Dutch Divergence?

Women's work, structural change, and household living standards in the Netherlands, 1830-1914

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Thesis

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"The most glorious moments in your life are not the so-called days of success, but rather those days when out of dejection and despair you feel rise in you a challenge to life, and the promise of future accomplishments."

– Gustave Flaubert

All experiences in life are shaped by the people who experience them with you and guide you along the way. The four years I spent as a PhD-student at the University of Wageningen were no exception. To start with the person whose guidance and patience have helped me get through the PhD-jungle (relatively) unharmed: my supervisor Elise van Nederveen Meerkerk. From the start, Elise was determined to be a good mentor and right away established a biweekly project meeting. I sometimes wonder whether she has kept all the notes she made during those meetings which, in my mind, could easily be turned into a book entitled *Memoires of a PhD-Supervisor*. Elise patiently commented on my first scribblings that slowly but surely turned into something one could call 'research results'. Thanks to her detailed comments she was always prepared to give, I am where I am now. I am deeply grateful to have had her as my supervisor.

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Chapter 1: Introduction

1.1. The problem

Today, women constitute 42% of the world's labour force and their significance for economic growth and reducing gender inequality has been extensively investigated.[1] Women's work has never been a linear process of extending participation. Instead, female labour force participation (FLFP) has extended and curtailed throughout time. To expound the forces driving these fluctuations, it is imperative to approach this issue from a long-term historical perspective. This dissertation studies a period of contracting FLFP: the nineteenth-century Netherlands.

Historical research on women's work took off in the 1920s by pioneers such as Alice Clark and Ivy Pinchbeck whose studies are still widely cited.[2] Notwithstanding the importance of these and later publications, the research on women's work based on *quantitative* methods and data has lagged behind for a long time. Such research is, however, crucial for understanding long-term economic developments on both a macro and a micro level, that is, on the level of the labour market and the household.[3] In recent decades, quantitative research on women's work has been catching up.[4] Still, many questions remain unanswered. For instance, despite ample research on the topic, we still know relatively little about the causes of the decreasing FLFP rates and the rise of a 'male breadwinner society' in nineteenth-century western Europe.[5]

The Netherlands make an important case study to further explore this issue because the nineteenth-century Dutch economy differed from neighbouring countries in two fundamental ways. First, FLFP rates as recorded in occupational censuses were relatively low

[1] Messing and Östlin, *Gender equality*, p. 2.
[2] Clark, *Working life*; Boserup, *Woman's role*; Pinchbeck, *Women workers*. See for an overview of the development of the research on women's labour history: van Nederveen Meerkerk, 'Gender and economic history'; van Eijl, *Het werkzame verschil*, pp. 14-24.
[3] The idea that we need to research households as economic units to understand economic development is not new. See for instance: Brownlee, 'Household values'.
[4] Among others: Borderias, 'Revisiting'; Burnette, *Gender, work and wages*; Grantham, 'Occupational'; Horrell and Humphries, 'The origins'; Humphries and Sarasua, 'Off the record'; Muñoz Abeledo, 'Women in the rural'; Schmidt and van Nederveen Meerkerk, 'Reconsidering'.
[5] Both the terms 'male breadwinner society' and 'breadwinner-homemaker household' are used within this strand of literature. Throughout this dissertation, I will use both terms interchangeably although the former generally refers to broader societal change whereas the latter generally refers to changes on the household level.

(Table 1.1). While this has puzzled historians for decades, no conclusive explanation has yet been found. Second, Dutch industrialization took off relatively late and until well into the twentieth century a significant part of the labour force worked in agriculture, in contrast to surrounding countries such as Britain and Belgium (see Table 1.3).[6] This deviant economic structure became especially apparent after 1830 when the southern provinces – present-day Belgium – became independent.[7]

This dissertation aims to answer the following question: **Why was the Dutch female labour force participation lower than in surrounding countries during the period 1830-1914?** I will consider the following explanatory factors: structural change, social norms, and the opportunity costs of women's labour. The key finding is that the specific structure of the Dutch economy was the most important driver of the 'Dutch divergence' in FLFP rates and that different economic structures within the Netherlands were a crucial determinant of women's labour allocation and hence the transition to a breadwinner-homemaker household.

Table 1.1. FLFP in Western Europe (percentage of women with a listed occupation)

Year	*Belgium*	*Germany*	*United Kingdom*	*The Netherlands*
1850	38		30	24
1860	36		28	18
1870	36		28	
1880	34	24	25	
1890	29	25	27	15
1900	29		25	17
1910	25	30	26	18
1920	21	35	26	18
1930	24	34	27	19

Source: Pott-Buter, *Facts and fairy tales*, p. 21.
NB: the years shown in the table are not always the exact years in which the census was conducted. (**Belgium**: 1850=1846; 1860=1856; 1870=1866. **Germany**: 1880=1882; 18901895; 1910=1907; 1920=1925; 1930=1933. **U.K.**: 1850=1851; 1860=1861; 1870=1871; 1880=1881; 1890=1891; 1900=1901; 1910=1911; 1920=1921; 1930=1931. **The Netherlands**: 1850=1849; 1860=1859; 1890=1889; 1900=1899; 1910=1909).

We need to keep in mind that censuses systematically underreported women's work due to their irregular work patterns and their involvement in informal labour. It is especially agricultural women that have remained largely invisible. Therefore, the censuses do not present a reliable reflection of actual FLFP rates. Indeed, in chapters 3 and 5, I will show that during the research period, many women performed work that was not registered by the census enumerators. This under registration was an issue in all western European countries

[6] de Jonge, *De industrialisatie*; Jansen, *De industriële ontwikkeling*; van Zanden and van Riel, *The strictures of inheritance*.
[7] Deschouwer, *The politics of Belgium*, pp. 18-22.

and therefore, even if the actual figures are downwardly biased everywhere, the *varying trends* between countries are probably realistic.[8] Still, under registration may have been more extensive in the Netherlands due to its large agricultural sector. In this way, census biases reflect economic structures which further justifies in-depth study of this variable as influencing FLFP rates based on additional source material.

The present research is important because first, most quantitative research on women's work during industrialization has focussed on Britain whereas research on the Netherlands has remained largely qualitative. I present an extensive compilation of sources that enables a combination of qualitative and quantitative research methods. Furthermore, I use a regional, comparative approach for a more thorough analysis of FLFP. Second, in the Dutch literature, social norms and the supply of labour as explanatory factors for women's LFP have received ample attention, while the impact of structural change remains underexplored. Although in earlier studies, structural change has certainly been proposed as the reason for the low Dutch FLFP rates, convincing quantitative evidence is lacking.[9] I combine all three factors in one analytical framework and in this way I disentangle different forces that have been at play in shaping the trajectory of women's work.

1.2. Debates

This dissertation engages in two debates: (1) the rise of the breadwinner-homemaker household – or the 'male breadwinner society' – in western Europe during the second half of the nineteenth century and (2) the development of living standards during industrialization. This section introduces both debates and shows how they are related.

The rise of the male breadwinner society in western Europe

During the second half of the nineteenth century, western Europe experienced a transition to a male breadwinner society. This shift entailed husbands working for wages, women becoming full time housewives, and children going to school: a pattern that would prevail until well into

[8] Higgs, 'Women, occupations and work'; Hill, 'Women, work and the census'; Horrell and Humphries, 'Women's labour force participation'; Humphries and Sarasua, 'Off the record'; Janssens, *Labouring lives*, p. 113; Muñoz Abeledo, 'Women in the rural'; van Nederveen Meerkerk, 'The first'; van Nederveen Meerkerk and Paping, 'Beyond the census'. Opposing arguments have been made: Hatton and Bailey, 'Women's work'; Shaw-Taylor, 'Diverse experience'.
[9] de Bruijn, *Haar werk*; Leydesdorff, *Verborgen arbeid*.

the second half of the twentieth century.[10] An important aspect of this change was the withdrawal of (especially married) women from the labour market. In most western European countries, FLFP rates decreased from the mid-nineteenth century onwards (Table 1.1). Male participation rates were more stable through time.[11]

Part of the discussion about FLFP rates has focussed on the role of demand for and supply of female labour. Demand-side factors have been pursued by, among others, Joyce Burnette who has argued that, above all, market forces affected FLFP and women's remuneration. Her study on a farm near the British city of Sheffield around 1800 showed that as a result of the enclosure movement the demand for female labourers in agriculture decreased: traditional female jobs in the hay-harvest declined in relative importance because of the switch from cattle to sheep breeding, work for which men were usually hired.[12] In later publications Burnette has argued that manual spinning, which had provided ample employment for women during the eighteenth century, disappeared by the mid-nineteenth century because of the transition to the factory system, which made work more geographically concentrated. Demand for female labour was only extensive in those regions where large factories arose and thus, "women's work opportunities [...] depended on the state of the local industry."[13] Similar arguments had already been advanced by Keith Snell in 1981 who claimed that women's roles in the economy and the household were principally determined by the structure of the local labour market rather than by changing attitudes towards women's labour.[14]

Factors of supply still dominate the literature on women's labour history. Louise Tilly and Joan Scott have argued that during early industrialization households changed from a *family economy*, in which production was carried out at home based on the cooperation of all household members, into a *family wage economy* in which the household members worked for individual wages in a factory or workshop. Female and child labourers were a crucial element of this stage of industrialization. As Tilly and Scott put it: "[a]s a mother and wife, the time she [a woman] spent earning money depended on the need of the family for wages and therefore on the wages and work of other family members."[15] As industrialization

[10] Creighton, 'The rise'; Horrell and Humphries, 'The origins'; Janssens, 'The rise and decline'; van Nederveen Meerkerk, 'The first'. See for an article about (the lack of) theorizing the concept of 'breadwinner': Warren, 'Conceptualizing'.
[11] Pott-Buter, *Facts and fairy tales*, p. 23.
[12] Burnette, 'Labourers at the oakes', p. 64.
[13] Burnette, *Gender, work and wages*, pp. 43-44.
[14] Snell, 'Agricultural seasonal unemployment'.
[15] Tilly and Scott, *Women, work & family*, p. 228.

progressed, men's wages and living standards improved and the opportunity costs of married women's labour increased. Consequently, the family wage economy became a *family consumer economy* in which the husband, and initially children too, were the household's wage earners and the wife performed domestic work.[16] At the same time Tilly and Scott stress the importance of demand for labour that is shaped by various characteristics of the local economy and dominant technology.

Jan de Vries has investigated the impact of another supply-side factor: changing households' consumer preferences. Starting in the early modern period, households increasingly desired to consume market-supplied goods. To purchase these commodities, all members of the household needed to work for wages. Consequently, households' leisure time was reduced and the supply of labourers increased. De Vries calls this mechanism the 'industrious revolution' which preceded the industrial revolution. During the nineteenth century, household consumer preferences expanded to non-market produced goods such as cleanliness and good nutrition, which required a different kind of labour input. Therefore, (married) women withdrew from the labour market to 'produce' these goods and the breadwinner-homemaker model became the preferable type of household labour allocation.[17] Joel Mokyr follows a similar reasoning as De Vries, but stresses the increasing knowledge about the connection between filth and diseases and nutritional sciences, which made people aware of the value of a clean home.[18] Consequently, the burden of domestic work increased.

Studies on women's work almost inevitably touch upon the influence of social norms which are essentially "social attitudes of approval and disapproval, specifying what ought to be done and what ought not to be done."[19] Every aspect of human behaviour is subject to social norms, some of which are institutionalized by means of legislation, while others are merely codes of behaviour.[20] In the literature on the male breadwinner society and women's work, social norms regarding women's place within the labour market and the household economy play a central role. These norms, or rather the implementation of these norms, changed during the nineteenth century, for an important part due to the growing desire for domesticity. Paul Minoletti has argued that in England, gender ideology caused increasing sex

[16] Tilly and Scott, *Women, work & family*, p. 229.
[17] de Vries, 'The industrial revolution'; de Vries, *The industrious revolution*. NB: De Vries' work will be discussed in more detail in chapter 5.
[18] Mokyr, 'Why "more work for mother"?'.
[19] Sunstein, 'Social norms', p. 914.
[20] See for an important theoretical study on formal and informal institutions the work of Douglas North: North, 'Institutions'.

segregation, excluding women from, most importantly, high-paid overseeing occupations.[21] He defines gender ideology as "[...] the beliefs held by a certain group(s) within society, or which were held across society, regarding what males and females were capable of performing and what was appropriate for them to perform."[22]

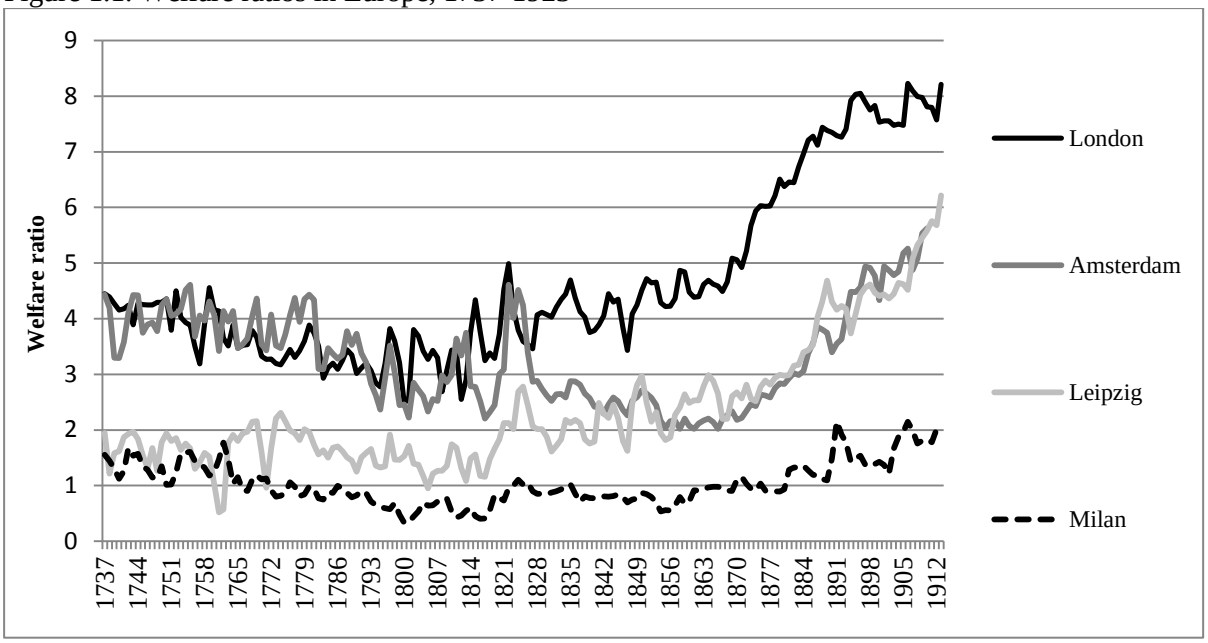
Living standards during industrialization

The increase of men's wages has been proposed as an explanation for the transition to a male breadwinner society because it enabled households to afford this type of labour division. However, a more in depth analysis of the financial aspect of the breadwinner-homemaker household has remained absent. Above all regional and sectoral differences of living standards have not been considered sufficiently. At the same time, research based on *aggregate* data has expanded during the past decades which has increased our understanding of the development of European living standards.

During the eighteenth century, London and Amsterdam welfare ratios – based on unskilled male workers' wages – started to drop from more than 4 in 1737 to almost 2 around 1800 (Figure 1.1).[23] In London, only in the 1840s did welfare ratios reach the same level as in 1737 and in Amsterdam this took until the 1890s. Increasing labour input of women and children could compensate for loss of income which explains how households were able to endure periods of low men's real wages.[24] Indeed, the extent of women's and children's contributions to the household income fluctuated through time as well. Therefore, to truly understand the long-term development of households' living standards, we need to look beyond men's wages and instead, include all sources of income into the analysis.[25]

[21] Minoletti, 'The importance of ideology'; Minoletti, *The importance*.
[22] Minoletti, *The importance*, p. 12.
[23] Welfare ratios are an annual man's wage divided by the costs of living of a man, a woman, and two children. An outcome lower than 1 indicates a living standard below the subsistence level. In chapter 5, this method and the critiques thereon will be discussed extensively.
[24] Allen and Weisdorf, 'Was there'; Humphries, 'The lure of aggregates'; Berg, 'What difference'.
[25] See for instance: Horrell and Humphries, 'Women's labour force participation'; van Nederveen Meerkerk and Boter, 'Colonial connections'.

Figure 1.1. Welfare ratios in Europe, 1737-1923



Sources: Allen, et al., 'Wages, Prices and Living Standards', p. 27.

The role that industrialization has played in the development of living standards is a much debated topic and different studies have yielded contradicting results. Peter Lindert and Jeffrey Williamson have argued that overall, living standards improved during industrialization, especially after 1820, and that "[t]he hardship faced by workers at the end of the Industrial Revolution cannot have been nearly as great as those of their grandparents."[26] Robert Allen follows this optimistic approach and claims that the industrial revolution started in Britain around 1750 because wages were exceptionally high.[27] These high wages were an incentive for producers to invest in machines that reduced labour costs. If wages had been low, such investments would not have been profitable.

Others have adopted a more pessimistic approach. For instance, Nicholas Crafts has pointed out that real wages do not necessarily represent total earnings and that unemployment had a severe impact on living standards, especially around 1820. Therefore, he argues that Lindert and Williamson have overestimated living standards during industrialization.[28] Jane Humphries contests Allen's idea of a high wage economy and argues instead that poverty was widespread among working-class households and that living standards, especially of women

[26] Lindert and Williamson, 'English workers' living standards', p. 24.
[27] Allen, 'The high wage economy'; Allen, *The British industrial revolution*; Allen and Weisdorf, 'Was there'; Humphries, *Childhood and child labour*; Humphries, 'The lure of aggregates'.
[28] Crafts, 'English workers' real wages'.

and children, were low.[29] The onset of industrialization was not a response to high wages, but instead to low wages.[30] In a joint work with Benjamin Schneider, she shows that during the period 1720-1800, spinners' wages were much lower than Allen has claimed and that therefore "[i]n spinning, the high wage economy is on shaky ground."[31] The wages were low because there was an almost inexhaustible supply of female and child labourers in the countryside, competition from cheap yarn produced by 'pauper labour' under the poor law, and a lack of organization among spinners to gain a strong bargaining position with the suppliers of fibre.[32] Humphries and Schneider conclude that the main incentive to mechanize was to overcome "[...] the low productivity and inconsistent quality in spinning and taking advantage of low wages for spinners and female and child workers [...]."[33] Also in the British countryside poverty was widespread around 1800. Based on 208 household budgets from the 1780s and 1790s, Ian Gazeley and Nicola Verdon have shown that most households lived below the level of 'tolerable comfort' as determined by the survey conductors.[34] Finally, based on information about male and female criminals, Paul Johnson and Stephen Nicholas have found that from the 1820s onwards, the wages and the living standards of lower-class people decreased due to the living conditions in urban regions resulting from industrialization.[35]

Linking the debates

With this research, I aim to link the debates on the rise of the male breadwinner society and the impact of industrialization on household living standards. This is important because to understand households' behaviour, particularly regarding their labour allocation, we need a more accurate picture of household income on a regional and a sectoral level as well as throughout the different stages of the household life-cycle. The welfare ratios displayed in Figure 1.1 are based on men's real wages and only tell part of the story about historical living standards. The income generating activities by all household members – that have remained

[29] More scholars have emphasized that not all households profited from this economic prosperity and have considered the implications for household labour allocation and health: Horrell, Meredith, and Oxley, 'Measuring misery'; Horrell and Oxley, 'Work and prudence'.
[30] Humphries, 'The lure of aggregates', p. 710; Humphries, 'Childhood and child labour'; Humphries, *Childhood and child labour*.
[31] Humphries and Schneider, 'Spinning the industrial revolution', p. 33.
[32] Humphries and Schneider, 'Spinning the industrial revolution', pp. 36-37.
[33] Humphries and Schneider, 'Spinning the industrial revolution', p. 38.
[34] Gazeley and Verdon, 'The first poverty line?'.
[35] Johnson and Stephen, 'Male and female living standards'.

invisible in official sources such as censuses – and the changing household composition throughout the household life-cycle form a crucial piece of this puzzle.

Furthermore, for a better insight into household living standards we need to look beyond the wage component. The social norms regarding domesticity were actively pursued by most households, at least from the end of the nineteenth century onwards. A clean and cosy home and nutritious meals improved people's living standards, but cannot be quantified in the same way as wages can. Inclusion of these facets is crucial because at a certain point households reached a level of income at which all the desired market-produced goods could be purchased and more monetary income would do little or nothing to further improve living standards. Instead, redeploying married women's time from market work to domestic work and sending children to school may have been more valuable.

The connection between economic development, household living standards, and household time allocation has been explored in previous studies by, among others, Jan de Vries and Gary Becker.[36] The present research provides more insight into the importance of this connection for the transition to a male breadwinner society by presenting new empirical evidence from a great variety of sources. As such, this dissertation provides a level of detail on household labour allocation and living standards that has hitherto not been provided.

1.3. The Netherlands

The first male breadwinner society?

According to, among others, Hettie Pott-Buter, the domesticity norms in the Netherlands were stronger than in neighbouring countries and these norms had already been prevalent in the early modern period. She concludes, on the basis of an extensive comparative study of seven European countries, that "[i]t is obvious that differences between the Netherlands and the other six countries are closely related to low labor force participation rates of married women, the dominance of bourgeois family ideals and high fertility rates."[37] However, recent research has shown that women were very active in the labour market in the early modern Dutch Republic, which contradicts the idea of an early modern Dutch male breadwinner society.[38]

[36] Becker, *The economic approach*; Becker, *A treatise*; de Vries, *The industrious revolution*. In section 1.4, I will provide more information about Becker's work on household time allocation.
[37] Pott-Buter, *Facts and fairy tales*, p. 321.
[38] van den Heuvel, *Women and entrepreneurship*; van Nederveen Meerkerk, *De draad in eigen handen*; Schmidt, 'Vrouwenarbeid'; Schmidt, 'Women and guilds'; Schmidt and van Nederveen Meerkerk, 'Reconsidering'; van Nederveen Meerkerk, 'The first'.

The exceptionally low FLFP rates (Table 1.1) do indicate that the Netherlands were a frontrunner in the realization of the male breadwinner society during the nineteenth century. Social norms and the cult of domesticity are the most prominently provided explanation for this phenomenon.[39] Frans van Poppel, Hendrik van Dalen, and Evelien Walhout have investigated the emergence of the Dutch housewife on the basis of an analysis of marriage records that list the occupations of brides and grooms. They found that from the 1850s onwards, Dutch women increasingly entered marriage without an occupation.[40] According to them, this reflects the growing importance of domesticity because women quit their jobs *before* they got married, that is, before they were supposed to take care of their own household. Furthermore, these social norms were prominent because even poorer households tried to live up to them, while they actually could not afford to completely relinquish the wife's income. Instead, "to keep up appearances, they substituted registered work for unregistered work [...]."[41]

A related explanation for the low Dutch FLFP rates is the prominent influence of the church in the polarized political arena of the late-nineteenth and early-twentieth centuries. Institutions led by either Catholics, Protestants, socialists, or liberals influenced the population through multiple aspects of everyday life.[42] There were considerable differences between the Protestant and Catholic pillars, for instance, in their ideas about reproductive behaviour. Jan van Bavel and Jan Kok have shown that the fertility decline during the period 1845-1945 started much earlier in Protestant families than in Catholic families.[43] Thus, also within the Netherlands social norms varied.

Finally, Dutch men's real wages rose significantly during the second half of the nineteenth century.[44] This was for an important part thanks to tax revenues from the Netherlands-Indies – a Dutch colony, present-day Indonesia – by means of the Cultivation System (*Cultuurstelsel*) in the period 1830-1870.[45] This system forced peasants to cultivate export crops for the Dutch market on their own land and imposed taxation on the indigenous population. Research on the 'Batig Slot', as the profits from this exploitation of the Javanese population are called, has shown that during the 1850s, more than half of the total Dutch tax

[39] Kloek, *Vrouw des huizes*.
[40] van Poppel, van Dalen, and Walhout, 'Diffusion'.
[41] van Poppel, van Dalen, and Walhout, 'Diffusion', p. 124.
[42] Plantenga, *Een afwijkend patroon*.
[43] van Bavel and Kok, 'The role of religion'.
[44] Vermaas, 'Real industrial wages'; Burger and Vermaas, 'Dutch industrial wage development'
[45] After 1870, the Cultivation System was abandoned and replaced by a system based on private entrepreneurship rather than coerced labour (Fasseur, 'Purse or principle').

revenues came from the Netherlands-Indies (Table 1.2). Consequently, the tax burden of the population in the Netherlands decreased.[46] However, decreasing agricultural prices after 1870 as a result of, among other things, the increasing use of artificial fertilizers, were the most important reason for the rising real wages.[47] Janneke Plantenga has argued that this rise in men's real wages was one of the most important drivers of women's withdrawal from the labour market because households were able to actually live up to the dominant societal ideas about gender roles.[48]

Table 1.2. The 'Batig Slot': estimation of tax revenues from the Netherlands-Indies in millions of guilders, 1831-1877

Period	**Batig Slot (in millions fl.)**	**% of GDP**	**% of total tax revenues**
1831-1840	150.6	2.8	31.9
1841-1850	215.6	3.6	38.6
1851-1860	289.4	3.8	52.6
1861-1870	276.7	2.9	44.5
1871-1877	127.2	1.7	26.5

Source: Van Nederveen Meerkerk, 'Vergelijkingen en verbindingen', p. 31. Based on: van Zanden and van Riel, *The strictures of inheritance*; de Jong, 'Van Batig Slot'.

However, research on real wages is dominated by developments in the industrial sector. Such research does not take into account the developments in agriculture, a sector that remained highly important in the Dutch economy during the nineteenth and early twentieth centuries. Furthermore, analyses purely based on men's wages are not indicative of the *total* household income because they exclude women's and children's wages and incomes from resources other than wage labour. Household living standards depended on the structure of local economies and on households' access to resources. To further pursue this argument, it is imperative to understand structural change in the Netherlands during the nineteenth century.

[46] Vermaas, 'Real industrial wages', p. 148; van Nederveen Meerkerk, 'Vergelijkingen en verbindingen', p. 32.

[47] This increasing use of artificial fertilizers was caused by first, new insights in the field of agricultural science. Second, the rapid changes taking place in the chemical and steel industries caused an increasing supply of essential elements of artificial fertilizers (such as nitrate). Third, independent farmers organized themselves into cooperative purchasing organizations that collectively purchased artificial fertilizers. See for an extensive explanation of these developments: van Zanden and van Riel, *The strictures of inheritance*, pp. 281-290.

[48] Plantenga, *Een afwijkend patroon*, p. 189.

Dutch structural change 1830-1914

Whereas by the mid-nineteenth century, many western European economies had already largely industrialized, the Dutch industrial take-off had not yet taken place. Instead, the agricultural and service sectors played a prominent role in economic development. In 1909, still one-third of the labour force worked in agriculture compared to 23% in Belgium and 12% in Britain (Table 1.3).[49] Despite this 'industrial retardation', during the long nineteenth century, the Dutch economy grew at a similar average rate as other European countries thanks to the high productivity of the agricultural sector.[50] Jan de Vries has argued that therefore, a more comprehensive notion of economic growth should be employed. Clearly, "[...] a path is opened to imagine substantial economic growth occurring without necessarily passing through the specific type of industrialization experienced by Britain."[51]

Table 1.3. Employment by sector in western Europe (percentage share)

Belgium				*United Kingdom*			
Year	Agriculture	Industry	Services	Year	Agriculture	Industry	Services
1846	46	36	18	1851	31	40	29
1866	40	39	20	1871	22	42	36
1890	27	43	30	1891	16	43	41
1910	23	47	31	1911	12	44	45

The Netherlands			
Year	Agriculture	Industry	Services
1849	40	31	29
1870	39	31	30
1889	37	32	32
1909	30	34	35

Sources: van Zanden and van Riel, *The strictures of inheritance*, p. 192; Feinstein, *Statistical tables*, p. T131; Mitchell, *British historical statistics*, p. 104.

Before 1830, the southern provinces, where most of the country's natural resources were located, were the centre of Dutch industry and the northern provinces focused on trade. After the previously mentioned secession of Belgium in 1830, various industries, such as metal processing and the cotton industry, started to develop in the northern provinces. Still, the Dutch industrial sector remained relatively underdeveloped during the first half of the

[49] Griffiths, *Industrial retardation*; Jansen, *De industriële ontwikkeling*.
[50] Burger, 'Dutch patterns', p. 164; de Vries, 'Dutch economic growth'; van Zanden, 'Tweemaal aan de top', p. 365. NB: Agricultural output stagnated during the period 1800-1850 because of a potato famine during the 1840s and because growing poverty in the cities affected the surrounding countryside: Mokyr, 'Industrialization and poverty'; Knibbe, 'Landbouwproductie'.
[51] de Vries, 'Dutch economic growth', p. 450.

nineteenth century.[52] This 'industrial retardation' was partly an inheritance from the Dutch 'Golden Age'. The Netherlands had played a successful role in the world economy during the early modern period by focussing on export trade. As a result the domestic market had remained underdeveloped. When the Netherlands lost its important place in the world economy because of, among others, French and British trade barriers and the effects of the Napoleonic Wars, the country was left with a small domestic market. Mechanization was, therefore, not (yet) lucrative.[53]

Let us now look more closely at the developments in the separate sectors. In the coastal provinces, agriculture had already specialized and commercialized during the sixteenth century because of an increasing demand for agricultural products in the rapidly growing cities. Conversely, in the eastern and southern parts of the country, farmers mainly worked for their own subsistence. This dichotomy between east and west gradually disappeared during the nineteenth century when the population in the eastern provinces grew rapidly, which increased the demand for surplus yields.[54] Overall, during the first half of the nineteenth century, wage labour, as opposed to independent farming, gained importance in Dutch agriculture.

From the 1880s onwards, a process of *de-proletarization* started due to the growing importance of small-scale farms at the expense of large-scale farms. Several reasons can be given for this shift. First, during the period 1878-1895, the Dutch agricultural sector suffered a crisis that was principally caused by the massive import of cheap grain causing grain prices – and prices of other crops such as madder – to drop. Furthermore, the price of butter dropped due to competition from Britain and the introduction of margarine, an inexpensive substitute for butter. Farmers in both arable and cattle farming therefore needed to cut their expenses on wage labour and were motivated to invest in labour-saving and more lucrative production methods such as artificial fertilizers.[55] Second, the demand for products that were typically cultivated in small-scale farms (such as vegetables and fruit) increased.[56] The result of the decreasing demand for wage labour was that many agricultural wage workers started their own business or migrated to the cities to find employment in the growing industrial sector.

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[52] de Groot, *Fabricage van verschillen*, pp. 186-196; Horlings and Smits, 'A comparison'; Jansen, *De industriële ontwikkeling*, p. 256.
[53] Smits, 'Economische ontwikkeling', pp. 18-19.
[54] Knippenberg and de Pater, *De eenwording*.
[55] van Zanden, *De economische ontwikkeling*, p. 332-333; Bieleman, *Boeren in Nederland*, pp. 280-281.
[56] van Zanden, *De economische ontwikkeling*, p. 336.

As in most countries, the textile industry was the first to industrialize. During the first half of the seventeenth century, Dutch textile production was concentrated in the coastal province of Holland. Thereafter, it was transferred to the low-wage regions of Tilburg in the south (wool) and Twente in the east (linen).[57] Most textile labourers in these regions were farmers who were weaving and spinning next to their work on the land, especially during the winter months. Because their livelihoods did not solely depend on the textile industry, they did not demand high wages.[58] This hybridity of agriculture and industry continued to be omnipresent in Twente and Tilburg until the first decades of the twentieth century.[59]

Because of the low labour costs there was no real incentive to invest in modern production techniques. Therefore, for a long time the mechanization of the Dutch textile industry lagged behind that of many other countries but did eventually occur in several stages. During the period 1800-1830, manually driven spinning machines (resembling the Spinning Jenny) were introduced, although compared to the machinery in use in Britain at the time they were primitive.[60] These machines were operated in spinning mills with the result that part of the production process was relocated from the homes to small workshops. In 1808, there were 30 spinning mills in Twente and in 1816, this number had increased to 52.[61] Still, spinning at home continued to be of importance for a further couple of decades. The mechanization of weaving lagged behind even more than that of spinning. For the same output, a Dutch manual weaver needed three times as long as a British weaver working with modern machinery.[62] The number of spindles and people employed in the spinning mills expanded much faster than the number of weaving-looms and weavers.

The period 1830-1860 was characterized by two important changes: an international expansion of the market and the careful implementation of steam-driven machines. The foundation of the Netherlands Trading Society (*Nederlandsche Handel-Maatschappij* [NHM]) in 1824 gave an important boost to Dutch textile production because it promoted the export of cotton cloth to the Netherlands-Indies.[63] This created ample work opportunities in the textile factories whereas the importance of hand spinning (which was mostly performed by women and children in the home) decreased. Consequently, many Dutch women and

[57] van Nederveen Meerkerk, Heerma van Voss, and Hiemstra-Kuperus, 'De Nederlandse textielnijverheid'.
[58] Hendrickx, 'Een wereld van verschil?'.
[59] See chapter 3 where I support this statement with empirical evidence.
[60] Boot, 'Handspinnen van katoen (deel 1)', p. 71.
[61] Boot, 'Handspinnen van katoen (deel 2)', p. 41.
[62] Fischer, 'De ontwikkeling', p. 9.
[63] See for a detailed history of the NHM: de Graaf, *Voor handel*.

children moved from working in the home industry to working in a factory.[64] Furthermore, during this period, spinning was increasingly performed on steam-driven machines, although it took until 1860 before these machines became predominant. The use of steam power in Twente became possible thanks to the increasing accessibility of coal due to an improving infrastructure.[65]

The steam-driven weaving-loom was introduced in the 1850s but did not come into general use before the 1880s. Still, the productivity of spinners increased considerably more than that of weavers. In 1800, one spinner could operate 20 spindles and this increased rapidly to 55 in 1830, 113 in 1860, and 143 in 1910. The number of weaving-looms operated by one weaver increased modestly from 1 in 1800 to 1.44 in 1860, and 1.85 in 1910.[66] All in all, in 1920 productivity per spinner was twelve times as high as in 1830 whereas the productivity per weaver only increased by 160%.[67] The success of the steam engine during this period can partly be explained by the abolishment of excise tax on fuel and the further improvement of infrastructure.[68]

Other branches started to industrialize later. Jan Luiten van Zanden and Arthur van Riel have distinguished two periods of industrial growth from 1865 onwards. Between 1865 and 1890, it was especially the printing, diamond, paper, textile, brewing, and tobacco industries that expanded. Furthermore, investments in infrastructure and urbanization after 1870 prompted the construction industry. "The most important factors behind the relatively sudden revival of industry were the accelerated integration of the domestic market, the revival of agriculture, and the shifting ratios between the costs of coal and steam-driven machinery and that of labor."[69] During the 1880s, industrial development briefly stagnated due to an international economic depression, the agricultural crisis, and the sugar crisis of 1884 that affected trade with the Netherlands-Indies.[70] Still, during these turbulent times, the food industry managed to expand as a result of increasing food consumption made possible by the

[64] Jansen and Trompetter, 'Hoezo achterlijk?', pp. 106-107; van Nederveen Meerkerk, 'Vergelijkingen en verbindingen'. NB: The entangled histories of the Netherlands and the Netherlands-Indies will not be addressed explicitly in this dissertation. Nevertheless, colonialism has been a crucial factor in the development of the structure of the Dutch economy. The present research will in the near future be part of an extensive study on the impact of colonial connections on household labour allocation and consumption in both parts of the empire. See for more information about this project: http://www.wur.nl/nl/show/Industriousness-in-an-imperial-economy.htm.
[65] Keij, *De patronen ontrafeld*, pp. 19-20.
[66] Fischer, 'De ontwikkeling', p. 35.
[67] Fischer, 'De ontwikkeling', p. 38.
[68] de Jonge, *De industrialisatie*, p. 100.
[69] van Zanden and van Riel, *The strictures of inheritance*, p. 295.
[70] To learn more about these crises see van Zanden and van Riel, *The strictures of inheritance*.

rising of real wages. Industrial development after 1890 occurred primarily in "heavy industry, electrical engineering, food, and coal mining."[71] Thanks to the intensified collaboration between industry and science during this so-called 'second industrial revolution' in industrializing economies, motors running on gas and electricity instead of steam were invented.[72] These motors required lower investments than steam engines and were therefore also accessible to small-scale businesses.

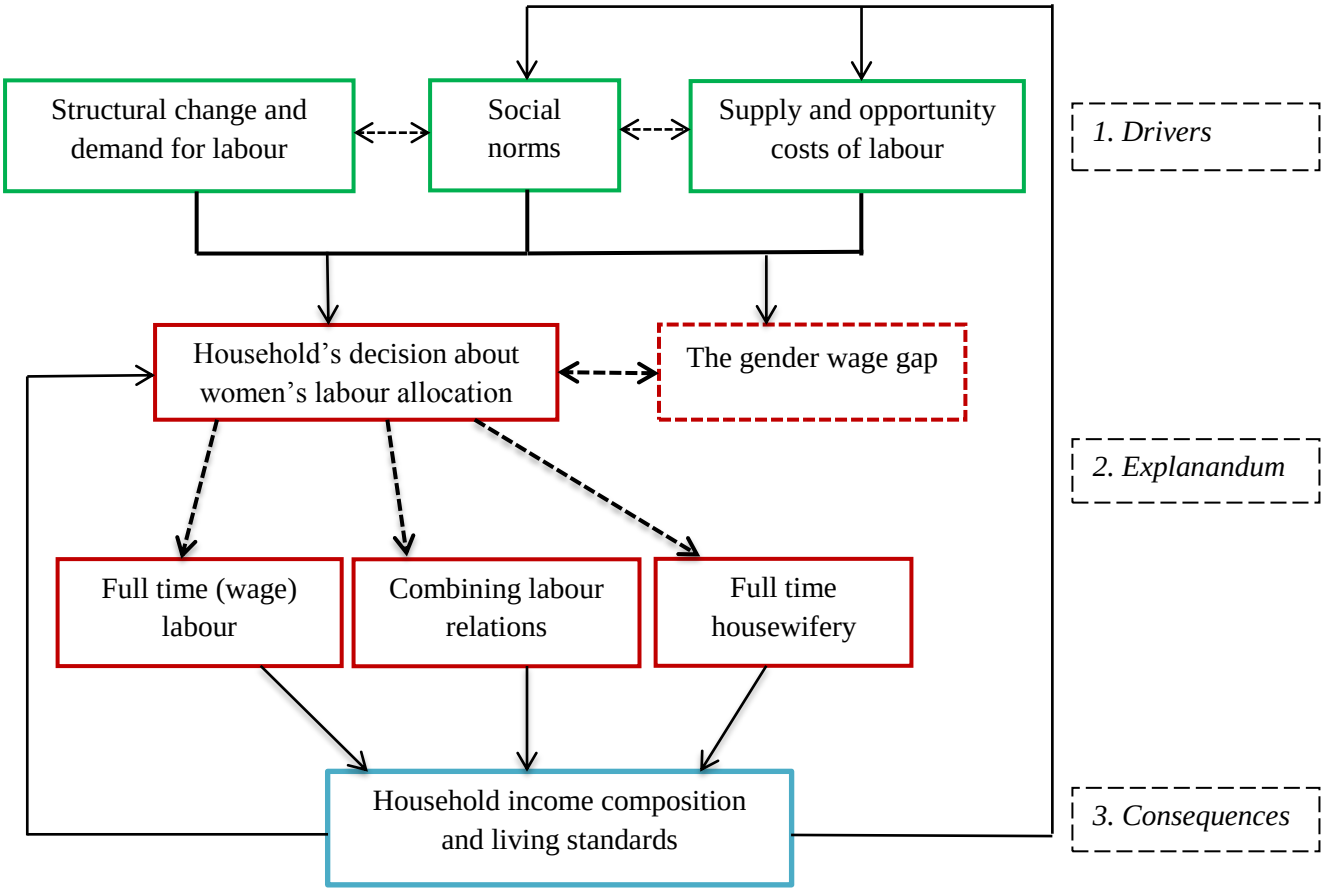
Finally, the service sector was an important driver of economic change during the second half of the nineteenth century.[73] For instance, as a result of rising incomes the demand for education increased. Indeed, primary education became widespread, although the first law that made primary education for children between six and twelve years obligatory, was implemented only in 1901. The most important instigator of the expansion of the service sector was trade overseas and the railways. The export of goods to the Netherlands-Indies continued to be of importance, but it was the export of human and financial capital to the colony that truly made the difference.[74]

1.4. Theoretical framework

Figure 1.2 illustrates the explanatory factors for the low Dutch FLFP rates and their possible outcomes in one analytical framework. The model in its entirety helps to better understand households' choices about time allocation and as such increases our understanding of changing FLFP rates and the transition to a breadwinner-homemaker household. This section first exemplifies the model and thereafter expounds three important bodies of theoretical literature.

[71] van Zanden and van Riel, *The strictures of inheritance*, p. 304.
[72] This second industrial revolution took place in most industrializing economies.
[73] This dissertation will principally focus on women's work in agriculture and industry. The source material for these sectors was more extensive than for the service sector and allowed for a more detailed analysis of household income and living standards.
[74] van Zanden and van Riel, *The strictures of inheritance*, pp. 306, 310-319.

Figure 1.2. Model



Explaining the model

The model is divided into three parts: (1) the drivers that affect (2) a household's decision about women's work and (3) the consequences of this decision for household income composition and living standards. Let me start by elaborating on the second part that captures the conundrum I aim to help solving: the low Dutch FLFP rates during the long nineteenth century. Decisions about women's work were usually made within the context of the household. This was a complex interaction between group and individual interests because "[h]ouseholds are not homogeneous entities, but sites of bargaining and accommodation – of conflict and compromise – within which individuals seek to achieve their own and others' well-being."[75]

Glancing through the windows of historical households is a cumbersome task.[76] Those historians who have succeeded show that resource distribution between the household

[75] Addabbo et al., *Gender inequalities*, p. 23 p. 23. See also: Robeyns, 'Social justice'; Fontaine and Schlumbohm, 'Household strategies', p. 7; Wallace, 'Household strategies'.
[76] Addabbo et al., *Gender inequalities*, p. 16.

members was often unequal.[77] For instance, based on the height, weight, and body mass of London prisoners in the nineteenth century, Sara Horrell, David Meredith, and Deborah Oxley have found that women in poor households put the needs of their husbands and children above their own, be it voluntarily, forced, or somewhere in between.[78] Horrell et al. summarize the factors contributing to unequal distribution of household resources as follows: "[e]xplicit bargaining, cultural assumptions, acts of parental sacrifice, of a wife to a husband, the generosity of a child to their widowed mother, as well as acts of greed and selfishness, all played their part in shaping nineteenth-century bodies, health, ageing, and inequality."[79] In this dissertation, it will remain largely obscured who exactly made the decisions about women's labour allocation.

The model includes three possible outcomes of decisions about women's labour allocation: full time (wage) labour, a combination of various labour relations, and full time housewifery. As such, the model allows for the possibility that women performed multiple types of work that could be performed in both the public and the private sphere.[80] This facilitates the inclusion of income from multiple resources and will as such cast more light on the development of total household income – as opposed to considering the husband's wage as the sole source of income. Women's 'hidden tasks' and their contribution to the household income will be more explicitly discussed in chapters 3 and 5. Note that women's labour relations in reality were not as rigid as they are displayed in the model. Women could move from one labour relation to another throughout the household life-cycle.[81] Furthermore, the women who performed 'full time (wage) labour' were not exempted from their domestic duties and actually combined different types of labour relations – as is made explicit in the second box. However, the women in the first box would have provided a full time income from, usually, one type of work whereas women in the second box allocated their time in a more diverse way.

The first part of the model includes the three drivers of FLFP: structural change of the economy and the changing demand for labour, social norms regarding women's role in the household, and the supply and opportunity costs of labour. The model specifies that these three drivers also influenced each other. Thus, this dissertation does not seek to give a

[77] Bourke, 'Avoiding poverty', p. 299.
[78] Klasen, 'Marriage'; Horrell, Meredith, and Oxley, 'Measuring misery'. See for comparable anthropometric research on the Netherlands: de Beer, 'Lichaamslengte'.
[79] Horrell, Meredith, and Oxley, 'Measuring misery', p. 116.
[80] In chapter 3, I will provide a more detailed overview of the 'separate-spheres theory'.
[81] Horrell and Humphries, 'The origins', p. 26; Wall, 'Some implications'.

monocausal explanation for women's LFP. Instead, it argues that the reciprocal relation between the various identified drivers determined FLFP rates. However, it also shows that it was the structure of the economy that caused the *differences* between western European countries. The third part of the model illustrates the consequences of women's work for household income composition and living standards.

Theory

The three drivers that influenced FLFP are embedded in three bodies of theoretical literature. First, arguments about the impact of the demand for labour have been advanced within the field of labour economics. Because during industrialization work was replaced from homes to factories, (especially married) women could no longer combine domestic work with wage labour. Consequently, they withdrew from the labour market and became more dependent on men's wages.[82] Ivy Pinchbeck was among the first to pursue this argument in the 1930s. She concluded that this development has been beneficial for women since they could enjoy more leisure time and did not have to deal with the dangerous working conditions in factories.[83]

Pinchbeck's finding that women lost economic independence still gains support in more recent literature, but is usually not perceived as a positive outcome of industrialization.[84] Ester Boserup has argued that "[...] when economic development induces a large number of men to change from agricultural, bazaar and service employment to modern sector employment, the accompanying movement of families from rural to urban areas may cut their wives off from employment in agriculture or bazaar and service occupations without giving them enough opportunities for employment in the still small modern sector, mostly staffed by men."[85] As a result, families lost income from subsistence agriculture, which had been provided by women. Even though men's earnings were usually higher in cities, if women replaced a large part of their working time with leisure time (which does not imply domestic work), household living standards overall decreased.

Claudia Goldin developed a related theory agreeing that during the initial stages of industrialization, women's opportunities in the labour market declined – but she takes the analysis one step further: while industrialization progressed, the service sector, most importantly white-collar work, became more important. Because in the meantime women's

[82] Thomas, 'Women and capitalism'.
[83] Pinchbeck, *Women workers*.
[84] For instance: Horrell and Humphries, 'Women's labour force participation'; Humphries and Weisdorf, 'The wages of women'; Boserup, *Woman's role*.
[85] Boserup, *Woman's role*, p. 185.

educational attainment had improved relative to men's, women were able to fulfil these jobs and to re-engage in paid employment. This 'U-shaped curve' of FLFP is characteristic for most developed economies, albeit the pace and timing depend on other factors as well.[86]

Second, the impact of supply and opportunity costs of labour on household labour allocation is an important aspect of the New Household Economics (NHE, henceforth). This movement started during the 1960s, pioneered by Gary Becker and Jacob Mincer.[87] Their key purpose was to better understand household time allocation by combining production and consumption into the same analytical framework. In their eyes, inspired by earlier studies[88], the household is a "'small factory': it combines capital goods, raw materials and labour to clean, feed, procreate and otherwise produce useful commodities."[89] Becker measured the input of these components by labelling the goods that were purchased on the market 'x', the labour input required to process these goods 'T_i', and how the goods were ultimately consumed 'Z'.[90] For instance, a household purchased tea leaves on the market (x), someone earned money to buy them (T_i), someone boiled water and mixed it with the tea leaves (also T_i) and hence produced the ultimately consumed tea (Z).[91]

This approach of household consumption, that not only considers material goods but also 'commodities' such as leisure activities and education, moves beyond the monetary interpretation of consumption and helps to explain the time allocation of households.[92] Crucial in the NHE's line of argumentation is that although husbands' time allocation can be interpreted as a dichotomy between market work and leisure, the same cannot be said for the time allocation of wives. For them, a third dimension needs to be considered: work within the home.[93] Indeed, both market work and work at home (both captured by 'T_i') are necessary for the consumption of most Z-commodities: market work is required to earn the money to buy the tea leaves and home work to produce the ultimately consumed tea.

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[86] Goldin, 'The u-shaped'; Goldin, 'The quiet revolution'.
[87] See for an overview of the history of the NHE: Grossbard-Shechtman, 'The new home economics'.
[88] Becker borrows the idea of the household being a small factory from Alexander Cairncross: Cairncross, 'Economic schizophrenia'.
[89] Becker, 'A theory', p. 496; Becker, *The economic approach*, pp. 89-114.
[90] Becker, 'A theory'; de Vries, *The industrious revolution*, p. 26.
[91] Jan de Vries' work on the industrious revolution draws heavily from Becker's work, especially the labour input needed to arrive at different sets of Z-commodities. More about De Vries' use of Becker in chapter 5.
[92] Becker, *The economic approach*, pp. 131-149.
[93] Mincer, 'Labor-force participation of married women'; Mincer, 'Market prices'; Gronau, 'The intrafamily allocation of time'. NB: this is likewise true for other household members who could also spend time on home work. However, women adding to this third dimension is more important, especially within the context of the male breadwinner society, since within this type of household labour division they were responsible for home work and men for market work.

Households are assumed to allocate their time in the most rational way to arrive at maximized utility. This depends on the value and opportunity costs ("benefits foregone as a result of rejecting the next best alternative action"[94]) of the time of all household members. For instance, increasing wage rates generally result in a decrease in the time spent on market work. Since within multi-person households an exchange takes place – husbands can eat the food their wives cook and, in turn, wives can spend the money their husbands earn[95] –, if the husband's wage increases, *his* time spent on market work may stay the same, while the wife's decreases. In turn, she can redeploy her time to domestic work.[96]

Fertility can likewise be expressed in terms of utility and the value of time. Becker argued that when women's wage rates increase, fertility is likely to decrease because women's time spent on market work becomes more valuable. The husband's wage rate affects fertility to a lesser extent because he generally spends less time on children. At the same time, when children's potential (future) earnings increase, the demand for children increases as well. Becker claims that farm families usually had more children than urban families because in the former, children could be more productive.[97] Crucial in Becker's treatise on fertility is that next to the quantity, he includes the quality of children (for instance the number of years of schooling a child received) into his equations. The trade-off between the two explains why a decrease in fertility is a likely outcome of economic development because "[...] incomes increase but also because rates of return on investments in education and other human capital increases."[98]

Third, social norms impacted both the supply of and demand for female labour. For instance, social norms could prevent women from performing paid work because they were expected to be full time housewives, hence affecting the supply of female labour. At the same time, social norms could prevent employers from hiring women, directly or via legislation, hence affecting the demand for female labour.[99] An influential theory in this context dates from 1899, and was developed by Thorstein Veblen who argued in his *Theory of the leisure class* that people want to emulate higher social classes to gain a higher social status. 'Conspicuous consumption', that is consuming goods and time in a way that is visible for

[94] Becker, Ronen, and Sorter, 'Opportunity costs', p. 317.
[95] NB: this is only one out of many ways to divide labour within the household.
[96] Mincer, 'Labor-force participation of married women'; Gronau, 'The intrafamily allocation of time'.
[97] Becker and Lewis, 'Interaction'; Becker, *A treatise*, pp. 93-112; Mincer and Polachek, 'Family investments'. Van Zanden and Van Riel have explored the quality-quantity trade-off in the Netherlands around 1900: van Zanden and van Riel, *The strictures of inheritance*, pp. 325-327.
[98] Becker, *A treatise*, p. 112.
[99] Although I acknowledge this ambiguity, throughout this dissertation I will consider social norms principally as a supply-side factor.

other people, was an essential aspect of this emulation.[100] Time allocation was for an important part determined by social norms about 'respectable behaviour'.

1.5. Methodology and data

Sources and methods

For a long time, research on FLFP in western Europe was principally based on aggregate sources, most notably censuses. Indeed, unveiling useful alternative source material about women's work from the archives is generally more cumbersome than finding information about men. Fortunately, over the past decades, the body of literature on women's work in pre-industrial and industrial economies using alternative sources has been growing. For instance, Luisa Muñoz Abeledo has researched FLFP rates in nineteenth-century Spain based on census takers' notebooks instead of the published censuses.[101] These notebooks were more informative since they contained details about all activities of all household members. The enumerators determined only later which activities counted as 'work'. Another example is Jane Humphries' work on child labour in industrializing Britain in which she uses children's autobiographies to shed light on women's and children's work activities.[102]

The present research contributes to the growing strand of literature that aims to "[...] rescue the history of women's work from its marginal, 'off the record' status [...]".[103] Based on numerous different sources and both qualitative and quantitative research methods, I will consider the differences between the Netherlands and surrounding countries, most importantly Britain, and the differences within the Netherlands. The sources I use allow for such a regional approach. Nowadays, the importance of a regional, comparative perspective is widely recognized:

> Technological developments in industry, the changing nature of work, gender and age structures in work, labour relations, urban living standards and social class relations all varied enormously from one region to the next. Thus studies of the role of agriculture, the pace of industrialization, the extent and causes of population growth, and the changing

[100] Veblen, *The theory of the leisure class*. Veblen's study is still influential in present-day literature. For instance: van Poppel, van Dalen, and Walhout, 'Diffusion', p. 101.
[101] Muñoz Abeledo, 'Women in the rural'.
[102] Humphries, 'Childhood and child labour'; Humphries, *Childhood and child labour*.
[103] Humphries and Sarasua, 'Off the record', p. 40.

nature of social relations may all yield very different insights when focused on specific regions rather than the nation as a whole.[104]

Throughout this dissertation, I use various research methods. Chapter 2 is based on a dataset containing information from nearly 2 million Dutch marriage records from the period 1812-1929.[105] The records give information about the groom's and the bride's occupation, their age, and the province where the marriage was recorded. These data – and additional information about the structure of the local labour market and GDP – are included in a logistic regression to determine what influenced the chance that women stated an occupation upon marriage. Such econometric methods allow for analysing the substantial magnitude of this database and for determining the statistical significance of my explanatory factors. The marriage records will further be employed in chapter 5 to compose prototypes of households based on the most common combinations of occupations of marrying couples.

Next, I have constructed a long-term series of men's, women's, and children's wages based on sources such as statistical reports of the *Centraal Bureau voor de Statistiek* (Central Bureau of Statistics), governmental surveys on the living standards and working conditions of labourers, and secondary literature. I use several methods to analyse these data. In chapter 4, I compose long-term nominal wage trends to trace the development of the gender wage gap during the period 1830-1914. The results from this analysis will be extended in chapter 5 where I estimate the development of total household income and household living standards. For this purpose, I additionally use household budgets that have recorded all of the incomes and expenditures of households over the course of one week, one month, or one year.

The effects of social norms are hard to measure with quantitative methods. One way to determine the impact of social norms is to consider social legislation because laws "reflect rather than promote changes of behavior [...]."[106] However, the law was not always obeyed and could have various objectives. For instance, laws regarding children's schooling may not have been born out of the ideal to provide children with human capital, but rather to keep them off the streets because there were not enough employment opportunities.[107] Social norms that do not result in legislation are even harder to measure. To get a grip on the impact

[104] Quote by Pat Hudson, cited in Verdon, 'The rural labour market', p. 299. See also: Berg and Hudson, 'Rehabilitating the industrial revolution'.
[105] I am greatly indebted to the many volunteers who have digitized this information over the past years, and to Kees Mandemakers (International Institute for Social History) who has given me access to the database.
[106] Cunningham, 'The decline', p. 415.
[107] Cunningham, 'The employment'.

of social norms, I analyse the labour surveys of 1890. These surveys provide valuable insights into the thoughts and daily lives of working-class people in the textile region of Twente. In chapter 3, I use these interviews to explore perceptions of women's labour on the one hand, and actual household labour allocation on the other hand.

Tools for labour historians: HISCO, HISCLASS, and labour relations

For the analysis of my sources, I use various tools among which are the 'Historical International Classification of Occupations' (HISCO) and the 'Taxonomy of Labour Relations', that have been developed at the International Institute of Social History in Amsterdam in cooperation with a large international group of scholars. These tools help historians to consistently classify different types of labour and aim to simplify global comparative research on labour history.

The HISCO assigns codes to occupational titles across the world. This classification scheme can solve many problems that scholars who are doing comparative research on labour normally face. For instance, the same type of work can have different titles in different countries and eras.[108] Assigning the same code to comparable occupational titles enables the researcher to compare the same occupations through space and time. The occupational titles are classified into one out of seven groups with their own subgroups.[109] The HISCO-codes form the basis of the HISCLASS that classifies occupations according to skill level.[110] I give all the occupational titles in the marriage records, the wage series, and the household budgets a HISCO and a HISCLASS code to consistently classify various types of labourers and to link the databases together.

The taxonomy of labour relations is related to HISCO and aims to identify different types of labour based on "for and with whom one works."[111] As such, the taxonomy focuses on the *situation* in which a labourer worked rather than on the exact sort of work he or she performed. Thus, the same type of work can be performed in the context of different labour relations. For instance, spinning can be done in a factory and rewarded with a wage, in which case the labour relation is identified as wage labour for the market. However, spinning can also be coerced without any type of remuneration, in which case the labourer is identified as a

[108] van Leeuwen, Maas, and Miles, *HISCO*; van Leeuwen, Maas, and Miles, 'Creating'.
[109] (1) Professional, technical, and related workers; (2) Administrative and managerial workers; (3) Clerical and related workers; (4) Sales workers; (5) Service workers; (6) Agricultural, animal husbandry and forestry workers, fishermen and hunters; (7) Production and related workers, transport equipment operators and labourers.
[110] van Leeuwen and Maas, *HISCLASS*.
[111] Hofmeester, Stapel, and Zijdeman, *The global collaboratory*, p. 1.

slave. For the present research, the taxonomy is especially useful to explore how and where married women allocated their time. Work is not necessarily the same as leaving the house and can be performed in the private sphere. The taxonomy will explicitly be employed in chapter 3, where I focus on household labour allocation and society's perception of women's work in two Dutch textile centres around 1890.

1.6. Outline of the dissertation

The central argument of this dissertation is that structural change was the most important driver of FLFP rates. Following from this, I expect that women's changing position in the economy and their contributions to the household income depended on the structure of local economies and that therefore, the transition to a male breadwinner society was regionally diverse. To test this assumption we need to understand women's position in the economy on both a macro and a micro level – in the labour market and the household. In what follows, I will outline the structure of this dissertation.

Chapter 2 starts with an analysis of unmarried women's LFP based on the question: *What was the key driver of Dutch unmarried women's labour force participation during the period 1812-1929?* It includes both factors of supply of and demand for labour in the analysis. Most existing studies on the explanations for the low Dutch FLFP during the nineteenth century (Table 1.1) have argued that supply-side factors, among which are social norms, were driving this development. This study shows that social norms were merely part of the story and it demonstrates, on the basis of nearly 2 million marriage records from the period 1812-1929, that sectoral shifts in the Dutch economy explain almost half of the decline of FLFP over the entire period.

Chapter 3 proceeds by exploring married women's work and focuses on the textile regions of Twente and Tilburg during the last decade of the nineteenth century. The central question of this chapter is: *How did households cope with the apparently conflicting wishes of keeping the wife at home to create domesticity and generating sufficient income?* Based on a qualitative analysis of hundreds of interviews with industrial labourers I conclude that the domesticity ideal was indeed prevalent in these regions. However, this does not mean that women did not contribute to the household income. On the contrary, many married women managed to combine different types of labour relations – among which were home-making

duties – that remained invisible in the census. In this way, households could both live up to the domesticity ideal and provide sufficient income.

Chapter 4 engages in the long-running debate about the impact of industrialization on women's position in the labour market by answering the following question: *How did structural change affect women's position in agriculture and industry?* Much is still unclear about this issue, above all due to our lack of knowledge about the long-term development of women's wages. This chapter presents the first nineteenth-century Dutch women's wage trend in the agricultural and industrial sectors. I compare the results with similar research on Britain that has concluded that during industrialization, unmarried women's position in the labour market improved whereas married women's position deteriorated. My most important finding is that women's relative position in casual agricultural and industrial work deteriorated from the mid-nineteenth century onwards. Conversely, (unmarried) women's position working on annual contracts remained stable. Although the British and Dutch economies developed in different ways, the development of the gender wage gap in both countries as a result of structural change during industrialization shows many similarities.

Chapter 5 is a synthesis of the former chapters and seeks to answer the following question: *When and where did households become able to finance a breadwinner-homemaker household?* To this end, I first compute the welfare ratios – a measure of the standard of living relative to a poverty line – of various prototypes of households during different stages of the household life-cycle based on the nominal wage trends discussed in chapter 4. Subsequently, I estimate the incomes from resources other than full time wage labour to come to a more complete understanding of household income. The main conclusion is that the breadwinner-homemaker household could financially be realized in industrial regions long before it could be realized in agricultural regions. Still, by 1912, in both types of households the husband's wage was not the sole source of income.

Chapter 6 returns to the model presented in section 1.4 and contemplates the implications of my findings for our understanding of women's changing role in the labour market and the household economy. Furthermore, this concluding chapter places the research results on the Netherlands in a broader, western European context and reflects on the core conundrum of Dutch women's labour history: the 'Dutch divergence' in FLFP rates.

Chapter 2: The impact of demand for labour and economic structure on Dutch unmarried women's labour force participation, 1812-1929*

2.1. Introduction

Historical studies on FLFP have been given much more attention to factors of supply than factors of labour market demand in both theoretical[112] and empirical studies.[113] Recently, Jane Humphries and Carmen Sarasúa have criticized the many methodological and theoretical flaws in the historiography on women's work, among which the excessive focus on supply-side factors. Instead, they argue that "[d]emand was dominant in shaping their [i.e. women's] place in European labour markets; women who were offered jobs by and large took them [...]."[114] The present study follows this line of reasoning with the primary aim to quantify as well as qualify the impact that shifts in the structure of the Dutch economy had on the development of FLFP.

Previous studies on the effects of labour demand on FLFP in industrializing western Europe have demonstrated that, because new machinery did not require ample physical strength and skills, women and children were ideal, cheap labourers for industrial work. As discussed in the introduction of this dissertation, Joyce Burnette has argued that in British regions where large textile factories were built, demand for female labour intensified whereas demand declined in other regions because hand-spinning, work that had provided many women with an income in pre-industrial times, disappeared. "Women's work opportunities, then, depended on the state of the local economy."[115] Claudia Goldin found a U-shaped curve of FLFP in the United States with a decline during the nineteenth century followed by a rise

* This chapter draws heavily from co-authored work with Pieter Woltjer (Wageningen University and Research, Department of Rural and Environmental History). Therefore, throughout this chapter I use the pronoun 'we' instead of 'I'. A previous version of this research has been published as a single-authored working paper in the Centre for Global Economic History series of the Utrecht University (http://www.cgeh.nl).

[112] Becker, 'A theory'.

[113] van Poppel, van Dalen, and Walhout, 'Diffusion'; Minoletti, 'The importance of ideology'; de Vries, *The industrious revolution*.

[114] Humphries and Sarasua, 'Off the record', p. 53.

[115] Burnette, *Gender, work and wages*, p.44. Burnette further argues that men's fear for competition of cheap, female labourers would lead to women's exclusion from well-paid jobs through legislation (see also: Horrell and Humphries, 'The origins', p. 50). Indeed, women workers, most notably in the textile industry, kept male wages low and that is why trade unions started to exclude female members. According to Burnette, men succeeded in driving women out of the labour market by using gender ideology (Burnette, *Gender, work and wages*, p. 15).

halfway through the twentieth century.[116] Demand for labour also affected other facets of society. For the case of England, Paul Atkinson demonstrated that the extent of local demand for female labour determined fertility rates. The higher the demand for female labour, the longer women would postpone their marriage and the lower fertility would be.[117]

Despite the growing attention for demand-side factors, the literature remains dominated by a range of supply-side explanations for long-term developments in FLFP. First, the specific stage of a woman's life-cycle presumably influenced her decision to work. The presence of many young, dependent children drove women from the labour market whereas they returned when their children had become older.[118] Second, Jan de Vries and Joel Mokyr have argued that during the nineteenth century, households increasingly desired to consume goods such as cleanliness and good nutrition. These goods could not be purchased on the market and had to be produced by a stay-at-home wife. Consequently, married women retreated from the labour market.[119] This changing consumptive behaviour was influenced by increasing knowledge of, among others, the spread of diseases through germs and the importance of good nutrition.[120] Moreover, men's nominal and real wages increased during industrialization, enabling households to relinquish the wife's income.[121] Finally, middle-class social norms became more pronounced among the nineteenth-century working class. Domesticity was the core of a proper bourgeois lifestyle and could only be achieved with the presence of a good housewife. Therefore, women who worked outside their homes could not provide their family with the proper home environment.[122]

The Netherlands forms a particularly interesting case to explore the impact of changing demand structures for labour. Evidence from occupational censuses suggests that during the nineteenth and early twentieth centuries, Dutch FLFP was remarkably low relative to surrounding countries (Table 1.1).[123] Up to now, this has mainly been explained by the above mentioned supply-side factors, most notably the influence of changing social norms

[116] Goldin, 'The u-shaped'. See section 1.4 for more information about the U-shaped curve of FLFP.
[117] Atkinson, 'Isn't it time'.
[118] Garrett, 'Was women's work'.
[119] de Vries, *The industrious revolution*.
[120] Mokyr, 'Why "more work for mother"?'.
[121] Goldin, 'The u-shaped'.
[122] Minoletti, 'The importance of ideology'; van Poppel, van Dalen, and Walhout, 'Diffusion'.
[123] Pott-Buter, *Facts and fairy tales*; Janssens, 'The rise and decline'. In chapters 3 and 5 I will show that women who withdrew from the registered labour market often took up other types of work, such as home industrial labour and subsistence farming, that could be combined with homemaking tasks.

regarding domesticity.[124] However, these social norms already prevailed during the early modern period and the *acceptance* of these norms did not change substantially during the nineteenth century.[125] Therefore, we need to look for other factors of change to explain the low Dutch FLFP rates in Table 1.1.

An underexplored factor is the specific Dutch economic structure. Table 1.3 has shown that, compared to neighbouring countries, the share of Dutch employment in industry was low throughout the latter half of the nineteenth and in the early-twentieth century.[126] In addition, its share of employment in services was particularly high due to the growth of commercial services (i.e. transport, wholesale, retail). This chapter will show that the sectors that came to dominate the Dutch economy presented only limited employment opportunities for women. The comparatively slow rate of industrialization is thus a likely cause of the relatively low FLFP in the Netherlands.

This study has three main objectives. First, it moves beyond the literature that has emphasized the influence of social norms on the changing levels of FLFP. Although we acknowledge the importance of these studies, we argue that they are incomplete. By exploring the influence of demand for labour in local economies, we combine factors of demand and supply in one analytical framework. This also implies a change of perspective: whereas most scholars have tried to answer the question why women withdrew from the Dutch labour market during the nineteenth century, we examine the reasons why a substantial share of the women did not. The results will show that the share of economic sectors with a large demand for female labour decreased during the long nineteenth century.

Second, this research is based on regional source material. Nowadays, it is widely acknowledged that censuses systematically underreported women's work and that other types of disaggregate sources are needed to understand developments of FLFP in pre-industrial and industrial economies.[127] In the past decade, many historians have started to take up the challenge to "[...] rescue the history of women's work from its marginal, 'off the record'

[124] de Vries, *The industrious revolution*; Walhout and van Poppel, 'De vermelding des beroeps'; van Poppel, van Dalen, and Walhout, 'Diffusion'.
[125] de Vries and van der Woude, *The first modern economy*, p. 605; Schmidt, 'Labour ideologies', p. 46. Some scholars have nuanced this view: Everard, 'Verandering *en* continuïteit'; Schuurman, 'Is huiselijkheid'.
[126] Griffiths, *Industrial retardation*; Horlings and Smits, 'A comparison', p. 89; de Jonge, *De industrialisatie*; Jansen, *De industriële ontwikkeling*; Mokyr, *Industrialization in the low countries*; Mokyr, 'The industrial revolution'.
[127] Higgs, 'Women, occupations and work'; Hill, 'Women, work and the census'; Humphries and Sarasua, 'Off the record'; Muñoz Abeledo, 'Women in the rural'; Schmidt and van Nederveen Meerkerk, 'Reconsidering'.

status [...]"[128] by using alternative, disaggregate source material.[129] Likewise, this chapter moves beyond the census by exploring an alternative source: the Dutch marriage records for the period 1812-1929. The employed database contains information on nearly 2 million marriages, covering seven out of the eleven Dutch provinces. Based on whether or not the bride stated an occupation in her marriage record, we will determine the extent of FLFP.[130]

The detailed marriage records allow us to run a logistic regression and to estimate, among others, how the occupational status of the groom, the age of the bride, and the characteristics of the local labour market affected the development of FLFP. The wide coverage of the data source, across both time *and* space, permits an analysis of FLFP on a municipal level.[131] We can thus observe and account for local variations in the demand for and supply of female labour: a crucial piece of the puzzle that cannot be observed when using a nationwide approach based on aggregate data. The results allow us to quantify what was driving the marked decline in FLFP in the Netherlands over the long nineteenth century. For this we utilize a novel decomposition framework that attributes the change in FLFP to the change in the various factors included in the analysis. This decomposition shows that, even though 'social norms' turned out to be an important driver, shifts in the economic structure of the Dutch economy were the most important driver behind the decline in FLFP.

Third, in addition to the regression analysis, we provide qualitative support for our main findings based on the labour surveys of 1890 that contain interviews with hundreds of people from various social classes. These accounts provide insight into how individuals responded to changes in different labour markets. We selected the textile and peat industries as case studies because by the end of the nineteenth century, the former industry flourished in certain parts of the country, while the latter was rapidly shrinking due to the growing competition of coal as fuel.

This chapter proceeds as follows. Section 2.2 considers the historiography on the influence of social norms on Dutch FLFP and presents the reasons why we question the completeness of this literature. Section 2.3 explains the nature of the sources and our research methods in more detail. Section 2.4 discusses the results from the logistic regression, showing

[128] Humphries and Sarasua, 'Off the record', p. 40.
[129] See for instance: Atkinson, 'Isn't it time'; Burnette, *Gender, work and wages*; Grantham, 'Occupational'; Muñoz Abeledo, 'Women in the rural'.
[130] In the context of the entire population, labour force participation is 'the percentage of the total population performing market work' (Pott-Buter, *Facts and fairy tales*, p. 7). In this chapter, the term FLFP refers to the percentage of brides with a listed occupation in their marriage record.
[131] Nowadays, the importance of regional research for women's labour history is widely recognized. See for instance: Verdon, 'The rural labour market'; Humphries, 'The lure of aggregates'.

that certain sectors, such as the textile industry and private services, had a significantly positive effect on the chance that a bride would state an occupation upon marriage. Section 2.5 quantifies the contribution of the shifts in the economic structure of the Dutch economy to the ever declining share of brides reporting an occupation by decomposing the change in FLFP between 1812 and 1929. Section 2.6 provides qualitative support for the regression results. Section 2.7 concludes.

2.2. The importance of regional research

The origins and expansion of the 'male breadwinner society' in Europe, where men were the household's sole wage earners, have been heavily debated. Although it is clear that FLFP indeed decreased in western Europe during the nineteenth century, the exact timing of the realization of the male breadwinner society remains obscured.[132] Most studies on this topic do conclude that by the end of the nineteenth century, the breadwinner-homemaker model had become the preferred type of household labour allocation in most western European countries.[133]

Frans van Poppel, Hendrik van Dalen, and Evelien Walhout have argued that social norms were driving the emergence of the Dutch male breadwinner society.[134] They have shown that throughout the nineteenth century, women increasingly entered marriage without an occupation. Inspired by theories developed by Jan de Vries and Joel Mokyr[135], Van Poppel et al. acknowledge the influence of the increasing value attached to household products such as cleanliness and *gezelligheid* (cosiness). They further expound on *why* choices in household labour allocation were made following these shifting consumer aspirations. They reason that because from the 1850s onwards, women increasingly quit their jobs before they got married, thus before they were expected to 'produce' these goods for their own household, social norms must have been the main impetus for women to enter marriage as a housewife. They further argue that many brides chose not to state an occupation although they did have one, only to live up to society's expectations and that therefore, "[t]o keep up appearances, they

[132] Creighton, 'The rise'; Janssens, 'The rise and decline'; van Nederveen Meerkerk, 'The first'.
[133] Bourke, 'Housewifery', pp. 172-173; van Poppel, van Dalen, and Walhout, 'Diffusion'.
[134] van Poppel, van Dalen, and Walhout, 'Diffusion'.
[135] Mokyr, 'Why "more work for mother"?'; de Vries, 'The industrial revolution'; de Vries, *The industrious revolution*.

substituted registered work for unregistered work (for example, in cottage industries, or working in the family firm or on the farm)."[136]

Although the social norms thesis is appealing, it fails to capture all of the dynamics in the change of FLFP for three reasons. First, social norms regarding domesticity already prevailed during the early modern period.[137] Therefore, *attitudes* towards female labour did not substantially change during the nineteenth century. Although some scholars have argued that Dutch women already withdrew from the labour market in the seventeenth century, recent research has shown that most women in the early modern Dutch Republic were in fact working and that the birth of the male breadwinner *ideal* did thus not match the actual practice.[138] Moreover, Jan de Vries' concept of an 'industrious revolution' contradicts the idea of an early modern male breadwinner society. He argues that during the early modern period, a period of growing industriousness leading up to the industrial revolution, households desired to purchase more market produced goods. To satisfy their needs, all members of the household were mobilized to perform wage labour.[139] Furthermore, in line with De Vries' conclusions, Ariadne Schmidt demonstrated that the early-modern view was that "[w]omen from those social layers that lacked income from capital should provide for their own subsistence through work."[140] In other words, the apparent contradicting ideologies of domesticity and industriousness coexisted in reality. If the domesticity ideal already existed during the early modern period, what then drove the changes in Dutch FLFP? Second, although social norms certainly differed between regions, they cannot sufficiently explain the large regional variations in FLFP. Third, Van Poppel et al. inadequately considered alternative explanations, prime amongst which is the shifting structure of the Dutch economy and its impact on the demand for female labour.

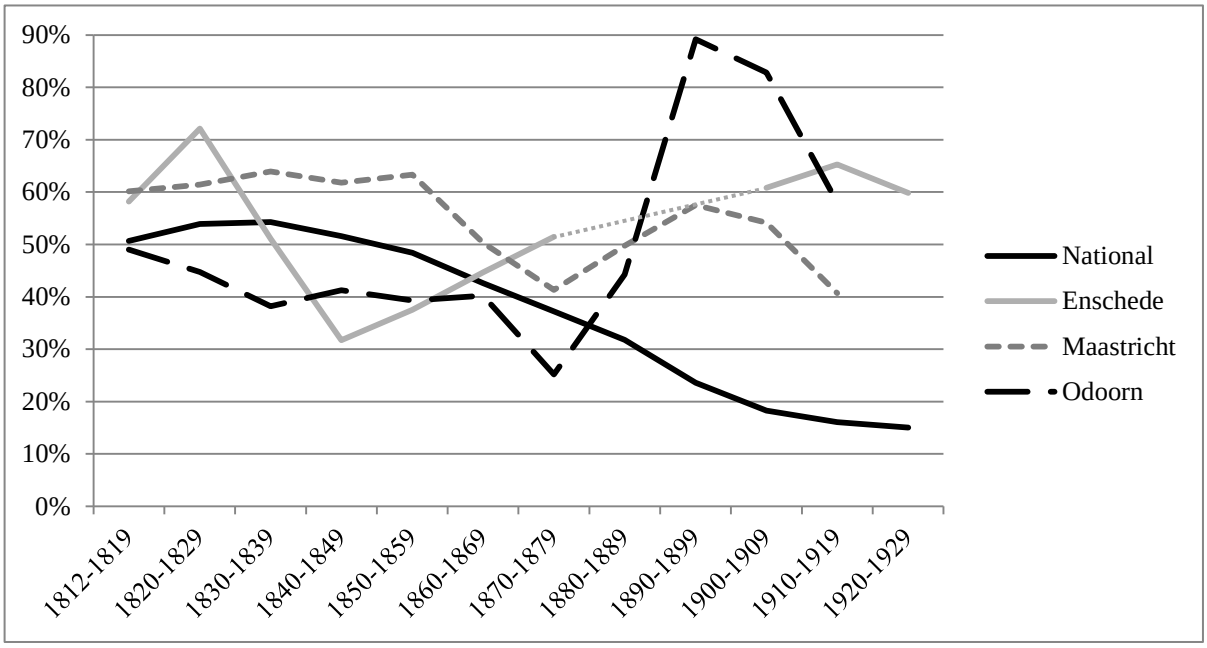
The present research applies a regional approach to explore other factors of change, besides social norms, that have determined FLFP rates through time. Many studies on women's labour rely heavily on aggregate sources, most notably occupational censuses, that neglect regional variation.[141] Sara Horrell and Jane Humphries have stated that: "[g]rand

[136] van Poppel, van Dalen, and Walhout, 'Diffusion', p. 124.
[137] Schmidt, 'Labour ideologies', p. 46; de Vries and van der Woude, *The first modern economy*, p. 605.
[138] van den Heuvel, *Women and entrepreneurship*; van Nederveen Meerkerk, *De draad in eigen handen*; Schmidt, 'Women and guilds'; Schmidt and van Nederveen Meerkerk, 'Reconsidering'.
[139] de Vries, *The industrious revolution*.
[140] Schmidt, 'Labour ideologies', p. 67. See also: Everard, 'Verandering *en* continuïteit'.
[141] See for studies that question the accuracy of censuses among others: van Nederveen Meerkerk and Paping, 'Beyond the census'; van Nederveen Meerkerk, 'The first'; Higgs, 'Women, occupations and work'; Hill, 'Women, work and the census'. Others have argued that the extent of underreporting was

theorizations of the rise of the male breadwinner family provide falsely homogenizing accounts which are obsessed with monocausality, outcomes and finished worlds."[142] Van Poppel et al. have successfully used an alternative source – marriage records – on a regional level for their research on the emergence of the Dutch housewife. However, although they analysed their data on a provincial level and distinguished between rural and urban regions, they did not systematically explore regional variation. By including regional economic structures in the analysis, we account for both factors of supply and demand.

We analyse the Dutch marriage records on a municipal level and show that the decreasing FLFP was not a linear process and that regional variation was considerable. Figure 2.1 below illustrates this point and shows the percentages of brides who stated an occupation in their marriage records in three municipalities and on the national level in the period 1812-1929. The three municipalities each represent a labour market with one dominant type of industry. In Enschede, this was textile, in Maastricht pottery and glass, and in Odoorn peat production.

Figure 2.1. Percentage of brides with a stated occupation 1812-1929



Source: Marriage records 1812-1929

not so problematic and that some occupations, such as domestic servants, may have even been over reported: Hatton and Bailey, 'Women's work'.

[142] Horrell and Humphries, 'The origins', p. 64. See also: Creighton, 'The rise'; Humphries, 'The lure of aggregates'.

In Enschede, Maastricht, and Odoorn, the marriage records suggest that FLFP indeed slightly decreased from the 1830s onwards, but drastically increased again during the last decades of the nineteenth century. Especially between 1880 and 1920, these regional trends diverged considerably from the national average. If social norms indeed were driving the decreasing Dutch FLFP, then how do we explain the sudden revival of working women in these specific regions? And why did regional FLFP show such a large variation?

We do not reject the influence of social norms. In fact, from ample other qualitative research it has become apparent that by the end of the nineteenth-century in the Netherlands, domesticity was actively pursued by the middle as well as by the working class.[143] Furthermore, a study by Koen Matthijs on the decreasing age at marriage of both men and women in Flanders during the nineteenth century has shown that factors of supply and demand reinforced each other. Economic change pushed women into the private domain and "[i]n response to this relative deprivation, they developed their own 'female' status scale that was centred almost exclusively on romantic marriage, the closed home, and the caring mother."[144] The present research likewise emphasizes the reciprocal relation between supply and demand and nuances the social norms thesis rather than rejecting it.

2.3. Data and methodology

In 1811, the Code Napoleon – the French civil code established by Napoleon I – was implemented in the Netherlands. It ordered that all municipalities had to register births, marriages, and deaths in the exact same way. In 1838, when the French had been long gone, the Code Napoleon was replaced by the Dutch Civil Code. However, virtually nothing changed in the ways in which birth, marriage, and death certificates were organized.[145] Thus, marriage records in the entire country were supposed to record the same information on the marrying couple and their parents, and, most importantly, on the occupation the bride held just before she got married. Despite the long timespan covered by the marriage records, the nature of and information provided by this source remained stable, and changes over time are therefore unlikely to be caused by a temporal source bias. Furthermore, the clerk who was in charge of the registration received clear instructions. For instance, the marriage record had to list "[...] the occupation of the woman when entering a marriage, or the job from which she

[143] More about this in chapter 3.
[144] Matthijs, 'Mimetic appetite', p. 122.
[145] van Sonsbeek, *Van de schaduw*, p. 14-15.

resigned at the time of marriage or some time before in view of her prospective marriage."[146] Both the groom and the bride reported their occupational titles themselves. In sum, marriage records are an invaluable source for a longitudinal analysis of unmarried women's labour as they are available on a local level, are comparable throughout the entire country, and cover an extensive period of time.

Marriage records have been used to research various aspects of family history such as changing family relations, the development of socially mixed marriages, social mobility, and demography.[147] Still, there are some source biases that need to be discussed. First, the records do not state whether the bride continued her work during her married life and they therefore only inform us about unmarried women's LFP. Therefore, the conclusions of this research cannot directly be applied to married women's labour market experience. Second, the source provides a lower-bound estimate of working women, as brides could choose not to state an occupation if they knew beforehand they would quit after they had married. Third, the records do not capture the occupations of women who did not marry at all. We know that the proportion of single women was relatively large in the Netherlands and that the age at first marriage decreased during the nineteenth century. Young women are thus overrepresented in the database.

To quantify the effects that structural economic shifts had on FLFP in the Netherlands, we run a logistic regression to estimate the probability that a woman stated an occupation upon marriage. We assume that this probability depended on the social status of the groom, the age of the bride, the period in which the marriage took place, the province where the marriage was recorded, and whether the bride and groom lived in an urban or rural location. Crucially, we include measures of the economic structure of the municipality where the marriage was registered (i.e. the share of employment in the main economic sectors). This allows us to determine whether women residing in municipalities that were primarily oriented towards, say, agriculture were more likely to state an occupation than women living in industrialized areas. In addition, annual, national figures for Gross Domestic Product (GDP) per capita are incorporated in the regression to capture the effect of rising income levels on FLFP over time.

For all brides we reclassified the occupational titles listed in the marriage records into a binary variable, i.e. '0' when the bride did not state an occupation and '1' if she did. The

[146] Quoted in: van Poppel, van Dalen, and Walhout, 'Diffusion', p. 107.
[147] Bras, 'Intensification of family relations?'; Bras and Kok, 'They live in indifference together'; van Poppel and Nelissen, 'The proper age'; van Leeuwen and Zijdeman, 'Digital humanities'; van Leeuwen and Maas, 'Economische specialisering'; van Bavel and Kok, 'Social control'.

grooms' occupational titles were recoded into 7 distinct social classes for men (see Table 2.1a) based on the *Historical International Standard Classification of Occupations* (HISCO).[148] Next, we grouped the year of marriage by decades and the age of the bride by 5-year intervals. Based on the municipality in which the marriage was registered the province and urban/rural variables were defined. We used the 1899 census to classify the municipalities in either the urban or the rural group.[149] Municipalities with fewer than 5,000 inhabitants were not counted separately for this census. Therefore, we consider all these smaller municipalities to be rural, while the municipalities reporting over 5,000 inhabitants are classified as urban.

To determine the share of employment in the major economic sectors for each of the 254 municipalities in the sample, we again turn to the 1899 occupational census. For the larger municipalities this census reported the number of men, women, and children working in 33 separate industries. These industries are aggregated into 12 distinct sectors corresponding with the basic *Standard Industrial Classification* (SIC).[150] The sectoral shares are based solely on the employment figures for men, as they were less concentrated in certain industrial branches and employment rates were higher. Therefore, the male labour force is more representative for a determination of the size of industry in each municipality. Furthermore, using the female labour force for this purpose could introduce a fair amount of circularity in the model, where the extent of FLFP in a municipality is explained by itself.

For the municipalities smaller than 5,000 inhabitants we rely on the marriage records for the years between 1889 and 1909. We assign the occupations as reported by the grooms, the fathers of the grooms, and the fathers of the brides to each of the 12 sectors on the basis of a correspondence table between the HISCO and SIC, provided by the *Integrated Public Use Microdata Series* (IPUMS).[151] To capture changes in the sectoral composition over time the marriage records for years prior to and following the census are utilized. Appendix 2.2 provides a complete overview of the method behind the construction of the sectoral shares.

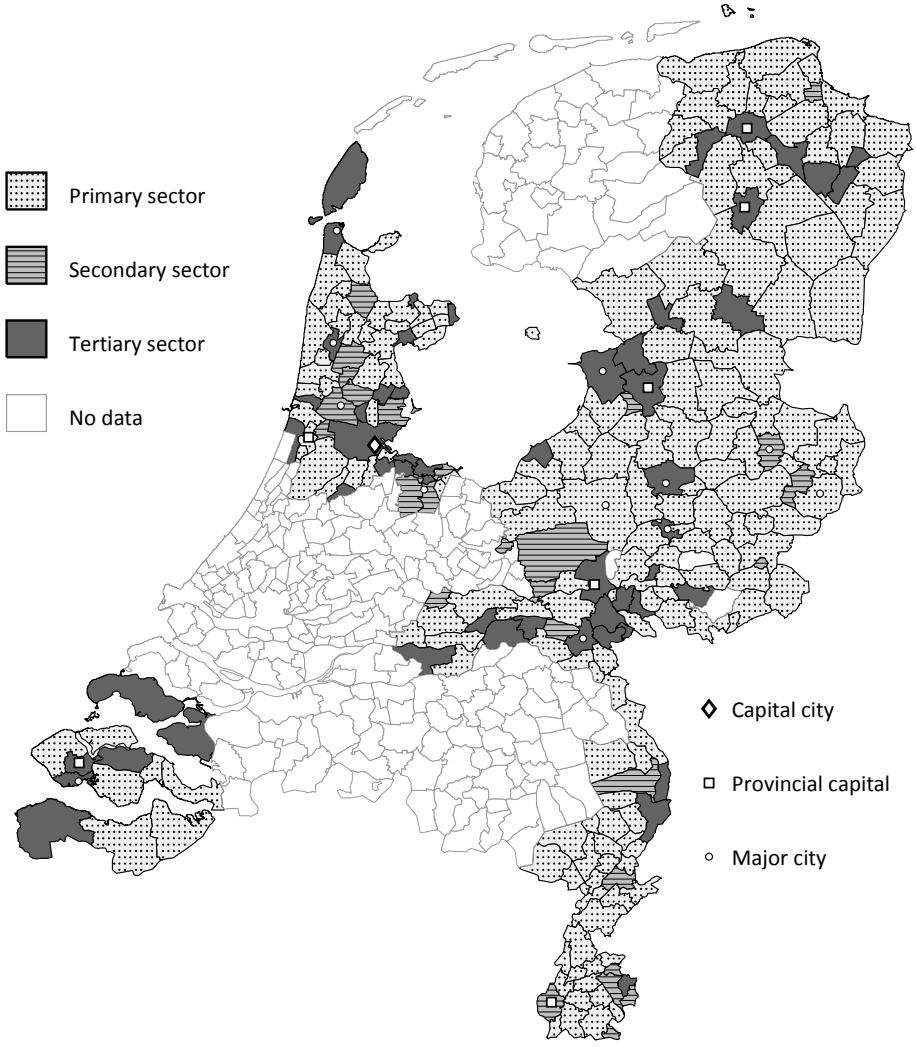
Lastly, GDP per capita is taken from the *Historical Statistics* by Angus Maddison.[152] The real GDP figures were converted to constant 1913 Dutch Guilders and Maddison's series

[148] van Leeuwen, Maas, and Miles, 'Creating'; van Leeuwen and Maas, *HISCLASS*. See for the website of this project: https://collab.iisg.nl/web/hisco/. See also the introduction of this dissertation for more information.
[149] www.volkstellingen.nl. For more information on the history of the Dutch census: Boonstra et al., *Twee eeuwen*.
[150] For an overview of the SIC, see Ruggles et al., *Integrated* (variable 'IND1950').
[151] See Ruggles et al., *Integrated* (variables 'OCCHISCO' and 'IND1950').
[152] Maddison, *Statistics*.

was extrapolated between 1812 and 1819 using Smits et al.[153] In the regression the natural log of the annual GDP per capita series is used.

Our dataset and interpretation differ in two important ways from the earlier work of Van Poppel et al. First, while they based their conclusions on just over one million marriages, we have access to nearly double that number: 1,820,527 records. The added records are principally those from the province of Noord Holland which until recently had only been partly digitized. Noord Holland was the most urbanized and densely populated province of the Netherlands. Consequently, the balance between rural and urban regions altered in favour of the latter. Second, while Van Poppel et al. predicted the probability that brides did not state an occupation, we predict the probability that they did.

Figure 2.2. Dominant sector by municipality, 1900-1929



Note: map indicates the greatest share of male employment in respectively the primary, secondary, and tertiary sectors for the years between 1900 and 1929.
Sources: Census 1899; marriage records 1910-1929.

[153] Smits, Horlings, and van Zanden, *Dutch GNP*.

Overall, the dataset covers seven of the eleven Dutch provinces and includes both agricultural as well as industrialized and urbanized areas (see Figure 2.2). The dataset ranges from 1812 to 1929. Tables 2.1a and 2.1b provide an outline of the main variables in the model. Table 2.1a summarizes the categorical variables: the rightmost column shows the share of brides that reported an occupation for that specific variable/category, while the middle column reports the share that each of the listed categories represents out of the total sample. Table 2.1b summarizes the continuous variables in the sample: the share of employment in each of the 12 major economic sectors at the municipal level and GDP per capita. The final column in Table 2.1b sums up the relationship between these variables and FLFP. Here the correlation between the average sectoral share for each combination of decade and municipality and the average percentage of brides stating an occupation is listed.

Table 2.1a. Summary statistics categorical variables

	% of sample	*% brides with occ.*		*% of sample*	*% brides with occ.*
Occupational status of groom			*Province*		
Upper class	3.2	14.3	Drenthe	5.8	41.2
White-collar middle class	14.6	16.5	Gelderland	18.3	33.2
Skilled workers	18.3	28.2	Groningen	11.9	35.4
Farmers	14.3	27.6	Limburg	10.9	38.0
Lower-skilled (farm) workers	15.5	32.9	Noord-Holland	32.1	20.0
Unskilled workers	16.3	40.9	Overijssel	12.3	36.8
Unskilled farm workers	18.0	52.2	Zeeland	8.7	61.2
Period of marriage			*Rural or urban municipality*		
1812-1819	3.8	52.1	Rural	39.4	38.6
1820-1829	5.5	54.6	Urban	60.6	29.5
1830-1839	5.8	54.7			
1840-1849	6.3	52.0	*Age bride at marriage*		
1850-1859	7.3	48.9	14-19	5.1	23.7
1860-1869	8.0	43.4	20-24	32.1	28.2
1870-1879	8.7	37.9	25-29	24.5	33.2
1880-1889	8.6	32.8	30-34	10.4	38.1
1890-1899	9.8	24.6	35-39	4.8	41.0
1900-1909	11.4	18.7	40-44	2.6	42.3
1910-1919	12.9	16.6	45-90	2.9	38.0
1920-1929	11.9	15.3	*Not available*	17.7	37.4

Source: see text.

Table 2.1b. Summary statistics continuous variables

	Mean	*Stdev.*	*Min.*	*Max.*	*Correlation to % brides with occ.*
Sectoral share (%)					
Agriculture	32.5	22.6	2.9	91.9	0.04
Mining and peat extraction	0.6	4.5	0.0	57.6	-0.32
Construction	9.2	3.8	0.0	24.5	-0.39
Food, tobacco and beverages mnf.	4.6	2.5	0.0	23.4	-0.28
Textile and apparel mnf.	7.2	5.1	0.1	62.6	0.48
Metal and machinery mnf.	3.5	2.1	0.0	15.1	-0.21
Paper and chemical mnf.	0.9	1.1	0.0	20.7	-0.22
Glass, pottery, misc. mnf.	3.8	3.3	0.0	27.7	-0.11
Transportation and public utilities	8.3	6.2	0.0	50.2	-0.39
Wholesale and retail trade	10.3	6.3	0.0	50.0	-0.35
Finance, insurance and real estate	1.7	1.6	0.0	6.4	-0.34
Private services	17.3	6.7	1.3	49.5	0.47
Gross Domestic Product p. capita (log)	5.67	0.29	5.02	6.31	-0.44

Source: see text.

We predict the likelihood that bride i reports an occupation in the marriage records. This probability should be bounded by 0 and 1, continuous and nonlinear; conditions which are all met by a logit model:

$$Pr\{y_i = 1|x_i\} = \frac{e^{x_i'\beta}}{1 + e^{x_i'\beta}} \quad (1)$$

The right-hand side of equation (1) is a distribution function with mean 0 and standard deviation 1. The coefficients (β) are estimated using maximum likelihood, which is the optimal parametric estimator in this context.

2.4. Regression results

A cursory look at Tables 2.1a and 2.1b reveals a number of correlations between the covariates. First, there is a clear negative relation between FLFP and the *occupational status of the groom*: only 14% of the women with the future husband holding an upper-class position reported an occupation, versus 52% of the women marrying unskilled farm workers. Second, younger brides were less likely to report an occupation. Third, there were large differences in FLFP between the provinces, which could be driven by the fact that fourth, women in urbanized municipalities were less likely to report work than those in rural areas.

The variable that should capture shifts in social norms is the *period of marriage*. Table 2.1a shows that, for the entire sample, approximately 50% of the women reported an occupation prior to 1850, while less than 20% did so after 1900. This could represent changing attitudes towards female labour. From at least 1850 onwards, there was a decline in either the actual FLFP or the willingness of unmarried women to report their occupation. This decline could, however, be driven by factors other than changing social norms such as demographic factors – rates of urbanization, migration, or fertility – or increases in the average household income (proxied by the *status of the groom* and *GDP*). Such developments are therefore likewise captured by the variable *period of marriage* and could cause social norms to become more constraining.

The main variables of interest are the *sectoral employment shares* summarized in Table 2.1b. The positive correlations in the last column of this table reveal that a greater than average share of employment in the 'Textile and apparel manufacturing' and the 'Private services' sectors generally coincided with a high rate of FLFP in any given municipality. For most of the other sectors, however, there was an opposite relation. Municipalities with a sizable share of employment in 'Construction' or 'Transportation and public utilities', for example, generally reported a FLFP rate below average. The share of employment in 'Agriculture' does not reveal a clear relation to the share of brides stating an occupation. The varying impact of different sectors on FLFP provides support for our hypothesis that local economic structures indeed affected opportunities for women on the labour market. Still, the real test of this hypothesis is whether these differences remain when all variables are included into a single model, and whether changes in the structure of the Dutch economy over time can actually explain a significant portion of the decline in FLFP throughout the nineteenth and early twentieth century.

Table 2.2 reports the results from the logistic regression. The odds ratios are presented here, as these provide a readily interpretable estimate of the expected increase/decrease in the likelihood that a woman held a job at specified times, places, or given the occupation of her future husband. For each of the independent categorical variables we first list the reference category between brackets and then return the odds ratios for the alternative categories. Note that three separate regressions are presented. Model (3) includes all variables discussed in the previous section but excludes all the observations from the province of Groningen because for this province, information about the brides' and grooms' age was not available. The first two

models include all observations but both leave out the *age at marriage* variable.[154] Model (1) excludes the sectoral-share variables and serves as our baseline estimate. Comparing the second and third models to this baseline enables us to estimate the sensitivity of the variables included when actually controlling for the structure of the local economy.

[154] Note that all three models include a full set of provincial dummies which were omitted from Table 2.2 for the sake of brevity. The full regression table, including the odds ratios for the age dummies in model (3) is given in Appendix 2.1.

Table 2.2. Odds ratios for brides stating an occupation ('no occupation' = 0)

	(1)		(2)		(3)	
	Odds ratio	*SE*	*Odds ratio*	*SE*	*Odds ratio*	*SE*
Occupational status of groom (unskilled farm workers = 1.00)						
Upper class	0.17***	(0.002)	0.16***	(0.002)	0.18***	(0.003)
White-collar middle class	0.25***	(0.002)	0.26***	(0.002)	0.28***	(0.002)
Skilled workers	0.48***	(0.003)	0.48***	(0.003)	0.51***	(0.004)
Farmers	0.36***	(0.002)	0.36***	(0.002)	0.41***	(0.003)
Lower-skilled workers and farm workers	0.63***	(0.004)	0.61***	(0.004)	0.67***	(0.005)
Unskilled workers	0.79***	(0.005)	0.82***	(0.005)	0.88***	(0.006)
Period of marriage (1920-1929 = 1.00)						
1812-1819	4.47***	(0.183)	1.51***	(0.064)	1.66***	(0.078)
1820-1829	5.17***	(0.183)	1.76***	(0.065)	1.96***	(0.080)
1830-1839	5.27***	(0.168)	1.99***	(0.066)	2.21***	(0.081)
1840-1849	4.81***	(0.144)	1.82***	(0.057)	1.99***	(0.069)
1850-1859	4.30***	(0.118)	1.86***	(0.053)	1.89***	(0.060)
1860-1869	3.46***	(0.089)	1.49***	(0.040)	1.46***	(0.043)
1870-1879	2.88***	(0.063)	1.56***	(0.036)	1.54***	(0.039)
1880-1889	2.48***	(0.042)	1.34***	(0.024)	1.32***	(0.026)
1890-1899	1.61***	(0.027)	1.26***	(0.022)	1.22***	(0.023)
1900-1909	1.17***	(0.017)	0.92***	(0.014)	0.89***	(0.015)
1910-1919	1.08***	(0.013)	1.09***	(0.014)	1.06***	(0.014)
Rural or urban municipality (Urban = 1.00)						
Rural	0.88***	(0.003)	0.84***	(0.004)	0.76***	(0.004)
Sectoral shares (Agriculture = 1.000)						
Mining and peat extraction			1.003***	(0.000)	1.005***	(0.000)
Construction			0.985***	(0.001)	0.997***	(0.001)
Food, tobacco and beverages mnf.			0.948***	(0.001)	0.951***	(0.001)
Textile and apparel mnf.			1.050***	(0.000)	1.048***	(0.000)
Metal and machinery mnf.			1.001	(0.002)	0.974***	(0.002)
Paper and chemical mnf.			1.005**	(0.002)	1.007***	(0.002)
Glass, pottery, misc. mnf.			1.025***	(0.001)	1.038***	(0.001)
Transportation and public utilities			0.969***	(0.000)	0.967***	(0.001)
Wholesale and retail trade			0.980***	(0.001)	0.974***	(0.001)
Finance, insurance and real estate			0.967***	(0.003)	1.007*	(0.004)
Private services			1.052***	(0.000)	1.052***	(0.000)
Gross domestic product p. capita	0.70***	(0.026)	0.63***	(0.024)	0.68***	(0.028)
Provincial dummies	YES		YES		YES	
Age bride dummies	NO		NO		YES	
N	1,820,531		1,820,531		1,498,180	
Pseudo R^2	0.160		0.183		0.196	

Notes: *** p<0.01, ** p<0.05, * p<0.1; Standard errors in parentheses; Pseudo R^2 reports McFadden's adjusted R^2.

Table 2.2 confirms that, while controlling for the other variables, the *occupational status of the groom* has a significant and negative impact in all three models on the likelihood of the bride stating an occupation. The odds for white-collar employees are almost four times lower than for the reference category (unskilled farm workers). Similarly, the *province* and *age at marriage* variables show the same variation/trend as reported in Table 2.1a (see Appendix 2.1). The results for the *rural* dummy are contrary to those reported in the summary statistics, however. All three regressions reveal that when the effects of the other variables are taken into account, women in urban areas are actually significantly more likely to state an occupation, not less likely as suggested in Table 2.1a.[155]

When the sectoral shares are introduced to model (2) three important observations stand out. First, nearly all sectors have a significant and substantive impact on FLFP. Second, the odds ratios are mostly in line with what could be expected on the basis of the correlations in Table 2.1b.[156] Third, the introduction of the sectoral shares in the last two models greatly reduces the odds ratios for the decade dummies.

In both model (2) and (3), the odds ratios for the 'Textile and apparel manufacturing' and the 'Private services' are highest; a difference of just 1% in the share of employment for any of these sectors explains a 5% increase in the odds. The odds for women living in the municipality reporting the maximum share of employment in textiles (62.6%) would thus be approximately 20 times greater than for a, otherwise identical, municipality with a zero per cent share in textiles. The food, transport, and the wholesale and retail sectors show the lowest odds in both model (2) and (3). A relatively high share of employment in these sectors would mean a significantly lower FLFP. Contrary to the simple correlations in Table 2.1b, the odds ratio for 'Glass, pottery and miscellaneous manufacturing' reveals that this sector had a positive and significant effect on the likelihood of brides reporting an occupation.

[155] This conclusion does not necessarily mean that FLFP rates were *higher* in urban regions. After all, the sectors that had a significantly negative effect on FLFP (such as 'Transportation and public utilities') were mostly concentrated in the cities. It does mean, however, that when accounting for all the variables, women in urban regions were more *likely* to list an occupation than we initially thought based on the summary statistics. The differences between urban and rural regions can be explained by the different types of local markets. Furthermore, the method we chose to identify urban and rural regions – i.e. all municipalities with more than 5,000 are classified as urban and the rest as rural – may have skewed the findings. Future research will have to provide more insight into the exact difference between the cities and the countryside.

[156] Note that the interpretation of the odds ratio listed for the sectoral shares differs slightly from those of the binary, categorical variables. The ratio listed represents the change in the odds that a bride will report an occupation given a 1% increase in the share of the respective sector. As before, a value greater than 1 indicates an increased likelihood; a value below 1 demonstrates a reduced likelihood. A 10% increase in the share of a given sector would thus transform the listed odds by a power of 10 (i.e. $\mathbf{1.05^{10} \approx 1.63}$).

The introduction of the sectoral shares in model (2) substantially lowers the odds ratios for the decade dummies. Whereas in model (1) there is a large gap between the odds reported for the earlier and the later decades, this difference more than halved in model (2) to the point where the odds were only twice as high during the first four decades in our sample than during the 1920s. Although there is still a significant decline in FLFP over time that cannot be explained by any of the other variables in the regression, it is markedly less than suggested by Van Poppel et al. [157], demonstrating the importance of economic structure.[158]

2.5. A decomposition of changing FLFP

The results from the regression have shown that both the structure of the (local) economy and changing social norms affected FLFP. This does not answer the question, however, of what was ultimately driving the sizable and prolonged decline of FLFP in the Netherlands. Below this issue is tackled by decomposing FLFP in, among others, the contribution of the shifts in the economic structure of the Dutch economy.

To illustrate this decomposition, consider the hypothetical two-period, two-sector example in Table 2.3 below. At time 0, there are eight municipalities entirely devoted to the production of agricultural goods, while in two municipalities all workers are engaged in services.[159] As the agricultural sector offers more opportunities for women's work, FLFP in the agricultural municipalities is higher than in the service-oriented municipalities. Total FLFP, the average of the 10 municipalities' FLFP in period 0, is 38%.

In the next period, 3 municipalities move away from agriculture and specialize in services instead. At the same time, average FLFP in both sectors declines by 10%, for instance as a result of women retreating from the labour force as a reaction to changing attitudes towards female labour. In period 1, the overall FLFP is now 31.5: a reduction of a little over 17% compared to the average of period 0.

Two forces are driving the decline in FLFP in the stylized example below. First, the structural shift towards the services sector, offering fewer opportunities for women to work. Second, the change in 'social norms', lowering FLFP equally in both agriculture and services. To decompose these effects, the counterfactual FLFP can be calculated, reflecting a scenario

[157] van Poppel, van Dalen, and Walhout, 'Diffusion', p. 115.
[158] Keith Snell has reached similar conclusions in his research on women's agricultural work in England in 1690-1860: Snell, 'Agricultural seasonal unemployment'.
[159] Note that the number of women residing in each hypothetical municipality is identical and doesn't change over time.

in which the structure of the economy remains unchanged over time. If we take period 0's sectoral shares and multiply by period 1's FLFP, the total FLFP would have been 34.2%. The difference with the observed FLFP in period 1, 2.7 percentage points, can be attributed to the first factor, changes in sectoral shares. The residual change, 3.8 percentage points, reflects the second factor, changing social norms.

Table 2.3. Stylized example of decomposition FLFP

	Period 0		*Period 1*	
	Muni.	*FLFP*	*Muni.*	*FLFP*
Agriculture	8	40.0	5	36.0
Services	2	30.0	5	27.0

FLFP at sector shares of:	*Period 0*	*Period 1*
Period 0	38.0	34.2
Period 1		31.5

Contribution from change in:	*Change*
Sectoral shares	-2.7
Residual	-3.8
Total	-6.5

This decomposition can also be applied to the evolution of FLFP in the Netherlands during the period 1812-1929. To fully break down the decline in FLFP in its underlying constituents, we need to take the change in all variables included in our model into account. Partial indices, that include only a subset of the characteristics driving FLFP, can be constructed for all variables in Table 2.2, with the exception of the period of marriage which is captured by the residual. For example, the partial index for the shift in the share of employment in the various economic sectors (i.e. sectoral shares), F^s, is given below.

$$F_t^{\bar{s}_0} = ln \frac{\sum_i^{N_t} Pr\{y_{it} = 1|s_{it}, x_{it}\}}{\sum_i^{N_t} Pr\{y_{it} = 1|\bar{s}_0, x_{it}\}} \quad (2)$$

Equation (2), uses the coefficients from model (3) in Table 2.2 above to predict the likelihood of women stating an occupation at time *t* under two scenarios. The numerator represents the benchmark case, in which the sectoral shares (s_t) as well as all the other independent variables (x_t) are as observed in the marriage records for this period. The denominator represents the counterfactual case, where the sectoral shares are set to the average of the base period 0 ($\bar{s}_0$), while the other independent variables still reflect the observed values at time *t*. By taking the log of the ratio of the benchmark and this

counterfactual case for all *N* brides in our sample at time *t*, the contribution of the shift in sectoral shares to the change in FLFP between period 0 and *t* is obtained.

A notable drawback of the decomposition in equation (2), which closely resembles a Paasche index, is that it is sensitive to the choice of base year. Generally, reliance on the average sectoral shares from the earlier decades will undervalue the contribution of the sectoral shifts to FLFP, while choosing a later base will overvalue its impact. To contain this potential bias, we adopt a chaining procedure, estimating the contribution for pairs of adjacent decades based on the average sectoral shares for both the respective decades. Next, we sum the contributions for all the pairs running from the first period to period *t* to obtain the change in FLFP which is base invariant. Note that equation (3) is the equivalent of a chained Fisher index.

$$F_t^{\bar{s}} = \sum_{\tau=1}^{t} \left(ln \frac{\sum_i^{N_\tau} Pr\{y_{i\tau} = 1 | s_{i\tau}, x_{i\tau}\}}{\sum_i^{N_\tau} Pr\{y_{i\tau} = 1 | \overline{s}_{\tau-1}, x_{it}\}} + ln \frac{\sum_i^{N_{\tau-1}} Pr\{y_{i\tau-1} = 1 | \overline{s}_{\tau}, x_{i\tau-1}\}}{\sum_i^{N_{\tau-1}} Pr\{y_{i\tau-1} = 1 | s_{i\tau-1}, x_{i\tau-1}\}} \right) / 2 \quad (3)$$

Table 2.4 below presents the results of the decomposition. The left column lists the change in FLFP between 1812 and 1929 that can be contributed to the variables in the model. For ease of interpretation, the right-most column shows the percentage share of the decline in FLFP attributable to each respective independent variable.

Table 2.4. Contribution to the change in FLFP, 1812-1929

Variable	*Contribution to growth (log %)*	*Percentage share*
Sectoral shares	-57	46
Occupational status of groom	-8	7
Province	5	-4
Rural/urban	1	-1
Age bride	-1	1
GDP p. capita	-24	20
Residual	*-39*	*32*
Total	-123	100

NB: figures may not sum to total due to rounding.

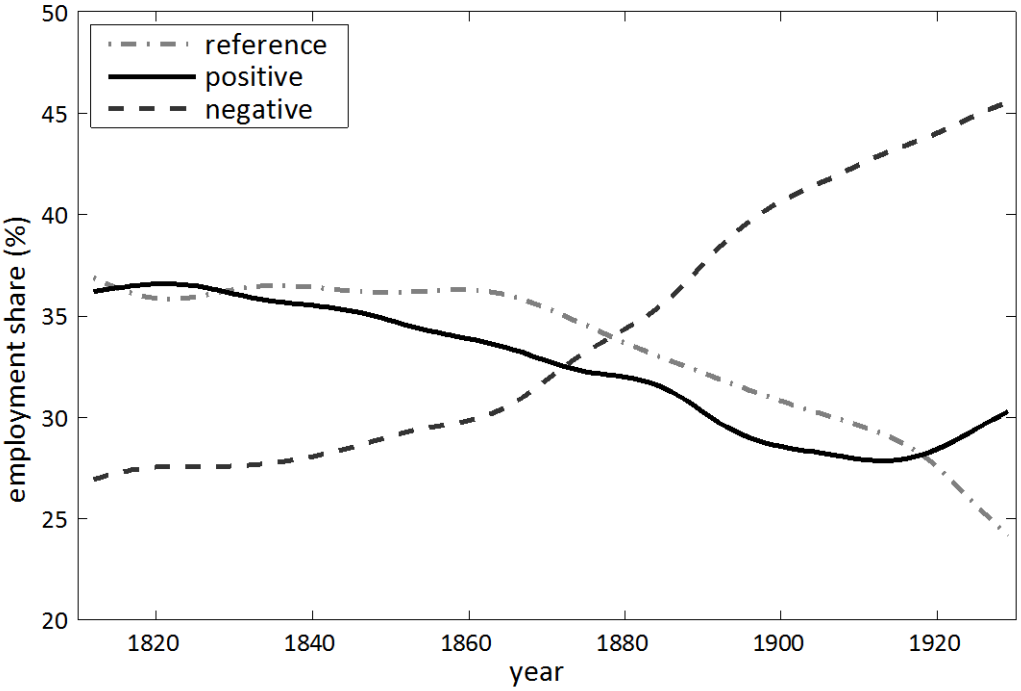
The decomposition reveals that sectoral shifts in the Netherlands explain 46% of the decline in FLFP over the entire period. The two other economic variables, the occupational status of the groom and GDP per capita, represent another 27% of the change in FLFP. The growth in household income – either directly, through an elevation of the husband's occupational status, or indirectly through the growth of the average GDP per capita – created

the circumstances that allowed women to relinquish their income and focus on the domestic chores instead. Shifts in the share of brides living in cities – captured by the rural/urban variable – as well as changes in their average age appear to have had a negligible effect on the aggregate participation rates. The contribution of the changing distribution of marriages across provinces is positive. This contribution could represent a shift in the overall population towards provinces that offer more opportunities for work, or a potential bias over time in our data source. In either case, the contribution of the provincial variable to the change in FLFP was rather small (5 percentage points). The residual, or unexplained variation in FLFP over time, encompasses a little over 30% of the decline in participation rates. This residual could capture any relevant factor that is driving the shifts in demand for as well as the supply of female labour that is not specifically included in the regression model. Still, arguably the most important factor encompassed by the residual is the change in social norms.

The results in Table 2.4 suggest that the changing structure of the Dutch economy is the most important driving force behind the decline of FLFP between 1812 and 1929. This is corroborated by Figure 2.3 which provides a summary of the shifts in the structure of the economy for the seven provinces in our sample. Here, the original 12 sectors are grouped into three categories: those sectors that provided employment opportunities for women and thus contributed *positively* to FLFP, those that did not provide employment opportunities and contributed *negatively* to FLFP, and a *reference* category which did not affect FLFP.[160] Over the entire period, but particularly from 1860 onwards, the sectors that affected FLFP negatively gained an ever greater share of employment in the municipalities in our sample, particularly metal manufacturing and the transportation and trade services expanded their share in the Dutch economy. At the same time, the sectors that did provide ample opportunities for female labour were unable to retain their relative share. Both the textile manufacturing and the private services, the sectors that could contribute most to FLFP, declined in relation to the other sectors of the economy.

[160] The categorization is based on the odds ratios for the 12 sectors in model (3), as listed in Table 2.2. Sectors with an odds ratio significantly greater than 1 are assigned to the positive category. Sectors with odds significantly smaller than 1 are designated as negative. Agriculture is assigned to the reference category by default.

Figure 2.3. Shifts in sectoral shares, 1812-1929



Notes: employment shares are based on 10-year moving averages. The *reference* category covers 'Agriculture'; *positive* covers 'Mining and peat extraction', 'Textile and apparel mnf.', 'Paper and chemical mnf.', 'Glass, pottery, misc. mnf.', 'Finance, insurance and real estate' and 'Private services'; *negative* covers 'Construction', 'Food, tobacco and beverages mnf.', 'Metal and machinery mnf.', 'Transportation and public utilities' and 'Wholesale and retail trade'. The categorisation is based on the odds ratios for the 12 sectors in model (3).

2.6. Qualitative evidence from the 1890 labour surveys

This section provides qualitative support for our claim that local labour markets significantly affected FLFP, and it briefly considers the relationship between the Dutch textile and peat industries and FLFP. We choose to zoom in on these two industries because for a long period, they offered ample employment opportunities for women. However, from the last decades of the nineteenth century onwards, the peat industry started to shrink due to the increasing competition of coal as fuel, while in the region of Twente (in the eastern provinces), the textile industry continued to flourish. The labour surveys from 1890 form the main source for this section. These surveys were carried out to investigate whether the labour law of 1889 was

lived up to.[161] To this end, hundreds of people from all social classes and from all regions of the country were interviewed about, among others, their work and incomes.[162]

The textile industry

Dutch industrialization took off in the textile industry in the eastern region of Twente from the 1830s onwards. By the end of the nineteenth century, the major part of the population in Enschede, one of the largest textile cities in Twente, worked for one of the cotton enterprises. To illustrate this: the number of labourers in the 'Heek & co.' cotton enterprise grew from 140 in 1860, to 1400 in 1896, and to over 2600 in 1909.[163]

The cotton industry relied heavily on the labour power of women and children. Since most machines did not require much physical strength, their operation was highly suitable for this relatively cheap labour force.[164] Although new legislation from the 1870s onwards increasingly restricted women's and children's (factory) labour, they remained ubiquitous in the cotton factories throughout the nineteenth and early twentieth centuries.[165] In the Oldenzaal enterprise 'Gelderman & zonen', 30% of the total labour force consisted of adult women during the first decades of the twentieth century.[166]

Most female factory labourers were unmarried. The share of *married* women's factory labour decreased during the nineteenth century, although they never completely disappeared from the factories. Furthermore, textile producers outsourced several parts of the production process, such as sewing sacks and bundling yarn, to home workers.[167] This gave married women the opportunity to work (part time) from their own homes, while concurrently fulfilling their homemaking tasks.[168] Women's earnings often were a substantial addition to the household income. In Enschede, women could earn approximately *f*2,50-4 per week in the home industry, while a full-time employed male factory labourer earned approximately *f*10

[161] This law limited women's and children's working days to eleven hours and prohibited their night- and Sunday labour. Furthermore, women were not allowed to work within four weeks after giving birth.
[162] Chapter 3 will provide a more in-depth analysis of the nature of this source.
[163] van Schelven, *Ondernemingen en familisme*, pp. 218-219.
[164] In chapter 4, I will argue that this was not necessarily true for every type of machinery and that occupational gender segregation was for an important part determined by British customs.
[165] The most important laws were the Child Labour Act (Kinderwetje van Van Houten) of 1874 and the Labour Law from 1889. See for instance: Schenkeveld, *Het kinderwetje*; van Drongelen, *De ontwikkeling*.
[166] Fischer, van Gerwen, and Winkelman, *Bestemming semarang*, p. 337.
[167] Arbeidsinspectie, *Twente*, p. 241.
[168] Chapter 3 will probe deeper into how married women combined various types of labour and in chapter 5, I will consider the implications of work in the home industry for the total household income.

per week.[169] Although the importance of the home industry decreased as industralization expanded, it fulfilled part of the high demand for labour in these textile regions until at least the first decades of the twentieth century.[170]

From the labour surveys it seems that attitudes towards this female presence in the factories were mostly negative. Young women would not be able to learn how to clean and cook in a factory and this would negatively affect their ability to manage their own future households. Married women's factory work was considered to be even worse, since their children would be neglected, the house would be in chaos and this would, according to most contemporary observers, inevitably drive their husbands into the nearest pub. Or, to use the words of a cotton producer: "[w]hen a girl is raised properly, she will be better able to guide her husband, to withhold him from extravagances like drinking, and to make sure he will be home in time. [...]."[171] However, the fact that for many households the wife's income was indispensable, proved to be sufficient reason for many survey respondents to at least accept the existence of female factory labour.

Due to the high number of female textile workers, average wages in the textile industry remained low relative to other sectors until at least 1913.[172] Women's factory wages were, as could be expected, lower compared to those of their male colleagues. In Enschede in 1890, male weavers earned about *f*10 weekly working on four weaving-looms, while women who operated the same number of looms earned about *f*6,50.[173] In 1876, in the *Nederlandse Katoenspinnerij* (Dutch Cotton Mill), male labourers earned between *f*6 and *f*13 and female labourers between *f*5 and *f*8 per week. These differences can partially be explained by the fact that labourers were paid piece-wages: in general women could not operate the same number of machines as fast and effectively as their male coworkers could. However, for an important part these differences were caused by gender wage discrimination.[174]

Although the gap between men's and women's wages was significant, financially factory work was an attractive option for women. They could make more money in the factories than they would working as a domestic servant.[175] It has been argued that factory

[169] Arbeidsinspectie, *Verslag van de tweede afdeling*; Arbeidsinspectie, *Twente*. NB: '*f*' is the sign for guilders (the former Dutch currency).
[170] In chapter 5, the significance of women's home industrial work for the total household income will be discussed.
[171] Arbeidsinspectie, *Twente*, p. 206.
[172] Vermaas, 'Real industrial wages', p. 144; Burnette, *Gender, work and wages*, p. 3.
[173] Arbeidsinspectie, *Verslag van de tweede afdeling*, pp. 6-14.
[174] de Groot, *Fabricage van verschillen*, p. 378. In chapter 4, more information about the trajectory of women's wages and the gender wage gap in agriculture and industry will be provided.
[175] Janssens, *Labouring lives*, p. 91.

girls' relatively high wages empowered them in the relationship with their parents: when wages were high, they could save enough money in a short time period in order to marry at a young age, enabling them to 'break away' from their parents to start their own household.[176] Thus, ample employment opportunities with relatively high returns must have been an important incentive for young women to choose factory work over life as a domestic servant or life in unemployment.

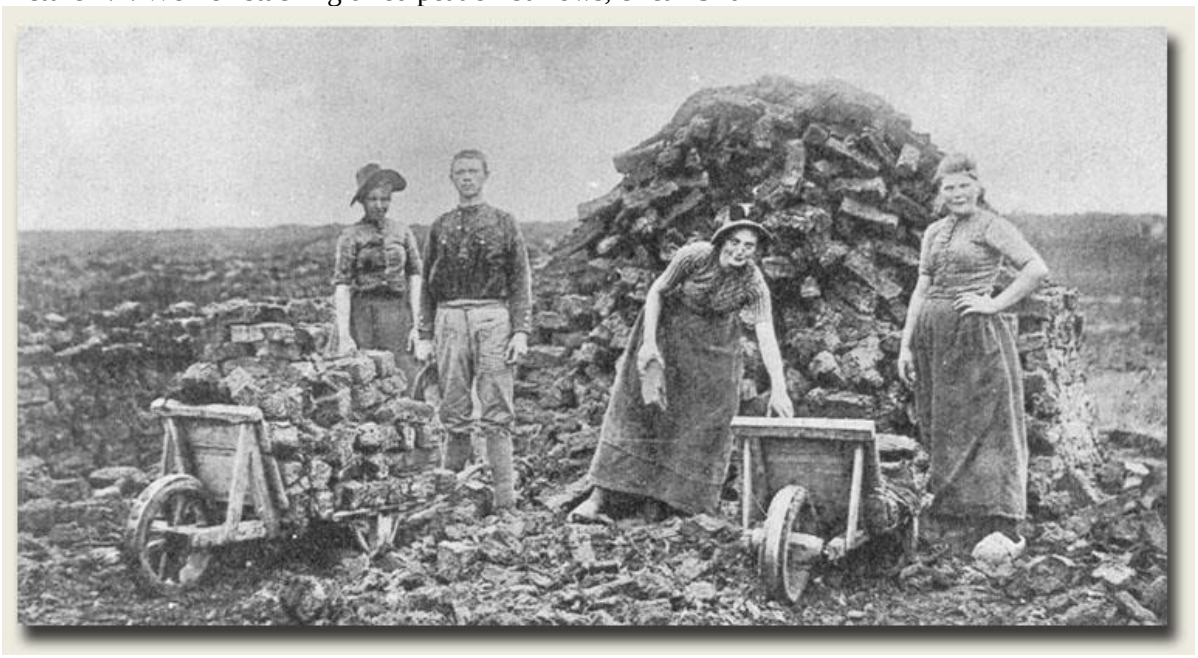
The peat industry

The peat industry was another sector that offered employment opportunities to women. Peat is decayed vegetation which has accumulated for over thousands of years. It is extracted from the soil and dried, after which it can no longer absorb fluids making it useful as fuel or as building material.[177] In the northern provinces of Groningen, Drenthe, Friesland, and Overijssel, people had been working on the peat lands since the seventeenth century. The peat industry was especially important during the nineteenth century when the extraction rapidly intensified.[178] During the twentieth century, as mentioned before, production decreased due to the growing competition of coal as fuel.

Annually, April to July were the most labour intensive months when apart from the permanent labourers living on the peat soils, casual labourers from surrounding regions were drawn there by the beneficial (seasonal) employment opportunities. The families that permanently lived in the peat regions were hired as one unit, meaning that every household member – with sufficient physical strength – was working. This was lucrative for the peat producers as they normally provided fuel and shelter for their employees: providing this for people who did not work was considered wasteful.

[176] Janssens, *Labouring lives*, p. 248.
[177] Gerding, *Vier eeuwen turfwinning*, p. 23.
[178] Gerding, *Vier eeuwen turfwinning*, pp. 274-275.

Picture 2.1. Women stacking dried peat on barrows, circa 1910



Source: http://www.inenomassen.nl/drententewater.html.

There was a clear gender segregation in the peat industry. Men cut the peat from the soil, while women were in charge of the drying process.[179] Women were also involved in transporting the dried peat to the ships that distributed the product across the country (Picture 2.1). Thus, women formed, just like in the textile industry, a considerable part of the labour force. In the 1890-survey a peat producer mentioned that: "[w]omen working along is the rule rather than the exception. [...] Perhaps this is a questionable matter as her housekeeping will not improve. However, if she is tough and swift, she will manage to hold everything together."[180] Based on this source we can safely conclude that, *if* there was enough work, women were active in the labour market.

In fact, in most households wives needed to work along in order to make ends meet. Poverty in the peat regions was widespread and, as peat could not be reproduced, eventually entire regions would become completely depleted. This development, together with the increasing competition of coal as fuel, negatively affected FLFP. As a doctor from a peat region where unemployment was a serious problem, mentioned in 1890: "[t]here is little work and much unemployment. Consequently, women remain at home."[181] Furthermore, as mentioned above, peat production was seasonal, which means that labourers needed to find

[179] Gerding, *Vier eeuwen turfwinning*, p. 35.
[180] Arbeidsinspectie, *Veenderijen*, p. 18.
[181] Arbeidsinspectie, *Veenderijen*, p. 82.

other employment during the rest of the year. Some of them were lucky enough to find a farmer to work for, but others lived in dire poverty entirely relying on poor relief.

Evidently, in the textile and peat regions, the ideal of a male breadwinner family was not strong enough to truly alter social practice. People rather adapted to the economic circumstances in their environment. Women in the textile regions responded to the demand for cheap labour, while the deteriorating working conditions in the peat regions caused unemployment among women.

2.7. Conclusion

This chapter has argued that factors of demand have been crucial in determining the course of women's labour history. Existing studies on FLFP have primarily focused on the influence of supply-side factors, most notably social norms. By including both factors of demand and supply into one analytical framework, this research has provided a more comprehensive understanding of Dutch unmarried women's LFP during the long nineteenth century.

On the basis of nearly 2 million marriage records we ran a logistic regression, accounting for the occupational status of the groom, the decade and province where the marriage took place, the age of the bride, GDP per capita, and the characteristics of the local labour market (proxied by *sectoral shares*). The results have shown that local economic structures indeed influenced FLFP to a significant degree. Especially 'textile and apparel manufacturing' and 'private services' had a positive effect on FLFP. Throughout the long nineteenth century, a greater than average employment share for these sectors in a given municipality coincided with an above average FLFP. A substantial part of the decreasing FLFP that was previously explained by the decade dummy that captured (among others) changing social norms, is actually the result of shifting sectoral shares. To further explore the importance of local labour markets, FLFP has been decomposed based on the variables used in the regression. The results have shown that sectoral shifts in the Dutch economy in the period 1812 to 1929 can explain 46% of the decline in FLFP during this period. The residual category, capturing the impact of changing social norms, explains 32% of this decline.

Sectoral shifts have explained a considerable part of the developments of FLFP within the Netherlands, but may additionally explain the low Dutch FLFP rates relative to other countries (Table 1.1). We have shown that the rapid expansion of the professional service sector and the relatively small textiles, large agricultural, and well-developed transport,

wholesale and retail sectors are the most likely source of the decreasing FLFP during the long nineteenth century. Countries with larger shares in sectors with ample demand for female labour most probably had higher overall FLFP rates. In more general terms, this could mean that the slow rate of Dutch industrialization, especially compared to England and Belgium, was driving the diverging FLFP rates within western Europe during the long nineteenth century. To further pursue this argument, the next chapter explores the working activities of married women that have remained largely hidden in the censuses.

Chapter 3: Ideal versus reality? The domesticity ideal and household labour relations in Dutch industrializing regions, circa 1890*

3.1. Introduction

For a long time, most research on FLFP in western Europe was based on aggregate source material, most notably censuses (Table 1.1). However, censuses in most western European countries systematically underreported women's labour due to their irregular work patterns and their involvement in informal labour.[182] Moreover, women who were self-employed or assisted their husbands on a farm were usually not listed as working. Even women who were full time, gainfully employed were often not listed with an occupation, while part time employed men were. Underreporting was in part caused by the specific characteristics of women's work but even more so by the enumerators' values and dominating stereotypes about gender labour division. Therefore, "[t]hey [censuses] appear objective and value free, but their meaning grows out of socially constructed concepts that are laden with cultural and political values."[183] Thus, census data have skewed our understanding of FLFP within countries and may have additionally given us the wrong impression about national FLFP rates relative to each other.

Fortunately, the strand of literature using alternative, disaggregate sources for investigating FLFP in pre-industrial and industrial economies has been growing over the past years.[184] Moreover, the broad definition of work by Tilly and Tilly – "[w]ork includes any human effort adding use value to goods and services"[185] – is increasingly applied in empirical research. These studies have taken more types of labour relations into consideration. For instance, next to men's wages, reciprocal labour – i.e. labour without the involvement of

* This chapter draws heavily from: Boter, 'Ideal versus reality?'.

[182] Horrell and Humphries, 'Women's labour force participation'; Humphries and Sarasua, 'Off the record'; Janssens, *Labouring lives*; Muñoz Abeledo, 'Women in the rural'; van Nederveen Meerkerk, 'The first'; van Nederveen Meerkerk and Paping, 'Beyond the census' Cunningham, 'Occupational, marital'; Opposing arguments have been made however: Hatton and Bailey, 'Women's work'; Shaw-Taylor, 'Diverse experience'.

[183] Folbre, 'The unproductive housewife', p. 463.

[184] Among others: Boter, 'Marriages are made in kitchens'; Humphries and Weisdorf, 'The wages of women'; Janssens, *Labouring lives*; Whittle, 'Enterprising widows'; van den Heuvel and van Nederveen Meerkerk, 'Households'; Muñoz Abeledo, 'Women in the rural'; Humphries and Sarasua, 'Off the record'; Schmidt and van Nederveen Meerkerk, 'Reconsidering'; Stanfors, 'Women in a changing economy'.

[185] Tilly and Tilly, *Work under capitalism*, p. 22.

markets or monetized transactions – is now considered to have been crucial for determining households' living standards throughout history.[186] Furthermore, it is increasingly acknowledged that using a regional approach is important because differences within countries are crucial for understanding the mechanisms behind changing FLFP rates in different types of labour markets.[187] In this line of argumentation, the extent and importance of women's 'hidden tasks' are increasingly unveiled by means of the use of disaggregate source material.

The Netherlands make an especially interesting case for investigating women's (hidden) labour because the census data (Table 1.1) suggests that FLFP in the Netherlands were lower compared to surrounding countries. As discussed in the previous chapter, the most extensively investigated reason for this 'Dutch divergence' in FLFP rates is the spreading of middle-class social norms regarding domesticity through the working class during the second half of the nineteenth century.[188] Because the housewife was crucial for a domestic lifestyle, task division within the household became more pronounced with men providing an income and women specializing in homemaking tasks.[189] Moreover, in the Netherlands, the domesticity ideal was presumably already prevalent during the early modern period.[190] Some scholars have concluded that, therefore, the Dutch 'male breadwinner society' was already established in the seventeenth century.[191]

Recent research has shown, however, that Dutch women were actually much more active in the early modern[192] and nineteenth-century labour markets[193] than previously believed. Ariadne Schmidt and Elise van Nederveen Meerkerk have estimated that female participation rates in the Dutch 1899 census (1900 in Table 1.1) need to be adjusted from 17% to at least 24%. According to them, above all married women working in agriculture and wives of self-employed men in the industrial and retailing sectors have remained invisible in the census.[194]

This discrepancy in the literature between a male breadwinner society and a considerable female labour force is in need of closer scrutiny. The present research shows,

[186] Humphries, 'The lure of aggregates'.
[187] Janssens, *Labouring lives*, pp. 45-49.
[188] de Regt, *Arbeidersgezinnen*; de Swaan, *Zorg en de staat*.
[189] van Poppel, van Dalen, and Walhout, 'Diffusion'.
[190] de Vries and van der Woude, *The first modern economy*.
[191] Pott-Buter, *Facts and fairy tales*.
[192] Schmidt, 'Vrouwenarbeid'; van den Heuvel, *Women and entrepreneurship*; van Nederveen Meerkerk, *De draad in eigen handen*.
[193] Schmidt and van Nederveen Meerkerk, 'Reconsidering'.
[194] Schmidt and van Nederveen Meerkerk, 'Reconsidering', pp. 88-89.

based on qualitative evidence, that such contradictory findings can partly be explained by the ways in which Dutch women attempted to reconcile their desire for domesticity with the need for income. Furthermore, by specifically focussing on various types of women's labour in industrializing regions, this chapter argues that FLFP in the 1899 census was even higher than the proposed adjusted percentages by Schmidt and Van Nederveen Meerkerk. As such, this research analyses two sides of the same coin. On the one hand, it examines the working and middle class' *perceptions* of labour relations in light of the cult of domesticity.[195] On the other hand, it looks at the *actual* work activities of working-class households. By analysing hundreds of interviews with industrial labourers from 1890, this chapter sheds new light on Dutch women's hidden labour in a domestic world.

Two main conclusions will be presented. First, I show that married women often combined different types of labour relations, i.e. wage labour, reciprocal labour, and reproductive labour, to both live up to the domesticity ideal and provide additional income. Including these types of work means that FLFP in the 1899 census was even higher than the previously proposed (lower-bound) estimate of 24%. Second, a household in which women provided an income did not necessarily contradict the ideal of domesticity. Letting the wife combine different types of labour relations was a way for households to *reconcile* their longing for domesticity with the need to provide sufficient income.

This chapter is structured as follows. Section 3.2 considers the theoretical framework of the dichotomy between a public and a private sphere that has often been applied in research on women's labour history. Furthermore, it elaborates on the sources used for this research and how they can help us understand the significance of separate spheres in real life. Section 3.3 is concerned with the working class' and middle class' perceptions of household labour relations. Section 3.4 gives an impression of actual household labour relations and considers the implications of the results for working-class households' income composition. Section 3.5 concludes.

3.2. Theory and sources

The discourse of domesticity is almost invariably linked with theories about the dichotomy between the public and the private sphere. The former is usually associated with outdoor work, dominated by men, while the latter is thought of as a domestic, female sphere. This

[195] See also: Hofmeester and Moll-Murata, 'The joy'.

conceptual framework has for long been the dominant way in which scholars approached the history of women.[196] An especially persistent idea is that industrialization stimulated women's retreat from the labour market. The reasoning is that due to mechanization, production was increasingly carried out in factories instead of at home whereby women could no longer combine their homemaking duties with gainful labour. Consequently, women became increasingly restricted to the private sphere, while their husbands became the household's sole wage earners. To use the words of one of the most outspoken opponents of the use of this framework in women's history: "[a]ccording to customary wisdom, sometime between 1600 and 1800 a wholesome 'family economy' wherein men, women and children shared tasks and status gave way to an exploitative wage economy which elevated the male breadwinner and marginalized his dependants".[197]

Vickery's critical account of the use of the separate-spheres theory in women's history is already twenty years old. Nevertheless, her arguments are still relevant in light of more recent research because the separate-spheres theory is still often interpreted as a dichotomy between a male and a female sphere, and as one between labour and domesticity. For instance, recent research has argued that women increasingly withdrew from the labour market to live up to society's increasing desire for domesticity and full time housewifery.[198] This conclusion implies that the private sphere *ideally* was to be freed from any type of gainful work and that women needed to stay out of the public sphere, i.e. withdraw from the labour market, to create domesticity in the private sphere. Thanks to our increasing understanding of women's hidden tasks within the home, we know that this was not true in reality. This research offers new insights into work in the private sphere and additionally shows that even ideals were not this stringent.

To further explore this issue, the Dutch labour surveys of 1887 and 1890 have been consulted. These surveys contain hundreds of interviews with a great variety of people such as (factory) labourers, vicars, mayors, and producers from all over the country.[199] The surveys were executed to investigate the working and housing conditions of labourers and control whether the Child Labour Act of 1874 and the Labour Law of 1889 were lived up to. The

[196] Vickery, 'Golden age'.
[197] Vickery, 'Golden age', p. 402.
[198] van Poppel, van Dalen, and Walhout, 'Diffusion'; Minoletti, 'The importance of ideology'.
[199] The surveys of 1887: Giele, *Amsterdam*; Giele, *Maastricht*; Giele, *Tilburg*. The surveys of 1890: Arbeidsinspectie, *De Zaankant*; Arbeidsinspectie, *Friesland*; Arbeidsinspectie, *Gelderland benoorden de Rijn*; Arbeidsinspectie, *Groningen*; Arbeidsinspectie, *Groninger veenkoloniën*; Arbeidsinspectie, *Leiden*; Arbeidsinspectie, *Nijmegen*; Arbeidsinspectie, *'S Gravenhage*; Arbeidsinspectie, *Twente*; Arbeidsinspectie, *Veenderijen*.

former law prohibited children younger than 12 to work in factories but did not apply to children working in the agricultural and service sectors.[200] The latter law, among other things, limited women's and children's working days to eleven hours, prohibited their night- and Sunday labour, and prohibited women to work within four weeks after giving birth.[201] Thus, the focus of the surveys was on the nature and extent of women's and children's labour, the relationship between labourers and employers, housing conditions, and working hours.

Let me briefly consider the definition of a child. Some studies define children by age, others focus on their societal role and classify all persons still co-resident with their parents as children, regardless of their age.[202] In this chapter, I will principally refer to children in the latter way. The focus will be on children older than 12 because after the Child Labour Law of 1874, this was the age at which children could start working in factories and hence could substantially contribute to the household income.[203]

The qualitative information from the surveys provides a rare insight into the daily lives of labourers in an industrializing economy. Their accounts tell us more about their conception of domesticity and how they attempted to realize this. Furthermore, implicitly, their answers increase our understanding of the existence of separate spheres on a micro level: did the respondents actually conceptualize the public and private spheres in terms of male versus female and work versus domesticity?

The surveys of Tilburg (1887) and Twente[204] (1890) have been selected as case studies. Both regions industrialized relatively early in the Dutch context, while in the Netherlands in general, industrialization took off much later than in neighbouring countries.[205] Already during the early modern period, both Twente and Tilburg had been important textile centres. Farmers' households were spinning and weaving during the winter months, slack periods for

[200] Schenkeveld, *Het kinderwetje*.
[201] Brouwer and van Eijndhoven, *Fabrieksarbeidsters*; Smit, *De Leidse fabriekskinderen*.
[202] Cunningham, 'The decline', pp. 410-411.
[203] This law only applied to factory work, not for agricultural work. See also: White, 'Childhood', p. 850. NB: throughout the rest of this book, I principally define children as people still cohabitating with their parents. For instance, in chapter 5 I aim to quantify the total household income, including the contributions of co-resident children. However, for estimating household living standards I distinguish between young children (younger than 12) and old children (older than 12) to determine the acquired caloric intake. In chapter 4 I had to determine a maximum age in order to distinguish the child wages from the wages of young men and women. Wages earned by a person younger than 18 have been registered as child wages and everything above that age as either men's or women's wages.
[204] Twente is a region in the east of the Netherlands. Throughout the text, the largest city of this region (Enschede) will in several instances be used as a case study within Twente.
[205] Griffiths, *Industrial retardation*; de Jonge, *De industrialisatie*; Jansen, *De industriële ontwikkeling*; Mokyr, 'The industrial revolution'; van Zanden and van Riel, *The strictures of inheritance*.

agricultural work.[206] After 1830, the Twente textile industry expanded swiftly because the Dutch cotton industry was transferred here from the southern provinces that had gained independence in this year. Consequently, the demand for labour in this region boomed and men as well as women were mobilized to supply the sudden need for a large labour force.[207] In contrast, the wool industry of Tilburg expanded more gradually. These different processes of industrialization resulted in a stricter gender segregation in Tilburg than in Twente.[208]

These regions were selected for two reasons. First, they augment former research that has successfully adjusted FLFP in the 1899 census – based on women's work in the agricultural and service sectors – by including women's hidden work in the industrial sector.[209] Second, industrial regions make an interesting case to investigate the ideal of domesticity since (registered) labour was normally carried out in the public sphere. In line with the growing desire for domesticity, women needed to stay home, at least most of the time, to fulfil their tasks as housewives, but at the same time the household had to provide enough income to make ends meet. How did industrial households cope with these possibly conflicting wishes? In other regions, such as the service oriented coastal cities, households might have responded differently and they might have had different perceptions of women's and children's labour relations.

The respondents' accounts were systematically searched for comments about household income, ideas about domesticity, women's and children's work activities, and perceptions of this work. It is imperative to distinguish between comments on unmarried and married women's work and to, where possible, account for the number of children because the different life-cycle stages of the household greatly affected household labour allocation. Besides the real possibility that the father/husband died, left his family or was otherwise absent, almost every household experienced periods during which his earnings were not sufficient to feed and clothe the entire family.[210] This was especially the case in households with many small, dependent children.[211]

We have to keep in mind that the interviews were conducted to investigate labourers' working conditions and, in the case of the 1890 survey, to test the success of the Labour Law. Employers were probably more inclined to lie about their preferences and policies –

[206] Slicher van Bath, 'Historische ontwikkeling'.
[207] de Groot, *Fabricage van verschillen*, pp. 186-196.
[208] de Groot, *Fabricage van verschillen*, p. 186; Janssens, 'De rol van vrouwen', p. 94.
[209] Schmidt and van Nederveen Meerkerk, 'Reconsidering'.
[210] Schneider, 'Real wages'.
[211] Humphries, 'The lure of aggregates', p. 708.

especially when they were breaking the law, which was implemented by the same authorities who carried out the survey. Likewise, labourers themselves were probably more inclined to obscure their perceptions and work activities because they wished to make a good impression on the survey conductors. Furthermore, the survey conductors at times put words into the respondents' mouths, pushing a certain issue when receiving unsatisfactory answers.[212] Finally, the number of questioned women is negligible (19 out of 244 interviewees in Twente and none in Tilburg) and children were not questioned at all.

Additional source material was therefore needed. Despite the objections against the use of censuses, still the 1899 census has been consulted to give an idea of the size and composition of the *registered* labour force. Furthermore, several surveys on the home industry and married women's factory labour from the first decade of the twentieth century have been examined.[213] These surveys were conducted for different reasons and therefore place the 1890 surveys in a (temporal) perspective. Finally, municipal records provide additional information on local textile production.

3.3. Perceptions of labour and domesticity

This section explores nineteenth-century conceptions of domesticity and the survey respondents' perceptions of the type(s) of labour relation(s) necessary to achieve this. Furthermore, it will touch upon the question whether labourers indeed viewed the public sphere as male and industrious, and the private sphere as female and domestic. Before moving on to the results, a closer reading of the Dutch historiography on the development of the domesticity ideal is required.

As mentioned in section 3.1, the early modern Dutch Republic supposedly was a front runner in the development of middle-class social norms regarding domesticity[214], although other studies give a more nuanced view.[215] At the same time, ample literature has shown that the size of the early modern female labour force was considerable. Furthermore, as I have argued in section 3.2, domesticity and industriousness could coexist because many types of work, such as textile production, were still carried out at home.[216]

[212] Smit, 'Arbeidersvrouwen', p. 93.
[213] These surveys will be analysed in more detail in chapter 5.
[214] de Vries and van der Woude, *Nederland 1500-1815*; Schmidt, 'Labour ideologies'.
[215] Schuurman, 'Is huiselijkheid'; Everard, 'Verandering *en* continuïteit'.
[216] Schmidt, 'Labour ideologies'.

The domesticity ideal further gained ground during the nineteenth century when the middle class started to actively propagate its way of life among the working class. Its main goal was to 'rescue' working-class people from life in dire poverty by promoting the virtues of, among others, self-restraint and frugality. It has been argued that the underlying motivation was to prevent the poor from revolting against the established order and against spreading contagious diseases.[217] Indeed, besides domesticity, spreading knowledge about hygiene was an important aspect of this mission, just like in nineteenth-century England.[218]

This 'civilizing mission' had been institutionalized already in 1784, when the *Maatschappij tot Nut van 't Algemeen* ('the society for public welfare', henceforward: *'t Nut*) was founded. Its ideas about women's roles in society were clear: "[f]or women from all social classes there is only one possible career. All women have merely one destiny: that is, to become friends, wives, mothers, and care givers".[219] In this line of reasoning, the most crucial requisite for a proper domestic life was the housewife who was supposed to devote all her time to homemaking tasks and consequently had to withdraw from the labour market.[220] Other examples of *'t Nut*'s activities are the establishment of local libraries and savings banks, and increasing interference in education.

Women

Perceptions of women's work depended upon the type of work and their marital status. Unmarried women's factory labour was, especially in middle-class circles, considered negative for their development. According to contemporary observers, in a factory young women would be corrupted by immoral gossip and intercourse with the opposite sex. Even worse, here she would never acquire sufficient knowledge about the ins and outs of good housewifery. An engineer from Tilburg mentioned:

> Factory girls cannot become decent housewives, and when the male labourer is lucky enough to marry a decent girl who served in a proper household for five or six years, and therefore knows how to manage a household, in that case this man is very fortunate. However, when the labourer marries a factory girl who knows nothing about housekeeping and will find his house in chaos after coming home, he will go to the pub

[217] Smit, 'Arbeidersvrouwen', p. 74; de Swaan, *Zorg en de staat*, p. 132.
[218] Mokyr, 'Why "more work for mother"?'.
[219] Quoted in: Kruithof, 'De deugdzame natie', p. 378.
[220] van Zanden and van Riel, *The strictures of inheritance*, pp. 319-328.

> and destroy himself. The woman plays a large part, and this pleads against women working in the factories.[221]

However, not all respondents were equally negative. A producer from Twente stated that: "I consider it crucial that girls do not go to the factory before they have learned how to manage a household".[222] Another producer emphasized the importance of factory work for saving for the foundation of a new household upon marriage.[223] Some factories even offered a special savings arrangement for their employees.[224] Probably, producers were more inclined to respond positively because young women were cheap labourers. Likewise, working-class respondents had ample economic incentives to approve unmarried women's factory labour. Women's factory wages were often an important resource for either their parents' or their (future) husbands' households. Still, working-class respondents were not that outspoken about this issue. Most labourers casually mentioned their adult daughters and other young women working alongside them, although they did stress the importance of good education in domestic skills such as knitting and sewing.

Perceptions of married women's work were more straightforward. Their factory work was seriously frowned upon by the majority of the respondents, although some did explicitly acknowledge the necessity of the wife's income for her household. We have to keep in mind that, as mentioned in section 3.2, the interview conductors often asked suggestive questions and that the respondents may have been inclined to give desirable answers. However, considering the remarkable consensus among the respondents on this issue, I suppose that these sentiments were indeed prevailing.

The respondents' arguments against married women's factory labour can be roughly divided into two groups. First, women should stay home to fulfil their domestic duties because working in a factory all day long inevitably resulted in chaotic homemaking. This type of reasoning corresponded to the goals of the middle class' civilizing mission: domesticity needed to be pursued by all households by means of a devoted housewife. The working-class respondents' answers therefore indicate that this mission had been successful. Cor Smit has similarly concluded for the city of Leiden that: "[t]he civilizing mission of the bourgeoisie aligned with the ideals of a considerable share of the working class".[225]

[221] Giele, *Tilburg*, p. 90.
[222] Arbeidsinspectie, *Twente*, p. 437.
[223] Arbeidsinspectie, *Twente*, p. 153.
[224] Arbeidsinspectie, *Twente*, p. 109.
[225] Smit, 'Arbeidersvrouwen', p. 110.

Second, several male labourers expressed their fear of female competition in the labour market. A labourer from Oldenzaal mentioned: "I wish that female labour would be abolished altogether because men's wages would rise and the prosperity of the household would improve".[226] Smit has found comparable answers in the surveys of Leiden.[227] Similar arguments have been advanced in the British historiography on FLFP.[228] Joyce Burnette has even argued that: "[t]hese men used gender ideology to increase public support for the entry barriers [i.e. against women in the labour market] they erected, but their primary motivations were economic".[229] Indeed, female competition in the labour market was considerable, causing men's wages to go down and women to performing work that would otherwise have been done by men who were now unemployed.[230]

Surprisingly, despite ample negative accounts, the majority of the respondents pleaded against stricter legislation abolishing married women's factory labour altogether. For instance, one producer from Enschede argued that young men were not capable of saving enough money before getting married and that during the first years of marriage, women's incomes were indispensable for the establishment of a new household. A prohibition of married women's factory labour would encourage young unmarried couples to postpone marriage, which would result in immoral relations between the sexes.[231] Even more remarkable is the quote by textile producer Albert Jan Blijdenstein who did not believe in depriving women of their freedom:

> The household's interests could make the wife's wage labour necessary. Generally, she doesn't desire to work. [...] The adult woman should have the freedom that we all wish to have. I believe that further interference of the law would cause much harm.[232]

[226] Arbeidsinspectie, *Twente*, p. 211.
[227] Smit, 'Arbeidersvrouwen', p. 100.
[228] Seccombe, *Weathering the storm*, p. 74; Horrell and Humphries, 'The origins', p. 50; Burnette, *Gender, work and wages*, p. 15.
[229] Burnette, *Gender, work and wages*, p. 15.
[230] In chapter 4 it will become clear that men's industrial wages increased more rapidly than women's, especially during the second half of the nineteenth century. The gender wage gap thus widened considerably. The question is whether men's wages would have increased even more without the competition of female labourers.
[231] Arbeidsinspectie, *Twente*, p. 153. See also Jane Humphries' study on gender segregation in nineteenth-century Britain in which she argues that its main objective was to control men's and women's sexuality: Humphries, 'The most free'.
[232] Arbeidsinspectie, *Twente*, p. 44.

All in all, the prevailing idea was that married women should principally reside in their home, i.e. the private sphere, because she had important tasks to fulfil: (1) turn the house into a home, (2) raise children, and (3) manage the finances. The first task was clearly illustrated by a preacher from Hengelo who said that: "[a] good woman can make a bad house more habitable than the best house would be under the supervision of a careless and sloppy woman".[233] The wife's dedication to the physical environment of her family was of crucial importance for the 'production' of hygiene and good nutrition. This too was something working-class people needed to learn, at least according to this producer:

> [...] I would like to point out the necessity of the abolishment of excise tax on soap, one of the primary necessities of life, and secondly the necessity of the abolishment of excise tax on salt. [...] People do not wash themselves as often as they should. [...] If one wants to do something for the working class, they should start by abolishing these taxes. [...] I pointed out soap and salt, as soap is essential for cleaning and salt for nutrition.[234]

The plea for lowering excise tax on soap was not new. Already in 1872, in the periodical *De Economist* an article was published showing that the burden of tax on soap was too high for people from the working class because, according to the author of this article, "[m]en and boys always come home dirty."[235] This type of sanitary propaganda is in line with Joel Mokyr's argument that the growing knowledge of the connection between filth and diseases greatly attributed to the origins of full-time housewifery. A clean home was crucial for the health of all household members.[236] Women were to be held accountable for the creation of such a healthy home. Mokyr then continues his argumentation by exploring *how* women were persuaded to play this role. According to him, "[m]iddle-class notions of a culture of respectability were a subtle means by which concepts of proper housekeeping were diffused through the working class".[237] Thus, in Mokyr's view, the spreading of middle-class social norms was merely the means by which knowledge about health was spread among the working class.

The housewife's second responsibility, raising children, links up to the first in terms of both health and respectability. Germs were transmitted via polluted water and cow milk.

[233] Arbeidsinspectie, *Twente*, p. 447.
[234] Arbeidsinspectie, *Twente*, p. 223.
[235] Anonymous, 'De accijns', p. 144.
[236] Mokyr, 'Why "more work for mother"?'.
[237] Mokyr, 'Why "more work for mother"?', p. 22.

Therefore, breastfeeding was actively promoted to combat child mortality.[238] Recent research on the Dutch case has led to the – albeit cautious – conclusion that breastfeeding indeed reduced child mortality.[239] Whether mothers actually chose to breastfeed their children principally depended on local culture.[240] Evidently, the promotion of breastfeeding was one of the key points of the interview conductors to combat child mortality and this could only be realized when young mothers would stay at home.[241] The same applied to raising children and teaching them good morals. Hiring a babysitter was regarded irresponsible, although it was perceived as less harmful when the babysitter was the child's grandmother. A preacher from Enschede said that, "[a]s long as the children are small, I consider married women's factory labour to be negative for the children, because they fall into the hands of others and lack motherly care. It is a different story when in such families there is still a grandmother present who takes over the care of the children from the mother [...]".[242]

Finally, housewives were expected to be frugal in order to manage the household's finances. How incomes were managed determined the well-being of a household more than the actual size of these incomes. A producer from Oldenzaal marvelled at the fact that labourers with a low income still managed to live a comfortable life. He concluded that: "[e]verything depends on the woman".[243] However, as a preacher from Borne noticed, by 1890, frugality had become a virtue of the housewives that once were. He stated that: "[t]hey all hoard their money, but the housewife of today is not as clever as she was before. She used to be sparing by tactically keeping everything in order with little means. Those housemothers have become a curiosity among labourers".[244]

Children

Child labour was another important topic in the labour surveys. Most respondents considered 12 to be a proper age to start working and thought that children who were not taught a craft at a young age would suffer the consequences during their adult lives.[245] Factory work was in this way considered to be an investment in human capital. However, one producer said: "[i]n general, it is not the producer's desire to hire such young labourers, but it is a request from the

[238] Dyhouse, 'Working-class'; Mokyr, 'Why "more work for mother"?'.
[239] Janssens and Pelzer, 'Did factory girls'.
[240] Walhout, 'Is breast best?'.
[241] The connection between child mortality and women's industrial labour has been explored in great depth for the case of England and Wales (Garrett, 'Was women's work').
[242] Arbeidsinspectie, *Twente*, p. 189.
[243] Arbeidsinspectie, *Twente*, p. 498.
[244] Arbeidsinspectie, *Twente*, p. 387.
[245] Arbeidsinspectie, *Twente*, p. 62.

parents themselves".[246] Indeed, from the surveys it is apparent that parents anticipated the moment their children were able to earn money. Thus, also perceptions of child labour were for an important part economically motivated.

Children's *individual* wages were reason for concern about their morality because they sometimes paid their parents boarding money and kept the rest for themselves. This supposedly encouraged them to spend their money on alcohol or other extravagances. Moreover, in this way adolescents realized that they played a crucial role in the household economy which could make them undermine their parents' authority. A priest from Almelo stated that: "I think it is an abominable thing when children pay board to their parents. They give them *f*2,50 or *f*3,- and they spend the rest of their wage themselves which is obviously bad for their morality."[247]

Perceptions of labour relations in relation to domesticity and spheres

These findings illustrate several important aspects in light of the debates about domesticity and the separate spheres theory. First, they show that unmarried as well as married women's *industriousness* was highly encouraged. Unmarried women were expected to save money for the foundation of a new household when they married, which is further reflected in the numerous saving banks, some even founded by *'t Nut*. Furthermore, married women's gainful labour was by many considered indispensable for her household and did not necessarily counteract the creation of domesticity.

The way in which women were supposed to earn money was, however, highly debated. Unmarried women should preferably work as domestic servants, although producers and working-class respondents did approve of factory labour. Married women on the other hand should not be working in factories. These statements were by no means a plea for the abolishment of married women's gainful work all together, as long as they could fulfil their homemaking duties accordingly. Thus, according to contemporaries, industriousness in the form of gainful work could be expressed and executed in the private sphere. This conclusion links up to Schmidt's argument that during the early modern period, domesticity and labour were not mutually exclusive.[248] In other words, even in industrial economies the dichotomy between the public and the private spheres cannot simply be interpreted as an (ideological) dichotomy between gainful work and domestic work. Similar arguments have been advanced

[246] Arbeidsinspectie, *Twente*, p. 101.
[247] Arbeidsinspectie, *Twente*, p. 248.
[248] Barclay, 'Farmwives'; Schmidt, 'Labour ideologies'.

in research on farm-wives in nineteenth-century Ireland that concludes that although here, the domesticity ideal was strong too, women's labour on the farm was likewise considered important. In fact, farm work was rather an extension of women's domestic work.[249]

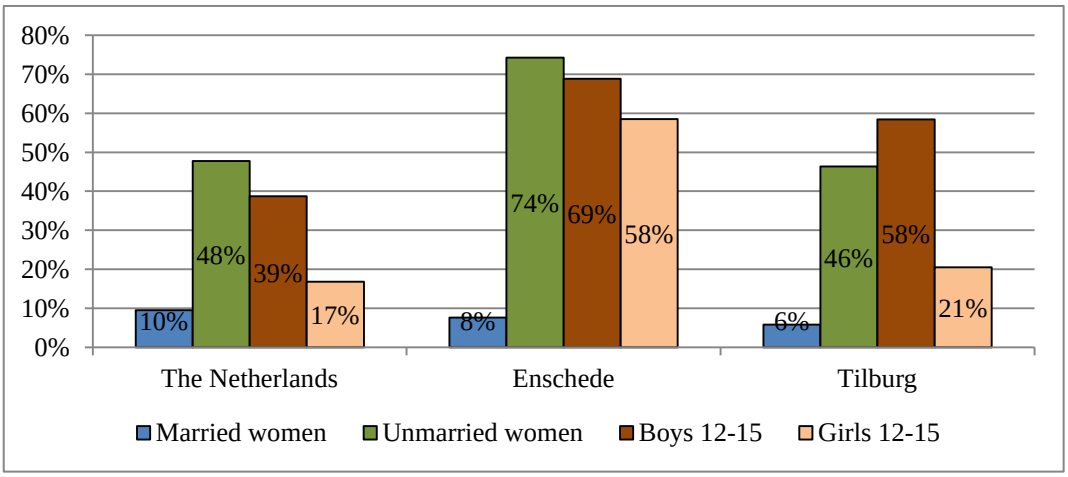
Second, women's education and work experience were considered essential investments for the future. A producer from Twente even mentioned that, according to him, women's education was more important than men's since only a well-educated woman would be able to "[...] guide her husband, to withhold him from extravagances like drinking, and to make sure he will be home in time".[250] Thus, the longing for domesticity was already reflected in how the respondents perceived unmarried women's labour. Therefore, we can conclude that domesticity in all its facets was indeed pursued by most nineteenth-century households.

3.4. Combining labour relations

As extensively argued in the introduction, occupational censuses do not give a complete picture of FLFP. Still, to get an idea of the extent of women's and children's formal participation rates, Figure 3.1 shows the percentage of married and unmarried women and children listed with an occupation in the 1899 Dutch census in Enschede and Tilburg. As expected, married women were poorly represented in the registered labour market, unlike children and unmarried women. The labour surveys offer a great opportunity to highlight some of women's (and children's) hidden tasks. In what follows, I present evidence of several labour relations: commodified labour in the factory and at home, and reciprocal labour at home.

[249] Barclay, 'Farmwives'.
[250] Arbeidsinspectie, *Twente*, p. 206.

Figure 3.1. Percentage of women and children with a listed occupation in the 1899 census



Source: Centraal Bureau voor de Statistiek, 'Census 1899'.

Commodified labour in the factory

The vast majority of the registered labour force in Tilburg and Enschede displayed in Figure 3.1 worked for an industrial enterprise. Table 3.1 shows, based on an industrial census from 1889, the share of the total population of Enschede working in an industrial enterprise classified according to age, gender, and marital status.[251]

Table 3.1. Men and women working in an industrial enterprise and the total population, Enschede, 1889

	Men/boys			**Women/girls**		
Age	**Working**	**Total**	**% working**	**Working**	**Total**	**% working**
12-13	65	152	43%	50	189	27%
13-14	93	190	49%	74	163	45%
14-16	209	312	67%	194	282	69%
16-18	188	297	63%	187	301	62%
>18 unmarried	2,096	4,176	50%	692	1,869[a]	37%
>18 married				228	2,531	9%
Total	**2,651**	**5,127**	**52%**	**1,425**	**5,053**	**28%**

[a] Including widows.
Source: Reudink, 'Nijverheidsstatistiek'.

Out of all the unmarried, adult women living in Enschede, 37% worked in a factory. Factory work was presumably more attractive for unmarried women than, for instance,

[251] In the *entire* province of Overijssel, the labour inspection reported 5,253 valid working permits given to children between 12 and 16 (3,474 to boys and 1,779 to girls): Arbeidsinspectie, *Verslagen over 1891*, p. 210.

domestic service because factory wages were much higher.[252] The share of married women's factory labour was relatively small, but they were by no means absent from the factories. The respondents' answers from Twente confirm this. Out of the 56 labourers that were explicitly asked whether their wives performed factory labour, 23 confirmed that they did. According to a different survey on married women's factory labour in the Netherlands conducted by the government in 1908, Twente remained the region with the highest number of married female factory workers.[253]

Thus, women formed an important part of the industrial labour force.[254] In 1889, circa 35% of all the industrial labourers in Table 3.1, including children, were female. Apparently, industrialization caused an increase of the demand for cheap labour due to the introduction of new machinery. New jobs for women and children were created because some of these machines required less physical strength.[255] This was also the case in the Dutch textile industry.[256] A producer observed this development and stated that:

> [d]ue to an increase of improved machines, the number of labourers has grown as well. Physical strength of men and women is no longer necessary. Instead, care and intelligence have become important. As a result, the number of women and children in the factories is much larger than it used to be, because even with little physical effort, they are still able to earn some money.[257]

Indeed, the municipal records of Enschede show that the number of spindles and looms increased drastically from the 1890s onwards (Table 3.2), meaning that the demand for labourers to operate them rose accordingly. When we zoom out and look at the textile industry from a macro perspective the same picture of expansion emerges. The total value added of Dutch textile production rapidly increased from the 1890s onwards.[258] In the previous chapter I have shown that the textile industry had a significant, positive effect on

[252] Janssens, *Labouring lives*, p. 91.
[253] Departement van Landbouw Nijverheid en Handel, *Onderzoek naar den fabrieksarbeid van gehuwde vrouwen*, 22-25.
[254] Janssens, *Labouring lives*, pp. 98-102.
[255] Humphries and Weisdorf, 'The wages of women', p. 47; Burnette, *Gender, work and wages*; Pinchbeck, *Women workers*.
[256] Smit, *De Leidse fabriekskinderen*, pp. 462-463. Note that because of the high demand for cheap labour and the expansion of the factory system, an increasing share of the female factory workers was unmarried. In chapter 4, I will show that this development, i.e. the rejuvenation of the female factory workers, caused the gap between men's and women's industrial wages to widen.
[257] Arbeidsinspectie, *Twente*, p. 43.
[258] Smits, Horlings, and van Zanden, *Dutch GNP*.

(unmarried) women's LFP. Especially from the 1880s onwards, FLFP in the major Dutch textile centres drastically increased again after a short period of decline.[259] In short, several sources confirm that the expanding Dutch textile sector was for an important part realized by women and children.

Table 3.2. Increasing number of spindles and looms in use in Enschede 1895-1917 (1895 = 100)

Year	No. of spindles	Index	No. of looms	Index
1895	110,780	100	6,130	100
1900	198,690	179	7,722	126
1905	253,358	229	9,587	156
1907	288,086	260	10,784	176
1917	439,240	396	14,677	239

Source: Municipal records of Enschede (1895-1917).

Married women's choice whether or not to work in a factory was heavily influenced by the number of children. It has been shown for several western European countries that childless women or mothers with only one or two children were more likely to be employed outside their homes than women with five or six small children.[260] Indeed, research on industrial England by Paul Atkinson has shown that fertility and FLFP were highly correlated. However, while many have reasoned that the extent of FLFP was determined by fertility rates, Atkinson turns causality around. He argues that in regions with ample working opportunities for women, fertility was low, while in regions with a low demand for female labourers, women chose to marry earlier and have more children.[261] Supporting evidence for the relationship between the number of children and married women's factory labour was found in the surveys:

> If labourers only have one or two children, both the husband and the wife work in the factory. However, the moment they have three children, the husband has to work alone and this means a difficult time until the first child can start working. When there are two or three children allowed to work, people can start saving money for their old age.[262]

In contrast, recent research on Spain has shown that the number of children did not affect women's employment rates at all. According to Muñoz Abeledo, Spanish women in the

[259] Boter, 'Before she said 'I do''.
[260] Garrett, 'Was women's work', p. 288.
[261] Atkinson, 'Isn't it time'.
[262] Arbeidsinspectie, *Twente*, p. 410. In chapter 5 (Figures 5.3 to 5.6), I show that household living standards indeed dropped dramatically during the stage of the household life-cycle with small children and that the husband's wage was often not sufficient to support the entire household.

tobacco and textile industries brought their children to the factory or left them in the care of neighbours. She even found evidence of nurseries in the factories.[263] The Dutch sources do show that mothers with older children often returned to the factory. A producer from Almelo said that: "[a]s soon as a child is 12 years old, he or she starts working in the factory. Frequently, their mother then returns to the factory".[264]

Moreover, many households could not afford to miss the wife's income. Keeping married women out of the factories, even though they would still be able to contribute to the household income in other ways, made households increasingly dependent on children's earnings.[265] A warehouse worker from Oldenzaal stated that a labourer "lives from the money his children earn with him".[266] A weaver from Enschede mentioned that: "[o]ne should not forget that there are households with four or five children. If the father earns nine guilders, then the household could use the support of a child that earns two or three guilders. Only then, better foodstuffs and clothing can be consumed".[267] Indeed, Table 3.1 has shown that in 1889, almost half of all children in Enschede aged 12-14 worked in a factory and nearly 70% of all children aged 14-16.[268]

Commodified and reciprocal (subsistence) work at home

There were three common alternatives for factory work: the home industry, reciprocal labour at home, such as the cultivation of land, and running a (family) business. To start with the first, the industrial sector still offered ample employment to home workers. Honeyman and Goodman have argued for the case of England that: "[a]s women were squeezed out of employment in the public arena, they were forced either into purely domestic activities or into homeworking or sweatshop employment".[269] In the Netherlands too, until at least the first decades of the twentieth century, the home industry remained important and encompassed a

[263] Muñoz Abeledo, 'Women in the rural', p. 138.
[264] Arbeidsinspectie, *Twente*, p. 241.
[265] de Vries, *The industrious revolution*, p. 200.
[266] Arbeidsinspectie, *Twente*, p. 211.
[267] Arbeidsinspectie, *Twente*, p. 48.
[268] The prohibition of children's factory work until the age of 12 positively affected the number of children receiving primary education. According to an investigation by the ministry of national affairs in 1892, circa 90% of all the Dutch children aged 6-12 were in school (Nationaal Archief, Archives of National Affairs, department education). Furthermore, in Enschede, factories were connected to a factory school providing education for employees between the age of 12 and 16. To be accepted in the factory and the factory school a primary school diploma was required. Since for many households the children's incomes were indispensable, parents were therefore forced to send their children to school until they turned 12.
[269] Honeyman and Goodman, 'Women's work', p. 622.

great variety of work ranging from peeling shrimps to producing rosaries. In the textile industry, many tasks were outsourced to homeworkers as well.

The surveys show that there was a large supply of labour in the home industries of Twente and Tilburg as well, in particular from married women. A factory director from Twente mentioned that the sewing of sacks was performed by homeworking, married women earning some 50-60 cents a day. His factory employed 200 of those women and therefore, "about as many households"[270] which implies that other household members assisted the home worker. The mayor of Tilburg stated that "at least 400 households"[271] were working in the home industry. The chair of the Chamber of Commerce of Tilburg estimated this number to be between 200 and 300 households.[272] Guillaume Pollet, producer of woollen cloth, stated: "I think that there are at least 1,000 home weavers [including men], maybe even 1,500".[273] Five interviewed producers together reported circa 600 employed homeworkers. Gertjan de Groot found that as late as 1938, there were 850 women working at home in Tilburg, compared to 1360 women working in factories.[274]

Information on wages in the home industry provided by the surveys is scarce. One producer from Almelo commented that,

> [s]pun yarn has to be bundled. I let married women do this, who gladly want to perform some work at home to earn a little extra. They earn *f*2,50-*f*4 per week, depending on household tasks: the larger the household, the less time they have for extra work. At the moment, I employ twelve: but were I to decide today I needed 24 or 36, I would have them by tomorrow. Seeing that one puts so much effort into earning extra money, it is apparent that wages are not high.[275]

A special survey on the home industry from 1909 provided more meticulous information on wages. The catalogue of the objects displayed at an accompanying exhibition provides ample information on the producer(s) of each object that was registered, including gender, age, hours worked per week, and weekly wages. Earnings differed considerably, depending on the type of work and the amount of hours worked per week. The producer's estimation quoted above seems to have been representative: a 66-year old woman from Goirle

[270] Arbeidsinspectie, *Twente*, p. 378.
[271] Giele, *Tilburg*, p. 5.
[272] Giele, *Tilburg*, p. 18.
[273] Giele, *Tilburg*, p. 42.
[274] de Groot, *Fabricage van verschillen*, pp. 205-206.
[275] Arbeidsinspectie, *Twente*, p. 241.

– nearby Tilburg – spent 48 hours per week on sewing sacks earning *f*2,50 and a woman from Mierlo, in the south of the Netherlands, spent 72 hours per week weaving velvet, earning *f*3,90.[276] These incomes constituted a considerable share of households' incomes since the average male factory labourer in Twente earned circa *f*8-*f*10 per week.

Table 3.3 below displays the average wages in the textile and apparel home industry in 1909.[277] The catalogue included objects from 114 women who were working alone. They earned an average wage of *f*3,82 in a working week of almost 57 hours. These relatively short average work weeks made it possible to combine home industrial work with homemaking chores. Men's significantly higher wages can be explained by longer average workdays and different types of work with higher turnover, such as shoemaking. Married couples also worked together. Children rarely worked alone, but did occasionally assist their parents for a couple of hours per day.

Table 3.3. Wages and working hours of homeworkers, 1909

	N	**Average wage per week (*f*)**	**Average wage per hour (*f*)**	**Average amount of working hours per week**
Man alone	146	7.87	0.10	76.1
Woman alone	114	3.82	0.07	56.7
Man + woman	75	8.64	0.09	100.5

Source: Posthumus, 'Huisindustrie in Nederland'.

The second alternative for factory work was the cultivation of land and keeping livestock. Subsistence agriculture is often overlooked in the historiography on women's labour and households' living standards in general. Indeed, in Twente, fifty-six workers mentioned whether or not they had a plot of land next to or nearby their home: forty-seven (72%) of them confirmed that they did. This was a legacy from the initial stages of industrialization, when factory workers were still part of the peasantry. As mechanization progressed, less time remained for activities outside the factory and eventually, agricultural labour was mostly abandoned. However, cultivating food crops for self-provisioning did not die out completely.

[276] Posthumus, *Huisindustrie in Nederland*, 46-49.
[277] The difficulty with this source is that sometimes, two different objects were produced by the same homeworker. However, the total weekly wage and amount of working hours were calculated per person, but noted down again for every object. I removed all the duplicates when calculating the averages in Table 3.3.

The cultivation of this land was a joint effort of the entire family. The housewife played an important part as she was, usually, not bound to the unrelenting jingling of the factory bells. A doctor from Haaksbergen noticed that: "[w]hen the wife does not work in the factory, more land is cultivated. The wife cultivates the land and the husband does so when he comes home from work".[278] In case both spouses worked in a factory or the wife could not manage on her own, households occasionally paid a day labourer to do the work. Moreover, other kin living nearby could have been able to assist.

According to a carpenter from Enschede, the habit of cultivating land was on its return by the end of the nineteenth century:

> It used to be customary that every civilian in Enschede and Hengelo possessed his own land to cultivate his potatoes, cabbage, etc. Those people are still familiar with agriculture, although this is decreasing. The weekly markets are more frequently visited than in former times, because there are people who do not want to cultivate their own land anymore. However, he who is wise will cultivate himself because it will save him *f*3 per week.[279]

Although according to this carpenter this practice was diminishing, cultivating food was still, for many households, a significant addition to the household income. Several labourers stated that without their land, they would not have been able to get by every week.[280] Moreover, if the above quoted comment is accurate, subsistence agriculture could save a household *f*3 a week: about one-third of the average man's factory wage.[281] It has to be noted that the self-provisioning of food was largely impossible in the larger cities in the western provinces and is therefore typical for rural regions or smaller cities with a long tradition of agriculture. In chapter 5, I present a more in-depth analysis of the value of subsistence agriculture by estimating the size of the land available to industrial and agricultural wage labourers.

Finally, some respondents mentioned that they ran their own business next to their factory work. Although this was only sporadically mentioned in the surveys, it was yet another way for women to combine different types of labour relations. Indeed, one factory

[278] Arbeidsinspectie, *Twente*, p. 353.
[279] Arbeidsinspectie, *Twente*, p. 16.
[280] Arbeidsinspectie, *Twente*, p. 132.
[281] In chapter 5 I present a more in-depth analysis of the value of subsistence agriculture.

labourer owned a beer room which, according to him, was managed by his wife when he was at the factory. At night, he took over.[282]

In sum, the surveys have demonstrated the ubiquity of women working in the home industry, in subsistence agriculture, and, to a lesser extent, in a (family) business. These are all types of gainful work that have remained invisible in the occupational census. The adjusted lower-bound share of working women in the 1899 census proposed by Schmidt and Van Nederveen Meerkerk therefore needs to be raised even more.

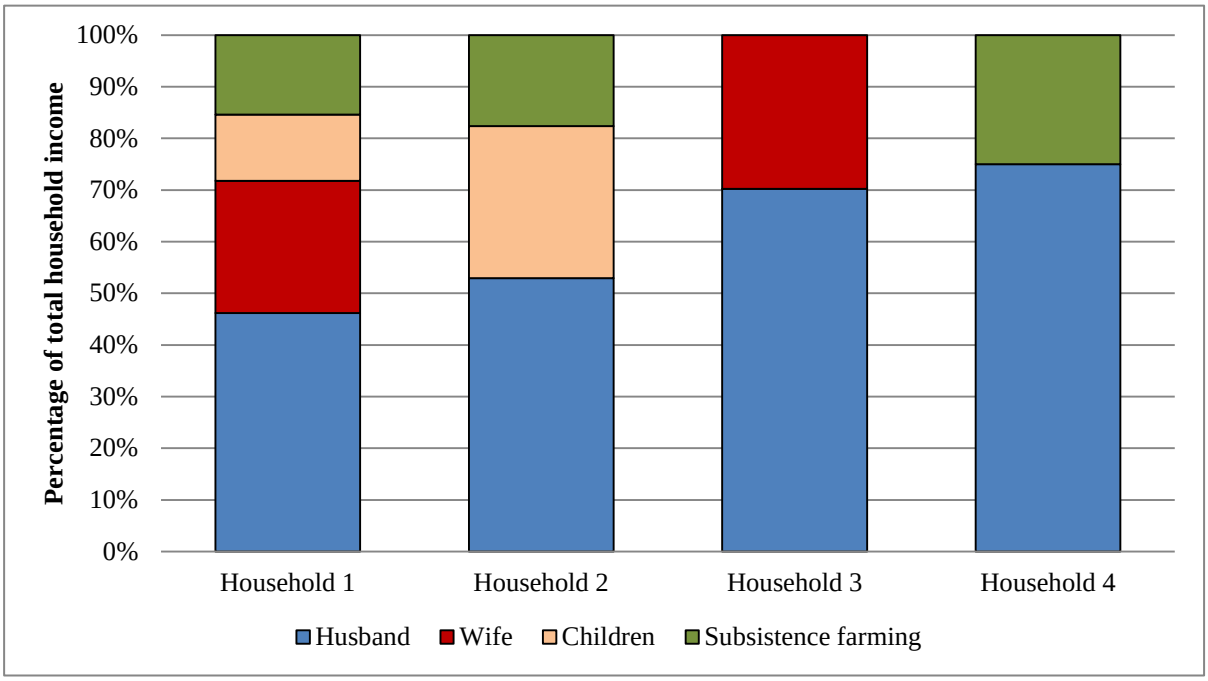
Combining labour relations and the household income

The results presented in this section show that most children older than twelve and unmarried women were principally engaged in some sort of wage labour. In contrast, married women managed to combine several types of labour relations to reconcile their longing for domesticity with the need to provide sufficient income. They engaged in reciprocal labour relations that were both reproductive (cleaning, cooking, child rearing, etc.) and productive (subsistence agriculture). Furthermore, wage labour in the home industry could easily be combined with reciprocal labour because working hours were flexible and the work could be performed from home. In this way, married women's work could mean a substantial contribution to the total household income. Therefore, they cannot be ignored by scholars investigating, among other things, the history of households' living standards.

Figure 3.2 below demonstrates the implications of this conclusion for working-class households' income composition. I constructed four prototypes of households, each representing one of the possible combinations of labour relations regularly mentioned in the surveys. I have used the average factory wages of men, women, and children noted down by the survey conductors for determining the incomes from *wage labour*, the average woman's wage in the home industry (Table 3.3) for *part-time wage labour*, and the comment made by a carpenter from Enschede quoted in section 3.4 for *subsistence farming*. Household 1 shows the maximum income that women could contribute by means of wage labour. In households 2 and 4 the wife merely performed homemaking labour (*reproductive labour*). Households 3 and 4 account for the possibility that children were absent or too young to work (*cannot be expected to work*). Table 3.4 further specifies the type of labour relation(s) performed in each prototype of household.

[282] Arbeidsinspectie, *Twente*, p. 113.

Figure 3.2. Income composition of 4 prototypes of households.



Source: Arbeidsinspectie, *Twente*.

Table 3.4. Labour relations in 4 prototypes of households

	Household 1	**Household 2**	**Household 3**	**Household 4**
Husband	Wage labour	Wage labour	Wage labour	Wage labour
Wife	Wage labour + reproductive labour	Reproductive labour	Part time wage labour + reproductive labour	Reproductive labour
Children	Wage labour (1 child)	Wage labour (2 children)	Cannot (be expected) to work	Cannot (be expected) to work
Subsistence farming	Reciprocal labour for the household	Reciprocal labour for the household	Non existent	Reciprocal labour for the household

These results are a first attempt to construct a more realistic idea of household income composition based on the qualitative information from the surveys. In chapter 5, I will employ a more quantitative approach to arrive at the income composition of agricultural and industrial households around 1900.

3.5. Conclusion

This chapter has provided supporting qualitative evidence for the claim that what we know about national FLFP rates based on occupational censuses in western Europe needs to be reconsidered. Previous research has estimated that the Dutch FLFP rates in the 1899 census need to be adjusted from 17% to at least 24%. These adjustments were principally based on

the inclusion of women's hidden work in agriculture, and women assisting their self-employed husbands in the industrial and retailing sectors. By exploring various household labour relations in the textile regions of Twente and Tilburg, the present research has further increased our understanding of the types of work that have remained invisible in the 1899 census and has argued that participation rates in the 1899 census must have been even higher than 24%. Future quantitative research will tell to what extent.

Furthermore, from the surveys it has become clear that domesticity was indeed pursued by the working class by the end of the nineteenth century. Multiple respondents answered that married women needed to dwell in the private sphere to create a domestic environment for their families. However, this did not mean that they were discouraged from providing an income. The private sphere was not perceived as a place exclusively for leisure, but rather as a place where domesticity and industriousness could go hand in hand.

The coexistence of domesticity and economic activity is reflected in the ways in which households allocated their labour. Most married women indeed stopped working in factories but instead, found other ways to provide an income to reconcile the desire for domesticity with the need for sufficient income. Cultivating food, keeping livestock, working in the home industry, and running a (family) business were common types of work that married women could perform next their homemaking and child rearing duties. This may explain why some scholars have found a nineteenth-century Dutch male breadwinner society, while others have presented evidence that the Dutch female labour force was considerable.

These conclusions have implications for the ways in which the separate spheres theory has been applied in the historiography. In the context of nineteenth-century industrial regions, the public and the private spheres cannot be understood as dualities between male and female, or labour and domesticity: the home and its immediate surroundings turned out to be important workplaces. This was even more true for agricultural regions where most of the work performed by both men and women was done in and around the home. Working was not necessarily the same as leaving the house.

Chapter 4: Women's wages and the gender wage gap: Did the impact of industrialization in the Netherlands mirror the British experience (1750-1914)?

4.1. Introduction

The impact of structural change on economic development is much debated. Although understanding the trajectory of women's work is vital for a full and correct narrative of economic development, for a long time the role of women was not adequately studied. In the past decades, an increasing body of literature has focussed on the quantification of various dimensions of women's economic activities including women's remuneration and their changing position in the labour market as a result of industrialization.[283] However, the majority of these studies have focussed on the British case and have concluded that overall, women's position worsened. The question this chapter seeks to answer is whether we can find similar effects of industrialization on women's labour market opportunities in the Netherlands compared to Britain, even though the timing and pace of industrialization were different. To this end, I compose the first nineteenth-century Dutch women's wage series and trace the development of the gender wage gap (GWG, henceforth). The key finding is that during industrialization, women's relative position in the casual agricultural and industrial wage labour markets deteriorated whereas servants working on annual contracts saw their relative position remain stable and even slightly improve. This development closely resembled the British experience.

Jane Humphries and Jacob Weisdorf have composed the first long-term series of unskilled women's wages in England for the period 1260-1850 and compared them to the well-known series of men's wages.[284] Based on their findings, they consider, among other things, the impact of industrialization on women's welfare and their opportunities in the labour market. They conclude that in the long run, "[i]t was largely [...] single women free from family responsibilities who could profit from the momentous economic changes of the

[283] Among others: Humphries and Weisdorf, 'The wages of women'; Verdon, 'The rural labour market'; Burnette, *Gender, work and wages*.

[284] Humphries and Weisdorf, 'The wages of women'. NB: men's nominal and real wages in industrial economies have been extensively investigated: Allen, 'The great divergence' (Europe); Vermaas, 'Real industrial wages' (the Netherlands); Frankema and van Waijenburg, 'Structural impediments' (British Africa); Clark, 'The condition' (England).

era of industrialization"[285], because women's *annual* contracts became, relatively speaking, better paid.[286] In contrast, married women became more dependent on men because women's *casual* wages could not keep up with men's wages.

Earlier research on the Dutch GWG has focussed on specific regions and industries. Richard Paping has shown that in the province of Groningen, the GWG in agriculture closed from 1790 onwards until the agricultural crisis of 1818, after which the GWG started to widen.[287] Peter Priester has likewise found a widening GWG in Groningen: around 1810 women's wage had been circa 65% of men's wages, around 1860 circa 45%, and in 1906 only 37%.[288] For the industrial sector, Gertjan de Groot found that in almost all the industries he surveyed[289], the GWG widened during the second half of the nineteenth and first half of the twentieth century. In the paper industry in 1871, women earned 65% of men's wages and in 1938 this share had fallen to 51%. In the cotton industry the GWG fluctuated and was, according to De Groot, a direct consequence of mechanization. In 1881 women's wages were 70% of men's, in 1917 52%, and in 1930 68%.[290]

Because research on Dutch women's wages is scattered, the long-term development of the GWG has hitherto remained unclear. We know more about men's wages: they remained stable during the eighteenth and first half of the nineteenth century and thereafter started to rise rapidly. This was followed by a period of stagnation during the last two decades of the nineteenth century and wages recovered during the 1900s.[291] The Netherlands provides an important case to investigate the GWG. First, the Dutch economy industrialized relatively late. By the beginning of the twentieth century, 30 percent of the total Dutch labour force still worked in agriculture compared to 23 percent in Belgium and 12 percent in the Britain.[292] Second, Table 1.1 in the introduction of this dissertation has shown that officially registered FLFP rates in the Netherlands decreased during the nineteenth century and were low

[285] Humphries and Weisdorf, 'The wages of women', p. 430.
[286] Recently, Humphries and Weisdorf have published a follow-up paper in which they present the long-term development of men's *annual* wages. They show that after 1700, men's annual real wages increased more rapidly than men's casual real wages: Humphries and Weisdorf, 'Unreal wages?', p. 19.
[287] Paping, *Voor een handvol stuivers*, pp. 194-197.
[288] Priester, *De economische ontwikkeling*, pp. 196-197.
[289] Most importantly: pottery, paper, and textile enterprises.
[290] de Groot, *Fabricage van verschillen*.
[291] Vermaas, 'Real industrial wages'.
[292] van Zanden and van Riel, *The strictures of inheritance*, p. 192; Feinstein, *Statistical tables*, p. T131; Mitchell, *British historical statistics*, p. 104. See Table 1.3 in the introduction of this dissertation.

compared to Britain.[293] A better understanding of women's changing position in the labour market will provide new insights into why nineteenth-century Dutch FLFP rates were so low.

This chapter is structured as follows. Section 4.2 provides an overview of the research on the impact of industrialization on women's work and the GWG in Britain. Furthermore, it considers the differences and similarities between changes in agriculture and industry in Britain and the Netherlands. Section 4.3 considers my sources and methodology. Section 4.4 shows the developments of Dutch men's, women's, and children's nominal wages and the GWG in the agricultural and the industrial sectors. Section 4.5 examines the differences and similarities between the British and the Dutch experience. Section 4.6 concludes.

4.2. Learning from the British case

The gender wage gap and the opportunity costs of labour

During the early modern period and the era of industrialization women earned between one-third and one-half of men's wages.[294] The existence of this GWG is undisputed, but its causes are all the more debated. Part of the explanations is based on neoclassical economic theories, arguing that women earned 'market wages', that is, wages that were determined by market forces of supply and demand.[295] In this line of reasoning, wage rates were not influenced by gender, but merely by the labourer's productivity and the desire of employers to maximize profits. Other studies have argued that the GWG was principally caused by social values and prejudices against women's skills and that women were thus paid 'customary wages' that were determined by their sex.[296]

A gap between men's and women's wages for the same type of work is not necessarily the result of wage discrimination. First, women were usually less productive than men. Despite the increasing use of machinery in many industrial branches, physical strength remained important which gave men an advantage. Thus, if piece rates were the same, women's total earnings were usually lower.[297] Second, women generally worked shorter days

[293] Pott-Buter, *Facts and fairy tales*, p. 21.
[294] Simonton, *A history*, p. 170; Ogilvie, 'How does social capital', p. 341; Burnette, *Gender, work and wages*, p. 72; van Nederveen Meerkerk, 'Market wage', p. 165; Stanfors et al., 'Gender, productivity', p. 48.
[295] Burnette, 'An investigation', p. 257.
[296] de Groot, *Fabricage van verschillen*.
[297] Burnette, *Gender, work and wages*. Timothy Leunig has argued for the case of New England that piece wages provided married women with the possibility to combine domestic labour with wage labour because working hours were flexible (Leunig, 'Piece rates and learning').

because they normally had a household and children to take care of. Third, combined earnings of a husband together with his wife are often mistaken for the earnings of one individual man.[298] Finally, payments in kind could be substantial, especially for women, but are usually not included in research on wages. Still, whether market wages or customary wages were the norm, in any case *indirect* discrimination played an important role: "[w]omen were 'statistically discriminated' against because as a group they were unlikely, for instance, to remain in the workforce for very long after marriage, and as a group they may have been pleased with jobs that involved a minimum of training."[299] Furthermore, women's educational attainment was usually lower than men's. Consequently, women were excluded from most higher-skilled – and higher-paid – occupations.

The GWG is an indicator of women's position in the labour market relative to men's. Even though the causes of the gap varied between sectors and periods, it gives us an idea about what men and women *could* earn and how attractive it was for women to engage in wage labour. The present research therefore employs a broad definition of the GWG and explores the differences between men's and women's average wages for unskilled and lower-skilled agricultural and industrial labour. However, for the analysis of industrial wages I will additionally zoom in on the GWG in weaving and spinning, hence investigating men's and women's wages for *the same type of work*.

All in all, the GWG is a crucial piece of information for determining how the supply and opportunity costs of women's labour – one of the three explanatory factors in my model (Figure 1.2) – affected FLFP rates. The theory of the allocation of time developed within the literature of the New Household Economics (NHE), helps to better understand this mechanism.[300] To remind the reader: an increasing wage rate of the husband normally results in a decrease of time spent on market work by the wife who then redeploys her time to domestic work. If women's wage rates do not increase as much as men's, this is all the more reason for women to withdraw from the labour market. The opportunity costs of women's labour increase when the GWG widens.

The effects of industrialization on the gender wage gap in Britain

During the period 1500-1850, open fields were enclosed and small farms were amalgamated into large estates. This enclosure movement instigated a process of proletarization because

[298] Burnette, 'An investigation'.
[299] Goldin, *Understanding*, p. 214.
[300] See section 1.4 for an overview of the NHE.

landownership became increasingly concentrated in the hands of a relatively small group of people. Furthermore, these landowners reduced farm employment by investing in modern cultivation techniques and by the end of the eighteenth century, British agricultural productivity had become exceptionally high.[301] The mainstream literature argues that the labour surplus that originated was employed in manufacturing in the growing cities and that this development resulted in the industrial revolution.[302]

The effects of the enclosure movement on women's agricultural labour are much debated. Robert Allen has argued that as farms grew in size, the number of (especially female) labourers per acre decreased.[303] Joyce Burnette has stated that although she also finds a decreasing demand for female labourers between 1750 and 1850, this was not caused by increasing farm-size. Burnette points out that Allen has only included female co-resident farm servants in his analysis. While she acknowledges the decreasing demand for these particular women when farms expanded, this was not the case for female *day* labourers. Instead, she suggests that the Poor Law was an incentive for farmers to hire more male instead of female labourers because in times of severe unemployment in their parish, landowners were obliged to support men either by employing them or through the poor rates.[304]

The demand for female farm labourers in regions where factories arose became more pressing because here, many women moved away from agricultural to industrial work. Furthermore, the factory system eventually destroyed manual spinning at home. In regions where this type of home industry had been omnipresent, the supply of female agricultural wage labourers increased. Jane Humphries has stressed that men and women were affected differently by proletarization and emphasizes that there has been a long transition period during which wage labourers still had access to other resources besides wages.[305] All in all, notwithstanding the debate about the causes, the demand for female agricultural day labourers decreased from the 1750s onwards.[306]

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[301] Allen, *Enclosure and the yeoman*, p. 1.

[302] There is debate among scholars about the direct link between the enclosure movement, increasing productivity, and the development of the industrial sector: Allen, *Enclosure and the yeoman*, pp. 1-21; Overton, *Agricultural revolution*, pp. 1-9; Hudson, *The industrial revolution*, pp. 64-97.

[303] Robert Allen distinguishes two agricultural revolutions: the yeoman's and the landlords. The former took place during the seventeenth century and consisted of doubling corn yields. The latter took place during the eighteenth century and was marked by enclosure, farm amalgamation, and reduced farm employment, not by increasing yields. Allen refutes the idea that "[...] released labourers were re-employed in manufacturing". Allen, *Enclosure and the yeoman*, p. 21.

[304] Burnette, 'The wages and employment', p. 685.

[305] Humphries, 'Enclosures'.

[306] See also more regional studies that come to the same conclusion: Speechley, *Female and child*; Lane, *Women in the regional economy*.

The mechanization of the textile industry impacted on the demand for and supply of female labour in both the agricultural and the industrial sector. Weaving and spinning mechanized at a different pace. During the 1760s, the flying-shuttle came into general use.[307] This manually driven devise could be operated at home and increased weavers' productivity. Consequently, the demand for yarn increased and this was an incentive to mechanize the spinning process as well: around 1765 the Spinning Jenny was invented and soon after, the water-frame and the mule were introduced in 1775 and 1779, respectively. While the Spinning Jenny could be operated at home, this was not the case with the spinning mules that were driven by water or steam power.[308] Around 1790, spinning and the preparatory tasks had become largely factory-based.[309] However, only with the introduction of the steam-driven *selfactor* around 1830, did spinning at home die out entirely. Weaving became factory-based around 1820 when the first power looms were introduced. Until the 1850s, handloom weaving at home and power loom weaving in the factory had coexisted.[310]

The early factory system relied heavily on cheap female and child labourers.[311] However, the transfer to the factory system made textile labour less amenable for *married* women because it was harder to combine with domestic chores. Mechanization further affected the demand for female labour through occupational gender segregation. Weaving had traditionally been a male task, but with the introduction of the flying-shuttle women increasingly engaged in this type of work. Spinning had been women's work before mechanization but became dominated by men when it was transferred to the factories and became geographically concentrated.[312] Paul Minoletti concludes his thesis on the transition to the factory system as follows: "[t]hus, the evidence strongly suggests that the changes that occurred in textile production and employment over the course of the Industrial Revolution not only decreased the availability of textile work to women across Britain, but also decreased the utility to women of the textile work that was available and weakened their position in the labour market relative to that of men."[313]

The changing economic structure profoundly influenced wages. Men's agricultural wages started to rise rapidly from the mid-eighteenth century onwards. In the 1810s, wages

[307] The flying-shuttle was invented in the 1730s by John Kay.
[308] The very first spinning-mules were manually driven. Later on, they were driven by either water or steam power: Boot, 'Handspinnen van katoen (deel 1)', p. 68; Lintsen and Bakker, *Geschiedenis van de techniek (deel 3)*, p. 24.
[309] Lazonick, 'Industrial relations', p. 233; Minoletti, *The importance*, p. 43.
[310] Minoletti, *The importance*, pp. 3-9.
[311] Fowler, 'Great Britain', p. 236; Horrell and Humphries, 'The exploitation'.
[312] Minoletti, *The importance*, pp. 7-8.
[313] Minoletti, *The importance*, p. 221.

dropped sharply and only started to recover during the 1830s. Women's wages followed the same pattern but did not increase as much.[314] Thus, the GWG in agriculture widened during the period 1770-1860. However, in regions where the cottage industry was prevalent and where factories arose, the GWG narrowed because many women moved from agricultural to industrial work causing a pressing demand for female labourers in agriculture.

In the industrial sector, the GWG likewise widened. Although in the early textile factories both men's and women's wages were higher than they had been in the home industry, the GWG was larger in the factories. According to Minoletti the GWG widened due to the transition to the factory system because of women's lesser physical strength, women's lower level of human capital formation, and, most importantly, the hostility against women workers based on gender ideology.[315] The GWG differed considerably between age groups. For instance, in 1833 in the Lancashire factory cotton production, girls earned more than boys until the age of 11, but afterwards the GWG widened rapidly. After the age of 40, the GWG slightly closed again.[316]

The study by Humphries and Weisdorf discussed in the introduction is the first to analyse the long-term development of the GWG.[317] Their dataset includes casual and annual payments for unskilled agricultural work, industrial work, as well as service work. The casual wage series consists of wages for, among others, agricultural labourers, garden labourers, "cleaners, scourers, laundresses, messengers, construction workers, and transport workers."[318] Most payments to annual workers were paid for agricultural work, domestic service, or a combination of the two.

British men's wages remained stable during the first half of the eighteenth century and thereafter began to rise until 1914, albeit with small setbacks during the early nineteenth and early twentieth centuries.[319] Women's casual day wages remained stable during the eighteenth

[314] Clark, 'Farm wages'; Burnette, 'The wages and employment'; Clark, 'The long march'; Feinstein, 'Pessimism perpetuated'; Burnette, 'Labourers at the oakes'; Sharpe, 'The female labour market'; Burnette, 'The wages and employment'; Verdon, *Changing patterns*, p. 153; Sharpe, *Adapting to capitalism*, p. 80; Speechley, *Female and child*, p. 131.

[315] Minoletti, *The importance*, pp. 215-218. See for older work on the effects of industrialization on women's labour for instance: Jordan, 'The exclusion'. Jordan argued that women in industrializing England were principally employed in those branches that had known a long history of home industry.

[316] Minoletti, *The importance*, pp. 62-63. See for the GWG in the cotton industry for a later period: Boot and Maindonald, 'New estimates'.

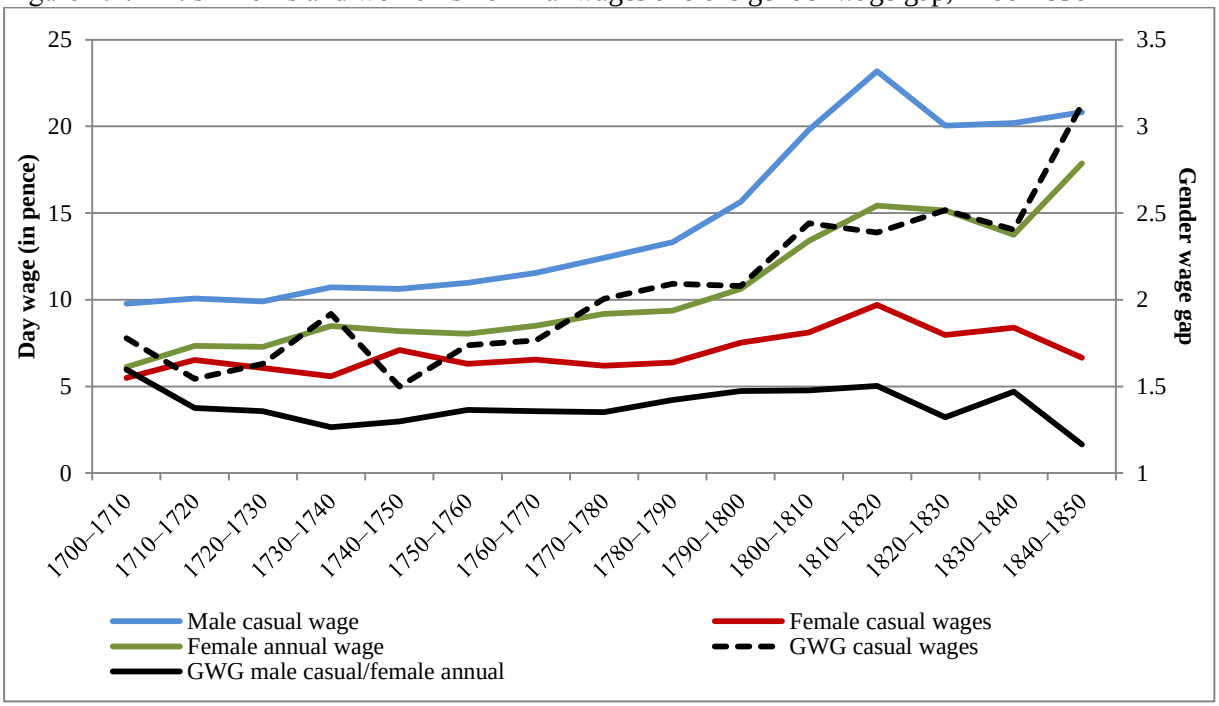
[317] Since the present research is concerned with the changes that occurred during industrialization, I leave out their research results in the period 1260-1700.

[318] Humphries and Weisdorf, 'The wages of women', p. 410. NB: they excluded spinners' wages. Nevertheless, as I will further discuss in section 4.5, based on their findings, Humphries and Weisdorf do draw conclusions about the effects of the mechanization of spinning.

[319] Allen et al., 'Wages, prices and living standards', pp. 19-20.

century, slightly rose around the turn of the nineteenth century, and thereafter decreased until 1850 to the same level as in 1780. Women's annual wages started to rise simultaneously with women's casual wages but from the 1800s onwards they continued to rise significantly (Figure 4.1). Thus, the GWG in casual wages widened after 1750, which made women's relative position in the labour market worse, whereas the GWG in annual wages closed and women's position improved.

Figure 4.1. British men's and women's nominal wages and the gender wage gap, 1700-1850[a]



[a] Humphries and Weisdorf have converted the female annual wages into daily wages.
Source: Humphries and Weisdorf, 'The Wages of Women', p. 432.

Women and industrialization in the Netherlands

During the first half of the nineteenth century, a process of proletarization started in Dutch agriculture and the absolute number of women listed with an occupation in the census increased. After 1880, this development reversed: the demand for wage labourers decreased because small-scale farms became more important compared to the large estates. This development is fundamentally different from agriculture in Britain where the process of proletarization persisted throughout the nineteenth century.

As a result of de-proletarization, agricultural FLFP rates in the census decreased from 152,600 in 1849 to 66,800 in 1899 (respectively 44% and 15% of the total registered

agricultural labour force).[320] However, the censuses usually did not record women working in their own businesses. Jan Luiten van Zanden has adjusted the outcomes of several censuses by estimating the number of women working in a private enterprise (Table 4.1).[321] His estimates show that indeed, these women constituted the largest of the three groups, especially around the turn of the twentieth century. Thus, from the end of the nineteenth century onwards, agricultural women workers moved away from the type of work that was usually registered in censuses to unregistered work that was performed on a family farm.

Table 4.1. Estimates of the female labour force in agriculture, 1810-1910 (in thousands)[ab]

	1810	**1850**	**1880**	**1910**
Women working in their own business	73.5	86.5	101.1	118.9
Farm servants	37.2	42.2	33.0	28.5
Day labourers	31.0	46.5	37.6	28.7
Total	**141.7**	**175.2**	**171.7**	**176.1**
According to census	-	*152.6*	-	*105.5*
Total as % of the male agrarian labour force	57.8	51.0	41.3	36.7
Share of women working in their own business as % of total agrarian female labour force	51.9	49.4	58.9	67.5

[a] Women older than 16.
[b] Including horticulture and forestry.
Source: van Zanden, *De Economische Ontwikkeling*, p. 75.

While the demand for casual wage labourers decreased after 1880, the demand for co-resident domestic and farm servants increased. This 'Servant Question', as it was called by contemporaries, was caused by an increasing demand for domestic servants of a growing middle class that could afford this kind of luxury. Furthermore, the supply of servants decreased because young unmarried women presumably preferred factory labour as it was better paid and gave them more freedom from both their employer and their parents.[322]

[320] van Zanden, *De economische ontwikkeling*, p. 68. See section 1.3 for more information about the changing structure of the Dutch agricultural sector.
[321] See also: Schmidt and van Nederveen Meerkerk, 'Reconsidering', pp. 88-89; van Nederveen Meerkerk and Paping, 'Beyond the census'.
[322] Poelstra, *Luiden van een andere beweging*, pp. 137-189. However, according to Jannie Poelstra this was only true for regions where there was industrial work for women in the first place (such as the textile industry in Twente and the pottery industry in Maastricht).

Arguably, the Servant Question hit the countryside even harder than the cities because domestic service in urban households was usually preferred over work as a farm servant.[323]

The mechanization of the Dutch textile industry lagged behind the rapid changes in Britain but followed a similar pattern. As in Britain, before mechanization spinning had been a female task whereas weaving was mostly performed by men. Around 1800, the Spinning Jenny – or rather, an improved version of this machine – was introduced and 30 years later the throstle-frame was introduced.[324] These machines – at the time primitive compared to the machines in use in Britain – were operated at home or in small workshops by women and children.[325] In Britain, already by the late eighteenth century an enhanced version of the Spinning Jenny was introduced that could be connected to either waterwheels or steam engines. In the Netherlands, and especially in Twente, waterpower was largely absent and steam power was not yet profitable.[326] Spinning at home only disappeared in the 1860s when the steam-driven 'selfactor' came into general use which was exclusively operated by men. As in Britain, the masculinization of spinning became irreversible with the switch from manually driven to steam-driven machines.

For weaving, the flying-shuttle was introduced in Twente in the 1830s, almost 70 years after it came into general use in Britain. Both men and women learned how to operate these machines at home. The integration of male and female weavers was maintained when the first power-looms were introduced in the 1860s and the production process was transferred from the home to the factories.[327] However, women were normally assigned fewer looms to operate than men. Furthermore, most female factory weavers were unmarried because married women were often unable to combine factory labour with domestic work. In the period 1860-1891, the number of handlooms in use in Twente decreased from 8,500 to 375, while the number of power-looms increased from 2,000 to 15,472.[328]

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[323] Bras, *Zeeuwse meiden*; Bras, 'Maids to the city'.

[324] van Nederveen Meerkerk, Heerma van Voss, and Hiemstra-Kuperus, 'De Nederlandse textielnijverheid', p. 21. See for an English version of this article: van Nederveen Meerkerk, Heerma van Voss, and Hiemstra-Kuperus, 'The Netherlands'; Lintsen and Bakker, *Geschiedenis van de techniek (deel 3)*, pp. 27-42. NB: Other parts of the spinning process, such as cleaning the cotton and preparing the cotton for spinning, were likewise mechanized from this period onwards.

[325] Boot, 'Handspinnen van katoen (deel 2)', p. 40.

[326] Boot, 'Handspinnen van katoen (deel 1)', p. 71. See section 1.3 in the introduction of this dissertation for a more extensive overview of the mechanization of the Dutch textile industry.

[327] This development regards the weaving of unicolour cloth. Weaving multicolour cloth was yet another story: this remained a mainly male profession because it was mechanized much later than the weaving of unicolour cloth. See: de Groot, *Fabricage van verschillen*, pp. 162-174.

[328] Lintsen and Bakker, *Geschiedenis van de techniek (deel 3)*, p. 52.

A brief overview of the timing of the introduction of machinery in the British and Dutch textile industries is provided in Table 4.2 below. Note that the transition period from manually driven to steam-driven machines was much shorter in Britain than in the Netherlands, especially in spinning. The reason that it took so long was because in Twente, the heart of Dutch textile production, labourers usually combined textile work with farming. Therefore, they did not demand high wages since they partly relied on other resources. Furthermore, until 1860 the infrastructure in Twente was not adequate to transport coal in large quantities.[329]

Table 4.2. Weaving and spinning machinery in Britain and the Netherlands, 1760-1880

	Machines		**Approximate year of introduction**	
	Type	*Power*	*Britain*	*Netherlands*
Weaving	Flying-shuttle	Manual	1760	1830
	Power loom	Steam	1820	1880
Spinning	Spinning Jenny	Manual	1765	
	Variants of the Spinning Jenny[a]	Water/steam/manual	1790	1800-1830
	Self-actor	Steam	1830	1860

[a] In Britain, the 'mules' were already connected to water and steam power during the 1790s whereas most spinning machines in use in the Netherlands remained manually driven for much longer.
Sources: see text.

4.3. Sources and methodology

The composition of the wage series

My database consists of a great variety of primary sources: several surveys on women's and children's labour, surveys on the state of the agricultural sector, and reports from the Dutch Central Bureau of Statistics among others. Furthermore, I have included the research results from previous studies on women's wages.[330] The collection of these data has resulted in a

[329] See section 1.3 for more information.

[330] **Primary sources**: Anonymous, *Arbeidsloonen en levensbehoeften*; Arbeidsinspectie, *Verslag van de tweede afdeling*; Arbeidsinspectie, *Verslag van de eerste afdeling*; Arbeidsinspectie, *Verslag van de derde afdeling*; Bultman, 'Verslagen'; Centraal Bureau voor de Statistiek, 'Opgaven (1902)'; Centraal Bureau voor de Statistiek, 'Opgaven (1903)'; Centraal Bureau voor de Statistiek, 'Statistiek (textiel industry)'; Centraal Bureau voor de Statistiek, 'Statistiek (schoenfabrieken)'; Centraal Bureau voor de Statistiek, 'Statistiek van loon en arbeidsduur'; Dam, 'De officiële loonstatistiek (1913)'; Dam, 'De officiële loonstatistiek (1915)'; Dam, 'De officiële loonstatistiek (1917)'; Dam, 'De officiële loonstatistiek (1921)'; Departement van Landbouw Nijverheid en Handel, *Onderzoek naar den fabrieksarbeid van gehuwde vrouwen*; Directie van den Arbeid, *Onderzoekingen (part I)*; Directie van den Arbeid, *Onderzoekingen (part II)*; Directie van den Arbeid, *Onderzoekingen (part III)*; Landbouwcommissie, *Uitkomsten*; Posthumus, *Huisindustrie in Nederland*; Staatscommissie voor den Landbouw, *Algemeen overzicht*; Staatscommissie voor den Landbouw, *Groningen-Gelderland*; Staatscommissie voor den Landbouw, *Utrecht-Limburg*. **Secondary literature**: Addens, *Arbeid en*

database that contains thousands of observations from the period 1800-1924.[331] Most of the primary and secondary sources reported average wages based on a large quantity of observations.[332] This means that one observation in my database is actually an average of the wages of an extensive group of labourers and that the total number of 7,876 wages represents many more individual wages.

Both daily and weekly wages are considered to be casual wages and will be analysed on a daily level. To this end, I have converted the week wages into day wages by dividing them by 6, assuming that labourers worked six days a week.[333] Annual wages were paid once a year to workers on fixed contracts. For industry, the dataset contains observations from men's, women's, and children's casual contracts. For agriculture, children are excluded and for men and women both casual and annual contracts are included.

In the sources, children were usually classified into age groups or their age was not specified at all. In total, I found 46 different ways of referring to a child. Out of the 1,018 children's wages included in the database, 27.9% had an unknown age, 22.2% was aged 14-18, 12.6% was 'younger than 17', 12.0% was 17-21, and 11.1% was 'younger than 14'. The rest was either defined differently or belonged to a younger age group.[334] Almost half of the wages were earned by boys (47.6%), 25% by girls, and of the rest the sex was unknown.

The data will be used to investigate both sectoral and economy-wide developments of nominal wages and the GWG. To facilitate a sectoral analysis, I assigned each observation the corresponding HISCO code and the industrial branch in which the occupation was categorized in the 1889 census.[335] To link every observation to HISCO, at times, my own interpretation of occupational titles was necessary. For instance, I gave labourers working in a factory where beans were preserved the same code as labourers working in other types of foodstuff factories.[336] Finally, I determined the skill level of each occupation using the HISCLASS

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loon; Brugmans, *De arbeidende klasse*; Gorter and de Vries, *Gegevens omtrent den kinderarbeid*; de Groot, *Fabricage van verschillen*; Jansen, *De industriële ontwikkeling*; Lubbers, *De statistiek van het arbeidsloon*; Paping, *Voor een handvol stuivers*; Priester, *De economische ontwikkeling*; van Zanden, *De economische ontwikkeling*; van Zanden, 'Lonen en arbeidsmarkt'.

[331] For this dissertation, the data from the period after 1914 will be excluded from the analysis. Table A4.1 shows the total number of observations per 5-year period.

[332] For the individual wages I found, I have calculated the weighted averages.

[333] From the qualitative sources discussed in chapter 3, I know that six-day working weeks in factories were no exception. Monday to Friday were full time working days and Saturday afternoon was usually meant for cleaning and organizing the work floor. (Arbeidsinspectie, *Twente*).

[334] The number of children younger than 12 is negligible.

[335] van Leeuwen, Maas, and Miles, *HISCO*; van Leeuwen, Maas, and Miles, 'Creating'.

[336] Although it was rare, some occupational titles were too vague to link to a HISCO code.

classification scheme.[337] The vast majority of the observations were either unskilled or lower-skilled occupations (Table A4.2).

Making sense of the sources

There are several data problems worth mentioning. First, in-kind payments took many forms and shapes and are often not specified in the sources. Humphries and Weisdorf added the market value of in-kind payments to the monetary wage to overcome this problem.[338] Where possible, I adopt this method. I have distinguished between two types of in-kind payments: (1) food, and (2) food and shelter. This method does lead to a loss of detail since smaller in-kind payments such as the use of land or an occasional tip are not accounted for. To determine the value of in-kind payments, I use Robert Allen's consumption baskets.[339] I assume that food and shelter for one male worker equalled the price of one man's bare bones consumption basket in that specific year whereas female workers consumed 0.9 of such a basket.[340] To determine the value of food alone, I add half the value of one bare bones consumption basket to the monetary wage for men, and 0.45 for women. For day wages I simply use 1/365 and for week wages 1/52 of one year's basket.[341]

Second, a comparison of daily, weekly, and annual wages is tricky since our knowledge about the number of days worked per year is scarce. The general consensus is that during the early modern period, labourers worked circa 260-270 days annually.[342] However, the amount and length of work days presumably increased during industrialization.[343] In the Netherlands, only in 1919 a law was implemented that legally limited the length of male labourers' working days (women's and children's working days were already restricted by

[337] van Leeuwen and Maas, *HISCLASS*.
[338] Humphries and Weisdorf, 'The wages of women', p. 417. See also: Boter, 'Marriages are made in kitchens'.
[339] Allen, *Amsterdam*; Allen et al., 'Wages, prices and living standards'.
[340] The 0.9 for women is based on the assumption that women on average consumed less calories than men and that, therefore, there bare bones consumption basket is smaller and cheaper. Among others: Allen, 'The great divergence'.
[341] Using bare bones consumption baskets may be an underestimation of actual consumption and the value of in-kind payments. Jane Humphries has recently argued that these baskets did not contain sufficient calories to feed a labourer performing physical work (Humphries, 'The lure of aggregates'). Robert Allen has accepted her critiques regarding the amount of calories (Allen, 'The high wage economy').
[342] de Vries and van der Woude, *The first modern economy*, p. 709; Humphries and Weisdorf, 'The wages of women', p. 412.
[343] Voth, *Time and work*; Voth, 'Living standards', p. 223.

previous legislation in the late-nineteenth century).[344] To overcome these uncertainties, I will analyse the casual and annual wages separately.

Third, it often remains unclear whether wages were paid to unmarried or married women. Humphries and Weisdorf assume that unmarried women worked on annual contracts whereas married women performed casual labour. They reason that married women could find casual work through their husbands, either by assisting him in his work or by being 'officially' hired by the same employer.[345] Furthermore, casual employment could easily be combined with domestic chores. Unmarried women were encouraged by the authorities to perform annual work because casual work would give them too much freedom.[346] For the annual wages in my series, I roughly follow the same kind of reasoning. Indeed, married women were unlikely to work on annual contracts since they usually had households to take care of and were therefore not able to work full time, let alone live in with their employer. However, casual employment – represented by daily and weekly wages – could be performed by both married and unmarried women. We know that, for instance, Dutch textile factories employed large numbers of unmarried women that received weekly wages. Some factories even excluded married women entirely, usually after they had had their first baby.[347] In general though, casual work will be considered as work that *could be* performed by married women.

Finally, the number of hours worked to receive a certain wage was almost never specified in the sources. A related issue is that both piece wages and time wages are included in the database. Piece wages were usually recorded as daily or weekly wages, i.e. the wage labourers received for their average output. Consequently, as I will further explain below, a comparison between men's and women's wages gives a distorted picture of wage discrimination because usually women worked fewer hours and were less productive than men.[348]

Correcting for regional and sectoral differences

Regional variation in wages was considerable within the Netherlands.[349] Since for most years not all provinces are represented in the dataset, I corrected the averages to compose a reliable,

[344] Heerma van Voss, *De doodsklok*.
[345] Humphries and Weisdorf, 'The wages of women', p. 411.
[346] Humphries and Weisdorf, 'The wages of women', pp. 411-412.
[347] Among others: Janssens and Pelzer, 'Did factory girls'.
[348] Burnette, 'An investigation'.
[349] See for instance: Kint and van der Voort, 'Economische groei'.

national wage trend. This was done as follows. First, I have calculated the ratio of each available wage (average per province per 5-year period) to the average wage of one reference province in that specific period.[350] Second, for the remaining periods I have interpolated these ratios.[351] Thus, for each 5-year period a ratio from the average wage per province to the average wage from the reference province was determined. Third, the gaps in the database, that is the provinces for which no wages were found in a specific period, were filled by multiplying the average wage from the reference province from that period, with the ratio for the province with no data, as calculated during step two. For instance, for the period 1880-1884, I only found female farm servants' wages for Groningen. In the subsequent period 1885-1889, servants' wages are known for all the provinces. The wage in, say, Zuid-Holland in the former period was estimated by using the ratio from the Zuid-Holland wage to the Groningen wage in the latter period.

Next, I determined the national average by calculating a weighted average of all the provinces based on the absolute number of male and female labourers in the agricultural and industrial sectors in each province in the 1899 census.[352] This method was used for several groups of wages: (1) male and female farm servants who received annual wages, (2) male annual farm labourers, (3) male and female casual agricultural labourers, (4) all male and female unskilled and lower skilled casual industrial labourers, and (5) male and female casual textile labourers separately.[353]

To aggregate the agricultural and industrial trends, the shares of the labour force working in agriculture and industry need to be accounted for. I have calculated the share of men's and women's employment in each sector based on various occupational censuses to compose a weighted average. Weighting the two trends was a simple procedure: imagine in a certain year 40 percent of the male labour force worked in agriculture, 30 percent in industry and 30 percent in services. The average agricultural wage will be multiplied by 0.4, the

[350] For most wage groups, Groningen was chosen as a point of reference because wages from nearly all 5-year periods from 1800-1914 are included. For women's and children's industrial wages and for all the textile wages, the province of Overijssel was used as the reference province.

[351] I did not use one specific formula to interpolate the ratios. If, for instance, for one period the ratio was 0.85 and for the subsequent period with data it was 0.9, I simply used the average of the two ratios for the intermediary periods. However, if the difference was larger, I let the ratios increase or decrease gradually.

[352] The weighted averages and the non-weighted averages of the provinces were usually not very different. Therefore, the assumption that the relative importance of the agricultural and industrial sectors did not change over time has not skewed the results.

[353] The (estimated) average wages and (estimated) ratios of each of these groups can be consulted in Appendix 4.1.

average industrial wage by 0.3 and the sum will be divided by 0.7 (because service wages are excluded from this research).[354]

4.4. Dutch nominal wages and the gender wage gap, 1800-1914

Agriculture

Analysing casual agricultural wages requires caution because summer wages were higher than winter wages and developed differently.[355] Because there was more work during the summer months, labourers had a stronger bargaining position. Moreover, during the harvest period both men and women performing specific tasks such as binding corn and *vlastrekken* (harvesting flax) earned significantly more than regular day labourers.[356] To ensure that an overrepresentation of summer or winter wages in the database does not skew the results, I have calculated the unweighted average of men's and women's summer wages, winter wages, and 'other' wages (mostly annual averages or wages without specification of the season) for every individual province. However, this method has its own flaw: working days were longer and more numerous in the summer than in the winter meaning that the winter wages have too much weight in an unweighted average. This is especially true for women, who were unlikely to work during the winter because the demand for labour was much lower. Still, this method is worthwhile because it shows how much men and women *could* earn on an annual full time basis.

The annual wages were mainly co-resident farm servants' wages (72% of the men's and 98% of the women's wages). These were usually unmarried men and women who on top of their monetary salary received food and shelter from their employer.[357] Male servants performed farm work such as milking and feeding the cattle, and ploughing. As such, their work did not differ greatly from other casual wage labourers. Female servants performed both domestic work and farm work such as raking hay and milking cows.[358] Although female farm tasks had for an important part been overtaken by machines by the first decade of the twentieth century, farm maids continued to combine domestic work with farm work, especially during the summer months when male and female servants worked alongside each

[354] See Appendix 4.1, Table A4.16 for the male and female employment by sector 1807-1930.
[355] Priester, *De economische ontwikkeling*, p. 190.
[356] Priester, *De economische ontwikkeling*, p. 197.
[357] As explained in the methodological section of this chapter, for the analysis I have added the (estimated) costs of food and shelter to the monetary wages.
[358] This combination of farm work and domestic work was also characteristic for female farm servants in Britain: Verdon, *Changing patterns*, pp. 125-126.

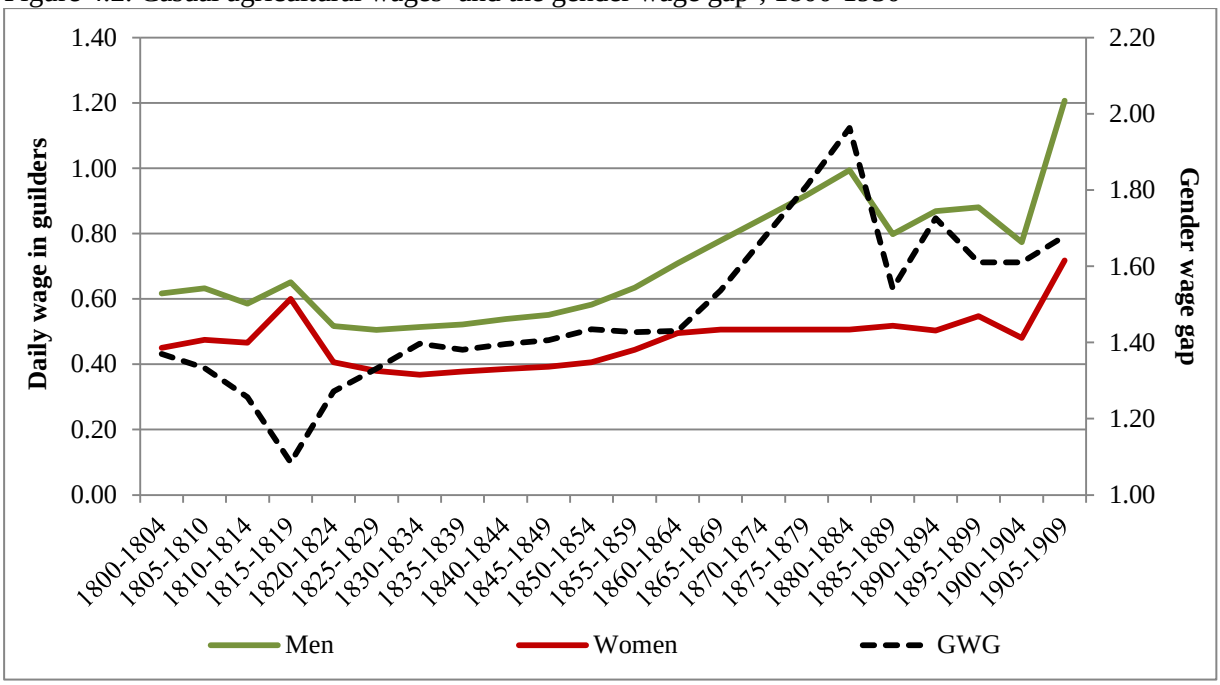
other on the land.[359] The dominance of farm servants in the women's wage series does not skew the trend in women's annual wages since this was by far the most common way for unmarried women to work on annual contracts.

The remaining 28 percent of men's annual wages were earned by non-living in wage labourers. Unfortunately, the sources do not always specify whether they were employed on fixed annual contracts or on casual contracts – in which case the reported wage was simply what a casual labourer *could* earn in one year. Furthermore, it is likely that the reported annual wages accounted for the (part-time) help of the labourer's wife and/or children. The report on the labour conditions of agricultural wage labourers from 1909 stated that "[i]t regularly occurs that advertisements for agricultural wage labourers in local periodicals express a preference for labourers with large families. The men will be labourers on fixed contracts but their entire family will be obliged to work for the farmer if he so desires."[360]

Figure 4.2 shows the evolution of casual agricultural wages and the GWG. After a brief period of decline during the 1820s, both men's and women's wages remained stable during the subsequent decades. From the 1860s onwards, men's and women's wages started to diverge dramatically. Men's casual wages began to rise until the agricultural crisis of 1878-1895 when wages dropped to the same level as twenty years before, but recovered during the first decade of the twentieth century. Women's wages remained stable until circa 1900, followed by a modest increase.

[359] Sociaal Democratische Studieclub, *Landarbeiders*, pp. 11-12.
[360] Sociaal Democratische Studieclub, *Landarbeiders*, p. 18.

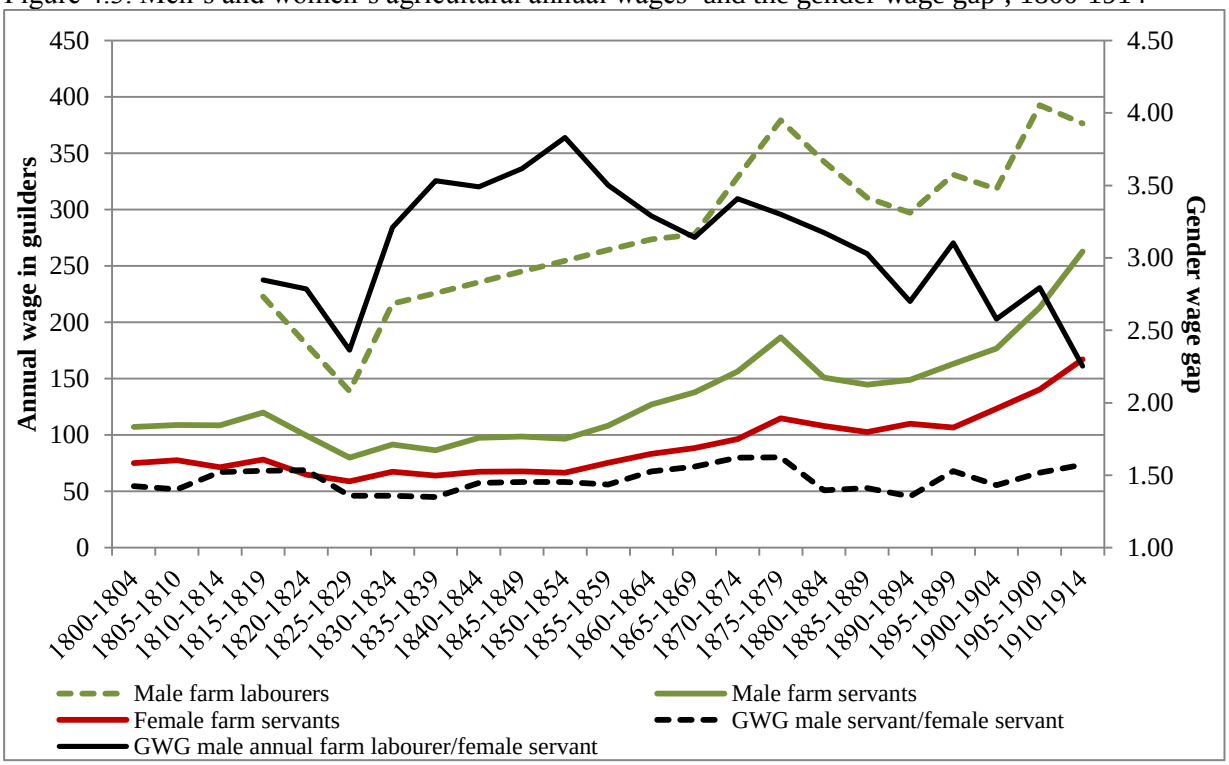
Figure 4.2. Casual agricultural wages[a] and the gender wage gap[b], 1800-1930[c]



[a] For both men's and women's wages, the data from the period 1865-1879 have been interpolated.
[b] The gender wage gap is the male wage divided by the female rate. NB: the higher the outcome, the larger the gap.
[c] See Tables A4.6 and A4.7 for the data
Source: Dutch wage series (Boter)

The developments of annual nominal wages and the GWG are displayed in Figure 4.3. The male and female servants' wages remained stable during the first half of the nineteenth century but from the 1860s onwards they started to improve rapidly until circa 1880 after which they briefly dropped to the same level as in 1870. From the 1890s to at least the 1910s, farm servants' wage increased faster than ever before. Farm labourers' wages were significantly higher than those of male farm servants (which may partially be explained by the unregistered help of women and children), but they followed more or less the same trend until the 1890s. Thereafter, they started to converge.

Figure 4.3. Men's and women's agricultural annual wages[a] and the gender wage gap[b], 1800-1914[c]



[a] For the period 1835-1864, I have interpolated the male farm labourers' wages.
[b] The gender wage gap is the male wage divided by the female rate. NB: the higher the outcome, the larger the gap.
[c] See Tables A4.8, A4.9, and A4.10 for the data.
Source: Dutch wage series (Boter)

These findings largely chime with the studies on Dutch agriculture discussed in section 4.2. First, men's and women's casual and annual wages dropped during the crisis of 1818-1835.[361] Wages got back to the pre-crisis level only during the 1850s. Second, the sharp drop of casual wages after 1880 reflects the decreasing demand for wage labour following on from the agricultural crisis of 1878-1895. For a brief period, the GWG closed but soon after started to widen again as it had done before the crisis. Third, the 'Servant Question', that is the increasingly pressing demand for co-resident domestic and farm servants, is clearly reflected by the rapidly rising wages from the 1890s onwards (Figure 4.3). Indeed, the agricultural survey from 1909 reports that female farm servants "demand more than before, they prefer working for urban households instead of farmers' households and they migrate to the cities, or they stay with their parents when they start working the field."[362] However, this rise was proceeded by decreasing wages of both male and female servants during the period

[361] This crisis was caused by failed grain harvests in Europe during the years 1816-1817. In the following years, a combination of British and French trade barriers, and a booming export of grain from southern Russia, caused the prices of Dutch grain to fall. See: van Zanden and van Riel, *The strictures of inheritance*, pp. 125-126.
[362] Staatscommissie voor den Landbouw, *Utrecht-Limburg*, p. 231.

1875-1890. The shock of the agricultural crisis caused all wages to temporarily drop. The same is true for annual farm labourers' wages that likewise decreased during the crisis. They did not, however, recover as well as the servants' wages did after 1890s.

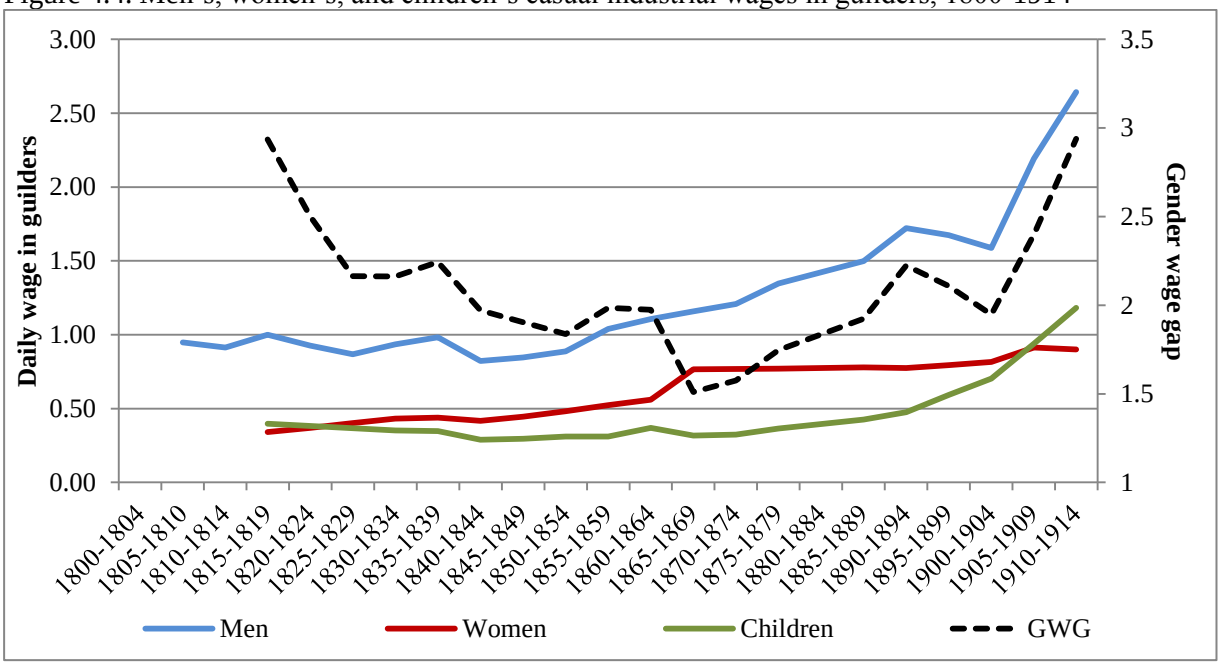
Now that we have a clear idea about the development of the male and female wage rates, we can further consider the implications of these developments for women's position in agricultural work based on the GWG.[363] The results shown in Figures 4.2 and 4.3 indicate that the relative position of women on annual contracts remained quite stable during the period 1880-1914. Over the nineteenth century, the GWG between male and female farm servants' wages widened from circa 1.4 to circa 1.6 and somewhat closed from the 1870s onwards to circa 1.5 during the first years of the twentieth century. Although the difference with male farm labourers on annual contracts was much larger, this gap likewise closed from circa 4.0 around 1850 to circa 2.2 around the turn of the twentieth century. The gap between men's and women's casual wages stayed more or less on par with the gap between male and female farm servants' wages during the period 1800-1850. However, whereas the GWG in the latter group subsequently narrowed, the GWG in the former group widened. Thus, the position of female casual labourers deteriorated, while the position of female farm servants slightly improved relative to that of men.

Industry

Figure 4.4 shows the development of men's, women's, and children's daily industrial wages. Men's wages remained constant during the first half of the nineteenth century and started to rise from the 1850s onwards. Around the turn of the twentieth century, there was a small decrease but the rise continued afterwards and faster than ever before. Women's wages likewise remained stable during the period 1800-1850 but did not share the growing returns to labour enjoyed by their male colleagues during the subsequent period. Even during the first decades of the twentieth century women's wages had hardly increased compared to the 1860s. Children's wages were lower than women's but followed the same trend for the larger part of the research period and even surpassed women's wages during the first decade of the twentieth century. The development of the GWG in industry was considerably different from the more or less gradually increasing GWG in agriculture (Figure 4.2): in industry the GWG closed during the first half of the nineteenth century and widened after 1860.

[363] See Appendix 4.2 for the data.

Figure 4.4. Men's, women's, and children's casual industrial wages in guilders, 1800-1914[ab]



[a] For the following periods I interpolated the data. **Men:** 1865-1869;1875-1889. **Women:** 1820-1834; 1845-1859; 1875-1889; 1895-1899. **Children:** 1820-1834; 1845-1854; 1875-1879; 1895-1899; 1905-1909.
[b] See Tables A4.11, A4.12, and A4.13 for the data.
Source: Dutch wage series (Boter)

The trends shown in Figure 4.4 encompass wages for multiple types of industry. For men, most wages (23.8%) were earned in 'construction, public works and cleaning', followed by 'metal processing' (17.2%), 'textile industry' (15.7%) and 'leather, wax cloth and caoutchouc' (7.5%). For women, the vast majority of the wages was earned in the 'textile industry' (48.6%), followed by 'pottery-, glass-, chalk and stone production' (14.9%) and the 'apparel industry' (12.8%).[364] To explore the impact of the mechanization of the textile industry on the GWG, it is worthwhile analysing the textile wages separately.

During the period 1840-1869, both men's and women's textile wages increased gradually. During the subsequent period, they started to diverge: women's wages hardly increased whereas men's wages, at least until the 1890s, increased dramatically. The data can be disaggregated even further by distinguishing between male and female spinners and weavers. Table 4.3 shows the average wages and the GWG for three 5-year periods.

[364] See Tables A4.3, A4.4, and A4.5 for the number of observations (men, women, and children) per industrial group (as used in the 1899 census) per 5-year period.

Table 4.3. The gap between male and female spinning and weaving wages (in guilders per day), 1840-1894

	Spinners			**Weavers**		
Period	*Average day wage men*	*Average day wage women*	*Gender wage gap*	*Average day wage men*	*Average day wage women*	*Gender wage gap*
1840-1844	0.61	0.36	1.70	0.46	0.40	1.16
1860-1864	0.76	0.54	1.41	0.60	0.54	1.10
1890-1894	1.72	0.95	1.80	1.30	0.91	1.44

Source: Dutch wage series (Boter)

The GWG in both occupations closed during the period 1830-1860 and widened thereafter. The mechanization of the textile industry and the corresponding gender segregation partly explain this development. First, the closing of the GWG in weavers' wages had probably already started in the 1830s with the introduction of the flying shuttle. As discussed in section 4.2, this manually driven machine made weaving less burdensome with the result that weaving evolved from an exclusively male occupation to one that was performed by both sexes. Men and women operated the exact same machine at home and could therefore in theory generate the same output. Indeed, the gap between male and female weaving wages was only 1.10 in 1860. Later on, however, even though the steam-driven weaving looms were likewise operated by both men and women, the GWG had widened considerably by the 1890s because women normally operated fewer looms than men. This had not yet been the case with the flying-shuttle. Furthermore, it became harder for married women to find work as weavers since after the transition to steam power the production was transferred from the home to the factory. Therefore, the weaving wages observed in 1890 probably were mostly unmarried women's wages. Thus, the rejuvenation of female weavers contributed to the widening GWG as well.

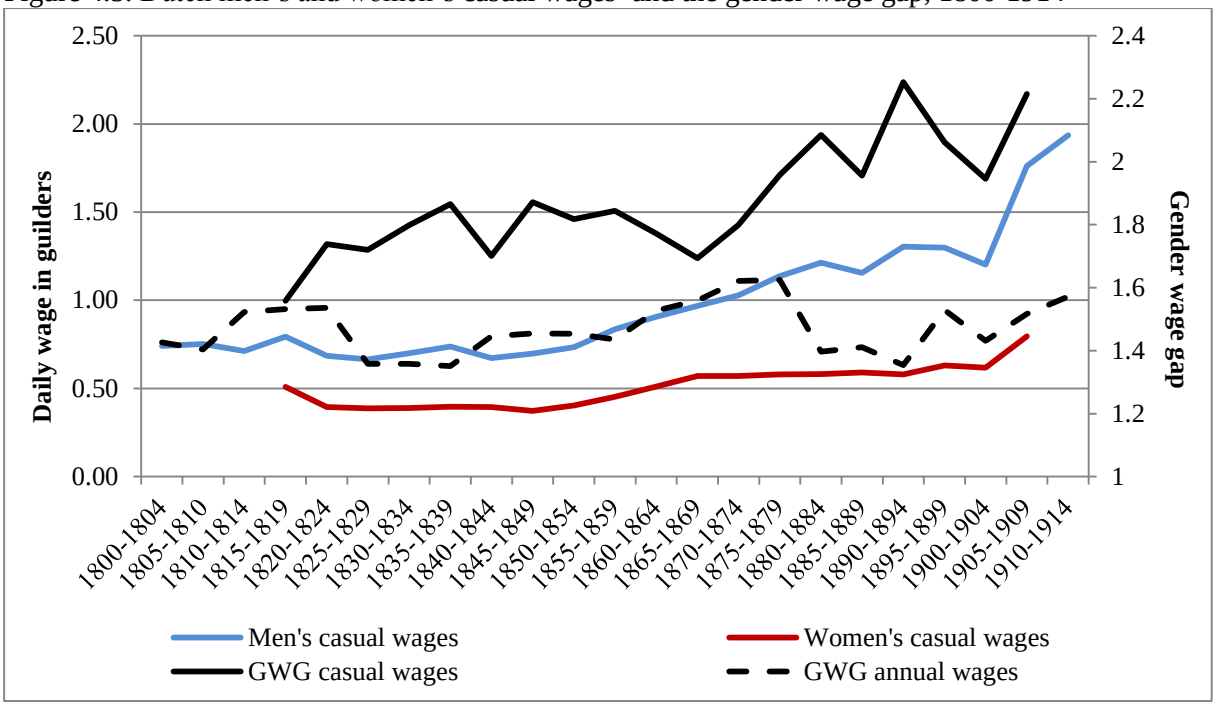
Two things stand out when comparing weaving with spinning wages: (1) the gap between male and female weavers' wages was much smaller than in the case of spinning and (2) the GWG in both occupations followed roughly the same trend over time. As discussed in section 4.2, spinning was mechanized earlier than weaving and consequently became less labour intensive. During the first half of the nineteenth century, therefore, the demand for weavers was much more pressing than the demand for spinners. Halfway through the nineteenth century, the steam-driven *selfactors* gained ground and were exclusively operated by men. Women, who had operated the more old-fashioned throstle-frames, were consequently pushed out of the spinning profession. Furthermore, spinning at home disappeared when steam power became commonly used. The masculinization of spinning is

an important explanation for the widening GWG in the textile industry during the second half of the nineteenth century. Here too, an increasing demand for young unmarried women and a decreasing supply of married women played a role in the widening GWG during the period 1860-1890.

4.5. Did the Dutch experience mirror the British experience?

On an aggregate sector-weighted level, Dutch men's wages remained stable during the first half of the nineteenth century and started to rise from the 1850s onwards (Figure 4.5). During the last decades of the nineteenth century this growth stagnated due to several economic crises and the decreasing demand for agricultural wage labourers, but wages continued to rise after 1900. Women's wages likewise remained stable during the period 1800-1850 but afterwards failed to keep up with men's wages. In contrast, their wages hardly increased until the turn of the twentieth century. We can thus conclude that the GWG in casual wages widened from circa 1.5 during the first decades of the nineteenth century to circa 2.2 during the first decade of the twentieth century. Figure 4.5 additionally includes the trend of the gap between male and female farm servants' wages which shows an adverse development. Whereas the GWG in casual wages widened, the GWG in annual wages likewise initially widened from 1.4 to 1.6 between 1820 and 1870 but thereafter closed to 1.5 in the 1900s.

Figure 4.5. Dutch men's and women's casual wages[a] and the gender wage gap, 1800-1914[b]

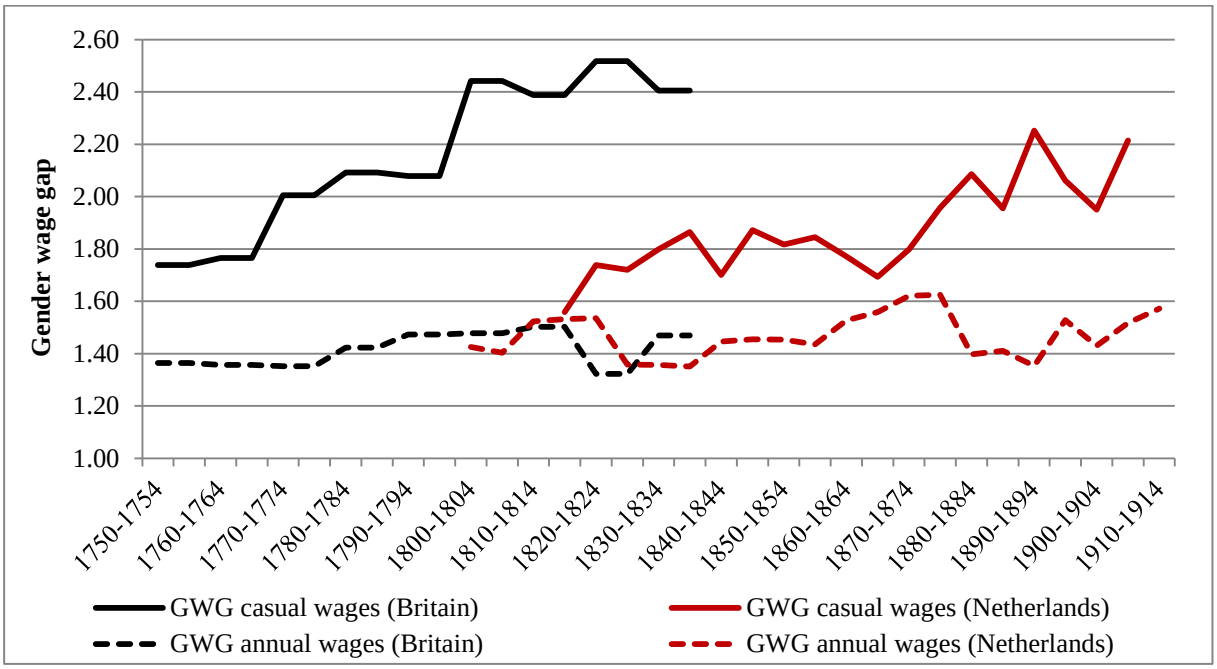


[a] Only co-resident farm servants' wages.
[b] The GWG of the period 1900-1904 is interpolated.
Source: Dutch wage series (Boter)

Let us now return to the central question of this chapter: whether we can find the same effects of industrialization on the women's labour market position in the Netherlands as can be found in Britain. Figure 4.6 shows the trajectory of the GWG in casual and annual wages in both countries. Because the offset of industrialization happened at different moments in time, Figure 4.6 shows the British developments during the period 1750-1850 and the Dutch developments in 1800-1914. The two starting points approximately mark the offset of mechanization in the textile industry and the early transition of production from the home to the factory. The two ending points mark the moment when virtually the entire textile production process was carried out by steam-driven machines, and, most importantly, when this production process relocated from the home to the factories.[365]

[365] As I will show in the next chapter, work in the home industry in various industrial branches still existed in the first decade of the twentieth century and was for many households an important additional source of income. Thus, the home industry never *entirely* disappeared.

Figure 4.6. The gender wage gap in British and Dutch casual and annual wages, 1700-1850 and 1800-1914[ab]



[a] The British trend is based on decadal averages instead of five-year averages and includes wages from all three economic sectors.
[b] The final data point of the British series has been excluded because it was exceptionally high. This made it harder to interpret the differences and similarities between the Dutch and the British trends. Thus, keep in mind that the British casual GWG further widened after 1840.
Sources: Humphries and Weisdorf, 'The Wages of Women', p. 432; Dutch wage series (Boter).

On an aggregate level, the Dutch GWG in casual and annual wages developed in a similar way to Britain: the position of women working on casual contracts deteriorated whereas women on annual contracts saw their relative position remain stable. Furthermore, the *extent* of the GWG was comparable, although in Britain the casual GWG was generally somewhat larger than in the Netherlands. Humphries and Weisdorf have concluded that unmarried women's opportunities in the labour market improved, because they generally worked on annual contracts, and that married women became more dependent on men because they usually worked for casual wages that became relatively less rewarding. I support this line of reasoning in the case of married women who indeed rarely worked on annual contracts. However, unmarried women's contracts were certainly not always annual.[366] In fact, virtually the only annual payments I found were those to co-resident (farm) servants. Thus, the lion's share of both unmarried and married female wage workers was negatively affected by the structural change of the nineteenth century.

[366] Humphries and Weisdorf stress that the method of linking the type of contract to marital status has its flaws since there were exceptions to the rule: Humphries and Weisdorf, 'The wages of women', p. 412.

To understand the forces driving the development of the British and Dutch GWG's, we need to consider changes on a sectoral level as well. Figure 4.4 has shown that Dutch male and female casual industrial wages remained stable during the first half of the nineteenth century and started to increase from the 1850s onwards. Whereas this rise continued for male labourers until at least the 1910s (with a minor setback around the turn of the twentieth century), women's wages stagnated until the beginning of the twentieth century. The GWG narrowed during the period 1800-1860 and thereafter started to widen. I have further shown that the GWG in weaving and spinning followed a similar trend when isolated from the other wages.

Based on these findings, I can now proceed to contemplate to what extent Dutch developments in the textile industry mirrored the British experience. There were two pivotal moments in the development of the textile industries in both countries. First, the introduction of the first manually driven machines in weaving and spinning which instigated the transition to the early factory system. In Britain, this era lasted from 1765-1790 in spinning and from 1760-1820 in weaving. In the Netherlands it was 1800-1860 and 1830-1880 respectively (see Table 4.2). The British and Dutch GWG's developed differently during these periods. Although Humphries and Weisdorf have not included spinners' wages in their analysis, they do conclude that "[t]he widening gender gap from around the 1760s coincides neatly with the onset of competition from spinning machinery and the catastrophic fall in spinners' potential earnings.[367] In contrast, Figure 4.4 and Table 4.3 show that in the Netherlands the GWG *narrowed* after the introduction of manually driven machines in both spinning and weaving. A crucial part of the explanation for this difference is that in the Netherlands, the period in which manually driven machines were used was much longer than in Britain, especially in spinning. Therefore, home industrial workers were not immediately out competed by factory workers.

The second turning point was marked by the replacement of manually driven machines by steam-driven and water-driven machines and the concurrent disappearance of the home industry. In Britain, this process started in spinning around 1790. The GWG had already widened before this moment, but this development clearly accelerated after 1790 (Figure 4.6).[368] In the Netherlands, steam-power came into general use in 1860 after which the GWG in casual industrial wages widened from 1.5 in 1860 to almost 3 in 1910. In

[367] Humphries and Weisdorf, 'The wages of women', p. 428.
[368] Note that this process started somewhat later in weaving (Table 4.2). NB: the home industry did not entirely disappear: in Tilburg, weaving at home was still done at the beginning of the twentieth century.

weaving it widened from 1.10 in 1840 and 1.44 in 1890, and in spinning from 1.41 to 1.80 during the same period (Table 4.3). The explanation for this trend is twofold. First, because of the transition to the factory system, married women were increasingly excluded from textile work and a growing share of the female factory workers was unmarried. This rejuvenation of the female labour force prompted the widening of the GWG. Second, ideas about 'men's work' and 'women's work' were exported from Britain to the Netherlands which resulted in a similar gender segregation on the work floor.[369]

In Dutch agriculture, women's casual wages were remarkably rigid throughout the entire research period whereas men's casual wages increased over time. Only during the agricultural crisis of 1878-1895 men's wages briefly decreased, but they started to rise again around the turn of the twentieth century. This stagnating growth can further be explained by the decreasing demand for agricultural wage labourers due to the growing importance of small-scale farms. Although both male and female agricultural wage labourers' wages were negatively affected by the crisis and de-proletarization, women were hit harder judged by the widening GWG in casual wages. Many men and women who previously worked as agricultural wage labourers switched back to work on their own farm or the industrial sector. Conversely, male and female farm servants' annual wages both continued to rise gradually throughout the entire research period because of the increasing demand for co-resident farm servants. In this segment of the labour market, women's relative position somewhat improved seeing that the GWG narrowed after 1880.

In Britain, wage labour remained important during the entire nineteenth century. Still, the GWG developed similarly to the Netherlands. In most regions the demand for female agricultural wage labourers decreased and the GWG widened. However, in Britain the large-scale farms – that had originated as a result of farm amalgamation and the enclosure movement – flourished whereas in the Netherlands large farms lost importance from the 1880s onwards and the opportunities to work in a private business expanded thanks to, among other things, farmers' cooperatives. Thus, looking beyond the development of the wage labour market shows that *married* women's opportunities in Dutch agriculture probably did not deteriorate as much as wages suggest. However, we will have to learn more about women's income and their (legal) position on a family farm in order to know more about whether this type of work was an improvement in comparison with wage labour. Unmarried women remained more dependent on wage labour – which could be lucrative in the case of

[369] Among others: de Groot, *Fabricage van verschillen*; de Groot, 'Aanlappers en drossters'.

(domestic) service – since they usually did not possess their own farm. Seeing that in Britain a larger share of the agricultural labour force depended on wage labour, women may have been worse off than in the Netherlands.

4.6. Conclusions

This chapter has explored the changing position of Dutch women in the agricultural and industrial labour markets. To this end, I have constructed the first long-term women's wage series of the nineteenth- and early-twentieth century Netherlands. The most important question was whether we can find similar effects of industrialization on the women's labour market position as can be found in Britain, even though the timing and pace of industrialization were different.

The impact of mechanization of the textile industry on women's position in the Dutch and British labour markets was comparable due to the custom of gender segregation of the production process and the expansion of the factory system. In both economies, women's position deteriorated and the opportunity costs of women's labour increased after steam-driven machinery came into general use. The difference is that this shift to steam power was preceded by a narrowing GWG in the Netherlands after the introduction of manually driven machinery, which was not the case in Britain where the GWG had widened from the very first signs of mechanization in 1760. In the agricultural wage labour markets in both countries, women's position likewise deteriorated. However, in the Netherlands working in a private business became more feasible after 1880, most importantly for married women, whereas this was not the case in Britain. Agricultural women were therefore probably better off in the Netherlands.

In general, structural change and the corresponding demand for labour have been pivotal factors in determining women's position in the labour market. The next chapter will consider these findings in light of women's position in the household economy.

Chapter 5: Household living standards and the transition to a male breadwinner society, 1800-1914

5.1. Introduction

Long-term analyses of historical living standards are often based on men's wages. In the past decade, Robert Allen's method of calculating 'welfare ratios' that show whether one man's wage could purchase sufficient consumption baskets for himself, his wife, and two children, has been adopted by scholars researching various parts of the world.[370] This method is worthwhile because it enables them to "maintain the international comparability and temporal consistency of [...] real wage series."[371] Indeed, thanks to this method, we now better understand the world-wide development of living standards and inequality during the past four centuries.

This strand of literature has been criticized because it is built on flawed assumptions about household income, family size, and consumption.[372] First, women's and children's contributions and the changes inherent to the household life-cycle are not accounted for. Although studies based on men's wages do not presume to capture the entire household income, they usually do claim that men's wages reflect general *trends* in household living standards. I argue that the results based on such research do not necessarily reflect changes at the household level because women's and children's incomes, that could make the difference between life below or above the subsistence level, developed differently.[373] Furthermore, the number and age of children, and hence their contributions to the household income, changed during the household life-cycle.[374] Second, income from other resources than full time wage labour, such as self-employed agriculture, were indispensable for many households and should be included in research on living standards. Third, money is not the only indicator of living standards. The consumption of Z-commodities that could not be purchased on the

[370] Allen, 'The great divergence'; Clark, 'Farm wages'; Frankema and van Waijenburg, 'Structural impediments'; Allen et al., 'Wages, prices and living standards'; Arroyo Abad, Davies, and van Zanden, 'Between conquest and independence'; de Zwart, *Globalization*; de Zwart and van Zanden, 'Labor, wages, and living standards'; Allen, 'The great divergence'.
[371] Frankema and van Waijenburg, 'Structural impediments', p. 900.
[372] Among others: Horrell and Humphries, 'Women's labour force participation'; Humphries, 'The lure of aggregates'; Horrell, Humphries, and Sneath, 'Consumption'.
[373] See for instance: Horrell and Humphries, 'Old questions'.
[374] Humphries, 'The lure of aggregates', pp. 703-704.

market, such as a clean home and nutritious meals, all contributed to the standard of living. In short, men's industrial wages are an incomplete measure of household living standards.

This brings me to a related problem. Our lack of knowledge about total household income has clouded our understanding of the transition to a 'male breadwinner society'. In western Europe during the second half of the nineteenth century, the industrious household – in which every household member provided an income – was transformed into a more specialized 'breadwinner-homemaker household' in which men provided an income, women exclusively performed domestic chores, and children went to school.[375] Most research on this topic has not been sufficiently linked with household income and the household life-cycle. This is, however, crucial to be able to understand when and where households became financially capable of financing a breadwinner-homemaker household.

The present research aims to cast light on the timing of the transition to a male breadwinner society in the Netherlands by exploring the development of agricultural and industrial households' living standards during the long nineteenth century.[376] To this end, I provide a more adequate picture of household income by including women's and children's wages, and incomes from self-employed agriculture and the home industry into the analysis. My key finding is that the realization of a breadwinner-homemaker household was possible in industrial households decades before it was possible in agricultural households. Men's full time industrial real wages could sustain an entire household after 1880, whereas agricultural real wages lagged behind and only increased modestly. Still, in many industrial households around 1900, the husband's wage was not the sole source of income.

This chapter expands on the questions introduced in the previous chapters about the impact of social norms and structural change on women's roles in the labour market and the household economy. Chapter 2 has shown that the demand for labour was the most important determinant of *unmarried* women's labour force participation. Chapter 3 has demonstrated that by the end of the nineteenth century, social norms regarding domesticity and good housewifery were widespread, but that many married women combined paid work with domestic work to achieve this ideal. In chapter 4 I have presented the first nineteenth-century women's nominal wage series to explore women's changing position in the labour market. The present chapter employs the research results from chapter 4 and follows its quantitative

[375] de Vries, *The industrious revolution*, 186-237; Janssens, 'The rise and decline', p. 3; Horrell and Humphries, 'The origins'.

[376] This chapter explores the purchasing power of wages, or in other words, households' material living standards. Living standards also entail emotional well-being, health, happiness, etc. Throughout this chapter, I principally use the term living standards to refer to *material* living standards.

approach to investigate if and when households became financially able to relinquish the wife's wage income (if they would prefer to do so).

The structure of this chapter is as follows. Section 5.2 gives an overview of the historiography on the development of Dutch real wages and the rise of the male breadwinner society in western Europe. Furthermore, it expounds the most prominent critiques on the use of men's real wages as the sole indicator of living standards. Section 5.3 considers the methodology and sources of this research. Section 5.4 analyses the welfare ratios of the nominal wages presented in chapter 4 and considers the changes during the household life-cycle. Section 5.5 presents empirical evidence from household budgets around 1900 about household income composition. Section 5.6 estimates the incomes from self-employed agriculture and wage labour for an agricultural and an industrial prototype of households. Section 5.7 concludes.

5.2. Real wages and household labour allocation

Real wages and methodological critiques

GDP and real wages are two commonly employed measures of living standards. GDP provides an aggregate picture, not allowing for analyses of regional and social variation. Real wages are an alternative measure that allow for both aggregate and disaggregate analyses. Indeed, it has proven a useful tool for global comparative research on historical living standards.[377] Both methods have yielded dissimilar results. For instance, Jan Luiten van Zanden has shown that during the period 1815-1860, the differences between Dutch and Javanese GDP increased whereas real wages converged.[378] More recently, Pim de Zwart and Jan Luiten van Zanden have constructed a real wage series for Java for the period 1680-1914 and they have concluded that Javanese living standards did not systematically decrease during the nineteenth century.[379]

Nowadays, the welfare ratio method developed by Robert Allen (see section 5.3) is generally preferred over the use of GDP as a measurement of living standards. Notwithstanding the added value of Allen's method, it does have various flaws. First, anthropometric research on the height and body weight of nineteenth-century people has shown that the amount of calories in one bare bones consumption basket could not have

[377] Searle, 'Is there anything real'.
[378] van Zanden, 'Rich and poor'. See also: Humphries and Weisdorf, 'Unreal wages?'.
[379] de Zwart and van Zanden, 'Labor, wages, and living standards', p. 231.

sustained a labourer performing physical work.[380] Allen acknowledges this critique and has composed 'respectability baskets' that contain more calories.[381] Still, the use of the bare bones consumption basket as a deflator of wages is widespread.

Second, women and children have virtually always, in one way or another, contributed to the household income. Because quantifying the history of women's and children's work has been hampered by all sorts of difficulties, information about their remuneration is still largely excluded from research on historical living standards. Richard Wall, among others, has argued that married women were rarely full time housewives and that "work tasks performed for the family in and around the household were very likely to involve husband and wife working alongside each other."[382] More recent works, on European regions and beyond, likewise emphasize this point.[383]

Third, the welfare ratio method does not account for changes during the household life-cycle. Allen's assumption that the average household contained two dependent children constantly over time skews the findings.[384] Working-class households in nineteenth-century England on average consisted of three to four children and their parents. Furthermore, the composition of the household was ever changing with all the consequences for living standards that this entailed. Eric Schneider found that in eighteenth-century England, the median welfare ratio of the entire life-cycle of a married couple with nine children was 1.69, which is significantly lower than the 2.5 Allen proposed for the same period. Initially, before any children were born, the welfare ratio of Schneider's household was higher than four, then dropped from the moment children started to arrive to circa 1.5, and finally began to increase again to a little more than 2.5 when the children started to leave the household.[385]

Finally, increasing wages did not necessarily mean increasing living standards since households' living environment contributed to the standard of living as well. If, for instance, a family moved to a city to work in a factory their wage income probably increased. However, their working and living environment may have deteriorated seeing that mortality rates were, at least until the 1880s, higher in cities than in the countryside.[386] Furthermore, they were

[380] Horrell, Meredith, and Oxley, 'Measuring misery'; Allen, 'The high wage economy'.
[381] Allen, 'The high wage economy'; Allen, *The British industrial revolution*.
[382] Wall, 'Some implications', p. 325.
[383] Humphries and Sarasua, 'Off the record' (England); Muñoz Abeledo, 'Women in the rural'; de Haas, 'Measuring rural welfare' (colonial Africa); van Nederveen Meerkerk, 'Vergelijkingen en verbindingen' (Dutch East-Indies); Schmidt, 'The profits' (early-modern Netherlands).
[384] Humphries, 'The lure of aggregates', p. 700.
[385] Schneider, 'Real wages', p. 104. See for similar research on Dutch households: Paping, 'Family strategies, wage labour'; Knotter, 'Gezinsarmoede-gezinsarbeid'.
[386] Szreter and Mooney, 'Urbanization'; Drukker and Tassenaar, 'Paradoxes', p. 352.

likely to lose access to other resources, such as subsistence agriculture. Therefore, we need to look beyond wage income to better understand living standards.

Changing consumer preferences and household labour allocation

Our incomplete knowledge about household income has also obscured our understanding of the transition to a male breadwinner society. Jan de Vries has argued that changing consumer aspirations have shaped the development of household labour allocation. His influential work on the 'industrious revolution' argues that during the early modern period, households increasingly desired to consume market produced goods. To this end, all members of the household engaged in paid work.[387] This development instigated the industrial revolution because the demand for goods was higher than the supply which prompted investments in labour-saving production techniques. During the second half of the nineteenth century, (men's) wages started to rise and household consumer aspirations expanded to commodities that could not be purchased on the market, such as health, hygiene, a better home environment, and good nutrition. Thus, instead of money, households needed increasing input of *domestic* work. Specialization within the household, with the husband going out to work and the wife committing to housewifery, was necessary to achieve this.[388]

De Vries argues, based on Gary Becker's work on household economics and the allocation of time, that the newly desired 'Z-commodities' from the 1850s onwards required more input of domestic work relative to input of money.[389] He points out that in times of rising wages, this seems like a discrepancy:

> After the mid-nineteenth century, real wages began to rise substantially and permanently, which, *ceteris paribus*, would have induced a substitution away from household time and towards goods in the production of the consumed Z-commodities – an intensification of the old industrious household. But, simultaneously, consumers began to shift demand toward a set of Z-commodities that could be achieved only via heavy inputs of household labor. [...] The major advances of living standards that we associate with modern society were achieved not *directly* by industrial and market production but *indirectly* by the

[387] Jan Luiten van Zanden has argued that the increasing labour input was not a result of changing consumer aspirations but rather of falling real wages during this period (van Zanden, 'Wages and the standard of living'). Much more can be told about De Vries' 'Industrious Revolution'. However, for the present research the research on nineteenth-century consumer changes are more relevant.
[388] de Vries, *The industrious revolution*.
[389] See section 1.4 for a brief overview of Becker's work within the movement of the New Household Economics.

household, which diverted goods produced by the market sector toward consumption objectives they would not have served "naturally".[390]

It is, as De Vries continues in his argument, no discrepancy at all. At a certain level of monetary income the household could buy all the necessary goods on the market. If this point was exceeded, households could further improve their living standards by redeploying married women's time from market work to domestic work. In other words, households needed to have the financial space to create a breadwinner-homemaker type of labour division.

The growing importance of health and hygiene has also been emphasized by Joel Mokyr who has argued that the dissemination of knowledge about health and diseases increased the burden of domestic tasks and instigated the withdrawal of married women from the labour market, or rather caused a delay in their widespread labour market participation.[391] The health revolution of the nineteenth century, as this increasing knowledge is normally referred to, was a success thanks to the interaction between the demand for and supply of health provision. The reform movement was imposed by higher social classes by 'teaching' the working class how to live healthily and by providing public works such as sewage systems. At the same time, improvements in health provisioning were enhanced because they were positively received by the working class.[392]

During the transition phase from the industrious to the breadwinner-homemaker household, women's incomes decreased whereas those of children increased. Thus, children were a crucial factor during the transition phase. Furthermore, the stage of the household life-cycle influenced households' possibilities regarding labour allocation: it may have been impossible for many households to relinquish the wife's income when there were many small children, but not once those children had grown up and could provide an income themselves.[393]

There is still much that is unclear about the timing and pace of the transition to a male breadwinner society in western Europe, and in the Netherlands in particular. First, long-term women's and children's wage series have hitherto remained absent which has hampered a

[390] de Vries, *The industrious revolution*, p. 189.
[391] Mokyr, 'Why "more work for mother"?', p. 34'. See also chapter 3 in this book for Mokyr's theory about the impact of knowledge on household labour allocation.
[392] de Vries, *The industrious revolution*, pp. 191-198, pp. 191-198.
[393] Hugh Cunningham has nuanced the idea of a substitution of married women's work for children's work: Cunningham, 'The decline'. See also: Schneider, 'Real wages'; Stanfors, 'Women in a changing economy', p. 6.

complete understanding of the opportunity costs of women's labour. I use the wage series I have presented in chapter 4 to estimate the possible wage income from *all* household members which will provide insight into the reasons why households chose to allocate their labour the way they did. Second, the transition depended on local economies. We would expect an earlier transition to a breadwinner-homemaker household in high-wage economies than in low-wage economies. Furthermore, a regional approach is important because households' accessibility to resources other than wage labour depended on their environments.

5.3. Methodology and sources

For the present research, I have investigated households that consisted of a husband, a wife, and (eventually) children. Furthermore, I have assumed that the husbands were employed full-time. As such, the prototypes of households under scrutiny are not representative for *all* households in the Netherlands. For instance, there were single men and women without children, widows and widowers, or children who had lost both their parents and were trying to muddle through on their own.[394] Also, many households had to face (partial) unemployment of one or more of their wage earners at some point. In what follows, I elaborate on my methodology.

Welfare ratios

First, I have recalculated the number of baskets that Allen's household (a husband, a wife, and two children younger than 12) needed, and adjusted the formula to determine their welfare ratios. Let me first explain Allen's method in more detail. He uses male unskilled construction workers' wages and standardized consumption baskets that contain the minimum annual quantity of food and non-food products one adult man required – based on the necessary nutrients, local cuisine and climate.[395] The welfare ratio is determined by dividing an annual wage (250 times one day wage) by 3.15 times the price of an annual consumption basket. The number 3.15 is based on the assumption that one household consumed three male consumption baskets per year because women and children consumed less than men. The

[394] See for instance: Humphries, *Childhood and child labour*.
[395] Allen, 'Poverty lines', p. 12.

remaining 0.15 includes the cost of rent into the analysis.[396] Thus, one male wage had to be sufficient to buy at least three baskets to feed a family of four. An outcome lower than 1 indicates that the household lived below the subsistence level.[397]

For this first step, I have used the same household composition and the same formula but with an increased number of consumption baskets to arrive at the welfare ratios of men's, women's, and children's wages. This adaptation derives from Jane Humphries' recalculations of the caloric requirements of men, women, and children from several age groups that she bases on the recommendation by the Food and Agriculture Organization of the United Nations (FAO).[398] The results are displayed in Table 5.1. The second and third column show the caloric requirements following Allen's reasoning that a man and a woman together needed to consume 1.9 baskets, meaning that one woman alone needed 0.9 basket. I multiplied the caloric requirement of one man (1,941 calories) with 0.9 to come to the requirement of one woman. Furthermore, Allen suggests that a household with one man, one woman, and two children together consumed 3 baskets. Since a man and a woman together consumed 1.9 baskets, 1.1 baskets are left for the children (0.55 per child). To arrive at the caloric requirement of a child, I multiplied the caloric requirement of one man with 0.55.

Finally, I have adjusted the number of baskets required per person by dividing Humphries' estimations by Allen's estimations and by multiplying the outcome with 0.8 of Allen's estimations (because 80% of one basket consisted of foodstuffs).[399] I then added 20% of Allen's estimations to make the adjusted baskets complete again. Note that I have calculated the average number of baskets for children below 12, not accounting for their specific age. I assume that children older than 12 consumed as much as adult women.

To come to Dutch men's, women's, and children's welfare ratios, I have deflated the nominal annual wages – 250 times a day wage – by the price of 3.83 consumption baskets (one adult man, one adult woman, and two children younger than 12). To include rent, I added 14% of the total expenditure for industrial households and 8% for the agricultural households since rent was usually lower in the countryside than in urban regions.[400]

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[396] Adding 5% of the cost of one basket is rather arbitrary. The actual share of total household expenditure on rent was usually much larger. See for instance: Lesger and van Leeuwen, 'Residential segregation'.
[397] Among others: Allen, *The British industrial revolution*.
[398] Humphries, 'The lure of aggregates'. For more literature about the caloric intake of men and women see for instance: Nicholas and Oxley, 'The living standards'.
[399] Allen, *The British industrial revolution*, p. 36.
[400] These numbers are derived from the analysis of household budgets that will further be discussed in section 5.5.

Table 5.1. Adjusted number of calories and consumption baskets

	Caloric requirement (Allen)[a]	**Number of baskets (Allen)**	**Caloric requirement (Humphries)[b]**		**Adjusted number of baskets**
Man	1,941	1.00	2,650 – 2,950	(2,800)	1.35
Woman	1,747	0.90	2,250 – 2,500	(2,375)	1.16
Boy aged 8	1,068	0.55	1,762	(1,334)	0.66
Boy aged 6	1,068	0.55	1,525	(1,334)	0.66
Girl aged 4	1,068	0.55	1,200	(1,334)	0.66
Girl aged 1½	1,068	0.55	850	(1,334)	0.66

[a] Allen has not explicitly proposed these amount of calories for women and children. See the text for more information.
[b] The second column shows the average of the estimated range of required calories. For children, it shows the average requirements of children below 12.
Sources: Allen, *The British Industrial Revolution*, pp. 33-42; Humphries, 'The Lure of Aggregates', p. 703.

Welfare ratios and the household life-cycle

The second step is to account for the changing living standards throughout the household life-cycle. For this step I calculate the welfare ratios by deflating the total household income with the price of the amount of baskets required at a specific moment in time. The formula is therefore not constant: it changes according to the stage of the household life-cycle.

I made various assumptions about the changing household composition through time. I assume that the life-cycle of one household lasted 40 years and can roughly be divided into four stages: newly-wed couples without children, couples with children younger than 12, couples with children older than 12, and elderly couples without co-resident children.[401] Furthermore, I assume that all the wage earners of the household either worked in industry or in agriculture. To check the credibility of this assumption, I have consulted the circa 2 million Dutch marriage records (analysed in chapter 2) to determine the most common combinations of married men's and women's occupations through time.[402] I have excluded the records in which no information was available for one or both of the spouses. Furthermore, although there were many brides listed as domestic servants, I have excluded them because it is unlikely that they continued this type of work during marriage.[403] Indeed, I found that normally, the bride and the groom either worked in the same sector, or that the bride stated she did not have an occupation.

[401] See Table A5.3 in Appendix 5.3 for the changing composition and the number of required consumption baskets of the household per year.
[402] See Appendix 5.2 for the top-10 of most common couples in the marriage records.
[403] Future research on premarital savings will have to show the significance of servants' wages before marriage for the household during marriage. For an estimation of servants' premarital savings during the eighteenth century see: Boter, 'Marriages are made in kitchens'.

For the second phase I use the average total fertility rate (TFR) in the Netherlands between 1900 and 1914: during this period on average four children were born to one woman in her lifetime.[404] The disadvantage of using TFR is that fertility changes over time and that it does not account for regional variation in child mortality and fertility.[405] However, research has shown that child mortality decreased drastically during the nineteenth and early-twentieth centuries.[406] Therefore, a situation in which all children lived until adulthood was, especially around 1900, not unlikely. Furthermore, using the national average is justified because I also use national average wages for the calculation of welfare ratios. Note that during this second phase, women required even more calories because most of the time they were either pregnant or breastfeeding.[407] For the third phase I suppose that the four children from phase 2 had all grown up to adolescents older than 12. During the final phase all the children had left the household.

To show the changing living standards throughout the life-cycle, I outline two possible scenarios: one in which the husband's wage was the sole source of income, and one in which the wife and children older than 12 earned wages as well.[408] These two situations represent the lower-bound and the upper-bound estimate of household income. In neither situation did children younger than 12 earn wages. After all, legislation implemented in the 1870s prohibited children's factory labour before this age. This was different for agriculture, where legislation regarding working hours remained entirely absent until, in 1901, education for children between 6 and 12 became compulsory. Still, after 1901 farmers' children were still allowed time off school to work the land during the harvest months.[409]

To emphasize changes through time, I show the changing living standards for households during the periods 1840-1880 and 1870-1910. It will become clear that the lower-bound scenario was unrealistic because welfare ratios of most households would drop below the subsistence level during the second and the third phase of the life-cycle. This was especially true during the former period.

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[404] van der Bie and Smits, *Tweehonderd jaar statistiek*, p. 15. NB: the TFR of earlier periods was not included.

[405] See for instance: Buissink, 'Regional differences'; Kok, Vandezande, and Mandemakers, 'Household structure'; van Poppel, *Trouwen in Nederland*; Schoonheim, *Mixing ovaries*.

[406] van Poppel, Schellekens, and Liefbroer, 'Religious differentials'; van Poppel et al., 'Mortality decline', p. 312.

[407] Humphries, 'The lure of aggregates', p. 701.

[408] To include children's earnings from industrial work, I use the wages presented in the previous chapter. For agriculture, I have calculated the difference between men's and children's wages in industry and have multiplied the male agriculture wages with this percentage to come to an estimation of children's possible contributions in agricultural households.

[409] Schenkeveld, *Het kinderwetje*.

Total household income and consumption

The final step is to estimate the value of resources other than full time wage labour. Bits and pieces of information from various sources together paint a reliable picture of household income composition. First, from household budgets that were composed around 1900 we get an idea about the importance of additional sources of income.[410] The budgets were composed to map the housing and working conditions of labourers that had deteriorated due to the rapid urbanization and abominable working conditions in factories following from industrialization.[411] We need to keep in mind that household accounts can lack precision because keeping track of all income and expenditure for the period of one month or one year was a burdensome task. Furthermore, the representativeness of the households is questionable because almost all of them had an employed husband.[412]

The budget studies enable an analysis of the difference between the husband's wage income and the total household income. I calculate the welfare ratios for each individual household according to the household composition and the adjusted number of baskets presented in Table 5.1. Next, I compute the households' welfare ratios based on the *entire* income, including the wages from women and children and the profits from their own land. The budget studies further provide information about the share of various resources of the total household income. The results will serve as a point of departure for a more aggregate analysis of household income composition. For industrial households I will, among other things, quantify the information subtracted from the 1890 labour surveys that have been extensively discussed in chapter 3. For the agricultural households, the detailed survey on the living standards of agricultural labourers from 1909 is my most important source. From these surveys I subtracted information about the profits from land cultivation and work in the home industry, the size of the land and the cattle available to households, and the price of land lease.

[410] In the past years, household budgets have been increasingly employed by historians researching household consumption and living standards. See for instance van Nederveen Meerkerk and Boter, 'Colonial connections'. (the Netherlands and the Netherlands-Indies); Vecchi and Coppola, 'Nutrition and growth' (Italy); Saaritsa and Kaihovaara, 'Good for girls' (Finland); Gazeley and Newell, 'Urban working-class' (Britain).

[411] Such growing concerns must be regarded against the background of the 'Social Question' following from industrialization and urbanization. The sentiment that something needed to be done gained ground and during the last decades of the nineteenth century several laws were implemented to protect industrial labourers, mostly women and children, from dismal working conditions. Conversely, Van Zanden and Van Riel have argued that the 'Social Question' was actually not so much about combating poverty but rather about the consideration that soon, "those labourers [i.e. the working class] would get their say in politics, and that ways had to be found to integrate this group into the existing political system" (van Zanden and van Riel, *The strictures of inheritance*, p. 246).

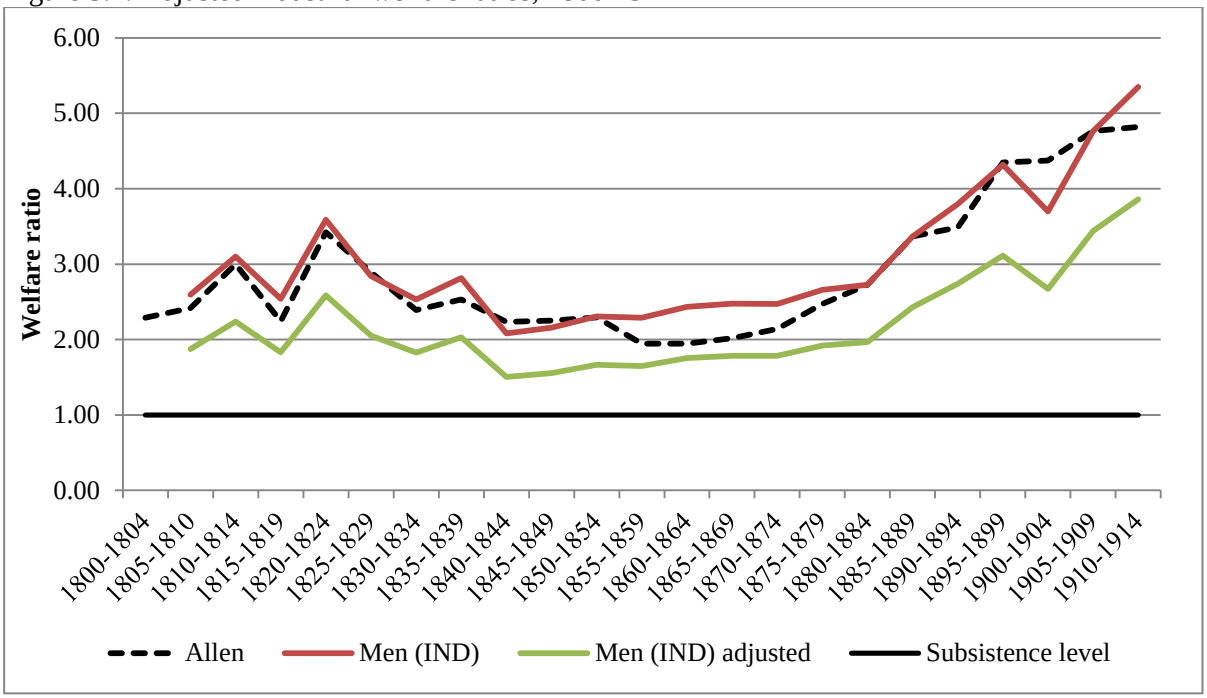
[412] A few widows' households were included.

5.4. Dutch welfare ratios throughout the household life-cycle

Adjusting the caloric intake

Figure 5.1 demonstrates the implications of the adjusted number of baskets (Table 5.1). It shows (1) the trajectory of unskilled male construction workers' real wages as calculated with Allen's method – based on 3.15 baskets for a family of four –, (2) the welfare ratios of the men's industrial wages that are included in my own dataset computed with Allen's formula, and (3) the welfare ratios of the latter wages based on the adjusted number of consumption baskets per person and a higher expenditure on rent.[413]

Figure 5.1. Adjusted industrial welfare ratios, 1800-1914[ab]



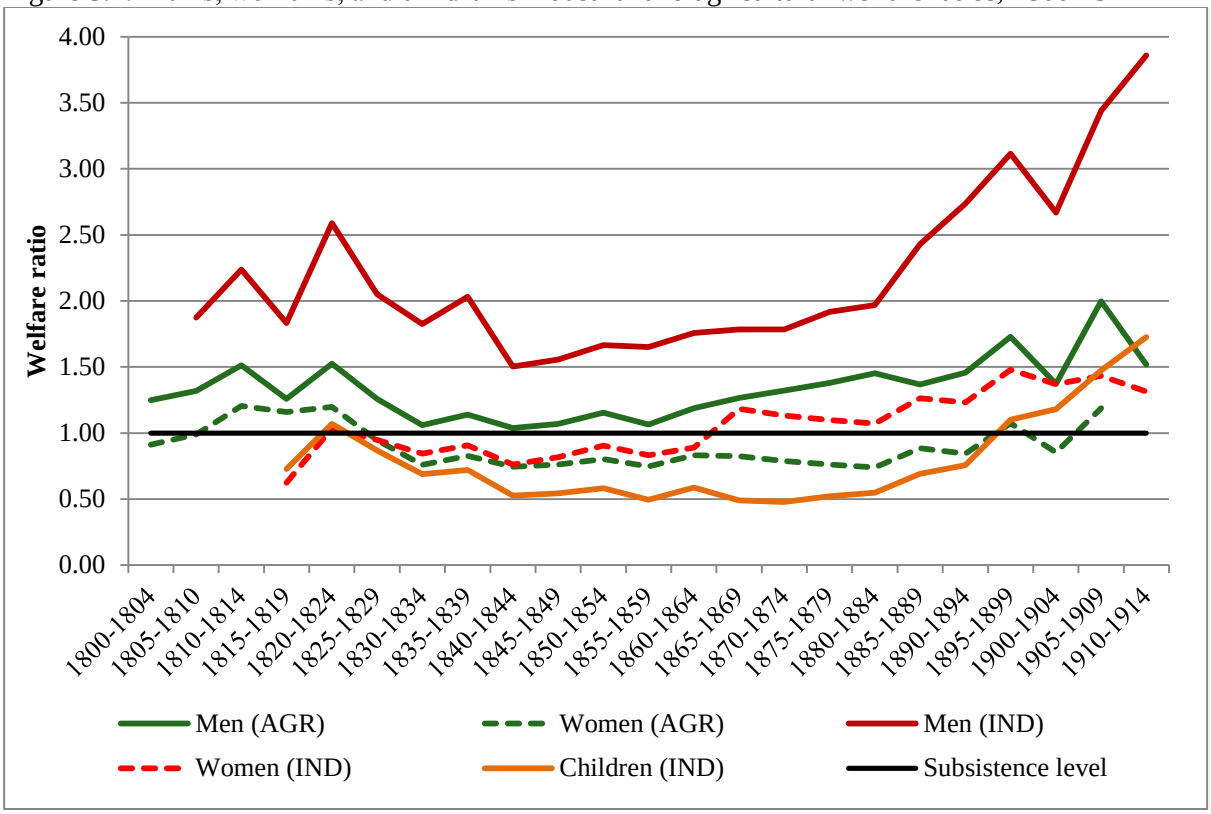
[a] See Table A5.1 for the data.
Source: Dutch wage series (Boter); Allen, *Amsterdam*.

Men's casual industrial wage trend as calculated with Allen's formula closely resembled the Amsterdam construction workers' trend (henceforth: Amsterdam trend). The welfare ratios dropped from 3.5 in 1820 to a little more than 2 in 1840. Thereafter, they gradually rose until the 1880s after which this growth accelerated until in 1905, a welfare ratio of almost 5 was reached. The adjusted male industrial trend was on average 0.77 points

[413] NB: these adjustments alone do not change the trends and international comparisons, merely the extent of the welfare ratios.

lower than the Amsterdam trend. Still, the conclusion upholds that from the 1880s onwards the purchasing power of men's industrial wages increased rapidly. Figure 5.2 shows that the welfare ratios of agricultural wages and all the women's and children's wages were much lower.

Figure 5.2. Men's, women's, and children's industrial and agricultural welfare ratios, 1800-1914[abc]



Source: wage series (Boter); Allen, *Amsterdam*.
[a] See Table A5.1 for the data.
[b] The welfare ratios have been calculated by dividing 250 times the day wage with the price of 3.83 baskets and an additional share for rent.
[c] The data for women's agricultural wages for the period 1900-1904 are interpolated based on the development of men's agricultural wages.

Women's industrial welfare ratios stayed slightly below 1 during the first half of the nineteenth century. From the 1860s onwards, they increased – but only modestly compared to the men's ratios – to 1.18 in 1865 and 1.43 in 1905. Especially after 1880, the purchasing power of men's and women's wages diverged significantly. Female industrial labourers clearly did not share the joy of rising wages with their male colleagues. Children's welfare ratios remained below 1 for the better part of the nineteenth century but passed subsistence

level in 1880 and even managed to catch up with those of adult women during the first decade of the twentieth century.[414]

Men's welfare ratios in agriculture were significantly lower than in industry but followed more or less the same trend until 1880. The two trends began to diverge from this moment onwards until, in 1905, the industrial welfare ratio was almost twice as high as the agricultural one. Women's agricultural wages were on par with women's industrial wages until 1860 after which they diverged somewhat. Surprisingly, they did not diverge further like men's welfare ratios did.

These findings have important implications for our understanding of household income. First, from the 1860s onwards, the opportunity costs of women's industrial labour increased whereas it became more lucrative to send children out to work. Thus, relinquishing the wife's wage and instead allowing her to 'produce' domesticity, became increasingly feasible. After all, in 1905, one man's wage could purchase more than what one man's and one woman's wage combined could have bought until 1880. Both forces of demand and supply played a role in this development: it was more appealing for producers to hire cheap labourers and the extending burden of domestic work and child rearing made married women's factory labour less attractive. Furthermore, children were increasingly able to fill the gap their mothers left behind. In agriculture, the relative advantage of men's wages from the end of the nineteenth century onwards was less apparent since the male and female trends developed in a similar way.

Second, one male agricultural labourer could hardly make enough money to provide for himself, a wife, and two children. During the first half of the nineteenth century, welfare ratios fluctuated around the subsistence level after which they increased to a little less than 2 during the first years of the twentieth century. Thus, other sources of income were indispensable for these households. In conclusion, the Amsterdam trend has overestimated living standards in the nineteenth-century Netherlands and male industrial labourers were the

[414] This finding should be treated cautiously because there are many wages of children without specification of their age included in the database. The rapid rise of children's wages from the 1890s onwards could very well be the result of an over-representation of the wages of older children. Furthermore, the average age of all child workers (at least in the industrial sector) increased from the moment legislation prohibited children younger than 12 to work in factories. Also, the rejuvenation of the adult female labour force as a result of the transition to the factory system also affected the trends in Figure 5.2. Future research will have to shed more light on the development of wages in specific age groups.

only group to truly enjoy rapidly rising real wages during the nineteenth and early twentieth centuries.[415]

Living standards throughout the household life-cycle

Yet a different picture of household welfare emerges when taking the changes during the household life-cycle into consideration. As explained in section 5.3, I have distinguished four phases in the household life-cycle and created two possible situations regarding their labour allocation to estimate the lower-bound and the upper-bound household income. The results are shown in Figures 5.3, 5.4, 5.5, and 5.6.[416] These Figures show the changes per year, accounting for the extent of the wages and the consumer price index in that specific year. The black lines mark the subsistence level, the red lines the households relying on the husband's wage (the lower-bound estimation), and the green lines the households in which the husband, the wife, and the older children performed wage labour (the upper-bound estimation). Table A5.3 in Appendix 5.3 shows the changes in the household composition per year that, together with the wage data and the consumer price index for Amsterdam, form the basis of the results in Figures 5.3 to 5.6.

During the first phase of the life-cycle, most households lived well above the subsistence level, except for newly-wed agricultural couples relying on one man's wage around 1840. During the second phase when children were born, in all households welfare ratios dropped. This development was especially problematic in the agricultural households in which the husband was the sole wage earner. In both periods under scrutiny, welfare ratios dropped below the subsistence level and decreased even further when the children became older. It was only when those children started to leave the household that welfare ratios started to recover. This increase stagnated the moment all the children had left the household and the parents only had to take care of themselves.[417] Clearly, the only way in which these households could have been able to survive was with the labour input of women during the second phase, and women and/or children during the third phase of the life-cycle.

[415] The service sector is not included in this research. Future research will have to show the development of men's and women's purchasing power in this sector. To remind the reader: Table 1.3 shows the employment by sector in the Netherlands 1849-1909.

[416] Note that the range of the values in the y-axes are different for agricultural and industrial households.

[417] During this final phase of the household life-cycle, the husband and the wife were older and therefore, probably, physically less capable of heavy work. The results in Figures 5.3 to 5.6 do not take loss of income as a result of the married couple's old age into consideration.

During the period 1840-1880, men's industrial wages were just barely sufficient to stay above the subsistence level during the second phase of the life-cycle and even briefly dropped below the subsistence level during the third phase. Thus, halfway through the nineteenth century, labour input of women and/or children was still crucial. However, much had changed by the end of the nineteenth century: men's industrial wages during the period 1870-1910 were high enough to sustain the household during the entire life-cycle. Still, with welfare ratios fluctuating around 1.5 for circa 15 years, it is unlikely that there were no additional sources of income at all.

So far, we can draw several conclusions. First, it is paramount that agricultural households with children could not possibly have survived based on one man's wage. It is therefore highly unlikely that the breadwinner-homemaker household was already well established in the early twentieth-century countryside. Second, this type of labour division was in much closer reach of industrial families after 1880. However, additional incomes during the third phase remained a welcome addition to the household income. This conclusion chimes with the idea that the breadwinner-homemaker household was initially possible thanks to the increasing labour input of children.

Figure 5.3. Welfare ratios and the life-cycle: agriculture 1840-1880

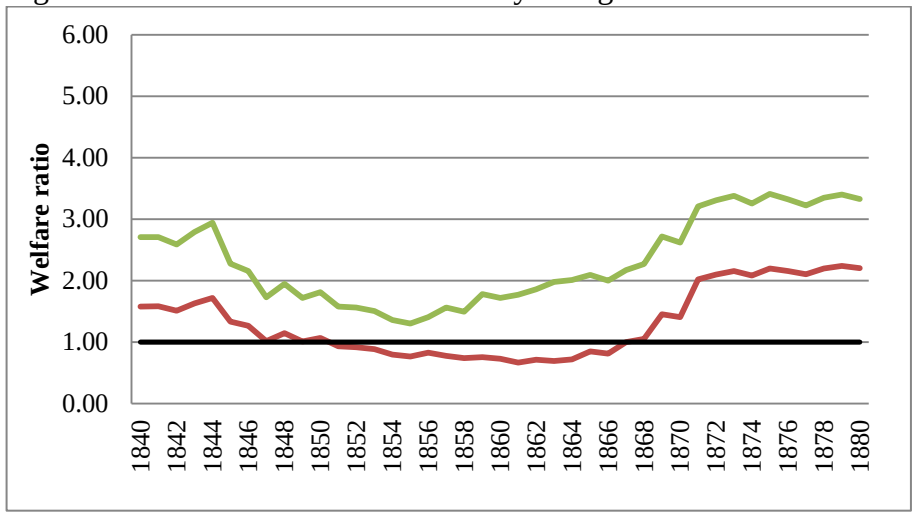


Figure 5.4. Welfare ratios and the life-cycle: agriculture 1870-1910

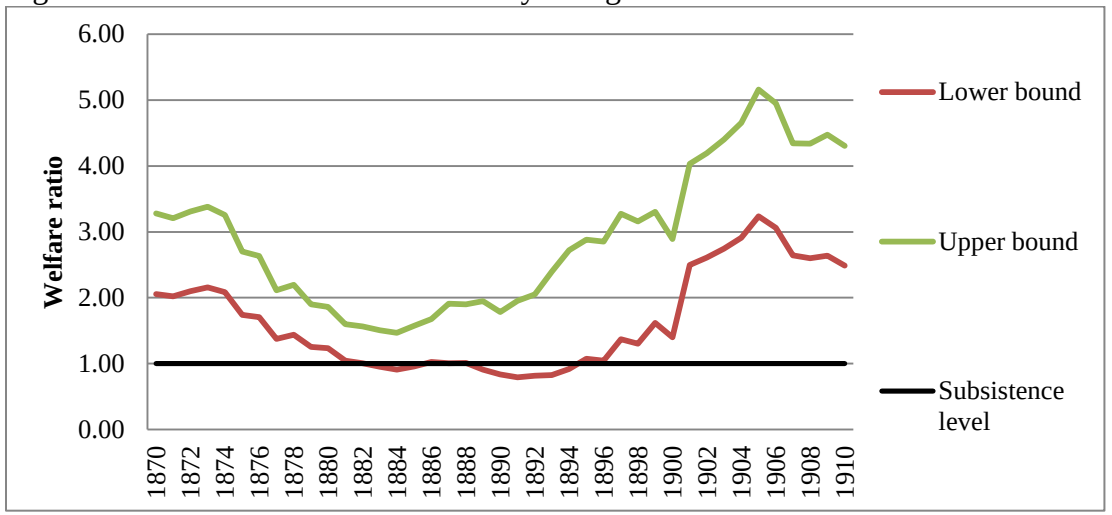


Figure 5.5. Welfare ratios and the life-cycle: industry 1840-1880

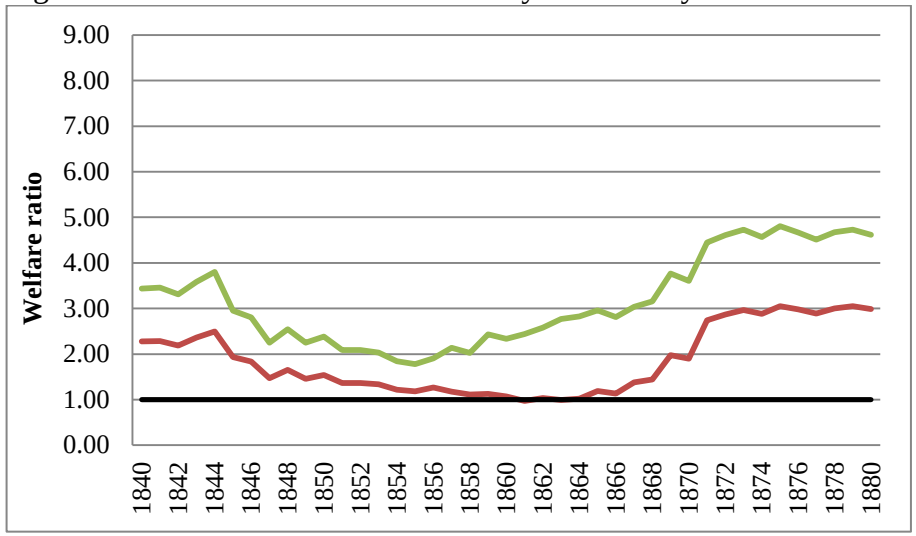
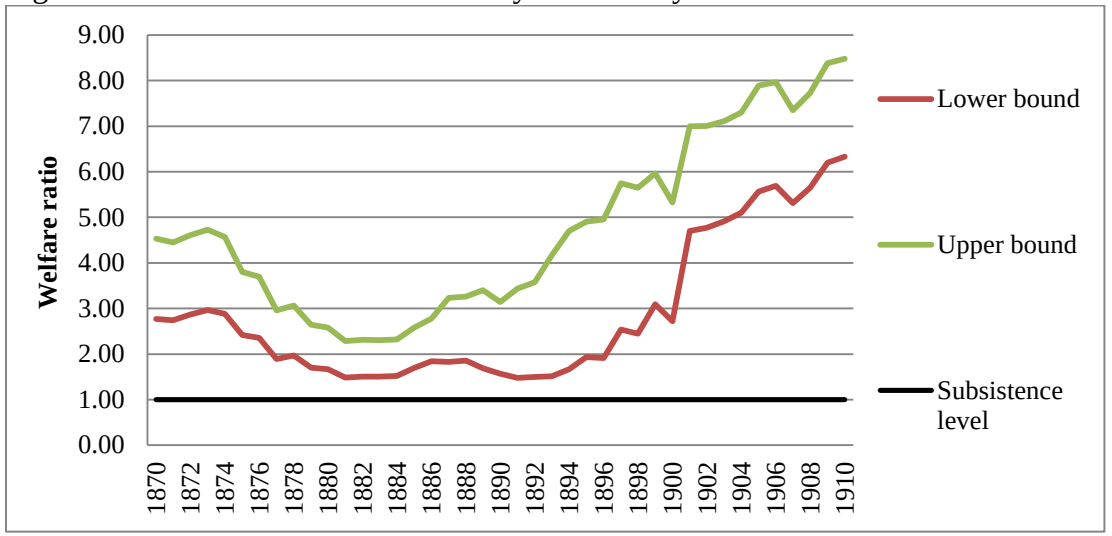


Figure 5.6. Welfare ratios and the life-cycle: industry 1870-1910



Sources Figures 5.3, 5.4, 5.5, and 5.6: wage series (Boter); Allen, *Amsterdam*. See Table A5.4 in Appendix 5.3 for the data.
NB: the lower-bound estimate is based on the husband's wage; the upper-bound estimate is based on the wages of the husband, the wife, and the children > 12.

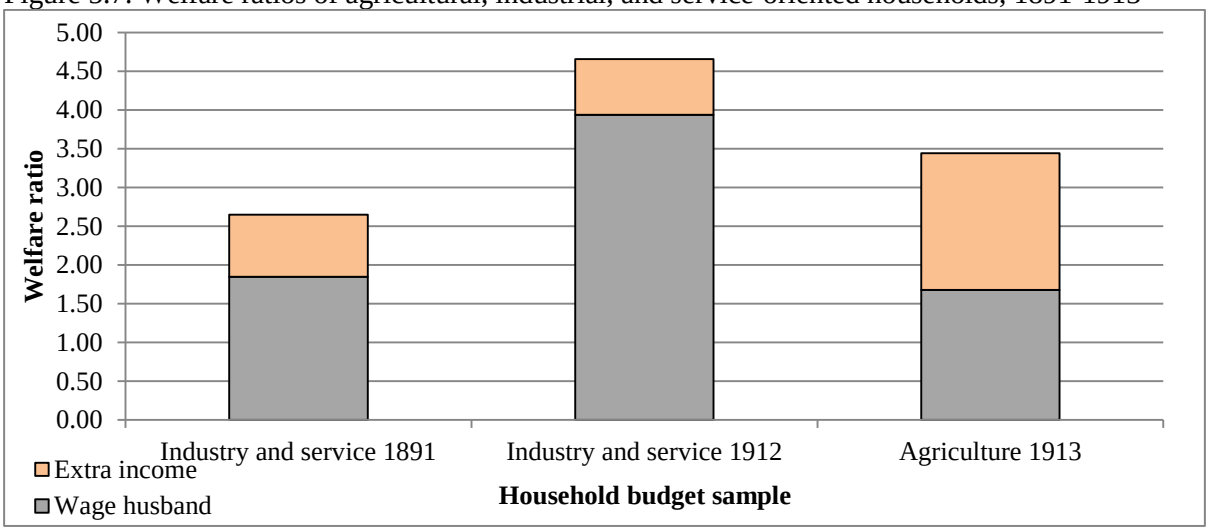
5.5. Household income composition: evidence from household budgets

This section supports the conclusions presented in the previous section with empirical evidence from household budgets and surveys. The inadequacy of men's agricultural wages is confirmed by the 1909 survey on agricultural wage labourers: the report on the province of Zuid-Holland stated that "[i]n general, people regret that the economic circumstances of agricultural labourers do not allow married women to dedicate themselves exclusively to taking care of her family and child rearing."[418] Still, according to this same survey, in most regions in the Netherlands married women's agricultural wage labour was uncommon outside the harvest season. The dominant sentiment was, as in the labour surveys of 1890, that married women's labour outside the home should be avoided because it harmed her family. Furthermore, although section 5.4 has shown that male *industrial* wages became increasingly capable to take care of an entire household from the 1880s onwards, from the labour surveys we know that for many industrial households other resources remained important.

The household budgets offer a unique insight into household income composition in both sectors. Previous research on Dutch household budgets has concluded that between 1890 and 1910, the wife's income share and incomes from other sources decreased.[419] My findings from two samples of industrial households' budgets from 1891 and 1910 largely corroborate these findings. However, I also include a sample of agricultural households' budgets from 1913 that will show a different picture. Most households that are included in the samples had several small children which makes them overall representative for the second stage of the household life-cycle.[420] Figure 5.7 shows households' welfare ratios based on the husband's wage alone and based on the total household income. Note that the extra income could have been many things (women's and children's wages, tips, lodgers, an inheritance, yields from the land, etc.) and does not represent the contributions of women and children specifically. Figure 5.8 shows the income composition of the three samples in more detail to illustrate the share of various resources in the total household income.

[418] Staatscommissie voor den Landbouw, *Utrecht-Limburg*, p. 240.
[419] van Zanden and van Riel, *The strictures of inheritance*, pp. 324-325.
[420] The exact number of children and their (approximate) age can be found in Appendix 5.5.

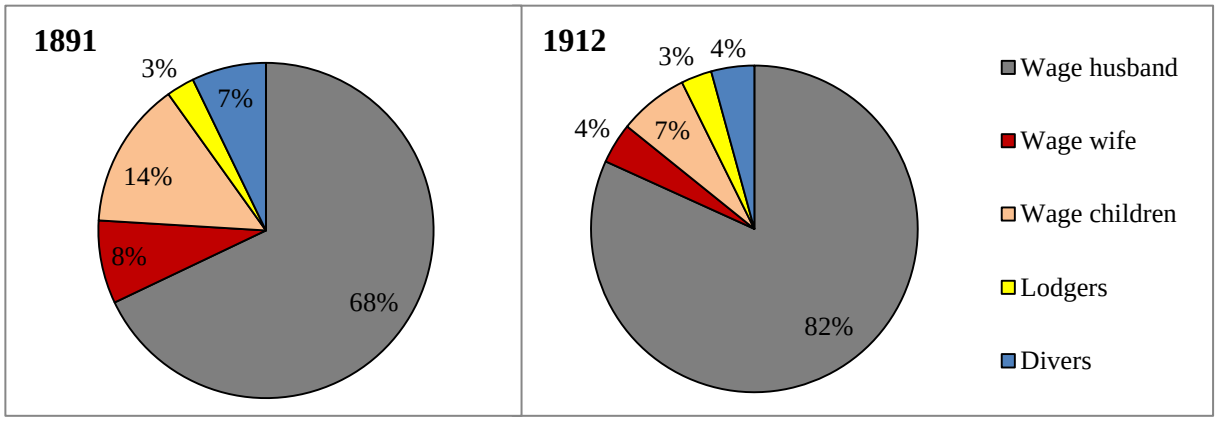
Figure 5.7. Welfare ratios of agricultural, industrial, and service-oriented households, 1891-1913[ab]



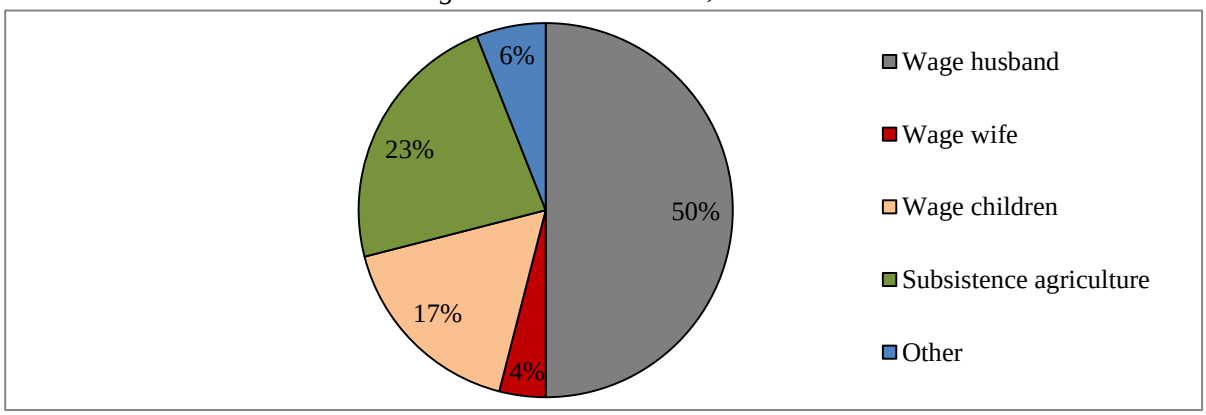
[a] See Tables A5.9, A5.10, and A5.11 for the underlying data.
[b] The 1891 sample contains 25 budgets, the 1912 sample 69, and the 1913 sample 25.
Sources: Allen, *Amsterdam;* Humphries, 'The Lure of Aggregates', p. 703; Koninklijke Nederlandsche Landbouwvereeniging, *Bijzondere Catalogus;* Sociaal Democratische Studie-Club, *Arbeidersbudgets;* Statistisch Instituut, 'Arbeidersbudgets'.

Figure 5.8. Household income composition 1891-1913

Industrial and service-oriented households, 1891 and 1912



Agricultural households, 1913



Sources: Koninklijke Nederlandsche Landbouwvereeniging, *Bijzondere Catalogus;* Sociaal Democratische Studie-Club, *Arbeidersbudgets;* Statistisch Instituut, 'Arbeidersbudgets'.

Figures 5.7 and 5.8 show that first, the husband's wage income is indeed not representative for actual household living standards. In the industrial households in 1891, the difference between the welfare ratio based on the entire income and based on the husband's wage was 0.80 points, and 0.72 in 1912. In agricultural households in 1913, the difference was 1.76 points. Note that not all men included in the samples worked full time for wages and that the welfare ratios corresponding to their wage income are therefore not directly comparable with those presented in Figure 5.2. Still, the differences are striking. On average, agricultural households had a welfare ratio of 3.44 in 1912 whereas Figure 5.2 has suggested a welfare ratio of 2.0 in the period 1905-1909 based on one man's wage providing for a family of four.

Second, by 1913 in agricultural households the share of extra income was 50% and consisted of women's and children's wages and 'diverse' income.[421] Qualitative information in the budgets shows that most household members combined multiple labour relations, sometimes even in various sectors. For instance, in one household (number 21 in Table A5.9) the husband worked part-time in a factory and the largest share of the household income derived from a plot of land.[422] This ambiguity of labour allocation is further illustrated by the strong correlation between the size of the available land and the husband's wage: the more land the lower the husband's wage. Women's relatively small wage earnings were probably earned during the harvest period. In the industrial and service households the share of the extra income was 30% in 1891 and 18% in 1912.[423] Thus, especially by the end of the nineteenth century, the share of extra income was still considerable.[424] In 1891, children's wages constituted the largest share of the extra incomes with 14% followed by the wife's wage and 'diverse' income (like selling eggs). In 1912, the share of children's wages had decreased to only 7% and the share of the wife's wage to only 4%.

Finally, analysing the share of the total expenditure on food is another way to look at living standards. After all, households that did not have to spend most of their money on foodstuffs had more possibilities to 'purchase' luxury goods such as education and leisure time. In 1891, the industrial households spent 55% of their total expenditure on food and in

[421] For instance, one household (no. 16) received a heritage in that year and some households hosted a lodger. NB: the lodgers are included for determining the number of baskets the household required.
[422] It remains unclear in what kind of factory the husband worked.
[423] The inclusion of service-oriented households and households headed by widows has only slightly altered the results. Excluding these households resulted in a share of the extra income of 32% in 1891 and 18% in 1912.
[424] See also: van Zanden and van Riel, *The strictures of inheritance*, p. 324.

the 1912 sample this share was 50%. In the agricultural households, the share of food expenditure was 62% in 1913. Thus, although agricultural living standards were in reality higher than we would think based on men's wage incomes, in terms of food expenditure their living standards were still lower than in industrial households.

5.6. Household income composition in agriculture and industry

Notwithstanding the relatively limited sample of household budgets, they have confirmed that the husband's wage was generally not the only resource. Furthermore, they have shown that self-employed agriculture was an essential source of income, especially for agricultural households. This section returns to the aggregate approach of section 5.4 to come to a more general picture of household income composition around 1900 by estimating the value of self-employed agriculture and work in the home industry.[425] It will become clear that the husband's wage constituted circa 35% of the total income in agricultural households and 53% in industrial households with access to land.

Quantifying the value of self-employed agriculture and the home industry

In large parts of the country, both agricultural and industrial labourers rented a plot of land for the cultivation of food crops and for keeping livestock. Even though the agricultural and industrial surveys (of 1909 and 1891 respectively) included ample information about the price of renting land, it is hard to determine it accurately because (1) rent for a house and land was often combined, (2) land was more expensive in or nearby villages and small cities than in the countryside, and (3) prices depended on the type of soil.[426] Based on scattered information, I estimate that around 1900, 1 are of land cost *f*0.55 per year in the countryside and *f*1 in more industrialized regions.[427]

Most labourers in both agriculture and industry cultivated potatoes as well as vegetables. It remains unclear how the available land was exactly used. Since potatoes were

[425] This section provides limited information about the data on which I base my estimations. See Appendix 5.6 for a more detailed overview of how I got to my estimations about the land and livestock that was available to agricultural and industrial wage labourers.

[426] van Zanden, *De economische ontwikkeling*, p. 119.

[427] Because several types of square measures were used in the sources, I converted everything into *ares* and hectares.
- 1 hectare = 100 × 100 meters = 10,000 m^2
- 1 hectare = 100 'are'
- 1 hectare = 700 'roede'
- 1 'are' = 10 × 10 meter = 100 m^2 = 0.01 hectare

most likely to be cultivated by every land user, I use the possible extent of the potato harvest per hectare and its market price as a proxy for the value of land. The yields from land and livestock are summarized in Table 5.2 and show the annual output and market prices of potatoes, milk, and eggs.[428]

Table 5.2. The annual profits from potato cultivation and livestock, circa 1900

Source of income	**Consumer product**	**Output per year**	**Average market price 1888-1892**	**Average market price 1908-1912**
1 hectare of land	Potatoes	201 hectolitres	553.15	574.06
1 goat	Milk	1,095 litres	68.46[a]	81.91[a]
1 cow	Milk	2,970 litres	185.68	222.16
1 chicken	Eggs	177 pieces	5.82	7.57

[a] Price of cow milk.

Sources: Anonymous, 'Geitemelk'; Anonymous, 'Hoe Doet U het?'; Anonymous, 'Hoeveel'; Arbeidsinspectie, 'Verslag van de Tweede Afdeling'; Bieleman, *Boeren op het Drentse Zand*, p. 516; Departement van Landbouw Nijverheid en Handel, *Verslag over 1910;* van Riel, *Prices;* Staatscommissie voor den Landbouw, *Algemeen Overzicht;* Staatscommissie voor den Landbouw, *Groningen-Gelderland;* Staatscommissie voor den Landbouw, *Utrecht-Limburg;* van Zanden, *De Economische Ontwikkeling*, p. 105.

A second important resource was work in the home industry. Although during the nineteenth century, the home industry in most sectors had lost importance due to the expanding factory system, by 1914 still thousands of men, women, and children were employed at home, for instance in the textile industry as weavers and their assistants.[429] Moreover, in some branches the demand for homeworkers even *increased*. For instance, the new method of preserving food was increasingly applied in the food industry from the 1900s onwards and included ample tasks that were suitable to be performed at home like cleaning vegetables (Picture 5.1).

[428] Sweet milk was much more expensive than butter milk (van Riel, *Prices*). I use the market price of sweet milk because butter milk was a by-product of sweet milk and of lesser quality. The milk that households got from their own cow or goat was therefore the higher quality sweet milk.

[429] This depended on the structures of local economies. In the cotton industry of Twente, factories were much larger and the home industry was of little importance during the first years of the twentieth century. Conversely, in the wool industry of Tilburg, the process of mechanization had happened more gradually and old fashioned production techniques remained important. That is why the home industry, especially in weaving, was still important in Tilburg by the time of the survey.

Picture 5.1. Women and children cleaning broad beans, circa 1914

Source: Directie van den Arbeid, *Onderzoekingen (Part I)*, pp. 112-113.

Thanks to an exhibition in 1909 and a survey published in 1914, information about the nature of the work, the number of home workers and their wages, and the length of their working days is available.[430] These sources back the conclusion presented in chapter 3 that married women could easily combine home industrial work with domestic chores because homeworkers' working weeks were relatively short: on average men worked 65 hours per week and women 51 hours.[431] Furthermore, circa half of both the male and the female homeworkers were aged between 25 and 49, and about the same share was married. The rest was either an unmarried or widowed adult, or a child. Thus, a large share of the female homeworkers was probably taking care of small children. As such, the wife's (and children's) home industrial work could compensate for the decreasing living standards during the second and the third stage of the household life-cycle (Figures 5.3 to 5.6). Table 5.3 shows how much women could earn in various home industrial branches.[432]

[430] Directie van den Arbeid, *Onderzoekingen (part I)*; Directie van den Arbeid, *Onderzoekingen (part II)*; Directie van den Arbeid, *Onderzoekingen (part III)*. For the 1914 survey, about 18,000 homeworkers' families were visited and interviewed. By far most of these homeworkers worked in the textile and apparel industries, and in the food and tobacco industries. See Tables A5.5, A5.6, and A5.7 in Appendix 5.4 for the summary statistics of the 1914 survey.

[431] Posthumus, *Huisindustrie in Nederland*. NB: this is an unweighted average of the five industrial branches. The weighted average is 72 hours for men and 54 hours for women.

[432] See Table A5.8 in Appendix 5.4 for a more detailed overview of home industrial wages, including men's and children's wages and working weeks.

Table 5.3. Women's hourly and weekly wages (in guilders) in the home industry, 1909[a]

Industry	Hourly wage	Hours worked per week	Weekly wage
Wood	0.07	56	3.79
Food	0.04	46	1.77
Textile	0.07	55	3.72
Paper	0.06	47	2.94
Average	***0.06***	***51.04***	***3.06***

[a] N = 166 (average age: 36).
Source: Posthumus, *Huisindustrie in Nederland*

The availability of land and livestock

The possibilities for agricultural wage labourers to cultivate their own land expanded during the last decades of the nineteenth century thanks to the foundation of agricultural cooperatives that made the acquisition of (artificial) fertilizers, forage, and sowing-seeds easier, and provided credit and insurance. Furthermore, through cooperatives, small farmers could make use of machinery which they could not afford to buy.[433]

The size of the land available to agricultural wage labourers has been reported in the agricultural surveys by the Royal Dutch Agricultural Society (*Koninklijke Nederlandsche Landbouwvereeniging*, henceforward: KNL) of the early twentieth century (Table 5.4).[434] Some families cultivated merely for their own subsistence, others managed to sell part of their surplus yields, and yet others were actually running their own farm with wage labour being a complementary source of income.[435] Most casual farm labourers belonged to the first two groups and rented a relatively small plot of land from their employer.[436] Furthermore, most of them owned one or more goats and several chickens: these animals were relatively cheap, did not require expensive forage, and provided nutritious milk and eggs. Based on secondary literature, I estimate that agricultural wage labourers on average owned 1.7 goats and 12 chickens.

[433] van Zanden, *De economische ontwikkeling*, p. 274.
[434] There was ample regional variation. For instance, in the coastal provinces of Noord-Holland and Zuid-Holland, only 32.24% of the (married) male agricultural labourers cultivated more than 5 are. On a national level this share was as high as 75.10%. See: Directie van den Landbouw, Verslagen (no. 3), p. 15.
[435] Staatscommissie voor den Landbouw, *Algemeen overzicht*, pp. 85-96.
[436] Koninklijke Nederlandsche Landbouwvereeniging, *Bijzondere catalogus*, p. 52. The survey conductors included every person who performed wage labour in the agricultural sector, even if it was not their primary source of income. It remains unclear whether the investigators included female wage labourers individually or reported the amount of land per household. Since by 1913 the number of female wage labourers had decreased relative to the nineteenth century and children were unlikely to own land, I assume the outcomes show the available land per household.

Table 5.4. Hectares of land per province and per head cultivated by agricultural wage labourers, 1913

Hectares of land	**Owners**		**Renters**		**Total**	
	N	*%*	*N*	*%*	*N*	*%*
0.05-0.15	2,230	2.6%	13,850	16.1%	16,080	18.7%
0.15-0.25	1,750	2.0%	8,270	9.6%	10,020	11.6%
0.25-0.50	4,370	5.1%	12,084	14.0%	16,454	19.1%
0.50-1.00	7,320	8.5%	12,170	14.1%	19,490	22.6%
1.00-2.00	6,580	7.6%	8,790	10.2%	15,370	17.8%
2.00-3.00	2,760	3.2%	3,020	3.5%	5,780	6.7%
3.00-5.00	1,360	1.6%	1,560	1.8%	2,920	3.4%
Total	***26,370***	***30.6%***	***59,744***	***69.4%***	***86,114***	***100.0%***

Source: Departement van Landbouw Nijverheid en Handel, *Verslag over 1911;* Koninklijke Nederlandsche Landbouwvereeniging*, Bijzondere Catalogus*, p. 54.

For the land cultivation by industrial households, I turned to the 1890 labour surveys. We know from chapter 3 that many households in Twente combined work in the textile industry with subsistence agriculture.[437] More than 70% of the survey respondents who were asked about land possession answered positively.[438] Many of them mentioned that this land was an essential source of income because the factory wages were not high enough to sustain a household.[439] The answers to the question of who was responsible for the cultivation of this land varied. In some households, children who did not work in the factory worked on the land[440], in other households it was primarily the wife, and the husband when he came home from the factory[441], and yet other households hired day labourers to do the work[442]. I estimate that these households cultivated on average 12.5 are of land (of which 5 came with the house and 7.5 was rented) and kept one goat.[443]

In sum, I assess that the mainstream agricultural household owned 1.7 goats and 12 chickens and rented a plot of land of 73 ares (0.73 hectares) which is the weighted average of all land being rented by agricultural wage labourers included in Table 5.4. This closely resembles the average size of the land – 76.5 are ≈ 0.77 hectares – available to the households in the budget studies discussed earlier.[444] Industrial households owned one goat and cultivated 12.5 are of land.

[437] Hendrickx, 'Een wereld van verschil?'.
[438] See section 3.4. Source: Arbeidsinspectie, *Twente*.
[439] Arbeidsinspectie, *Twente*, p. 132.
[440] Arbeidsinspectie, *Twente*, p. 357.
[441] Arbeidsinspectie, *Twente*, p. 383.
[442] Arbeidsinspectie, *Twente*, p. 380.
[443] See Appendix 5.6 for more information about these estimations.
[444] Koninklijke Nederlandsche Landbouwvereeniging, *Bijzondere catalogus*, Appendix IV. NB: this conclusion gives confidence that on average, these 25 households have been representative in terms of generating income from their own land.

Income composition and living standards

To arrive at the income composition of the two prototypes of households, three things still need to be accounted for: the land lease, the contingent transaction costs of selling surplus on the market, and the number of days worked for wages per household member. The first is simple, seeing that I have already estimated the price of land in the first part of this section. To remind the reader: in the countryside people paid on average *f*55 per hectare per year, while in industrialized regions, one hectare cost *f*100 per year. Thus, the agricultural household invested approximately *f*40 per year for 0.73 hectare and the industrial household *f*12.50 for 0.125 hectare.

Second, the accounting for transaction costs is more complicated. The use of consumer prices, that is the prices that consumers had to pay to purchase a certain commodity on the market, for determining the value of potatoes, milk, and eggs is justified if households consumed everything themselves. After all, that is the price they would have otherwise paid on the market.[445] However, if part of the yields were *sold* we have to account for transaction costs that:

> depend on transportation costs to and from the market, mark-ups by merchants, the opportunity costs of time involved in selling (search costs) and buying (recruitment and supervision costs), risk associated with uncertain prices and availabilities, that determine perceived certainty equivalent prices that are lower than farm-gate prices for items sold and higher for items bought, and a variety of other transaction costs that are largely household specific.[446]

Most qualitative sources indicate that factory labourers cultivated land and kept livestock for their own subsistence, although the budget studies did show that some households generated a modest income from selling eggs. This was different for agricultural households that on average leased 73 ares of land on which they could cultivate 147 hectolitres of potatoes (10,290 kilogram) per year. These small farmers usually sold their produce to local factories with support of the cooperatives that assured that the farmers received a fair price. Indeed, the growing dependence of agricultural labourers on the market,

[445] de Haas, 'Measuring rural welfare', pp. 12-13.
[446] de Janvry, Fafchamps, and Sadoulet, 'Peasant household behaviour', pp. 1401-1402.

as opposed to wages, was one of the most important incentives for the foundation of these cooperatives.[447]

To correct for these transaction costs I assume that the agricultural households cultivated both potatoes for their own subsistence and so-called 'factory potatoes' that were not meant for direct consumption but were processed in factories for the production of potato starch.[448] In the agricultural survey of 1912 detailed information about one farm's profits in Drenthe was included, among which the price paid for factory potatoes by the potato-starch factories.[449] During the years 1906-1910 this was on average *f*0.92 per hectolitre.[450] If agricultural households would have cultivated 25 hectolitres consumption potatoes for their own subsistence (the same quantity as the industrial households) and 189.37 hectolitres factory potatoes on the remaining land, their income from 73 are of land would have been *f*245.62 – and *f*204.62 when the land lease is subtracted.[451] The household budgets have shown that the average *profit*, thus accounting for transaction costs and the costs of land lease, from an average plot of land of 77 are was *f*176.06.[452]

Third, from the qualitative sources we have a fairly good idea about the labour allocation of industrial households in Twente by 1890: the husband worked full time in a factory, the wife combined productive and reproductive labour, children younger than 12 went to school, and children older than 12 worked (often alongside their fathers) in the factory. Indeed, Table 3.1 has shown that in 1889, between 40% and 50% of all the children between 12 and 14 years old in the city of Enschede worked in an industrial enterprise. For the age group 14-18 the share was even as large as 60%-70%. The share of adults was smaller with half of all the men working in a factory, 37% of the unmarried women, and 9% of all the married women. For the estimation of industrial households' income composition this means that men and children worked 250 days per year for wages. I assume that married women worked 26 weeks per year in the home industry.

[447] van Zanden, *De economische ontwikkeling*, p. 275. NB: cooperatives were unsuccessful in selling grains and cattle/meat.
[448] Potato starch was used for numerous products among which included glue and being used as a binder in the food industry.
[449] Compared to the prototype of household, this farm was relatively large with a cadastral of 50 hectares on which various crops were cultivated. However, the price factories paid for factory potatoes to smaller farmers will not have differed considerably since the farmers' cooperatives played an important role in determining the price.
[450] Staatscommissie voor den Landbouw, *Overzicht van het landbouwbedrijf*, p. 417.
[451] On one hectare of land, more factory potatoes could be cultivated than consumption potatoes (in hectolitres). I have accounted for this with help of the agricultural reports: Departement van Landbouw Nijverheid en Handel, *Verslag over 1910*, p. 51.
[452] Koninklijke Nederlandsche Landbouwvereeniging, *Bijzondere catalogus*, Appendix IV. NB: Profits from livestock were excluded from this calculation.

In the agricultural households, the cultivation of land was a joint effort of the entire household. The survey on farming in the Netherlands corroborates the idea that women and children were partly responsible for this land cultivation:

> And while wage labour by women and children has decreased due to the reduction of the cultivation of sugar beets and potatoes on farms, the labour of these people [i.e. women and children] in their own, small businesses has increased, which relates to the strong expansion of potato- and sugar beet cultivation by small farmers in their expanding businesses.[453]

I assume that male agricultural wage labourers worked 250 days per year. This is possibly too optimistic because (seasonal) unemployment was common. However, in the rural household budgets I found that on average, men earned *f*354 annually for which, based on my nominal wage series, one man needed to work 290 days. The sources were more explicit about women's wage work, stating that they only worked for wages during the harvest month, which I set to be 25 days. Finally, I assume children worked 125 days per year (whether or not alongside their fathers) during the summer months when most work was available. Children younger than 12 went to school, although they were expected to assist on the land, especially during the harvest season.

With all the building blocks collected so far, I can now proceed to outline the income composition of agricultural and industrial households. Table 5.5 summarizes the estimated value from self-employed agriculture and wage labour.[454] The welfare ratios displayed in the final row are based on households that consisted of one man, one woman, three children younger than 12, and one child older than 12. They have been calculated using the same formula as in section 5.4 – that is dividing the total household income by the cost of the required number of consumption baskets – with the difference that I added the price of land lease to the annual costs of living.

[453] Staatscommissie voor den Landbouw, *Overzicht van het landbouwbedrijf*, p. 246. See also: Staatscommissie voor den Landbouw, *Overzicht van het landbouwbedrijf*, pp. 339, 412; Staatscommissie voor den Landbouw, *Schetsen van het landbouwbedrijf*, p. 354; Staatscommissie voor den Landbouw, *Rapporten (landarbeiders)*, p. 137.
[454] See Table A5.12 in Appendix 5.6 for a more detailed summary of the value from various resources.

Table 5.5. Household income in agriculture and industry ca. 1910 in guilders an percentage shares

Source of income		**Agriculture**		**Industry**	
		f	*%*	*f*	*%*
Self-employed agriculture		457.76[a]	54	153.31	15
Wage labour	*Husband*	*302.50*	*36*	*547.50*	*53*
	Wife	*21.50*	*3*	*96.72*	*9*
	Children	*65.00*	*8*	*235.00*	*23*
	Total	389.00	46	879.22	85
Total income (welfare ratio)		**864.76 (3.3)**		**1,032.53 (4.2)**	

[a] The value of potato cultivation entails 25 hectolitres potatoes for consumption (market price) and 189.37 hectolitres of factory potatoes to be sold to the potato-starch factories (wholesale price).
Sources: see text.

From this aggregated information it seems that 54% of the total income of agricultural households was generated by self-employed agriculture, about 36% from the husband's wage labour – provided he could find work 250 days per year –, and the rest from the wife's and child's wage labour (11%). In industrial households, the largest share was the husband's wage labour (53%), followed by the child's wage labour (23%), self-employed agriculture (15%), and finally the wife's wage labour from the home industry (9%).

These estimations differ somewhat from the empirical evidence from the household budgets presented in section 5.5. For the agricultural households, categorizing the value of milk and eggs as income from self-employed agriculture, which was not the case in the budget studies, has increased the share of this resource to more than half of the total income and moves the share of the husband's wage to the second place. For the industrial household, the conclusion stands that the husband's wage was by far the most important resource. Still, in regions where industrial households had access to land (unlike the major share of the households included in the budget studies), the share of the husband's wage was smaller.[455]

This section has provided insight into how households managed to make ends meet during the second and the third stage of the household life-cycle when men's wages were not sufficient to provide for an entire family. The labour input of women and children and the yields from self-employed agriculture were generally crucial in order to stay above the subsistence level.

[455] These estimations are not representative for every single household throughout the entire country. In the larger cities in the western provinces, households did not have equal access to land and the share of the husband's wage was probably larger.

5.7. Conclusion

This research has gauged when and where Dutch households became financially able to realize a breadwinner-homemaker household by tracing the development of household living standards during the nineteenth and early twentieth centuries. I have undertaken three steps to come to my conclusions. First, I have computed the welfare ratios of men's, women's, and children's wages. Because the classical welfare ratio method – as developed by Robert Allen – has underestimated people's caloric requirements, I have adjusted the formula by increasing the number of bare bones consumption baskets that men, women, and children required. The employment of this modified formula has shown that the welfare ratios of Dutch male industrial wage labourers during the period 1800-1914 were on average circa 0.75 points lower than previous research has made us believe. Still, the conclusion that the purchasing power of men's industrial wages increased dramatically from the 1880s onwards upholds. This was not the case for women's and children's wages in industry, neither was it the case for all of the agricultural wages. Thus, real wages started to diverge from the end of the nineteenth century onwards both between sectors and between men and women.

Second, I have constructed the trajectory of the welfare ratios throughout the life-cycle of agricultural and industrial households during the periods 1840-1880 and 1870-1910. I distinguished four phases in the life-cycle: newly-wed couples, couples with four young children, couples with four older children, and elderly couples without co-resident children. By accounting for the annual changes in the household composition, income, and consumption requirements, I have illustrated that welfare ratios started to decrease from the moment children were born and only truly recovered when those children started to leave the household. In both periods, the welfare ratios of the agricultural households that relied solely on the husband's wage dropped below the subsistence level during the second and the third phase of the life-cycle. Thus, for agricultural households the labour input of women and/or children was imperative. The same conclusion applied to industrial households during the period 1840-1880: the husband's wage was not sufficient to sustain the entire household during the second and the third phase of the life-cycle. During the latter period, however, one man's industrial wage could keep the household above the subsistence level throughout the entire life-cycle. Still, it is likely that in these households additional income was necessary as well, because for circa 15 years in the life-cycle, welfare ratios fluctuated around 1.5.

Third, I have estimated the value of self-employed agriculture and the incomes from industrial work to come to a more detailed picture of household income composition. A sample of household budgets has shown that by 1912, 50% of the total income of agricultural households was generated by the husband's wage labour and that in industrial and service-oriented households this share was 82%. An analysis of more aggregated information about land lease, livestock, and home industrial labour has shown that for many agricultural and industrial households with access to land the share of the husband's wage was even smaller with 35% in the former and 53% in the latter.

These findings have contributed to our understanding of the timing of the transition to a male breadwinner society in the Netherlands. By 1910, agricultural households could not yet have survived based on the husband's wage. The household budgets underpinned this conclusion and showed contributions from other household members were still crucial. Industrial households, on the other hand, were increasingly able to make ends meet with one man's wage from the 1880s onwards. In conclusion, the male breadwinner society was well on its way during the first decades of the twentieth century in the urban regions of the Netherlands. However, the transition phase was not yet complete since women and children still engaged in gainful labour instead of, respectively, being engaged full time in domestic work and schooling. In the countryside, households were financially not able to rely on the husband's wage.

Chapter 6: Conclusions

This dissertation's main aim was to explain one of the core conundrums of Dutch women's labour history: the Dutch divergence in FLFP rates as recorded in nineteenth-century occupational censuses (Table 1.1). This chapter returns to the model presented in the introduction (Figure 1.2) and systematically revisits the main explanatory factors in order to come to conclusions on the relative weight of each factor. Furthermore, I place my findings in a broader, western European context. I present two main conclusions. First, the specific structure of the Dutch economy is the most important reason for the low Dutch FLFP rates. Second, the transition from the industrious household to the breadwinner-homemaker household depended on local economic structures. This chapter proceeds by recapitulating the central explanatory factors for the trajectory of Dutch FLFP: the development of social norms, the opportunity costs of women's work, and economic structural change. Finally, I consider my findings in light of the U-shaped curve of FLFP and briefly expound on necessary future research.

6.1. Social norms

In the broadest sense, *social norms* are "social attitudes of approval and disapproval, specifying what ought to be done and what ought not to be done."[456] They can include good manners, perceptions of what is morally condemnable and acceptable, etcetera. Within this broad definition, which covers almost all aspects of human behaviour, the focus of this dissertation has been on society's perception of household labour allocation, most importantly women's labour, in relation to the growing desire for domesticity.

In the literature on Dutch women's labour history, social norms regarding women's place within the household are the most extensively investigated explanation for the development of FLFP. Contemporary reports from the early modern period illustrate how the Dutch woman was portrayed as a diligent housewife, a pioneer of the cult of domesticity. Supposedly, this long-standing tradition was the reason for the low Dutch FLFP rates during the nineteenth and early twentieth centuries.[457] However, recent studies on early modern women's work have shown that women were actually very active in various segments of the

[456] Sunstein, 'Social norms', p. 914.
[457] Pott-Buter, *Facts and fairy tales*.

labour market. Furthermore, the realization of domesticity did not require a breadwinner-homemaker household. Ariadne Schmidt states that during the early modern period, industriousness of both men and women was highly encouraged.[458] Early modern domesticity and an extensive female labour force could coexist because much work was still carried out at home. These conclusions have hence shaken the foundations of the concept of an early-modern male breadwinner society.

My research has shown that by the end of the nineteenth century, domesticity was actively pursued by households from both higher and lower social classes.[459] Numerous surveys that were conducted around the turn of the twentieth century reported that married women's work outside the house was generally discouraged because it would harm their family life. Indeed, around 1900, married women were largely absent from the factories and instead took up other types of work, most notably subsistence agriculture and work in the home industry, which could be combined with domestic labour. As Schmidt argued for the early modern period, I found that also by 1900, domesticity and gainful labour were not necessarily mutually exclusive. Thus, married women's work outside the home had always been the exception.

Although during industrialization, a vast part of the production process moved from the home to the factories, the home industry did not entirely disappear. In fact, technological change in some industries during the first years of the twentieth century even increased the demand for home workers.[460] In chapter 3, I illustrated this with the answers of several labour survey respondents who stated that it was easy for married women to find employment in the home industry and that this type of work was desired because it could be combined with domestic chores.[461]

The norms regarding unmarried women's work were different, although domesticity also played an important role in how society perceived them. For instance, various survey respondents thought that domestic service was more proper work for young women than factory labour because it prepared them for housewifery in their own future households.

[458] Schmidt, 'Labour ideologies'.
[459] See the special issue of the *Tijdschrift voor Sociale en Economische Geschiedenis* on households as agents of change in the Low Countries. The introduction offers a useful overview: Blondé and Hanus, 'Households as agents'.
[460] For instance, as I have shown in chapter 5, the increasingly applied method of preserving vegetables created more work in the home industry such as peeling beans and producing packaging material.
[461] Among others: Arbeidsinspectie, *Twente*, p. 241.

Women who had been factory labourers before their marriage were generally expected to be bad housewives for this very reason.[462]

Thus, the qualitative analysis of surveys illustrated the prevailing social views on women's labour. However, these sources did not answer the question *to what extent* social norms impacted FLFP. In chapter 2, I analysed the labour force participation of Dutch unmarried women based on almost 2 million marriage records from the period 1812-1929.[463] Previous research based on this source has argued that women increasingly withdrew from the labour market before they married, thus before they had to take care of their own household, and that therefore, social norms were the driver of the decreasing share of brides with a listed occupation. I challenged this view by including various variables that captured both the impact of demand for and supply of labour in a logistic regression with which I estimated the probability that a woman stated an occupation in her marriage record. The decade dummy that captured social norms lost significance with the inclusion of variables capturing the characteristics of local economic structures.

Another reason to question the extent of the impact of social norms on Dutch FLFP is the fact that households in neighbouring countries such as Britain and Belgium, where FLFP rates were higher, likewise pursued a domestic life centred around a stay-at-home wife. Lynn Abrams, among others, stresses the omnipresence of the domesticity norm throughout western Europe that started in the middle-class and gradually penetrated the working-class as well.[464] Thus, although the timing and the pace of the dissemination of these ideas may have differed between countries, it was by no means a Dutch phenomenon.

To sum up, in response to the expanding cult of domesticity women's work became less visible, partly explaining the decreasing participation rates in the censuses. However, although various previous studies suggest that this ideal was older and stronger in the Netherlands[465], it was similarly predominant in other nineteenth-century western European societies. Furthermore, Dutch FLFP was already relatively low around 1850 when the transition to the male breadwinner society presumably took off. Therefore, social norms are not a conclusive explanation for the aberrant Dutch trends.

[462] Note that these opinions were not uniform and the survey conductors were sometimes putting words into the respondents' mouths.
[463] This chapter draws heavily from a co-authored paper with Pieter Woltjer.
[464] Abrams, 'At home', p. 34.
[465] Pott-Buter, *Facts and fairy tales*.

6.2. Household living standards and the opportunity costs of women's work

I measured *living standards* by deflating household income from various types of resources by the costs of living. *Opportunity costs* were defined as "benefits foregone as a result of rejecting the next best alternative action."[466] Throughout this dissertation, I have considered the opportunity costs of choices regarding labour allocation for households, as opposed to individuals. For instance, the opportunity cost of women's wage labour was a clean and cosy home environment and, vice versa, the opportunity cost of full time housewifery was a wage income.

The analysis of this second explanatory factor included (1) the development of men's, women's, and children's nominal and real wages and (2) the income composition and living standards of households during the household life-cycle. First, in chapter 4, I presented the first series of nineteenth-century women's wages in the agricultural and industrial sectors to investigate the impact of structural change on women's position in the labour market. I found that in agriculture the gap between men's and women's casual wages widened during the nineteenth century, while the gender wage gap (GWG) in annual wages closed. In industry the GWG in casual wages closed during the first half of the nineteenth century, but thereafter started to widen dramatically until at least the 1910s. Overall, accounting for the structure of the economy, the GWG in casual wages widened and women's position in the casual labour market deteriorated. Female farm servants (and probably also domestic servants in the cities) working on annual contracts, however, saw their relative position improve somewhat.

In chapter 5 I used the wage series to estimate the living standards of agricultural and industrial households by employing Robert Allen's welfare ratio method. I have responded to three of the most fundamental criticisms on the application of this method: (1) the insufficient amount of calories in the bare bones consumption basket, (2) the disregard of changes throughout the household life-cycle, among which household size, and (3) the neglect of women's and children's contributions to the household income. I found that men's industrial real wages increased rapidly after 1880 and that they became increasingly capable of providing for an entire household with four children. However, the purchasing power of men's agricultural wages could not keep up and an additional income remained crucial to support a family.

[466] Becker, Ronen, and Sorter, 'Opportunity costs', p. 317.

Second, based on the findings from chapters 4 and 5 we can conclude that during the second half of the nineteenth century, it became less attractive for industrial households to let the wife perform (full time) wage labour. The GWG widened and the financial possibilities to create a breadwinner-homemaker household expanded because of the increase in men's real wages. In agricultural households, matters were different. Although women's position in the wage labour market likewise deteriorated because of a widening GWG, men's wages were not sufficient to provide for an entire household. Indeed, I found that self-employed agriculture was an important resource for agricultural wage labourers: around 1910, only 35-50% of the total household income was generated by the husband's wage labour and about the same share by yields from the land. However, also in industrial households during the same period, the husband's wage was often not the sole source of income, constituting circa 80% in highly urbanized regions and circa 60% in the more rural industrial regions in the eastern provinces. Still, considering the different opportunity costs of women's labour in the two sectors, from the 1880s onwards, industrial households were more likely to create a breadwinner-homemaker type of labour division than agricultural households that probably had no choice but to partly rely on the wife's income-generating activities.

In other European countries, too, many households had trouble living up to the norms regarding domesticity without falling into poverty: "[a]nd in all European cities women were obliged to work from home; the identification of women as primarily domestic and only secondary workers pushed the employment of married women in particular into their own homes or small workshops."[467] A comparison with Britain enhances our understanding of the aberrant FLFP rates in the Netherlands. Recent research on British women's wages by Jane Humphries and Jacob Weisdorf draws similar conclusions about women's changing position in the labour market during industrialization. They too find that women's position in the casual labour market deteriorated during industrialization, while the position of women working on annual contracts slightly improved.[468] The difference between Britain and the Netherlands is that the Dutch GWG in casual industrial wages *closed* after the introduction of the first manually driven machines in the textile industry and started to widen only after the steam-driven machinery became dominant. Conversely, in Britain the GWG had already started to widen during the early stages of mechanization. Overall, although the British and Dutch economies developed in a different way and industrialized at different moments in

[467] Abrams, 'At home', p. 34.
[468] Humphries and Weisdorf, 'The wages of women'.

time, technological change *eventually* had a negative effect on women's opportunities in the casual labour market in both countries.

Furthermore, the welfare ratios of London construction workers were significantly higher than in Amsterdam and had started to rise already during the early nineteenth century. The growth of men's real wages has often been proposed as an explanation for the withdrawal of (married) women from the labour market. Although my research generally supports this argument, it is not a satisfying explanation for the diverging FLFP rates in the Netherlands and Britain. After all, real wages were higher in London than in Amsterdam, but so were the FLFP rates in the censuses. Furthermore, in Britain too, industrial wages were generally higher than agricultural wages and the share of employment in the industrial sector had been much larger in Britain than in the Netherlands during the entire research period.[469] Thus, if the extent of men's real wages was indeed the most important explanatory factor, we would have expected even lower FLFP rates in Britain than in the Netherlands.

To sum up, rising men's real wages partly explain the decreasing FLFP in the industrial sector since married women's wage labour became increasingly redundant. Therefore, households became more likely to choose a breadwinner-homemaker type of household labour division. However, this was not the case for agricultural households that could not make ends meet without additional incomes next to the husband's wage labour. Since the agricultural sector was still extensive in the Dutch economy around the turn of the twentieth century, rising real wages are not a satisfactory explanation, both on a national and an international level, for the *overall* low FLFP rates.

6.3. Economic structural change

The impact of demand for labour on FLFP has gained increasing attention in the past years. Scholars such as Joyce Burnette and Jane Humphries have argued that in general, women worked if work was available and that the state of local labour markets was therefore a crucial determinant of FLFP.[470] Few studies have investigated the impact of structural change on women's work in the Netherlands, which is problematic considering that the Dutch economy developed in a unique way relative to most other western European countries (Table 1.3). A simple definition of *structural change* is a shift in the way an economy functions. It is closely linked to economic development and entails, among other things, a reallocation of labour and

[469] Williams, 'Poor relief'.
[470] Burnette, *Gender, work and wages*; Humphries and Sarasua, 'Off the record'.

resources from one sector to another.[471] I have used the term to reflect changes in the structure of the economy, most importantly employment shares, and coinciding shifts in the demand for labour. This dissertation has shown that structural change was a pivotal factor of influence.

First, in chapter 2, I found that unmarried women's LFP rates were to a large extent determined by economic structure. I have included variables capturing the structure of local markets into the regression analysis discussed in section 6.1. I argued that former research has largely neglected demand-side factors and that the results have therefore overemphasized the impact of social norms on Dutch unmarried women's LFP. Along with revealing a significant impact of sectoral shares, the regression results have also shown that the sectors that had a positive effect on unmarried women's LFP, especially textile and apparel manufacturing and private services, decreased in relative importance during the long nineteenth century.[472] I concluded that sectoral shares explain 46% of the changes in unmarried women's LFP, while social norms explain 32%.

Second, I argued in chapter 4 that changes in the Dutch agricultural sector contributed to the low participation rates in the censuses. Jan Luiten van Zanden, among others, found that from the 1880s onwards, large-scale farms lost importance and that instead small-scale farms flourished. Consequently, wage labour became less important because small farmers required fewer wage labourers and an increasing number of men and women worked in their own business. Female independent farmers were usually not registered by the census takers. Van Zanden has estimated that in 1910, the actual total number of female labourers in the agricultural sector was 176,100 (including women working in their own businesses) instead of the 105,500 registered women workers.[473] The de-proletarization in the agricultural sector was typical for the Netherlands. In Britain, large-scale farms and wage labour gained significance throughout the entire nineteenth century.[474] Although the demand for female labour decreased in the British agricultural sector during the nineteenth century, the exceptional invisibility of Dutch women's agricultural labour is yet another important explanation for the relatively low FLFP rates in the censuses.

Third, technological development was an important aspect of structural change during the nineteenth century. Although the early factory system, in which manually driven machinery was used, depended mainly on women and children, this changed with the introduction of steam-driven engines. This is not to say that women disappeared from the

[471] See for instance: Nassif, Feijó, and Araújo, 'Structural change', p. 7.
[472] I.e. the employment share of these sectors decreased during this period.
[473] van Zanden, *De economische ontwikkeling*, p. 75.
[474] Allen, *Enclosure and the yeoman*; Overton, *Agricultural revolution*.

factories: some machines were especially designed to be operated by women. Still, after the transition to steam power, most female factory workers were unmarried. Furthermore, in the textile industry many parts of the production process that had traditionally been women's work were taken over by men when mechanization progressed. Gertjan de Groot has argued that this was an international development since the Netherlands not only imported machinery from Britain, but also took over British customs of gender division.[475]

The analysis of male and female spinners' and weavers' wages in chapter 4 corroborates the idea that technological change had a profound impact on women's position in the labour market. In both professions, the GWG closed during the first half of the nineteenth century and thereafter started to widen until at least the 1890s. I argued that these two turning points coincided with the introduction of manually driven and steam-driven machinery, respectively. Spinning had traditionally been women's work and remained so after the first machines – resembling the Spinning Jenny – came into general use. These machines could be operated at home or in small workshops. However, spinning at home died out with the introduction of the steam-driven *selfactor*, which was operated in factories. Consequently, spinning became dominated by men and the GWG widened. Similarly, when the flying-shuttle was introduced in the 1830s, the GWG initially narrowed because weaving became less burdensome and could still be done at home. After 1860, however, steam-driven machines started to take over. Although weaving remained a gender-neutral profession in the factories, women were generally given fewer looms to operate, thus diminishing their relative earnings and causing the GWG to widen.

To summarize, structural change and technological development negatively impacted the demand for female labour. It is not only an important explanation for the decreasing FLFP rates in the national censuses, it is also a likely cause of the differences between the Netherlands and surrounding countries.

6.4. At the bottom of the 'U'?

Let me briefly consider my findings on the Dutch divergence in FLFP rates in light of Claudia Goldin's theory of the U-shaped curve of FLFP.[476] As I more elaborately discussed in chapters 1 and 2, Goldin argues that because production moved from the home to the factories during the early stages of industrialization, women's opportunities in the labour market

[475] de Groot, 'Aanlappers en drossters'.
[476] Goldin, 'The u-shaped'.

diminished. During later stages, when the service sector had developed and women's educational attainments had caught up with men's, women re-engaged in paid employment. When the censuses included in Table 1.1 were conducted, the British economy had largely industrialized, whereas the Dutch economy had only just embarked upon industrialization. Therefore, it is likely that around 1900, the Dutch economy reached the bottom of the 'U' whereas Britain was already in the upward part of the curve. In this line of argumentation, the U-shaped *curve* of FLFP was a universal consequence of industrialization, but the *extent* of FLFP depended on the structure of national economies.

This dissertation has provided more insight into the downward slope of Goldin's 'U' and reflected on how this affected household living standards. A diachronic comparison between Britain and the Netherlands indeed suggests that the effects of industrialization on women's work were to a large degree internationally comparable. Occupational censuses of the twentieth century suggest that the *upward* part of the U-shaped curve of FLFP was likewise internationally comparable: Dutch FLFP started to rise again after 1900. Still, Dutch FLFP rates continued to be relatively low throughout the twentieth century. While this dissertation has thoroughly investigated nineteenth-century developments, future research is required to shed light on the impact of structural change on women's work during the twentieth century.

Samenvatting in het Nederlands

Tegenwoordig vormen vrouwen bijna de helft van de mondiale arbeidsmarkt. De geschiedenis van vrouwenarbeid is nooit een lineair proces geweest. De arbeidsparticipatie van vrouwen is door de tijd heen afwisselend gekrompen en toegenomen. Dit proefschrift onderzoekt een periode van afnemende arbeidsparticipatie: Nederland gedurende de negentiende eeuw.

Kwantitatief onderzoek naar vrouwenarbeid is noodzakelijk om lange-termijn economische ontwikkelingen te begrijpen, zowel op een macroniveau (de arbeidsmarkt) als op een microniveau (het huishouden). Ondanks vele belangrijke studies van de afgelopen jaren, zijn er nog vele belangrijke vragen onbeantwoord gebleven. We weten bijvoorbeeld nog weinig over de redenen voor de afnemende arbeidsparticipatie van vrouwen en de opkomst van het mannelijke-kostwinnersmodel gedurende de negentiende eeuw in West Europa.

Nederland is een interessante casestudy om dit verder te onderzoeken omdat de arbeidsparticipatie van vrouwen relatief laag lag en omdat de Nederlandse economie relatief laat industrialiseerde. Dit proefschrift draagt bij aan het beantwoorden van de volgende vraag: **Waarom was de arbeidsparticipatie van vrouwen lager in Nederland dan in omliggende landen gedurende de periode 1830-1914?** Mijn belangrijkste bevinding is dat de afwijkende structuur van de Nederlandse economie de belangrijkste reden was voor de lage vrouwelijk arbeidsparticipatie en dat verschillende economische structuren *binnen* Nederland bepalend waren voor het soort werk dat vrouwen deden en dus bepalend waren voor de transitie naar een mannelijke-kostwinnersmodel.

Mijn onderzoek draagt bij aan twee historiografische discussies: (1) het ontstaan van het mannelijke-kostwinnersmodel en (2) de ontwikkeling van de levensstandaarden van huishoudens gedurende de negentiende en vroeg twintigste eeuw. Gedurende de tweede helft van de negentiende eeuw vond er in West-Europese huishoudens een transitie plaats. Een model waarin alle gezinsleden (vanaf een bepaalde leeftijd) een inkomen genereerden veranderde in een mannelijke-kostwinnersmodel waarin mannen werkten voor lonen, vrouwen zich bezighielden met het huishouden en kinderen naar school gingen. Een veelbesproken onderwerp binnen de literatuur over deze transitie is de verminderende arbeidsparticipatie van vrouwen. Beroepstellingen hebben aangetoond dat het aantal vrouwen dat werd opgetekend met een beroep in West-Europa tussen 1850 en 1930 afnam. In Nederland was de arbeidsparticipatie gedurende deze gehele periode uitzonderlijk laag.

Verklaringen voor deze afwijkende uitkomsten worden voornamelijk gezocht in maatschappelijke normen over huiselijkheid. Die waren volgens veel wetenschappers in Nederland dominanter dan in omliggende landen.

De overgang naar het mannelijke-kostwinnersmodel wordt verder vaak verklaard door stijgende reële lonen van mannen, die daardoor steeds beter in staat waren zonder het inkomen van de vrouw een gezin te onderhouden. Echter, weinig historici hebben zich nog gewaagd aan diepgaand regionaal onderzoek naar de financiële component van het mannelijke-kostwinnershuishouden. Geaggregeerde trends en reële mannenlonen in de industriële sector domineren nog altijd de historiografie over de ontwikkeling van levensstandaarden. Hierdoor hebben we weliswaar inzicht gekregen in de ontwikkeling van wereldwijde ongelijkheid, maar is het nog altijd onduidelijk hoe levensstandaarden zich ontwikkelden op het niveau van het huishouden. Om dit beter te begrijpen, is het noodzakelijk de inkomsten van vrouwen en kinderen en van werk dat niet in loon werd uitbetaald in de analyse mee te nemen.

Dit proefschrift combineert de twee bovengenoemde discussies in hetzelfde analytische raamwerk met het doel meer inzicht te krijgen in de overgang naar het mannelijke-kostwinners model. Hiertoe onderzoek ik verschillende zaken. Ten eerste, de factoren die de loop van vrouwelijke arbeidsparticipatie hebben beïnvloed. De factoren die ik onderscheid zijn maatschappelijke normen, veranderende vraag naar vrouwenarbeid als gevolg van verschuivende economische structuren en veranderend aanbod van vrouwenarbeid. Ten tweede, het soort werk dat vrouwen deden en hun positie in de arbeidsmarkt ten opzichte van die van mannen. Ten derde, de inkomenssamenstelling en levensstandaarden van huishoudens in de agrarische en industriële sectoren.

De centrale hypothese van dit onderzoek is dat de positie van vrouwen in de arbeidsmarkt en het huishouden in belangrijke mate werd bepaald door de structuur van plaatselijke arbeidsmarkten en dat de transitie naar het mannelijke-kostwinnersmodel daarom heterogeen was. Om deze hypothese te testen heb ik vier onderzoeksvragen geformuleerd: (1) In welke mate beïnvloedden veranderingen in de economische structuur de arbeidsparticipatie van ongetrouwde Nederlandse vrouwen gedurende de periode 1812-1929? (2) Wat voor werk verrichtten getrouwde vrouwen in en rondom het huis en hoe stond de maatschappij hier tegenover? (3) In welke mate beïnvloedden veranderingen in de economische structuur de positie van vrouwen in de rurale en industriële arbeidsmarkten? (4) Wanneer en waar werd het financieel mogelijk voor huishoudens om het mannelijke-kostwinnersmodel te realiseren?

In wat volgt zal ik de belangrijkste bevindingen per hoofdstuk uiteenzetten. In hoofdstuk 2 onderzoek ik wat de bepalende factoren waren voor de arbeidsparticipatie van ongetrouwde vrouwen. Mijn belangrijkste bron is een database waarin de informatie uit bijna 2 miljoen huwelijksakten uit de periode 1812-1929 is opgenomen, waaronder de beroepen en leeftijd van de bruid, de bruidegom en hun ouders. In dit hoofdstuk wordt vrouwelijke arbeidsparticipatie gemeten aan de hand van het percentage bruiden met een vermeld beroep in de huwelijksakte. In bestaand onderzoek op basis van deze bron betogen de auteurs dat veranderende maatschappelijke normen de belangrijkste drijfveer waren achter de waargenomen verminderde vrouwelijke arbeidsparticipatie gedurende de negentiende eeuw. Op basis van een logistische regressie concluderen ze dat de periode waarin het huwelijk werd afgenomen statistisch zeer significant was. Echter, ze hebben hierbij geen rekening gehouden met de structuur van de economie. Ik voer dezelfde regressie uit (op basis van meer data), met het verschil dat ik de structuur van de plaatselijke arbeidsmarkten als een onafhankelijke variabele meeneem. De belangrijkste bevinding is dat de significantie van de variabele die maatschappelijke normen meet afneemt wanneer kenmerken van de economische structuur worden meegenomen in de regressie. Hoewel maatschappelijke normen de ontwikkeling van de arbeidsparticipatie van ongetrouwde vrouwen ongetwijfeld hebben beïnvloed, nuanceer ik dit beeld door aan te tonen dat bovenal de structuur van de arbeidsmarkt en de daarbij behorende vraag naar arbeid bepalend is geweest.

In hoofdstuk 3 betoog ik dat in de beroepstellingen van de negentiende en vroeg twintigste eeuw een groot deel van de vrouwenarbeid onzichtbaar is gebleven, omdat niet alle soorten arbeid werden geregistreerd. Bovendien wordt het debat over vrouwenarbeid vaak gelinkt aan theoretische studies die betogen dat er een scheiding is tussen een publieke en een private sfeer. Het wordt regelmatig gesteld dat industrialisatie het productieproces uit huis haalde en naar de fabriek bracht, dus van de private sfeer naar de publieke sfeer verplaatste. Hierdoor zouden vrouwen hun huiselijke taken niet meer kunnen combineren met loonarbeid en werden hun echtgenoten de enige kostwinners van het huishouden. Het probleem is dat de publieke sfeer te veel wordt geassocieerd met mannen en arbeid terwijl de private sfeer wordt geassocieerd met vrouwen en huiselijkheid. Op basis van honderden interviews met arbeiders en leden van hogere sociale klassen, zoals priesters en ondernemers, onderzoek ik hoe huishoudens hun werk verdeelden (waarbij de focus ligt op het werk van getrouwde vrouwen) en wat de maatschappelijke houding ten opzichte van dit werk was. Mijn belangrijkste conclusie is dat vrouwen verschillende soorten arbeidsrelaties combineerden en dat op die manier huishoudens het huiselijkheidsideaal naleefden en tegelijkertijd genoeg inkomen

genereerden. Huiselijkheid en arbeid sloten elkaar dus niet uit en konden naast elkaar bestaan in de private sfeer van het huis.

In hoofdstuk 4 onderzoek ik hoe de positie van vrouwen in de arbeidsmarkt veranderde als gevolg van de veranderende economische structuur gedurende de negentiende eeuw. Tot nu toe bleef deze vraag voor Nederland nog grotendeels onbeantwoord omdat onze kennis over de lange-termijn ontwikkeling van vrouwenlonen nihil was. Om dit beter te kunnen onderzoeken heb ik een vrouwenlonenreeks geconstrueerd voor de agrarische en industriële sectoren. Daarbij maak ik onderscheid tussen dag- en weeklonen ('losse' lonen) aan de ene kant en jaarlonen aan de andere kant. In de eerste helft van de negentiende eeuw werd het verschil tussen de losse industrielonen van mannen en vrouwen kleiner, maar vanaf circa 1850 groeide de loonkloof drastisch. Ook de loonkloof in losse lonen in de landbouw nam toe gedurende de negentiende eeuw. Het verschil tussen mannelijke en vrouwelijke jaarlonen (bijna allemaal de lonen van knechten en dienstbodes op boerderijen) werd daarentegen iets minder vanaf 1880. Dit betekent dat de positie van vrouwen die op losse contracten werkten over het algemeen verslechterde gedurende de periode van industrialisatie terwijl de positie van dienstbodes op het platteland juist verbeterde. Deze resultaten zijn vergelijkbaar met de situatie in Groot-Brittannië waar de loonkloof tussen mannen en vrouwen eveneens begon te groeien gedurende het proces van industrialisatie en mechanisatie.

In hoofdstuk 5 komen veel van de onderzoeksresultaten uit de hoofdstukken 2 tot en met 4 bij elkaar. Als zodanig vormt dit hoofdstuk een eindanalyse van de betekenis van vrouwenarbeid voor de welvaart van het huishouden en de overgang naar het mannelijke-kostwinnersmodel. Een van de belangrijkste vragen in dit hoofdstuk is wanneer Nederlandse huishoudens in verschillende sectoren de financiële mogelijkheid kregen voor het creëren van een arbeidsverdeling waarin de man de enige kostwinner was en de vrouw het huishouden verzorgde. Allereerst zet ik de nominale lonen die ik in hoofdstuk 4 behandel om in reële lonen. Hierdoor wordt meer duidelijk over de ontwikkeling van de koopkracht van mannelijke, vrouwelijke en minderjarige loonarbeiders en in hoeverre die lonen in theorie een gezin konden onderhouden. Ik kijk hierbij naar de situatie in vier verschillende fasen van de levenscyclus van het huishouden: (1) een echtpaar zonder kinderen, (2) een echtpaar met vier kinderen jonger dan 12, (3) een echtpaar met vier kinderen ouder dan 12 en (4) een ouder echtpaar zonder inwonende kinderen. Het zal blijken dat mannelijke loonarbeiders die in de industriële sector werkten al vanaf de jaren 1880 steeds beter in staat waren om een heel gezin te onderhouden terwijl dit in de agrarische sector nog niet zo was. Daarom was extra inkomen

voor huishoudens in agrarische arbeidsmarkten nog langer noodzakelijk dan voor huishoudens in een industriële setting.

In de conclusie kom ik terug op de uitzonderlijk lage arbeidsparticipatiegraad van Nederlandse vrouwen in de beroepstellingen en evalueer ik op basis van mijn onderzoeksresultaten de factoren die vrouwelijke arbeidsparticipatie beïnvloedden. Ten eerste hebben maatschappelijke normen over de rol van de vrouw binnen het huishouden als reactie op het groeiende verlangen naar huiselijkheid een enorme impact gehad op de geschiedenis van vrouwenarbeid. Getrouwde vrouwen trokken zich terug uit de 'zichtbare' arbeidsmarkt. In plaats daarvan deden ze werk dat beter te combineren was met het huishouden en dat grotendeels onzichtbaar is gebleven in officiële statistische bronnen. Maatschappelijke normen waren echter ook zeer invloedrijk in andere landen, zoals Engeland, waar de arbeidsparticipatie van vrouwen veel hoger lag. Dus, ondanks dat maatschappelijke normen deels verklaren waarom het aandeel vrouwen met een opgetekend beroep afnam, verklaren ze niet het grote verschil tussen Nederland en andere West-Europese landen.

Ten tweede wordt in hoofdstuk 5 duidelijk dat reële mannenlonen in de industriële sector vanaf 1880 snel stegen terwijl dit niet het geval was in de agrarische sector. Vrouwenlonen in beide sectoren stegen amper en de loonkloof tussen mannen en vrouwen groeide. Hieruit heb ik geconcludeerd dat het mannelijke-kostwinnersmodel waarschijnlijk eerder ontstond in industriële gebieden dan in agrarische gebieden. De hoogte van mannenlonen heeft invloed gehad op de arbeidsparticipatie van vrouwen. Echter, het is niet een afdoende verklaring voor de verschillen met andere West-Europese landen. In Groot-Brittannië bijvoorbeeld waren de reële mannenlonen nog een stuk hoger dan in Nederland terwijl de vrouwelijke arbeidsparticipatie ook hoger was. Als reële lonen de belangrijkste drijfveer achter de ontwikkeling van arbeidsparticipatie zouden zijn geweest, zou het percentage vrouwen met een beroep in Groot-Brittannië hoger moeten zijn geweest dan in Nederland.

Ten derde, ik toon in verschillende hoofdstukken aan dat de economische structuur en de veranderende vraag naar arbeid van groot belang is geweest. In hoofdstuk 2 wordt duidelijk dat de structuur van plaatselijke arbeidsmarkten een significant effect had op de kans dat een vrouw een beroep optekende in haar huwelijksakte. In hoofdstuk 4 betoog ik dat de veranderende structuur van de Nederlandse landbouw, i.e. het belangrijker worden van kleine bedrijven ten opzichte van grote bedrijven, de vraag naar loonarbeiders heeft verminderd. Mannen en vrouwen werkten steeds meer in hun eigen bedrijf. Als dit werk door vrouwen werd gedaan, werd dit over het algemeen niet opgetekend in de beroepstellingen. Daardoor

werd vrouwenarbeid in de landbouw nog onzichtbaarder dan voorheen. In hoofdstuk 4 wordt het verder duidelijk dat technologische veranderingen in de textielindustrie de positie van vrouwen verslechterden. Veel machines werden ontworpen om ofwel door mannen, ofwel door vrouwen te worden bediend. Hierdoor namen mannen bepaalde taken over die voorheen door vrouwen werden verricht, zoals spinnen.

Al mijn onderzoeksresultaten in acht nemend, kan ik concluderen dat de afwijkende structuur van de Nederlandse economie de belangrijkste verklaring is voor de lage vrouwelijke arbeidsparticipatie in Nederland gedurende de negentiende en vroeg-twintigste eeuw.

Summary in English

Women's work has never been a linear process of extending participation. Instead, female labour force participation (FLFP) has extended and curtailed throughout time. To expound the forces driving these fluctuations, it is imperative to approach this issue from a long-term historical perspective. This dissertation studies a period of contraction: the nineteenth-century Netherlands.

Historical research on women's work took off in the 1920s as the result of research by pioneers such as Alice Clark and Ivy Pinchbeck whose studies are still widely cited. Notwithstanding the importance of these and later publications, the research on women's work based on *quantitative* methods and data has lagged behind for a long time. The inclusion of women in this strand of literature is, however, imperative for understanding long-term economic developments on both a macro and a micro level, i.e. on the level of the labour market and the household. In the past decades, quantitative research on women's work has been catching up. Still, many questions remain unanswered. For instance, despite ample research on the topic, we still know relatively little about the causes of the decreasing FLFP rates and the rise of a 'male breadwinner society' in nineteenth-century western Europe.

The Netherlands make an important case study to further explore this issue. First, FLFP rates as recorded in occupational censuses were low compared with surrounding countries. While this 'Dutch divergence' has puzzled historians for decades, no conclusive explanation has been found. Second, Dutch industrialization took off relatively late and until well into the twentieth century a significant part of the labour force worked in agriculture, in contrast to neighbouring countries such as Britain and Belgium. This dissertation contributes to answering the following question: **Why were Dutch female labour force participation rates lower than in surrounding countries during the period 1830-1914?** I will consider the following explanatory factors: structural change, social norms, and the opportunity costs of women's labour. The key finding is that the specific structure of the Dutch economy was the most important driver of the exceptionally low FLFP rates and that different economic structures within the Netherlands were a crucial determinant of women's labour allocation and hence the transition to a breadwinner-homemaker household.

I engage in two historiographical debates. First, the rise of the breadwinner-homemaker household – or the 'male breadwinner society' – in western Europe during the second half of the nineteenth century. This shift entailed husbands working for wages, women

becoming full time housewives, and children going to school: a pattern that would prevail until well into the second half of the twentieth century. An important aspect of this change was the withdrawal of (especially married) women from the labour market. The low Dutch FLFP rates indicate that the Netherlands were a frontrunner in the realization of the male breadwinner society. Social norms and the cult of domesticity are the most intensively investigated explanation for this phenomenon. The second debate is about the development of living standards during industrialization. We know that in London and Amsterdam, men's real wages started to drop after 1730 and remained low during the initial stages of industrialization. In London, only in the 1840s did welfare ratios reach the same level as in 1737 and in Amsterdam this took until the 1890s. A detailed analysis of households' resources is crucial to understand how households compensated for this loss of income.

With this research, I aim to link these debates. This is important because to understand households' behaviour, particularly regarding their labour allocation, we need a more accurate picture of household income on a regional and a sectoral level as well as throughout the different stages of the household life-cycle. Research on living standards that is based on men's real wages only tells part of the story. Increasing labour input of women and children could compensate for loss of income which explains how households were able to endure periods of low men's real wages. Indeed, the extent of women's and children's contributions to the household income fluctuated through time as well. Therefore, to truly understand the long-term development of households' living standards we need to include all sources of income into the analysis. Furthermore, for a better insight into household living standards we need to look beyond the wage component. This dissertation provides a level of detail on household labour allocation and living standards that has hitherto not been provided.

The central argument of this dissertation is that structural change was the most important driver of FLFP rates. Following from this, I expect that women's changing position in the economy and their contributions to the household income depended on the structure of local economies and that therefore, the transition to a male breadwinner society was regionally diverse. Chapter 2 starts with an analysis of unmarried women's LFP based on the question: *What was the key driver of Dutch unmarried women's labour force participation during the period 1812-1929?* On the basis of nearly 2 million marriage records I explore the impact of demand-side and supply-side factors on unmarried women's LFP. The magnitude of the dataset allows to run a logistic regression accounting for the occupational status of the groom, the decade and province where the marriage took place, the age of the bride, GDP per capita, and the characteristics of the local labour market. The results show that local economic

structures influenced FLFP to a significant degree. Especially 'textile and apparel manufacturing' and 'private services' had a positive effect on FLFP. Throughout the long nineteenth century, a greater than average employment share for these sectors in a given municipality coincided with an above average FLFP. A substantial part of the decreasing FLFP that was by previous studies explained by changing social norms, is actually the result of shifting sectoral shares. Indeed, the decomposition of FLFP shows that sectoral shifts in the Dutch economy in the period 1812 to 1929 can explain 46% of the decline in FLFP during this period. The residual category, capturing the impact of changing social norms, explains 32% of this decline.

Chapter 3 proceeds by exploring married women's work and focuses on the textile regions of Twente and Tilburg during the last decade of the nineteenth century. The central question of this chapter is: *How did households cope with the apparently conflicting wishes of keeping the wife at home to create domesticity and generating sufficient income?* Based on a qualitative analysis of hundreds of interviews with industrial labourers I consider both the *perception* of women's labour and women's *actual* working activities. I present two main conclusions. First, married women often combined various types of labour relations, i.e. wage labour, reciprocal labour, and reproductive labour, to both live up to the domesticity ideal and provide additional income. Including these types of work means that FLFP was higher than the occupational censuses have suggested. Second, a household in which women provided an income did not necessarily contradict the ideal of domesticity. Letting the wife combine different types of labour relations was a way for households to *reconcile* their longing for domesticity with the need to provide sufficient income.

Chapter 4 engages in the long-running debate about the impact of industrialization on women's work by answering the following question: *How did structural change affect women's position in agriculture and industry?* For the British case, recent research has shown that the gender wage gap (GWG) in casual wages widened from the mid-seventeenth century onwards. The authors argue that mechanization and the transition to the factory system were important drivers of this development. I wonder whether we can we find similar effects of industrialization on women's labour market opportunities in the Netherlands as in Britain, even though the timing and pace of industrialization were different. To answer this question, I compose the first Dutch nineteenth-century women's wage series and trace the development of the GWG. The key finding is that during industrialization, women's relative position in the casual agricultural and industrial wage labour markets deteriorated whereas servants working on annual contracts saw their relative position remain stable. The impact of the mechanization

of the textile industry on women's position in the Dutch and British labour markets was comparable due to customs of gender segregation and the expansion of the factory system. In both economies, women's position deteriorated and the opportunity costs of women's labour increased after steam-driven machinery came into general use. The difference is that this shift to steam power was preceded by a narrowing GWG in the Netherlands after the introduction of manually driven machinery, which was not the case in Britain where the GWG had widened from the very first signs of mechanization circa 1760. In the agricultural wage labour markets in both countries, women's position likewise deteriorated. However, in the Netherlands working in a private business became more feasible after 1880, most importantly for married women, whereas this was not the case in Britain. Agricultural women were therefore probably better off in the Netherlands.

Chapter 5 is a synthesis of the former chapters and seeks to answer the following question: *When and where did households become able to finance a breadwinner-homemaker household?* To answer this question, I provide a more adequate picture of household income in the Dutch industrial and agricultural sectors by including women's and children's wages, and incomes from self-employed agriculture and the home industry into the analysis. Furthermore, I account for changing household living standards and income composition during the several stages of the household life-cycle. I show that previous research has underestimated the living standards of newlywed couples, but severely overestimated them during later stages of the life-cycle with children. For many households, additional sources of income besides the husband's wage labour was still necessary by the start of the twentieth century. My key conclusion is that the realization of a breadwinner-homemaker household was possible in industrial households decades before it was possible in agricultural households. Men's fulltime industrial real wages could sustain an entire household after 1880, whereas agricultural real wages lagged behind and only increased modestly. Still, also in many industrial households around 1900, the husband's wage was not the sole source of income.

Chapter 6 contemplates the implications of my findings for our understanding of the impact of the three explanatory factors on FLFP. First, social norms regarding women's role within the household following from the growing desire for domesticity have affected the trajectory of women's labour. In chapters 3 and 5, I show that married women withdrew from the registered labour force and instead, performed work that could be combined with domestic chores and that remained invisible in most statistical sources. However, these social norms were likewise strong in other western European countries, such as Britain, where FLFP was

higher. Furthermore, Dutch FLFP was already low around 1850 when the transition to the male breadwinner society in western Europe started. Thus, although the domesticity norm may have been somewhat stronger in the Netherlands, it is no conclusive explanation for the aberrant Dutch trend in FLFP.

Second, men's real industrial wages started to rise after 1880 and became increasingly able to take care of a family of four. However, this was not true for men's agricultural wages. Women's wages in both sectors hardly increased at all during the nineteenth century in both sectors. I therefore concluded that industrial households were already able to realize a breadwinner-homemaker type of labour division from the 1880s, whereas agricultural households still relied for an important part on other sources of income besides the husband's wage labour by 1910. Thus, men's wages profoundly influenced household labour division. However, in Britain, men's real wages were even higher, but so were FLFP rates in the censuses. Thus, if the extent of men's real wages was indeed the most important explanatory factor, we would have expected even lower participation rates in Britain than in the Netherlands.

Third, the impact of economic structure and the changing demand for labour on FLFP has been a pivotal factor of influence. In chapter 2, I show that the structure of the local economy had a statistically significant effect on the chance that a bride stated an occupation in her marriage record. In chapter 4, I conclude that in agriculture, women increasingly performed work in a private business which was usually not registered in the censuses. Furthermore, technological change in the textile industry and the transition to the factory system negatively impacted women's position in the labour market because married women could no longer combine domestic chores with wage labour. Finally, many parts of the production process that had traditionally been women's work were taken over by men when mechanization progressed.

Considering all my research results, I conclude that the structure of the Dutch economy is the most important explanation for the exceptionally low Dutch FLFP rates during the long nineteenth century.

Appendices

Appendices chapter 2

Appendix 2.1. Odds ratios for brides stating an occupation

Table A2.1. Odds ratios for brides stating an occupation ('no occupation' = 0)

	(1)	(2)	(3)
Occupational status of groom (unskilled farm workers = 1.000)			
Upper class	0.166***	0.156***	0.183***
	(0.00221)	(0.00213)	(0.00277)
White-collar middle class	0.253***	0.259***	0.282***
	(0.00175)	(0.00188)	(0.00235)
Skilled workers	0.478***	0.476***	0.511***
	(0.00278)	(0.00291)	(0.00359)
Farmers	0.355***	0.364***	0.414***
	(0.00217)	(0.00227)	(0.00290)
Lower-skilled workers and farm workers	0.630***	0.612***	0.669***
	(0.00379)	(0.00391)	(0.00486)
Unskilled workers	0.786***	0.822***	0.884***
	(0.00454)	(0.00509)	(0.00626)
Period of marriage (1920-1929 = 1.000)			
1812-1819	4.467***	1.510***	1.662***
	(0.183)	(0.0637)	(0.0776)
1820-1829	5.165***	1.759***	1.961***
	(0.183)	(0.0645)	(0.0796)
1830-1839	5.268***	1.992***	2.207***
	(0.168)	(0.0658)	(0.0808)
1840-1849	4.807***	1.821***	1.994***
	(0.144)	(0.0568)	(0.0687)
1850-1859	4.297***	1.861***	1.892***
	(0.118)	(0.0531)	(0.0597)
1860-1869	3.456***	1.491***	1.458***
	(0.0890)	(0.0399)	(0.0431)
1870-1879	2.882***	1.562***	1.544***
	(0.0633)	(0.0356)	(0.0389)
1880-1889	2.484***	1.336***	1.317***
	(0.0416)	(0.0236)	(0.0258)
1890-1899	1.608***	1.258***	1.222***
	(0.0269)	(0.0217)	(0.0232)
1900-1909	1.168***	0.919***	0.890***
	(0.0170)	(0.0138)	(0.0147)
1910-1919	1.077***	1.088***	1.058***
	(0.0132)	(0.0135)	(0.0144)
Rural municipality (Urban = 1.000)	0.877***	0.835***	0.764***
	(0.00344)	(0.00385)	(0.00404)
Sectoral shares (Agriculture = 1.000)			
Mining and peat extraction		1.003***	1.005***
		(0.000460)	(0.000467)
Construction		0.985***	0.997***
		(0.000813)	(0.000891)
Food, tobacco and beverages mnf.		0.948***	0.951***

Sectoral shares continued…	(1)	(2)	(3)
		(0.00104)	(0.00109)
Textile and apparel mnf.		1.050***	1.048***
		(0.000440)	(0.000451)
Metal and machinery mnf.		1.001	0.974***
		(0.00155)	(0.00167)
Paper and chemical mnf.		1.005**	1.007***
		(0.00218)	(0.00226)
Glass, pottery, misc. mnf.		1.025***	1.038***
		(0.000863)	(0.000956)
Transportation and public utilities		0.969***	0.967***
		(0.000441)	(0.000525)
Wholesale and retail trade		0.980***	0.974***
		(0.000754)	(0.000850)
Finance, insurance and real estate		0.967***	1.007*
		(0.00319)	(0.00401)
Private services		1.052***	1.052***
		(0.000375)	(0.000477)
Province (Noord-Holland = 1.000)			
Drenthe	3.290***	1.859***	2.220***
	(0.0258)	(0.0186)	(0.0245)
Gelderland	1.783***	0.935***	0.990
	(0.00958)	(0.00745)	(0.00901)
Groningen	2.245***	1.607***	
	(0.0137)	(0.0123)	
Limburg	2.814***	1.147***	1.245***
	(0.0177)	(0.0114)	(0.0139)
Overijssel	2.611***	1.693***	1.907***
	(0.0156)	(0.0139)	(0.0173)
Zeeland	6.714***	4.376***	5.339***
	(0.0466)	(0.0391)	(0.0530)
Age of the bride (14-19 = 1.000)			
20-24			1.309***
			(0.0121)
25-29			1.589***
			(0.0150)
30-34			1.817***
			(0.0187)
35-39			2.009***
			(0.0236)
40-44			2.124***
			(0.0291)
45+			1.844***
			(0.0248)
Gross domestic product p. capita	0.701***	0.628***	0.675***
	(0.0263)	(0.0239)	(0.0283)
Constant	1.453	4.287***	1.587*
	(0.335)	(1.004)	(0.410)
N	1,820,531	1,820,531	1,498,180
Pseudo R^2	0.160	0.183	0.196

*** p<0.01, ** p<0.05, * p<0.1; Standard errors in parentheses; Pseudo R^2 reports McFadden's adjusted R^2.

Appendix 2.2. Construction of the sectoral shares

The construction of the employment shares for the 12 economic sectors in each of the 254 municipalities proceeds in three distinct steps. First, the share of male employment in 1899 for larger municipalities is determined on the basis of the occupational census for that year. Second, we estimate the sectoral shares for the remaining, smaller municipalities on the basis of the occupational returns for men in the marriage records. Third, for each municipality the change in the sectoral shares for years before and after 1899 is estimated, again based on the returns from the marriage records. Note that the average sectoral shares are estimated for 6 separate periods, each covering approximately 20 years. This is done in order to guarantee that our estimates are supported by a sufficient number of observations for each municipality at any given time.

The 1899 occupational census reports the number of men, women, and children working in 33 separate industries for municipalities exceeding 5,000 inhabitants. This census provides the basis for our estimation of the sectoral shares for the years 1890 to 1909. First, the male employment for all 33 industries is combined into the 12 distinct sectors, corresponding to the major sectors of the *Standard Industrial Classification* (see Table 2.1b).[477] Second, the relative shares of employment for these 12 major sectors are calculated. As noted in the main text, the sectoral shares are based solely on the employment figures for men, as they are less concentrated in certain industrial branches and employment rates are higher. Therefore, the male labour force is more representative for a determination of the size of industry in each municipality.

The municipalities that have less than 5,000 inhabitants are grouped together by province in the 1899 census. To get individual estimates of the sectoral shares for these smaller municipalities we turn to the marriage records instead. For each municipality, the occupations are assigned as reported between 1890 and 1909 by the grooms, the fathers of the grooms and the fathers of the brides to each of the 12 sectors on the basis of a correspondence table between the HISCO and SIC.[478] It is thus implicitly assumed that not just the groom, but also the father of the bride as well as the father of the groom reside within the municipality where the marriage was recorded. A robustness check using only the occupation of the groom reveals that the estimates for the sectoral shares are by-and-large insensitive to this assumption. The inclusion of the fathers' occupations in the estimation does increase the observation count per municipality, however, which is particularly helpful for the smallest

[477] For an overview of the SIC, see Ruggles et al., Integrated, variable 'IND1950'.
[478] See Ruggles et al., Integrated, variables 'OCCHISCO' and 'IND1950'.

municipalities that witnessed fewer marriages. Next, the resulting average sectoral shares for the groups of smaller municipalities per province are compared with the shares derived listed in the 1899 census. Although the differences are small, the shares obtained from the marriage records are normalized to make them fully compatible with the estimates in the census.

The final step is to look at the change in sectoral composition over time. For each municipality, both large and small, first the average sectoral shares for all six periods is estimated, solely on the basis of the marriage records, using the procedure described above. Next, the change in shares for each period with respect to the base period 1890-1909 is determined. We extrapolate the shares obtained from the occupational census for the base period – either directly, as for the large municipalities, or indirectly for the smaller ones – on the basis of these changes. Generally, the resulting shares will not sum to one for each municipality in all the different periods. This is solved by again normalizing the shares.

Appendix 2.3. Note on decomposition

To fully decompose the decline in FLFP in its underlying constituents, the change in all variables included in the model needs to be taken into account. Partial indices, that include only a subset of the characteristics driving FLFP, can be constructed for all variables in the regression. This note will discuss first the basic notation behind this decomposition, second the derivation of the decomposition itself and lastly the chaining procedure.

Basic notation

As noted in the main text, the decomposition builds on the results from the logistic regression. The regression predicts the probability that bride *i*, given her characteristics X_i, will report an occupation.

$$Pr\{y_i = 1|X_i\} \tag{C.1}$$

The variable X comprises all independent variables in the regression model, so *occupational status of the groom* (*o*), *period of marriage* (*d*), *province* (*p*), *rural/urban* (*r*), *age at marriage* (*a*), *sectoral shares* (*s*) and *GDP p. capita* (*g*).

$$Pr\{y_i = 1|o_i, d_i, p_i, r_i, a_i, s_i, g_i\} \tag{C.2}$$

Note that equation (C.1) and (C.2) are identical, however (C.1) is generally easier to interpret. When one of the variables in the decomposition is fixed, however, this needs to be showed explicitly. If, for instance, we want to estimate what would be the probability that bride *i* stated an occupation if we fix her age to the average age in our sample ($\bar{a}$), the following notation would be used:

$$Pr\{y_i = 1|\bar{a}, x_i\} \tag{C.3}$$

Note that the lower case x is used to denote the remaining independent variables in the model, to distinguish it from the upper case notation (X) used previously, which does include age. Also note that all variables that include the subscript *i* are based on actually observed values and are unique for each individual bride, while the variables that don't include the subscript *i* (i.e. age $\bar{a}$ in the example above) are based on fixed values which do not change between brides.

The equations above only estimate the probability for one bride. To obtain this probability for all brides in the marriage records we take an average over all 1.8 million brides. The variable *N* is used to denote the number of brides in our sample.

$$FLFP = \frac{\sum_i^N Pr\{y_i = 1|X_i\}}{N} \tag{C.4}$$

The decomposition looks at the change in FLFP over time, so a time component (*t)* is included.

$$FLFP_t = \frac{\sum_i^{N_t} Pr\{y_{it} = 1|X_{it}\}}{N_t} \tag{C.5}$$

As previously noted, in the decomposition we want to fix some of the variables to see how this impacts FLFP. Equation (C.6) provides an example which estimates FLFP for decade *t* when the sectoral shares are fixed to the average for the base period 0 (i.e. $\bar{s}_0$).

$$FLFP_t^{\bar{s}_0} = \frac{\sum_i^{N_t} Pr\{y_{it} = 1|\, \bar{s}_0, x_{it}\}}{N_t} \tag{C.6}$$

Two things to note here: first, a superscript $\bar{s}_0$ is added to *FLFP* to denote the sectoral shares are fixed; second, the lowercase x is used again to show it excludes one of the independent variables (*s*, which is shown separately).

Decomposition

To look at the effect of changes in the sectoral shares (*s*) it can be calculated, for instance, how FLFP would change between period 0 and 1 if we keep the sectoral shares fixed to the average for period 0 ($\bar{s}_0$). The ratio between FLFP in period 1 and 0 is then given by:

$$\frac{FLFP_1^{\bar{s}_0}}{FLFP_0^{\bar{s}_0}} = \frac{\sum_i^{N_1} Pr\{y_{i1} = 1|\, \bar{s}_0, x_{i1}\}/N_1}{\sum_i^{N_0} Pr\{y_{i0} = 1|\, \bar{s}_0, x_{i0}\}/N_0} \tag{C.7}$$

Note that the denominator predicts the average probability that brides in decade 0 state an occupation given that the sectoral shares are fixed to the average for that same decade 0. It is not unreasonable to assume that this prediction will be identical (or very close) to the FLFP

actually observed for decade 0. So instead of using the average sectoral shares for period 0 (i.e. $\bar{s}_0$) the actually observed sectoral shares for each bride are used instead (i.e. s_{i0}). Analysis of our data confirms that the results will indeed be nearly identical, regardless whether the average for that period is used or the actually observed values. So it is assumed that:

$$\sum_{i}^{N_t} Pr\{y_{it} = 1|\, \bar{s}_t, x_{it}\}/N_t = \sum_{i}^{N_t} Pr\{y_{it} = 1|\, s_{it}, x_{it}\}/N_t \quad \forall t \tag{C.8}$$

If we substitute the right-hand part of (C.8) in (C.7) we obtain:

$$\frac{FLFP_1^{\bar{s}_0}}{FLFP_0} = \frac{\sum_i^{N_1} Pr\{y_{i1} = 1|\, \bar{s}_0, x_{i1}\}/N_1}{\sum_i^{N_0} Pr\{y_{i0} = 1|\, s_{i0}, x_{i0}\}/N_0} \tag{C.9}$$

To get the change or growth in FLFP (denoted by *f*), logs are taken (*ln*).

$$f_1^{\bar{s}_0} = ln\frac{FLFP_1^{\bar{s}_0}}{FLFP_0} = ln\frac{\sum_i^{N_1} Pr\{y_{i1} = 1|\, \bar{s}_0, x_{i1}\}/N_1}{\sum_i^{N_0} Pr\{y_{i0} = 1|\, s_{i0}, x_{i0}\}/N_0} \tag{C.10}$$

Equation (C.10) gives the expected growth of FLFP between period 1 and 0 if the sectoral shares *do not* change. To get the effect of the *change* in the sectoral shares on FLFP we should thus compare the growth in FLFP if we allow the sectoral shares to change (f_1) to the growth in FLFP if we do not allow them to change ($f_1^{\bar{s}_0}$). The difference between these growth rates (i.e. $F_1^{\bar{s}_0}$) will give the contribution of the (change in) sectoral shares.

$$F_1^{\bar{s}_0} = f_1 - f_1^{\bar{s}_0} = ln\left(\frac{FLFP_1}{FLFP_0}\right) - ln\left(\frac{FLFP_1^{\bar{s}_0}}{FLFP_0}\right) = ln\frac{\sum_i^{N_1} Pr\{y_{i1} = 1|\, s_{i1}, x_{i1}\}}{\sum_i^{N_1} Pr\{y_{i1} = 1|\, \bar{s}_0, x_{i1}\}} \tag{C.11}$$

Note that *N* drops out of the equation as it occurs simultaneously in both the numerator and the denominator. Equation (C.11) gives the contribution of the sectoral shares to the growth in FLFP between period 1 and 0, where the sectoral shares are fixed to the average observed in period 0. A more general notation of the contribution to the growth between period *t* and 0 is given below. Note that equation (C.12) is identical to equation (2) in the main text.

$$F_t^{\bar{s}_0} = ln\frac{\sum_i^{N_t} Pr\{y_{it} = 1|s_{it}, x_{it}\}}{\sum_i^{N_t} Pr\{y_{it} = 1|\bar{s}_0, x_{it}\}} \tag{C.12}$$

Base-years and chaining

As noted in the main text, the decomposition in (C.12) is sensitive to the choice of the base year. Going back to the specific case of the decomposition of the growth of FLFP between period 1 and 0, we opted to use the average sectoral shares for period 0. An equally valid choice would be to use the average sectoral shares for period 1 in the decomposition.

$$f_1^{\bar{s}_1} = ln\frac{FLFP_1}{FLFP_0^{\bar{s}_1}} = ln\frac{\sum_i^{N_1} Pr\{y_{i1} = 1|\, s_{i1}, x_{i1}\}/N_1}{\sum_i^{N_0} Pr\{y_{i0} = 1|\, \bar{s}_1, x_{i0}\}/N_0} \quad \text{(C.13)}$$

The contribution of the sectoral shares to growth ($F_1^{\bar{s}_1}$) based on period 1's average shares is:

$$F_1^{\bar{s}_1} = ln\,\frac{\sum_i^{N_0} Pr\{y_{i0} = 1|\, \bar{s}_1, x_{i0}\}}{\sum_i^{N_0} Pr\{y_{i0} = 1|\, s_{i0}, x_{i0}\}} \quad \text{(C.14)}$$

Or it's general form:

$$F_t^{\bar{s}_t} = ln\,\frac{\sum_i^{N_0} Pr\{y_{i0} = 1|\, \bar{s}_t, x_{i0}\}}{\sum_i^{N_0} Pr\{y_{i0} = 1|\, s_{i0}, x_{i0}\}} \quad \text{(C.15)}$$

As noted in the main text, equations (C.12) represent a Paasche index, whereas (C.15) represents a Laspeyres index. Unfortunately, the Paasche and the Laspeyres indices will often yield a different answer. There is no theoretical rationale to prefer one over the other, however. The general solution is to use the average of both the Paasche and Laspeyres index, which yields a so-called Fisher index:

$$F_t^{\bar{s}_{0t}} = \frac{F_t^{\bar{s}_0} + F_t^{\bar{s}_t}}{2} = \left(ln\,\frac{\sum_i^{N_t} Pr\{y_{it} = 1|s_{it}, x_{it}\}}{\sum_i^{N_t} Pr\{y_{it} = 1|\bar{s}_0, x_{it}\}} + ln\,\frac{\sum_i^{N_0} Pr\{y_{i0} = 1|\, \bar{s}_t, x_{i0}\}}{\sum_i^{N_0} Pr\{y_{i0} = 1|\, s_{i0}, x_{i0}\}} \right)/2 \quad \text{(C.16)}$$

Equation (C.16) still fully relies on the sectoral shares of decades 0 and *t*, while ignoring the shares of the intervening decades. A solution to this would be to construct a chained index. Chaining links the estimates of the contribution for the change in sectoral shares for all the pairs of adjacent decades based on the average sectoral shares for both the respective decades. In other words, we separately estimate (C.16) for the growth of FLFP between decades 0 and 1, 1 and 2, 2 and 3, all the way up to decade *t*, after which these contributions are summed. This procedure ensures that all the average sectoral shares are used and each is weighted equally. In effect it is no longer necessary to choose a base year at all, and what is left is a single estimate of the contribution of the change in sectoral shares to the growth in FLFP.

$$F_t^{\bar{s}} = F_t^{\bar{s}_{01}} + F_t^{\bar{s}_{12}} + F_t^{\bar{s}_{23}} \dots F_t^{\bar{s}_{t-1t}} \quad \text{(C.17)}$$

Written in full, equation (C.17) gives us equation (3) from the main text.

$$F_t^{\bar{s}} = \sum_{\tau=1}^{t} \left(ln \frac{\sum_i^{N_\tau} Pr\{y_{i\tau} = 1 | s_{i\tau}, x_{i\tau}\}}{\sum_i^{N_\tau} Pr\{y_{i\tau} = 1 | \overline{s}_{\tau-1}, x_{it}\}} + ln \frac{\sum_i^{N_{\tau-1}} Pr\{y_{i\tau-1} = 1 | \overline{s}_{\tau}, x_{i\tau-1}\}}{\sum_i^{N_{\tau-1}} Pr\{y_{i\tau-1} = 1 | s_{i\tau-1}, x_{i\tau-1}\}} \right) / 2 \quad \text{(C.18)}$$

Appendices chapter 4

Appendix 4.1. Number of observations

Tables A4.1 to A4.5 show the number of observations in various ways: (1) in Table A4.1 per industry, gender, and period, (2) in Table A4.2 per industrial branch and skill level, (3) and in Tables A4.3 to A4.5 per industrial branch, gender, and period. The sources normally reported average wages of an extensive group of labourers and I have entered them in my database as such. This means that the actual number of individual wages that lay at the basis of these results is much higher than the 7,876 observations. NB: I have entered the weighted average of the few sources that reported individual wages.

As the tables show, some occupations are still underrepresented in the database or not included at all. Future research on women's wages will give a more comprehensive overview of the trajectory of women's wages.

Table A4.1. Number of observations per five-year period 1800-1924

	Agriculture		**Industry**			**Total**
Period	*Men*	*Women*	*Men*	*Women*	*Children*	
1800-1804	21	15	10	0	0	*46*
1805-1810	21	12	10	0	0	*43*
1810-1814	23	12	10	0	0	*45*
1815-1819	36	11	63	9	2	*121*
1820-1824	22	10	10	0	0	*42*
1825-1829	23	14	19	0	0	*56*
1830-1834	22	13	10	0	0	*45*
1835-1839	22	17	20	2	1	*62*
1840-1844	23	17	103	57	185	*385*
1845-1849	21	16	28	6	0	*71*
1850-1854	22	18	27	0	0	*67*
1855-1859	25	20	14	0	1	*60*
1860-1864	11	10	154	112	346	*633*
1865-1869	7	7	11	3	3	*31*
1870-1874	8	9	3	0	3	*23*
1875-1879	16	11	0	0	0	*27*
1880-1884	16	9	0	0	0	*25*
1885-1889	229	132	0	0	0	*361*
1890-1894	13	9	178	74	38	*312*
1895-1899	1,635	1,387	0	0	0	*3,022*
1900-1904	17	7	323	25	144	*516*
1905-1909	685	187	0	14	0	*886*
1910-1914	103	69	32	43	9	*256*
1915-1919	5	0	119	75	286	*485*
1920-1924	5	0	251	0	0	*256*
Total	*3,031*	*2,012*	*1,395*	*420*	*1,018*	***7,876***

Sources: see chapter 4

Table A4.2. Number of observations per industry, sector and skill level (men's, women's, and children's wages)[a]

I	N	%	I	N	%	I	N	%
1	128	1.75%	*12*	64	0.87%	*23*	1	0.01%
2	6	0.08%	*13*	7	0.10%	*24*	7	0.10%
3	48	0.66%	*14*	21	0.29%	*25*	1	0.01%
4	327	4.47%	*15*	372	5.08%	*26*	1	0.01%
5	31	0.42%	*16*	0	0.00%	*27*	3	0.04%
6	75	1.02%	*17*	68	0.93%	*28*	1	0.01%
7	168	2.29%	*18*	4,723	64.51%	*29*	1	0.01%
8	1	0.01%	*19*	1	0.01%	*30*	1	0.01%
9	868	11.86%	*20*	1	0.01%	*31*	1	0.01%
10	0	0.00%	*21*	80	1.09%	*32*	1	0.01%
11	312	4.26%	*22*	1	0.01%	*33*	1	0.01%

Sector	**N**	**%**
Agriculture	5,106	63.55%
Industry	2,929	36.45%
Total	8,035	100.00%

Skill level	**N**	**%**
Unskilled	4,300	54.85%
Lower skilled	2,956	37.70%
Medium skilled	580	7.40%
Higher skilled	4	0.05%
Total	7,840[b]	100.00%

[a] I = Number of occupational group according to the 1899 census (see Appendix 4.2).
[b] Excluding observations without a specified skill level.
Sources: Dutch wage series (Boter); 1899 census.

Table A4.3. Number of observations per industrial branch according to the 1899 census per 5-year period (men's industrial wages)

	Group 1899 census																	
Period	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**Total**
1800-1804	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	**10**
1805-1810	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	**10**
1810-1814	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	**10**
1815-1819	1	0	1	22	0	4	0	2	3	2	6	0	2	0	3	0	7	**53**
1820-1824	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	**10**
1825-1829	0	0	1	11	0	0	0	0	0	0	2	1	1	0	0	0	3	**19**
1830-1834	0	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	**10**
1835-1839	0	0	1	12	0	0	0	0	0	0	0	1	0	0	3	1	2	**20**
1840-1844	12	1	0	10	0	0	0	0	0	0	5	0	0	3	70	0	2	**103**
1845-1849	10	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0	**28**
1850-1854	0	0	0	21	0	0	0	0	0	0	1	1	1	0	0	1	2	**27**
1855-1859	0	0	0	10	0	0	0	0	0	0	1	0	0	0	1	0	2	**14**
1860-1864	40	1	2	3	0	0	3	0	0	0	7	2	2	8	70	2	14	**154**
1865-1869	0	0	0	10	0	0	0	0	0	0	0	0	0	1	0	0	0	**11**
1870-1874	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	**3**
1875-1879	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1880-1884	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1885-1889	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1890-1894	27	0	18	4	2	3	3	0	4	0	8	0	2	3	66	2	26	**168**
1895-1899	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1900-1904	2	2	15	121	0	28	11	4	0	0	35	0	22	1	5	37	40	**323**
1905-1909	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1910-1914	0	0	2	0	0	0	0	0	0	0	3	0	0	1	0	18	1	**25**
1915-1919	0	0	2	0	0	0	3	0	103	0	0	0	0	0	9	1	0	**118**
Total	*92*	*4*	*42*	*292*	*2*	*35*	*20*	*6*	*110*	*2*	*68*	*5*	*30*	*17*	*230*	*62*	*99*	***1,116***

Source: wage series

Table A4.4. Number of observations per industrial branch according to the 1899 census per 5-year period (women's industrial wages)

	Group 1899 census																
Period	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**Total**
1800-1804	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1805-1810	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1810-1814	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1815-1819	1	0	0	0	0	1	0	0	0	0	0	0	0	0	7	0	0	**9**
1820-1824	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1825-1829	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1830-1834	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1835-1839	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	**2**
1840-1844	7	1	0	0	0	0	0	0	0	0	1	0	0	2	45	0	1	**57**
1845-1849	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**6**
1850-1854	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1855-1859	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1860-1864	28	0	0	0	0	0	3	0	0	0	1	0	0	5	69	0	6	**112**
1865-1869	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	**3**
1870-1874	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1875-1879	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1880-1884	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1885-1889	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1890-1894	14	0	0	0	0	1	3	0	0	0	1	0	0	2	47	0	6	**74**
1895-1899	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1900-1904	0	0	2	2	0	1	16	0	0	0	0	0	0	0	0	2	2	**25**
1905-1909	0	0	0	0	0	0	0	0	0	0	0	0	0	1	13	0	0	**14**
1910-1914	3	1	1	0	2	1	0	0	0	0	8	0	0	1	18	0	6	**41**
1915-1919	0	0	2	0	0	0	33	0	30	0	0	0	0	0	10	0	0	**75**
Total	*59*	*2*	*5*	*2*	*2*	*4*	*55*	*0*	*30*	*0*	*11*	*0*	*0*	*13*	*212*	*2*	*21*	***418***

Source: wage series

Table A4.5. Number of observations per industrial branch according to the 1899 census per 5-year period (children's industrial wages)

	Group 1899 census																	
Period	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**Total**
1800-1804	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1805-1810	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1810-1814	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1815-1819	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	**2**
1820-1824	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1825-1829	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1830-1834	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1835-1839	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	**1**
1840-1844	23	2	0	0	0	0	0	0	0	0	9	0	0	6	142	0	3	**185**
1845-1849	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1850-1854	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1855-1859	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	**1**
1860-1864	86	2	2	0	0	0	8	0	0	0	7	1	0	9	211	0	20	**346**
1865-1869	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	0	0	**3**
1870-1874	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	**3**
1875-1879	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1880-1884	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1885-1889	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1890-1894	4	0	3	0	0	2	0	0	0	0	5	0	0	1	16	0	7	**38**
1895-1899	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1900-1904	0	1	15	29	0	19	14	1	0	0	15	0	12	1	3	10	24	**144**
1905-1909	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**0**
1910-1914	0	0	0	0	0	0	0	0	0	0	9	0	0	0	0	0	0	**9**
1915-1919	0	0	0	0	0	0	32	0	250	0	0	0	0	0	4	0	0	**286**
Total	*113*	*5*	*21*	*29*	*0*	*21*	*54*	*1*	*250*	*0*	*45*	*1*	*12*	*19*	*381*	*10*	*56*	***1,018***

Source: wage series

Appendix 4.2. Economic sectors as in the 1899 census

Group	Sector
1	Pottery-, glass-, chalk- and stone production
2	Diamant- and other gemstone processing
3	Book- and lithography printing, printing of wood-, copper- and steel engraving, photography etc.
4	Construction, public works and cleaning
5	Chemical industry
6	Wood-, cork, straw processing, carving and turning of various fabrics
7	Apparel industry
8	Art industry
9	Leather, wax cloth and caoutchouc
10	Coal and peat
11	Metal processing
12	Steam- and other types of equipment, instruments and war material production
13	Shipbuilding and carriage production
14	Paper production
15	Textile industry
16	Gas industry
17	Food and tobacco industry
18	Agriculture
19	Fishing and hunting
20	Retail
21	Traffic
22	Credit- and banking
23	Insurance
24	Free professions
25	Education (excluding public and religious education)
26	Nursing and care of the poor
27	Domestic service
28	Day labourers
29	In service of the state
30	In service of the provinces
31	In service of a municipality
32	In service of a waterschap
33	In service of a religious community

Appendix 4.3. Absolute number of male and female labourers in the 1899 census

The tables below show the absolute number of men, women, and children with a recorded occupation in the agricultural, industrial, and textile sectors in the 1899 census. They have been used to compute the weighted average of the wages from the eleven provinces.

Number of male and female labourers in the agricultural sector per province, 1899

Province	Male	Female	TOTAL
GR	35,203	4,798	40,001
ZH	60,000	4,911	64,911
ZL	31,748	8,724	40,472
FR	48,663	3,663	52,326
NH	43,567	2,511	46,078
UT	19,934	2,464	22,398
DR	23,545	2,737	26,282
NB	71,932	21,433	93,365
OV	40,026	7,592	47,618
LI	40,321	9,952	50,273
GL	75,755	10,797	86,552
TOTAL	490,694	79,582	570,276

Source: Centraal Bureau voor de Statistiek, 'Census 1899'.

Number of male and female labourers in the industrial sector per province, 1899

Province	Male	Female	TOTAL
GR	28,204	3,852	32,056
ZH	133,590	20,379	153,969
ZL	14,944	1,515	16,459
FR	26,585	3,616	30,201
NH	112,994	17,954	130,948
UT	28,125	3,811	31,936
DR	13,146	1,963	15,109
NB	71,169	11,095	82,264
OV	44,851	11,106	55,957
LI	30,729	5,281	36,010
GL	59,061	6,602	65,663
TOTAL	563,398	87,174	650,572

Source: Centraal Bureau voor de Statistiek, 'Census 1899'.

Number of male and female labourers in the textile industry per province, 1899

Province	Male	Female	TOTAL
GR	348	351	699
ZH	4,259	2,273	6,532
ZL	100	11	111
FR	264	116	380
NH	2,040	413	2,453
UT	1,092	466	1,558
DR	102	34	136
NB	9,276	2,311	11,587
OV	14,321	7,384	21,705
LI	1,109	402	1,511
GL	1,967	847	2,814
TOTAL	34,878	14,608	49,486

Source: Centraal Bureau voor de Statistiek, 'Census 1899'.

Appendix 4.4. Average wages per 5-year period

Tables A4.6 to A4.15 below show the average day wages of men, women, and children in the agricultural and industrial sectors per 5-year period. As briefly explained in chapter 4, I corrected for regional variation by calculating the ratio of a certain province to one reference province. In the tables, the black numbers represent wages based on actual data whereas the red numbers are based on interpolation. The unweighted average is a simple average of the eleven provinces, the weighted average takes the absolute number of labourers in both sectors in each province into consideration. The latter has been used in the analysis in chapter 4.

Legend

GR	Groningen
ZH	Zuid-Holland
ZL	Zeeland
FR	Friesland
NH	Noord-Holland
UT	Utrecht
DR	Drenthe
NB	Noord-Brabant
OV	Overijssel
LI	Limburg
GL	Gelderland
Av.	Unweighted national average
W.Av.	Weighted national average
	Period with no data at all

Table A4.6. Male casual wages agriculture in guilders per day

	Wages													Ratios										
Period	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**	**Av**	**W.Av**	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**
1800-1804	0.53	0.84	0.75	0.78	0.76	0.72	0.57	0.54	0.52	0.47	0.42	*0.63*	**0.62**	**1.00**	1.60	1.42	1.49	1.45	1.36	1.09	1.03	0.98	0.89	0.81
1805-1810	0.54	0.86	0.75	0.80	0.79	0.74	0.59	0.56	0.53	0.48	0.44	*0.64*	**0.63**	**1.00**	1.60	1.39	1.49	1.45	1.36	1.09	1.03	0.98	0.89	0.81
1810-1814	0.50	0.79	0.75	0.74	0.72	0.68	0.54	0.51	0.49	0.44	0.40	*0.60*	**0.59**	**1.00**	1.60	1.51	1.49	1.45	1.36	1.09	1.03	0.98	0.89	0.81
1815-1819	0.55	0.88	0.86	0.82	0.80	0.75	0.60	0.57	0.54	0.49	0.45	*0.66*	**0.65**	**1.00**	1.60	1.56	1.49	1.45	1.36	1.09	1.03	0.98	0.89	0.81
1820-1824	0.49	0.68	0.75	0.70	0.63	0.58	0.39	0.41	0.40	0.37	0.38	*0.53*	**0.52**	**1.00**	1.39	1.53	1.44	1.29	1.18	0.80	0.83	0.81	0.76	0.77
1825-1829	0.48	0.67	0.75	0.67	0.62	0.57	0.38	0.40	0.39	0.37	0.37	*0.52*	**0.51**	**1.00**	1.39	1.56	1.39	1.29	1.18	0.80	0.83	0.81	0.76	0.77
1830-1834	0.49	0.68	0.75	0.66	0.63	0.58	0.39	0.41	0.40	0.38	0.38	*0.52*	**0.51**	**1.00**	1.39	1.52	1.34	1.29	1.18	0.80	0.83	0.81	0.76	0.77
1835-1839	0.50	0.70	0.75	0.65	0.65	0.59	0.40	0.42	0.41	0.39	0.39	*0.53*	**0.52**	**1.00**	1.39	1.49	1.29	1.29	1.18	0.80	0.83	0.81	0.76	0.77
1840-1844	0.52	0.73	0.75	0.65	0.67	0.62	0.42	0.43	0.43	0.40	0.41	*0.55*	**0.54**	**1.00**	1.39	1.43	1.24	1.29	1.18	0.80	0.83	0.81	0.76	0.77
1845-1849	0.54	0.75	0.75	0.64	0.70	0.64	0.43	0.45	0.44	0.41	0.42	*0.56*	**0.55**	**1.00**	1.39	1.38	1.19	1.29	1.18	0.80	0.83	0.81	0.76	0.77
1850-1854	0.58	0.80	0.77	0.66	0.74	0.68	0.46	0.48	0.47	0.44	0.45	*0.59*	**0.58**	**1.00**	1.39	1.33	1.14	1.29	1.18	0.80	0.83	0.81	0.76	0.77
1855-1859	0.63	0.88	0.81	0.69	0.81	0.75	0.51	0.52	0.52	0.48	0.49	*0.64*	**0.63**	**1.00**	1.39	1.28	1.09	1.29	1.18	0.80	0.83	0.81	0.76	0.77
1860-1864	0.71	0.99	0.88	0.74	0.92	0.84	0.57	0.59	0.58	0.54	0.55	*0.72*	**0.71**	**1.00**	1.39	1.23	1.04	1.29	1.18	0.80	0.83	0.81	0.76	0.77
1865-1869	0.78	1.09	0.96	0.81	1.01	0.92	0.63	0.65	0.64	0.60	0.61	*0.79*	**0.78**	**1.00**	1.39	1.23	1.04	1.29	1.18	0.80	0.83	0.81	0.76	0.77
1870-1874	0.85	1.18	1.05	0.88	1.10	1.01	0.68	0.71	0.69	0.65	0.66	*0.86*	**0.85**	**1.00**	1.39	1.23	1.04	1.29	1.18	0.80	0.83	0.81	0.76	0.77
1875-1879	0.92	1.28	1.13	0.96	1.19	1.09	0.74	0.76	0.75	0.71	0.71	*0.93*	**0.92**	**1.00**	1.39	1.23	1.04	1.29	1.18	0.80	0.83	0.81	0.76	0.77
1880-1884	1.00	1.39	1.23	1.04	1.29	1.18	0.80	0.83	0.81	0.76	0.77	*1.01*	**0.99**	**1.00**	1.39	1.23	1.04	1.29	1.18	0.80	0.83	0.81	0.76	0.77
1885-1889	0.96	1.14	0.84	0.80	1.08	0.96	0.49	0.60	0.63	0.61	0.71	*0.80*	**0.80**	**1.00**	1.18	0.87	0.83	1.12	1.00	0.51	0.62	0.65	0.64	0.74
1890-1894	0.88	1.17	0.88	0.88	1.21	1.00	0.62	0.72	0.74	0.73	0.74	*0.87*	**0.87**	**1.00**	1.34	1.00	1.00	1.38	1.15	0.71	0.82	0.85	0.84	0.85
1895-1899	0.76	1.14	0.87	0.90	1.25	0.99	0.69	0.78	0.80	0.79	0.73	*0.88*	**0.88**	**1.00**	1.50	1.14	1.18	1.64	1.29	0.90	1.02	1.05	1.03	0.96
1900-1904	0.69	0.94	0.74	0.91	1.06	0.70	0.67	0.74	0.71	0.72	0.58	*0.77*	**0.77**	**1.00**	1.37	1.08	1.33	1.54	1.02	0.98	1.08	1.04	1.05	0.85
1905-1909	1.13	1.40	1.17	1.32	1.62	0.85	1.19	1.30	1.16	1.20	0.83	*1.20*	**1.21**	**1.00**	1.24	1.03	1.17	1.43	0.75	1.05	1.15	1.02	1.06	0.73
1910-1914	0.92	1.14	0.95	1.08	1.33	0.69	0.97	1.06	0.95	0.98	0.68	*0.98*	**0.99**	**1.00**	1.24	1.03	1.17	1.43	0.75	1.05	1.15	1.02	1.06	0.73
1915-1919	1.59	1.97	1.63	1.85	2.28	1.19	1.67	1.82	1.63	1.68	1.16	*1.68*	**1.69**	**1.00**	1.24	1.03	1.17	1.43	0.75	1.05	1.15	1.02	1.06	0.73
1920-1924	2.19	2.71	2.25	2.56	3.14	1.64	2.30	2.51	2.24	2.32	1.61	*2.32*	**2.33**	**1.00**	1.24	1.03	1.17	1.43	0.75	1.05	1.15	1.02	1.06	0.73
1925-1929	1.97	2.44	2.03	2.30	2.83	1.48	2.07	2.26	2.02	2.09	1.44	*2.08*	**2.10**	**1.00**	1.24	1.03	1.17	1.43	0.75	1.05	1.15	1.02	1.06	0.73

Source: wage series

Table A4.7. Female casual wages agriculture in guilders per day

	Wages													Ratios										
Period	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**	**Av**	**W.Av**	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**
1800-1804	0.41	0.56	0.43	0.37	0.64	0.41	0.35	0.48	0.41	0.40	0.48	*0.45*	**0.45**	**1.00**	1.36	1.04	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1805-1810	0.43	0.59	0.45	0.39	0.67	0.44	0.36	0.50	0.44	0.42	0.50	*0.47*	**0.47**	**1.00**	1.36	1.04	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1810-1814	0.42	0.57	0.50	0.38	0.65	0.42	0.35	0.48	0.42	0.41	0.48	*0.46*	**0.47**	**1.00**	1.36	1.19	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1815-1819	0.54	0.74	0.64	0.49	0.83	0.54	0.45	0.62	0.54	0.53	0.62	*0.60*	**0.60**	**1.00**	1.36	1.19	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1820-1824	0.37	0.50	0.43	0.33	0.56	0.37	0.31	0.42	0.37	0.36	0.42	*0.40*	**0.41**	**1.00**	1.36	1.19	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1825-1829	0.34	0.47	0.41	0.31	0.53	0.34	0.29	0.39	0.34	0.33	0.39	*0.38*	**0.38**	**1.00**	1.36	1.19	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1830-1834	0.33	0.45	0.39	0.30	0.51	0.33	0.28	0.38	0.33	0.32	0.38	*0.37*	**0.37**	**1.00**	1.36	1.19	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1835-1839	0.34	0.46	0.45	0.30	0.52	0.34	0.28	0.39	0.34	0.33	0.39	*0.37*	**0.38**	**1.00**	1.36	1.34	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1840-1844	0.34	0.47	0.44	0.31	0.53	0.35	0.29	0.40	0.35	0.33	0.40	*0.38*	**0.39**	**1.00**	1.36	1.29	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1845-1849	0.35	0.48	0.45	0.32	0.54	0.35	0.29	0.40	0.35	0.34	0.40	*0.39*	**0.39**	**1.00**	1.36	1.29	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1850-1854	0.36	0.50	0.45	0.33	0.56	0.37	0.31	0.42	0.37	0.35	0.42	*0.40*	**0.41**	**1.00**	1.36	1.24	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1855-1859	0.40	0.55	0.45	0.37	0.62	0.41	0.34	0.47	0.41	0.39	0.47	*0.44*	**0.44**	**1.00**	1.36	1.12	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1860-1864	0.44	0.60	0.57	0.40	0.68	0.44	0.37	0.51	0.45	0.43	0.51	*0.49*	**0.50**	**1.00**	1.36	1.28	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1865-1869	0.45	0.61	0.61	0.41	0.69	0.45	0.38	0.52	0.45	0.44	0.52	*0.50*	**0.51**	**1.00**	1.36	1.36	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1870-1874	0.45	0.61	0.61	0.41	0.69	0.45	0.38	0.52	0.45	0.44	0.52	*0.50*	**0.51**	**1.00**	1.36	1.36	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1875-1879	0.45	0.61	0.61	0.41	0.69	0.45	0.38	0.52	0.45	0.44	0.52	*0.50*	**0.51**	**1.00**	1.36	1.36	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1880-1884	0.45	0.61	0.61	0.41	0.69	0.45	0.38	0.52	0.45	0.44	0.52	*0.50*	**0.51**	**1.00**	1.36	1.36	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1885-1889	0.45	0.62	0.66	0.41	0.70	0.46	0.38	0.53	0.46	0.44	0.53	*0.51*	**0.52**	**1.00**	1.36	1.44	0.91	1.54	1.01	0.84	1.16	1.01	0.97	1.16
1890-1894	0.46	0.63	0.61	0.42	0.68	0.46	0.41	0.50	0.46	0.45	0.49	*0.51*	**0.50**	**1.00**	1.37	1.32	0.91	1.48	1.01	0.90	1.08	1.01	0.97	1.06
1895-1899	0.52	0.72	0.62	0.48	0.74	0.53	0.50	0.52	0.53	0.51	0.51	*0.56*	**0.55**	**1.00**	1.37	1.19	0.91	1.41	1.01	0.95	1.00	1.01	0.97	0.96
1900-1904																								
1905-1909	0.71	0.77	0.84	0.64	1.00	0.71	0.81	0.64	0.68	0.76	0.68	*0.75*	**0.72**	**1.00**	1.09	1.19	0.91	1.41	1.01	1.15	0.91	0.97	1.07	0.96

Source: wage series

Table A4.8. Male annual wages agriculture in guilders (farm servants)[a]

	Wages													Ratios										
Period	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**	**Av**	**W.Av**	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**
1800-1804	123.57	146.28	110.64	89.37	124.80	107.89	92.15	93.08	88.44	101.41	99.43	*107.01*	107.20	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1805-1810	125.47	148.53	112.33	90.74	126.72	109.55	93.56	94.50	89.80	102.97	100.95	*108.65*	108.85	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1810-1814	125.20	148.20	112.09	90.54	126.44	109.31	93.36	94.30	89.61	102.74	100.73	*108.41*	108.61	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1815-1819	138.17	163.56	123.71	99.93	139.55	120.64	103.04	104.07	98.90	113.39	111.17	*119.65*	119.87	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1820-1824	114.67	135.74	102.66	82.93	115.81	100.12	85.51	86.37	82.07	94.10	92.26	*99.29*	99.48	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1825-1829	92.06	108.97	82.42	66.58	92.97	80.38	68.65	69.34	65.89	75.55	74.07	*79.72*	79.86	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1830-1834	105.56	124.95	94.51	76.34	106.61	92.16	78.71	79.51	75.55	86.63	84.93	*91.40*	91.57	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1835-1839	99.66	117.98	89.23	72.08	100.65	87.02	74.32	75.07	71.33	81.79	80.19	*86.30*	86.46	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1840-1844	112.45	133.12	100.68	81.33	113.57	98.19	83.86	84.70	80.49	92.29	90.48	*97.38*	97.55	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1845-1849	113.66	134.54	101.76	82.20	114.79	99.24	84.76	85.61	81.35	93.28	91.45	*98.42*	98.60	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1850-1854	111.43	131.90	99.76	80.59	112.53	97.29	83.09	83.93	79.75	91.44	89.65	*96.49*	96.66	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1855-1859	124.82	147.76	111.76	90.28	126.06	108.99	93.08	94.02	89.34	102.44	100.43	*108.09*	108.29	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1860-1864	146.52	173.44	131.18	105.97	147.97	127.93	109.26	110.36	104.87	120.24	117.89	*126.87*	127.10	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1865-1869	159.07	188.30	142.41	115.04	160.65	138.89	118.62	119.81	113.85	130.54	127.99	*137.74*	137.99	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1870-1874	180.13	213.23	161.27	130.28	181.92	157.28	134.33	135.68	128.93	147.83	144.93	*155.98*	156.27	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1875-1879	215.22	254.77	192.69	155.65	217.36	187.91	160.49	162.10	154.04	176.62	173.16	*186.36*	186.70	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1880-1884	173.86	205.81	155.66	125.74	175.59	151.80	129.65	130.95	124.44	142.68	139.89	*150.55*	150.83	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1885-1889	166.78	197.42	149.32	120.62	168.44	145.62	124.37	125.62	119.37	136.87	134.19	*144.42*	144.68	1.00	1.18	0.90	0.72	1.01	0.87	0.75	0.75	0.72	0.82	0.80
1890-1894	161.97	192.75	159.79	137.18	165.30	148.89	125.22	132.95	127.33	152.05	134.90	*148.94*	149.06	1.00	1.19	0.99	0.85	1.02	0.92	0.77	0.82	0.79	0.94	0.83
1895-1899	167.53	200.43	180.55	162.61	172.75	161.73	134.11	148.84	143.50	177.06	144.28	*163.04*	163.03	1.00	1.20	1.08	0.97	1.03	0.97	0.80	0.89	0.86	1.06	0.86
1900-1904	184.23	204.48	168.85	193.18	212.33	153.68	154.38	160.96	153.47	201.30	150.60	*176.13*	176.71	1.00	1.11	0.92	1.05	1.15	0.83	0.84	0.87	0.83	1.09	0.82
1905-1909	226.21	231.52	170.86	254.84	288.17	159.02	198.03	194.31	183.12	247.18	175.03	*211.66*	213.17	1.00	1.02	0.76	1.13	1.27	0.70	0.88	0.86	0.81	1.09	0.77
1910-1914	230.23	278.29	244.26	289.23	426.29	250.80	219.14	244.14	230.37	259.80	214.92	*262.50*	262.69	1.00	1.21	1.06	1.26	1.85	1.09	0.95	1.06	1.00	1.13	0.93

[a] Including in-kind payments (food and shelter)

Source: wage series

Table A4.9. Female annual wages agriculture in guilders (farm servants)[a]

	Wages													Ratios										
Period	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**	**Av**	**W.Av.**	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**
1800-1804	74.81	105.35	71.34	73.17	91.21	100.67	62.78	70.57	65.53	75.61	74.57	*78.69*	75.18	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1805-1810	77.16	108.66	73.57	75.47	94.07	103.83	64.75	72.79	67.59	77.99	76.91	*81.16*	77.54	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1810-1814	70.96	99.93	67.66	69.40	86.52	95.49	59.55	66.94	62.16	71.72	70.73	*74.64*	71.31	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1815-1819	77.86	109.65	74.24	76.15	94.93	104.77	65.34	73.45	68.20	78.70	77.61	*81.90*	78.25	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1820-1824	64.43	90.74	61.44	63.02	78.56	86.71	54.08	60.79	56.44	65.13	64.23	*67.78*	64.76	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1825-1829	58.50	82.39	55.79	57.22	71.33	78.72	49.10	55.19	51.25	59.13	58.31	*61.54*	58.80	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1830-1834	67.11	94.51	63.99	65.64	81.82	90.31	56.32	63.31	58.79	67.83	66.89	*70.59*	67.45	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1835-1839	63.68	89.68	60.73	62.29	77.64	85.69	53.44	60.07	55.78	64.37	63.47	*66.99*	64.00	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1840-1844	67.13	94.54	64.01	65.66	81.85	90.33	56.34	63.33	58.80	67.85	66.91	*70.61*	67.47	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1845-1849	67.46	95.00	64.33	65.98	82.25	90.77	56.61	63.64	59.09	68.18	67.24	*70.96*	67.79	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1850-1854	66.16	93.18	63.09	64.71	80.67	89.03	55.53	62.42	57.96	66.87	65.95	*69.60*	66.49	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1855-1859	75.07	105.72	71.59	73.42	91.53	101.02	63.00	70.82	65.76	75.88	74.83	*78.97*	75.45	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1860-1864	82.82	116.63	78.97	81.00	100.97	111.44	69.50	78.13	72.55	83.71	82.55	*87.11*	83.23	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1865-1869	88.07	124.03	83.98	86.14	107.38	118.51	73.91	83.08	77.15	89.02	87.78	*92.64*	88.51	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1870-1874	95.91	135.07	91.46	93.81	116.94	129.06	80.49	90.48	84.02	96.94	95.60	*100.89*	96.39	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1875-1879	114.33	161.02	109.03	111.83	139.40	153.86	95.95	107.86	100.16	115.57	113.96	*120.27*	114.91	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1880-1884	107.41	151.26	102.42	105.06	130.96	144.54	90.14	101.33	94.09	108.56	107.06	*112.98*	107.95	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1885-1889	102.02	143.67	97.28	99.78	124.39	137.28	85.62	96.24	89.37	103.12	101.69	*107.32*	102.53	1.00	1.41	0.95	0.98	1.22	1.35	0.84	0.94	0.88	1.01	1.00
1890-1894	106.25	154.37	100.69	105.61	134.01	139.55	90.50	105.46	102.68	111.20	106.82	*114.29*	110.09	1.00	1.45	0.95	0.99	1.26	1.31	0.85	0.99	0.97	1.05	1.01
1895-1899	99.93	149.64	94.11	100.92	130.23	128.03	86.36	104.10	105.61	108.16	101.32	*109.85*	106.65	1.00	1.50	0.94	1.01	1.30	1.28	0.86	1.04	1.06	1.08	1.01
1900-1904	118.37	157.81	105.84	115.62	150.13	145.61	101.61	118.43	118.18	138.04	121.74	*126.49*	123.49	1.00	1.33	0.89	0.98	1.27	1.23	0.86	1.00	1.00	1.17	1.03
1905-1909	137.84	161.14	116.70	130.08	170.02	162.53	117.53	132.22	129.58	172.30	143.78	*143.07*	140.50	1.00	1.17	0.85	0.94	1.23	1.18	0.85	0.96	0.94	1.25	1.04
1910-1914	143.53	193.15	143.44	163.32	180.84	214.47	127.05	155.72	150.90	228.55	159.61	*169.14*	167.10	1.00	1.35	1.00	1.14	1.26	1.49	0.89	1.08	1.05	1.59	1.11

[a] Including in-kind payments (food and shelter)

Source: wage series

Table A4.10. Male annual wages agriculture in guilders (farm labourers)

	Wages													Ratios										
Period	GR	ZH	ZL	FR	NH	UT	DR	NB	OV	LI	GL	Av	W.Av	GR	ZH	ZL	FR	NH	UT	DR	NB	OV	LI	GL
1800-1804																								
1805-1810																								
1810-1814																								
1815-1819	210.00	263.22	207.95	191.55	295.40	251.70	207.79	210.77	202.86	206.51	209.13	*223.35*	222.83	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1820-1824	170.00	213.08	168.34	155.07	239.14	203.76	168.21	170.63	164.22	167.17	169.30	*180.81*	180.38	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1825-1829	131.00	164.20	129.72	119.49	184.28	157.01	129.62	131.48	126.54	128.82	130.46	*139.33*	139.00	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1830-1834	204.00	255.70	202.01	186.08	286.96	244.51	201.86	204.75	197.06	200.61	203.16	*216.97*	216.46	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1835-1839	213.00	266.98	210.92	194.29	299.62	255.30	210.76	213.79	205.76	209.46	212.12	*226.54*	226.01	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1840-1844	222.00	278.26	219.83	202.50	312.28	266.08	219.67	222.82	214.45	218.31	221.08	*236.12*	235.56	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1845-1849	231.00	289.54	228.74	210.71	324.94	276.87	228.57	231.85	223.14	227.16	230.05	*245.69*	245.11	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1850-1854	240.00	300.82	237.66	218.92	337.60	287.66	237.48	240.88	231.84	236.01	239.01	*255.26*	254.66	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1855-1859	249.00	312.10	246.57	227.13	350.26	298.44	246.38	249.92	240.53	244.86	247.97	*264.83*	264.21	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1860-1864	258.00	323.38	255.48	235.34	362.92	309.23	255.29	258.95	249.23	253.71	256.93	*274.41*	273.76	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1865-1869	262.00	328.40	259.44	238.99	368.55	314.03	259.25	262.97	253.09	257.64	260.92	*278.66*	278.00	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1870-1874	309.75	388.25	306.73	282.54	435.72	371.26	306.49	310.89	299.22	304.60	308.47	*329.45*	328.67	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1875-1879	357.50	448.10	354.01	326.10	502.89	428.49	353.74	358.82	345.34	351.55	356.02	*380.23*	379.33	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1880-1884	323.00	404.85	319.85	294.63	454.36	387.14	319.60	324.19	312.01	317.63	321.67	*343.54*	342.73	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1885-1889	292.68	366.86	289.83	266.98	411.71	350.80	289.61	293.76	282.73	287.81	291.48	*311.30*	310.56	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1890-1894	280.00	350.96	277.27	255.41	393.87	335.60	277.06	281.03	270.48	275.34	278.84	*297.80*	297.10	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1895-1899	312.05	391.12	309.00	284.64	438.95	374.01	308.77	313.20	301.43	306.85	310.76	*331.89*	331.10	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1900-1904	300.00	376.03	297.07	273.65	422.00	359.57	296.85	301.11	289.80	295.01	298.76	*319.08*	318.32	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1905-1909	370.00	463.77	366.39	337.50	520.47	443.47	366.11	371.36	357.42	363.84	368.47	*393.53*	392.60	1.00	1.25	0.99	0.91	1.41	1.20	0.99	1.00	0.97	0.98	1.00
1910-1914	372.87	340.51	368.00	417.92	524.51	375.00	325.00	374.25	300.30	366.67	362.33	*375.22*	376.47	1.00	0.91	0.99	1.12	1.41	1.01	0.87	1.00	0.81	0.98	0.97

Source: wage series

Table A4.11. Male casual industrial wages in guilders per day (unskilled and lower skilled)

	Wages													Ratios										
Period	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**	**Av.**	**W.Av.**	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**
1800-1804	1.06	0.98	1.65	0.88	1.25	0.85	0.49	0.76	0.93	0.95	0.47	***0.93***	0.95	**1.00**	0.93	1.56	0.83	1.17	0.81	0.46	0.72	0.88	0.89	0.45
1805-1810	1.06	0.98	1.66	0.88	1.25	0.86	0.49	0.76	0.93	0.95	0.47	***0.94***	0.95	**1.00**	0.93	1.56	0.83	1.17	0.81	0.46	0.72	0.88	0.89	0.45
1810-1814	1.02	0.95	1.60	0.85	1.20	0.82	0.48	0.73	0.90	0.92	0.46	***0.90***	0.91	**1.00**	0.93	1.56	0.83	1.17	0.81	0.46	0.72	0.88	0.89	0.45
1815-1819	1.12	1.04	1.75	0.93	1.32	0.90	0.52	0.80	0.98	1.00	0.50	***0.99***	1.00	**1.00**	0.93	1.56	0.83	1.17	0.81	0.46	0.72	0.88	0.89	0.45
1820-1824	1.02	0.94	1.58	0.71	1.23	0.82	0.58	0.73	0.89	0.91	0.62	***0.91***	0.93	**1.00**	0.93	1.56	0.70	1.21	0.81	0.57	0.72	0.88	0.89	0.61
1825-1829	0.95	0.88	1.47	0.66	1.17	0.76	0.54	0.68	0.83	0.85	0.57	***0.85***	0.87	**1.00**	0.93	1.56	0.70	1.24	0.81	0.57	0.72	0.88	0.89	0.61
1830-1834	0.95	0.88	1.49	0.67	1.48	0.77	0.55	0.68	0.83	0.85	0.58	***0.88***	0.93	**1.00**	0.93	1.56	0.70	1.55	0.81	0.57	0.72	0.88	0.89	0.61
1835-1839	0.94	0.87	1.47	0.66	1.75	0.76	0.54	0.67	0.83	0.84	0.57	***0.90***	0.98	**1.00**	0.93	1.56	0.70	1.86	0.81	0.57	0.72	0.88	0.89	0.61
1840-1844	0.94	0.87	1.47	0.54	1.07	0.76	0.54	0.67	0.63	0.84	0.57	***0.81***	0.82	**1.00**	0.93	1.56	0.57	1.14	0.81	0.57	0.72	0.67	0.89	0.61
1845-1849	1.00	0.93	1.56	0.73	1.07	0.81	0.57	0.68	0.69	0.52	0.61	***0.83***	0.85	**1.00**	0.93	1.56	0.73	1.07	0.81	0.57	0.67	0.68	0.52	0.61
1850-1854	1.05	0.98	1.64	0.77	1.06	0.85	0.60	0.71	0.72	0.75	0.64	***0.89***	0.89	**1.00**	0.93	1.56	0.73	1.00	0.81	0.57	0.67	0.68	0.71	0.61
1855-1859	1.19	1.11	1.86	0.87	1.36	0.96	0.68	0.81	0.83	0.85	0.72	***1.02***	1.04	**1.00**	0.93	1.56	0.73	1.14	0.81	0.57	0.67	0.70	0.71	0.61
1860-1864	1.20	1.11	1.87	1.06	1.54	0.96	0.82	0.76	0.69	1.09	0.92	***1.09***	1.11	**1.00**	0.93	1.56	0.89	1.29	0.81	0.68	0.63	0.58	0.91	0.77
1865-1869	1.19	1.12	1.85	1.09	1.63	1.22	0.81	0.87	0.80	1.11	0.88	***1.14***	1.16	**1.00**	0.94	1.56	0.92	1.37	1.03	0.68	0.73	0.67	0.94	0.74
1870-1874	1.18	1.13	1.83	1.12	1.72	1.48	0.80	0.97	0.90	1.14	0.84	***1.19***	1.21	**1.00**	0.96	1.56	0.95	1.46	1.26	0.68	0.83	0.77	0.97	0.71
1875-1879	1.25	1.22	1.94	1.23	1.93	1.85	0.85	1.15	1.07	1.24	0.85	***1.32***	1.35	**1.00**	0.98	1.56	0.98	1.55	1.48	0.68	0.92	0.86	1.00	0.69
1880-1884	1.32	1.28	2.05	1.29	2.04	1.95	0.90	1.21	1.13	1.31	0.90	***1.40***	1.42	**1.00**	0.98	1.56	0.98	1.55	1.48	0.68	0.92	0.86	1.00	0.69
1885-1889	1.39	1.35	2.16	1.36	2.15	2.06	0.94	1.28	1.19	1.38	0.95	***1.47***	1.50	**1.00**	0.98	1.56	0.98	1.55	1.48	0.68	0.92	0.86	1.00	0.69
1890-1894	1.52	1.51	2.37	1.54	2.49	2.60	1.04	1.55	1.45	1.56	1.00	***1.69***	1.72	**1.00**	0.99	1.56	1.02	1.64	1.71	0.68	1.02	0.96	1.02	0.66
1895-1899	1.34	1.77	2.09	1.37	2.20	2.30	0.92	1.37	1.45	1.37	1.22	***1.58***	1.68	**1.00**	1.32	1.56	1.02	1.64	1.71	0.68	1.02	1.08	1.02	0.91
1900-1904	1.17	1.92	1.82	1.19	1.91	2.00	0.80	1.19	1.40	1.19	1.35	***1.45***	1.59	**1.00**	1.65	1.56	1.02	1.64	1.71	0.68	1.02	1.20	1.02	1.16
1905-1909	1.78	2.41	2.20	1.80	2.90	2.46	1.21	1.62	1.90	1.67	1.98	***1.99***	2.19	**1.00**	1.36	1.24	1.02	1.64	1.38	0.68	0.91	1.07	0.94	1.11
1910-1914	2.38	2.55	2.20	2.42	3.90	2.53	1.62	1.92	2.25	2.04	2.55	***2.40***	2.64	**1.00**	1.07	0.92	1.02	1.64	1.06	0.68	0.81	0.94	0.85	1.07
1915-1919	2.14	2.20	2.33	2.15	2.68	2.20	1.90	1.90	3.93	2.07	1.96	***2.31***	2.36	**1.00**	1.03	1.09	1.01	1.25	1.03	0.68	0.89	1.84	0.97	0.92
1920-1924	5.20	5.15	4.88	5.23	5.59	5.11	3.54	4.91	5.32	5.61	6.41	***5.18***	5.34	**1.00**	0.99	0.94	1.01	1.08	0.98	0.68	0.94	1.02	1.08	1.23

Source: wage series

Table A4.12. Female casual industrial wages in guilders per day (unskilled and lower skilled)

	Wages													Ratios										
Period	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**	**Av**	**W.Av.**	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**
1800-1804																								
1805-1810																								
1810-1814																								
1815-1819	0.40	0.37	0.21	0.35	0.39	0.39	0.27	0.29	0.33	0.26	0.28	*0.32*	**0.34**	1.22	1.13	0.65	1.07	1.18	1.19	0.82	0.90	**1.00**	0.80	0.84
1820-1824	0.35	0.40	0.23	0.29	0.45	0.42	0.29	0.32	0.36	0.29	0.30	*0.34*	**0.37**	0.98	1.12	0.65	0.81	1.27	1.19	0.82	0.90	**1.00**	0.80	0.84
1825-1829	0.38	0.43	0.25	0.32	0.49	0.46	0.32	0.35	0.39	0.31	0.33	*0.37*	**0.40**	0.98	1.12	0.65	0.81	1.27	1.19	0.82	0.90	**1.00**	0.80	0.84
1830-1834	0.41	0.47	0.27	0.34	0.53	0.49	0.34	0.38	0.42	0.34	0.35	*0.39*	**0.43**	0.98	1.12	0.65	0.81	1.27	1.19	0.82	0.90	**1.00**	0.80	0.84
1835-1839	0.31	0.47	0.28	0.24	0.58	0.50	0.35	0.38	0.43	0.34	0.36	*0.38*	**0.44**	0.73	1.11	0.65	0.56	1.36	1.19	0.82	0.90	**1.00**	0.80	0.84
1840-1844	0.30	0.45	0.26	0.23	0.55	0.48	0.33	0.36	0.41	0.33	0.34	*0.37*	**0.42**	0.73	1.11	0.65	0.56	1.36	1.19	0.82	0.90	**1.00**	0.80	0.84
1845-1849	0.33	0.44	0.29	0.33	0.60	0.46	0.37	0.37	0.45	0.41	0.37	*0.40*	**0.44**	0.73	0.98	0.65	0.74	1.35	1.04	0.82	0.84	**1.00**	0.93	0.84
1850-1854	0.36	0.48	0.31	0.40	0.65	0.47	0.40	0.39	0.49	0.45	0.41	*0.44*	**0.48**	0.73	0.98	0.65	0.82	1.35	0.97	0.82	0.81	**1.00**	0.93	0.84
1855-1859	0.38	0.52	0.34	0.43	0.71	0.51	0.43	0.42	0.53	0.49	0.44	*0.47*	**0.52**	0.73	0.98	0.65	0.82	1.35	0.97	0.82	0.81	**1.00**	0.93	0.84
1860-1864	0.41	0.55	0.36	0.51	0.75	0.50	0.46	0.44	0.56	0.59	0.47	*0.51*	**0.56**	0.73	0.98	0.65	0.91	1.35	0.89	0.82	0.78	**1.00**	1.05	0.84
1865-1869	0.58	0.78	0.51	0.58	1.07	0.59	0.53	0.61	0.79	0.54	0.75	*0.67*	**0.77**	0.73	0.98	0.65	0.73	1.35	0.75	0.67	0.78	**1.00**	0.68	0.94
1870-1874	0.58	0.73	0.51	0.58	1.07	0.59	0.54	0.62	0.80	0.63	0.79	*0.68*	**0.77**	0.73	0.92	0.65	0.73	1.35	0.75	0.67	0.78	**1.00**	0.79	0.99
1875-1879	0.59	0.74	0.52	0.58	1.08	0.60	0.54	0.62	0.80	0.63	0.80	*0.68*	**0.77**	0.73	0.92	0.65	0.73	1.35	0.75	0.67	0.78	**1.00**	0.79	0.99
1880-1884	0.59	0.74	0.52	0.59	1.08	0.60	0.54	0.62	0.80	0.64	0.80	*0.68*	**0.78**	0.73	0.92	0.65	0.73	1.35	0.75	0.67	0.78	**1.00**	0.79	0.99
1885-1889	0.59	0.74	0.52	0.59	1.09	0.60	0.54	0.63	0.81	0.64	0.80	*0.69*	**0.78**	0.73	0.92	0.65	0.73	1.35	0.75	0.67	0.78	**1.00**	0.79	0.99
1890-1894	0.59	0.69	0.52	0.59	1.09	0.60	0.54	0.63	0.81	0.73	0.84	*0.69*	**0.77**	0.73	0.86	0.65	0.73	1.35	0.75	0.67	0.78	**1.00**	0.90	1.05
1895-1899	0.66	0.74	0.53	0.53	1.11	0.56	0.49	0.64	0.82	0.70	0.91	*0.70*	**0.79**	0.81	0.90	0.65	0.64	1.35	0.67	0.60	0.78	**1.00**	0.85	1.10
1900-1904	0.74	0.79	0.54	0.46	1.13	0.51	0.44	0.65	0.84	0.67	0.97	*0.70*	**0.82**	0.88	0.94	0.65	0.55	1.35	0.60	0.52	0.78	**1.00**	0.80	1.16
1905-1909	0.86	0.92	0.63	0.54	1.32	0.59	0.51	0.76	0.98	0.79	0.63	*0.78*	**0.91**	0.88	0.94	0.65	0.55	1.35	0.60	0.52	0.78	**1.00**	0.80	0.64
1910-1914	1.00	1.07	0.74	0.62	0.70	0.69	0.60	0.99	1.14	0.91	0.68	*0.83*	**0.90**	0.88	0.94	0.65	0.55	0.62	0.60	0.52	0.87	**1.00**	0.80	0.59
1915-1919	1.25	2.50	1.17	1.45	1.71	1.59	1.39	1.03	2.65	2.12	1.26	*1.65*	**1.87**	0.47	0.94	0.44	0.55	0.65	0.60	0.52	0.39	**1.00**	0.80	0.48

Source: wage series

Table A4.13. Children's casual industrial wages in guilders per day (unskilled and lower skilled)

	Wages													Ratios										
Period	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**	**Av**	**W.Av.**	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**
1800-1804																								
1805-1810																								
1810-1814																								
1815-1819	0.27	0.35	0.38	0.22	0.52	0.35	0.32	0.43	0.40	0.43	0.38	*0.37*	**0.40**	0.67	0.89	0.95	0.55	1.31	0.88	0.81	1.07	**1.00**	1.09	0.94
1820-1824	0.26	0.34	0.37	0.21	0.50	0.34	0.31	0.41	0.39	0.42	0.36	*0.36*	**0.38**	0.67	0.89	0.95	0.55	1.31	0.88	0.81	1.07	**1.00**	1.09	0.94
1825-1829	0.25	0.33	0.35	0.21	0.48	0.33	0.30	0.40	0.37	0.40	0.35	*0.34*	**0.37**	0.67	0.89	0.95	0.55	1.31	0.88	0.81	1.07	**1.00**	1.09	0.94
1830-1834	0.24	0.31	0.34	0.20	0.46	0.31	0.29	0.38	0.36	0.39	0.34	*0.33*	**0.35**	0.67	0.89	0.95	0.55	1.31	0.88	0.81	1.07	**1.00**	1.09	0.94
1835-1839	0.24	0.31	0.33	0.19	0.46	0.31	0.28	0.37	0.35	0.38	0.33	*0.32*	**0.35**	0.67	0.89	0.95	0.55	1.31	0.88	0.81	1.07	**1.00**	1.09	0.94
1840-1844	0.20	0.26	0.28	0.16	0.38	0.26	0.23	0.31	0.29	0.32	0.27	*0.27*	**0.29**	0.68	0.89	0.95	0.55	1.31	0.88	0.81	1.07	**1.00**	1.09	0.94
1845-1849	0.21	0.29	0.29	0.21	0.39	0.20	0.25	0.27	0.31	0.31	0.29	*0.27*	**0.30**	0.68	0.93	0.95	0.68	1.29	0.65	0.81	0.89	**1.00**	1.00	0.94
1850-1854	0.22	0.30	0.30	0.22	0.41	0.21	0.26	0.28	0.32	0.32	0.30	*0.29*	**0.31**	0.68	0.93	0.95	0.68	1.29	0.65	0.81	0.89	**1.00**	1.00	0.94
1855-1859	0.22	0.32	0.31	0.26	0.42	0.14	0.27	0.23	0.33	0.30	0.31	*0.28*	**0.31**	0.68	0.98	0.95	0.80	1.27	0.42	0.81	0.70	**1.00**	0.91	0.94
1860-1864	0.26	0.39	0.37	0.31	0.50	0.17	0.32	0.28	0.39	0.36	0.37	*0.34*	**0.37**	0.67	0.98	0.95	0.80	1.27	0.42	0.81	0.70	**1.00**	0.91	0.94
1865-1869	0.23	0.33	0.32	0.27	0.42	0.14	0.27	0.23	0.33	0.38	0.31	*0.29*	**0.32**	0.70	0.98	0.95	0.80	1.27	0.42	0.81	0.70	**1.00**	1.13	0.94
1870-1874	0.22	0.33	0.32	0.27	0.42	0.14	0.27	0.23	0.33	0.38	0.38	*0.30*	**0.32**	0.67	0.98	0.95	0.80	1.27	0.42	0.81	0.70	**1.00**	1.13	1.13
1875-1879	0.29	0.37	0.34	0.39	0.46	0.22	0.31	0.27	0.36	0.41	0.37	*0.35*	**0.37**	0.81	1.03	0.95	1.07	1.27	0.60	0.85	0.75	**1.00**	1.13	1.02
1880-1884	0.32	0.40	0.37	0.42	0.50	0.24	0.34	0.29	0.39	0.44	0.40	*0.37*	**0.40**	0.81	1.03	0.95	1.07	1.27	0.60	0.85	0.75	**1.00**	1.13	1.02
1885-1889	0.34	0.44	0.40	0.45	0.54	0.26	0.36	0.32	0.42	0.48	0.43	*0.40*	**0.43**	0.81	1.03	0.95	1.07	1.27	0.60	0.85	0.75	**1.00**	1.13	1.02
1890-1894	0.44	0.49	0.43	0.61	0.58	0.36	0.41	0.36	0.46	0.51	0.42	*0.46*	**0.48**	0.95	1.08	0.95	1.33	1.27	0.78	0.90	0.79	**1.00**	1.13	0.91
1895-1899	0.39	0.61	0.55	0.78	0.74	0.46	0.53	0.46	0.58	0.66	0.51	*0.57*	**0.59**	0.67	1.05	0.95	1.33	1.27	0.78	0.90	0.79	**1.00**	1.13	0.87
1900-1904	0.27	0.72	0.67	0.94	0.90	0.55	0.64	0.56	0.71	0.80	0.59	*0.67*	**0.70**	0.38	1.01	0.95	1.33	1.27	0.78	0.90	0.79	**1.00**	1.13	0.83
1905-1909	0.56	0.98	0.65	1.28	1.10	0.75	0.87	0.77	0.96	1.08	0.86	*0.90*	**0.94**	0.58	1.01	0.68	1.33	1.14	0.78	0.90	0.79	**1.00**	1.13	0.89
1910-1914	0.96	1.24	0.49	1.62	1.23	0.95	1.10	1.08	1.22	1.37	1.16	*1.13*	**1.18**	0.79	1.01	0.40	1.33	1.01	0.78	0.90	0.89	**1.00**	1.13	0.95
1915-1919	0.86	1.10	0.44	1.44	1.09	0.85	0.98	0.96	1.08	1.22	1.03	*1.00*	**1.05**	0.79	1.01	0.40	1.33	1.01	0.78	0.90	0.89	**1.00**	1.13	0.95

Source: wage series

Table A4.14. Men's casual wages in the textile industry per day in guilders

	Wages													Ratios										
Period	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**	**Av.**	**W.Av.**	**GR**	**ZH**	**ZL**	**FR**	**NH**	**UT**	**DR**	**NB**	**OV**	**LI**	**GL**
1800-1804																								
1805-1810																								
1810-1814																								
1815-1819	0.57	0.87		0.38	1.06	0.60	0.42	0.63	**0.60**	0.73	0.52	*0.64*	**0.67**	0.94	1.44		0.62	1.76	0.99	0.70	1.05	**1.00**	1.21	0.85
1820-1824	0.62	0.94		0.41	1.15	0.65	0.45	0.68	0.65	0.79	0.56	*0.69*	**0.72**	0.94	1.44		0.62	1.76	0.99	0.70	1.05	**1.00**	1.21	0.85
1825-1829	0.66	1.01		0.44	1.24	0.70	0.49	0.74	0.70	0.85	0.60	*0.74*	**0.78**	0.94	1.44		0.62	1.76	0.99	0.70	1.05	**1.00**	1.21	0.85
1830-1834	0.71	1.08		0.47	1.33	0.75	0.52	0.79	0.75	0.91	0.64	*0.80*	**0.83**	0.94	1.44		0.62	1.76	0.99	0.70	1.05	**1.00**	1.21	0.85
1835-1839	0.74	1.13		0.49	1.38	0.78	0.55	0.82	0.78	0.94	0.67	*0.83*	**0.86**	0.94	1.44		0.62	1.76	0.99	0.70	1.05	**1.00**	1.21	0.85
1840-1844	0.57	0.87		0.38	1.07	0.60	0.42	0.63	0.61	0.73	0.52	*0.64*	**0.67**	0.94	1.44		0.62	1.76	0.99	0.70	1.05	**1.00**	1.21	0.85
1845-1849	0.65	0.98		0.43	1.21	0.68	0.48	0.72	0.69	0.83	0.59	*0.72*	**0.76**	0.94	1.44		0.62	1.76	0.99	0.70	1.05	**1.00**	1.21	0.85
1850-1854	0.72	1.10		0.68	1.35	0.76	0.53	0.80	0.77	0.98	0.65	*0.83*	**0.85**	0.94	1.44		0.89	1.76	0.99	0.70	1.05	**1.00**	1.28	0.85
1855-1859	0.78	1.19		0.74	1.46	0.82	0.58	0.87	0.83	1.06	0.71	*0.90*	**0.92**	0.94	1.44		0.89	1.76	0.99	0.70	1.05	**1.00**	1.28	0.85
1860-1864	0.64	0.98		0.78	1.20	0.68	0.48	0.69	0.68	0.93	0.58	*0.76*	**0.75**	0.94	1.44		1.15	1.76	0.99	0.70	1.01	**1.00**	1.36	0.85
1865-1869	0.75	0.97		0.85	1.39	0.78	0.55	0.97	0.79	1.07	0.59	*0.87*	**0.89**	0.94	1.23		1.07	1.76	0.99	0.70	1.22	**1.00**	1.36	0.75
1870-1874	0.85	1.11		0.96	1.59	0.89	0.63	1.29	0.90	1.22	0.67	*1.01*	**1.07**	0.94	1.23		1.07	1.76	0.99	0.70	1.44	**1.00**	1.36	0.75
1875-1879	0.99	1.18		1.09	1.85	1.04	0.73	1.51	1.05	1.42	0.73	*1.16*	**1.23**	0.94	1.13		1.03	1.76	0.99	0.70	1.44	**1.00**	1.36	0.70
1880-1884	1.13	1.35		1.24	2.11	1.19	0.84	1.72	1.20	1.63	0.84	*1.32*	**1.40**	0.94	1.13		1.03	1.76	0.99	0.70	1.44	**1.00**	1.36	0.70
1885-1889	1.27	1.52		1.40	2.38	1.34	0.94	1.94	1.35	1.83	0.94	*1.49*	**1.58**	0.94	1.13		1.03	1.76	0.99	0.70	1.44	**1.00**	1.36	0.70
1890-1894	1.40	1.52		1.48	2.62	1.47	1.03	2.13	1.48	2.01	0.96	*1.61*	**1.71**	0.94	1.02		1.00	1.76	0.99	0.70	1.44	**1.00**	1.36	0.65
1895-1899																								
1900-1904																								
1905-1909																								
1910-1914																								
1915-1919	3.71	4.02		3.91	6.92	3.89	2.73	5.64	3.93	5.32	2.54	*4.26*	**4.53**	0.94	1.02		1.00	1.76	0.99	0.70	1.44	**1.00**	1.36	0.65

Source: wage series

Table A4.15. Women's casual wages in the textile industry per day in guilders

	Wages													Ratios										
Period	GR	ZH	ZL	FR	NH	UT	DR	NB	OV	LI	GL	Av.	W.Av.	GR	ZH	ZL	FR	NH	UT	DR	NB	OV	LI	GL
1800-1804																								
1805-1810																								
1810-1814																								
1815-1819																								
1820-1824																								
1825-1829																								
1830-1834																								
1835-1839	0.35	0.50	0.43	0.23	0.61	0.45	0.32	0.40	0.43	0.36	0.35	0.40	**0.43**	0.83	1.17	1.00	0.54	1.43	1.07	0.75	0.95	**1.00**	0.84	0.83
1840-1844	0.32	0.45	0.38	0.21	0.55	0.41	0.29	0.36	0.38	0.32	0.32	0.36	**0.39**	0.83	1.17	1.00	0.54	1.43	1.07	0.75	0.95	**1.00**	0.84	0.83
1845-1849	0.36	0.43	0.43	0.22	0.62	0.42	0.33	0.34	0.43	0.37	0.36	0.39	**0.41**	0.83	1.00	1.00	0.51	1.43	0.96	0.75	0.80	**1.00**	0.83	0.83
1850-1854	0.40	0.48	0.48	0.24	0.69	0.46	0.36	0.38	0.48	0.42	0.40	0.44	**0.46**	0.83	1.00	1.00	0.51	1.43	0.96	0.75	0.80	**1.00**	0.83	0.83
1855-1859	0.44	0.53	0.53	0.27	0.77	0.51	0.40	0.42	0.53	0.47	0.44	0.48	**0.51**	0.83	1.00	1.00	0.51	1.43	0.96	0.75	0.80	**1.00**	0.83	0.83
1860-1864	0.48	0.58	0.59	0.28	0.84	0.50	0.44	0.38	0.59	0.48	0.48	0.51	**0.54**	0.83	1.00	1.00	0.47	1.43	0.85	0.75	0.64	**1.00**	0.81	0.83
1865-1869	0.65	0.79	0.79	0.37	1.14	0.58	0.59	0.41	0.79	0.53	0.53	0.65	**0.70**	0.83	1.00	1.00	0.47	1.43	0.73	0.75	0.52	**1.00**	0.81	0.88
1870-1874	0.66	0.80	0.80	0.38	1.15	0.58	0.60	0.31	0.80	0.65	0.71	0.68	**0.71**	0.83	1.00	1.00	0.47	1.43	0.73	0.75	0.39	**1.00**	0.81	0.88
1875-1879	0.67	0.81	0.81	0.38	1.16	0.59	0.61	0.47	0.81	0.66	0.72	0.70	**0.74**	0.83	1.00	1.00	0.47	1.43	0.73	0.75	0.58	**1.00**	0.81	0.88
1880-1884	0.68	0.82	0.82	0.39	1.18	0.60	0.62	0.48	0.82	0.67	0.72	0.71	**0.75**	0.83	1.00	1.00	0.47	1.43	0.73	0.75	0.58	**1.00**	0.81	0.88
1885-1889	0.69	0.83	0.83	0.39	1.19	0.61	0.62	0.48	0.83	0.67	0.73	0.72	**0.76**	0.83	1.00	1.00	0.47	1.43	0.73	0.75	0.58	**1.00**	0.81	0.88
1890-1894	0.70	0.69	0.84	0.40	1.21	0.61	0.63	0.49	0.84	0.72	0.79	0.72	**0.75**	0.83	0.82	1.00	0.47	1.43	0.73	0.75	0.58	**1.00**	0.81	0.94
1895-1899	0.74	0.73	0.89	0.42	1.28	0.65	0.67	0.52	0.89	0.77	0.84	0.76	**0.80**	0.83	0.82	1.00	0.47	1.43	0.73	0.75	0.58	**1.00**	0.81	0.83
1900-1904	0.78	0.77	0.94	0.44	1.35	0.69	0.71	0.55	0.94	0.82	0.89	0.81	**0.84**	0.83	0.82	1.00	0.47	1.43	0.73	0.75	0.58	**1.00**	0.81	0.83
1905-1909	0.81	0.81	0.98	0.46	1.41	0.59	0.74	0.76	0.98	0.87	0.71	0.83	**0.89**	0.83	0.82	1.00	0.47	1.43	0.60	0.75	0.78	**1.00**	0.81	0.72
1910-1914	1.00	0.99	1.21	0.57	1.74	0.73	0.91	0.71	1.21	0.92	0.76	0.98	**1.05**	0.83	0.82	1.00	0.47	1.43	0.60	0.75	0.59	**1.00**	0.81	0.72
1915-1919	2.19	2.18	2.65	1.24	3.80	1.60	1.99	1.56	2.65	0.97	0.81	1.97	**2.23**	0.83	0.82	1.00	0.47	1.43	0.60	0.75	0.59	**1.00**	0.81	0.72

Source: wage series

Table A4.16. Male and female employment by sector in percentages[ab]

Sector	1807	1849	1859	1889	1899	1909	1920	1930
Men								
Primary	42.7	36.8	36.8	35.3	33.8	30.4	26.1	22.6
Secondary	26.0	36.4	36.4	36.8	37.6	39.2	41.6	44.1
Tertiary	30.5	25.2	25.1	26.0	26.7	29.2	31.0	32.0
Rest	0.7	1.6	1.8	1.9	1.8	1.3	1.2	1.4
Women								
Primary	42.7	47.2	48.3	37.9	33.0	29.2	13.9	14.3
Secondary	26.0	16.5	15.9	14.6	16.6	19.0	23.4	22.1
Tertiary	30.5	36.2	35.6	47.4	50.4	51.8	62.7	63.6
Rest	0.7	0.1	0.1	0.1	0.0	0.0	0.0	0.0

[a] The 1807 census merely reported the share of *total* employment in each sector: men and women were not reported separately. Therefore, I have used the same percentages for men and women in this specific year.

[b] The 'Rest' category consists of *losse werklieden*: working people that were given the title '(day) labourer', that is, with no further specification of the type of work (van Vugt, *Een Arbeidersbuurt*, p. 181).

Sources: Centraal Bureau voor de Statistiek, 'Census 1849'; Centraal Bureau voor de Statistiek, 'Census 1859'; Centraal Bureau voor de Statistiek, 'Census 1889'; Centraal Bureau voor de Statistiek, 'Census 1899'; Centraal Bureau voor de Statistiek, 'Census 1909'; Centraal Bureau voor de Statistiek, 'Census 1920'; Centraal Bureau voor de Statistiek, 'Census 1930'; Smits, et al., 'Dutch GNP'.

Appendix 4.5. The gender wage gap in agriculture and industry, 1800-1914

The gender wage gap can be calculated by dividing the female wage rate with the male wage rate or the other way around. The former shows the female wage as a percentage of the male wage, meaning that the lower the outcome, the larger the gender wage gap. The latter shows the male wage as a percentage of the female wage, meaning that the larger the outcome, the larger the gender wage gap. Throughout this dissertation, I employed the second method.

Table A4.17 below shows the GWG in several occupations. They are all self-explanatory, except for the male casuals labourer/female farm servant. This GWG is not meant to look at men's and women's wages for the same type of work, but to further emphasize the favourable position of female farm servants relative to male agricultural labourers from the 1880s onwards. The GWG is calculated by diving 250 times one men's day wage for casual work with the annual wage of a female farm labourers. As becomes clear, the difference between these two annual incomes decreased from the end of the nineteenth century onwards, meaning that the position of female farm servants in the agricultural labour market improved.

Table A4.17. The gender wage gap in agriculture and industry, 1800-1914

	Agriculture				**Industry**	
Period	*Male servant/ female servant*	*Male annual farm labourer/ female servant*	*Male casual labourer/ female casual labourer*	*Male casual labourer/ female farm servant*	*Male/female industrial casual labourer*	*Male/female casual textile labourer*
1800-1804	1.50		1.37	2.21		
1805-1810	1.48		1.33	2.20		
1810-1814	1.59		1.26	2.20		
1815-1819	1.61	2.96	1.08	2.25	2.94	
1820-1824	1.60	2.87	1.27	2.14	2.50	
1825-1829	1.44	2.46	1.33	2.33	2.16	
1830-1834	1.43	3.35	1.40	2.07	2.16	
1835-1839	1.43	3.68	1.38	2.21	2.24	2.01
1840-1844	1.53	3.65	1.40	2.17	1.97	1.72
1845-1849	1.54	3.78	1.41	2.21	1.90	1.83
1850-1854	1.54	4.00	1.44	2.38	1.84	1.84
1855-1859	1.52	3.67	1.43	2.29	1.98	1.80
1860-1864	1.61	3.43	1.43	2.31	1.97	1.39
1865-1869	1.65	3.27	1.54	2.38	1.51	1.27
1870-1874	1.71	3.54	1.67	2.37	1.58	1.50
1875-1879	1.67	3.27	1.81	2.05	1.75	1.65
1880-1884	1.44	3.10	1.96	2.34	1.83	1.86
1885-1889	1.43	2.84	1.54	1.89	1.92	2.07
1890-1894	1.36	2.40	1.73	1.82	2.22	2.27
1895-1899	1.46	2.41	1.61	1.67	2.11	
1900-1904	1.38	1.97		1.24	1.95	
1905-1909	1.50	2.32	1.68	1.85	2.40	
1910-1914	1.51	1.82		1.24	2.94	

Source: wage series (Boter)

Appendices chapter 5

Appendix 5.1. Welfare ratios of men's, women's, and children's wages

As explained in chapter 5, I have calculated the welfare ratios corresponding the nominal wage series presented in chapter 4. Table A5.1 below summarizes the findings. The welfare ratios under 'Allen's method' have been calculated based on the assumption that one household consisting of a husband, a wife, and two children together needed to consume 3.15 baskets annually. The remaining welfare ratios in Table A5.1 have taken the increased number of baskets such a household needed into account. Comparing the 'industry' wage under Allen's method and the adjusted men's industrial wages shows the impact of the adjusted number of consumption baskets.

Table A5.1. Welfare ratios of agricultural and industrial casual wages, 1800-1914

	Allen's method		**Industry (adjusted)**			**Agriculture (adjusted)**	
Period	*Amsterdam*	*Industry*[a]	*Men*	*Women*	*Children*	*Men*	*Women*
1800-1804	2.29					1.23	0.90
1805-1809	2.42	2.60	1.94			1.30	0.97
1810-1814	3.00	3.10	2.32			1.49	1.18
1815-1819	2.24	2.54	1.90	0.65	0.76	1.24	1.14
1820-1824	3.42	3.59	2.68	1.07	1.11	1.50	1.18
1825-1829	2.89	2.84	2.13	0.98	0.90	1.24	0.93
1830-1834	2.39	2.53	1.89	0.88	0.72	1.04	0.75
1835-1839	2.53	2.82	2.11	0.94	0.75	1.12	0.81
1840-1844	2.24	2.08	1.56	0.79	0.55	1.02	0.73
1845-1849	2.25	2.16	1.61	0.85	0.56	1.05	0.75
1850-1854	2.30	2.31	1.73	0.94	0.60	1.13	0.79
1855-1859	1.95	2.29	1.71	0.86	0.51	1.05	0.73
1860-1864	1.95	2.43	1.82	0.92	0.61	1.17	0.82
1865-1869	2.02	2.47	1.85	1.23	0.51	1.24	0.81
1870-1874	2.14	2.47	1.85	1.17	0.50	1.30	0.77
1875-1879	2.47	2.66	1.99	1.14	0.54	1.35	0.75
1880-1884	2.73	2.73	2.04	1.11	0.57	1.43	0.73
1885-1889	3.37	3.37	2.52	1.31	0.72	1.34	0.87
1890-1894	3.49	3.79	2.84	1.28	0.78	1.43	0.83
1895-1899	4.35	4.32	3.23	1.53	1.14	1.70	1.05
1900-1904	4.37	3.70	2.77	1.42	1.22	1.35	
1905-1909	4.76	4.77	3.56	1.49	1.53	1.96	1.17
1910-1914	5.18	5.75	4.30	1.46	1.92	1.60	

[a] Based on the male casual industrial wages from my wage series.

Sources: Dutch wage series (Boter); Allen, *Amsterdam*.

Appendix 5.2. Ten most common couples in the marriage records

Table A5.2. Ten most common couples in the marriage records in absolute numbers, 1800-1929

HISCO groom	HISCO bride	Occupation groom	Occupation bride	1800-1809	1810-1819	1820-1829	1830-1839	1840-1849	1850-1859	1860-1869	1870-1879	1880-1889	1890-1899	1900-1909	1910-1919	1920-1929	Total
61220	-2	Field Crop Farmer	No occupation	2,023	2,652	3,871	4,112	4,920	6,173	8,104	9,462	9,066	10,951	12,456	17,094	12,375	**103,259**
99900	-2	Labourer	No occupation	148	460	1,289	1,506	2,282	3,309	4,826	6,208	6,876	9,203	8,731	7,993	5,489	**58,320**
99900	54020	Labourer	House Servant	72	1,360	2,568	3,284	3,966	5,077	5,991	6,543	5,776	4,788	3,526	3,031	1,799	**47,781**
99900	99900	Labourer	Labourer	94	1,178	2,534	3,378	3,926	4,465	4,441	3,539	2,899	2,921	2,379	2,604	1,794	**36,152**
62105	54020	Farm-Worker, General	House Servant	30	2,379	4,058	3,951	3,571	3,662	3,420	3,480	2,740	2,493	1,879	1,047	441	**33,151**
61220	54020	Field Crop Farmer	House Servant	167	2,307	2,948	3,098	2,893	3,024	3,191	3,338	2,697	2,607	2,356	2,235	1,224	**32,085**
61220	61220	Field Crop Farmer	Field Crop Farmer	468	2,413	2,221	2,840	2,853	3,279	3,036	2,442	1,647	1,449	1,183	943	383	**25,157**
99920	54020	Day-Labourer	House Servant	195	1,558	1,819	1,772	1,820	2,151	1,937	1,712	1,412	1,304	880	736	430	**17,726**
54020	54020	House Servant	House Servant	190	1,148	1,359	1,341	1,603	2,053	2,094	2,046	1,824	1,456	849	274	60	**16,297**
95410	54020	Carpenter, General	House Servant	33	835	1,286	1,350	1,427	1,574	1,677	1,736	1,718	988	750	798	354	**14,526**

Source: marriage records

Appendix 5.3. The household life-cycle

Table A5.3. The changing household composition and consumption during the life-cycle

Year of the life-cycle	Husband	Wife	Children <12	Children >12	Baskets needed (N)
1	1	1	0	0	2.51
2	1	1	0	0	2.51
3	1	1	0	0	2.51
4	1	1	0	0	2.51
5	1	1	0	0	2.51
6	1	1	1	0	3.17
7	1	1	1	0	3.17
8	1	1	2	0	3.83
9	1	1	2	0	3.83
10	1	1	3	0	4.49
11	1	1	3	0	4.49
12	1	1	4	0	5.15
13	1	1	4	0	5.15
14	1	1	4	0	5.15
15	1	1	4	0	5.15
16	1	1	4	0	5.15
17	1	1	4	0	5.15
18	1	1	3	1	5.65
19	1	1	3	1	5.65
20	1	1	2	2	6.15
21	1	1	2	2	6.15
22	1	1	1	3	6.65
23	1	1	1	3	6.65
24	1	1	0	4	7.15
25	1	1	0	4	7.15
26	1	1	0	3	5.99
27	1	1	0	3	5.99
28	1	1	0	2	4.83
29	1	1	0	2	4.83
30	1	1	0	1	3.67
31	1	1	0	1	3.67
32	1	1	0	0	2.51
33	1	1	0	0	2.51
34	1	1	0	0	2.51
35	1	1	0	0	2.51
36	1	1	0	0	2.51
37	1	1	0	0	2.51
38	1	1	0	0	2.51
39	1	1	0	0	2.51
40	1	1	0	0	2.51
41	1	1	0	0	2.51

Sources: see text chapter 5.

Table A5.4. Welfare ratios and the household life-cycle, 1840-1880 and 1870-1910

	Agriculture		Industry			Agriculture		Industry	
Year	*Lower bound*	*Upper bound*	*Lower bound*	*Upper bound*	*Year*	*Lower bound*	*Upper bound*	*Lower bound*	*Upper bound*
1840	1.58	2.71	2.28	3.44	1870	2.05	3.28	2.77	4.53
1841	1.58	2.71	2.29	3.46	1871	2.02	3.21	2.74	4.45
1842	1.51	2.59	2.19	3.31	1872	2.10	3.31	2.87	4.61
1843	1.63	2.79	2.36	3.59	1873	2.15	3.38	2.96	4.73
1844	1.72	2.94	2.50	3.80	1874	2.08	3.25	2.88	4.57
1845	1.33	2.28	1.93	2.95	1875	1.74	2.70	2.42	3.80
1846	1.26	2.16	1.83	2.80	1876	1.71	2.63	2.36	3.69
1847	1.01	1.73	1.47	2.25	1877	1.38	2.11	1.89	2.96
1848	1.14	1.95	1.66	2.55	1878	1.44	2.19	1.97	3.06
1849	1.01	1.72	1.46	2.25	1879	1.25	1.90	1.70	2.64
1850	1.07	1.81	1.54	2.38	1880	1.23	1.86	1.67	2.58
1851	0.93	1.58	1.36	2.09	1881	1.04	1.60	1.48	2.29
1852	0.92	1.56	1.37	2.09	1882	1.00	1.56	1.51	2.32
1853	0.89	1.50	1.34	2.03	1883	0.95	1.51	1.51	2.30
1854	0.80	1.36	1.22	1.84	1884	0.91	1.47	1.52	2.32
1855	0.76	1.30	1.18	1.78	1885	0.96	1.57	1.70	2.58
1856	0.83	1.41	1.27	1.91	1886	1.03	1.67	1.84	2.77
1857	0.77	1.56	1.18	2.14	1887	1.00	1.91	1.83	3.23
1858	0.74	1.49	1.11	2.03	1888	1.01	1.90	1.86	3.26
1859	0.75	1.78	1.13	2.43	1889	0.91	1.95	1.69	3.40
1860	0.73	1.72	1.07	2.33	1890	0.84	1.78	1.57	3.14
1861	0.67	1.77	0.97	2.44	1891	0.79	1.95	1.48	3.44
1862	0.71	1.86	1.03	2.58	1892	0.81	2.05	1.50	3.57
1863	0.69	1.98	0.99	2.77	1893	0.83	2.39	1.51	4.17
1864	0.72	2.01	1.02	2.83	1894	0.92	2.72	1.67	4.70
1865	0.85	2.09	1.19	2.96	1895	1.07	2.88	1.93	4.90
1866	0.81	2.00	1.14	2.81	1896	1.04	2.85	1.91	4.95
1867	1.00	2.17	1.38	3.03	1897	1.37	3.27	2.54	5.75
1868	1.05	2.27	1.44	3.15	1898	1.30	3.16	2.45	5.65
1869	1.45	2.72	1.97	3.77	1899	1.62	3.30	3.09	5.96
1870	1.40	2.62	1.90	3.61	1900	1.40	2.89	2.72	5.32
1871	2.02	3.21	2.74	4.45	1901	2.50	4.03	4.70	7.00
1872	2.10	3.31	2.87	4.61	1902	2.61	4.19	4.77	7.00
1873	2.15	3.38	2.96	4.73	1903	2.75	4.40	4.91	7.11
1874	2.08	3.25	2.88	4.57	1904	2.91	4.65	5.10	7.30
1875	2.20	3.41	3.05	4.80	1905	3.23	5.16	5.56	7.88
1876	2.15	3.32	2.98	4.67	1906	3.06	4.95	5.69	7.97
1877	2.10	3.22	2.89	4.51	1907	2.64	4.34	5.31	7.35
1878	2.19	3.35	3.00	4.67	1908	2.60	4.34	5.65	7.73
1879	2.24	3.40	3.05	4.73	1909	2.64	4.48	6.19	8.38
1880	2.20	3.33	2.99	4.61	1910	2.49	4.30	6.33	8.48

Sources: see text chapter 5.

Appendix 5.4. Summary statistics survey home industry, 1909 and 1914

Table A5.5. Number of home industrial workers by marital status, 1914

Marital status	**Men**		**Women**		**Unknown gender**		**Total**	
	N	*%*	*N*	*%*	*N*	*%*	*N*	*%*
Married	3,423	25.4	4,425	39.6	0	0.0	7,848	31.4
Unmarried[a]	2,908	21.6	3,669	32.8	318	100.0	6,895	27.6
Widow(er)[b]	11	0.1	739	6.6	0	0.0	750	3.0
Unknown	7,142	53.0	2,352	21.0	0	0.0	9,494	38.0
Total	***13,484***	***100.0***	***11,185***	***100.0***	***318***	***100.0***	***24,987***	***100.0***

[a] Including children.
[b] The survey conductors did normally not have a separate category for widowers, only for widows.
Sources: Directie van den Arbeid, *Onderzoekingen (part I, II, and III)*.

Table A5.6. Number of home industrial workers by age, 1914

Age	**Men**		**Women**		**Unknown gender**		**Total**	
	N	*%*	*N*	*%*	*N*	*%*	*N*	*%*
<12	790	5.9	912	8.2	179	70.8	1,881	7.6
12-15	802	6.0	1,061	9.6	74	29.2	1,937	7.9
16-19	919	6.9	1,069	9.7	0	0.0	1,988	8.1
20-24	352	2.6	538	4.9	0	0.0	890	3.6
25-29	2,038	15.3	1,646	14.9	0	0.0	3,684	15.0
30-39	2,844	21.4	2,101	19.0	0	0.0	4,945	20.1
40-49	2,254	16.9	1,529	13.8	0	0.0	3,783	15.4
50-59	1,569	11.8	802	7.2	0	0.0	2,371	9.6
60-64	211	1.6	171	1.5	0	0.0	382	1.6
65-69	775	5.8	346	3.1	0	0.0	1,121	4.6
>70	419	3.1	240	2.2	0	0.0	659	2.7
Unknown	333	2.5	657	5.9	0	0.0	990	4.0
Total	***13,306***	***100.0%***	***11,072***	***100.0%***	***253***	***100.0%***	***24,631***	***100.0***

Sources: Directie van den Arbeid, *Onderzoekingen (part I, II, and III)*.

Table A5.7. Number of home industrial workers per sector, 1914

Industry	**Men**		**Women**		**Total**	
	N	*%*	*N*	*%*	*N*	*%*
Food and tobacco industry	2,544	18.9	3,783	33.8	6,327	25.3
Diamant- and other gemstone processing	48	0.4	54	0.5	102	0.4
Textile industry	9,012	66.8	5,075	45.4	14,405	57.6
Wood-, cork, straw processing	973	7.2	1,160	10.4	2,133	8.5
Apparel industry	656	4.9	979	8.8	1,635	6.5
Paper production	2	0.0	4	0.0	6	0.0
Leather, wax cloth and caoutchouc	140	1.0	55	0.5	195	0.8
Metal processing	76	0.6	53	0.5	129	0.5
Book- and lithography printing, printing of wood-, copper- and steel engraving, photography	33	0.2	22	0.2	55	0.2
Total	***13,484***	***100.0***	***11,185***	***100.0***	***24,987***	***100.0***

Sources: Directie van den Arbeid, *Onderzoekingen (part I, II, and III)*.

Table A5.8. Hourly and weekly wages (in guilders) in the home industry, 1909

Industry	**Per person**[a]			**Per household**		
	Hourly wage	*Hours worked per week*	*Weekly wage*	*Number of workers*	*Hours worked per week*	*Weekly wage*
Wood	0.09	64.6	5.81	1.46	99.11	7.98
Metal	0.10	69.8	6.98	1.36	94.87	10.17
Food	0.05	40.6	2.03	2.70	93.62	3.19
Textile	0.08	60.9	4.87	1.36	83.26	6.85
Paper	0.08	39.2	3.14	1.64	55.24	4.36
	Man alone[b]			**Woman alone**[c]		
	Hourly wage	*Hours worked per week*	*Weekly wage*	*Hourly wage*	*Hours worked per week*	*Weekly wage*
Wood	0.11	70	7.90	0.07	56	3.79
Metal	0.11	70	9.83	-	-	-
Food	0.08	54	3.65	0.04	46	1.77
Textile	0.10	76	7.71	0.07	55	3.72
Paper	0.08	53	4.37	0.06	47	2.94
Average	***0.10***	***64.51***	***6.69***	***0.06***	***51.04***	***3.06***

[a] Average of male, female, and child workers. In the source, if more than one person within the same household worked in the home industry, the *total* weekly wage was recorded, which made it impossible to distinguish the exact contributions from the individual workers. For the households in which only one man or one woman was performing home industrial work, I could determine the wages and working hours of men and women separately.

[b] N = 292 (average age: 41).

[c] N = 166 (average age: 36).

Source: Posthumus, *Huisindustrie in Nederland*.

Appendix 5.5. Household budgets

From the end of the nineteenth century onwards, numerous household budgets have been constructed to gain insight into the living standards of the Dutch population.[479] For this book, I have merely used the budgets from 1891, 1912, and 1913.[480] In the tables below the following information is included: (1) the number of men, women, and children from various age groups present in the household, (2) the number of barebones consumption baskets required based on the household composition and the adjusted number of baskets presented in Table 5.1 in section 5.3, (3) the income of the husband and the total household income, and (4) the welfare ratios based on the husband's wage alone, and the welfare ratio based on the total household income.

[479] The most important publications are: Bureau van de Statistiek der gemeente Amsterdam, 'De uitgaven'; Bureau van de Statistiek der gemeente Amsterdam, 'Huishoudrekeningen'; Centraal Bureau voor de Statistiek, *Huishoudrekeningen (deel I)*; Centraal Bureau voor de Statistiek, *Huishoudrekeningen (deel II)*; Directie van den Arbeid, *Arbeidersbudgets*; Koninklijke Nederlandsche Landbouwvereeniging, *Bijzondere catalogus*; Statistisch Bureau der Gemeente 's-Gravenhage, *Uitkomsten*; Statistisch Bureau der Gemeente 's-Gravenhage, *Onderzoek*; Sociaal Democratische Studie-Club, *Arbeidersbudgets*; Statistisch Instituut, 'Arbeidersbudgets'.

[480] See for a comparison of Dutch and Indonesian household budgets 1900-1930: Van Nederveen Meerkerk and Boter, 'Colonial connections'.

Table A5.9. Household composition, income (in guilders per year), and welfare ratios of 25 agricultural households, 1913

	Household members					**Income**		**Welfare ratios**	
Nr.	*Men*	*Women*	*Children <12*	*Children >12*	*Total baskets needed*	*Wage husband*	*Total income*	*Wage husband*	*Total income*
1	1	1	4	0	5.15	455.63	470.06	2.42	2.50
2	1	1	5	0	5.81	495.11	538.66	2.33	2.54
3	1	1	4	0	5.15	442.24	507.61	2.35	2.70
4	1	1	2	0	3.83	215.3	397.31	1.54	2.84
5	1	1	0	3	5.99	82.59	847.92	0.38	3.88
6	1	1	0	4	7.15	480.61	1772.16	1.84	6.79
7	1	1	5	0	5.81	162.84	775.56	0.77	3.66
8	1	1	4	1	6.31	481.57	733.65	2.09	3.18
9	1	1	3	0	4.49	445.25	767.24	2.72	4.68
10	1	1	6	0	6.47	473.36	607.45	2.00	2.57
11	1	1	4	2	7.47	363.7	1008.77	1.33	3.70
12	1	1	2	0	3.83	368.54	728.93	2.64	5.21
13	1	1	1	0	3.17	136.36	737.91	1.18	6.38
14	1	1	5	5	11.61	596.74	1878.64	1.41	4.43
15	1	1	2	0	3.83	464.5	571.45	3.32	4.09
16	1	1	6	0	6.47	182.6	720.91	0.77	3.05
17	2	2	3	0	7.00	207.7	744.05	0.81	2.91
18	1	1	3	0	4.49	240.87	676.32	1.47	4.13
20	1	1	4	3	8.63	293	755.37	0.93	2.40
21	2	2	1	0	5.68	298.6	849.89	1.44	4.10
22	1	1	4	0	5.15	470	685.64	2.50	3.65
23	1	1	3	0	4.49	419.75	507.97	2.56	3.10
24	1	1	5	0	5.81	55.41	646	0.26	3.05
25	1	1	3	0	4.49	471.4	596.23	2.88	3.64
27	1	1	3	0	4.49	554.8	620.61	3.38	3.79
Average	***1.08***	***1.08***	***3.28***	***0.72***	***5.71***	***354.34***	***765.85***	***1.81***	***3.72***

Sources: Allen, 'Amsterdam'; Humphries, 'The Lure of Aggregates', p. 703; Koninklijke Nederlandsche Landbouwvereeniging, *Bijzondere Catalogus*, Appendix IV.

Table A5.10. Household composition, income (in guilders per week), and welfare ratios of 25 industrial households, 1891

		Household members						**Income**		**Welfare ratios**	
Nr .	*Occupation head of household*	*Men*	*Women*	*Children <12*	*Children 12-15*	*Children >15*	*Total baskets needed*	*Income husband*	*Total income*	*Husband*	*Total*
A	Carpenter	1	1	0	1	1	4.83	13.22	13.47	3.95	4.03
B	Carpenter	1	1	3	0	0	4.49	10.7	16.04	3.44	5.16
C	Carpenter (factory)	1	1	2	0	0	3.83	11.37	14	4.29	5.28
D	Charwoman	0	1	0	0	2	3.48	0	9.65	0.00	4.00
F	Unknown	0	1	2	2	1	5.96	0	13.935	0.00	3.38
G	Doorman	1	1	0	1	0	3.67	10	10	3.93	3.93
H	Labourer	1	1	2	2	1	7.31	6.61	18.68	1.31	3.69
J	Goldsmith	1	1	6	0	0	6.47	11.58	12.64	2.58	2.82
K	Typographer	1	1	5	1	2	9.29	7.16	15.47	1.11	2.40
L	Factory labourer (bread)	1	1	6	0	0	6.47	9.01	9.07	2.01	2.02
M	Sawyer (valet)	1	1	2	0	0	3.83	7.9	10.36	2.98	3.90
N	Furniture manufacturer	1	1	1	2	0	5.49	8.51	12.93	2.24	3.40
O	Carpenter	1	1	6	0	0	6.47	10.01	10.89	2.23	2.43
P	Mason	1	1	7	0	0	7.13	8.83	8.92	1.79	1.81
Q	Carpenter	1	1	4	1	0	6.31	7.72	8.5	1.77	1.94
R	Day labourer	1	1	3	0	0	4.49	7.29	7.8	2.34	2.51
S	Unknown	1	1	0	0	3	5.99	9.1	21.7	2.19	5.23
T	Day labourer	1	1	5	0	0	5.81	4.1	5.22	1.02	1.30
U	Labourer	1	1	4	3	0	8.63	6.39	10.15	1.07	1.70
V	Carpenter (valet)	1	1	2	1	2	7.31	8.62	10.74	1.70	2.12
W	Labourer	1	1	3	0	0	4.49	6.82	7.05	2.19	2.27
X	Charioteer	1	1	0	0	0	2.51	9	9.63	5.18	5.54
Y	Pan manufacturer	1	1	3	2	1	7.97	8.04	8.79	1.46	1.59
Z	Day labourer	1	1	2	2	2	8.47	2.41	4.95	0.41	0.84
AA	Labourer	1	1	2	2	0	6.15	6.22	9.15	1.46	2.15
Average		**0.92**	**1.00**	**2.80**	**0.80**	**0.60**	**5.87**	**7.62**	**11.19**	**2.11**	**3.02**

Sources: Statistisch Instituut, ‘Arbeidersbudgets’; Allen, *Amsterdam*; Humphries, ‘The lure of aggregates’, p. 703.

Table A5.11. Household composition, income (in guilders per year) and welfare ratios of 69 industrial and service-oriented households, 1912

		Household members						Income (per year)		Welfare ratios	
Nr	*Occupation head of hh*	*Men*	*Women*	*Children <12*	*Children 12-15*	*Children >15*	*Nr of baskets needed*	*Wage husband*	*Total income*	*Wage husband*	*Total income*
1	Bookbinder	1	1	3	0	0	4.49	754	872.95	4.60	5.48
2	Mailman	1	1	3	0	0	4.49	696.62	781.75	4.25	4.90
3	Baker	1	1	1	0	0	3.17	740.56	910.86	6.40	8.09
4	Baker	1	1	4	0	0	5.15	805.67	805.67	4.28	4.41
5	Courier (bread)	1	1	1	0	0	3.17	913	913	7.89	8.11
6	Courier (bread)	1	1	0	1	1	4.83	827.75	859.25	4.69	5.01
7	Civil servant (telephone)	1	1	3	0	0	4.49	805.95	858.5	4.92	5.38
8	Civil servant (crane-driver)	2	1	2	1	0	6.34	901.8	1166.8	3.90	5.18
9	Civil servant (Ticket inspector)	1	1	4	0	0	5.15	843.02	988.47	4.48	5.41
10	Tailor	1	1	2	0	0	3.83	902.7	910.9	6.46	6.70
11	Tailor	1	1	3	1	0	5.65	974.45	1447.4	4.72	7.21
12	Typographer	1	1	0	0	0	2.51	762.09	762.09	8.32	8.55
13	Typographer	1	1	1	2	1	6.65	763.1	1387.12	3.14	5.87
14	Typographer	1	2	1	0	0	4.33	715.8	958	4.53	6.23
15	Typographer	1	1	3	0	0	4.49	802.8	852.8	4.90	5.35
16	Civil servant (mail)	1	1	6	1	0	7.63	843	1087.41	3.03	4.01
17	Civil servant (state)	1	1	2	0	0	3.83	745.32	747.32	5.33	5.49
18	Civil servant (navy)	1	1	2	0	0	3.83	650.62	798.96	4.65	5.87
19	Civil servant	1	1	3	0	0	4.49	673.89	684.89	4.11	4.30
20	Stoker	1	1	0	0	0	2.51	777.94	927.48	8.49	10.41
21	Carpenter	1	1	1	0	0	3.17	952.15	954.15	8.23	8.48
22	Carpenter	1	1	3	0	0	4.49	922.45	1056.6	5.63	6.63
23	Carpenter	1	1	2	1	0	4.99	1013.3	1028.24	5.56	5.80
24	Wall-paperer and upholsterer	1	1	5	1	1	8.13	719.99	912.29	2.43	3.16
25	Postman	1	1	1	0	0	3.17	729.26	825.51	6.30	7.33
26	Rangeerder H.S.M.	1	1	2	2	0	6.15	773.24	1022.69	3.44	4.68
27	Stonemason	1	1	1	1	1	5.49	779.5	1000	3.89	5.13
28	Ticket inspector (railway)	1	1	1	0	0	3.17	790.4	1159.15	6.83	10.30
29	Carpenter	1	1	3	0	0	4.49	861.25	1091.1	5.25	6.84
30	Carpenter	1	1	3	0	0	4.49	709.82	828.05	4.33	5.19

		Household members						Income (per year)		Welfare ratios	
Nr	*Occupation head of hh*	*Men*	*Women*	*Children <12*	*Children 12-15*	*Children >15*	*Nr of baskets needed*	*Wage husband*	*Total income*	*Wage husband*	*Total income*
31	Carpenter	1	1	4	0	0	5.15	948.92	1077.04	5.05	5.89
32	Ticket inspector (tram)	2	1	1	0	0	4.52	732.5	842.27	4.44	5.25
33	Bridgeman	1	1	0	1	1	4.83	655.2	889.2	3.72	5.18
34	Ticket inspector	1	1	3	0	0	4.49	1053.04	1053.04	6.42	6.60
35	Civil servant (garbage)	1	1	4	0	0	5.15	520	731.67	2.77	4.00
36	Civil servant (garbage)	2	1	1	1	0	5.68	546	1081	2.63	5.36
37	Machinist	1	1	2	0	0	3.83	724.85	724.85	5.18	5.33
38	Charwoman	0	1	3	1	1	5.46	0	885.46	0.00	4.57
39	Machinist (boat)	1	1	1	1	3	7.81	656.2	1139.66	2.30	4.11
40	Painter	1	1	4	3	3	12.11	555.08	1233.43	1.26	2.87
41	Tailor	1	1	3	0	0	4.49	695.65	736.87	4.24	4.62
42	Teacher	1	1	0	0	0	2.51	1185.6	1185.6	12.94	13.30
43	Painter	1	1	3	1	2	7.97	494.82	934.27	1.70	3.30
44	Construction labourer	1	1	7	0	0	7.13	751.5	751.5	2.89	2.97
45	Civil servant (railway)	1	1	2	1	0	4.99	721.38	742.61	3.96	4.19
46	Construction labourer/smith	1	1	2	0	0	3.83	670	730.9	4.79	5.37
47	Printer	1	1	0	0	0	2.51	533	544.65	5.82	6.11
48	Painter	1	1	3	0	0	4.49	562.25	720.26	3.43	4.52
49	Factory labourer	1	1	1	0	0	3.17	628.25	633.56	5.43	5.63
50	Carpenter	1	1	2	0	0	3.83	624	1033.63	4.46	7.60
51	Patroonmaker	1	1	2	2	0	6.15	771.67	900.72	3.44	4.12
52	Rijstpeller	1	1	1	0	0	3.17	759.5	759.5	6.56	6.75
53	Cigar manufacturer	1	1	1	0	0	3.17	622.17	742.14	5.38	6.59
54	Machinist S.S.	1	1	7	2	0	9.45	1130.19	1161.19	3.28	3.46
55	Factory labourer	1	1	1	1	0	4.33	592	628.53	3.74	4.09
56	Painter	1	1	3	2	2	9.13	444.75	832.81	1.33	2.57
57	Carpenter	1	1	2	1	0	4.99	542.16	578.98	2.98	3.27
58	Factory labourer	1	1	2	1	0	4.99	364	765.23	2.00	4.32
59	Furniture maker	1	1	2	0	0	3.83	728	733	5.21	5.39
60	Tobacco processor	1	1	3	0	0	4.49	500.5	581.45	3.05	3.65
61	Salesclerk	1	1	3	0	0	4.49	513.5	588.5	3.13	3.69
62	Tailor	1	1	4	0	0	5.15	730.61	797.03	3.89	4.36
63	Essayeursbediende	1	1	1	0	0	3.17	736.9	736.9	6.37	6.55
64	Carpenter	1	1	1	0	0	3.17	727.15	767.15	6.28	6.82

		Household members						Income (per year)		Welfare ratios	
Nr	*Occupation head of hh*	*Men*	*Women*	*Children <12*	*Children 12-15*	*Children >15*	*Nr of baskets needed*	*Wage husband*	*Total income*	*Wage husband*	*Total income*
65	Civil servant (municipality)	1	1	1	2	0	5.49	519.1	616.7	2.59	3.16
66	Machinist	2	1	0	0	2	6.18	520	959.65	2.30	4.37
67	Sugar processor	1	1	2	0	0	3.83	455.35	560.9	3.26	4.12
68	Baker	1	1	4	0	0	5.15	728	728	3.87	3.98
69	Ticket inspector	2	2	2	0	0	6.34	608.85	667.9	2.63	2.97
Av.		1.06	1.03	2.23	0.45	0.26	4.92	716.00	875.03	4.49	5.46

Appendix 5.6. The estimation of land size, livestock, and land yields

The provinces of Groningen, Friesland, and Noord-Holland reported in the 1909 agricultural survey that the rent for one are of land was on average one guilder per year (*f*100 per hectare). Overijssel reported *f*0.75 per are per year (*f*75 per hectare). However, Jan Luiten van Zanden found that one hectare of farm land or pasture cost on average *f*44.50 per year in 1880 and *f*55.00 per year in 1910 (*f*0.45 and *f*0.55 per are respectively), ranging from *f*28.20 per hectare in Drenthe to *f*73.20 per hectare in Zuid-Holland. Land designated for horticulture was more expensive and cost *f*84.00 per hectare per year in 1880.[481] The labour surveys of 1890 stated that land was more expensive in or nearby villages and small cities than in the countryside. For the town of Almelo it was reported that "200 hectares, rented to labourers in small plots, are worth *f*20,000 in rent, this is about as much as 1800 hectares that are rented by farmers in the countryside."[482] It was however not specified whether this was weekly, monthly, or annual rent. Following Van Zanden's results, it seems most plausible that these are annual prices since he estimated one are to have cost *f*0.55 per year and in Almelo it comes down to *f*1 rent per are. Thus, based on scattered information, I estimate that around 1900, 1 are of land cost *f*0.55 per year in the countryside and *f*1 in more industrialized regions.

To estimate the value of the land yields, I have used the market price of potatoes. The national average potato production per hectare during the period 1901-1910 was 201 hectolitres and the market prices of potatoes was on average *f*2.75 per hectolitre in the period 1888-1892 and *f*2.86 in the period 1908-1912.[483] The most commonly held types of cattle were goats and cows for milk and chickens for eggs. Chickens on average gave 177 eggs and cows 2,970 litres of milk per year each.[484] Information about the milk yields of goats was less straightforward. In the Dutch periodical on goat keeping from 1957, various remarks indicate that on average one goat gave circa 3 litres of milk per day which comes down to 1,095 litres per year.[485]

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[481] van Zanden, *De economische ontwikkeling*, pp. 118-123.

[482] Arbeidsinspectie, *Verslag van de tweede afdeling*, p. 23. NB: this land all belonged to one landowner renting his land in small plots to people from Almelo.

[483] Departement van Landbouw Nijverheid en Handel, *Verslag over 1910*, p. 51. NB: how much potatoes could be cultivated per hectare of land depended on the type of soil and was therefore regionally depended. The numbers used here are the national average.

[484] Bieleman, *Boeren op het Drentse zand*, p. 516; van Zanden, *De economische ontwikkeling*, p. 105.

[485] Anonymous, 'Hoeveel', p. 43; Anonymous, 'Geitemelk', p. 57; Anonymous, 'Hoe doet u het?', p. 86. Although these articles were published about half a century after my research period, these comments are still worthwhile because these articles are written by people who owned just one or two goats and not by farmers using modern farming techniques.

Now that we know the price and value of land, we need to know large the plots of land were that wage labourers in the cities and in the countryside could cultivate. The final reports on Twente state that "houses in Enschede, at least in the outer quarters, usually come with a plot of land of 1 'spint' – 200 à 250 m^2 – and not seldom with 2 'spints' or more."[486] The exact definition of one 'spint' differed between regions, but from the quote it seems that one 'spint' was on average 225 m^2 which equals 2.25 are. The survey respondents mentioned plots of land of 3-4 are or 5-10 are.[487] On top of this, labourers often rented land nearby the city. The Almelo reports stated that these plots were either 5 or 10 are.[488] Agricultural households on average rented 73 are of land.

For information about agricultural households' livestock I turned to the secondary literature. Goats were considered to be "the dairy cow of the poor"[489] because they provided milk – mainly for subsistence use – and did not require expensive forage as they were supposedly happy to consume the food remains from the kitchen. Furthermore, their excrements could be used as manure for the cultivation of land. Jan Bieleman has shown that 71% of all the wage labourers in Drenthe owned one or more goats (on average 1.7) as opposed to 27% of the independent farmers (on average 1.3).[490] Furthermore, he has estimated that almost 75% of the wage labourers in Drenthe owned chickens: on average 12 per household.[491] One chicken gave approximately 177 eggs per year which means that the average wage labourer's household could consume and/or sell 2,124 eggs annually.[492]

The survey on home industry from 1914 provided information about the livestock of 340 households in which at least one person was working in the home industry. In total, they kept 279 cows, 21 horses, and 383 pigs, sheep, or goats (on average 0.82, 0.06, and 1.13 per household respectively). By far most households included in the sample (40%) owned one pig, sheep, or goat. This source explicitly excluded information about chickens.

In sum, I estimate that the mainstream agricultural household owned 1.7 goats and 12 chickens and rented a plot of land of 73 ares (0.73 hectares) which is the weighted average of all land renting agricultural wage labourers included in Table 5.4. This closely resembles the average size of the land – 76.5 are ≈ 0.77 hectares – available to the households in the budget

[486] Arbeidsinspectie, *Verslag van de tweede afdeling*, p. 22.
[487] Arbeidsinspectie, *Twente*, pp. 240, 249.
[488] Arbeidsinspectie, *Verslag van de tweede afdeling*, p. 23.
[489] Cited in: Bieleman, *Boeren op het Drentse zand*, p. 512.
[490] Bieleman, *Boeren op het Drentse zand*, p. 510.
[491] Independent farmers owned 20-25 chickens.
[492] Bieleman, *Boeren op het Drentse zand*, pp. 514-516.

studies discussed before.[493] Industrial households owned one goat and cultivated 12.5 are of land.

Table A5.12. Household resources and income in agriculture and industry ca. 1910

Source of income			**Agriculture**			**Industry**		
			Size/N	*Output*	*Value (f)*	*Size/N*	*Output*	*Value (f)*
Self-employed agriculture	Land		73 are	147 HL potatoes	245.62[a]	12.5 are	25 HL potatoes	71.40
	Livestock	Goats	1.7	1,862 litres milk	139.28	1	1,095 litres milk	81.91
		Chickens	12	2,124 eggs	90.86	-	-	-
Total agriculture				*475.76*			*153.31*	
Wage labour			*Days*	*Day wage*	*Value (f)*	*Days*	*Day wage*	*Value (f)*
	Wage labour husband		250	1.21	302.50	250	2.19	547.50
	Wage labour wife		25	0.86	21.50	26[b]	3.72[b]	96.72
	Wage labour 1 child >12		125	0.52	65.00	250	0.94	235.00
Total wage income				*389.00*			*879.22*	
Total income (welfare ratio)				**864.76 (3.3)**			**1,032.53 (4.2)**	

[a] 25 hectolitres potatoes for consumption (market price) and 189.37 hectolitres factory potatoes to be sold to the potato-starch factories (wholesale price).
[b] Number of weeks worked and weekly wage in the home industry (see Table 5.3).
Sources: see text.

[493] Koninklijke Nederlandsche Landbouwvereeniging, *Bijzondere catalogus*, Appendix IV. NB: this conclusion gives confidence that on average, these 25 households have been representative in terms of generating income from their own land.

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WASS Training and Supervision Plan

Corinna Agatha Boter
Wageningen School of Social Sciences (WASS)
Completed Training and Supervision Plan

Name of the learning activity	Department/Institute	Year	ECTS*
A) Project related competences			
My project in a nutshell	NW Posthumus Institute	2013	2
Work in progress	NW Posthumus Institute	2013	6
Research design course	NW Posthumus Institute	2014	8
Individual assessment	NW Posthumus Institute	2015	1
B) General research related competences			
Introduction course	WASS	2013	1
Organizing and participating in masterclass with Jan de Vries	WUR	2013	1
"The Dynamics of the Household. Labour Division in Dutch Households 1830-1940"	ESSHC, Vienna	2014	1
"Women's and Children's Work and the Rise of the 'Male Breadwinner Society' in the Netherlands 1830-1890"	Berkshire, Toronto and ENIUGH, Paris	2014	1
"Ideal versus reality? The ideal of the breadwinner-homemaker household in industrializing regions in the Netherlands, circa 1890"	Cambridge graduate seminar, Cambridge University	2014	1
"Ideal versus reality? Women's and children's contributions to the household income in the Netherlands 1830-1930"	Oxford graduate seminar, Oxford University	2015	1
"Between bare bone necessity and respectability: household income in the Netherlands and the Netherlands Indies, ca. 1850-1940"	WEHC, Kyoto	2015	1
"Dutch Household Incomes and Expenditures during the transition to a Male Breadwinner Society 1880-1920"	ESSHC, Valencia	2016	1
"*The development of Dutch women's nominal and real wages and the gender wage gap during the long nineteenth century"* And chair two sessions	Gender, household labour relations and (post)colonialism, 1800-present, Yogyakarta	2016	2
C) Career related competences/personal development			
Scientific Writing	WUR	2013	1.8
Summer school Introduction Econometrics	UU	2014	4
Total			**32.8**

*One credit according to ECTS is on average equivalent to 28 hours of study load

Publications

Peer-reviewed journals

Boter, C. 'Ideal Versus Reality? The Domesticity Ideal and Household Labour Relations in Dutch Industrializing Regions, Circa 1890', *History of the Family*, 22 (2016), pp. 82-102.

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van Nederveen Meerkerk, E. and Boter, C., 'Colonial Connections and Living Standards: Household Budgets, Labour Relations and Consumption in the Netherlands and Java, ca. 1880-1940'.

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Boter, C., Book review of Angélique Janssens, Labouring Lives. Women, work and the demographic transition in the Netherlands, 1880-1960. *Tijdschrift voor Sociale en Economische Geschiedenis* 12 (2015), 134-136.

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Cover image

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