the sample is then weighted to take account of all enterprises in a specific branch of economic activity in the population. A total figure for the average hourly wage and the rate of increase from the last quarter is then calculated for each branch of economic activity. After this the index point and the annual rate of increase is calculated for each branch. Finally the total index point and annual rate of increase is found as a total for all branches.

3.1 Source data

The data are collected quarterly from a sample survey comprising business enterprises in the private sector of ten or more employees, and also partly public enterprises not belonging to the public administration sector. The collection of information about the enterprises is done in collaboration with the Confederation of Danish Employers, the Danish Employers' Association for the Financial Sector and the Association of Danish Pharmacies. For public enterprises, data is collected from the Agency for Modernisation (an organisation under the Ministry of Finance), DSB (Danish State Railways) and KRL (the Municipal and Regional Wage Data Office of Denmark). The sample of the private enterprises is stratified and extracted from the Business Register (ESR) after number of full-time employees divided into the following size groups: 10-19, 20-49, 50-99 and 100+. All enterprises with 100+ employees are included in the sample.

3.2 Frequency of data collection

Data is collected quarterly.

3.3 Data collection

The data collected consists exclusively of extracts from the reporting enterprises' and organisations' IT-systems for payroll administration of their employees on individual levels. For most of the enterprises, the extracting of data is done by a system-to-system method, where the payroll system transmits data for their customers (enterprises and organisations) directly and in large quantities to Statistics Denmark. Enterprises and organisations with their own payroll system transmit data either by uploading it through a web-application, or by sending it as an encrypted file to a distinct e-mail address. The Confederation of Danish Employers (DA) and the Danish Employers' Association for the Financial Sector (FA) collect data from their own members and transmit these data to Statistics Denmark by a special system-to-system solution. According to the act on Statistics Denmark, enterprises are obliged to supply the information requested. If they fail to do this, they will be reported to the Police and penalized with a fine.

3.4 Data validation

The received data is validated on several levels through the steps in the production process. Already by the receipt of the data, a rough search for errors is performed, for example of whether the period of the payroll is as expected and whether the general format is adhered to. If this is not the case, the person or company responsible for the transmission is contacted either by mail or phone and asked to correct the error and retransmit. During the actual production of statistics, the data is validated more thoroughly. This is done both on the individual level, where for example it is checked whether there are missing values on hours worked and wage, and on firm level where for example average pay per hour and number of employees are compared to data transmitted for previous quarters.

3.5 Data compilation

The quarterly rate of increase in wages is calculated as the mean wage per hour worked in one quarter compared to the mean wage per hour worked in the previous quarter. This is done for every group of industry. Since the data is based on a stratified sample, the first step that is done is to calculate the correct average wage per hour for each industry in both quarters. The average wage per hour for a group of industry is calculated as the weighted average of the hourly wages for the different size of employment classes 10-19, 20-49, 50-99 and 100+. In the calculations, only enterprises that have transmitted data for the two consecutive quarters are included. After having calculated the average wage per hour for each size class in an industry, the average wage per hour is calculated for the industry as a whole by weighting the different size classes after the number of workers in each of them for a certain quarter. The difference between the average wages per hour in the two consecutive quarters is then added to the sub-index of the industry. The sub-indices are then aggregated from the 36-class of industry to the 21- or 10-class of industry. The final index for the whole private sector is then calculated by weighting the sub-indices with the number of workers in each of them for enterprises and organizations with 10 employees or more.

3.6 Adjustment

Only enterprises that have transmitted data that can be used in both the quarter being measured and the previous quarter are included in the calculations of the index. This means that whenever data from an enterprise is omitted due to quality issues in a certain quarter, the enterprise will as a minimum first be included in the indices after the preceding quarter.

4 Relevance

Private corporations and organisations in Denmark and abroad, and ministries and other public institutions are the most frequent users of the index. The index is especially used in relation to regulation of contracts. In addition to that, the index plays a vital part in the wage negotiations of employees in the public sector.

4.1 User Needs

Users of the statistics are private business enterprises, national and international organisations, ministries and public institutions. The index of average earnings are especially used to in relation to regulation of contracts. In addition, they also play a part in the regulation of wages paid to public employees through the collective bargaining process.

4.2 User Satisfaction

User satisfaction has not been investigated or quantified. Nevertheless, based on the number of viewings at Statistics Denmarks homepage and at Statbank and other more direct inquiries, the user satisfaction is considered to be very high. Every second year, a more detailed discussion of the methodological issues behind the index are held at one of the meetings of the contact committee. At these meetings the most central user representatives are present and it is obvious that they are not only interested in learning about the indices, but are also quite satisfied with the quality of them.

4.3 Data completeness rate

There is no regulation or guideline for *the Index of average earnings for Corporations and Organisations* concerning the completeness of data, but the coverage is in accordance with the national accounts definition of the sector *Corporations and Organisations* which is outside the *Public Sector, Central Government*.

Because of quality issues and the fact that the index is based on a sample and not the whole population, the index is not published for small branches of economic activity. This concerns e.g. the classification codes B oil refinery and E water supply and renovation.

5 Accuracy and reliability

The accuracy and reliability is mainly affected by two factors. First of all, the index is based on a sample, which in itself cause some uncertainty. Second of all, there is some uncertainty connected to the completeness in the collected data, which is often caused by errors in the way the system is generated for transmission of data. An example of this is a payroll system where the different wage compositions are not correctly linked or reported, and thus give an inaccurate picture of the development of wages. The problem with errors like these is that they tend to be difficult to discover. For example would reporting of a low and wrong value for irregular payments result in too high calculation of wage developments, as the irregular payments could not be separated from the wage component.

5.1 Overall accuracy

The overall reliability of the index is considered to be reasonably high. This is based on the fact that the number of enterprises in the sample should be sufficient and that the coarse search for errors before the production process make sure to sort out observations with errors. This is especially true for the total value of the index and for the largest branches of economic activity. However, for the smallest branches of economic activity the accuracy are lower.

5.2 Sampling error

Not available at the current moment.

5.3 Non-sampling error

Other uncertainties are primarily linked to mistakes in enterprises reporting of components for the wages of their employees. This could for example concern components like irregular payments, e.g. bonuses and delayed regulations of wages. When these are not correctly registered in the payroll system of the enterprise, they can have unintentional consequences for the calculations of wages. As such, the problem is not not caused by non-response, but rather errors present in the enterprises payroll systems, which can be quite difficult for the enterprises to detect. At the same time it is not always possible to detect the errors during the coarse search for errors before the production process, as it is not necessarily given that there should be payments of this kind in a given period.

5.4 Quality management

Statistics Denmark follows the recommendations on organisation and management of quality given in the Code of Practice for European Statistics (CoP) and the implementation guidelines given in the Quality Assurance Framework of the European Statistical System (QAF). A Working Group on Quality and a central quality assurance function have been established to continuously carry through control of products and processes.

5.5 Quality assurance

Statistics Denmark follows the principles in the Code of Practice for European Statistics (CoP) and uses the Quality Assurance Framework of the European Statistical System (QAF) for the implementation of the principles. This involves continuous decentralized and central control of products and processes based on documentation following international standards. The central quality assurance function reports to the Working Group on Quality. Reports include suggestions for improvement that are assessed, decided and subsequently implemented.

5.6 Quality assessment

An overall assessment of quality is not available. Still. the sample is drawn in a way to ensure that a high share of the employees in the statistical population actually are present in the sample of companies and organisations with at least 10 persons employed. At the same time should the search for errors performed on the data make sure that both the total measured development in wage and the development in wage for the largest branches of economic activity show reasonable and robust results. For these reasons, the quality of the index is considered to be quite good.

5.7 Data revision - policy

Statistics Denmark revises published figures in accordance with the Revision Policy for Statistics Denmark. The common procedures and principles of the Revision Policy are for some statistics supplemented by a specific revision practice.

5.8 Data revision practice

Only final figures are published. for the index not seasonal adjusted. For the seasonal adjusted index revisions are made from time to time.

6 Timeliness and punctuality

The index of average earnings is published approximately 60 days after the end of the quarter in question. The punctuality of the publication is considered high and there has been no delays of any kind during the last years.

6.1 Timeliness and time lag - final results

The index of average earnings is always published as finite figures. Therefore, there are never any publications of temporary numbers at any time.

6.2 Punctuality

The punctuality is in general quite high, and delays in the publication of final numbers seldom happen.

7 Comparability

The index of average earnings for Corporations and Organizations replace *the index of average earnings of the private sector* which was last published for the fourth quarter of 2013. The comparability of the two indices is considered to be high. The difference has to do with the new applied delimitations of the sectors, where some of the public owned enterprises, such as Danish Railways (DSB) and some of the municipal owned resource centers, now according to the new delimitations of the sectors belong to "the index of average earnings of Corporations and Organizations". The new sector delimitations were applied in the indices going back to first quarter of 2013, where it caused a small data breach.

7.1 Comparability - geographical

The index of average earnings can to some extent be compared to other similar indices abroad. It should be highlighted that there normally are quite big differences in the methodology behind the indices, and therefore they are not fully comparable.

7.2 Comparability over time

Due to a new sector delimitation starting from the first quarter of 2013, there was a small breach in the data for this quarter. The new sector delimitation now follows the same principles as the delimitation used for the national accounts. The previous delimitation of sectors was run into the fourth quarter of 2013. Except for the small breach in data caused by this shift, the index is comparable going back to the first quarter of 2005. Before that the index was classified according to an older version of the Danish Industrial Classifications (DB03), and the subdivisions of the classification are not perfectly comparable to the subdivisions of the new classification version (DB07). Nevertheless, the total index covering all class of industries is comparable no matter what version of the classification that has been used.

7.3 Coherence - cross domain

A corresponding statistics for the public sector exists.

7.4 Coherence - internal

The index is based on a single data source and so there are no internal inconsistency.

8 Accessibility and clarity

The index of average earnings for Corporations and Organisations is published in a news release (called NYT) by Statistics Denmark. In the Statbank, the figures of the index is found in the tabel ILON12 and the yearly changes under ILON15. In addition, the index can be found on the subject page for Earnings and labour costs.

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8.1 Release calendar

The publication date appears in the release calendar. The date is confirmed in the weeks before.

8.2 Release calendar access

The Release Calender can be accessed on our English website: Release Calender.

8.3 User access

Statistics are always published at 8:00 a.m. at the day announced in the release calendar. No one outside of Statistics Denmark can access the statistics before they are published.

8.4 News release

The index is published in a news release by Statistics Denmark called NYT which can be found on the subject page on Earnings and labour costs.

8.5 Publications

The index of average earnings for Corporations and Organizations are presented in both the Statistical Ten-Year review and the Statistical Yearbook.

8.6 On-line database

The index and the annual percentage change of average earnings can be found at Statbank i tabellerne ILON12 og ILON15.

8.7 Micro-data access

Scientists do not have access to the micro data. Still, the primary data is available at the level of individuals. Consequently it is possible to define special projects, order customized compilations etc against a fee. However, because the data is collected from a sample of enterprises the possibility of breakdown of estimates on various subgroups is limited. It should also be noticed that the searching for errors in the dataset is done at exactly those levels of classifications that are being published. For these reasons, when faced with a customized order, Statistics Denmark always assess whether or not to accept the order by taking into account the amount of resources necessary to complete the job and the quality of the data material in question.

8.8 Other

A part of the data material is also used in the production of the labour cost in Statistics Denmark's construction cost index. In addition, the data material is also used to produce the Danish figures in the European Labour Cost Index (LCI).

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8.9 Confidentiality - policy

The production of the index does, in general, follow the data privacy policy of Statistics Denmark. To learn more more about the policy, read the page on data confidentiality. In addition, the index does not include information on smaller industries, such as oil refinery, water supply and renovation.

8.10 Confidentiality - data treatment

Not relevant in the case of the index of average earnings.

8.11 Documentation on methodology

For further information about the compilation method, see *Løn- og indkomststatistik 2002:8* (Statistics on earnings and incomes) appearing in the series Statistikservice (Statistics Service). Since then first quarter of 2005 has been used as the base period for the index and was assigned the value 100. For more information it can also be referred to the publication "Indeksberegninger I Danmarks Statistik" where a more thorough explanation of the methodology can be found.

8.12 Quality documentation

Results from the quality evaluation of products and selected processes are available in detail for each statistics and in summary reports for the Working Group on Quality.

9 Contact

The administrative placement of these statistic are in the division of Personal Finance and Welfare. The person responsible is Uwe Pedersen, tel. +45 37 17 34 24, mail: uwp@dst.dk

9.1 Contact organisation

Statistics Denmark

9.2 Contact organisation unit

Personal Finance and Welfare, Social Statistics

9.3 Contact name

Uwe Pedersen

9.4 Contact person function

Responsible for the statistics

9.5 Contact mail address

Sejrøgade 11, 2100 Copenhagen

9.6 Contact email address

uwp@dst.dk

9.7 Contact phone number

+45 39 17 34 24

9.8 Contact fax number

+45 39 17 39 99