Statistics Iceland

Metadata

Wage Index

0. Registration entry for subjects
1. Contents
2. Time
3. Reliability and security
4. Comparison
5. Access to information

0. Registration entry for subjects

0.1 Name

Wage Index

0.2 Subject area

Wages and income

0.3 Responsible authority; office, division, person etc.

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0.4 Purpose and history

The wage index is a monthly price index, calculated and published according to act No 89/1989. An aggregated index for the entire labour market has been published monthly since January 1989. According to the legal act the index is intended to reflect, to the extent possible, changes in total wages of all employees who get paid for fixed hours, excluding irregular payments. Employers' social contributions and taxes are excluded. Calculation of the index is based on a comparison of wages for two consecutive months where working hours and composition of the group is fixed between measurements.

Time series on sub-indices for some groups in the wage index are published according to users' requirements for estimating wage changes for smaller groups in the Icelandic labour market.

The origin of the wage index is related to the indexation of financial obligations in Iceland. From 1979, indexation was based on a composite index, where 2/3 were based on changes in

consumer prices and 1/3 on changes in building costs. The composition was changed in early 1989, with 1/3 being changes in consumer prices, 1/3 changes in building costs and 1/3 changes in wages. As a consequence each part needed to be calculated on a monthly basis. This change required a legal basis for the wage index and in longer terms a renewal of the existing data collection on wages. The legal basis for the indexation of financial obligations was changed in 1995 to rely solely on the Consumer Price Index. From that time the wage index has been commonly used for economic and labour market analyses and for indexation of contracts.

0.5 Users and application

Users of the wage index and sub-indices are individuals, enterprises, national and international organisations, employees' organisations and employers' associations, ministries and public in-stitutions. The wage index is a price index that measures changes in regular hourly wages in the Icelandic labour market. The index is based on sample data.

0.6 Data sources

The wage index is based on data collected through the Icelandic survey on wages, earnings and labour costs (ISWEL), conducted by Statistics Iceland. The survey is based on a sample of private companies and municipalities (local governments) with 10 or more employees. In addi-tion, data are collected directly from the central government for all its employees. The data is collected monthly directly from the employers' payroll systems and contains all labour costs and paid hours as well as background information on employees and employers. Validation checks are performed in accordance to predefined rules in order to eliminate or fix data items that are incorrect. The ISWEL is in accordance with regulations on surveys of earnings and labour in the European Economic Area. The ISWEL sample and weights are based on the PAYE (Pay as your Earn) data.

0.7 Legal basis for official statistics

Statistics Iceland releases both a total index according to the legal act and sub-indices according to users' demand. While the total wage index is a legal requirement, Statistics Iceland is not obliged to publish any sub-indices. The total wage index is based on the [Act on the Wage Index No 89/1989,](#) which stipulates that a wage index shall be based on average wages for each month and published after the middle of the following month. In general, all statistics collected, gen-erated and disseminated by Statistics Iceland are governed by [act on Statistics Iceland No 163/2007](#).

0.8 Response burden

The survey, ISWEL, is based on the tradition of collecting data directly from employers by using the pay-roll software. Monthly, each employer sends a data file containing detailed infor-mation on earning structure and cost items, together with background data on the employee and the employer. Taking advantage of data collection by direct access minimises the bias caused

by recording. Moreover, the expense and nuisance employers might associate with data collection and the time lost through reporting is kept to a minimum. This is important, as it improves data quality and helps maintaining a representative sample for each calculation of the wage index. In order to collect metadata on each employer and its pay structure, great effort is spent on the inclusion process as the employer enters the survey. Feedback to the employer is given during data collection, if necessary, to maintain quality of data.

0.9 EEA and EU obligations

No specific EEA or EU regulations apply. However, Statistics Iceland takes notice of regulations No 530/1999 from March 9th 1999, No 1916/2000 from September 8th 2000 and No 530/1999 regarding economic reports and the construction of ISWEL.

1. Contents

1.1 Description of content

The total wage index is published 20-24 days after the end of the reference month. The base of the wage index is December 1988.

* Wage index from 1989

Sub-indices are published 80-85 days after the end of the reference month. Sub-indices are published for private and public sectors, with special indices for central and local government within the public sector. Within the private sector sub-indices by economic activities and occupational groups are published. The base for the sub-indices is December 2018 for monthly sub-indices.

* Monthly wage index by sector from 2015
* Monthly wage index in private sector by occupational group from 2015
* Monthly wage index in private sector by economic activity from 2015

Older tables with quarterly sub-indices are maintained. The base is average 2005.

* Quarterly wage index by sector from 2005
* Quarterly wage index in private sector by occupational group from 2005

Calculation of the index

The wage index is based on (weighted) changes, between two consecutive months, of regular hourly wages paid to an employee for fixed working hours within the same occupation, the same economic activity and by the same employer that is the elementary item of the index. Törnqvist index formula is used at the lower aggregation levels and a matched sample model with the smallest aggregate being the item itself, i.e. changes in hourly wage for a given set of working hours within a given occupation and given economic activity. At top-level the sub-

indices are aggregated according to Laspeyres' formula since weights at this level are updated once a year. Each economic activity and occupation group is given a weight based on their share in total wages. Weights are discussed in detail below.

Matched sample model

To control for quality changes, matched models structure is used where the elementary aggregate is the changes in regular hourly wages paid to an employee for fixed working hours within the same occupation, the same economic activity and the same employer between two consecutive months. Occupations are down to a five digit number. A four digit number according to the ÍSTARF95 occupation classification of Statistics Iceland (based on ISCO-88) and in addition there is a 5th digit in the occupational code to distinguish the status of the employee, i.e. general worker, foreman and craft worker. Economic activities down to a five digit level are classified according to ÍSAT2008 which is the Icelandic equivalent to NACE rev. 2 classification.

Data coverage

The wage index is based on sample data, ISWEL. Included are the following economic activities according to ÍSAT2008: Manufacturing (C), Electricity, gas steam and air conditioning supply (D), Water supply, sewerage, waste management and remediation activities (E), Construction (F), Wholesale and retail trade; repair of motor vehicles and motorcycles (G), Transportation and storage (H), Accommodation and food service activities (I), Information and communication (J, only big companies in economic divisions 58–61), Financial and insurance activities (K), Engineering activities (M, only economic division 71), Public administration and defence; compulsory social security (O), Education (P), Human health and social work activities (Q) and Arts, entertainment and recreation (R). Economic activities O, P, Q and R only include employees in the public sector. Self-employed individuals are excluded from the ISWEL data. In the year 2022 there were about 200 thousand employees on the labour market according to Statistics Iceland's resources[1]. According to the same resources, within the economic activities from which the ISWEL data is drawn there are approximately 168 thousand employees or about 85% of the total number of employees in 2022. In 2022 approximately 119 thousand individuals had at least one measurement in the ISWEL dataset.

1.2 Statistical concepts

Regular hourly wages

The wages used in the calculation of the index are regular hourly wages, i.e. all basic wages paid for both day-time and shift-work hours. In addition to basic wages *regular hourly wages* consist of bonuses given that the bonuses where earned during the month that is currently being

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[1] https://px.hagstofa.is:443/pxen/sq/8cf2a4d1-4493-4fbd-9cbd-be61c3c47041

paid for. However, if the bonuses being paid for where earned over more than one month the bonuses are not part of the regular basic wages. This definition holds also for other irregular payments. Payment for overtime is not included in the regular hourly wages unless the payment is of fixed amount and does not depend on hours delivered. Furthermore, employers' social contributions, including employers' payments in pension funds, and taxes are also excluded from regular hourly wages.

Population

The population of the ISWEL survey is defined as all employees working at companies and municipalities with 10 or more employees and all employees working for the central government. The population frame is based on the monthly PAYE data. The wage index uses a sub-sample of the data, including only employees 18 years and older. The population of the wage index is the total labour market and weights are used to adjust the sample to the population. Weights are discussed further below.

Sectors

From 2018, sectors are based on the ESA 2010 classification of National Accounts. The public sector only consists of the General Government (S.13; i.e. the municipals and the central government with some exception, see the ESA 2010 classification for details). Others belong to the private sector. Until 2017, the public sector consisted of those getting remunerated by the municipalities or by the Central Government Accounting Office. There are only small differences between those two definitions.

In the private sector the wage index is based on data collected from companies operating in the following economic activities in the private sector: Manufacturing (C), Electricity and steam supply (D), Water supply and waste management (E), Construction (F), Wholesale and retail trade (G), Transportation and storage (H), Accommodation and food service activities (I), Information and communication (J, only big companies in divisions 58–61), Financial and insurance activities (K) and Engineering activities (M, only division 71). Statistics Iceland is working towards full inclusion of all economic activities in the wage index.

In the public sector, the wage index covers employees in a sample of municipalities (local government), as well as data on all employees from the Central Government Accounting Office (central government), working at institutions belonging to sector S.13. In addition, there are few companies in the sample belonging to S.13 that use their own pay-roll system. Few institutions are missing from the sample in the public sector, mostly service institutions owned and operated by more than one municipality.

Weights

The calculation of the wage index involves a standard structure of expenditure weights which are calculated for all sub-levels of the index that is for elementary aggregates, cell-aggregates

(for occupation + economic activity cells/federation of trade unions) and economic sectors. Weights are revised after the end of 1ˢᵗ quarter every year.

An employer expenditure weight is based on the ISWEL sample design. In the private sector the employers' weight is based on the expenditure weight of the sample layer (NACE division and size). A comparable approach is used to determine the weights of the local government (sample of municipalities). All employers in the central government have the weight 1 as data on employees in the central government are close to census data. The employer expenditure is fixed yearly.

Weights on the level of the elementary aggregates are based on a combination of the employers' weight and the expenditure of an employee within a cell (defined by occupation and economic activity in the private sector and federation of trade unions in the public sector) in the ISWEL. In cases where weights are based on ISWEL data, other sources to estimate the population are not available. The expenditure for each employee is computed each time the wage index is computed.

Expenditure weights for cells (defined by occupation and economic activity) in the private sector are based on the expenditure of the economic activity, including employer with less than 10 employees, in the PAYE data and the expenditure of occupational groups in the ISWEL data. In the public sectors the weights for cells (defined by federation of trade unions) are based on the ISWEL data. The cell expenditure weights are fixed yearly.

Expenditure weights for economic sectors are based on the total expenditure, including employer with less than 10 employees, in the PAYE data. The sector expenditure weights are fixed yearly.

The weights for the year 2023 are based on PAYE and ISWEL data for the year 2022. Weights are rounded.

The public sector is 72.3% of the total index.

%	Total	Manag-ers	Special-ists	Techni-cians	Clerks	Service workers	Craft work-ers	General-ized work-ers
Manufacturing (C)	23.8	3.2	3.1	2.3	0.7	0.9	3.5	10.0
Energy and water supply (D&E)	3.7	0.8	0.8	0.4	0.2	0.1	0.6	0.8
Construction (F)	14.2	1.3	1.6	0.8	0.4	0.1	5.2	4.8
Wholesale and re-tail trade (G)	21.1	3.7	2.1	2.6	1.0	9.7	0.6	1.3
Transportation and storage (H)	12.5	1.2	1.0	3.7	1.1	1.4	0.8	3.3
Accommodation and food service (I)	10.3	1.8	0.1	0.3	0.8	4.8	< 0.1	2.5
Information and communication (J)	2.9	0.5	0.9	0.9	0.1	0.2	0.1	< 0.1
Financial and in-surance activities (K)	8.2	2.0	3.4	1.9	0.8	0.1	< 0.1	< 0.1
Engineering activ-ities (M)	3.4	0.3	2.2	0.7	0.1	< 0.1	< 0.1	< 0.1

The public sector is 27.7% of the total index.

%	Total	ASÍ	BSRB	BHM	KÍ	University edu-cated outside union federa-tions	Other unions outside federa-tions	Not union-ized
Central government	14.6	5.3	23.2	34.5	6.4	22.3	2.6	5.9
Local gov-ernment	13.1	17.4	32.8	15.0	31.6	1.9	0.3	1.0

2. Time

2.1 Reference periods

Reference period for the wage index is the previous month. For example the wage index for January is published between 20th and 24th of February and is based on comparison of wages between December and January. The sub-indices for January are published between 20th and 24th of April.

2.2 Processing time

Processing time for the total wage index is 20 to 24 days. Processing time for the sub-indices is 80 to 85 days.

2.3 Punctuality

The wage index is published according to the advance release calendar at 9:00 am the day of publication. The advance release calendar for each year is published on the website of Statistics Iceland https://statice.is/.

2.4 Frequency of releases

Monthly releases on Statistics Iceland's website https://statice.is/.

3. Reliability and security

3.1 Accuracy and reliability

The Icelandic survey on wages, earnings and labour costs (ISWEL) is a sample survey. The sample is a stratified cluster sample where the sample unit is the employer and the observation unit is the employee. The target population of companies contains all employers with 10 or more employees (see section Sectors above). The population frame is based on monthly PAYE data. The PAYE data reflects the sum of wages reported to the tax authorities. The population frame and the sample are revised yearly in order to adjust it to changes in employer's environment from the last revision, but a systematic sample refresh has not yet be implemented due to lack of coverage.

Companies in the private sector are stratified in divisions according to NACE Rev. 2 (two first digits). Big companies, defined as companies with more than A/m employees where A is the total number of employees in the stratum and m is the number of selected companies in the stratum, are selected with probability of 1. The rest of the companies are further split into medium size and small size companies within each section and selected randomly from the corresponding stratum. Municipalities are stratified according to location and size and selected in a similar way. All employees with an employer in the sample are included in the survey, and thus they get the same weight as their employer.

During visits to employers in the sample, technical aspects concerning the software for wage calculations are addressed along with details on entering records such as classification of occupations according to the ÍSTARF95 and ÍSAT2008 standards. The employer's wage structure is examined assigning payroll items to the wage items of the survey to ensure coordination with other employers. Efforts are continuously made to improve data quality through feedback to the employers and through updating and improvement of the validation checking system. Validation checks are made continuously and data is edited by using a set of predefined rules.

There are not fixed cut-offs regarding outliers in the data, but predefined rules are used to handle and examine the outliers. Cut-offs are applied in the calculation for the first and last two data entries each elementary aggregate, i.e. the hourly wage for a given set of working hours within a given occupation and given economic activity. Cut-offs also apply when paid normal hours

are either under 10 or over 340 per month. Those entries are eliminated from the calculation of the index because there is an increased risk of abnormal wages under those circumstances

3.2 Sources of errors

In the calculation of the wage index various errors can arise, e.g. sampling errors (coverage errors, non-response errors) which may occur if the sample does not reflect the population accurately. Errors can arise if employers are incorrectly registered according to their economic activity classification in the sample frame; in cases of employers operating in more than one economic activity but only registered in one of it; if newly established companies are not a part of the survey's pool, etc. The wage index is subject to challenges because of lack of data coverage and due to inadequate sample refresh.

The wage index can also be subject to various errors and biases known to affect general price index numbers like quality changes, chaining effect and the influence of life cycles. Estimation of the chaining drift and life cycle error for the wage index can be found in a working paper from August 2018.

3.3 Measures on confidence limits/accuracy

Not calculated, except from estimation on the chaining drift and life cycle error, see above.

4. Comparison

4.1 Comparison between periods

The wage index adequately represents changes in wages at each time point and the changes can be compared between time points covered by the index. However, access to data has changes over time and at first data were scarce and of questionable quality. This changed in 2001 when data from the ISWEL survey became the base for the wage index. Comparison between different time points have to take this into account. In the table below is an overview of groups included in the wage index after use of the ISWEL data began.

Group:	From
Manufacturing	2001
Electricity and steam supply	2008
Water supply and waste management	2008
Construction	2001
Wholesale and retail trade; repair of motor vehicles	2001
Transportation and storage	2001
Accommodation and food service activities	2019
Information and communication	2001
Financial and insurance activities	2005
Engineering activities	2018
Central Government Accounting Office	2001
City of Reykjavík	2001
Other municipalities	2001

4.2 Comparison with other statistics

The wage index is intended to be an indicator of general monthly hourly changes in wages since 1989. Several sub-indices have been published since 2005 and are intended to reflect changes in regular wages in the private sector by occupational groups and economic activities as well as overall changes in regular wages for the level of administration in the public sector.

The regular hourly wages used in the wage index is equivalent to regular wages in average Earnings Statistics Iceland´s publication. However the wage index measures the changes in wages paid by employers for one hour of work, which should not depend on structural changes of the market or on the quality and quantity of the labour while data on average Earnings is designed to incorporate these effects. Thus if an analysis is focused on the changes of average wages that reflect structural change in the labour market, then data on average Earnings should be the preferred measure or Quarterly Total Wage Index. On the other hand, if an analysis is concerned with the price change of wages then users should consider using the wage index. For example the average wage may change if the availability of cheap workflow changes, where only changes in wages may affect the results of the index calculations.

4.3 Coherence between preliminary and final statistics

Preliminary statistics are not published. Revised indices are not published but every month, the two previous changes are re-calculated and adjustments added to the change in the current month. The recalculations are necessary due to strict demand for timeliness for the total wage index, to compensate for data delays and data errors.

5. Access to information

Statistics Iceland operates in accordance with the United Nations Fundamental Principles of Official Statistics, the European Statistics Code of Practice as well as the Act on the Protection of Privacy regarding the processing of personal data. Furthermore, Statistics Iceland has laid down its own Rules of Procedure for Treating Confidential Data.

5.1 Disseminations

The wage index and other indices are published monthly as in accordance with the release calendar (https://statice.is/publications/news-archive/advance-release-calendar/). The total wage index is published monthly about 20-24 days after the end of the reference month and is accessible from 1989 onwards. About 80-85 days after the reference month several sub-indices are made accessible on Statistics Iceland's website. Older tables with quarterly data are maintained. See here: https://statice.is/statistics/society/wages-and-income/wage-index/

5.2 Original data storage and accessibility

The original data is retrieved directly from the pay-roll system of companies in the survey. The data includes information on earnings and labour costs. The original data is stored by Statistics Iceland as confidential data.

5.3 Reports

Working paper on the methodology of the wage index was published 16 August 2018.

A report by Dr. Kim Zieschang on the Wage index was published 1 February 2019.

5.4 Other information

Further information is provided by the department of Wages, income and education.

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