

10.

Nominal and real wages of manufacturing workers, 1860–2007

Svante Prado

10.1. Introduction

The nominal wage represents the marginal return to a unit of labour input.¹ The rise or fall in nominal wages is one of the most central aspects of an economy in which competitive labour markets determine the price of manpower. In addition, the movement of nominal wages, deflated by a cost-of-living index, indicates progress or decline in living standards, the most important by-product of economic growth.² Throughout most of the pre-modern era, and also in many of today's less developed countries, the ratio between wages and prices has failed to remain on a long-term upward track, preventing workers from gaining sustainable increases in the purchasing power of goods and services. It is only during the era of modern economic growth that expectations of perpetual rises in real wages have been fulfilled. From our vantage point, workers have gained enormously since the onset of sustainable increases in income per capita in the mid-19th century. Since 1860, real wages of male manufacturing workers have on average increased 2.25 per cent annually, implying that purchasing power thus measured has increased by a factor of 26. Workers have gained access to an almost infinite variety of goods and services. Of course, they have also enjoyed shorter working hours per week, longer holidays and decreased years of work over the lifetime, as well as improved working conditions and greater security

1 The author would like to acknowledge Daniel Waldenström, Christer Lundh, Jan Bohlin, Oskar Broberg, Rodney Edvinsson, Lars Svensson, Jonatan Svanlund, Johan Söderberg, Stefan Öberg, Martin Fritz and Erik Bengtsson for helpful suggestions. Any remaining errors rest with the author.

2 There are various objections to using the growth of real hourly earnings as a measure of changing living standards. To address issues of material living standards, annual household earnings, or annual disposable incomes, would be a better indicator of material well-being. Furthermore, these real hourly earnings exclude payroll taxes, the significance of which increased notably in the latter half of the twentieth century.

in the face of unemployment and sickness. Still, the importance of real wages as a manifestation of the material benefits of economic growth serves to justify the close attention social scientists devote to the measurement of nominal wages.³

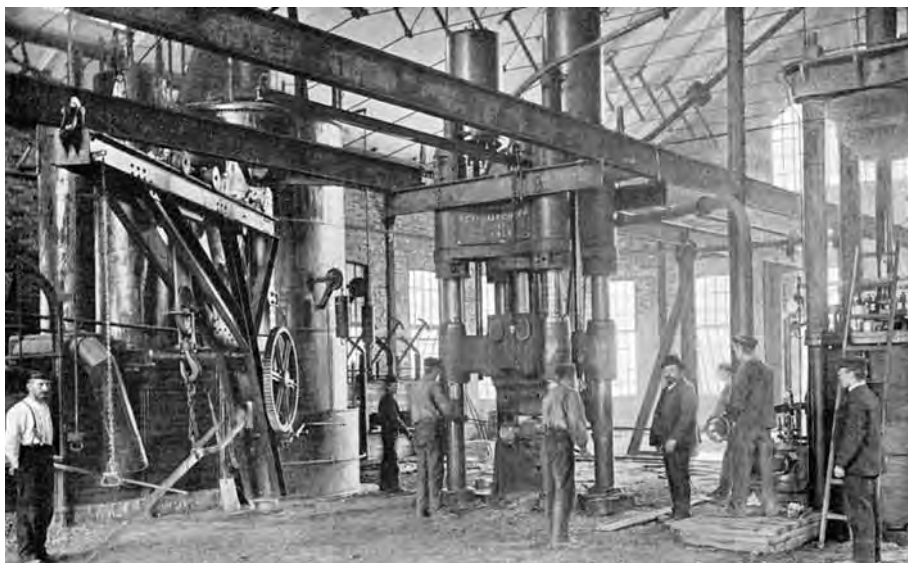
The purpose of this chapter is to document series of nominal and real wages of male and female manufacturing workers in 1860–2007.⁴ An attempt is made to construct nine wage series for groups of industries and an overall average series for manufacturing as a whole, spanning the era in its entirety and circumventing the constraint imposed by inter-temporal inconsistency in the classification of industry. The first half of the chapter deals with the nature, sources and definitions of the historical wage sources available, with particular attention to the different wage sources before and after 1913. The second half contains a discussion of the results, with respect to growth rates of male real wages and the evolutions of the female-to-male wage gap and inter-industry wage differentials.

10.2. Quality of labour

Needless to say, employers have altered minimum hiring standards many a time since 1860. This project shares with all historical wage studies the intention of establishing wage series with as high a degree of inter-temporal consistency as possible in the qualifications demanded of the workers. Commonly, attempts to document long-term series for wages seek to trace the evolution of wages for an unchanged professional characteristic, like unskilled, manual or plain labourer. The idea is that it is possible to trace the nominal price of a particular kind of labour service, the essential feature of which, despite the many far-reaching implications of technological development, has remained fairly unchanged over time. It is also sometimes suggested that this kind of labour service commands no industry-specific formal skill or requires little or no on-the-job training. Therefore unskilled workers are subjected to

3 Scholliers (1989) is an excellent introduction to the significant role which the measurement and interpretation of real wages have played in the historiography of economic history. In brief, whereas an older tradition used real wages as an indicator of the evolution of living standard, most importantly in the discussions of the British industrial revolution, modern approaches also use nominal and real wages to address issues of, for instance, divergence and convergence between sectors, regions and countries and various aspects of income distributions.

4 Research on the long-term evolution of wages by sectors in Sweden is relatively scarce. An early example is Bagge, Lundberg and Svenilsson (1933, 1935), who constructed 7 industry-specific wage series based on archival research and wage series of agriculture and municipal workers spanning 1860–1913. Other works include Jungenfelt (1959, 1966), who constructed annual wage series covering the period 1870–1950 and all major sectors of the economy; Jörberg's (1972) magisterial volumes of prices, which contain wage series for day workers in agriculture based on market price scales in 1732–1914; Björklund and Stenlund (1995), who presented annual wages for 6 manufacturing industries in 1870–1950; Svensson (1995), who explored the female-to-male wage gap in 1913–90 on the basis of wage data from the official statistics for 11 manufacturing industries; and Ljungberg (2004), who has compiled series of earnings of graduate and college engineers in 1867–2002 to study educational pay-off.



The Kohlsua ironworks in 1900.

Source: http://commons.wikimedia.org/wiki/File:Kohlsua_jernverk.jpg.

similar forces of demand and supply in the labour market which do not derive from industry-specific developments of new technologies.⁵

Before the proportion of manufacturing industries reached significant importance in the economy, typical workers labelled unskilled were mostly found in the construction sector, for instance helpers in the building trade or unskilled road and canal construction workers.⁶ In the initial stages of industrialisation it is perhaps doubtful whether unskilled workers were a common category of labour since most manufacturing industries were small-scaled and relied on handicraft-based technologies; they were what Kenneth Sokoloff tellingly referred to as artisanal shops.⁷ For instance, in the Swedish mechanical engineering industry at the beginning of the 20th century, only 13 per cent were helpers and 83 per cent were workers with a specific profession (the rest were supervisors and apprentices).⁸ Other industries, for instance the sawmill industry and iron and steel works,⁹ employed a mass of helpers and transport

5 Williamson (1995).

6 The most classic example of long-term series of construction workers is that of Phelps Brown and Hopkins (1955, 1956). A more recent one is Allen (2001). For Sweden, see Johan Söderberg's contribution in Chapter 9 of this volume.

7 Sokoloff (1984).

8 Lundh Nilsson (2007, p. 96).

9 Monthlies, Utterström and Söderlund (1959) provide insights into the type of labour that iron works needed; for the labour service performed at the sawmill industry, see Gustafsson (1965) and Cornell (1982).

workers, but unskilled workers probably did not become preponderant in manufacturing industries before the mass production technologies in the 20th century.¹⁰ The Social Board's official wage statistics, which came into being in 1913, do not mention a specific occupational category like common labour or unskilled labour. They simply distinguish between workers on the one hand and technical personnel (engineers, chemists, and supervisors), administrative staff and shop assistants on the other. Thus the label worker is very heterogeneous. Statistical agencies in the 20th century have in general not responded to economic historians' infatuation with the prefix unskilled.¹¹ It is a great paradox that whereas the rise of mass production technologies in the 20th century turned the manufacturing industry into a large employer of the typical unskilled worker, the label unskilled fell out of favour among statistical agencies. When the 20th century drew to a close, and the forces of technical development and capital accumulation served to contract the labour force in manufacturing industries, the share of unskilled workers started to decline. Perhaps the market service sectors, some of which are characterised by a multiplicity of quite monotonous labour services, have instead become the most important employer of unskilled workers.

10.3. Historical wage sources

Today's researchers with a keen eye on the historical dimensions of wages depend crucially on past generations' concern with the detailed documentation and compilation of wage records. Various possible wage sources are at our disposal, which makes the enterprise to patch some or all of them together, to capture as long a time span of history as possible, particularly challenging. Sweden is known for its rich source of statistical material from earlier times, for instance a census from 1749 and annual publications of industrial statistics from the mid-19th century. With wage statistics one is however inclined to take a less benign view on the supply of useful source material, in particular for the 19th century. For instance, we have nothing that at all closely resembles the Norwegian *Wedervang's Arkiv*, which supplies a wealth of wage quotations back to the mid-18th century.¹² We also lack the type of government surveys which were conducted in the US post-bellum years, the so-called Weeks and Aldrich reports,¹³ or the wage material which A. L. Bowley and G.H. Wood used to compile their pioneering index of average earnings in the UK during the 19th centu-

10 Goldin and Katz (1998) argue along a somewhat different line. Their model, supported by historical evidence from the early 20th century, predicts that the increase in the relative demand for skilled labour was associated with the technological shifts from factories to continuous-process and batch methods, and from steam and water power to electricity. The use of modern technology reduced the need for unskilled workers and increased the proportion of white-collar workers.

11 David and Sollar (1977).

12 Grytten (2007).

13 Margo (2006).



The AGA factory in Lidingö, outside Stockholm, in 1915.

Source: http://commons.wikimedia.org/wiki/File:AGA_Fabrik_1910.jpg

ry.¹⁴ The scarceness of wage data may be one explanation for the faint interest which Swedish economic historians have taken in the evolution of wages during the era of industrialisation before the First World War.¹⁵

In relation to the US and the UK, the overwhelmingly agrarian nature of the Swedish economy in the latter half of the 19th century may explain the low priority Swedish authorities gave to the systematic collection and presentation of wages in sectors other than agriculture. Action was taken only when the first major labour conflicts occurred around the turn of the century, posing a threat to the social order. A series of investigations into working conditions and wage remunerations in manufacturing industries paved the way for the establishment of the Social Board's official wage statistics in 1913. Our knowledge of wage movements before the First World

¹⁴ Feinstein (1990).

¹⁵ In contrast, the list of works on the historical evolution of real wages for American manufacturing workers is lengthy. Three well-known books are Douglas (1930); de Long (1960) and Rees (1961). In the British case, the most cited works have focused on the development of wages during the industrial revolution and the 19th century, for instance Hobsbawm (1957), Hartwell (1961), Lindert and Williamson (1983) and Feinstein (1998).

War relies instead on the large-scale project *Wages in Sweden*, which presents the results of a major research programme intended to trace the evolution of nominal and real wages.¹⁶ The presentation of the sources and methods used to construct the present series of Swedish wages thus falls into two parts. The first covers 1860–1913 and deals with *Wages in Sweden*, and the second covers 1913–2007, coinciding with the publication of official wage statistics.

10.3.1. *Wages in Sweden, 1860–1913*

It may be useful to distinguish between wage rates and earnings, although the boundary between them is frequently blurred. Many historical studies, including the present one, are forced to depend on a mixture of these two types of measure. Wage rate is the stipulated return for a given time unit of labour input, usually hourly or daily for blue-collar workers and monthly for white-collar workers. It excludes payment for overtime work, premiums, bonuses and other forms of payment by result, as well as payment in kind. Studies intending to establish the movement of wage rates and capture a lengthy time span rely ultimately on firm records that show the stipulated wage rate, or on wage rates established by labour unions. Earnings is a more inclusive measure which incorporates the effects of changes in the composition of the labour force between industries and of changes within each industry by age, sex, skill and region. It also allows for the effect of payments for overtime work, and for premiums, bonuses and other forms of payment by result as well as any rise in hourly rates paid to compensate for a reduction in standard hours worked. Dividing the wage bill by the number of working hours gives a measure of average hourly earnings.

In the 1920s, Gösta Bagge, at the Institute for Social Sciences at Stockholm University, launched a large-scale project with the explicit intention of tracing the evolution of wages, cost of living and national income for Sweden between 1860 and 1930.¹⁷ Two of the final five volumes which were published in the 1930s deal with wages, the first in the manufacturing and mining sectors and the second in the municipal service sectors and the agriculture and forestry sectors.

Weak unionisation in Swedish manufacturing industries pre-1900 precluded the authors of *Wages in Sweden* from using union wage rates. Instead they relied on wage rates paid to individual workers based on information from about 100 firms whose payrolls had been preserved. The method used to construct wage series for 1860–1913 can be described as a four-stage procedure:¹⁸ First, collect payrolls from firms whose wage records had survived. Second, select workers from a few representative occupations in each firm. One of the selection criteria was that the worker's employment exceeded 11 months, thus excluding temporary workers. A worker's wage was recorded for no more than 5–10 years, thereby eliminating the influence of age on

16 Bagge, Lundberg and Svernilson (1933, 1935).

17 Carlsson (1982) gives all the fascinating details about the whole project.

18 Bagge, Lundberg and Sverningsson (1933, pp. 15–46).

wage movements. Payment in kind, although a more important component in the latter half of the 19th century than it is today, was generally omitted.¹⁹ The most important benefit was access to free housing. The authors discussed the matter at length yet approached it ambiguously. In most instances the value of free housing was not incorporated into earnings. In other cases, when some workers received a cash allowance for rent while others had free housing, the value of free housing was included. Third, compute wage averages for each firm. Fourth, combine the different firm-specific wage series to form industry-specific series, with weights based on the quality of the series, the size of the firm and the relative importance of the industry.

The method described above is sometimes called kinetic since it tracks the *movement* of wages better than it establishes the average wage *level* of all workers in a particular industry, a methodology which is attributed to A. L. Bowley.²⁰ Cross-sections were therefore used to compare the wage levels of the selected workers in relation to the average level of all workers in a particular concern. These cross-sections were made for 1865, 1885 and 1905 and it was found that in most cases the wage level of the selected workers was on average five per cent higher than the average of all workers. In addition, the authors considered the problems of heterogeneity with respect to age, gender and professional qualifications. Today we stand to benefit greatly from that careful consideration because it made possible the documentation of homogeneous professional characteristics. For most of the industries there are separate series for skilled, in a few cases also semi-skilled, and unskilled workers. Furthermore, the industry-specific wage series exclude the potential influence of changes in the composition of the labour force. The disadvantages concern, for instance, the low coverage and the equivocal approach to benefits in kind. It is also doubtful whether these wage levels can be used to address issues of standards of living since they do not reflect the levels of income which workers had at their disposal.

The wage data for manufacturing represent the most comprehensive part of the project. The authors documented 7 industry-specific wage series in the main section of the volume, while the appendix contains the original wage data from the firm records. Besides these 7 manufacturing industries there are wage series for sugar industries and railway workers. In relation to the 9 industries included in the present chapter, *Wages in Sweden* does not provide wage series for the quarrying industry and the chemical industry. Based on the wage material presented in their monographs section, I have attempted to establish wage series for these industries, though undeniably these two series rest on a more tenuous empirical foundation. For female workers there are two industry-specific wage series, textiles and food, but no aggregate series.

19 The value of food allowance made up a minor value relative to the cash wage in most industries. The major exception to this rule is the payment system of the iron works where the values of benefits in kind and free housing were significant and therefore included in the estimate of hourly and annual earnings (Bagge, Lundberg and Svenilsson 1933, pp. 85–90).

20 Bowley (1895).

Table 10.1. *Wage series for 1860–1913 from Wages in Sweden used in the present study*

	Wage	First observation
Male workers		
Mining	annual	1860
Metal	hourly	1860
Engineering	hourly	1860
Quarrying	hourly, daily	1868
Wood	hourly	1870
Paper	hourly	1860
Food	hourly	1861
Textile	hourly	1865
Chemical	hourly, daily, annual	1871
Female workers		
Food	hourly	1888
Textile	hourly	1865

Table 10.2. *Average annual growth rates (per cent) of nominal wages in the manufacturing industry, 1868–1913*

	Wage	Sawmills included	Sawmills excluded
New series	hourly	1.6	2.0
Bagge, Lundberg and Svenilsson	hourly	2.2	
Bagge, Lundberg and Svenilsson	annual	1.9	

Sources: Bagge, Lundberg and Svenilsson (1933 table 26); new series: Appendix, table A10.1.

What do we know about the reliability of the wage evidence presented in *Wages in Sweden*? Admittedly, not all that much. Bo Gustafsson has shown that there are problems with the wage series of sawmill workers in 1890–1913. Based on an investigation into the movement of wages for sawmill workers in Norrland 1896–1913, he argued that the sawmill series in *Wages in Sweden* shows too little progress and that the wage levels are too high. He has also raised concerns about the omission of temporary workers.²¹ Others have criticised the methodology and the wage data for workers in the match industry.²² The present author has cast some doubt on the weighting scheme applied in *Wages in Sweden*.²³ The lack of transparency in the description of how the different wage series were combined into an aggregate measure makes it difficult to replicate the result. Lennart Schön has raised the level of gross output for several industries, including sawmills, within the context of Swedish Historical National Accounts.²⁴ We therefore have reasons to suspect that weighting

21 Gustafsson (1965).

22 Berglund (1982).

23 Prado (2008a).

24 Schön (1988).

with respect to these higher levels of gross output, and thereby employment, will modify the series of average wages for manufacturing workers in *Wages in Sweden*. Weighting the industry-specific series to allow for the large number of workers employed in the sawmill industry lowers the estimated growth rate of the new series of wages for manufacturing as a whole before 1890 compared to the aggregate series in *Wages in Sweden*, as Table 10.2 shows.²⁵ The reason is the sluggish growth of sawmill workers' wages, which rose steeply in the wake of booming conditions in world markets for sawmill products in the first half of the 1870s but collapsed when the boom turned to bust in the second half of that decade. In fact, sawmill workers' wages did not resume a sustained upward course like that of manufacturing until the beginning of the 1890s. Thus, the aggregate series of manufacturing wages offered here shows slower progress than the corresponding series in *Wages in Sweden*.

10.3.2. *The official wage statistics, 1913–2007*

Apart from the wage statistics for day-workers in agriculture that were reported in the Swedish Agricultural Statistics, the first official attempt to document wage conditions covered the manufacturing sector. This was because the first far-reaching labour conflicts in Sweden occurred among industrial workers. The authorities felt a pressing need for more information on labour and wage conditions in several manufacturing industries. Therefore, in 1899–1909 the Board of Trade (*Kommerskollegium*) undertook a number of special investigations into the following industries: bakeries, tobacco industry, mechanical engineering and book printing. The methodology of these investigations conformed to a resolution passed by the International Statistical Institute requiring wage statistics to be based on individual wage data. To meet that requirement, each wage survey was directed at a single industry in a particular year, which limited the possible number of industries and years to be investigated.²⁶ However, the inflationary conditions in the aftermath of the First World War, when money wages first rose dramatically and then plummeted in the ensuing deflation, required that wage statistics be published annually. Otherwise they would be outdated and of limited use by the time they saw the light of day.²⁷

To render an annual publication possible, several modifications, in practice simplifications, were necessary. As with most official wage statistics, the method used by the Social Board from 1913 onwards was designed to provide a measure of average hourly earnings, thus fundamentally different from the attempt made in *Wages in*

25 The computed growth rate in Prado (2008a p. 57) is slightly different from the growth rate reported in Table 10.2 because the constituent series are not identical and have different weights. However, the difference between a series with sawmills included and one with them excluded remains.

26 A recent doctoral dissertation, Lundh Nilsson (2007), is based on the investigation of wages in the mechanical engineering industry.

27 SOU (1931).

Sweden to provide a more specific and homogeneous measure of wages. The Social Board collected data by requesting firms to provide information on wages and other closely related issues in surveys. It extracted from a single firm the total sum paid out as wages during one year and divided this sum by the number of working hours, days or workers (the average number of workers on a number of pay-days, for instance once a week). Thus, in their final shape, the official wage statistics concealed firm-specific wage information. In this way the Social Board tackled the reluctance of many employers to submit detailed information about wages.

There are three types of hourly wage, labelled *a*, *b* and *c*. Categories *a* and *b* represent payment for regular working hours, where *a* stands for time wages and *b* piece wages; piece wages are generally higher. Label *c* is the total wage sum paid out divided by the number of working hours. The wage sum includes all kinds of payment, whether piece wages, time wages, benefits in kind, holiday pay or overtime. In their own publications, the Social Board and Statistics Sweden use the *c*-wage to illustrate movements of hourly earnings over time. It is the most satisfactory available measure of average hourly earnings and is used in the present study. However, it is not accessible throughout the period; after 1992 Statistics Sweden provides only wage data that exclude overtime pay, which lowers their reported wage levels by around twenty per cent.

Bagge, Lundberg and Svenilsson levelled damning criticism at the way the official wage statistics were constructed.²⁸ A series of earnings so constructed makes no distinction between factors which change the composition of the work force, apart from holding constant for the impact of females, males and the under-age, for which the official wage statistics provided separate information. The inherent problem with this method, as the authors correctly pointed out, is that a change in the computed average may be caused by a number of factors other than changing wage rates. For instance, if the proportions of skilled and unskilled workers change in favour of skilled workers, the increase in the average wage mirrors not only changing wage rates but also the compositional effect of higher wages for skilled workers. Likewise, if the average age of the working population in a specific firm increases, so will the measure of average earnings. Further problems include the proportions of full- and part-time workers. A substantial proportion of temporary workers will drive a wedge between the measures of average annual and hourly earnings. In many cases the actual number of employed workers is higher than the average number of workers given by the statistics, which leads to too high an estimate of annual income per worker. This is especially problematic in industries with pronounced seasonal characteristics or those employing casual labour. The method does not, however, cause any problems with the number of hours, which means that in the official statistics hourly wages are more useful than annual.

Even though Bagge, Lundberg and Svenilsson painted the method of the official statistics in rather derogatory colours, they acknowledged the statistics' usefulness for

28 Bagge, Lundberg and Svenilsson (1933, pp. 243–7).

indicating wage movements post-1913. In their final index, the official post-1913 series is linked to their pre-1913 series to provide a wage series covering the entire era 1860–1930. They also admitted that the official statistics covered a much broader segment of the manufacturing sector. In 1930, it encompassed 67 per cent of the industries, and while that share admittedly was smaller in 1913, it rose in the course of the 20th century to include the lion's share of all firms.

The years before 1921 represent the most serious lacuna in the official statistics. It is sometimes wrongly asserted that the Social Board began to publish wage statistics annually in 1913, whereas in fact it did not do so until 1919. In 1918 the Social Board requested firms to report wages not only for that year but also for 1913–17. This wage material is less complete, and less reliable, than for post-1919 years, and there are no wage data for 1914 and 1915. Besides, no information on average hourly wages was given between 1913 and 1920. Later on, the Social Board estimated hourly wage series for male and female workers for manufacturing as a whole on the basis of information on working hours, but the gap in our knowledge as to the evolution of hourly wages in different industries still exists. There are two ways out of this dilemma, neither of them very satisfactory. One is to extrapolate backwards from 1920 to 1913 by drawing on the series of daily wages. However, the substantial reduction of working hours in the two years preceding the Hours of Labour Act in 1920 makes daily wages a bad indicator of hourly wages. The rate at which reductions took place varied widely by type of activity and location, making it difficult to ascertain the movement of hourly wages for different industries. And there are still gaps in 1914 and 1915. The other way out involves filling the gap with the Social Board's aggregate hourly wage series, a solution which gives the misleading impression that all industries grew in tandem. The preferred solution here is to leave out all industry-specific wage series 1913–21.

The labels for the nine different manufacturing industries are conditioned by a classification scheme called SNI 92,²⁹ which was put into practice in 1993.³⁰ Some of the major changes which SNI 92 brought about cannot be dealt with satisfactorily; for instance, wood industries do not include furniture after 1993. Similar breaks have occurred in 1952 and 1971. Frequent changes in classification schemes pose a challenge to the very idea of establishing long-term wage series for different industries. In the coming section an attempt is therefore made to deal with inter-temporal inconsistencies.

10.4. Aggregation

Constructing wage series spanning the most recent one-and-a-half centuries encounters major difficulties and many potential pitfalls. Few industries have been classified

²⁹ Svensk näringslivsindelning.

³⁰ SNI 92 became SNI 2002 but that involved only minor modifications.



A mass meeting in Stockholm during the general strike in 1909.

Source: <http://sv.wikipedia.org/wiki/Fil:Storstrejkk.jpg>.

in the same manner throughout the entire era. Industries like metal and engineering, whose product varieties defy efforts to capture their nature by labels, are difficult per se, whereas other difficulties arise mostly because of breaks in classifications. Another closely related problem is the effects of economic growth and technical development on the evolution of skill requirements (human capital), the tasks workers are set to carry out and labour's working conditions more generally. All this has of course changed a lot since 1860. The only thing a worker in the wood industry in 2007 has in common with his peer 150 years earlier is probably the material (wood) that is being processed.

To deal with inter-temporal inconsistencies in the definition of industries and the different sources and methodologies used before and after 1913, indices of average hourly earnings for nine industries are compiled with no attention paid to the actual wage levels in different industries. Still, the construction of an aggregate measure requires allowance for these wage levels because an important part of the movement in average hourly earnings may be due to the changing proportions of low and high wage occupations. Modern economic growth often entails the expansion of dynamic industries whose wage levels exceed those of industries sliding into decline. The approach used in the present study is therefore designed to provide an estimate of levels of average hourly earnings in nine industries, with indices of hourly earnings in

each industry scaled proportionally to the actual hourly wages in a reference year, as in (1), where the wage levels for each industry in 1950, $W_{i,1950}$, are multiplied by all the years in each industry's wage index.

$$\text{Estimated wage levels} = \text{index}_{i,t}^w * W_{i,1950} \quad (1)$$

The wage levels thus constructed comply with the official wage statistics between 1913 and 1992. They also track *Wages in Sweden's* pre-1913 estimated wage levels very well; the difference is on average less than one per cent in 1880–1913. Before 1880 the gap expands because the new series grows more slowly. From 1992 onwards the wage levels of the new series are, however, higher than Statistics Sweden's because the latter exclude overtime pay. Whereas interpretations of actual wage levels extending further back in history admittedly call for great caution, these series of wage levels at least allow the computation of inter-industry and gender pay ratios on the one hand, and permit the computation of proper index numbers on the other.

The next step is to come up with the corresponding numbers of workers for the nine industries for which hourly wage levels have been estimated. That requires data for employment which tally with the classification of the nine wage series. This requirement is only partly met; for instance, the Swedish Industrial Statistics started using SNI 69 in 1969, while the official wage statistics did not apply it until 1972. A more severe shortcoming concerns the ways in which employment figures have been obtained for different sub-periods. The Swedish Industrial Statistics pre-1913 suffer from insufficient coverage and cannot therefore be used as a source of employment. Alternative employment series are used instead.³¹ Another major change in the way employment was recorded occurred in 1989, and employment weights had to be derived elsewhere. AKU,³² which is based on household surveys about people's current employment, was used as an indicator of employment trends between 1986 and 1992; from then on employment figures from RAMS³³ were used. From the perspective of the present study, the different sources suffer from inter-temporal variations in reported levels of number of workers, which render necessary a solution similar to (1). Thus, indices of employment were compiled and scaled proportionally to the actual number of workers in 1950. That gives industry-specific series of estimated employment for the entire era. The employment series are only intended to measure the changing proportions of employment between different industries. They are not designed to provide a measure of the actual number of people employed. In the appendix, they appear as employment shares, not as absolute numbers.

31 The unpublished, industry-specific employment series underlying the aggregate series of employment in manufacturing in Prado (2008a p. 194) have been used. To make these new employment series comparable to the Swedish Industrial Statistics' post-1913 series, they incorporate Schön's (1988) estimated number of handicraft workers.

32 *Arbetskraftsundersökning* (labour force surveys).

33 *Registerbaserad arbetsmarknadsstatistik* (register-based labour market statistics).

$$\text{An index of average hourly earnings} = \frac{\sum_{i=1}^n W_{i,t} N_{i,t}}{\sum_{i=1}^n N_{i,t}} \bigg/ \frac{\sum_{i=1}^n W_{i,r} N_{i,r}}{\sum_{i=1}^n N_{i,r}} \quad (2)$$

Equipped with series of wage and employment levels annually, a series of weighted means can be straightforwardly computed, in the form of either levels or an index, as in (2), where r stands for reference year. This series of wages incorporates the effects of inter-industry growth rates and shifts in employment structure but does not satisfy the properties of an index number because the choice of reference year does not affect the estimated annual growth rate. It cannot tell us whether structural transformation contributed to the rise in average earnings. To do that, the series needs to be decomposed into two proper index numbers, one showing intra-occupational wage movements, a Laspeyres index (3), and the other inter-occupational structural shifts, a Paasche index (4).³⁴

$$\text{Laspeyres index numbers} = \frac{\sum_{i=1}^n W_{i,t} N_{i,b}}{\sum_{i=1}^n W_{i,b} N_{i,b}} \quad (3)$$

$$\text{Paasche index numbers} = \frac{\sum_{i=1}^n W_{i,t} N_{i,t}}{\sum_{i=1}^n W_{i,t} N_{i,b}} \times \frac{\sum_{i=1}^n N_{i,b}}{\sum_{i=1}^n N_{i,t}} \quad (4)$$

Now the chosen base year (b) will affect the movement of the series. A Laspeyres index number measures the way wages would have changed if the sectoral structure had remained the same as in the base year. Two Laspeyres index numbers can be computed, one with the first and the other with the last year as base year, to gain at least a brief understanding of the extent to which the structure influenced the average annual growth rate. The computation of these two index figures reveals that the choice of early or late base year has a negligible affect on the estimated annual growth rate: the difference is 0.02 percentage points. Further evidence of the insignificance of inter-occupational structural shifts for the estimated growth rates is that the Paasche index remains essentially flat.

In fact, over such a long period the insignificance of weighting is an expected result. The effect of the intra-industry growth rates dwarfs the potential impact of the employment structure on the movement of the series of weighted means. Differ-

³⁴ Dividing (2) by (3) gives (4).

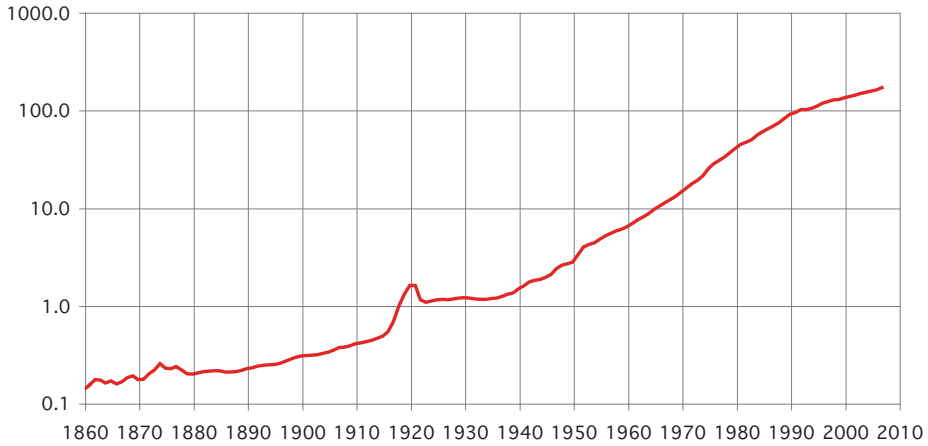
ent weighting schemes will only exert an influence on a series of means if the constituent components grow at significantly varying rates, and/or there are very large inter-industry wage gaps. Intra-industry growth rates do sometimes diverge over short time spans, as testified by the previously discussed example of the sawmill industry in 1870–90, but in the long run it is not entirely likely that wages in any industry will either race ahead perpetually or notoriously lag behind. Competitive forces and movements of labour tend to keep the band within which rates of wage growth range quite narrow. In addition, the influence of labour unions through centralized bargaining contributes to even out the variability in inter-industry growth rates of wages. The weights employed affect the estimated growth rate of the aggregate for the more volatile pre-1913 era, when there were frequent shifts in intra-industry growth rates. The importance of weighting diminishes gradually in the interwar years, and disappears altogether after the Second World War, when wage progress was notably uniform. Furthermore, the chosen weights have an impact on the movement of the series comprising both female and male wages, because female wages outgrew male in the 20th century at the same time as the share of female workers increased.

10.5. Long-term evidence of nominal and real wages

The series of hourly wages for male manufacturing workers offers the most consistent evidence of the evolution of nominal wages for the era in its entirety. The long-term, quite steep, upward movement of nominal wages depicted in Figure 10.1 is an expected result because, first, the investigated period coincides with the onset of modern economic growth in Sweden, and second, nominal wages do not take price increases for consumables into account. Nominal wages increased on average by 5.3 per cent annually but the rate fluctuated significantly. The first era of industrialization until 1913 was accompanied by steady increases in nominal wages. The most remarkable surge in nominal wages took place towards the end and in the aftermath of the First World War, between 1917 and 1921, when wages rose 134 per cent. Wages then fell substantially in the ensuing deflation but remained quite stable in the rest of the 1920s and the 1930s. A steady and long-term rise followed from the 1950s until the depression at the beginning of the 1990s. After the crises, nominal wages have increased moderately.

However, the movement of nominal wages may give a misleading impression of the evolution of workers' final means for purchasing goods and services. At times, reliable measurement of price changes is a far more crucial element in achieving a correct assessment of movements in real wages, especially when fluctuations in prices were very much greater than those in nominal wages. Bringing in the measure of cost-of-living which Rodney Edvinsson and Johan Söderberg offer in Chapter 8 permits a preliminary assessment of the speed at which improvements in living standards have taken place from 1860 to today. The most striking feature of Figure 10.2

Figure 10.1. *Nominal hourly earnings (kronor) of male manufacturing workers, 1860–2007*



Note: Logarithmic scale

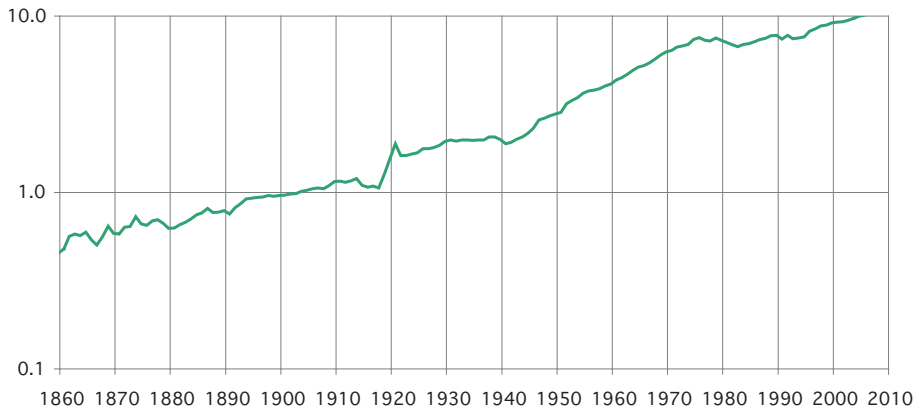
Source: Appendix, Table A10.1.

is the incessant force with which economic growth has propelled the growth of real wages since 1860. Although a few setbacks, brief in time yet serious in terms of losing foregone gains in consumption, did interrupt the general upward movement of workers' purchasing power, the general tendency is undisputable. Most economists and economic historians would probably agree that the growth of labour productivity is the most important determinant of the growth of real wages, even though intermittent changes in the share of value added accruing to labour at times drive a wedge between the movements of labour productivity and real wages. Still, there are those who have argued that the reverse may be the case, that exogenous growth in real wages may trigger the growth of labour productivity.³⁵

Turning now to the sub-periods, the average rate of progress varied widely, as indicated by the computed growth rates in Table 10.3, where the time spans follow Angus Maddison's widely used classification of the last one-and-a-half centuries. As will be clear below, somewhat different turning points in fact give a better fit with the evolution of Swedish real wages.³⁶ The first wave of industrialization from 1860 to about the mid-1890s brought with it steady if erratic progress of real wages. A significant part of the series' volatility comes from the sawmill industry, which weighs heavily. The rapid expansion of this industry peaked in 1874 and the subsequent drop to the trough in 1891 cut the wage level by half. Between 1870 and 1912 the series' average annual growth rate was 0.4 per cent, which was 72 per cent less than the rate for

³⁵ Wright (2006) and David and Wright (2003).

³⁶ Maddison (1991).

Figure 10.2. *Real hourly earnings of male manufacturing workers, 1860–2007*

Note: Real hourly earnings in kronor of 1950. Logarithmic scale

Sources: nominal earnings: Appendix, Table A10.2; cost-of-living: Chapter 8, Table 8.4 in this volume.

manufacturing as a whole. Although volatility decreased after the 1890s, the average annual growth rate actually decelerated somewhat, which is surprising given that the growth of labour productivity was appreciably faster after the mid-1890s.³⁷ Here is a possible macro-economic clue to workers' dissatisfaction with the wage benefits they reaped in relation to profits, manifested most significantly in the general strike in 1909.

Table 10.3. *Average annual growth rates (per cent) of real wages for male workers in manufacturing*

Label	Years	Growth rate (per cent)
The whole era	1860–2007	2.3
Industrialisation	1860–1913	1.6
Interwar years	1913–1950	2.1
Golden age	1950–1973	3.8
Globalisation	1973–2007	1.1

Source: Appendix, Table A10.1.

Unlike the series of nominal wages, which gives the impression of unbroken improvements in the lot of workers during the First World War, the real wage measurement highlights the initial, detrimental war conditions. Real wages dropped about 11 per cent from 1914 to 1918 because shortages of imported food led to price increases

³⁷ Prado (2008a p. 167).

that greatly exceeded the increases in nominal wages. However, real wages then soared in the following three years, from 1918 to 1921. Workers gained annual real wage increases of more than twenty per cent and the total increase was no less than 77 per cent. Even though the subsequent severe deflation cut real wages by 14 per cent, contemporaries witnessed an unprecedented rise in real wages. These anomalous increases in average hourly earnings are partly explained by the marked reductions in working hours in 1918–20; in 1920, the working week was restricted to 48 hours in manufacturing, commerce and transport.³⁸ Annual wages did not increase by nearly as much as hourly wages.³⁹

The interwar era, plagued by recurrent labour disputes and high rates of unemployment, brought comparatively modest real wage increases, mostly because of stagnation in the 1930s. The fearsome crisis at the beginning of the 1930s, the Great Depression, did not in fact leave a conspicuously negative mark in the wage record but the 1930s as a whole looks particularly pale given the Swedish growth record in that decade: the annual per capita GDP growth rate was more than 3 per cent in 1930 to 1939 and the growth of labour productivity in manufacturing industry was vigorous.⁴⁰ By inference, labour's share of value added in the manufacturing industry decreased.⁴¹

The 1938 Saltsjöbad agreement between the employers association, SAF, and the labour union, LO, establishing a set of rules governing central wage negotiations and restrictions circumscribing the adverse effects of strikes, was the culmination of a series of attempts to solve the problems of recurrent labour disputes. It ushered in an era of relative peace and consensus between the representatives of capital and labour, which lasted until the end of the 1960s.⁴² As with the beginning of the First World War, real wage reductions occurred initially in the Second World War because price increases for consumables exceeded nominal wage increases. There is a striking parallel here between the two World Wars; the opening (three) years reduced real wages by about 8 per cent and in both cases reductions were caused by price increases for goods and services.

However, the era which followed the Second World War brought large and permanent gains in living standards. Because of rapid increases in labour productivity and an institutional set-up designed to promote consensus between the combatants in labour markets, workers in most developed countries enjoyed a long-lasting period of peace and prosperity.⁴³ The traditional dating of this golden era is 1950 to 1973. Until at least the end of the 1960s there were few labour disputes and the latter half

38 Isidorsson (2000).

39 Bagge, Lundberg and Svernilson (1933 pp. 260–1).

40 Edvinsson (2005).

41 Schön (2004).

42 Lundh (2004).

43 Eichengreen (1996).

of that decade also saw the emergence of the so-called Swedish model.⁴⁴ The Swedish real wage series indicate, however, that the golden era actually started in 1942 and lasted until 1976, signifying 35 years of uninterrupted real wage increases, unprecedented in modern times. The average annual growth rate was no less than 4.1 per cent, 1.8 percentage points above the growth rate recorded for the period 1860–2007 as a whole. The long series of years during which real wages grew rapidly and sustainably has perhaps tended to perpetuate the notion that this achievement is the standard against which other growth records should be judged. That is questionable. The long-term evidence of real wages suggests instead that the era after the Second World War was exceptional, which makes it unsuitable as a benchmark.

Since then, the growth of real wages has been relatively sluggish, on average 1.2 per cent per annum. Above all, progress in this period has been more episodic; with brief episodes of rapid acceleration, deceleration and even temporary declines. Between 1976 and 1983 real wages actually decreased by 11 per cent, which contrasts sharply with the more optimistic nominal wage picture in Figure 10.1, which does not allow for the inflationary conditions in the wake of the oil crises and the three consecutive devaluations of the currency. In sharp contrast with the interwar period, when both nominal and real wages grew at a sedate pace, the crises at the end of the 1970s involved nominal wage increases that greatly exceeded the growth of real wages. Contemporaries predicted just a brief deceleration in the growth of real wages and a rebound in economic growth in the next few years. Economic policy was therefore designed to safeguard employment with massive industrial subsidization to prevent substantive destruction of human and material capital and the labour unions continued to demand high nominal wage increases in response to soaring inflation.⁴⁵ The expectations of a brief slump came to naught, however, and the conflict between labour unions and the employers' association heightened. By historical standards, the crises in the late 1970s and early 1980s seem to have entailed the most protracted and deepest wage recession in the entire era.

The next severe setback, at the beginning of the 1990s, was comparatively brief, reducing real wages by 4.4 per cent between 1990 and 1993. Since 1994 we have enjoyed 13 years of unbroken real wage gains, historically rivalled only by the golden period 1942–76. The rate of inflation was brought down, which meant that modest nominal wage increases translated into respectable increases in real wages; between 1994 and 2007 real wages grew by 2.4 per cent per annum. Yet, to break the record after the Second World War, we need a further 23 years of uninterrupted real wage growth, an accomplishment that seems increasingly remote in the light of the current economic crisis.

44 Lundberg (1985); Lindbeck (1997).

45 Bohlin (1999).

10.6. The evolution of the wage structure

The present investigation permits a cursory scan of two measures of wage dispersion: the gender pay ratio and inter-industry wage differentials. The female to male wage ratio for blue-collar workers in manufacturing at large is a crude measure of the inequality of pay. The interpretation of the ratio's size requires caution. The measure does not reveal whether the observed payment gaps were in fact generated by differences in educational attainments and job-related qualifications. However, those who are prepared to waive all reservations concerning the multitude of possible interpretations may find some interest in what the long-term gender pay ratio suggests. An outstanding feature of this ratio is that female wages have outgrown male wages since 1865, although female catching up has been episodic rather than continuous. Figure 10.3 shows that convergence was manifest in three, easily identifiable periods, the first of which took place immediately after the First World War, the second between 1943 and 1949 and the third, and most pronounced, between 1961 and 1978. This evidence of sharp contractions of the male to female wage gap in manufacturing in three marked episodes during the 20th century accords well with what Lars Svensson, on the basis of the official wage statistics, found in his investigation.⁴⁶ Apart from these episodes of rapid developments of female relative wages, the gap between male and female wages has been quite stable. Before 1913, the female-to-male pay ratio was on average 50 in the textile industry; thus, a female worker had to toil twice as long as a male worker to earn the same annual wage. In 2007, the male wage advantage had narrowed to on average 8 per cent. This marked contraction of the gender wage gap is one of the most pervasive aspects of the evolution of labour markets in the 20th century, in Sweden as well as in other developed countries.⁴⁷ Another noteworthy aspect is the increase in the female participation rate in the manufacturing industry, from 16 per cent in 1913 to 29 per cent at the end of the 1980s. Since then, the rate has fallen back to 25 percent.⁴⁸

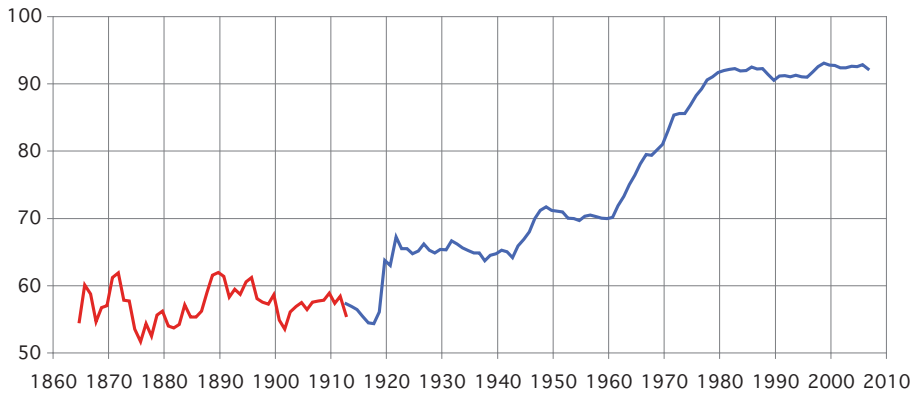
The three occurrences of gender wage gap contractions in the 20th century, particularly the last one, have attracted close attention. An earlier camp interpreted the narrowing of the gender pay gap after the Second World War as a response to policy changes promoting equal opportunities for male and female workers.⁴⁹ Most of these policies, for instance the abolition of separate wage tariffs for male and female workers and agreements designed to promote workers at the lower end of the market, were implemented in the 1960s and 1970s. Lars Svensson questions the idea that these strategies to favour wage compression were solely responsible for the female wage catch up in the 1960s and 1970s. Two factors cast doubt on the policy change

46 Svensson (1995, 1996).

47 Blau and Kahn (2000).

48 Most women are employed in sectors other than manufacturing. Before 1960 the proportion of women in gainful employment engaged in manufacturing was 30 per cent; today it is down to 10 per cent (Svensson 2003).

49 Hibbs (1990), Löfström and Gustafsson (1991) and Gustafsson and Lantz (1985).

Figure 10.3. *The female-to-male wage ratio in manufacturing, 1865–2007*

Note: The pre-1913 series is based solely on wage ratios in the textile industry.

Sources: Appendix, Tables A10.1 and A10.2.

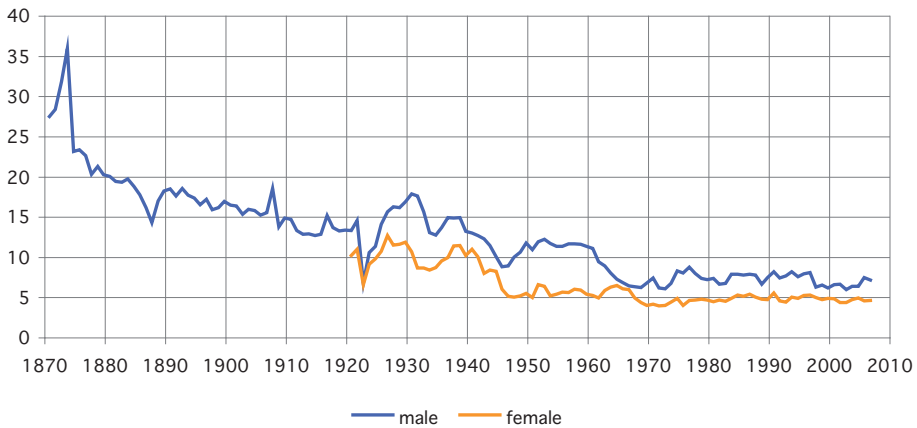
hypothesis: first, the tendency towards wage compression started before the change in wage policy; second, market and demographic forces, in terms of a relative scarcity of married women willing to enter the labour markets, and surplus demand for female labour services in connection with technological developments and rationalization, were very favourable for the development of female relative wages. Svensson shows that the increase in demand for female labour was particularly strong in the metal, engineering and electro-mechanical industries. The most striking example is the automotive industry, where the female to male wage ratio increased by 32 percentage points between 1960 and 1965, and female employment increased by 750 per cent. Similar unbalanced growth characteristics – varying rates of female relative wage gains within different industries – served to contract the gender pay gap in the two earlier episodes of convergence, in 1919–22 and from 1943 to 1949. Thus the effects of inter-industrial employment structures do not seem to have played an important part in the race between female and male wages in the manufacturing industry.⁵⁰

The other measure of wage dispersion which the present investigation enables us to explore is the variation of wage levels by industry. These inter-industry wage gaps are sometimes referred to as a surprisingly sustainable feature of economic development that calls for an explanation. One would perhaps expect the gaps to disappear altogether as a result of equilibrating market forces but they disobey this simple logic and thus have engaged numerous minds in economics and economic history.⁵¹ The

⁵⁰ Svensson (1995).

⁵¹ Cullen (1956), Johansen (1958), Krueger and Summers (1987) and Allen (1995). For Sweden, see Svensson (2004) and Hibbs and Locking (1996, 2000).

Figure 10.4. *The evolution of inter-industry wage dispersion, 1871–2007 (coefficient of variation)*



Sources: Appendix, Tables A10.1 and A10.2

long-term Swedish evidence indicates that the 20th century witnessed a pronounced compression of these wage differentials. In the course of the nearly one-and-a-half centuries this chapter encompasses, these differentials have diminished but have not completely disappeared. Figure 10.4 shows the evolution of the coefficient of variation for male wages since 1871, and for female wages since 1921. Disregarding for a moment the anomalous peak in the mid-1870s, attributable to the anomalous behaviour of wages for male sawmill workers, the ratio was roughly halved between the pre-1913 era of industrialization and the end of the 1960s, after which it has remained quite stable. Inter-industry wage dispersions were generally smaller among female workers for the period as a whole but since the tendency towards wage compression among male workers was more pronounced and there was a slight tendency towards increased dispersion among female workers in the 1970s and 1980s, the two measures nearly converged around the turn of the century. Three eras of major wage compression permanently reduced the magnitude of the coefficient of variation, each of them by about forty per cent. The first coincides broadly with the first pre-1913 wave of industrialization; the second started at the beginning of the 1930s and lasted until the end of the 1940s; and the third spanned the golden period after the Second World War, from the end of the 1950s to the beginning of the 1970s.⁵² The deflation at the beginning of the 1920s also compressed the wage structure temporarily but wage dispersion quickly rebounded during the rest of the 1920s. The reason for the sudden wage compres-

52 Lundh (2002 p. 203) documents the coefficient of variation for a similar classification of industries from the official wage statistics between 1930 and 1970. His documentation also shows that the wage structure became more compressed in the 1930s, 1940s and 1960s.



The Little Brewery, 1890, by Anders Zorn (1860–1920).

Source: Nationalmuseum.

sion during the deflation was that industries with relatively high wage levels experienced a more precipitous drop in wages than did low-wage industries. The same mechanism compressed the wage structure at the beginning of the 1930s and during the Second World War.

The size order of the hourly wage levels among the nine industries underwent some changes, particularly before 1913. Wages in mining remained at the top throughout the period, usually followed by engineering and paper. At the other end of the scale, the wood industry seems to have performed consistently badly, the 1870s notwithstanding. Other low wage industries were food (apart from the pre-1913 period), textiles and quarrying. The female story is similar. The highest wages were paid to female workers in the engineering industry until the mid-1960s, when female wages in mining rose from the lowest to the highest position in just a few years. During the rest of the period, mining remained at the top of the table, while engineering wages declined relatively. Low wages were paid to female workers in the textile, food, wood and quarrying industries. In general, high-wage industries were oriented towards the world market.

It is tempting to view this movement towards greater wage compression as a response to the rise of labour unions and to government involvement in the labour market through regulation and legislation designed to promote wage equality. In particular, the concurrence of wage compression on the one hand and centralized bargaining and wage solidarity on the other in the 1960s hints at a possible connec-

tion, running from policy to performance.⁵³ The interlude of prominent equalization of inter-industry wage gaps in the 1960s made the Swedish wage structure in manufacturing very compressed in an international perspective, especially in relation to the US.⁵⁴ In Sweden, most of the industry wage differentials can be explained by industry differences in labour quality and working conditions, while in the US, the industry variable is a more important wage determinant. Swedish wage differentials by occupation have been almost erased. The difference between the two countries suggests that labour unions play an important part.⁵⁵ And, as Claudia Goldin concludes, and which contrasts with her study object, the American labour market, European labour markets have been fundamentally transformed by institutional wage settings, employment security laws, mandated work councils and centralized bargaining.⁵⁶ The remarkably uniform pace of wage progress among the nine industries since at least the 1970s – itemized in Table 10.4, which shows the annual growth rates of female and male wages by industry in 1970–2007 – is difficult to imagine without the establishment of collective agreements and pervasive unionization in the manufacturing industry. In Sweden, the first wave of labour unions occurred in the 1880s. The establishment of new labour unions continued through the 1890s and 1900s until the general strike in 1909, which marked a turning point in labour union memberships. The share of workers associated with a labour union recovered in the 1920s and rose steadily from then on until the 1950s, when close to 80 per cent of blue-collar workers belonged to a labour union.⁵⁷

Table 10.4. *Average annual growth rates (per cent) of nominal hourly earnings by industry, 1970–2007*

	Male	Female
Mining	6.7	6.8
Metal	6.8	6.9
Engineering	6.7	7.0
Quarrying	6.8	7.0
Wood	6.7	7.0
Paper	6.8	7.0
Food	6.8	6.9
Textile	6.9	6.9
Chemical	7.1	7.1

Sources: Appendix, Tables A10.1 and A10.2.

⁵³ Hedin and Holmlund (1995) and Hibbs and Locking (2000).

⁵⁴ Kreuger and Summers (1987).

⁵⁵ Edin and Zetterberg (1992).

⁵⁶ Goldin (2000 p. 550).

⁵⁷ Lundh (2002 pp. 100–1).



A modern printing works.

Source: Riksbanken.se

Still, as others have pointed out many times, the perceived wisdom that policy and labour market institutions always exert a strong influence on the way history unfolds often turns out to be unfounded. Instead, authors often conclude that the voice and actions of unionized labour and the legislation which often follows in their wake simply reinforce long-term forces that have already been set in motion.⁵⁸ Sustainable gains in real wages started in the 1860s, before labour unions appeared on the stage and the levelling tendency of inter-industry wage differentials predated the policy of wage solidarity.

10.7. Conclusions

This chapter presents series of earnings for female and male manufacturing workers from 1860 to 2007, for 9 separate industries and for manufacturing as a whole. Wage data from the pre-1913 period, when there is a paucity of official wage statistics, are taken from Bagge, Lundberg and Svenilsson's major contribution, *Wages in Sweden*, whose first volume (1933) contains industry-specific wage series based on thus far novel and extensive archival research. They attempted to establish wage rates for homogeneous professional classifications, paying due consideration to the effects of age, qualifications and gender. In spite of all the decades that have elapsed since its publication, *Wages in Sweden* still sums up what we know about wage movements in the manufacturing sector before 1913. After 1913 the Social Board, first, and Statistics Sweden, later, provide average hourly earnings by industry. The coverage is significantly improved in relation to *Wages in Sweden* but the measure of average hourly earnings by industry in the official statistics makes no distinction between worker's formal and professional qualifications.

The allocation of industries into nine groups is based on Statistics Sweden's latest classification scheme, SNI 1992/2002, making it possible to carry the series forward henceforth. The approach used to construct a weighted average of manufacturing is designed to provide an estimate of levels of average hourly earnings in nine industries, with indices of hourly earnings in each industry scaled proportionally to the actual hourly wages in a reference year (1950). The same methodology was used to establish series of employment. The decomposition of the series of average wages into Laspeyres and Paasche index numbers shows that inter-occupational employment shifts did not contribute significantly to the growth of average earnings.

Male nominal wages in the manufacturing sector increased at an annual average rate of 5.3 per cent from 1860 to 2007. Because nominal wages fail to account for price increases for the goods which make up workers' consumption bundle, they lead

58 For instance, Roine and Waldenström (2009) show that the wealth share of the top decile started declining long before the welfare state and a set of redistributive policies could possibly have affected income distribution. Scheve and Stasavage (2009) likewise demonstrate that the decline of top income shares occurred before centralized wage bargaining was introduced in a sample of OECD countries.

us astray as to the real gains in purchasing power. The real wage, which is the preferred measure, has grown more moderately, 2.25 per cent annually. The era after the Second World War stands out for the series of 35 years of unbroken real wage progress, averaging 4.1 per cent annually, unprecedented in modern times. The most astonishing leap forward took place, however, in the aftermath of the First World War, 1919–21, when average hourly earnings soared by about 20 per cent annually, due above all to cuts in working hours. The most prolonged and severe real wage crisis occurred in 1977 to 1983, cutting earlier real wage gains by 11 per cent.

This long-term wage study permits a preliminary look at the evolution of two measures of wage dispersion: the gender pay ratio and inter-industry wage differentials. Female wage convergence was profound in three well-defined periods, raising the female to male wage ratio from about 50 to 90. The most recent and important of these episodes ran from 1961 to 1978. Since then, the ratio has been rather stable. A combination of policy, intended to promote wage compression via regulation, and the supply of and demand for female labour services, closed most of the remaining gender wage gap in the 1960s and 1970s. The movement of the coefficient of variation indicates that the wage structure has become more compressed since the pre-1913 initial surge of industrialization. The measure was roughly halved between the pre-1913 era of industrialization and the end of the 1960s, after which it has remained quite stable. While it is true that wage compression began before unionization and legislation could possibly have had a significant impact on the wage structure, collective agreements between labour unions and the employer's association surely set the stage for the levelling tendency during the 20th century.

Appendix A10.1

Classification of industry

The following account gives the sources underlying the nominal wage series and employment weights. Words in italics mark entries in any of the following volumes:

Wages:

- 1913–28: Sociala meddelanden, Socialstyrelsen
- 1929–51: Statistisk årsbok, Socialstyrelsen
- 1952–60: Statens offentliga statistik, Löner, Socialstyrelsen
- 1961–93: Statens offentliga statistik, Löner, Statistiska centralbyrån
- 1994–2007: Statistiska meddelanden, Statistiska centralbyrån

Employment:

- 1913–58: Statens offentliga statistik, Industri, Kommerskollegium
- 1959–86: Statens offentliga statistik, Industri, Statistiska centralbyrån
- 1987–92: Arbetskraftsundersökning, Statistiska centralbyrån
- 1993–2007: Registerbaserad arbetsmarknadsstatistik, Statistiska centralbyrån

Mining

Wages

- 1860–1913: Bagge, Lundberg and Svenilsson (1933 p. 104, Table 8), male annual wages at mines in central Sweden
- 1913–51: *Gruvor och anrikningsverk*
- 1952–71: *Malmgruvor*
- 1972–93: SNI₆₉ 2
- 1994–2007: SNI₉₂ 10–14

Employment

- 1860–1912: Prado (2008b)
- 1913–67: *Järnmalmgruvor och anrikningsverk; Andra malmgruvor och anrikningsverk*
- 1968–85: SNI₆₉ 2
- 1986–2007: SNI₉₂ 10–14

Metal

Wages

- 1860–1913: Bagge, Lundberg and Svenilsson (1933 p. 74–5, Table 6), male hourly wages at iron works
- 1913–51: *Järn- stål och kopparverk; Järn- och stålmanufaktur; Metalmanufaktur; Guld- och silverfabriker*

1952–71: *Järn- och metallverk; Järn- och stålmanufaktur; Annan metallindustri*

1972–93: SNI₆₉ 37; SNI₆₉ 381

1994–2007: SNI₉₂ 27–28

Employment

1860–1912: Prado (2008b) less handicraft workers from Schön (1988 Table 14)

1913–39: *Verk för framställning av järn och stål; Verk för framställning av andra metaller; Järn- och stålmanufaktur; Metallmanufaktur; Guld- och silverfabriker; Annan järn- och metallindustri*

1940–68: *Järn- och stålverk; Andra metallverk; Järn- och stålmanufaktur; Guld- silver- och nysilverfabriker*

1969–85: SNI₆₉ 37; SNI₆₉ 381

1986–2007: SNI₉₂ 27–28

Engineering

Wages

1860–1913: Bagge, Lundberg and Svennilson (1933 p. 115, Table 10), male hourly wages at metal manufacturing and engineering works.

1913–51: *Mekaniska verkstäder; Skeppsvarv och båtbyggerier; Instrument och urfabriker; Fabriker för elektriska maskiner*

1952–71: *Mekaniska verkstäder; Bil- och karosserifabriker; Reparationsverkstäder; Skeppsvarv; Elektroteknisk industri*

1972–93: SNI₆₉ 38 with SNI₆₉ 381 excluded

1994–2007: SNI₉₂ 29–35

Note: The wage series for 1860–1913 contains a certain amount of industries that actually belong to Metal.

Employment

1860–1912: Prado (2008b) less handicraft workers from Schön (1988 Table 14)

1913–39: *Mekaniska verkstäder; Skeppsvarv och båtbyggeri, Instrument- och urfabriker; Fabriker för elektriska apparater; Fabriker för elektriska apparater och ledningar*

1940–67: *Andra Mekaniska verkstäder och gjuterier; Skeppsvarv och båtbyggeri, Instrument- och urfabriker; Transportmedelsfabriker (utom skeppsvarv); Elektroteknisk industri*

1968–85: SNI₆₉ 38, with SNI₆₉ 381 excluded

1986–2007: SNI₉₂ 29–35

Quarrying, clay and glass industry

Wages

1868–1913: Bagge, Lundberg and Svennilson (1933, monograph section), based on wage series for glass workers, workers at china factories, brick makers, workers at cement factories and hewers. For a more detailed description, see Prado (2008a p. 59).

1913–51: *Jord- och stenindustri*

1952–71: *Jord- och stenindustri; Kolgruvor*

1972–93: SNI₆₉ 36

1993–2007: SNI₉₂ 26

Employment

1868–1912: Prado (2008b) less handicraft workers from Schön (1988 Table 14)

1913–51: *Jord- och stenindustri*

1952–68: *Jord- och stenindustri; Kolgruvor*

1969–85: SNI₆₉ 36

1986–2007: SNI₉₂ 26

Wood industry

Wages

1870–1913: Bagge, Lundborg and Svenilsson (1933 p. 143, Table 12), arithmetic mean of the series of hourly earnings of sawers and plank pilers

1913–71: *Träindustri*

1972–93: SNI₆₉ 33

1994–2007: SNI₉₂ 20

Note: The wage series for 1870–1913 and 1994–2007 do not include the furniture industry

Employment

1870–1912: Prado (2008b) less handicraft workers from Schön (1988 Table 14)

1913–51: *Träindustri*

1952–68: *Träindustri; Wallboardfabriker*

1969–85: SNI₆₉ 33; SNI₆₉ 34113

1986–2007: SNI₉₂ 20

Pulp, paper and printing

Wages

1860–1913: Bagge, Lundberg and Svenilsson (1933 p. 172, Table 15), hourly earnings for male wood pulp workers and hourly earnings for skilled paper mill workers (p. 187, Table 16).

1913–51: *Pappers- och grafisk industri*

1952–71: *Massafabriker och pappersbruk; Pappersvaru- och grafisk industri*

1972–93: SNI₆₉ 34

1994–2007: SNI₉₂ 21–22

Note: The wage series for 1860–1913 does not include the book printing industry.

Employment

1860–1912: Prado (2008b) less handicraft workers from Schön (1988 Table 14)

1913–51: *Pappers- och grafisk industri*
 1952–68: *Massa- och pappersindustri; Grafisk industri*
 1969–85: SNI₆₉ 34, with SNI₆₉ 34113 excluded
 1986–2007: SNI₉₂ 21–22

Food, beverages and tobacco

Wages

1861–1913: Bagge, Lundberg and Svennilson (1933 p. 196, Table 18), male and female hourly wages

1913–51: *Livsmedelsindustri*
 1952–71: *Livsmedelsindustri; Dryckesvaru- och tobaksindustri*
 1972–93: SNI₆₉ 31
 1994–2007: SNI₉₂ 15–16

Note: The wage series for 1861–1913 does not include the tobacco industry

Employment

1861–1912: Prado (2008b) less handicraft workers from Schön (1988 Table 14)
 1913–51: *Livsmedelsindustri*
 1952–68: *Livsmedelsindustri; Dryckesvaru- och tobaksindustri*
 1969–85: SNI₆₉ 31
 1986–2007: SNI₉₂ 15–16

Textiles, leather and hair

Wages

1865–13: Bagge, Lundberg and Svennilson (1933 p. 220, Table 20), male and female hourly wages

1913–71: *Textil- och beklädnadsindustri; Läder- och hårindustri*
 1972–93: SNI₆₉ 32
 1994–2007: SNI₉₂ 17–19

Note: The wage series for male and female wages in 1865–1913 does not include the leather and hair industry.

Employment

1865–1912: Prado (2008b) less handicraft workers from Schön (1988 Table 14)
 1913–68: *Textil- och beklädnadsindustri; Läder- och hårindustri*
 1969–85: SNI₆₉ 32
 1986–2007: SNI₉₂ 17–19

Chemical

Wages

1871–1913: Bagge, Lundberg and Svennilson (1933 monographic section) arithmetic mean of the series of wages for workers at soap factories, nitroglycerine factories,

superphosphate factories, match factories and candle moulders at stearine factories. For a more detailed description, see Prado (2008a p. 61–2).

1913–71: *Kemisk-teknisk industri; Gummivaruindustri*

1972–93: SNI₆₉ 35

1993–2007: SNI₉₂ 23–25

Employment

1871–1912: Prado (2008b)

1913–68: *Kemisk-teknisk industri, Gummivaruindustri, Gummirepationsverkst der*

1969–85: SNI₆₉ 35

1986–2007: SNI₉₂ 23–25

Appendix A10.2.

Table A10.1. *Male hourly earnings, 1860–2007, kronor*

	Mining	Metal	Engineering	Quarrying	Wood	Paper	Food	Textile	Chemical	Weighted average
1860	0.20	0.08	0.12			0.11				
1861	0.21	0.09	0.12			0.11	0.16			
1862	0.22	0.13	0.12			0.11	0.16			
1863	0.21	0.12	0.13			0.12	0.16			
1864	0.22	0.10	0.12			0.12	0.16			
1865	0.22	0.11	0.13			0.12	0.17	0.13		
1866	0.22	0.09	0.13			0.12	0.17	0.13		
1867	0.22	0.10	0.14			0.12	0.17	0.13		
1868	0.23	0.13	0.14	0.15		0.12	0.17	0.13		
1869	0.23	0.15	0.16	0.14		0.12	0.17	0.13		
1870	0.23	0.10	0.17	0.15	0.29	0.12	0.17	0.13		
1871	0.24	0.12	0.17	0.16	0.27	0.12	0.17	0.13	0.16	0.17
1872	0.27	0.15	0.19	0.17	0.30	0.14	0.19	0.13	0.19	0.20
1873	0.33	0.15	0.20	0.18	0.33	0.16	0.21	0.14	0.23	0.22
1874	0.35	0.18	0.21	0.20	0.44	0.18	0.22	0.16	0.25	0.25
1875	0.34	0.18	0.21	0.22	0.28	0.19	0.22	0.17	0.27	0.22
1876	0.32	0.17	0.20	0.22	0.29	0.19	0.20	0.18	0.27	0.22
1877	0.32	0.18	0.19	0.22	0.32	0.19	0.23	0.18	0.27	0.23
1878	0.30	0.17	0.18	0.20	0.27	0.19	0.22	0.18	0.25	0.22
1879	0.28	0.15	0.17	0.16	0.23	0.18	0.22	0.17	0.24	0.20
1880	0.29	0.16	0.19	0.19	0.20	0.18	0.22	0.17	0.25	0.19
1881	0.30	0.14	0.21	0.20	0.22	0.18	0.22	0.18	0.25	0.20
1882	0.31	0.16	0.21	0.20	0.23	0.18	0.22	0.19	0.26	0.21

Table A10.1 (cont.). *Male hourly earnings, 1860–2007, kronor*

	Mining	Metal	Engineering	Quarrying	Wood	Paper	Food	Textile	Chemical	Weighted average
1883	0.32	0.17	0.21	0.20	0.23	0.19	0.21	0.19	0.26	0.21
1884	0.32	0.17	0.21	0.20	0.22	0.19	0.22	0.18	0.26	0.21
1885	0.31	0.17	0.21	0.20	0.22	0.19	0.22	0.19	0.26	0.21
1886	0.29	0.17	0.20	0.20	0.22	0.18	0.22	0.19	0.26	0.21
1887	0.28	0.17	0.20	0.20	0.21	0.18	0.22	0.19	0.26	0.20
1888	0.26	0.17	0.21	0.20	0.22	0.19	0.22	0.19	0.26	0.21
1889	0.29	0.16	0.23	0.22	0.23	0.19	0.23	0.19	0.28	0.21
1890	0.31	0.18	0.23	0.22	0.22	0.20	0.25	0.20	0.30	0.22
1891	0.31	0.17	0.24	0.23	0.22	0.22	0.26	0.20	0.30	0.23
1892	0.32	0.19	0.23	0.23	0.23	0.22	0.27	0.21	0.31	0.24
1893	0.32	0.18	0.24	0.23	0.23	0.22	0.28	0.21	0.31	0.24
1894	0.32	0.18	0.24	0.24	0.23	0.22	0.28	0.22	0.31	0.24
1895	0.32	0.18	0.25	0.24	0.23	0.23	0.28	0.22	0.32	0.25
1896	0.33	0.18	0.27	0.25	0.24	0.24	0.29	0.22	0.30	0.25
1897	0.35	0.19	0.27	0.25	0.25	0.26	0.32	0.23	0.32	0.26
1898	0.37	0.21	0.30	0.26	0.26	0.27	0.33	0.25	0.33	0.28
1899	0.39	0.22	0.31	0.28	0.27	0.28	0.34	0.26	0.34	0.29
1900	0.41	0.23	0.33	0.28	0.28	0.29	0.35	0.26	0.35	0.30
1901	0.42	0.24	0.32	0.29	0.27	0.29	0.35	0.28	0.35	0.30
1902	0.42	0.25	0.33	0.28	0.27	0.29	0.36	0.29	0.36	0.31
1903	0.41	0.25	0.33	0.29	0.28	0.30	0.37	0.28	0.36	0.31
1904	0.43	0.26	0.36	0.29	0.29	0.31	0.37	0.28	0.36	0.32
1905	0.43	0.27	0.38	0.30	0.30	0.32	0.39	0.30	0.37	0.33
1906	0.45	0.29	0.39	0.32	0.30	0.33	0.41	0.32	0.40	0.34
1907	0.48	0.29	0.41	0.34	0.32	0.36	0.42	0.33	0.43	0.36
1908	0.51	0.29	0.42	0.35	0.32	0.32	0.45	0.34	0.44	0.37
1909	0.41	0.31	0.43	0.34	0.32	0.38	0.47	0.35	0.44	0.38
1910	0.53	0.37	0.44	0.36	0.34	0.38	0.48	0.35	0.43	0.40
1911	0.55	0.37	0.45	0.37	0.35	0.39	0.47	0.37	0.44	0.41
1912	0.55	0.39	0.47	0.38	0.36	0.40	0.49	0.40	0.45	0.42
1913	0.57	0.39	0.46	0.42	0.37	0.43	0.49	0.41	0.46	0.43
1914										0.45
1915										0.48
1916										0.53
1917										0.67
1918										0.96
1919										1.28
1920										1.58
1921	2.06	1.42	1.68	1.44	1.34	1.55	1.79	1.48	1.66	1.57
1922	1.43	1.06	1.25	0.94	0.95	1.08	1.39	1.10	1.16	1.13
1923	1.17	1.02	1.13	0.97	0.98	1.08	1.18	1.06	1.07	1.06
1924	1.36	1.04	1.17	0.99	0.98	1.07	1.23	1.07	1.11	1.09
1925	1.41	1.07	1.19	1.03	0.99	1.11	1.31	1.08	1.14	1.12

Table A10.1 (cont.). *Male hourly earnings, 1860–2007, kronor*

	Mining	Metal	Engineering	Quarrying	Wood	Paper	Food	Textile	Chemical	Weighted average
1926	1.52	1.08	1.20	1.04	0.98	1.15	1.37	1.06	1.13	1.14
1927	1.58	1.09	1.21	0.94	1.01	1.15	1.34	1.07	1.13	1.13
1928	1.63	1.11	1.23	0.95	1.02	1.19	1.35	1.08	1.14	1.15
1929	1.65	1.13	1.26	0.97	1.05	1.20	1.38	1.07	1.17	1.17
1930	1.71	1.15	1.27	0.98	1.04	1.23	1.38	1.09	1.20	1.19
1931	1.73	1.13	1.27	0.97	1.00	1.24	1.37	1.09	1.20	1.17
1932	1.65	1.09	1.23	0.94	0.96	1.19	1.37	1.06	1.20	1.14
1933	1.54	1.09	1.22	0.94	0.95	1.16	1.36	1.07	1.20	1.13
1934	1.42	1.11	1.23	0.97	0.94	1.19	1.33	1.06	1.19	1.14
1935	1.44	1.14	1.24	0.98	0.97	1.21	1.34	1.06	1.20	1.15
1936	1.50	1.15	1.27	1.00	0.96	1.24	1.35	1.07	1.23	1.17
1937	1.63	1.19	1.30	1.02	1.00	1.30	1.38	1.12	1.27	1.21
1938	1.72	1.27	1.39	1.09	1.06	1.37	1.43	1.14	1.33	1.28
1939	1.79	1.32	1.43	1.12	1.10	1.41	1.45	1.18	1.36	1.32
1940	1.84	1.44	1.57	1.23	1.18	1.52	1.55	1.31	1.49	1.45
1941	1.96	1.57	1.69	1.31	1.27	1.63	1.63	1.40	1.61	1.56
1942	2.16	1.71	1.85	1.46	1.40	1.76	1.75	1.55	1.72	1.70
1943	2.26	1.79	1.91	1.57	1.47	1.82	1.83	1.62	1.78	1.77
1944	2.28	1.84	1.96	1.63	1.51	1.87	1.85	1.70	1.83	1.82
1945	2.33	1.92	2.05	1.73	1.63	1.95	1.92	1.79	1.93	1.91
1946	2.47	2.03	2.15	1.88	1.81	2.10	2.04	1.95	2.07	2.04
1947	2.85	2.34	2.45	2.18	2.07	2.40	2.31	2.25	2.39	2.34
1948	3.20	2.55	2.65	2.34	2.25	2.59	2.50	2.46	2.59	2.54
1949	3.34	2.66	2.76	2.42	2.31	2.62	2.49	2.57	2.67	2.62
1950	3.57	2.78	2.88	2.51	2.40	2.70	2.57	2.63	2.78	2.73
1951	4.18	3.37	3.46	3.04	2.95	3.24	3.05	3.10	3.15	3.27
1952	5.03	4.05	4.14	3.59	3.42	3.97	3.57	3.59	3.83	3.91
1953	5.30	4.27	4.44	3.76	3.59	4.11	3.75	3.75	4.03	4.13
1954	5.50	4.41	4.60	4.00	3.84	4.36	3.85	3.89	4.28	4.31
1955	5.92	4.77	4.93	4.34	4.17	4.79	4.23	4.19	4.61	4.68
1956	6.36	5.19	5.35	4.66	4.48	5.20	4.52	4.55	5.01	5.06
1957	6.80	5.51	5.64	4.96	4.75	5.48	4.76	4.80	5.28	5.35
1958	7.20	5.84	6.01	5.27	5.05	5.75	5.05	5.08	5.53	5.68
1959	7.55	6.12	6.25	5.52	5.32	6.00	5.33	5.30	5.73	5.93
1960	8.03	6.51	6.60	5.99	5.67	6.46	5.71	5.64	6.10	6.32
1961	8.62	7.05	7.10	6.45	6.11	6.97	6.19	6.14	6.56	6.83
1962	9.04	7.31	7.68	7.07	6.66	7.47	6.92	6.76	7.06	7.35
1963	9.58	8.09	8.23	7.59	7.19	8.02	7.51	7.25	7.53	7.93
1964	10.17	8.72	8.86	8.31	7.83	8.77	8.16	7.91	8.19	8.58
1965	10.95	9.60	9.73	9.19	8.67	9.74	8.97	8.70	9.08	9.46
1966	11.78	10.37	10.53	10.04	9.38	10.56	9.94	9.46	9.82	10.26
1967	12.46	11.01	11.41	10.77	10.20	11.51	10.76	10.13	10.59	11.06
1968	13.23	11.98	12.10	11.51	10.85	12.55	11.46	11.01	11.25	11.85

Table A10.1 (cont.). *Male hourly earnings, 1860–2007, kronor*

	Mining	Metal	Engineering	Quarrying	Wood	Paper	Food	Textile	Chemical	Weighted average
1969	14.32	12.99	13.06	12.58	11.85	13.76	12.43	11.95	12.28	12.86
1970	16.26	14.47	14.50	13.94	13.20	15.23	13.80	13.14	13.75	14.30
1971	18.21	15.97	15.90	15.13	14.31	16.44	15.14	14.44	15.03	15.67
1972	19.56	17.92	17.10	17.16	16.12	18.65	17.31	16.40	16.62	17.33
1973	21.09	19.57	18.62	18.43	17.57	20.13	18.60	17.79	17.86	18.82
1974	23.96	21.96	20.61	20.59	19.90	23.08	20.58	19.91	20.11	21.04
1975	29.35	25.87	23.96	24.08	23.02	27.30	24.27	23.13	23.61	24.64
1976	32.85	29.13	26.83	27.34	25.76	31.14	27.88	26.30	27.18	27.81
1977	36.45	31.16	29.11	29.63	27.84	33.49	29.77	28.15	29.37	30.02
1978	39.09	33.78	31.54	32.50	30.89	36.60	33.04	30.84	32.29	32.70
1979	41.46	38.05	34.85	36.03	33.87	41.41	36.68	34.45	35.94	36.39
1980	45.60	41.77	38.27	40.51	37.21	45.72	40.44	38.31	40.09	40.12
1981	50.27	44.87	41.95	43.83	40.63	49.79	44.46	41.54	43.71	43.74
1982	51.49	47.74	44.29	46.37	42.72	51.98	46.56	43.75	46.40	46.15
1983	54.28	50.32	46.88	49.01	45.28	55.54	49.59	46.20	49.44	48.90
1984	63.23	56.30	52.00	55.16	50.32	62.64	54.14	51.85	55.56	54.51
1985	67.12	61.34	56.25	59.96	54.53	68.66	58.80	55.36	60.00	59.11
1986	72.47	65.84	60.23	64.50	58.24	72.80	62.77	59.80	64.29	63.25
1987	77.18	71.81	63.80	68.68	62.78	78.51	67.23	64.06	69.21	67.77
1988	83.66	75.33	69.01	74.81	67.62	84.40	72.95	69.24	75.20	72.87
1989	89.17	83.57	76.08	81.71	75.27	91.15	80.71	76.44	83.18	80.36
1990	100.89	92.49	83.52	92.02	83.79	101.88	87.67	83.39	91.92	88.82
1991	108.76	96.29	87.93	94.61	87.05	106.54	90.84	86.80	95.98	92.84
1992	117.45	102.56	95.36	100.25	94.45	110.00	97.70	94.24	104.63	99.57
1993	117.39	102.93	94.50	100.26	94.47	110.82	97.83	93.32	103.79	99.52
1994	121.75	105.66	97.43	103.18	97.57	115.51	101.37	94.34	107.69	102.68
1995	124.85	111.61	102.16	105.85	102.11	120.43	105.52	100.16	109.88	107.22
1996	135.83	118.36	111.75	113.89	110.10	129.62	112.99	105.61	117.19	115.69
1997	140.39	124.53	115.32	117.76	113.67	133.91	115.62	108.70	122.90	119.88
1998	138.48	129.11	120.40	124.54	117.28	137.53	119.82	116.82	126.11	124.32
1999	141.94	132.42	122.02	126.47	119.56	138.90	121.30	118.07	131.75	126.57
2000	147.66	135.74	127.82	128.89	123.16	144.83	128.47	126.56	136.58	131.75
2001	152.31	143.02	129.72	135.07	128.81	150.52	129.95	129.81	142.52	135.72
2002	158.03	145.31	133.59	137.61	132.90	154.19	136.50	131.18	146.75	139.48
2003	160.77	150.16	139.69	143.78	137.22	158.95	140.08	138.18	151.72	144.78
2004	168.40	154.09	144.25	148.50	142.03	166.70	145.14	142.93	156.19	149.65
2005	172.69	157.89	150.10	146.69	146.24	170.99	149.22	148.80	160.24	154.32
2006	184.49	162.54	154.50	150.92	150.08	176.96	154.78	150.55	166.58	159.18
2007	192.95	171.07	161.13	160.73	157.17	183.51	161.08	157.67	171.53	166.17

Table A10.2. *Female hourly earnings 1865–2007, kronor*

	Mining	Metal	Engineering	Quarrying	Wood	Paper	Food	Textile	Chemical	Weighted average
1865								0.07		
1866								0.08		
1867								0.08		
1868								0.07		
1869								0.07		
1870								0.07		
1871								0.08		
1872								0.08		
1873								0.08		
1874								0.09		
1875								0.09		
1876								0.09		
1877								0.10		
1878								0.09		
1879								0.09		
1880								0.09		
1881								0.10		
1882								0.10		
1883								0.10		
1884								0.11		
1885								0.11		
1886								0.11		
1887								0.11		
1888							0.09	0.11		
1889							0.09	0.12		
1890							0.12	0.12		
1891							0.13	0.12		
1892							0.13	0.12		
1893							0.13	0.12		
1894							0.13	0.13		
1895							0.14	0.13		
1896							0.15	0.14		
1897							0.15	0.14		
1898							0.16	0.15		
1899							0.15	0.15		
1900							0.16	0.15		
1901							0.16	0.15		
1902							0.17	0.15		
1903							0.17	0.16		
1904							0.18	0.16		
1905							0.18	0.17		
1906							0.20	0.18		

Table A10.2 (cont.). *Female hourly earnings 1865–2007, kronor*

	Mining	Metal	Engin- eering	Quarry- ing	Wood	Paper	Food	Textile	Chemical	Weighted average
1907							0.21	0.19		
1908							0.23	0.19		
1909							0.26	0.20		
1910							0.27	0.21		
1911							0.26	0.21		
1912							0.27	0.23		
1913							0.28	0.23		
1914										
1915										
1916										
1917										
1918										
1919										
1920										
1921		0.91	1.07	0.83	0.83	0.99	1.10	0.91	1.00	0.98
1922		0.70	0.77	0.57	0.77	0.75	0.87	0.71	0.76	0.75
1923		0.66	0.70	0.59	0.65	0.69	0.75	0.68	0.69	0.69
1924		0.69	0.72	0.55	0.69	0.70	0.79	0.68	0.69	0.71
1925		0.72	0.81	0.60	0.68	0.69	0.83	0.69	0.71	0.72
1926		0.72	0.87	0.63	0.69	0.74	0.85	0.68	0.72	0.73
1927		0.72	0.90	0.59	0.72	0.70	0.86	0.69	0.72	0.74
1928		0.73	0.91	0.61	0.74	0.72	0.84	0.70	0.73	0.74
1929		0.73	0.93	0.66	0.69	0.74	0.86	0.70	0.73	0.75
1930		0.74	0.96	0.67	0.69	0.74	0.86	0.72	0.77	0.76
1931		0.74	0.93	0.67	0.71	0.76	0.85	0.71	0.77	0.76
1932		0.73	0.85	0.65	0.73	0.75	0.85	0.72	0.77	0.75
1933		0.72	0.84	0.65	0.78	0.74	0.85	0.70	0.77	0.74
1934		0.73	0.86	0.65	0.75	0.76	0.83	0.70	0.76	0.74
1935		0.75	0.86	0.64	0.74	0.76	0.84	0.71	0.76	0.75
1936		0.75	0.87	0.64	0.69	0.77	0.84	0.71	0.77	0.75
1937		0.76	0.89	0.64	0.70	0.80	0.86	0.74	0.78	0.78
1938		0.82	0.98	0.68	0.70	0.83	0.88	0.76	0.83	0.81
1939		0.84	1.02	0.69	0.75	0.88	0.91	0.80	0.83	0.84
1940		0.92	1.09	0.75	0.88	0.95	1.00	0.89	0.91	0.93
1941		1.00	1.19	0.80	0.90	1.04	1.07	0.96	1.01	1.01
1942		1.08	1.28	0.89	0.99	1.13	1.15	1.05	1.09	1.10
1943		1.13	1.22	0.96	1.00	1.18	1.20	1.09	1.11	1.13
1944		1.18	1.35	1.02	1.06	1.22	1.22	1.16	1.15	1.19
1945		1.26	1.43	1.08	1.12	1.30	1.27	1.25	1.23	1.27
1946		1.35	1.48	1.20	1.30	1.43	1.40	1.37	1.33	1.38
1947		1.57	1.73	1.47	1.53	1.69	1.64	1.61	1.57	1.63
1948		1.74	1.89	1.61	1.70	1.88	1.78	1.79	1.73	1.80
1949		1.81	1.98	1.66	1.75	1.91	1.86	1.86	1.82	1.87

Table A10.2 (cont.). *Female hourly earnings 1865–2007, kronor*

	Mining	Metal	Engineering	Quarrying	Wood	Paper	Food	Textile	Chemical	Weighted average
1950		1.90	2.07	1.70	1.82	1.96	1.87	1.92	1.91	1.93
1951		2.30	2.49	2.07	2.21	2.29	2.29	2.29	2.24	2.31
1952	2.52	2.80	3.05	2.49	2.57	2.91	2.71	2.67	2.68	2.77
1953	2.59	2.92	3.21	2.59	2.72	3.01	2.85	2.79	2.81	2.88
1954	2.67	3.01	3.31	2.82	2.84	3.11	2.96	2.91	2.99	3.00
1955	2.87	3.25	3.53	2.94	3.18	3.42	3.23	3.13	3.25	3.25
1956	3.14	3.56	3.88	3.20	3.45	3.71	3.50	3.40	3.54	3.55
1957	3.22	3.79	4.11	3.39	3.68	3.92	3.69	3.62	3.75	3.76
1958	3.33	4.02	4.38	3.55	3.85	4.13	3.90	3.82	3.94	3.98
1959	3.39	4.21	4.54	3.68	4.12	4.28	4.11	3.96	4.08	4.14
1960	3.84	4.50	4.80	3.97	4.41	4.53	4.43	4.21	4.35	4.41
1961	4.32	4.87	5.15	4.28	4.73	4.88	4.82	4.56	4.69	4.78
1962	4.80	5.40	5.63	4.77	5.26	5.32	5.39	5.02	5.12	5.27
1963	5.30	5.97	6.32	5.21	5.82	5.83	5.91	5.46	5.50	5.79
1964	5.97	6.64	7.05	5.75	6.35	6.53	6.49	6.01	6.04	6.41
1965	7.03	7.58	7.96	6.50	7.16	7.27	7.18	6.66	6.82	7.21
1966	8.38	8.39	8.77	7.34	7.90	8.02	8.02	7.31	7.59	7.99
1967	9.89	9.19	9.56	8.04	8.76	8.94	8.81	7.98	8.40	8.77
1968	10.46	9.65	10.12	8.82	9.28	9.66	9.33	8.69	8.99	9.38
1969	11.43	10.42	10.89	9.78	10.26	10.74	10.26	9.55	9.90	10.29
1970	13.55	11.73	12.14	11.11	11.48	11.89	11.49	10.62	11.25	11.55
1971	15.35	13.27	13.68	12.50	12.87	13.15	12.82	11.82	12.60	12.97
1972	17.14	15.43	15.09	14.49	14.45	15.17	14.83	13.49	14.40	14.75
1973	18.39	16.86	16.44	15.83	15.87	16.51	15.94	14.76	15.47	16.06
1974	20.78	18.80	18.20	17.66	17.81	18.98	17.61	16.39	17.42	17.96
1975	25.17	22.48	21.55	21.10	20.79	22.72	20.82	19.37	20.45	21.34
1976	28.17	25.58	24.82	24.36	23.74	25.27	24.22	22.46	23.55	24.48
1977	31.55	27.86	26.93	26.43	25.76	28.47	26.08	24.57	25.45	26.73
1978	33.90	30.57	29.63	29.42	28.84	31.76	29.10	27.19	27.97	29.55
1979	35.88	34.30	33.29	32.24	32.07	35.33	32.47	30.34	31.14	33.05
1980	41.08	37.85	36.82	36.36	35.40	39.46	36.11	33.81	34.73	36.71
1981	44.78	40.75	40.62	40.00	38.57	42.82	39.57	36.96	37.87	40.14
1982	46.25	43.02	43.02	41.78	40.48	45.29	41.90	38.73	40.20	42.42
1983	49.29	45.53	45.67	44.37	43.11	47.91	44.34	41.09	42.83	45.00
1984	57.73	50.44	50.75	50.56	47.38	53.52	48.42	45.31	48.13	49.98
1985	60.59	55.27	54.75	54.77	51.59	58.59	52.57	48.74	51.98	54.24
1986	66.80	59.45	58.90	59.55	55.00	62.64	56.67	52.76	56.03	58.35
1987	70.42	65.18	62.22	63.25	59.24	66.93	60.62	55.93	60.06	62.34
1988	73.10	67.42	67.33	68.64	63.52	72.01	65.62	60.46	64.96	67.07
1989	77.82	74.49	73.05	74.19	70.09	78.27	72.18	65.90	71.21	73.25
1990	87.54	81.49	79.40	82.73	77.00	86.49	78.27	73.61	78.22	80.21
1991	92.21	84.88	84.45	85.95	80.26	91.50	81.46	74.82	81.74	84.43
1992	101.83	90.14	92.15	92.33	86.98	94.79	90.13	82.01	84.70	90.61

Table A10.2 (cont.). Female hourly earnings 1865–2007, kronor

	Mining	Metal	Engineering	Quarrying	Wood	Paper	Food	Textile	Chemical	Weighted average
1993	99.82	91.54	91.00	91.41	88.16	94.23	88.75	80.47	88.14	90.39
1994	102.92	93.31	94.09	95.78	91.90	96.57	93.93	81.06	91.93	93.48
1995	108.61	97.90	99.33	98.84	94.05	99.93	96.50	84.98	94.20	97.39
1996	116.24	104.40	107.62	104.33	107.23	107.56	104.45	90.65	100.16	105.03
1997	121.08	109.47	112.67	110.35	110.60	113.43	106.44	94.68	105.19	109.75
1998	116.70	115.08	117.21	114.19	113.65	120.65	110.87	101.29	108.96	114.76
1999	119.78	117.82	120.60	117.43	114.58	120.92	110.50	103.94	116.52	117.49
2000	122.85	121.11	125.72	119.47	117.98	125.63	115.43	106.95	120.12	121.93
2001	128.53	130.25	126.41	123.31	123.14	130.58	119.13	111.52	125.09	125.58
2002	138.23	130.42	127.65	125.95	126.19	134.15	125.53	114.53	130.20	128.57
2003	138.70	136.82	134.36	129.44	129.01	138.13	127.63	119.82	134.01	133.47
2004	153.01	141.94	138.47	132.08	134.64	144.57	133.05	122.95	137.86	138.27
2005	159.51	145.51	143.60	137.60	140.39	149.21	135.51	125.35	140.94	142.47
2006	176.89	149.14	149.40	141.44	142.85	152.34	141.92	130.05	145.86	147.46
2007	186.94	154.52	154.14	146.73	148.95	159.11	147.21	134.62	151.31	152.85

Table A10.3 Male employment weights, 1871–2007

	Mining	Metal	Engineering	Quarrying	Wood	Paper	Food	Textile	Chemical
1871	0.04	0.25	0.07	0.07	0.18	0.03	0.19	0.05	0.11
1872	0.05	0.25	0.07	0.08	0.18	0.04	0.18	0.05	0.10
1873	0.05	0.24	0.08	0.08	0.18	0.04	0.17	0.05	0.10
1874	0.06	0.24	0.09	0.08	0.17	0.05	0.17	0.05	0.10
1875	0.05	0.24	0.09	0.08	0.17	0.05	0.17	0.05	0.10
1876	0.04	0.25	0.08	0.09	0.18	0.05	0.16	0.05	0.10
1877	0.04	0.24	0.08	0.10	0.19	0.05	0.16	0.05	0.10
1878	0.03	0.24	0.07	0.10	0.19	0.04	0.17	0.05	0.10
1879	0.03	0.24	0.07	0.10	0.20	0.04	0.17	0.05	0.10
1880	0.04	0.25	0.07	0.11	0.18	0.05	0.16	0.05	0.10
1881	0.04	0.25	0.08	0.09	0.18	0.05	0.16	0.05	0.10
1882	0.04	0.25	0.09	0.09	0.17	0.05	0.16	0.04	0.10
1883	0.04	0.25	0.10	0.09	0.16	0.05	0.16	0.04	0.10
1884	0.04	0.25	0.09	0.10	0.17	0.05	0.16	0.04	0.10
1885	0.04	0.24	0.09	0.10	0.17	0.05	0.16	0.05	0.10
1886	0.04	0.25	0.09	0.10	0.16	0.06	0.16	0.05	0.09
1887	0.04	0.24	0.08	0.10	0.17	0.06	0.16	0.05	0.09
1888	0.04	0.25	0.09	0.10	0.16	0.07	0.15	0.05	0.09
1889	0.03	0.25	0.10	0.11	0.16	0.07	0.14	0.05	0.08
1890	0.03	0.26	0.10	0.11	0.15	0.07	0.14	0.05	0.08
1891	0.03	0.24	0.10	0.14	0.15	0.08	0.14	0.05	0.08
1892	0.04	0.20	0.11	0.14	0.15	0.07	0.16	0.05	0.08

Table A10.3 (cont.). Male employment weights, 1871–2007

	Mining	Metal	Engineering	Quarrying	Wood	Paper	Food	Textile	Chemical
1893	0.04	0.16	0.11	0.15	0.15	0.08	0.17	0.05	0.08
1894	0.04	0.16	0.11	0.15	0.15	0.08	0.16	0.06	0.08
1895	0.04	0.16	0.12	0.16	0.15	0.09	0.16	0.06	0.08
1896	0.04	0.15	0.13	0.17	0.15	0.09	0.15	0.06	0.07
1897	0.04	0.14	0.14	0.17	0.15	0.09	0.14	0.06	0.07
1898	0.04	0.14	0.14	0.18	0.14	0.09	0.14	0.06	0.07
1899	0.03	0.15	0.15	0.18	0.14	0.09	0.13	0.06	0.06
1900	0.04	0.14	0.15	0.18	0.14	0.09	0.13	0.06	0.06
1901	0.04	0.14	0.14	0.18	0.14	0.10	0.14	0.06	0.06
1902	0.04	0.14	0.14	0.19	0.13	0.10	0.14	0.06	0.06
1903	0.04	0.14	0.14	0.19	0.14	0.10	0.13	0.06	0.05
1904	0.04	0.14	0.15	0.19	0.13	0.11	0.13	0.07	0.05
1905	0.04	0.15	0.15	0.20	0.12	0.11	0.13	0.07	0.05
1906	0.04	0.14	0.15	0.19	0.12	0.11	0.13	0.07	0.05
1907	0.03	0.15	0.16	0.18	0.12	0.12	0.12	0.06	0.05
1908	0.04	0.14	0.17	0.18	0.11	0.13	0.12	0.06	0.05
1909	0.03	0.14	0.15	0.18	0.11	0.13	0.13	0.07	0.05
1910	0.03	0.14	0.15	0.18	0.12	0.13	0.13	0.07	0.05
1911	0.04	0.14	0.16	0.18	0.12	0.13	0.12	0.07	0.05
1912	0.03	0.14	0.16	0.18	0.11	0.13	0.12	0.07	0.06
1913	0.04	0.14	0.16	0.18	0.11	0.13	0.12	0.07	0.06
1914	0.03	0.14	0.17	0.18	0.11	0.13	0.12	0.07	0.06
1915	0.04	0.14	0.18	0.15	0.11	0.13	0.12	0.07	0.06
1916	0.04	0.14	0.20	0.13	0.12	0.13	0.12	0.07	0.06
1917	0.04	0.14	0.21	0.14	0.11	0.13	0.11	0.06	0.06
1918	0.04	0.14	0.22	0.15	0.11	0.13	0.10	0.06	0.07
1919	0.03	0.13	0.21	0.15	0.11	0.14	0.10	0.06	0.07
1920	0.03	0.13	0.20	0.14	0.11	0.15	0.11	0.07	0.06
1921	0.03	0.12	0.18	0.14	0.10	0.16	0.14	0.07	0.06
1922	0.03	0.12	0.13	0.14	0.12	0.18	0.14	0.08	0.06
1923	0.02	0.13	0.16	0.15	0.12	0.17	0.10	0.09	0.06
1924	0.02	0.13	0.17	0.15	0.11	0.16	0.12	0.08	0.06
1925	0.02	0.13	0.18	0.16	0.11	0.16	0.11	0.08	0.06
1926	0.02	0.13	0.18	0.15	0.11	0.16	0.11	0.08	0.05
1927	0.02	0.13	0.19	0.15	0.11	0.17	0.09	0.08	0.05
1928	0.02	0.13	0.19	0.14	0.11	0.17	0.11	0.08	0.05
1929	0.02	0.13	0.20	0.15	0.11	0.17	0.10	0.08	0.05
1930	0.02	0.13	0.20	0.15	0.10	0.16	0.10	0.08	0.05
1931	0.02	0.14	0.20	0.14	0.11	0.16	0.10	0.09	0.05
1932	0.02	0.15	0.19	0.13	0.11	0.16	0.10	0.09	0.05
1933	0.01	0.16	0.19	0.12	0.10	0.16	0.10	0.10	0.05
1934	0.02	0.16	0.20	0.11	0.11	0.15	0.10	0.10	0.05
1935	0.02	0.17	0.21	0.11	0.11	0.14	0.10	0.09	0.05
1936	0.02	0.17	0.22	0.12	0.10	0.14	0.09	0.09	0.05

Table A10.3 (cont.). *Male employment weights, 1871–2007*

	Mining	Metal	Engin- eering	Quarry- ing	Wood	Paper	Food	Textile	Chemical
1937	0.02	0.18	0.23	0.12	0.10	0.13	0.09	0.09	0.05
1938	0.02	0.17	0.24	0.12	0.10	0.13	0.09	0.09	0.05
1939	0.02	0.17	0.24	0.11	0.10	0.13	0.09	0.09	0.05
1940	0.02	0.15	0.28	0.09	0.09	0.12	0.10	0.10	0.06
1941	0.02	0.15	0.29	0.10	0.09	0.11	0.09	0.09	0.06
1942	0.02	0.15	0.29	0.12	0.08	0.11	0.09	0.08	0.06
1943	0.02	0.14	0.30	0.13	0.09	0.10	0.09	0.08	0.06
1944	0.02	0.14	0.30	0.12	0.09	0.10	0.09	0.08	0.06
1945	0.01	0.14	0.29	0.12	0.09	0.11	0.09	0.08	0.06
1946	0.01	0.14	0.31	0.11	0.09	0.12	0.08	0.09	0.06
1947	0.01	0.14	0.31	0.10	0.09	0.12	0.08	0.09	0.06
1948	0.01	0.14	0.32	0.10	0.08	0.12	0.08	0.09	0.06
1949	0.01	0.14	0.33	0.09	0.08	0.12	0.08	0.09	0.06
1950	0.01	0.14	0.33	0.09	0.08	0.12	0.08	0.09	0.06
1951	0.01	0.14	0.33	0.08	0.08	0.12	0.09	0.09	0.06
1952	0.02	0.15	0.33	0.09	0.07	0.11	0.08	0.09	0.06
1953	0.02	0.16	0.32	0.09	0.07	0.11	0.08	0.09	0.06
1954	0.02	0.15	0.32	0.09	0.08	0.11	0.08	0.09	0.06
1955	0.02	0.16	0.34	0.09	0.04	0.12	0.09	0.08	0.06
1956	0.02	0.15	0.33	0.08	0.08	0.12	0.08	0.08	0.06
1957	0.02	0.16	0.34	0.08	0.07	0.12	0.08	0.07	0.06
1958	0.02	0.16	0.34	0.08	0.07	0.12	0.08	0.07	0.06
1959	0.02	0.16	0.34	0.08	0.07	0.12	0.08	0.07	0.06
1960	0.02	0.17	0.34	0.08	0.07	0.12	0.08	0.06	0.06
1961	0.02	0.17	0.35	0.08	0.07	0.12	0.07	0.06	0.06
1962	0.02	0.17	0.36	0.08	0.07	0.12	0.07	0.06	0.06
1963	0.01	0.16	0.37	0.08	0.07	0.12	0.07	0.06	0.06
1964	0.01	0.17	0.37	0.08	0.07	0.11	0.07	0.06	0.06
1965	0.01	0.17	0.37	0.08	0.07	0.11	0.07	0.06	0.06
1966	0.01	0.17	0.37	0.08	0.07	0.11	0.07	0.05	0.06
1967	0.01	0.17	0.37	0.08	0.08	0.11	0.07	0.05	0.06
1968	0.01	0.19	0.37	0.07	0.08	0.10	0.07	0.05	0.06
1969	0.01	0.20	0.37	0.07	0.07	0.10	0.07	0.04	0.06
1970	0.01	0.20	0.38	0.06	0.07	0.10	0.07	0.04	0.07
1971	0.01	0.20	0.39	0.06	0.07	0.10	0.07	0.04	0.07
1972	0.01	0.20	0.39	0.06	0.07	0.10	0.07	0.04	0.07
1973	0.01	0.20	0.40	0.05	0.07	0.10	0.07	0.04	0.07
1974	0.01	0.20	0.41	0.05	0.07	0.09	0.06	0.03	0.07
1975	0.01	0.20	0.42	0.05	0.07	0.09	0.07	0.03	0.07
1976	0.01	0.20	0.42	0.05	0.07	0.10	0.07	0.03	0.07
1977	0.01	0.20	0.41	0.05	0.07	0.10	0.07	0.03	0.07
1978	0.01	0.19	0.42	0.05	0.07	0.10	0.07	0.03	0.07
1979	0.01	0.19	0.42	0.05	0.07	0.10	0.07	0.02	0.07
1980	0.01	0.19	0.41	0.05	0.07	0.10	0.07	0.02	0.07

Table A10.3 (cont.). *Male employment weights, 1871–2007*

	Mining	Metal	Engin- eering	Quarry- ing	Wood	Paper	Food	Textile	Chemical
1981	0.01	0.19	0.41	0.04	0.06	0.10	0.08	0.02	0.07
1982	0.01	0.19	0.42	0.04	0.06	0.10	0.08	0.02	0.07
1983	0.01	0.19	0.42	0.04	0.06	0.10	0.08	0.02	0.08
1984	0.01	0.19	0.42	0.04	0.06	0.10	0.08	0.02	0.08
1985	0.01	0.18	0.43	0.04	0.06	0.10	0.08	0.02	0.08
1986	0.01	0.18	0.43	0.04	0.06	0.10	0.08	0.02	0.08
1987	0.01	0.18	0.43	0.04	0.06	0.10	0.08	0.02	0.08
1988	0.01	0.18	0.43	0.04	0.06	0.11	0.07	0.02	0.08
1989	0.01	0.18	0.42	0.04	0.06	0.11	0.08	0.01	0.08
1990	0.01	0.18	0.41	0.05	0.06	0.11	0.08	0.01	0.08
1991	0.01	0.18	0.42	0.04	0.06	0.12	0.08	0.01	0.07
1992	0.01	0.17	0.43	0.03	0.06	0.12	0.08	0.02	0.07
1993	0.01	0.17	0.41	0.03	0.06	0.12	0.09	0.02	0.08
1994	0.02	0.17	0.41	0.03	0.06	0.12	0.09	0.02	0.08
1995	0.02	0.18	0.42	0.03	0.06	0.11	0.08	0.01	0.08
1996	0.02	0.18	0.43	0.03	0.06	0.11	0.08	0.01	0.08
1997	0.01	0.18	0.43	0.03	0.06	0.11	0.08	0.01	0.08
1998	0.01	0.18	0.44	0.03	0.06	0.10	0.08	0.01	0.08
1999	0.01	0.18	0.43	0.03	0.06	0.10	0.08	0.01	0.08
2000	0.01	0.18	0.43	0.03	0.06	0.10	0.08	0.01	0.08
2001	0.01	0.18	0.43	0.03	0.06	0.10	0.08	0.01	0.09
2002	0.01	0.18	0.43	0.03	0.06	0.10	0.08	0.01	0.09
2003	0.01	0.18	0.43	0.03	0.06	0.10	0.08	0.01	0.09
2004	0.01	0.19	0.43	0.03	0.07	0.10	0.08	0.01	0.09
2005	0.01	0.19	0.43	0.03	0.07	0.10	0.08	0.01	0.08
2006	0.01	0.19	0.43	0.03	0.07	0.09	0.08	0.01	0.08
2007	0.01	0.19	0.43	0.03	0.07	0.10	0.08	0.01	0.08

Table A10.4 *Female employment weights, 1921–2007*

	Mining	Metal	Engin- eering	Quarry- ing	Wood	Paper	Food	Textile	Chemical
1921		0.04	0.04	0.04	0.01	0.12	0.24	0.39	0.11
1922		0.04	0.03	0.04	0.01	0.12	0.21	0.44	0.11
1923		0.05	0.04	0.04	0.01	0.12	0.21	0.44	0.11
1924		0.05	0.04	0.03	0.01	0.12	0.20	0.44	0.11
1925		0.05	0.05	0.03	0.01	0.12	0.18	0.44	0.11
1926		0.05	0.05	0.03	0.01	0.13	0.18	0.44	0.11
1927		0.05	0.05	0.03	0.01	0.13	0.17	0.44	0.12
1928		0.05	0.06	0.03	0.01	0.13	0.16	0.45	0.12
1929		0.06	0.06	0.03	0.01	0.12	0.16	0.44	0.12
1930		0.05	0.06	0.03	0.01	0.12	0.16	0.45	0.11
1931		0.05	0.06	0.03	0.01	0.12	0.16	0.47	0.11

Table A10.4 (cont.) *Female employment weights, 1921–2007*

	Mining	Metal	Engineering	Quarrying	Wood	Paper	Food	Textile	Chemical
1932		0.05	0.05	0.03	0.01	0.12	0.16	0.47	0.11
1933		0.05	0.05	0.03	0.01	0.12	0.15	0.48	0.11
1934		0.05	0.06	0.03	0.01	0.12	0.15	0.50	0.10
1935		0.06	0.07	0.03	0.01	0.12	0.14	0.49	0.09
1936		0.05	0.07	0.03	0.01	0.12	0.14	0.50	0.09
1937		0.05	0.08	0.03	0.01	0.11	0.14	0.48	0.09
1938		0.05	0.09	0.03	0.01	0.11	0.14	0.48	0.09
1939		0.06	0.09	0.03	0.01	0.11	0.13	0.48	0.09
1940		0.07	0.10	0.03	0.01	0.10	0.12	0.47	0.11
1941		0.08	0.11	0.03	0.01	0.11	0.12	0.45	0.10
1942		0.08	0.12	0.05	0.01	0.11	0.12	0.42	0.09
1943		0.08	0.13	0.05	0.01	0.11	0.11	0.42	0.09
1944		0.08	0.13	0.05	0.01	0.12	0.11	0.43	0.09
1945		0.08	0.12	0.05	0.01	0.12	0.11	0.42	0.08
1946		0.08	0.12	0.05	0.01	0.12	0.11	0.42	0.08
1947		0.08	0.13	0.04	0.01	0.12	0.11	0.43	0.08
1948		0.08	0.13	0.04	0.01	0.11	0.11	0.45	0.08
1949		0.08	0.13	0.03	0.01	0.12	0.11	0.45	0.07
1950		0.08	0.12	0.03	0.01	0.12	0.10	0.45	0.08
1951		0.09	0.13	0.03	0.01	0.11	0.11	0.44	0.08
1952	0.002	0.09	0.15	0.04	0.01	0.12	0.12	0.40	0.08
1953	0.002	0.08	0.13	0.03	0.01	0.12	0.12	0.42	0.08
1954	0.002	0.09	0.14	0.04	0.01	0.12	0.12	0.40	0.08
1955	0.002	0.10	0.15	0.04	0.01	0.12	0.11	0.39	0.08
1956	0.002	0.10	0.15	0.03	0.01	0.12	0.13	0.38	0.08
1957	0.002	0.10	0.15	0.03	0.01	0.12	0.12	0.37	0.08
1958	0.002	0.09	0.16	0.03	0.01	0.13	0.13	0.36	0.08
1959	0.002	0.10	0.16	0.03	0.01	0.13	0.13	0.36	0.08
1960	0.003	0.11	0.16	0.03	0.01	0.13	0.13	0.34	0.08
1961	0.003	0.11	0.18	0.03	0.01	0.12	0.13	0.33	0.08
1962	0.003	0.11	0.19	0.03	0.01	0.12	0.13	0.32	0.08
1963	0.003	0.11	0.20	0.03	0.01	0.12	0.13	0.31	0.08
1964	0.002	0.11	0.20	0.03	0.02	0.12	0.13	0.30	0.08
1965	0.002	0.12	0.21	0.04	0.02	0.12	0.13	0.28	0.08
1966	0.003	0.12	0.22	0.04	0.02	0.12	0.13	0.25	0.09
1967	0.002	0.13	0.22	0.04	0.02	0.12	0.13	0.25	0.09
1968	0.002	0.12	0.22	0.03	0.03	0.12	0.14	0.24	0.09
1969	0.002	0.13	0.24	0.03	0.02	0.12	0.14	0.22	0.10
1970	0.002	0.14	0.27	0.03	0.02	0.12	0.13	0.19	0.10
1971	0.003	0.14	0.29	0.03	0.03	0.12	0.13	0.17	0.10
1972	0.003	0.14	0.28	0.03	0.03	0.12	0.13	0.17	0.10
1973	0.003	0.15	0.29	0.03	0.03	0.12	0.12	0.16	0.10
1974	0.003	0.16	0.31	0.03	0.03	0.11	0.12	0.14	0.10
1975	0.004	0.16	0.33	0.03	0.03	0.11	0.11	0.13	0.10

Table A10.4 (cont.) Female employment weights, 1921–2007

	Mining	Metal	Engin- eering	Quarry- ing	Wood	Paper	Food	Textile	Chemical
1976	0.004	0.16	0.33	0.03	0.03	0.12	0.12	0.12	0.10
1977	0.004	0.16	0.33	0.03	0.03	0.12	0.12	0.11	0.09
1978	0.004	0.16	0.33	0.03	0.03	0.12	0.12	0.10	0.09
1979	0.004	0.16	0.33	0.03	0.03	0.12	0.12	0.10	0.10
1980	0.004	0.16	0.33	0.03	0.03	0.13	0.12	0.09	0.10
1981	0.004	0.16	0.34	0.03	0.03	0.13	0.12	0.09	0.10
1982	0.005	0.16	0.33	0.03	0.03	0.13	0.12	0.09	0.10
1983	0.004	0.16	0.34	0.03	0.03	0.13	0.12	0.09	0.10
1984	0.004	0.16	0.34	0.02	0.03	0.13	0.12	0.08	0.10
1985	0.004	0.15	0.36	0.02	0.03	0.13	0.12	0.08	0.10
1986	0.004	0.15	0.36	0.02	0.03	0.13	0.12	0.08	0.10
1987	0.004	0.15	0.36	0.02	0.03	0.13	0.12	0.08	0.10
1988	0.008	0.14	0.37	0.02	0.03	0.14	0.12	0.07	0.10
1989	0.008	0.13	0.36	0.02	0.03	0.15	0.12	0.07	0.10
1990	0.006	0.13	0.35	0.02	0.03	0.16	0.14	0.06	0.10
1991	0.005	0.13	0.35	0.02	0.03	0.17	0.14	0.06	0.10
1992	0.004	0.13	0.34	0.02	0.03	0.18	0.14	0.05	0.11
1993	0.005	0.11	0.33	0.02	0.03	0.19	0.14	0.05	0.12
1994	0.005	0.11	0.33	0.02	0.03	0.18	0.14	0.06	0.12
1995	0.006	0.11	0.34	0.02	0.03	0.18	0.14	0.05	0.12
1996	0.006	0.11	0.35	0.02	0.03	0.18	0.14	0.05	0.13
1997	0.005	0.11	0.35	0.02	0.03	0.17	0.13	0.05	0.13
1998	0.005	0.11	0.36	0.02	0.03	0.17	0.13	0.04	0.13
1999	0.005	0.11	0.36	0.02	0.03	0.17	0.14	0.04	0.12
2000	0.004	0.11	0.36	0.02	0.03	0.16	0.13	0.04	0.14
2001	0.004	0.11	0.36	0.02	0.03	0.16	0.14	0.04	0.14
2002	0.005	0.10	0.36	0.02	0.03	0.16	0.14	0.03	0.15
2003	0.005	0.10	0.36	0.02	0.03	0.16	0.14	0.03	0.15
2004	0.005	0.11	0.35	0.02	0.03	0.16	0.14	0.03	0.15
2005	0.006	0.11	0.35	0.02	0.03	0.16	0.14	0.03	0.15
2006	0.006	0.11	0.35	0.02	0.04	0.16	0.14	0.03	0.15
2007	0.006	0.11	0.35	0.02	0.04	0.16	0.14	0.03	0.15

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