

Quality report, Swedish Structure of Earnings Survey 2006

1. Relevance

Main users of the results are the National Mediation Office, media, researchers, EU institutions, Statistics Sweden and other national statistical offices.

The needs vary between different users. The main part of the Structure of Earnings Survey (SES) 2006 comes from yearly surveys on earnings. The surveys are constructed with consideration for the needs of the users and are well established in Sweden both in terms of using the results and reporting requested data to Statistics Sweden.

2. Accuracy

2.1. Sampling errors

The coefficients of variation concerning “Gross earnings in the reference month” and “Average gross hourly earnings in the reference month” are presented in Annex A.

When calculating coefficients of variation the SAS-program CLAN is used to extract the point- and standard error estimates. The program takes into account both survey design and non-response.

2.2. Non-sampling errors

2.2.1. Coverage errors

The sampling procedure consists of two stages. First, a stratified random sample of enterprises is drawn from a frame including the private sector. The public sector (government authorities, municipalities and county councils) is fully covered in the sample. Second, a simple random sample of employees is drawn from the enterprises, authorities, municipalities and county councils drawn in the first stage.

The sample from the private sector was drawn from the Business register at Statistics Sweden in August 2006. Units selected had 10 or more employees and an economic activity within NACE sections C to O. Stratified simple random sampling with Neyman allocation was used. Each stratum is set up by combining size class and economic activity of the enterprise. The biggest size class, 500 or more employees, is fully covered in the sample and the overall sample fraction is 18.6 percents. Table 1 shows the sample fraction by size class of enterprise.

Table 1. Sample fraction, by size class of enterprise

Size class of enterprise (employees)	Number of enterprises in the frame	Number of enterprises in the sample	Sample fraction (percent)
10-49	29 713	3 042	12.7
50-199	4 680	1 595	39.3
200-499	805	538	69.4
500-	411	453	100.0
Total	35 656	5 628	18.6

The frame of August 2006 is expected to well reflect the target population, since the reference month surveyed is September 2006. Even though the frame is set up close in time to the reference month problems with under- and overcoverage may arise, since updates concerning information in the Business register sometimes takes time. An analysis on the rates of undercoverage has not been done. The overall rate of overcoverage is 1 percent. An enterprise is considered as overcoverage if it did not exist in practice. Table 2 shows the rates of overcoverage by NACE section.

Table 2. Overcoverage, by NACE section

NACE	Number of enterprises in the frame	Number of enterprises in the sample	Number of overcoverage enterprises in the sample	Rate of overcoverage in the sample (percent)
10	12	12	0	0
13	8	8	0	0
14	50	49	1	2.0
15	629	92	1	1.1
16	5	5	0	0
17	111	78	2	2.6
18	35	35	0	0
19	21	21	0	0
20	588	222	4	1.8
21	183	89	1	1.1
22	717	181	4	2.2
23	12	12	0	0
24	218	130	0	0
25	393	142	0	0
26	179	70	0	0
27	158	46	1	2.2
28	1 655	246	0	0
29	1 002	130	0	0
30	43	27	1	3.7
31	271	66	0	0
32	103	32	0	0
33	252	93	0	0
34	262	51	0	0
35	127	33	0	0
36	352	135	0	0
37	52	52	0	0

Table 2 cont.

NACE	Number of enterprises in the frame	Number of enterprises in the sample	Number of overcoverage enterprises in the sample	Rate of overcoverage in the sample (percent)
40	228	67	0	0
41	10	10	0	0
45	3 909	390	4	1.0
50	1 177	203	0	0
51	3 593	253	0	0
52	3 035	260	1	0.4
55	1 997	233	8	3.4
60	1 865	365	6	1.6
61	60	50	1	2.0
62	47	27	1	3.7
63	576	103	0	0
64	122	48	0	0
65	218	37	0	0
66	89	41	3	7.3
67	159	88	3	3.4
70	801	203	3	1.5
71	175	100	2	2.0
72	1 224	173	3	1.7
73	175	84	3	3.6
74	3 706	197	1	0.5
80	1 208	236	0	0
85	1 257	127	3	2.4
90	119	62	0	0
91	1 277	916	6	0.7
92	988	189	5	2.6
93	203	99	1	1.0
Total	35 656	6 618	69	1.0

2.2.2. Measurement errors and processing errors

The main part of the data concerning the private sector was collected in a yearly earnings survey and a separate survey concerning annual bonuses. These data was collected by using a questionnaire. The yearly earnings survey has been carried out since 1997 and is well established both among users and respondents. The results from the survey are of high importance for the users and the questionnaire has been evaluated and improved during the years. The bonus survey has been carried out since 2002 and some minor changes have been done in purpose to improve the questionnaire.

Besides the questionnaire, all respondents receive guidance with explanations to all questions in the questionnaire. To further help the respondents, the guidance includes FAQs and contact information.

All data has been validated both on micro and macro level. In the validation process, different kinds of logical tests were carried out. In the yearly earnings survey these tests have been evaluated during the years, and are now considered to reveal most errors in the data. The method for validation of the data from the annual bonuses survey has been changed due to analysis of previous data. In both surveys, respondents were contacted in order to validate errors and collect correct data.

Possible sources of errors that may not be revealed in the validation process can be for example incorrect individual occupational codes. An individual's occupation may be coded incorrectly by the respondent using a valid code. Such errors are likely to remain undetected in the validation process. Other possible sources of errors may be information in administrative registers, at Statistics Sweden or other agencies, which are used in the survey. This may have an impact on for example level of education, gross annual earnings and number of weeks to which the gross annual earnings relate.

Measurement errors have not been evaluated further and it is difficult to estimate the impact they may have on the results of the survey.

2.2.3. Non-response errors

Different actions have been taken to reduce the unit non-response rate. First, a reminder by mail. Second, non-respondents were reminded by phone calls. Third, for certain large enterprises, a request of fine was used. The overall non-weighted response rate was 85.1 percent, including 1.0 percent overcoverage. Table 3 shows the unit response rates, by NACE section and size class.

Table 3. Response rate (percent), by NACE section and size class of enterprise

NACE	10-49 employees	50-199 employees	200-499 employees	500 or more employees
10	78	100		
13	100	100	100	100
14	76	100	100	
15	64	100	85	100
16	100	100		100
17	74	100	100	100
18	91		100	
19	50	100	100	
20	78	84	100	100
21	88	84	100	96
22	81	90	100	100

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Table 3 cont.

NACE	10-49 employees	50-199 employees	200-499 employees	500 or more employees
23	80	100	67	100
24	91	89	100	100
25	82	94	94	100
26	86	78	100	100
27	60	100	100	100
28	80	81	100	100
29	85	98	95	100
30	82	75	100	
31	72	83	100	100
32	100	70	100	100
33	89	82	100	100
34	90	80	100	100
35	80	82	60	100
36	87	95	100	100
37	87	83		
40	94	87	100	100
41	100	67		100
45	75	84	88	100
50	80	92	100	83
51	83	88	80	95
52	75	84	95	100
55	51	83	100	100
60	70	70	96	89
61	85	85	100	100
62	60	60	100	100
63	77	97	95	100
64	60	70	100	100
65	100	82	100	100
66	60	92	90	100
67	79	96	100	100
70	86	92	95	100
71	77	67	100	100
72	77	81	96	100
73	80	90	100	100
74	70	75	100	97
80	83	91	100	100
85	74	72	94	100
90	88	87	100	100
91	98	97	100	100
92	72	85	100	100
93	69	100	100	100
Total	81	87	96	99

Variables that are item non-response are “*Collective pay agreement*”, “*Type of employment contract*”, “*Annual days of paid absence*” and “*Annual days of holiday leave*”. Data on these variables is not collected and is not to be found in other sources.

No imputation was done for item non-response. Statistics Sweden is prohibited by law to make imputation on data concerning individuals.

2.2.4. Model assumption errors

- Reference month is September, which is considered to be a representative month, since it does not include any public holidays or a lot of absence due to vacation. Further more, changes in wages and salaries due to new wage agreements are rare in September.
- No adjustment from fiscal year to calendar year is done. The main part of data on earnings related to the reference year is collected from administrative registers at the Swedish Tax Agency and refers to the calendar year.
- NACE sections C to O is covered for the private sector for enterprises with 10 or more employees. Employees surveyed in the enterprises are between 18 and 64 years of age.
- Some variables in the SES are collected from administrative registers. In table A, the variables “*Size of enterprise to which the local unit belongs*”, “*Economic activity*” and “*Economic and financial control*” are collected from administrative registers. In table B, the variables “*Highest completed level of education and training*”, “*Length of service in enterprise*”, “*Citizenship*”, “*Number of weeks to which the gross annual earnings relate*”, “*Gross annual earnings in the reference year*” and “*Annual payments in kind*” are collected from administrative registers. To link collected data for an individual or an enterprise with data from registers, identity numbers of the individuals or enterprises is used. Registers may have undercoverage which is considered as item non-response in the SES.

3. Punctuality and Timeliness

3.1. Punctuality

The public sector

The collection of data in the yearly survey of the public sector is carried out in corporation with the *Swedish Agency for Government Employers (SAGE)* and the *Swedish Association of Local Authorities and Regions (SALAR)*.

SAGE collects data on individuals from all government authorities with September as reference month. SALAR collects data on individuals from all municipalities and county councils with November as reference month.

After processing and editing the data is transmitted to Statistics Sweden.

The private sector

A stratified random sample of enterprises is drawn from the private sector. Both the yearly earnings survey for the private sector and the survey on annual bonuses use the same sample. The frame was set up and the sample was drawn in August 2006.

The yearly earnings survey

Information about the survey was sent out in advance to the sampled enterprises in August 2006 and the questionnaire was sent out by end of September 2006. The respondents had approximately three weeks to send in the requested data. Scanning, coding and validation of the data started as soon as any questionnaires were answered. The data collection was stopped in March 2007.

The survey on annual bonuses

Since annual premiums related to profit sharing depend on the results of the enterprise, it was important to let the respondents finalize the balancing of their accounts. This is often done in the first months of the year. Therefore, the questionnaire was sent out in April 2007, and the respondents were given three weeks to answer. Scanning, coding and validation of the data started as soon as any questionnaires were answered. The data collection was stopped in August 2007.

3.2. Timeliness

The Swedish Structure of Earnings data for the reference year 2006 was delivered to Eurostat in June 2008.

4. Accessibility and clarity

Statistics Sweden does not publish results from the Structure of Earnings Survey. No results from the survey have been sent to the reporting units.

5. Comparability

5.1. Geographical comparability

According to regulations regarding the SES, local units shall be surveyed. Due to problems related to the survey design the Swedish SES collect data on enterprises and not their local units. However, all local units in each enterprise are surveyed. This may have an impact on the results in two general ways. First, data broken down by region might be incorrect. Second, data broken down by NACE might be affected, since local units within an enterprise may belong to a different economic activity than the enterprise.

These problems were analyzed when carrying out the Labour Cost Survey 2000 and the analyses indicated that the problem was minimal.

The Swedish Structure of Earnings Survey only includes employees in the age of 18 to 64 years. The age of the employee is set in the reference month.

5.2. Comparability over time

Statistics Sweden has carried out the SES three times; for the reference years of 1995, 2002 and 2006. The survey design was rather different in 1995, surveying only a portion of employees in the sampled enterprises. In 2002 information from two surveys was used in combination with data from different administrative registers. The survey 2006 was extended to include the public sector.

Comparisons between the surveys should be done with caution, since the survey design has changed since 1995.

6. Coherence

In table 4, the SES variable "*gross annual earnings*" is compared to "wages and salaries" of the National Accounts (NA). The public sector is excluded from the SES data since it can not be disaggregated by NACE.

A significant difference between the sources is that sampled units in SES had 10 or more employees whereas the NA data also includes smaller firms.

Table 4. Comparisons between SES and NA concerning annual earnings per employee by NACE, private sector.

NACE	Average annual earnings	
	SES	NA
C	333 427	361 625
D	300 121	320 822
E	364 579	371 703
F	279 864	319 748
G	249 590	282 366
H	142 777	195 564
I	268 691	277 719
J	371 766	414 523
K	296 581	317 189
M	209 953	224 065
N	210 164	268 335
O	244 652	241 103
Total	276 845	299 563

Annex A

Table 1. Coefficient of variation concerning monthly earnings and average hourly earnings, by full-time/part-time employees and sex.

FT/PT	Sex	Cv_monthly earnings	Cv_hourly earnings
FT	M+F	0.005	0.005
FT	F	0.006	0.006
FT	M	0.006	0.006
PT	M+F	0.006	0.006
PT	F	0.006	0.006
PT	M	0.020	0.017

Note: FT = full-time employees, PT = part-time employees,
 M = male, F = female

Table 2. Coefficient of variation concerning monthly earnings and average hourly earnings by NACE section .

NACE	Cv_monthly earnings	Cv_hourly earnings
C	0.014	0.013
D	0.007	0.007
E	0.025	0.025
F	0.019	0.019
G	0.021	0.020
H	0.044	0.042
I	0.013	0.012
J	0.021	0.021
K	0.023	0.023
L	0.003	0.002
M	0.005	0.004
N	0.004	0.004
O	0.016	0.016
Total	0.004	0.004

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Table 3. Coefficient of variation concerning monthly earnings and average hourly earnings by ISCO-88 1-digit.

ISCO	Cv_monthly earnings	Cv_hourly earnings
1	0.015	0.015
2	0.009	0.009
3	0.010	0.009
4	0.014	0.014
5	0.009	0.008
6	0.105	0.101
7	0.019	0.018
8	0.012	0.012
9	0.021	0.021
0	0.024	0.024
Total	0.004	0.004

Table 4. . Coefficient of variation concerning monthly earnings and average hourly earnings by age band .

Age	Cv_monthly earnings	Cv_hourly earnings
-20	0.030	0.025
20-29	0.010	0.009
30-39	0.007	0.007
40-49	0.009	0.009
50-59	0.004	0.004
60-	0.004	0.004
Totalt	0.004	0.004

Table 5. Coefficient of variation concerning monthly earnings and average hourly earnings by NUTS level.

NUTS 1	Cv_monthly earnings	Cv_hourly earnings
SE1	0.008	0.008
SE2	0.009	0.008
SE3	0.014	0.013
Total	0.004	0.004

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6. Coefficient of variation concerning monthly earnings and average hourly earnings by size of enterprise .

Size	Cv_monthly earnings	Cv_hourly earnings
10-49	0.019	0.019
50-249	0.015	0.015
250-299	0.025	0.025
500-299	0.003	0.002
1000-	0.001	0.001
Total	0.004	0.004