



Time series of CAO wages, 2010=100

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Contents

Summary 3

1. Introduction 3

2. Data sources 4

3. Method 4

References 6

Appendix:

Availability of time series 7

Summary

This article describes the construction of the long time series of CAO wages, contractual wage costs and working hours. For this purpose, older versions of these series were re-indexed to 2010=100 and linked to each other, as far as changes in the classification of economic activities allowed for this.

1. Introduction

There is a great deal of historical information available regarding collective labour agreement (in Dutch: CAO) statistics, in the form of index series describing a particular period of time. Statistics Netherlands started a new set of index series approximately every ten years with the base year indexed at level 100. There were disjoint index series with base years 1972, 1980, 1990, 2000 and 2010. All figures pertain to annual averages. A long – temporal – time series of CAO wages is constructed by linking these series. The most recent index series were taken as starting point, meaning that the older index series were all re-indexed to level 2010=100.

The current statistics of CAO wages describe the following topics:

1. Monthly CAO wages including special payments
2. Monthly CAO wages excluding special payments
3. Hourly CAO wages including special payments
4. Hourly CAO wages excluding special payments
5. Contractual working hours
6. Monthly contractual wage costs
7. Hourly contractual wage costs

Where possible, these series were amended with data from older index series. Continuous time series of CAO wages were constructed for three CAO sectors and 27 SIC branches. So, for each of the above topics there are at most 31 series available, including the grand total.

- The three CAO sectors are private companies (PC), the government sector (GS) and subsidised corporations (SC). Apart from these sectors, the total for all Dutch collective labour agreements is published.
- The classification of economic activities has changed twice during the running length of the time series. The index series based in 1972 and 1980 were classified according to SIC1974, the index series with base years 1990 and 2000 according to SIC1993, while the current series with base year 2010 are classified according to SIC2008. This means that for some branches a long continuous time series could not be constructed.

2. Data sources

For the construction of the time series, the following sources were used:

- Internal CBS archive with index series of CAO wages with base year 2010 (unrounded)
- Internal CBS archive with index series of CAO wages with base year 2000 (unrounded)
- StatLine database with the final index series with base year 1990 (rounded to 1 digit)
- Index series of Collective wages for adult labourers with base year 1980, rounded to 1 digit (“Regelingslonen voor volwassen werknemers” in the CBS publication “Sociaal economische maandstatistiek”, 1983–1991)
- Index series of Collective wages for adult labourers with base year 1972, rounded to 0 digits (“Regelingslonen voor volwassen werknemers” in the CBS publication “Sociale maandstatistiek”, 1974–1984)

3. Method

General remarks

The resulting time series of CAO wages in the period 1972–2009 are an approximation of the index series published originally, obtained by linking disjoint index series. The indices show the development of CAO wages since 1972. The changes in these series are expressed as proportional year-to-year changes. Both the index series and the changes are rounded to 1 digit. In the normal procedure for rounding the index values are rounded first, then the changes are calculated and rounded.

Due to the rounding small discrepancies arise. If we would repeat the rounding procedure each time we re-index the time series, the rounding errors would pile up to a level of noise, while in fact the changes have not changed. Moreover, in the older periods the level of the index values usually is much lower than 100, making the rounding errors larger relatively.

To prevent the buildup of rounding errors, we decided that for the older index series which are re-indexed to the most recent base year, we will not change the original changes. We therefore, when we linked the period 1972–2009 to base year 2010, maintaining the changes as published the previous version of these time series (2000=100).

Due to the fixing of number rounding after changes, they are not always equal to the changes that can be calculated from the related rounded index series. A more obvious example of this phenomenon can be found in the time series of “monthly CAO wages excluding special payments”, for the retail sector.

Retail	1987	1988
Rounded index value (2010=100)	57.4	57.8
Calculated change		0.7%
Original change		1.0%

The original annual changes are closest to the values as published in the original publications. The index values are the best approximation of a long index series which is comparable over time.

All series are linked using "early linking", in which two series are linked at the earliest time period in the overlap between the series. This means that, in periods where index series overlap, the most recent estimates were used to construct the final time series.

For the 1972=100 index series the published data were rounded to 0 digits. This leads to some peculiar results. An example can be seen in the topic "*hourly CAO wages including special payments*". In this series the proportional change of the total of all CAO sectors from 1973 to 1974 is lower than all three of the underlying sectors. This phenomenon is present in the original publication and is entirely due to rounding. Rounding to 0 digits can have a very profound influence on the changes. The accuracy of the original changes is therefore considerably lower in the period 1972–1980 than it is for the period 1981–2010.

Breakdown by CAO sector

The new time series is based on index series with base years 1972, 1980, 1990, 2000 and 2010. However, the current classification into three CAO sectors is not available in all index series.

In the series 1972=100 (available for 1972–1983) the subsidised corporations (SC) and private companies (PC) were not published separately. Index series for the combination of these sectors (SC + PC) are available for the topics "*monthly CAO wages including special payments*", "*monthly CAO wages excluding special payments*" and "*hourly CAO wages including special payments*". For the same topics there are index series for the branch "Other services", which for the most part consists of subsidised corporations.

We used the branch "Other services" as proxy to estimate the index series of the sector SC for the period 1972–1979. These series were then used to adapt the series for SC + PC to a set of series for PC only, using the weights of these sectors in the 1980=100 series. The year-on-year changes of the sectors SC and PC for the years 1973–1980 therefore differ from the values we published in the 2000=100 version of these time series.

Breakdown by industry (SIC2008)

The SIC1974 classification of economic activities was used in the original publication of the 1972=100 and the 1980=100 index series, SIC1993 in the 1990=100 and 2000=100 series and SIC2008 in the 2010=100 index series. The differences between these classifications generally cannot be ignored at the publication level of these series. For instance, between SIC1974 and SIC1993 there are large changes in the industries "healthcare and social work activities" and "cultural and other services". In the SIC1974 classification the latter also contains a large part of the social work industry. As there is no information available to distinguish social work from other services, a continuous time series cannot be constructed for both these industries over the period 1972–1989.

During linking of SIC1993 to SIC2008 in 2010, again some industries were mixed up in a similar way. We will not discuss all occurrences of this phenomenon here. Any industry that could not be linked to SIC2008 one-on-one was dropped in the older series. The table in

the appendix shows the availability of a breakdown by industry for each topic according to the first year of the series.

For some industries, only the CAO sector private companies was published in the index series 1972=100 and 1980=100 and not the total. The assumption was that in these cases the other sectors were negligible within the branch and therefore the total was set as equal to the private sector.

References

[CAO wages, contractual wage costs and working hours; index \(2010=100\)](#), (CBS StatLine)

[Korte onderzoekbeschrijving CAO-lonen 2010=100](#). (Short explanation StatLine table, only in Dutch)

[CAO-lonen, contractuele loonkosten en arbeidsduur; indexcijfers \(2000=100\), 1972-2014](#), (StatLine table, archived)

[CAO wages, contractual wage costs and working hours \(2000=100\), 2000-2014](#), (StatLine table, archived)

B.J.H. Lodder and R.H.M van der Stegen, [Tijdreeks CAO-lonen 1972-2014](#), august 18, 2014, (Description of the long index series 2000=100, only available in Dutch)

Appendix: availability of time series

Starting period of available long time series before 2010 by topic and SIC group

SIC2008	SIC1993	CAO sector	Description (SIC2008)	Monthly CAO wages incl. spec. pay.	Monthly CAO wages excl. spec. pay.	Hourly CAO wages incl. spec. pay.	Hourly CAO wages excl. spec. pay.	Monthly contractual wage costs	Hourly contractual wage costs	Contractual working hours
A-U	01-93	PC + SC + GS	Total SIC	1972	1972	1972	1990	2000	2000	1980
A-U	01-93	PC	- Sector private companies	1972	1972	1972	1990	2000	2000	1980
A-U	01-93	SC	- Sector subsidised corporations	1972	1972	1972	1990	2000	2000	1980
A-U	01-93	GS	- Sector government	1972	1972	1972	1990	2000	2000	1980
A	01-05	PC + SC + GS	Agriculture, forestry and fishing	1972	1972	1972	1990	2000	2000	1980
B-F	10-45	PC + SC + GS	Manufacturing and energy	2000	2000	2000	2000	2000	2000	2000
C	15-37	PC + SC + GS	Manufacturing	1972	1972	1972	1990	2000	2000	1980
10-12	15-16	PC + SC + GS	Manufacture of food and beverages	2000	2000	2000	2000	-	-	2000
18	22	PC + SC + GS	Printing and reproduction	2000	2000	2000	2000	-	-	2000
19-22	23-25	PC + SC + GS	Refineries and chemistry	2000	2000	2000	2000	-	-	2000
20-21	24	PC + SC + GS	Chemistry and pharmaceuticals	2000	2000	2000	2000	-	-	2000
24-30, 33	27-35	PC + SC + GS	Metallic/electrical engineering	2000	2000	2000	2000	2000	2000	2000
F	45	PC + SC + GS	Construction	1972	1972	1972	1990	2000	2000	1980
G-N	50-74	PC + SC + GS	Commercial services	2000	2000	2000	2000	2000	2000	2000
G	50-52	PC + SC + GS	Wholesale and retail trade	1972	1972	1972	1990	2000	2000	1980
45	50	PC + SC + GS	Sale and repair of motor vehicles	2000	2000	2000	2000	-	-	2000
46	51	PC + SC + GS	Wholesale trade (not in motor vehicles)	1972	1972	1972	1990	-	-	1980
47	52	PC + SC + GS	Retail trade (not in motor vehicles)	1972	1972	1972	1990	-	-	1980
I	55	PC + SC + GS	Accommodation and food serving	1980	1980	1980	1990	2000	2000	1980
49	60	PC + SC + GS	Land transport	2000	2000	2000	2000	-	-	2000
64	65	PC + SC + GS	Financial institutions (no insurance)	1972	1972	1972	1990	-	-	1980
65	66	PC + SC + GS	Insurance and pension funding	1972	1972	1972	1990	-	-	1980
K	65-67	PC + SC + GS	Financial institutions	1972	1972	1972	1990	2000	2000	1980
711	742	PC + SC + GS	Architects, engineers, etc.	2000	2000	2000	2000	-	-	2000
80	746	PC + SC + GS	Security and investigation	2000	2000	2000	2000	-	-	2000
812	747	PC + SC + GS	Cleaning activities	2000	2000	2000	2000	-	-	2000
O-U	75-93	PC + SC + GS	Non-commercial services	2000	2000	2000	2000	2000	2000	2000
O	75	PC + SC + GS	Public administration and services	1980	1980	1980	1990	2000	1990	1980
P	80	PC + SC + GS	Education	1980	1980	1980	1990	2000	1990	1980
Q	85	PC + SC + GS	Health and social work activities	1990	1990	1990	1990	2000	1990	1990
R-U	90-93	PC + SC + GS	Culture, recreation, other services	1990	1990	1990	1990	2000	2000	1990

Explanation of symbols

Empty cell	Figure not applicable
.	Figure is unknown, insufficiently reliable or confidential
*	Provisional figure
**	Revised provisional figure
2018–2019	2018 to 2019 inclusive
2018/2019	Average for 2018 to 2019 inclusive
2018/19	Crop year, financial year, school year, etc., beginning in 2018 and ending in 2019
2016/17–2018/19	Crop year, financial year, etc., 2016/17 to 2018/19 inclusive

Due to rounding, some totals may not correspond to the sum of the separate figures.

Colophon

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