

CHAPTER 6

Norwegian wages 1726–2006 classified by industry

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In this chapter the data on nominal wages by occupation presented in Chapter 5 are aggregated into data for nominal annual wages for 18 industries and sub-industries. In addition we present a national series for average annual wages 1726–2006. Our main sources for data are previous work by writers on Norwegian historical wages, The Wedervang Archive and records from Statistics Norway.

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6.1 Introduction

In this chapter we present 18 annual wage series for different industries and sub-industries. In addition, we present a series of national average wages for 1726–2006. We basically draw on the material presented in the previous two chapters of this book. To recall, Chapter 4 describes the creation and working of Professor Dr. Ingvar B. Wedervang’s Historical Archive on Prices and Wages at the Norwegian School of Economics and Business Administration, whereas Chapter 5 contains historical wage data (by occupation) mainly derived from the Wedervang Archive, supplemented by private records and data from Statistics Norway. The spliced wage series combine data from various sources. The most important sources up to the nineteenth century are previous historical research on wages compiled from different private archives. The Wedervang Archive serves as the single most important source for the period 1751–1940, whereas public records kept by different bodies at national or local levels provide us with a substantial amount of data for the nineteenth century up till 1940. Thereafter, our computations basically rest on wage data from Statistics Norway.

6.2 Classification

All wage series are transformed into annual wages measured in Norwegian kroner. In order to make this transformation, we have provided new estimates of normal working hours per man-year for the different industries. Table 1 shows our classification of wage data across the different industries and sub-industries.

Note that the series for aggregated industries are not averages of the quoted sub-industries, but representative numbers for the entire industry. Similarly, the last group *Total* is not the average of the quoted industries, but representative numbers for average wages for the entire economy.

TABLE 6.1
Classification of wage data by industry

Number	Classification	Industry and sub-industry
1	1.0.	Primary industries
2	1.1.	Agriculture and forestry
3	2.0.	Secondary industries
4	2.1.	Construction
5	2.2.	Manufacturing and mining
6	2.2.1.	Textile
7	2.2.2.	Engineering
8	2.3.	Crafts
9	3.0.	Transport and communication industries
10	3.1.	Maritime transport
11	3.2.	Domestic transport
12	3.3.	Communications
13	4.0.	Private services
14	4.1.	Domestic services

TABLE 6.1
Classification of wage data by industry

Number	Classification	Industry and sub-industry
15	4.1.1.	Housekeeping (domestic servants)
16	5.0.	Public services
17	5.1.	Public administration
18	5.2.	Public education
19	6.0.	Total

6.3 Methodological challenges with the data

It is not a straightforward task to construct continuous wage series for a period covering almost 300 years. In the methodological field we have to come up with a number of creative solutions to numerous data challenges.

One problem has to do with the definition and classification of industries, in addition to occupations within the industries. The nature and title of most industries and occupations have changed dramatically over the decades and centuries, e.g. professions which in nature belonged to crafts in the eighteenth century later became manufacturing industry and finally service industries. Thus, it is very difficult to make valid classifications of industries and occupations over time. The present approach is to use the same classifications as were used historically. Nevertheless, we will have to bear in mind that the character of work and industry changed substantially over time.

Another methodological challenge is time units for wages. Some data are given in hourly wages, some in daily, weekly, monthly or annual wages. Data are sometimes given for piecework or as fixed time unit salaries. In order to compare these different time units, we have basically tried to recalculate all wages within each industry into one unit of time account, i.e. annual wages. Thus, we have found estimates of normal man-years by industry and by that transformed wages given in other time units into annual wages. As for piecework versus fixed wages, we recalculate the piecework wages into time unit wages according to their average salary per time unit worked. Then we find average wages for both piecework and fixed wage employees.

A third methodological challenge with the data is non-cash payments. In the eighteenth and first part of the nineteenth century these commonly made up the bulk of the wages for ordinary employees. Thus, we try to add them. Previously, non-cash payments were usually added as a fixed share of cash payments or just as a fixed sum. Here, non-cash payments are considered a basket of goods and services, basically boarding and lodging. The aggregated value of these products is calculated by multiplying estimated volumes of non-cash payments with their current price. By doing so, we arrive at variable non-cash payments, fluctuating with volume and prices.

The fourth challenge we will address here is the problem of different currencies used as unit of value account. In 1671 the Danish-Norwegian currency Rigsdaler Species was officially set to a

silver value of 9.25 dalers per mark fine silver. Rigsdaler Courant was originally set to a value of 81.6 per cent of the Rigsdaler Species. In 1795 this value was changed to 80 per cent. During the Danish-Norwegian King's involvement on the French side during the Napoleonic wars, Norway saw a period of monetary turbulence, with strong inflation and currency depreciation and devaluation. New currencies were introduced in order to regain control of the daler in the market. However, these attempts at restoring a stable currency system were unsuccessful and Norway went into monetary chaos 1813–1816.² Admittedly, one could argue this chaos started earlier and lasted until 1822. During this period it is very difficult to come up with consistent series of wages.

Additionally, for the period 1726–1842 the data sources tend to present manipulated data, by correcting them according to fluctuations in exchange rates. This was done in order to present them in par values of the daler. Moreover, in 1874–1877 the daler ceased as the key currency, which now became the krone.

In order to obtain continuous series of wages and prices in current values we use krone as our unit of account. The data adjusted for exchange rate fluctuations have been readjusted, whereas data in other currency units principally are transformed into krone by their formal values at the time when the observations were taken.

6.4 Paasche and Laspeyres wage series

Here the wage data are added up from micro series to occupational series, and from occupational series to series for sub-industries, industries and the total economy. Ideally we would use annual quantity weights for each micro series in our aggregated series according to the Paasche approach (V_P). That is, we would prefer to use the annual number of employed persons in each micro series in order to compute running annual aggregated series of average wages, as shown in equation 6.1:

$$V_{P,t} = \sum_j (v_{jt} q_{jt}) \quad (6.1)$$

Here v denotes nominal wages, q volumes, j industry and t year of observation. However, in many cases this formula has not been applicable due to shortage of employment observations. In consequence, we have used aggregated Laspeyres series with fixed weights during time intervals, according to equation 6.2:

$$V_{L,t} = \sum_j (v_{jt} q_{j0}) \quad (6.2)$$

²Eitheim 2004, 1–18.

6.5 Weights

In order to arrive at aggregated series, we have to sum up sub-series. For the period 1946–2006 we use the same weights as Statistics Norway. For the period 1930–1945 we use annual weights according to the historical national accounts statistics concerning man-years carried out in the Norwegian industries.³ Thus, the total average wages 1930–2006 are calculated by a Paasche approach. For the years previous to 1930 we use benchmark year estimates of employment in the historical national accounts along with data from the population censuses.⁴ Hence, we use a Laspeyres approach in order to calculate total aggregated wages 1726–1929.

6.6 Man-years

In order to establish comparable figures, all series are presented as annual wages in the present chapter. From 1946 we have man-year data for all industries and sub-industries. For the pre-1945 period we have man-year wages for some industries, like public administration, education, domestic services and partly farming. For the rest we have to find man-years estimates for the period prior to 1946.

Most of our sources provide data in average daily wages. These take into account that the number of working hours shifted over time. Thus, we have to find the number of working days during a year. When the working hours in manufacturing was reduced to eight hours per day in 1919, the man-year became significantly shorter. We have taken this into account in our calculations. Holidays are excluded. As the number of vacation days was increasing, the number of working days decreased. Nevertheless, the number of actual working days stayed almost constant before 1900, despite that the number of working hours was falling. The number of working days varied between the industries. Agriculture had the most, whereas public administration had less than most other sectors.

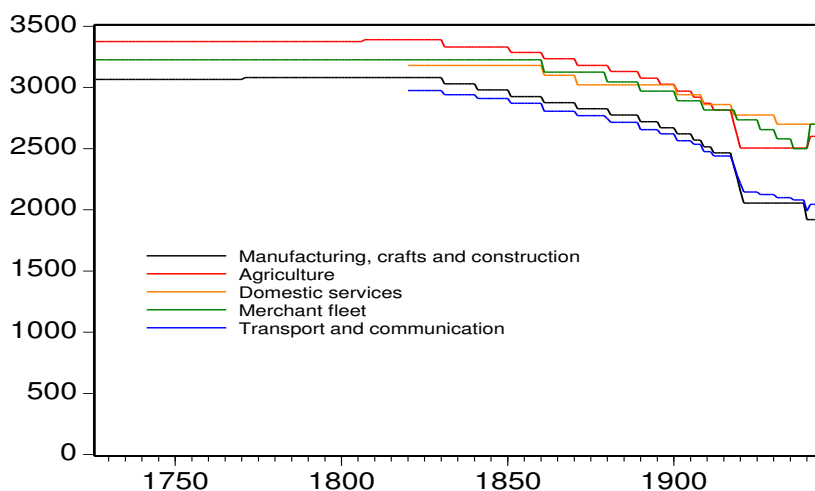
We have been able to find estimates of the number of working hours per man-year by dividing reported annual salaries by reported hourly wages. Again, the Wedervang Archive and Statistics Norway are our most important sources. One should note that time efficiency of work probably increased substantially during the nineteenth century. Thus, the formal working hours were significantly lower in the late nineteenth century than in the eighteenth century. However, the utilization of the working time was considerable higher in the nineteenth than the eighteenth century. It may be a valid assumption that the number of efficient working hours were at least as high in 1850 as in 1750. Nevertheless, this is not mirrored in the formal working hours, which we have to use here in order to arrive at representative annual wages. Figure 6.6 below reports the number of normal working hours assumed in this work. Note that these are not necessarily the working hours per actual man-year, but the working hours adopted here in order to transform our data into meaningful annual wage series.

For sailors we have monthly wages. They stayed on land substantial parts of the year. However,

³NOS 1965, 328–337.

⁴Bjerke 1966, 30–65.

FIGURE 6.1 Number of working hours per normal man-year used in present calculations, 1726–1945



Sources, Wedervang Archive, files W089 and W091, Minde 1993, 65–78 and Grytten 1994. 238–267.

the extra value of boarding has been estimated to about the same value as their free time on land. Thus, their monthly wages are multiplied with a factor of twelve to arrive at annual wages. For the period prior to 1798 boarding is included in the wages from the archive.

6.7 Wages by industry

By assembling data from various sources we have been able to map nominal wages back to 1726 for mining, manufacturing and crafts, 1751 for the merchant fleet, 1820 for agriculture, 1830 for domestic services, 1850 for communication and construction and 1875 for public services.

The major sources for the period up to the first decades of the nineteenth century are previous research on private records along with files from the Wedervang Archive. For the period stretching from 1820–1920 the Wedervang Archive is the basic source, whereas Statistics Norway takes over as the major provider of data thereafter.

6.7.1 Primary industries

We have been able to establish a dataset of wages for the primary industries back to 1899. For the sub-industries agriculture and forestry we have been able to trace the development back to 1820.

Historical wage data for hired labor on farms can be extracted from the Wedervang Archive, which keep records of farm accounts from 57 major Norwegian farms. Almost 50 of these can be

used as source for historical farm wages. Some of the data start as early as 1820, whereas the bulk of the records are taken from the mid nineteenth century onwards.⁵

The files report wages for both genders, though female wages are scarce until 1850. Both summer and winter seasons are included. Most observations are recorded as cash-wages for hired labor, exclusive of board and lodging. Thus, these have to be added. Ole Gjølberg and Torill Lønningdal have compiled substantial parts of the available data from the archive from the mid 1800s.⁶

In public records published by Statistics Norway, we find observations of daily wages for agricultural workers for every fifth year, starting in 1850 for men and in 1875 for women.⁷ The records report wages both in the summer and in the winter season. The five-annual series from Statistics Norway can be complemented with annual figures found in the Wedervang Archive to obtain an indicator of annual developments. The public records continue till 1915, when they are substituted with annual and more detailed wage series published by Statistics Norway.⁸ The latter series have good coverage of both farm and forestry wages. They also reflect seasonal differences, reporting spring, summer, autumn, and winter wages.

As for the period previous to 1850, most wage data do not include food provided for the workers by the farms. Thus, it has to be added to the cash wages. After 1850 the picture is mixed. Full cash payments were more common from the last decades of the nineteenth and the dawn of the twentieth century. Nevertheless, still as many as about half of all agricultural workers were compensated in non-cash wages until the post World War II era.

Both the Wedervang staff, Lønningdal and Gjølberg tried to map the value of non-cash payments.⁹ They all concluded that boarding and lodging was by far the most important factor of income for hired labor in agriculture in the nineteenth century. A problem with most of these estimates is that they add a more or less fixed share of compensation to the cash wages. Here, we try to examine annual values of compensation independently of cash wages.

We estimate food provided on farms according to a normal consumption basket for working class families, which is the closest we can get to farm labor in the existing consumption surveys for the period.¹⁰ Instead of adding a constant factor for food and lodging, we have taken estimates of consumption in three base years, 1850, 1880 and 1910. Thereafter, we have calculated annual consumption by interpolation with CPI as indicator of the fluctuations.¹¹ This operation provides us with more reliable series of non-cash wages in agriculture than hitherto.¹²

For the period from 1940–1945 we use wages in agriculture as reported by Statistics Norway in their historical survey of 1948.¹³ Thereafter we use quotations of wages in agriculture, forestry

⁵Wedervang Archive, files W027, W028, W204, W205 and W207.

⁶Gjølberg 1974, 135–153 and Lønningdal 1984, 141–163.

⁷NOS 1949, 366–367.

⁸NOS 1949, 366–367.

⁹Wedervang Archive, files W089 and W091, Gjølberg 1974, 139–144, Lønningdal 1984, 37–43.

¹⁰Statistical Office of Kristiania 1915, 144–149, Ramstad 1982, 482–492, Minde and Grytten 1997, 79 and Grytten and Minde 1998, 52–55,

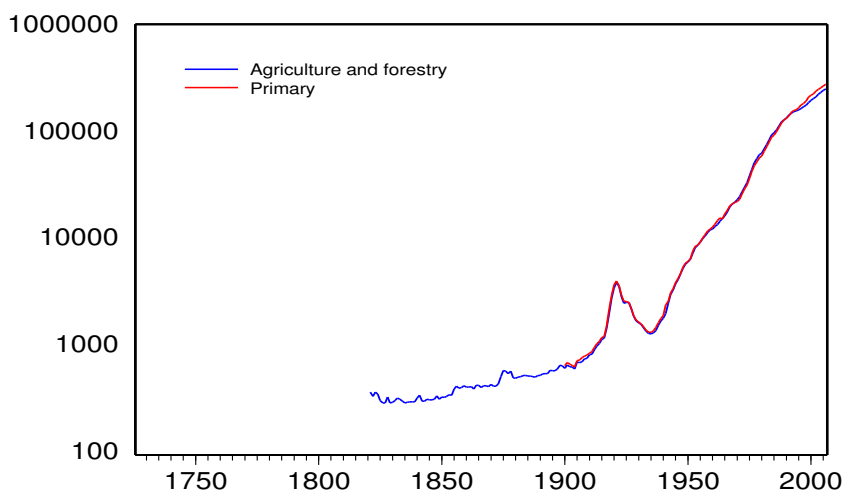
¹¹Grytten 2004a, 78–93.

¹²Lønningdal 1984, 108, Wedervang Archive, files W089 and W091

¹³NOS 1949, 366–367.

and fisheries drawn from the national accounts' department at Statistics Norway. These are given in nominal figures for 2005 and thereafter calculated for every year 1946–2006 on the basis of reported annual changes in nominal wages for the different industries within the primary sector.¹⁴ It should be noted that Statistics Norway recommends the data on agriculture to be used with caution.

FIGURE 6.2 Annual wages in primary industries, in NOK, per man-year, 1726–2006. Semi-logarithmic scale.



Sources, Wedervang Archive, files W009, W013, W014, W021, W027, W028, W204, W205, W207, NOS 1949, 366–367, Gjølborg 1974, 31–103, Lønningdal 1984, 141–163 and data provided by Tor Skoglund, Statistics Norway.

6.7.2 Secondary industries

The available sources enable us to construct consistent series of wages for secondary industries as far back as 1726. We have been able to trace the development of the construction industry, the manufacturing and mining industry with its two sub-industries, engineering and textile, and finally, crafts.

Construction

The main source of information on wages within construction work is again the Wedervang Archive 1850–1920 and thereafter Statistics Norway. On the basis of these sources we are able to follow five different occupations over some time. These are road construction, railway construction, bricklayers, telecommunication and harbor construction and maintenance.

The road construction data cover construction and maintenance work on public roads financed by local or central governments. The series have been calculated by dividing wage costs by the total

¹⁴Data provided by Tor Skoglund, Statistics Norway 2007.

number of working days. They reflect more than 13.4 million estimated observations of daily wages for piecework from 1850 till about 1920. The corresponding number for workers on fixed salaries was almost 1.1 million. The data are reported practically from the entire country.¹⁵ The reported data make up continuous series for summer and winter wages over the entire period.

From 1915 onwards, we also draw our series from Statistics Norway, which from 1921 becomes the major source for our data.¹⁶ The data from the bureau also include both fixed and piecework salaries in public road construction all over the country.

The second most important group of wage data in the construction industry stems from public railway construction. The main source up to the interwar period is again the Wedervang Archive.¹⁷ The data starts in 1873 and continue till 1940, except for a lacuna 1884–1891. For the last 20–25 years the data from the Wedervang Archive are supplemented by records from Statistics Norway.¹⁸ On the basis of the archival data it has also been possible to give rough estimates on railway construction data back to 1854. The data are partly reported as daily and partly as hourly wages. We use daily wages here. Thus, we have to transform hourly wages into daily wages. Till 1913 it was common with ten working hours per day. In 1914 the normal was nine to ten hours per day, between 1915–1917 nine hours, and finally eight hours from 1918.

The records in the Wedervang Archive rest on 11.6 million and 1.7 million observations of piecework and fixed daily wages respectively. Hence, the number of indirect observations of hourly wages reflected in the archive is astonishingly 139.3 million and 22.8 million respectively.¹⁹

For the interwar period we also include bricklayers, port construction and maintenance workers and telegraph construction and maintenance workers into our series. These data were recorded and published annually by Statistics Norway with coverage for up to 40 main Norwegian urban areas. They are taken at different months of the year. Hence, the coverage must be considered good. These series were collected and reported partly as hourly and partly as daily wages. We have transformed all into daily, and thereafter to annual wages.²⁰

As for 1940–1945, we again find our data in Statistic Norway's historical survey of 1948.²¹ Thereafter, we use the office's accounts of yearly changes in annual wages in construction up to 2006.²² 2005 is used as the reference year, and the time series of annual changes is linked to this reference year in order to come up with annual series of wages in construction 1945–2006. Finally, all series are linked into a complete series of annual wages in the construction industry 1726–2006.

¹⁵Wedervang Archive, files W118, W119A, W120A and W249.

¹⁶NOS 1949, 365.

¹⁷Wedervang Archive, files W245 and W249.

¹⁸NOS 1949, 365.

¹⁹Wedervang Archive, files W245 and W249 and Alme 1993, 64–65.

²⁰NOS 1920–1940.

²¹NOS 1949, 364–368.

²²Data provided by Tor Skoglund, Statistics Norway 2007.

Manufacturing and mining

Wage data on manufacturing and mining are compiled from various sources. They have to be modified in order to arrive at consistent time series. Our source for the period 1726–1806 is Ingeborg Fløystad's work on working conditions, including wages, at the iron manufacturing plant Baasland and Næs Jernverk, outside Arendal.²³ Fløystad gives wages for manufacturing and crafts five-annually, starting in 1726 and ending in 1806, cash, boarding and lodging included. They are reported in riksdaler, ort and skilling. A problem connected to her data is different currency units. Formally they were all called daler. However, there were different versions of them, and they tended to depreciate. Here, we prefer the unit closest to the par silver value and splice the series in overlapping years according to official exchange rates.²⁴

A second source is the work by Matti Goksøy on working conditions at the Alvøen industrial plant outside Bergen. The company was founded in 1797 and was a pioneer in paper production based on hydraulic power.²⁵ Here we use wage data covering the period from 1820 till 1865 combined with records from the Wedervang Archive. The employees had individual contracts, where wage conditions for them and their families were set. The contracts spanned over a number of years, so that wages stayed fairly constant within intervals. Wage levels were thus consequences of when the contracts were signed, the size of the families and the number of working hands in the households. Boarding and lodging have to be added to the cash wages. Surveys from the mid 1800s provide us with information on the size of these non-cash payments. We arrive at about 60 per cent in 1850 and 70 per cent in the early 1820s. By using the CPI for Norway as indicator of the price movements in order to interpolate non-cash wages, we arrive at the total annual wages between 1820–1865.²⁶

From the 1820s the Wedervang Archive gradually takes over as the key source of Norwegian manufacturing wages. In the 1830s and 1840s the data found in the archive are dominated by huge industrial conglomerates within mining, wood and paper industry.²⁷ From the late 1840s textiles and mechanical industry take over the dominant position.²⁸ Women are included in the material for most years. For some series we have to add boarding and lodging. From the 1870s the archive reports annual data on the basis of some thousand observations of hourly, daily, weekly monthly and annual wages.²⁹ The most common unit is daily wages. The number of observations is increasing until 1920, thereafter falling.

Statistics Norway becomes our main source for manufacturing wages prior to 1920, as the bureau recorded data from almost 50 towns and industrial communities.³⁰ Admittedly, small-scale and new industries along with unorganized workers are under-represented in the files. Nevertheless, covering

²³Fløystad 1979, 595–596.

²⁴Eitrheim 2005, 8–10 and Grytten 2005, 65–66.

²⁵Goksøy 1982.

²⁶Grytten and Minde 1998, 52–54 and Grytten 2004, 90–93.

²⁷Wedervang Archive, files W046, W047, W048, W055 W074, W082 and W417.

²⁸Wedervang Archive, files W045, W049, W054, W056, W071, W072, W075, W080, W081, W121 and W284.

²⁹See e.g. Wedervang Archive, file W284.

³⁰NOS 1918–1941.

the bulk of the manufacturing labor force, they represent both valid and reliable aggregated series for the last decades prior to World War II.³¹

In addition to the records by Statistics Norway, Erling Petersen offers wages for mechanical engineering industry 1910–1940.³² Christian Venneslan of the Norwegian School of Economics and Business Administration is about to publish a new and rich dataset on manufacturing wages 1896–1939 as part of his PhD-dissertation. These cover the manufacturing industry better than any established series hitherto.³³

Finally we use data from Statistics Norway for the period from 1940 to present times. Again, the data covering the war years are taken from the historical survey of 1948, whereas annual wages 1946–2006 are compiled from records sent us by the national accounts' department at Statistics Norway.³⁴ Originally these cover 14 sub-industries of manufacturing. However, we are only able to follow two of these consistently well back into the nineteenth century, i.e. textiles and engineering.

Crafts

Ingeborg Fløystad gives five-annual wage series for craftsmen in iron production 1726–1806.³⁵ She includes boarding and lodging in her series. These series are reported as wages per year. From 1820 the Wedervang Archive serves as our main source. We first use wage data for senior blue-collar workers at the Kongsberg Sølvverk up to 1850. These have been extracted from financial records. Boarding and lodging have been added here according to the same principles as for manufacturing workers. From 1833 we also compile wages from the Wedervang files recorded from the Cappelen-Ulefoss industrial plant.³⁶

From 1875 the data have a significantly better coverage, reporting daily wages for painters, masons, carpenters, bakers, tailors, shoe makers in urban areas of Norway. From 1915 they include thousands of observations of eleven occupations. Data are given for both urban and rural labor nation-wide, despite a clear Oslo bias.³⁷ A problem with the data from Oslo is that in the second half of the 1890s they report piecework only, and they also give priority to tariff *ex ante* wages as opposed to *ex post* wages. However, information from the Wedervang Archive gives us the opportunity to adjust for these pitfalls. Female workers were basically excluded from the Wedervang records for crafts. Nevertheless, few women did work as craftsmen before the post World War II-period.

³¹NOS 1949, 364–365 and NOS 1918–1941.

³²Petersen 1950, 670–671.

³³Venneslan 2007.

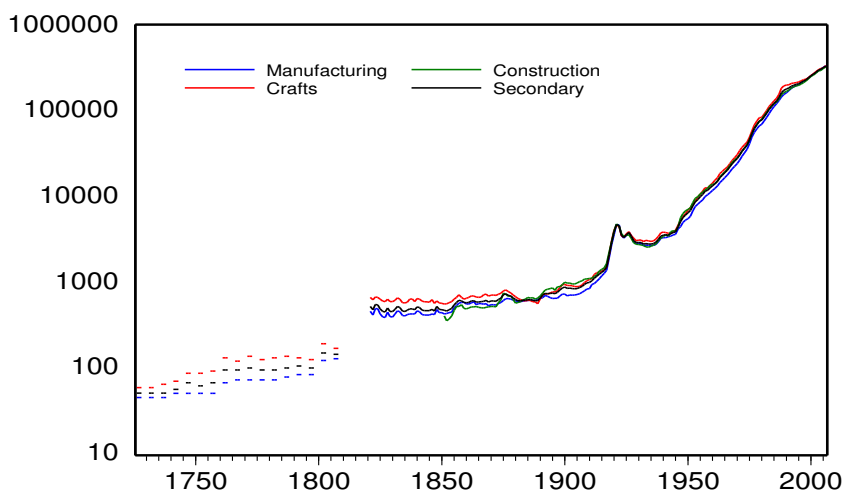
³⁴NOS 1949, 364–365 and data provided by Tor Skoglund, Statistics Norway 2007.

³⁵Fløystad 1979, 595–596.

³⁶Wedervang Archive, files W046 and W055.

³⁷Wedervang Archive, file W284.

FIGURE 6.3 Annual wages in secondary industries (per man-year in NOK), 1726–2006. Semi-logarithmic scale.



Sources, Wedervang Archive, files W045, W046, W047, W048, W049, W054, W055, W056, W071, W072, W074, W074, W080, W081, W082, W118, W119A, W120A, W121, W245, W249, W284, W417, NOS 1949, 364–365, NOS 1915–1941, Petersen 1950, 670–671, Fløystad 1979, 595–596, Goksøyr 1982, Grytten 1992, 159–167, Alme 1993, 64–65, Hodne, Grytten and Alme 1995, 240–243 and data provided by Tor Skoglund, Statistics Norway.

After 1915 Statistics Norway takes over as our most important source. They also report an aggregated series of daily wages for skilled artisans in 1914 and 1918–1940.³⁸ From 1940 onwards, Statistics Norway constitutes our only source. Daily wages for crafts are used up to 1946.³⁹ Thereafter we use persistent series of changes in annual salaries up till 2006.⁴⁰

6.7.3 Transport and communication industries

This group of industries stretches back to 1751 for maritime transports. It increases its coverage with domestic transport from the mid nineteenth century and then includes most types of private and public transport and communication from 1946 onwards.

Merchant fleet

We use data from the Wedervang Archive on sailors' wages dating back to 1751. These continue till 1921. Then, we use data from Frode Akstun till 1940 and Statistics Norway till present. The series from the Wedervang Archive are based on all capacities of crew listed at all ports where records were taken, i.e. up to 26 capacities in up to 26 ports. For the years before 1844 we have data from sailing

³⁸NOS 1915–1941 and NOS 1949, 364–365.

³⁹NOS 1949, 364–365.

⁴⁰Data provided by Tor Skoglund, Statistics Norway 2007.

vessels only, since steamers were not permanently introduced to the Norwegian ocean going merchant fleet at that time.⁴¹ From 1844 till 1921 we have data from sailing and steam vessels. Diesel motor ships are added when they first came into use in the early 1900s.⁴² From 1920/1921 we basically have data for steam and motorised ships, and for the post World War II-period chiefly motorised vessels. In the records seamen's wages are basically measured without boarding and lodging until the last decades.⁴³

The data culled from the Wedervang Archive was collected from basically three types of sources, i.e., recruitment lists, crew lists and dischargement lists, of which the first category is the one mostly used by us.⁴⁴ Note that this information is given only on crew joining in Norwegian ports on Norwegian ocean going vessels. Domestic ocean transport is excluded from the data. The empirical basis of the series is quite strong from the early 1800s, and particularly from 1816 onwards.

For the interwar period we use data from Akstun and Statistics Norway. These were originally taken from crew lists kept and reported by the ship owner's association.⁴⁵ The number of capacities of crew in these data is down to nine, and they basically account for steam and motor engine vessels. For the World War II-period we draw information from Lars Chr. Jenssen's work on working conditions for sailors on vessels belonging to the Norwegian state controlled ship owner company, Nortraship.⁴⁶ For the post-war period we use records from Statistics Norway only.

Domestic transport

Our data start in 1850 and are compiled from The Wedervang Archive. An important group of labor for the first decades is public road construction workers providing their own horses. The number of daily observations taken from all over the country varied between 225 in 1851 and 29,685 in 1896.⁴⁷ The data also include hire for horses. In the 1850s workers with horse were paid about twice as much as those without. In the 1890s the compensation for bringing a horse fluctuated around 29–36 per cent, and finally fell to 22 per cent in 1914.⁴⁸ For the period 1854–1910 the Wedervang Archive also provides records of daily wages from railways. These were taken from the railway workers union.⁴⁹

From 1915 we use data from Statistics Norway for this sector. These include transport in forestry by workers providing their own horse.⁵⁰ From 1920 onwards, Statistics Norway also give general wage data for drivers. This set of data includes both horse and motor drivers. Hence, they reflect an important part of passenger and goods transport nation wide.

⁴¹ Wedervang Archive, file W043.

⁴² Wedervang Archive, file W044.

⁴³ Akstun 1960, 45–52 and NOS 1921–1941.

⁴⁴ Wedervang Archive, files W030, W032, W034, W035, W036, W038, W039, W063, W172, W173, W174, W176, W182, W184, W185, W186, W187, W188, W189, W193, W320, W327, W329, W330 and W407.

⁴⁵ Akstun 1960, 45–52 and NOS 1921–1941.

⁴⁶ Jenssen, 1992, 17–53.

⁴⁷ Wedervang Archive, files W118, W119A, W120A and W249.

⁴⁸ Alme 1993, 62–63.

⁴⁹ Wedervang Archive, file W058.

⁵⁰ NOS 1949, 367.

From 1940 till 2006 we use data from Statistics Norway only. For the war years 1940–1945 only rough estimates are available, but from 1946 more reliable wage series have been constructed on the basis of data reported to Statistics Norway in order to construct representative wage series for the national accounts.⁵¹ These basically report changes in annual wages. However, the levels are given for several years. Again we use the 2005 level and splice the series with this observation. Hence, we obtain continuous series till 2006.

Communications

The historical frontiers between the transport and communication industry and the construction industry are not always clear. E.g. should nineteenth century railway and telegraph maintenance be considered construction or transports and communications? The sources do not always leave us with clear indications. The term railway worker may include conductors, cleaners, maintenance workers, construction workers and railway station staff. Since we do not have sufficient information to classify this group according to their actual profession, it seems natural to classify them as part of the transport and communication industry, as we do here. These data start in 1850 and increase their coverage significantly in the 1870s.⁵²

From 1918 Statistics Norway also report hourly wages for telegraph workers, and from 1921 daily wages paid by port authorities. Data are given for both fixed wages and piecework.⁵³ Statistics Norway serves as our only source from 1940 onwards. For the first five years of this period we trace data from different sources published by the bureau.⁵⁴ Finally, we use the wage data set from the national accounts department from 1946 onwards.⁵⁵

6.7.4 Private services

When it comes to private services the sources are fairly scarce up to the twentieth century. However, there is basically one exception, private domestic services, and within this group chiefly housekeeping. A problem connected to this sub-industry is that domestic services were basically low paid jobs, whereas other private services, e.g. finance and consulting, were well-paid occupations. Private series as an aggregate is found by splicing Statistics Norway's data on annual wages in the private sector 1946–2006 with other series of private services 1915–1940 and private domestic services 1830–1915. Transport and communication is also used as an inter- and extrapolator for the development of wages in private services.

⁵¹Data have been kindly provided by Tor Skoglund, Statistics Norway 2007.

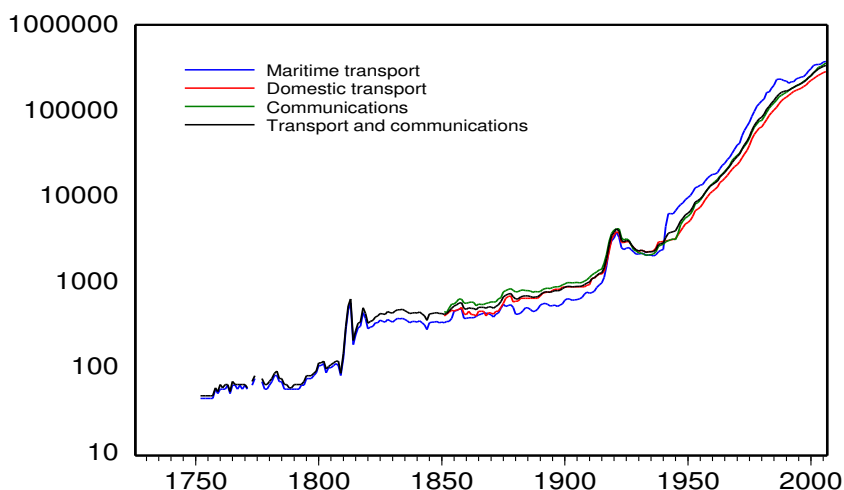
⁵²Wedervang Archive, files W058, W118, W119A, W120A, W245 and W249

⁵³NOS 1918–1941.

⁵⁴NOS 1949, 366–367 and NOS 1940–1948.

⁵⁵Data have been kindly provided by Tor Skoglund, Statistics Norway 2007.

FIGURE 6.4 Annual wages in transport and communication industries (per man-year in NOK), 1726–2006. Semi-logarithmic scale.



Sources, Wedervang Archive, files W009, W013, W014, W021, W028, W030, W032, W034, W035, W036, W038, W039, W043, W044, W058, W063, W118, W119A, W120A, W172, W174, W176, W182, W184, W185, W186, W187, W188, W189, W204, W245, W248, W249, W349, NOS 1949, 364–367, NOS 1918–1941, NOS 1978, 530–532 and 576, Akstun 1960, 45–62, Minde and Grytten 1997, 61–82, Grytten 2004a, 92–93, Grytten and Minde 1998, 42–58 and data provided by Tor Skoglund, Statistics Norway.

Domestic services

The Wedervang Archive serves as the most important source for domestic services. Our aggregated series start in 1830. We use data on wages for female domestic servants on major Norwegian farms.⁵⁶ On the basis of Gjølberg's work on farm wages we are able to construct estimates of annual wages for male domestic servants from 1850 onwards.⁵⁷ We also use Lønningdal's aggregated annual series of wages for domestic female servants on major farms in eastern Norway 1850–1910.⁵⁸ From about 1850 till their conclusion in 1920 the records in the Wedervang Archive improve significantly. In addition, five-annual data on wages for domestic male and female servants are drawn from records held by Statistics Norway.⁵⁹ The data from the Wedervang Archive and Statistics Norway are closely correlated both in levels and in movements.

In order to arrive at annual data of wages for domestic services in the urban eras before 1915, we have interpolated the five-annual urban data with annual rural data. For rural male labor we have interpolated between the five-annual observations 1850–1875 with the help of data left by Gjølberg

⁵⁶Wedervang Archive, files W028 and W204.

⁵⁷Gjølberg 1974, 85–107.

⁵⁸Lønningdal 1984, 141–163.

⁵⁹NOS 1949, 366–367.

along with corresponding female series by Lønningdal.⁶⁰

According to the records, cash-wages stayed fairly stable during intervals. Admittedly, boarding and lodging were stable in volume. However, their values fluctuated with price movements. Lønningdal proposed fixed sums to be added as non-cash wages. These are given for intervals.⁶¹ By examining the composition of consumption expenditures from the nineteenth century, we find that Lønningdal must have over-estimated their value.⁶² Using estimates of households' budget shares on food in selected base years, we calculate an appropriate sum to be added to the cash wages in these years. The annual values of non-cash payments is then interpolated between the base years according to prices on food and housing in the consumer price index for the period. By adding this estimated value of non-cash compensation to the cash wages, we arrive at annual series of nominal daily payments for domestic servants 1830–1940.

From 1915 Statistics Norway provides wage data for domestic servants, and from 1918 also for cleaning and laundry personnel.⁶³ There is some confusion about boarding and lodging in these latter series. By crosschecking the data, we notice that, contrary to the claim from Statistics Norway, the series for rural domestic services do not include boarding and lodging. Also, according to consumption surveys, the values for compensational payments are far too high in other tables by the office.⁶⁴ By using cash-wages and adding estimated non-cash wages on the basis of consumption surveys and price developments, we obtain representative series of their full wages.⁶⁵

From 1940 onwards Statistics Norway is our major source for wages in domestic services. Again the historical survey of 1948 serves as our most important source between 1940–1945, whereas data from the national accounts' section of Statistics Norway is our main provider of wage data for domestic services from 1946 onwards.⁶⁶ By linking these annual series to the series covering previous years, we arrive at continuous nominal wage series spanning over 176 years from 1830 till 2006.

6.7.5 Public services

It is difficult to map wages in public services prior to 1945. The Wedervang Archive holds some sporadic data from the early nineteenth century, but these are not consistent with the series presented here.⁶⁷ Elisabeth Bjørsvik has studied salaries for public servants in her PhD-dissertation on the public sector's contribution to GDP 1830–1865. However, she does not give any consistent series of individual wages.⁶⁸

⁶⁰Gjølborg 1974, 61–68 and 94–107.

⁶¹Lønningdal 1984, 104–109.

⁶²Minde and Grytten 1997, 61–82.

⁶³NOS 1949, 364–365 and NOS 1918–1941.

⁶⁴Grytten 1992, 162.

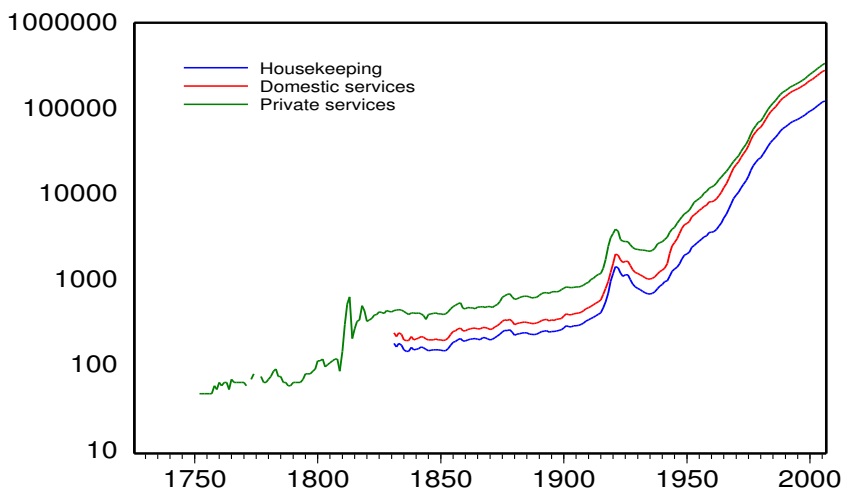
⁶⁵NOS 1978, 530–532 and 576 and Grytten 2004a, 92–93.

⁶⁶NOS 1949, 365–368 and data kindly provided by Tor Skoglund, Statistics Norway 2007.

⁶⁷Wedervang Archive, file W028.

⁶⁸Bjørsvik 2004, 290–310.

FIGURE 6.5 Annual wages in private services, in NOK, per man-year, 1726–2006. Semi-logarithmic scale.



Sources, Wedervang Archive, files W009, W013, W014, W021, W028, W030, W032, W034, W035, W036, W038, W039, W043, W044, W058, W063, W118, W119A, W120A, W172, W174, W176, W182, W184, W185, W186, W187, W188, W189, W204, W245, W248, W249, W349, NOS 1949, 364–367, NOS 1918–1941, NOS 1978, 530–532 and 576, Akstun 1960, 45–62, Gjøølberg 1974, 61–68 and 85–107, Lønningdal 1984, 23–36, 104–109 and 141–163, Minde and Grytten 1997, 61–82, Grytten 2004a, 92–93, Grytten and Minde 1998, 42–58 and data provided by Tor Skoglund, Statistics Norway.

The best available source is Kjell Bjørn Minde's, study on the profitability of higher education 1885–1960, which offers annual tariff salaries for public servants.⁶⁹ By diving into the works of Minde and his sources, we have been able to come up with representative estimates of *ex post* wages for public services. Admittedly, these do not have the same sound empirical basis as other series in this chapter. Nevertheless, they serve as a valid indicator for the development of wages in the public sector till 1940. Thereafter we use data published by Statistics Norway on annual wages in public services.⁷⁰

Public administration

Minde primarily pays attention to public administration and education. He offers wage data on public servants in the central and local public administration. Most of his data report wages of senior bureaucrats. Thus, they are higher than the average. However, he also gives wages for technical personnel and assistants and more junior secretaries. By adding extra payments to the tariff wages and constructing a normal distribution of employees according to the tariffs, we arrive at reliable estimates of public administration wages, inclusive central ministries up to 1946.⁷¹

⁶⁹Minde 1993, 25–123* (appendix).

⁷⁰Data kindly provided by Tor Skoglund, Statistics Norway 2007.

⁷¹Minde 1993, 25–123* (appendix).

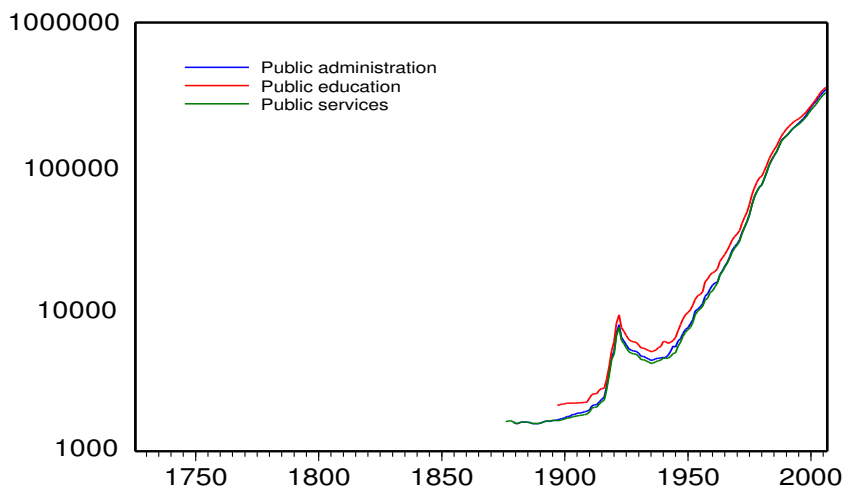
For the period after 1946 we use data provided by Statistics Norway.⁷² We have gained access to unpublished files and have been able to construct one combined series of annual wages in public administration. This is spliced to the pre-World War II series, and thus we arrive at annual wages for public administration from the late nineteenth century till present.

Public education

Minde also reports wages of teachers, lecturers, assistant professors and professors from the late nineteenth century till 1960. Again, these are tariff wages. However, by diving deeper into his material, including estimated *ex post* wage determinants, we find actual salaries.⁷³ Admittedly, Minde's series are biased in that they basically cover senior staff, but by linking them to Statistics Norway's data on the level of over-all salaries in education in 1946, we arrive at representative numbers for the years prior to World War II.

The data from Statistics Norway represent the total educational sector of Norway, and provide annual wages from 1946 till 2006.⁷⁴ By splicing the post- and pre-World War II-series, we conclude with a joint series wages for public education in Norway from the 1890s till 2006.

FIGURE 6.6 Annual wages in public services, in NOK, per man-year, 1726–2006. Semi-logarithmic scale.



Sources, Minde 1993, 25–123* (appendix) and data provided by Tor Skoglund, Statistics Norway.

⁷²Data kindly provided by Tor Skoglund, Statistics Norway 2007.

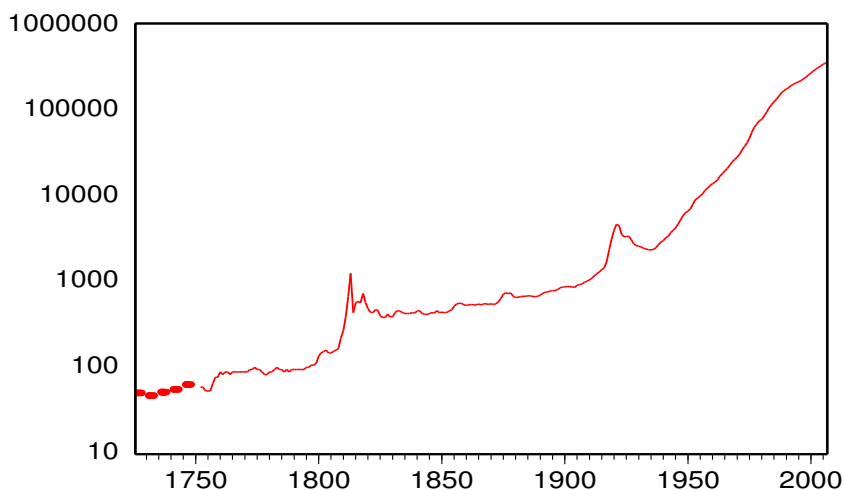
⁷³Minde 1993, 25–123* (appendix).

⁷⁴Data provided by Tor Skoglund, Statistics Norway 2007.

6.7.6 Total

By summing up the 18 series, we arrive at average wages for the total Norwegian labor force for the 280 years spanning from 1726 till 2006. In order to do so, we have to give all series by industry and sub-industry weights. And, in order to make that happen, we have to come up with the same unit of account, which is kroner per man-year.

FIGURE 6.7 Total average annual wages in Norway, in NOK, per man-year, 1726–2006. Semi-logarithmic scale.



Sources, Agriculture and forestry: Wedervang Archive, files W009, W013, W014, W021, W027, W028, W204, W205, W207, NOS 1949, 366–367, Gjølberg 1974, 31–103, Lønningdal 1984, 141–163 and data provided by Tor Skoglund, Statistics Norway. Secondary: Wedervang Archive, files W045, W046, W047, W048, W049, W054, W055, W056, W071, W072, W074, W074, W080, W081, W082, W118, W119A, W120A, W121, W245, W249, W284, W417, NOS 1949, 364–365, NOS 1915–1941, Petersen 1950, 670–671, Fløystad 1979, 595–596, Goksøyr 1982, Grytten 1992, 159–167, Alme 1993, 64–65, Hodne, Grytten and Alme 1995, 240–243 and data provided by Tor Skoglund, Statistics Norway. Public services: Minde 1993, 25–123* (appendix) and data provided by Tor Skoglund, Statistics Norway. Private services: Wedervang Archive, files W009, W013, W014, W021, W028, W030, W032, W034, W035, W036, W038, W039, W043, W044, W058, W063, W118, W119A, W120A, W172, W174, W176, W182, W184, W185, W186, W187, W188, W189, W204, W245, W248, W249, W349, NOS 1949, 364–367, NOS 1918–1941, NOS 1978, 530–532 and 576, Akstun 1960, 45–62, Gjølberg 1974, 61–68 and 85–107, Lønningdal 1984, 23–36, 104–109 and 141–163, Minde and Grytten 1997, 61–82, Grytten 2004a, 92–93, Grytten and Minde 1998, 42–58 and data provided by Tor Skoglund, Statistics Norway.

Behind Figure 6.7.6 we know there are significant wage differences between industries (see appendix). In particular, public services were comparatively well off until World War II. Thereafter, we find a rapid convergence and simultaneous development up till present days. For the years prior to 1911, we find a tendency towards somewhat lower nominal wages in the secondary sector than believed hitherto. This is, however, due to the fact that our new series have better coverage than previous figures.

6.8 Conclusions

As part of Norges Bank's project on Historical Monetary Statistics this chapter offers 18 series of nominal wages classified by industry back to 1726. We have also presented an aggregated series for total average annual wages in Norway between 1726–2006. The data are collected and compiled from various sources. The most important ones are previous work done by other scholars on the basis of private and public archives, the Professor Dr. Ingvar B. Wedervang's Historical Archive on Wages and Prices, located at the Norwegian School of Economics and Business Administration, and records held by Statistics Norway.

In order to make the series comparable, they are calculated into man-years and annual wages. We then arrive at annual nominal wages 1726–2006. The results reveal that nominal wages in the long run stayed fairly stable both in the eighteenth and nineteenth century, before they started to grow on a more permanent basis in the twentieth century, in particular during the post-World War II period. Our results also reveal that a convergence of wages between industries took place. In particular, public services lost ground as a high wage industry during the twentieth century.

In Chapter 7 we provide estimates of real wages between 1726–2006 by deflating the time series of total annual wages with the consumer price index presented Chapter 3 of the first volume of Historical Monetary Statistics of Norway.⁷⁵

⁷⁵Grytten 2004a, 47–98.

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6.A Nominal annual wages 1726-2006 in NOK

TABLE 6.A.1
Nominal annual wages 1726-2006 in NOK.

	1.0 Primary industries	1.1 Agriculture and forestry	2.0 Secondary industries	2.1 Construction	2.2 Manufacturing	2.2.1 Textile	2.2.2 Engineering	2.3 Crafts
1726			54		51			61
1727								
1728								
1729								
1730								
1731			51		45			60
1732								
1733								
1734								
1735								
1736			56		48			69
1737								
1738								
1739								
1740								
1741			61		52			74
1742								
1743								
1744								
1745								
1746			69		56			89
1747								
1748								
1749								
1750								
1751			67		51			89
1752								
1753								
1754								
1755								
1756			71		53			96
1757								
1758								
1759								
1760								
1761			98		72			137
1762								
1763								
1764								
1765								
1766			96		77			125
1767								
1768								
1769								
1770								

TABLE 6.A.1
Nominal annual wages 1726-2006 in NOK.

	1.0 Primary industries	1.1 Agriculture and forestry	2.0 Secondary industries	2.1 Construction	2.2 Manufacturing	2.2.1 Textile	2.2.2 Engineering	2.3 Crafts
1771			102		78			139
1772								
1773								
1774								
1775								
1776			96		75			127
1777								
1778								
1779								
1780								
1781			97		74			132
1782								
1783								
1784								
1785								
1786			104		81			140
1787								
1788								
1789								
1790								
1791			108		90			135
1792								
1793								
1794								
1795								
1796			105		86			132
1797								
1798								
1799								
1800								
1801			153		126			195
1802								
1803								
1804								
1805								
1806			150		133			177
1807								
1808								
1809								
1810								
1811								
1812								
1813								
1814								
1815								
1816								
1817								
1818								

TABLE 6.A.1
Nominal annual wages 1726-2006 in NOK.

	1.0 Primary industries	1.1 Agriculture and forestry	2.0 Secondary industries	2.1 Construction	2.2 Manufacturing	2.2.1 Textile	2.2.2 Engineering	2.3 Crafts
1819								
1820		378	530		467			676
1821		343	487		424			633
1822		378	556		501			686
1823		362	555		501			681
1824		314	497		433			646
1825		299	463		400			610
1826		299	459		396			605
1827		339	511		454			643
1828		297	466		405			608
1829		303	462		400			605
1830		314	491		431			630
1831		332	532		475			666
1832		323	516		461			646
1833		309	469		417			589
1834		299	464		414			583
1835		302	479		429			596
1836		305	495		431			645
1837		307	500		436			648
1838		305	485		434			605
1839		334	527		471			656
1840		352	516		461			643
1841		311	484		430			609
1842		312	477		424			601
1843		325	476		422			601
1844		319	473		421			596
1845		321	492		431			636
1846		323	471		425			577
1847		351	529		490			619
1848		322	492		452			586
1849		341	487		448			577
1850		336	480	410	435	224	495	569
1851		344	471	360	440	224	520	574
1852		356	486	381	448	231	548	591
1853		352	502	410	457	231	576	608
1854		404	551	474	510	242	607	642
1855		428	593	531	548	252	753	679
1856		410	624	533	579	303	729	727
1857		417	616	557	592	330	710	679
1858		431	591	505	595	303	685	643
1859		419	588	500	570	277	694	662
1860		419	595	508	570	287	679	675
1861		422	614	523	584	281	729	704
1862		404	620	525	606	274	757	698
1863		435	596	528	554	267	691	682
1864		435	600	521	571	283	713	679
1865		416	601	516	571	280	713	685
1866		432	611	509	562	297	701	727

TABLE 6.A.1
Nominal annual wages 1726-2006 in NOK.

	1.0 Primary industries	1.1 Agriculture and forestry	2.0 Secondary industries	2.1 Construction	2.2 Manufacturing	2.2.1 Textile	2.2.2 Engineering	2.3 Crafts
1867		431	624	519	574	283	722	741
1868		422	597	527	541	248	657	698
1869		445	612	532	557	245	691	718
1870		427	613	529	558	259	678	720
1871		430	607	527	553	264	672	713
1872		448	638	587	571	308	651	737
1873		530	664	634	588	357	709	758
1874		601	723	755	621	378	754	802
1875		592	741	739	652	350	788	828
1876		561	721	700	658	348	780	796
1877		591	705	704	644	347	770	765
1878		510	669	641	631	355	762	724
1879		506	635	581	618	356	754	688
1880		519	621	592	604	358	743	657
1881		526	620	607	608	356	738	640
1882		536	623	633	615	355	735	624
1883		539	624	644	620	358	730	614
1884		532	638	677	625	356	728	625
1885		534	637	666	630	380	722	624
1886		525	625	668	622	376	728	599
1887		522	620	645	625	370	751	600
1888		536	620	665	639	368	780	573
1889		540	668	701	659	374	788	655
1890		559	721	762	676	382	801	739
1891		562	751	823	711	390	854	744
1892		562	749	845	697	384	854	737
1893		605	751	852	673	378	788	761
1894		595	758	868	659	379	801	783
1895		595	748	815	662	386	801	787
1896		621	775	896	660	393	801	807
1897		673	825	906	709	389	880	885
1898		662	874	950	741	434	893	954
1899	663	629	893	1019	738	456	893	959
1900	712	675	864	995	706	440	854	933
1901	687	651	869	996	722	431	854	928
1902	670	645	860	969	720	434	854	926
1903	644	619	851	968	722	443	867	900
1904	742	716	861	993	729	445	867	903
1905	754	713	880	1039	745	465	867	908
1906	796	725	909	1054	773	481	932	946
1907	818	771	958	1105	809	518	998	1006
1908	835	781	995	1115	848	597	1024	1061
1909	872	842	1014	1122	858	607	1024	1094
1910	899	852	1064	1133	957	626	1106	1124
1911	983	932	1132	1182	979	666	1124	1250
1912	1062	1007	1193	1237	1042	711	1187	1311
1913	1119	1077	1267	1373	1120	764	1258	1339
1914	1222	1173	1329	1438	1212	818	1303	1372

TABLE 6.A.1
Nominal annual wages 1726-2006 in NOK.

	1.0	1.1	2.0	2.1	2.2	2.2.1	2.2.2	2.3
	Primary industries	Agriculture and forestry	Secondary industries	Construction	Manufacturing	Textile	Engineering	Crafts
1915	1243	1200	1391	1500	1287	840	1216	1420
1916	1556	1471	1518	1670	1401	902	1242	1532
1917	2270	2069	2149	2301	2005	1346	2033	2190
1918	3017	2844	2966	3003	2800	1799	2390	3102
1919	3768	3522	3912	4009	3651	2498	3835	4102
1920	4108	3965	4768	4864	4780	3324	5222	4693
1921	3710	3657	4635	4595	4756	3248	4833	4544
1922	3018	2916	3595	3750	3560	2420	3517	3526
1923	2661	2541	3390	3451	3330	2281	3328	3409
1924	2647	2588	3632	3568	3579	2452	3533	3727
1925	2587	2576	3866	3646	3917	2729	4037	3961
1926	2268	2254	3481	3296	3526	2422	3420	3557
1927	1945	1923	3100	2940	2991	2030	2742	3312
1928	1773	1742	2951	2823	2880	1982	2737	3105
1929	1694	1665	2961	2796	2879	1985	2716	3148
1930	1632	1609	2961	2771	2884	2000	2737	3160
1931	1530	1507	2843	2721	2729	1888	2535	3033
1932	1424	1397	2871	2630	2754	1908	2569	3143
1933	1364	1329	2837	2612	2738	1898	2558	3081
1934	1359	1319	2839	2678	2733	1897	2569	3047
1935	1405	1349	2867	2749	2733	1900	2579	3074
1936	1508	1414	2971	2834	2799	1940	2616	3230
1937	1672	1589	3221	3116	3022	2105	2874	3484
1938	1830	1744	3509	3317	3310	2305	3144	3829
1939	1955	1843	3590	3465	3358	2344	3220	3898
1940	2447	2036	3636	3649	3358	2410	3349	3871
1941	2661	2558	3598	3494	3455	2450	3430	3787
1942	3200	3086	3735	3947	3512	2585	3765	3798
1943	3464	3375	3863	4041	3616	2834	3868	3969
1944	3961	3856	3926	3999	3681	2964	3971	4096
1945	4353	4241	4519	4544	4271	3310	4482	4721
1946	4807	4814	5188	5746	4534	3590	5157	5412
1947	5523	5382	5761	6430	5063	4078	5688	5954
1948	6010	5883	6174	6918	5387	4216	6086	6397
1949	6261	6216	6573	7188	5621	4384	6262	7022
1950	6593	6558	6995	7483	5998	4691	6626	7562
1951	7813	7478	7918	8605	6916	5522	7785	8366
1952	8656	8424	8793	9707	7759	6190	8571	9127
1953	8916	8905	9424	10182	8279	6636	9171	9951
1954	9513	9465	10139	10926	8784	6994	9786	10833
1955	10312	10229	10789	11428	9302	7574	10119	11689
1956	11107	10802	11724	12114	10130	8301	11171	12875
1957	12062	11671	12036	12695	10688	8675	11618	12805
1958	12544	12357	12850	13698	11265	8970	12292	13707
1959	13058	12557	13571	14109	12019	9679	13103	14592
1960	13920	13291	14320	14448	12644	10153	13863	15705
1961	15076	13820	15383	15430	13555	11056	14487	16953
1962	15950	14875	17016	17128	14802	12018	15718	18883

TABLE 6.A.1
Nominal annual wages 1726-2006 in NOK.

	1.0 Primary industries	1.1 Agriculture and forestry	2.0 Secondary industries	2.1 Construction	2.2 Manufacturing	2.2.1 Textile	2.2.2 Engineering	2.3 Crafts
1963	15615	15732	18090	18498	15720	12812	16645	19909
1964	17302	16686	19338	19589	16867	13785	17860	21342
1965	18893	18227	20688	21313	18115	15122	19468	22550
1966	20650	20221	22600	23402	19764	16695	21570	24580
1967	21580	21540	24609	25461	21463	18265	23469	26829
1968	22206	22281	26402	27192	22944	19470	24947	28932
1969	22716	23658	28371	28797	24688	20599	27043	31328
1970	23897	25134	31168	31100	27058	22700	29287	34806
1971	26765	27949	34380	34366	30143	25129	32567	38097
1972	29549	30716	37316	37493	32916	27642	35596	41055
1973	32563	34156	40590	40905	36405	30434	39298	44055
1974	37382	39416	46541	46959	42157	35456	45232	50116
1975	43475	45407	55116	55177	50335	42228	53691	59260
1976	49214	52264	63686	63619	57080	47929	60724	69509
1977	53545	57229	70827	70872	63017	52482	66796	77632
1978	58096	62322	77374	77463	68373	56838	72608	85193
1979	60594	64192	79458	81491	70903	59566	75149	85672
1980	66836	70419	86785	89069	77568	65761	81687	93421
1981	74254	77672	96192	98600	86023	72468	90591	103586
1982	81977	85827	106348	108460	95141	79933	100012	114834
1983	90748	95354	115219	116594	105036	88006	109714	123270
1984	94650	99550	124178	123707	114174	95310	118271	133227
1985	102601	106120	133263	129768	123993	101982	128561	143558
1986	112553	115671	146403	141837	135276	109937	140003	158993
1987	122796	125734	166555	157013	148804	121150	154143	188050
1988	130532	131644	176801	167219	158030	131569	163546	199215
1989	136536	137436	183400	172570	166563	140121	171232	204901
1990	144046	145682	188860	178783	176391	150911	180993	206068
1991	154273	151801	197524	188079	187151	158154	190947	212504
1992	161524	157114	203267	195038	194637	164797	199731	215962
1993	163624	159628	207683	199134	201254	169905	207320	218652
1994	171641	163459	212379	203117	207493	175172	214369	222444
1995	181081	168036	219077	209007	215378	179201	222087	228607
1996	187419	174589	227103	217994	224424	186907	231414	235139
1997	197727	180350	235550	229330	234298	195692	242291	240532
1998	215325	191352	248096	243090	248591	208803	257071	250793
1999	223723	200345	261655	257189	262760	220705	270181	263480
2000	230435	207958	273411	267734	273008	229092	282069	277312
2001	244491	216693	288228	282191	286931	242837	297301	293136
2002	254515	228828	303503	298841	302426	252793	312760	307360
2003	262313	237752	312914	303323	312103	264169	324020	319619
2004	273593	247975	324511	319096	329269	282133	339249	323732
2005	283600	256900	340829	332500	343100	293700	351800	344047
2006	294145	266408	353615	344801	357508	303686	368687	355717

TABLE 6.A.2
Nominal annual wages 1726-2006 in NOK.

	3.0 Transport and communications	3.1 Merchant fleet	3.1. Transport	3.2. Communications	4.0 Private services	4.1 Domestic services	4.1.1 Housekeeping
1726							
1727							
1728							
1729							
1730							
1731							
1732							
1733							
1734							
1735							
1736							
1737							
1738							
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1740							
1741							
1742							
1743							
1744							
1745							
1746							
1747							
1748							
1749							
1750							
1751	52	49			52		
1752	52	48			52		
1753	50	46			50		
1754	49	45			49		
1755	48	45			48		
1756	54	50			54		
1757	63	59			63		
1758	57	53			57		
1759	68	64			68		
1760	64	60			64		
1761	66	61			66		
1762	70	65			70		
1763	59	55			59		
1764	72	67			72		
1765	70	66			70		
1766	68	63			68		
1767	70	65			70		
1768	67	62			67		
1769	70	65			70		
1770	65	61			65		
1771							
1772	73	68			73		
1773	83	77			83		

TABLE 6.A.2
Nominal annual wages 1726-2006 in NOK.

	3.0 Transport and communications	3.1 Merchant fleet	3.1. Transport	3.2. Communications	4.0 Private services	4.1 Domestic services	4.1.1 Housekeeping
1774							
1775							
1776	79	73			79		
1777	68	64			68		
1778	65	61			65		
1779	74	69			74		
1780	77	72			77		
1781	90	84			90		
1782	94	87			94		
1783	82	76			82		
1784	78	72			78		
1785	66	62			66		
1786	66	61			66		
1787	62	58			62		
1788	63	59			63		
1789	68	63			68		
1790	68	63			68		
1791	67	63			67		
1792	69	64			69		
1793	72	67			72		
1794	85	79			85		
1795	82	77			82		
1796	86	80			86		
1797	92	85			92		
1798	98	91			98		
1799	119	110			119		
1800	119	111			119		
1801	124	116			124		
1802	102	95			102		
1803	110	102			110		
1804	111	104			111		
1805	119	111			119		
1806	126	118			126		
1807	122	114			122		
1808	92	85			92		
1809	152	140			152		
1810	314	287			314		
1811	537	488			537		
1812	651	588			651		
1813	214	193			214		
1814	280	250			280		
1815	342	303			342		
1816	352	311			352		
1817	515	453			515		
1818	445	389			445		
1819	342	295			342		
1820	356	306			354		
1821	370	317			368		

TABLE 6.A.2
Nominal annual wages 1726–2006 in NOK.

	3.0 Transport and communications	3.1 Merchant fleet	3.1. Transport	3.2. Communications	4.0 Private services	4.1 Domestic services	4.1.1 Housekeeping
1822	404	343			400		
1823	414	348			410		
1824	443	368			436		
1825	436	359			429		
1826	431	351			422		
1827	465	375			453		
1828	453	362			439		
1829	447	354			434		
1830	473	374			451	248	187
1831	490	387			456	227	171
1832	489	386			463	248	187
1833	491	388			462	239	179
1834	476	377			440	209	157
1835	462	365			425	200	151
1836	441	349			409	200	151
1837	450	356			426	225	169
1838	456	360			424	209	157
1839	448	354			420	213	160
1840	458	362			427	215	161
1841	438	346			416	226	170
1842	417	329			398	220	166
1843	368	291			357	212	159
1844	435	344			407	206	155
1845	443	350			413	207	156
1846	447	353			417	209	157
1847	456	360			424	210	158
1848	441	348			413	209	157
1849	441	349			412	207	156
1850	434	346	412	465	405	204	153
1851	441	360	433	451	412	205	154
1852	471	359	456	511	438	216	162
1853	510	387	480	570	476	239	179
1854	537	472	472	572	504	257	193
1855	559	481	487	606	522	263	198
1856	583	498	493	653	545	276	207
1857	590	497	519	647	553	284	213
1858	503	388	441	587	480	265	199
1859	495	389	428	579	474	264	198
1860	519	397	467	597	495	272	204
1861	506	399	428	598	487	278	209
1862	504	397	428	594	487	281	211
1863	487	409	415	548	475	284	214
1864	520	428	467	572	498	277	209
1865	521	437	467	565	498	276	207
1866	524	447	467	563	505	289	217
1867	512	448	415	581	496	289	217
1868	525	441	454	585	503	280	211
1869	527	429	449	608	502	274	206

TABLE 6.A.2
Nominal annual wages 1726-2006 in NOK.

	3.0 Transport and communications	3.1 Merchant fleet	3.1. Transport	3.2. Communications	4.0 Private services	4.1 Domestic services	4.1.1 Housekeeping
1870	511	405	433	601	491	279	210
1871	534	433	467	604	513	290	218
1872	556	447	467	653	534	302	227
1873	606	510	519	678	578	318	239
1874	687	568	578	788	647	340	255
1875	718	537	666	818	676	353	265
1876	744	550	700	845	695	349	263
1877	755	558	708	858	706	358	270
1878	694	524	604	825	652	336	253
1879	653	431	614	790	611	310	233
1880	656	437	614	791	617	320	240
1881	689	445	666	824	643	323	242
1882	701	478	666	827	655	329	246
1883	712	519	666	819	664	332	248
1884	712	517	666	821	664	331	248
1885	698	489	666	807	650	323	241
1886	682	468	666	784	637	319	238
1887	689	472	666	800	642	318	236
1888	695	499	666	790	648	324	240
1889	733	556	708	800	682	336	249
1890	772	575	760	839	716	346	256
1891	789	581	778	861	730	352	260
1892	790	565	786	871	732	356	262
1893	776	539	786	859	718	343	252
1894	803	547	822	889	740	351	258
1895	819	552	848	903	752	349	256
1896	813	534	848	904	751	357	262
1897	823	553	848	913	760	364	266
1898	864	575	900	954	794	369	269
1899	892	630	900	978	822	389	283
1900	914	655	907	1010	847	411	299
1901	914	649	907	1013	844	404	293
1902	905	631	907	1007	837	402	292
1903	911	639	907	1015	846	414	300
1904	913	642	907	1019	848	416	301
1905	913	653	907	1008	850	421	304
1906	928	684	907	1020	866	433	311
1907	962	747	907	1054	898	450	323
1908	1002	785	946	1090	937	474	339
1909	1027	764	959	1168	963	490	351
1910	1124	776	1141	1243	1043	509	363
1911	1152	802	1141	1297	1071	527	376
1912	1229	890	1218	1354	1138	548	390
1913	1294	957	1270	1423	1197	574	408
1914	1318	1005	1270	1449	1225	601	426
1915	1503	1170	1374	1709	1400	697	483
1916	1940	1590	1745	2167	1777	815	568
1917	2835	2608	2385	3078	2525	991	723

TABLE 6.A.2
Nominal annual wages 1726–2006 in NOK.

	3.0 Transport and communications	3.1 Merchant fleet	3.1. Transport	3.2. Communications	4.0 Private services	4.1 Domestic services	4.1.1 Housekeeping
1918	3588	3115	3298	3791	3200	1264	990
1919	3909	3342	3630	4143	3562	1587	1215
1920	4291	3958	3974	4287	4022	2055	1467
1921	4044	3402	3803	4287	3810	1992	1423
1922	3138	2576	2981	3356	3036	1766	1236
1923	3033	2462	2981	3172	2913	1646	1131
1924	3127	2556	3025	3300	2898	1696	1175
1925	3103	2594	3067	3158	2875	1691	1175
1926	2809	2449	2766	2774	2633	1508	1034
1927	2580	2301	2593	2450	2461	1357	921
1928	2448	2178	2419	2370	2358	1263	853
1929	2372	2183	2333	2239	2329	1220	817
1930	2417	2217	2419	2246	2300	1183	791
1931	2373	2207	2377	2176	2288	1136	758
1932	2282	2107	2289	2102	2270	1092	729
1933	2314	2119	2333	2138	2233	1053	707
1934	2318	2122	2333	2144	2225	1049	704
1935	2333	2074	2377	2187	2273	1073	719
1936	2463	2135	2548	2322	2400	1116	746
1937	2830	2322	3025	2692	2700	1206	810
1938	2894	2426	3025	2774	2813	1289	869
1939	2940	2457	3067	2832	2878	1334	905
1940	3394	4566	3111	3017	3038	1406	982
1941	3819	6480	3141	3121	3257	1600	1005
1942	3915	6450	3204	3215	3705	2100	1136
1943	3969	6432	3243	3265	4036	2560	1296
1944	4078	7004	3285	3220	4221	2811	1374
1945	4627	7680	3690	3842	4713	3109	1454
1946	5296	8272	4055	4802	5170	3595	1581
1947	5726	8669	4464	5306	5600	4113	1809
1948	6232	9406	4893	5736	6063	4540	1997
1949	6543	9961	5095	6023	6354	4708	2071
1950	6941	10546	5421	6378	6726	4944	2174
1951	7692	11604	6017	7131	7463	5611	2468
1952	8811	12937	6968	8372	8300	5903	2596
1953	9167	13342	7323	8682	8778	6287	2765
1954	9630	13869	7682	9289	9188	6651	2925
1955	10292	14193	8373	10228	9676	7004	3080
1956	11355	15429	9344	11301	10578	7424	3265
1957	12502	16947	10270	12522	11162	7662	3369
1958	13461	17836	11173	13662	12093	8382	3686
1959	14125	18575	11777	14372	12502	8415	3701
1960	14722	18708	12436	15306	12929	8584	3775
1961	15527	19465	13232	16179	13889	9099	4001
1962	17298	21710	14899	17683	15331	9917	4361
1963	18437	23654	15674	18744	16315	10830	4763
1964	19611	24991	16662	20131	17574	12281	5401
1965	21393	27627	18061	21822	19002	13693	6022

TABLE 6.A.2
Nominal annual wages 1726-2006 in NOK.

	3.0 Transport and communications	3.1 Merchant fleet	3.1. Transport	3.2. Communications	4.0 Private services	4.1 Domestic services	4.1.1 Housekeeping
1966	23177	29490	19759	23699	20686	15679	6895
1967	25602	32774	21320	26993	22800	18125	7971
1968	27812	36574	22855	28964	24924	20807	9151
1969	30074	40927	24203	30962	27049	22950	10093
1970	32047	43014	26115	32944	29008	24741	10880
1971	36738	52521	29014	36403	32520	27734	12197
1972	41139	60660	32090	39715	35884	30563	13441
1973	45643	68112	35427	43607	39625	33711	14825
1974	51718	76080	40670	49451	44662	38094	16753
1975	60698	88728	48153	57759	52296	44569	19601
1976	69004	101112	54413	66076	59212	50408	22168
1977	76950	116088	59746	72221	65601	55398	24363
1978	83052	124632	64645	78287	71313	59997	26385
1979	86718	134268	66649	79305	73784	62396	27441
1980	93822	141348	73114	87711	81138	68636	30185
1981	107662	169044	81376	98851	91811	77078	33897
1982	115442	170208	90571	110416	101646	85865	37762
1983	126092	188940	98089	119250	111068	94366	41500
1984	135599	204972	105151	127120	118837	100877	44363
1985	150428	238476	113038	137163	128767	108342	47646
1986	160058	241632	124341	149919	139606	117659	51744
1987	169126	239386	134537	155466	151135	128249	56401
1988	172827	231486	142744	163395	160369	136585	60067
1989	176244	228708	148739	168787	167349	143278	63010
1990	178499	215215	156325	178070	174857	150871	66350
1991	186966	224254	164610	186261	183867	158717	69800
1992	192881	224926	172676	193898	190770	165224	72662
1993	202097	243370	177856	200490	197785	170511	74987
1994	207661	248968	183370	206104	204415	175797	77312
1995	213893	254694	187771	214142	211388	181774	79940
1996	221821	257496	196784	225492	220614	189954	83537
1997	233898	275520	205442	236992	230981	197552	86879
1998	251799	300868	220645	251685	246432	209405	92092
1999	265321	319522	232781	262256	259432	219038	96328
2000	284272	345723	242557	283236	272369	226704	99699
2001	300300	358169	255413	306178	287404	239626	105382
2002	316700	356378	267162	329754	303222	251847	110757
2003	329000	360655	276245	338987	317088	264943	116516
2004	338500	381573	287295	352886	331724	278455	122458
2005	348900	389200	296200	373000	348170	288200	126744
2006	366100	395820	310123	392023	365345	299153	131561

TABLE 6.A.3
Nominal annual wages 1726–2006 in NOK.

	5.0 Public services	5.1 Public administration	5.2 Education	6.0 Total
1726				50
1727				
1728				
1729				
1730				
1731				47
1732				
1733				
1734				
1735				
1736				52
1737				
1738				
1739				
1740				
1741				55
1742				
1743				
1744				
1745				
1746				63
1747				
1748				
1749				
1750				
1751				61
1752				59
1753				58
1754				55
1755				56
1756				65
1757				79
1758				82
1759				89
1760				86
1761				90
1762				92
1763				85
1764				93
1765				92
1766				91
1767				92
1768				90
1769				92
1770				90
1771				96
1772				95
1773				100

TABLE 6.A.3
Nominal annual wages 1726-2006 in NOK.

	5.0 Public services	5.1 Public administration	5.2 Education	6.0 Total
1774				98
1775				95
1776				94
1777				87
1778				86
1779				90
1780				91
1781				99
1782				102
1783				98
1784				98
1785				92
1786				96
1787				94
1788				94
1789				98
1790				97
1791				97
1792				98
1793				98
1794				105
1795				102
1796				106
1797				110
1798				114
1799				140
1800				150
1801				158
1802				160
1803				149
1804				150
1805				155
1806				164
1807				167
1808				222
1809				275
1810				394
1811				674
1812				1249
1813				440
1814				569
1815				588
1816				566
1817				729
1818				573
1819				490
1820				444
1821				437

TABLE 6.A.3
Nominal annual wages 1726–2006 in NOK.

	5.0 Public services	5.1 Public administration	5.2 Education	6.0 Total
1822				471
1823				469
1824				403
1825				385
1826				383
1827				422
1828				393
1829				391
1830				437
1831				460
1832				455
1833				436
1834				425
1835				426
1836				428
1837				435
1838				429
1839				454
1840				461
1841				429
1842				421
1843				414
1844				426
1845				435
1846				430
1847				463
1848				435
1849				442
1850				435
1851				438
1852				457
1853				472
1854				520
1855				551
1856				560
1857				563
1858				537
1859				529
1860				538
1861				543
1862				537
1863				539
1864				548
1865				540
1866				553
1867				553
1868				543
1869				557

TABLE 6.A.3
Nominal annual wages 1726-2006 in NOK.

	5.0 Public services	5.1 Public administration	5.2 Education	6.0 Total
1870				546
1871				553
1872				580
1873				643
1874				717
1875	1580			742
1876	1595			727
1877	1605			739
1878	1579	1575		679
1879	1540	1536		656
1880	1540	1536		659
1881	1568	1564		669
1882	1573	1569		678
1883	1575	1571		682
1884	1567	1563		685
1885	1554	1550		682
1886	1534	1530		670
1887	1542	1538		669
1888	1532	1528		676
1889	1545	1541		699
1890	1568	1564		731
1891	1590	1586		753
1892	1601	1598		757
1893	1589	1585		777
1894	1620	1617		786
1895	1620	1617		788
1896	1601	1631	2060	807
1897	1619	1649	2081	850
1898	1634	1665	2101	868
1899	1654	1690	2117	865
1900	1674	1715	2130	885
1901	1683	1728	2132	875
1902	1712	1773	2135	871
1903	1717	1778	2140	858
1904	1736	1808	2142	908
1905	1746	1819	2150	925
1906	1755	1834	2150	944
1907	1773	1854	2169	988
1908	1785	1873	2169	1013
1909	1853	1913	2324	1058
1910	1972	2045	2451	1105
1911	1999	2073	2485	1174
1912	2004	2081	2485	1239
1913	2109	2178	2642	1311
1914	2188	2274	2711	1386
1915	2239	2352	2711	1454
1916	2645	2775	3140	1704
1917	3405	3570	3914	2384

TABLE 6.A.3
Nominal annual wages 1726–2006 in NOK.

	5.0 Public services	5.1 Public administration	5.2 Education	6.0 Total
1918	4329	4470	4999	3152
1919	4722	4932	5789	3982
1920	6372	6656	7813	4657
1921	7278	7602	8923	4523
1922	5905	6157	7263	3605
1923	5599	5853	6850	3341
1924	5241	5490	6386	3378
1925	4904	5138	5974	3394
1926	4792	5029	5820	3080
1927	4739	4967	5768	2785
1928	4714	4950	5717	2644
1929	4540	4784	5467	2593
1930	4327	4556	5219	2541
1931	4326	4554	5219	2450
1932	4242	4467	5114	2411
1933	4148	4365	5011	2361
1934	4064	4275	4910	2350
1935	4098	4309	4958	2389
1936	4184	4404	5050	2497
1937	4247	4418	5248	2709
1938	4290	4445	5342	2903
1939	4434	4473	5804	3019
1940	4406	4478	5779	3239
1941	4432	4664	5628	3391
1942	4559	4958	5746	3752
1943	4767	5391	5879	3975
1944	4828	5296	6188	4224
1945	5379	5866	6930	4734
1946	5754	6049	7639	5261
1947	6287	6587	8341	5882
1948	6740	7035	8917	6358
1949	7032	7275	9292	6670
1950	7280	7711	9682	7057
1951	7897	8220	10456	7988
1952	8974	9519	11502	9010
1953	9512	9785	12204	9533
1954	9847	10196	12435	10038
1955	10301	10655	12983	10661
1956	11285	12040	15255	11631
1957	11759	12630	16002	12398
1958	12855	13615	17058	13242
1959	13185	14432	17706	13943
1960	14049	14952	18043	14529
1961	15041	15236	18963	15488
1962	16997	17201	21333	17130
1963	18008	18234	22443	18243
1964	19341	19619	23812	19575
1965	20802	20973	25574	21121

TABLE 6.A.3
Nominal annual wages 1726-2006 in NOK.

	5.0 Public services	5.1 Public administration	5.2 Education	6.0 Total
1966	22548	22945	27594	22916
1967	24671	25423	30105	24956
1968	26330	26973	31731	26753
1969	27741	28349	33286	28519
1970	29643	30163	35083	30714
1971	33403	33904	39433	34554
1972	36793	36853	43219	37871
1973	40653	40649	47455	41847
1974	45654	45324	53766	47497
1975	53151	52757	62369	55761
1976	60234	60512	69790	63345
1977	66154	66018	76770	69869
1978	71270	70838	82374	75948
1979	73465	73175	84598	78530
1980	80687	80566	91873	86226
1981	90518	90798	101428	96487
1982	101422	101331	112585	107487
1983	110269	109336	121254	117160
1984	117847	117536	129499	126065
1985	126107	125764	138435	135519
1986	137566	137208	150617	147852
1987	149571	151066	162064	160715
1988	155787	157411	171464	170358
1989	163124	162605	181752	177853
1990	170709	169435	190112	186390
1991	178852	177737	196576	195896
1992	185370	185558	204242	203536
1993	191106	192609	209961	210456
1994	196676	200506	215210	216981
1995	202805	207122	221236	224141
1996	211943	216029	230307	234227
1997	221271	227694	238828	245470
1998	235064	243405	252680	261426
1999	247392	258496	264303	275543
2000	258602	272455	278047	288218
2001	270858	284715	294452	303493
2002	287659	302937	312414	319882
2003	302605	315964	330846	331718
2004	316001	331446	344411	347308
2005	328678	345700	357500	361200
2006	341163	360563	369653	376010

