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Wage Structure and Labor Mobility in the Netherlands, 1999–2003

Lex Borghans and Ben Kriechel

4.1 Introduction

Labor relations in the Netherlands are subject to an intensive system of negotiations between employer associations, trade unions, and the government. Every year, starting at a centralized level, these three parties discuss the economic developments, aiming for agreement on the desirable development of wages. Moderate development of wages to stimulate employment growth has always been an important theme in these negotiations. This agreement serves as advice for negotiations between union and employers' associations at industry level. Collective agreements in industries are generally extended by the Minister of Social Affairs, which means that the agreement applies to all workers and firms within the industry and also to those who are not represented by a trade union or employer association.

This structure suggests that wage development is highly centralized and focused on wage moderation. In contrast, the Dutch labor market also has clearly individualized features. Union membership is low, a high share of employment is in the service sector, while the fraction of workers in the traditionally much more organized industry is small. A large fraction of firms

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explicitly apply some kind of performance pay, and in many more firms, managers have performance interviews with their employees, which may lead to extra wage increases or promotion. Even in the public sector, these modern human resource practices are well developed.

The aim of this chapter is to explain the institutional setting and the main actors of wage determination in the Netherlands, to investigate the influence of the centralized bargaining system on the Dutch wage structure, and to see to what extent individual factors, developments at the firm level, and market developments determine wages. We will also relate wage developments to worker mobility, as this may be a way in which workers respond to rigid wage structures. The analyses are based on administrative data collected by Statistics Netherlands (CBS) from various sources, bringing together wage information about all employment relationships held in the Netherlands. Currently this data set covers the period 1999 to 2003. Our main findings for this period were that the Netherlands clearly experienced an increase in wage inequality, especially among men. This pattern was very similar when comparing firms of different size, while specific industries revealed patterns that substantially deviated from the overall pattern. Young people in all wage categories faced, on average, much higher wage increases than others. Decomposing the wage growth into an industry component, a firm component, and an individual component showed that by far most of the variation in wage growth was individual. On average, only 12 percent of the variance was firm specific. Industry-specific wage growth was almost negligible. In smaller firms, however, the development of wages was much more firm specific. Mobility rates were relatively high among workers in firms with low wage growth as well as firms with high wage growth. This relationship exists when we look at differences both between and within industries in the wage development of a firm.

The period of investigation was characterized by relatively high wage growth (Ter Weel 2003). Although economic performance was already deteriorating after the boom in the late 1990s, the labor market was still heated, especially because of shortages for higher-educated workers in general and low-skilled workers in some specific industries (especially the building industry [ROA 2005]). Our findings, therefore, suggest that wage formation in the Netherlands—at least in this period—was determined mainly by the development of the scarcity of human capital on the one hand, and by individual career developments on the other. Neither collective agreements nor the profitability of firms seemed to have great effects.

We will proceed as follows in this chapter. In section 4.2, we will provide a detailed description of the institutional actors and processes of wage determination in the Netherlands and economic conditions in the period investigated. In section 4.3, we will describe the data. Section 4.4 provides the results of the analyses, and section 4.5 contains our conclusions.

4.2 Institutional Setting

4.2.1 Characteristics of the Dutch Economy

The Dutch economy is a corporative economy in which the government, employers' associations, and trade unions are focused on deliberation and consensus. It can be characterized as a capitalist state of the Rhineland model. The model is based on a regulated market economy and an extensive system of social security. The government, the employers' associations, and the trade unions negotiate about goals and appropriate measures to reach these goals. One of the main aims is sustainable and socially responsible economic growth. Social responsibility and solidarity are some of the main characteristics of this state model.

Until 1982, the Dutch economy was often called the "welfare state without work." In 1982, 13 percent of the Dutch labor force was unemployed, and almost the same number were on social welfare programs, especially early retirement and disability programs. The broad unemployment rate was 28 percent of the labor force (Organization for Economic Cooperation and Development [OECD] 1982). Since 1982, the Dutch economy tackled its labor market problems by applying strict wage moderation, welfare reform, activating labor market policies, and measures to increase labor market flexibility.

From the 1990s onward, the performance of the Dutch economy improved substantially. Some authors refer to wage moderation as the main explanation (Dur 2001; Den Butter and Mosch 2003), others argue that the flexibility of the economy was the main cause (Hartog 1999; Broersma, Koeman, and Teulings 2000), while the third explanation could be that the composition of the Dutch industrial landscape, with many people working in the service industry, explains the favorable situation (OECD 2006).

4.2.2 Wage Negotiations

The legal framework of Dutch industrial relations was put in place in the 1930s. As a consequence of the recession between the wars, the collective agreement received public protection as a measure against unfettered wage competition. After 1945, the role of the state expanded, and for two decades the Netherlands maintained a statutory wage policy. This policy was linked closely to the central union and employers' federations: the *Stichting van de Arbeid*[1] (STAR), the bipartite Foundation of Labor in which unions and employers have been meeting since 1945; and the *Sociaal Economische Raad*[2] (SER), the government's main advisory council on social and economic policies.

1. The English translation is "The Labor Foundation."
2. The English translation is "The Social and Economic Council of the Netherlands."

A new wage act in 1970 deprived the government of part of its power. From that time onward, the government was only supposed to intervene during a stalemate of negotiations or to suspend contracts. Nevertheless, between 1973 and 1982, these powers were used seven times, so wage negotiations in that time could hardly be described as bipartite. 1982 was said to be the year of the return to voluntary wage moderation without the threat of government intervention. Dutch unions, although weakened by severe job and membership crises of the early 1980s (Van den Berg 1998) but assured of continued institutional support, have publicly chosen a "jobs before wages" strategy (Visser and Hemerijk 1998).

Actual negotiations on contracts and wages are traditionally done by sector in the Netherlands. This means that for each trade or sector, a separate collective agreement (CAO) is made. However, the trade unions and firms negotiating in a sector or trade are either directly or indirectly guided by their respective central organization. These central organizations are the actors in the national debate on targets, goals, and aims of the bargaining process, set forth in the agreements at the end of every year. This combination of centralized "prebargaining" and goal-setting, combined with decentralized negotiating over the actual form of the new wage contracts, leads to flexibility without overlooking the macroeconomic repercussions of sectoral wage contracts for the rest of the economy. In the context of "globalization," the trend in the Netherlands was to give more leeway to bargaining within a sector to allow for necessary variation across sectors.

The setup of organizations implies that macroeconomic conditions provide major feedback on wage formation. A typical example is the "Wassenaar Agreement" of 1982, which marked the starting point of wage moderation. Instead of a collective agreement, it was an agreement of the centralized trade unions, employers' associations, and the government to implement wage moderation in the collective agreements of the coming year. This was to be the general framework for the collective agreements in different sectors.

Traditionally, the Dutch had tripartite negotiations. Since 1982, negotiations can be called bipartite. But even if the government officially is no longer a direct partner in the bargaining process, the public and political debate plays an important role in the results of the negotiations. The distance between the negotiators is small by any means—physically, socially, and—since the 1980s—also ideologically.

Close cooperation of the parties involved has been institutionalized in the Netherlands through the existence of numerous foundations, councils, committees, and commissions in which parties meet regularly. Because of this system and the small size of the country, trade partners know each other, and meetings may take place in an informal manner. The most important institutions in this context are the aforementioned STAR and the SER.

The STAR was founded 1945 as a private committee by trade union confederations and employers' associations. Its goal was to create a common meeting point to discuss issues relating to social security, pensions, taxes, and wage formation. The STAR publishes proposals and agreements guiding the annual contractual wage negotiations. Part of its advisory function is even laid down in law.[3] The SER is a meeting point for members of STAR with the cabinet and was founded 1950 as an organization under public law and part of a corporatist civil order of the economy. The SER is also the most important council for the government in social and economic issues. The organization of SER is tripartite. Employers and employees each have eleven seats; another eleven seats are for independent members appointed by the government.

The organization of employees in trade unions started between 1905 and 1920, but they were not accepted as negotiation partners for collective bargaining until the 1920s. Today, union membership in the Netherlands is quite low. Nevertheless, a broad majority agrees with the unions' policies. In the Netherlands, there are four trade union federations that cover all sectors. Representing 63 percent of all union members, the Dutch Trade Federation (FNV, *Federatie Nederlandse Vakbeweging*) is the most important one, followed by the Christian National Trade Federation (CNV, *Christelijk Nationaal Vakverbond*), representing 18 percent of all members, the General Trade Federation (AVC, *Algemene Vakcentrale*), and the Trade Federation for Higher Employees and Senior Officials (MHP, *Vakcentrale voor Middelbaar en Hoger Personeel*), both with 9 percent of the total number of members. Trade unions need to cooperate during negotiations to avoid the threat of being excluded. Trade unions are subdivided into units per sector. The largest trade union in this respect is the one for civil servants; the leading trade union within the negotiations is still the industrial federation (IB).

Even though the federations share the same goal, they differ in terms of tradition, religion, and ideology. This differentiation is still a relic from the times of the denominationalism of Dutch society until the seventies. The FNV is a result of a merger of the socialist and the Catholic sections, whereas the CNV's roots are in the Protestant denomination. The important goals of all trade unions include employment growth, wage moderation, reduction of working hours, preventing high wage spread between companies and sectors, and preserving a proper social security system.

The degree of membership among employers is quite high; 60 to 70 percent of all employees in the private sector work in companies that are members of an employers' organization. Of all Dutch employees, 83 percent are covered by a collective contract, 14 percent by company contracts

3. The Minister for Social Services and Employment formally has to ask for advice if there is disagreement on the general nature (sanctioning) of a CAO.

(very large companies such as Phillips have their own agreements), while 69 percent are covered by sectoral contracts. In the Netherlands, there are three main employers' associations: *Verbond van Nederlandse Ondernemingen-Nederlands Christelijke Werkgeversverbond* (VNO-NCW) for large companies, *Midden-en Kleinbedrijf* (MKB) for small and medium-sized companies, and *Land-en tuinbouworganisatie* (LTO) Nederland for the agricultural sector.

Despite the decentralization of 1993, many ties can still be found between the approximately 5,000 negotiators involved in bargaining for the 720 collective agreements (Visser and Hemerijk 1998). The bargaining and agreement process typically goes through several stages (de Kam, van Drimmelen, and van Hulst 1994).

The first stage is in the summer of each year. When all collective agreements for the current year have been settled, claims for the coming year start to emerge. This is also to influence the government in its budget planning for the coming year.

The second stage consists of discussions and negotiations within STAR and SER. If these negotiations are successful, they lead to a central agreement within STAR, which provides general guidelines for the sectoral negotiations.

The third stage, usually at the beginning of the new year, is then the actual negotiations for each sector.[4] These negotiations result in the final contractual agreements. The federation usually sets out some guidelines, which are then detailed by the negotiators for the different sectors and levels of negotiation.

The government has the possibility of sanctioning the CAO result, making it binding for all workers involved. This means that even nonunionized employees and firms have to follow the stipulated contract. This is usually done because the CAOs are almost always transferred into law, thus becoming binding for all workers in the sector.

Government influence on wage formation has a long tradition in the Netherlands. Between 1945 and 1970, Dutch wage policies were controlled by the state. All agreements had to be submitted to a body of experts appointed by the government. Agreements became effective after acceptance by this body. Even after 1970, when a new wage law came into force that returned responsibility for wage setting to employers and employees, the state was able to influence wage negotiations in the case of an "economic emergency situation." As mentioned in the preceding, such an "emergency" occurred seven times in the twelve years between 1970 to 1982. Most of the

4. Actually, the term "sector" is not entirely correct, because collective agreements are not necessarily negotiated for sectors or industrial branches but can also be on the firm level. The units of collective agreements developed historically and are mutually accepted. They usually follow some sector (e.g., chemical industry), but some firms, such as AKZO, have their own firm-level CAO agreement.

state interventions were necessary because employees and employers were unable to agree. It was not until the Wassenaar Agreement in 1982 that trade partners became autonomous in their wage setting. The power of the government to threaten with state intervention if trade partners could not reach an agreement in their negotiations forced the partners to find a compromise. The possibility of government intervention enabled the trade unions to explain unpopular wage agreements to their members.

At the central level, government is very much involved in Dutch wage negotiations. It is a participant in the discussion on general agreements through the SER, even though it is not directly involved in the drafting of the agreements in the STAR. Through changes in taxes and the social security system, which is set out in the government's budget (*Miljoenennota*), it also influences both the general agreements and the final sectoral collective agreements. These changes must be implemented through the political process and approved by parliament.

At the sectoral level, the government also plays the role of a moderator. For example, the government pointed out that unemployment benefits could not be maintained at the current level if agreed wage increases were too high, as this could lead to a further rise of unemployment. This underlines the solidarity aspect of Dutch culture. Another example is that the government has been lowering the wedge between wage costs and net wages in order to support wage moderation. The government has also restrained wages of civil servants and related employees to a great extent. Direct government involvement follows from the fact that it has to sanction collective agreements at the sectoral level.[5] After government sanctioning, agreements become binding for all those employed in the sector concerned. So even though only about 20 percent of the workers are trade union members, these unions bargain on behalf of all workers and even represent the unemployed. The system of collective agreements that are sanctioned by government, as well as government participation in negotiations and consultations at the central level, is supported explicitly by employers and employees. One of the results is social stability: strikes are very rare in the Netherlands. In addition, the rather implicit role of the government ensures that agreements are based on consensus. Consequently, wage drift is relatively small in the Netherlands.

4.2.3 Wage Flexibility

The institutional setting suggests quite strict and similar wage developments, at least within (sub)sectors. There are, however, reasons why there may be more wage flexibility in practice than these institutional circumstances would suggest.

An important reason is that centrally bargained agreements typically

5. Since 1997, sectoral agreements no longer need to be sanctioned.

have an influence on the wage scales and wage grades that companies use. This shifting of the scales would lead to an equal rise in workers' wages if all workers remained at the same position in these scales. However, the main part of workers' wage development comes from their careers, within or across firms. Throughout their careers, workers move up the wage grades and scales, which leads to higher average wage increases than those that are centrally agreed upon. An example is given in Dohmen (2004): in a large manufacturing firm in the Netherlands, workers move up wage grades and scales, while the underlying matrix of scales are shifted to accommodate centrally agreed wage changes. Many Dutch firms apply modern human resource practices, with performance interviews determining the position of a worker on the wage scale.

Another reason for flexible and divergent development in pay in the Netherlands is the prevalent use of incentive pay. This incentive pay is linked to either quantitative performance measures or qualitative evaluations. At least part of the pay is thus linked to objective or subjective evaluations of performance. Borghans and Kriechel (2006) give an overview of the use of incentive pay and its influence on the moments of wage distribution. They show that the use of incentive pay is quite high across most sectors and that the introduction of incentive pay has had an influence on the distribution within firms. Stegeman (2000) also reports that many Dutch firms use some kind of incentive pay.

4.2.4 Economic Development in 1999 to 2003

In the late 1990s, the Dutch economy was booming, partly as a result of international developments in the information technology (IT) sector. Unemployment decreased rapidly. As the increase in the supply of higher-educated workers diminished while their demand increased, the labor market position of this group improved. Among lower- and intermediately educated workers, the main increase in demand was in the building industry, which experienced a rapid increase in employment of 20 percent between 1996 and 2001 (ROA 2005).

Table 4.1 provides some basic statistics about the development of the labor market in the period 1996 to 2005.[6] The table shows that until 2000, the Dutch economy was doing quite well. Annual gross domestic product (GDP) growth was around 3 percent for some time. Because unemployment was at a high level in the 1980s and, in particular, higher-educated workers had a poor labor market position, it took some time before scarcity was felt in the labor market. In 1998, firms started to have problems recruiting higher-educated workers, vacancy rates increased, and

6. The main analysis in section 4.3 is performed for the time period 1999–2003. We have included the other years to show the developments that have led to the examined time period. For the most recent years, the detailed microdata were not yet available.

Table 4.1 **Key indicators of the Dutch labor market from 1996–2005**

	1996	1997	1998	1999	2000	2001[a]	2002	2003	2004	2005
GDP growth	3.0	3.8	4.3	4.0	3.5	1.4	0.1	–0.1	1.7	0.9
Contract wages (annual growth)	1.9	2.3	3.1	2.9	3.2	4.2	3.5	2.7	1.5	0.8
Incidental wages (annual growth)	0.7	0.7	0.5	0.7	1.6	2.8	0.5	0.8	0.9	0.4
Labor force (x million)[b]	6.686	6.832	6.941	7.069	7.187	7.314	7.337	7.401	7.398	7.401
Labor supply (x million)	5.808	5.992	6.166	6.309	6.423	6.636	6.620	6.563	6.454	6.421
Public sector (x million)	.698	.700	.713	.722	.731	.778	.800	.817	.806	.798
Private sector (x million)	5.110	5.291	5.453	5.587	5.692	5.858	5.819	5.745	5.648	5.623
Employed (x million)	4.338	4.500	4.671	4.825	4.931	5.080	5.050	4.980	4.888	4.859
Self-employed (x million)	.772	.791	.782	.762	.760	.778	.769	.765	.760	.765
Person per full-time year (%)	126	126	126	126	126	125	126	126	126	127
Employed workers (x million)	6.185	6.384	6.587	6.768	6.917	7.020	7.035	7.001	6.919	6.918
Unemployment (%)	7.5	6.6	5.1	4.3	3.8	3.5	4.1	5.4	6.5	6.5
Vacancies (x1,000)	68	85	123	158	188	182	135	99	109	139

Source: Netherlands Bureau for Economic Policy Analysis (CBP; 2006, 178–179, 184–185).

[a]The series were revised in 2001. The figures after revision have been reported here.

[b]The labor force is defined as the sum of the employed and the unemployed labor force

unemployment dropped. The period of 1998 to 2002 was characterized by relatively high wage increases as a response to these developments.

The contractual wage increase indicates the wage increase that workers would receive if the collective agreements were the only cause for a change in wages. In practice, however, workers also experience wage increases due to promotion, change of job, and incidental increases in pay because of good performance. The table shows that contractual wage increases were large from 1998 until 2003. In 2001, 2002, and 2003, these contractual increases were actually larger than the growth of GDP. Usually the incidental component in wage increases equals approximately 0.7, but employers use the possibilities of incidental increases as instruments in the competition for workers. This was obviously the case in 2000 and 2001, which were years characterized by high vacancy rates. The unemployment rate also decreased until 2001 and started to increase from 2002 onward.

4.3 Data and Variables

The analyses in this chapter are based on administrative sources collected by Statistics Netherlands. We have used two administrative data sets.

First, the *Gemeentelijke Basisadministratie* (GBA) contains information about the demographic characteristics and household compositions of all inhabitants of the Netherlands. The data origin from the register is kept within the municipalities. Because all Dutch municipalities use the same unified system for their registers, this joint database is a useful basis for linking various sources. From the GBA, we have used the gender and age of the person.

The second source that we have used is the Social Statistical Database of Jobs (*SSB Banenbestand*). In this data set, Statistics Netherlands has combined information about all Dutch employment relationships from various administrative sources. The two main sources are the social insurance administration (*Verzekeringsadministratie werknemers* [VZA]) and the fiscal database (*Fibase*), which collects information on income taxes. Statistics Netherlands has combined the different sources, verified the information from the different sources, and developed decision rules to combine information in case of inconsistencies. Cases in the database that appear not to reflect a real employment relationship, but are merely financial transactions, have been excluded. An example of this could be a mistake that has been made in the salary of a former employee. Later, when the firm pays the remaining salary, this appears in the administration as a one-day employment relationship with a relatively high salary.

The data is employment-based, so every employment relationship is an observation. Because workers may move from one firm to another within a year and may have multiple employment relationships simultaneously, there are more employment relationships than workers. The data set con-

tains about ten million cases annually. It is organized as a combination of event history and annual data set. For each change in employment relationships, a new observation is generated. Wages, however, are included on an annual basis for each employment relationship separately. Wage changes or a change of job within a firm will not lead to a new observation, but wages earned in different firms are registered separately.

4.3.1 Wages

Within the SSB, the wage information is based on administrative data from the insurance and fiscal authorities. The data set contains all wage earners living in the Netherlands, with their annual incomes.[7] The incomes should be regarded as fiscal, gross salaries. Included in the information from the tax offices are also the number of days a worker has worked.

For some counts (e.g., firm size) a fixed date within a year had to be chosen. We decided to "cut" the data at a specific date. We have used the third Thursday in September, avoiding cut points that have administrative significance or cut points that happen to fall in weekends or major vacations. For the subsequent analysis, in cases where multiple employment relationships for a single worker existed, only the employment relationship within one year that generated the highest income was used for a worker.[8]

We used the gross fiscal annual wages and the number of days a worker was reported to have worked in order to calculate the gross monthly wages in euros. We were unable to control for working hours, but we were able to adjust for the number of days employed within a year.[9] Wage differences were simple deductions of the previous year's wage of the current wage.

It is possible to match various administrative sources using the ID number (*SOFI-nummer*, i.e., the social security number) of people working or living in the Netherlands. For privacy reasons, Statistics Netherlands transforms this ID number into the so-called registrant identification number (RIN) number. In this way, personal information can still be matched, but users of the file cannot search for the social security number of a specific person.

4.3.2 Tenure

Tenure can be measured accurately. It is calculated on the basis of the day of entry into a firm, which is known in the data. We have calculated the tenure in years based on the cutoff point in September.

7. The self-employed are not included in this database. Statistics Netherlands is currently developing a similar but separate database for this specific group.

8. An exception is made for the exit and entry rates. These are based on all contracts within a year.

9. Average monthly working hours are reported only for a nonrepresentative subset of the population. Using working hours would halve the population used.

4.3.3 Demographics

The age of a worker is known through the year and month of birth that is available in the data. In addition, there is information on gender, household composition, and changes of a person's address based on the municipal database.

4.3.4 Firm

Firms are identified by a firm ID. The definition of a firm is based on an economic definition developed by Statistics Netherlands. When a holding consists of units that are fairly independent in their daily management, these units are considered to be separate firms.

4.3.5 Mobility

Worker mobility was measured by the number of contracts, with a minimum duration of ninety days, ending within the year. We excluded the prolongation of year-to-year contracts. While most workers have only one contract at a time, it is possible that a worker has several employment contracts simultaneously. Thus, a single worker can, in principal, cause several "exits" within a year.

4.3.6 Selection of the Data

For the analyses, we used only information about employees who were employed for at least three months and had an annual income in excess of one fourth of the annual minimum wage. This excluded short-term contracts and those that contained only very few hours a week. Furthermore, because we are especially interested in differences in wages between workers in the same firm, we excluded from the analyses all workers in firms with less than ten workers.

4.4 Results

The data allow us to investigate the wage structure, wage changes, and mobility patterns of the Dutch economy in the period of 1999 to 2003. Due to the associated firm employee character of the data, the wage structure within the firm can be compared to the overall wage structure.

Table 4.2 presents summary statistics for the distribution of individual wages and the distribution of mean wages of firms. Because smaller firms pay on average substantially lower wages than larger firms, the wage levels of the average firm is lower than the corresponding levels among individuals. Of course, inequality is greater among individuals than among firms. The standard deviation among individuals is about twice the standard deviation of mean wages in firms.

Table 4.3 summarizes the wage distributions within firms. On average,

Table 4.2 **The distribution of individual wage and the mean wages within firms**

	Individual level					Firm level				
	1999	2000	2001	2002	2003	1999	2000	2001	2002	2003
Median wage	2,176	2,237	2,322	2,384	2,441	1,868	1,919	2,009	2,079	2,142
Mean wage	2,472	2,543	2,646	2,710	2,767	1,923	1,976	2,077	2,142	2,206
SD	1,650	1,759	1,795	1,730	1,986	758	852	951	917	1,107
CV	0.667	0.692	0.678	0.638	0.718	0.394	0.431	0.458	0.428	0.502
P90	3,706	3,821	4,008	4,125	4,211	2,626	2,694	2,857	2,970	3,066
P75	2,785	2,867	2,992	3,083	3,151	2,226	2,284	2,400	2,490	2,571
P25	1,722	1,753	1,799	1,833	1,867	1,502	1,532	1,587	1,631	1,672
P10	1,420	1,431	1,452	1,468	1,485	1,165	1,182	1,201	1,217	1,249

Source: Own calculations based on the job files from the Social Statistical Database (SSB) made available by Statistics Netherlands (CBS).
Note: SD = standard deviation; CV = coefficient of variation.

Table 4.3 Distribution of the coefficient of variation within firms

	1999	2000	2001	2002	2003
Median CV	0.4831	0.4886	0.4910	0.4904	0.4832
Mean CV	0.5055	0.5116	0.5148	0.5133	0.5081
Standard deviation of CV	0.2073	0.2042	0.2064	0.2049	0.2096
P90 CV	0.7487	0.7525	0.7631	0.7613	0.7580
P75 CV	0.6036	0.6104	0.6145	0.6160	0.6107
P25 CV	0.3752	0.3820	0.3835	0.3793	0.3723
P10 CV	0.2845	0.2907	0.2902	0.2874	0.2817

Source: Own calculations based on the job files from the Social Statistical Database (SSB) made available by Statistics Netherlands (CBS).
Note: CV = coefficient of variation.

the coefficient of variation within firms is below the national coefficient of variation. About 25 percent of the firms, however, had a higher wage inequality than the national average, as the 75th percentile equals about this national coefficient of variation of 0.6, as can be found in table 4.2.

Table 4.4 compares the within-firm wage distribution with the overall wage distribution. It confirms that for the average firm, the standard deviation of wages is about half the overall standard deviation of wages. Because firms with a higher average pay also have higher standard deviations, the firms with high wage inequality have about the same inequality as the overall distribution here.

In table 4.5, we take a look at the wage growth measured as the change in log wages. The growth figures approximately reflect the macrofigures presented in section 4.2. As smaller firms especially increased wages between 2001 and 2002, we found large increases at firm level in this period. Both at the individual level and at the firm level, the 10th percentile of the annual change is negative, with the exception of the period 2001 to 2002 at firm level. Because the wages are not deflated, this reveals that a substantial fraction of firms and individuals faced wage decreases every year.

In table 4.6, we present the distribution of exit rates over time. This is done separately for all firms, in the first column of a year, and for large firms with 100 employees or more in the second column of a year. In general, the exit rates diminish from 2000 to 2003, starting at a median of 23.66 percent in 2000 and ending at 17 percent in 2003. This reduction is mainly due to firms at the upper end of the distribution—that is, with the highest exit rates, which is lowered over time. Large firms consistently have 2 to 3 percent lower-than-average exit rates. The exit rate by the position of a firm in the wage distribution shows that the higher exit rates are generated by the lower-paying firms.

The increase in wages was not distributed equally among workers. To investigate the development of wages in greater detail, we split the sample in

Table 4.4 **Comparison of overall wage distribution with wage distributions within the firm**

	1999	2000	2001	2002	2003
Firm mean SD/country SD	0.5987	0.5839	0.6056	0.6393	0.5715
Firm SD/country mean	0.3067	0.3348	0.3595	0.3383	0.4001
90/10 within firm to 90/10 of country	0.1624	0.1615	0.1530	0.1495	0.1472
90/10 of firm means to 90/10 of country	0.8637	0.8536	0.8618	0.8685	0.8657
Within firm 90% SD relative to the country SD	0.9436	0.9102	0.9566	1.0214	0.9058
Within firm 10% SD relative to the country SD	0.2892	0.2847	0.2880	0.3065	0.2697
Between firm 90% relative to country 90%	0.7086	0.7051	0.7128	0.7200	0.7281
Between firm 10% relative to country 10%	0.8204	0.8260	0.8271	0.8290	0.8411

Source: Own calculations based on the job files from the Social Statistical Database (SSB) made available by Statistics Netherlands (CBS).
Note: SD = standard deviation.

Table 4.5 **Distribution of the annual change of individual log wage and the mean log wage within firms**

	Individuals				Firms			
	1999–2000	2000–2001	2001–2002	2002–2003	1999–2000	2000–2001	2001–2002	2002–2003
Median	0.046	0.063	0.048	0.038	0.058	0.069	0.135	0.046
Mean	0.058	0.075	0.060	0.045	0.061	0.071	0.162	0.047
Standard deviation	0.188	0.199	0.195	0.204	0.145	0.151	0.127	0.143
P90	0.193	0.217	0.196	0.175	0.171	0.184	0.310	0.148
P75	0.097	0.116	0.098	0.829	0.103	0.114	0.211	0.086
P25	0.013	0.025	0.011	0.002	0.022	0.028	0.077	0.012
P10	–0.050	–0.038	–0.055	–0.063	–0.032	–0.031	0.040	–0.039

Source: Own calculations based on the job files from the Social Statistical Database (SSB) made available by Statistics Netherlands (CBS).

99 percentile groups, based on wages in 2001, with all workers in the 0.5 to 1.5 percentile in the first group, all workers in the 1.5 to 2.5 percentile in the second group, and so on. When comparing different groups, we keep these brackets constant. Figure 4.1 provides the change in wages from 2000 to 2002. Because the percentile groups are based on wages in 2001, we avoided reversal to the mean effects due to measurement error or incidental changes in wages.

The figure compares wage growth of men and women. It shows that there is a general tendency for an increase in wage inequality as wages for workers with high incomes grew more than wages for low-wage workers. This holds especially for men. For women we observed an above-average wage increase for the group in between the 5th and the 40th percentile.

Figure 4.2 makes a similar comparison between age groups. As can be

Table 4.6 **Yearly exit rates for all firms and firms with 100 employees or more and at several percentiles of the wage distribution, by year**

	2000		2001		2002		2003	
	All firms	>100 firms	All firms	>100 firms	All firms	>100 firms	All firms	>100 firms
Median	0.2000	0.1697	0.1961	0.1635	0.1765	0.1455	0.1343	0.1071
Mean	0.2366	0.2008	0.2318	0.1964	0.2160	0.1817	0.1700	0.1374
Standard deviation	0.1692	0.1225	0.1744	0.1257	0.1771	0.1328	0.1539	0.1088
P90	0.4286	0.3393	0.4286	0.3408	0.4118	0.3200	0.3333	0.2644
P75	0.3015	0.2500	0.3000	0.2479	0.2791	0.2241	0.2286	0.1773
P25	0.1250	0.1204	0.1154	0.1150	0.1000	0.1014	0.0714	0.0692
P10	0.0727	0.0893	0.0667	0.0821	0.0556	0.0717	0.0000	0.0439
Position in wage distribution								
P90	0.189		0.190		0.184		0.140	
P75	0.183		0.175		0.166		0.126	
P50	0.228		0.219		0.204		0.158	
P25	0.275		0.271		0.250		0.202	
P10	0.333		0.331		0.297		0.233	

Source: Own calculations based on the job files from the Social Statistical Database (SSB) made available by Statistics Netherlands (CBS).

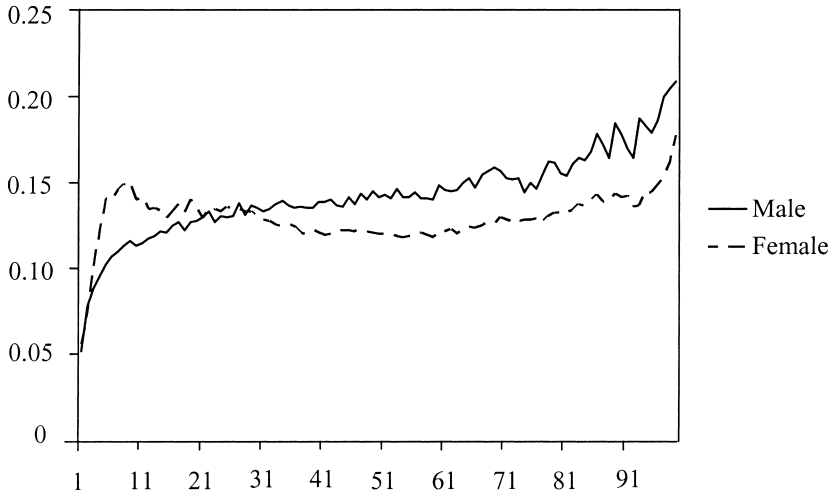

Fig. 4.1 Average wage growth between 2000 and 2002 for male and female employees for 99 percentile groups of the Dutch wage distribution

Source: Own calculations based on the Job files from the Social Statistical Database (SSB) made available by Statistics Netherlands (CBS).

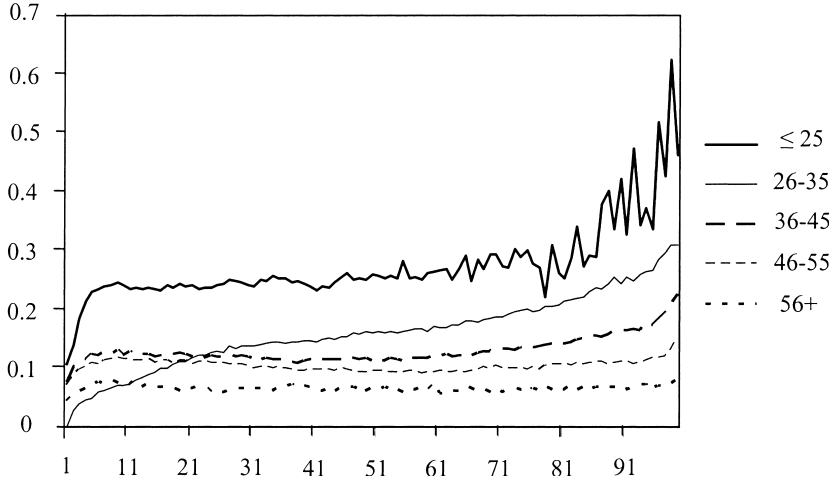

Fig. 4.2 Average wage growth between 2000 and 2002 for employees in different age categories for 99 percentile groups of the Dutch wage distribution

Source: Own calculations based on the Job files from the Social Statistical Database (SSB) made available by Statistics Netherlands (CBS).

expected, young workers faced larger wage increases than older workers. This difference was also very substantial, however, when comparing these figures internationally (Lazear and Shaw 2006). Another interesting feature of the graph is that the wage increase for young workers was high compared to other workers in all percentile groups. This implies that young workers who already earned wages that were very high with respect to the overall wage distribution experienced wage increases far beyond the wage increase of older workers with the same wages.

In figure 4.3, different firm sizes are compared. Although wages are strongly correlated with firm size, the surprising finding here is that the growth of wages—conditional on the wage level—is very similar for all size groups. This result is clearly consistent with a human capital interpretation of wages. When smaller firms pay lower wages because they hire people with lower levels of human capital, but wages only depend on the value of human capital in the market, the change in wages should be the same for all types of firms when conditioning on the wage level.

These findings changed completely when we compared different industries. Figures 4.4 to 4.6 provide the wage growth patterns for ten broad clusters of industries. There are some clear differences between industries. Especially the building industry has a pattern that deviates from the rest. Workers with wages in the lower percentiles of the Dutch wage distribution

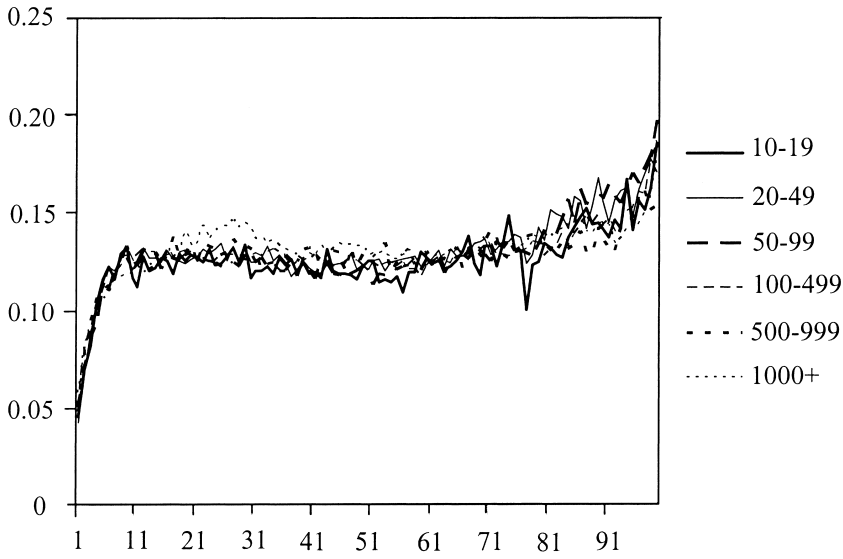

Fig. 4.3 Average wage growth between 2000 and 2002 for employees in various firm-size categories for 99 percentile groups of the Dutch wage distribution

Source: Own calculations based on the Job files from the Social Statistical Database (SSB) made available by Statistics Netherlands (CBS).

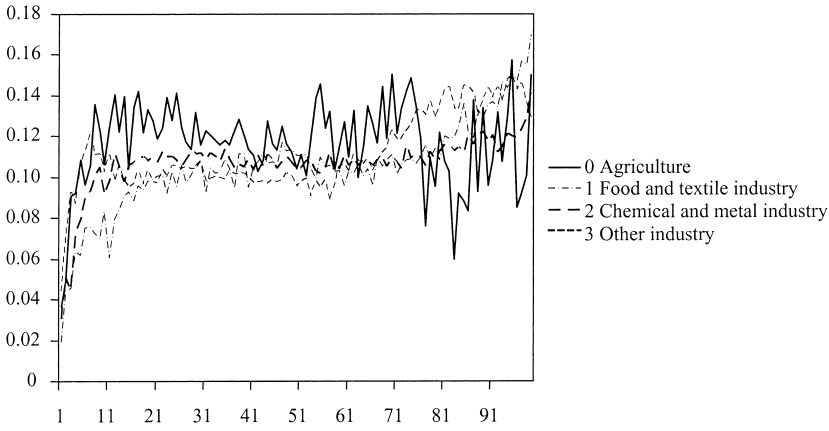

Fig. 4.4 Average wage growth between 2000 and 2002 for employees in agriculture, food and textile industry, chemical and metal industry, and other industries for 99 percentile groups of the Dutch wage distribution

Source: Own calculations based on the Job files from the Social Statistical Database (SSB) made available by Statistics Netherlands (CBS).

Fig. 4.5 Average wage growth between 2000 and 2002 for employees in the building industry, retail and catering, and financial services and transport for 99 percentile groups of the Dutch wage distribution

Source: Own calculations based on the Job files from the Social Statistical Database (SSB) made available by Statistics Netherlands (CBS).

experienced wage increases that are comparable to the wage increases of the top earners in this industry. Employment in the building industry was expanding rapidly in the period 1996 to 2001, so this wage pattern seems to reflect the increased demand for low-skilled workers in this industry.

The findings, therefore, suggest that the structure of wages in the Nether-

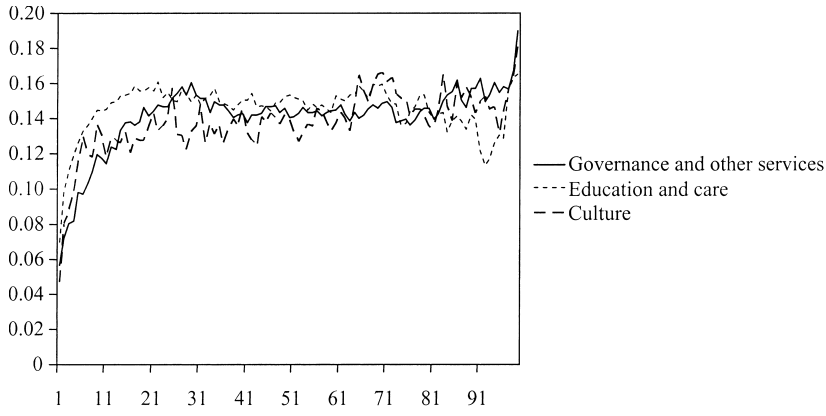

Fig. 4.6 Average wage growth between 2000 and 2002 for employees in public administration and other services, education and care, and culture for 99 percentile groups of the Dutch wage distribution

Source: Own calculations based on the Job files from the Social Statistical Database (SSB) made available by Statistics Netherlands (CBS).

lands is largely related to changes in the scarcity and value of human capital. A remaining question is to what extent these developments are correlated at the firm level and how much they can vary at the individual level. For this reason, we decomposed the wage increase in the period 2001 to 2002 in industry effects, firm effects, and individual effects. The first column of table 4.7 provides the variance of wages if each worker had experienced the same (relative) wage increase within each industry. For these analyses, we used the two-digit industry classification, which consists of fifty-seven different industries. The second column gives the variance of wages, assuming that each worker faced the average wage increase within his firm. The third column provides the individual variance of wages.

Based on this, the contribution to the wage inequality can be split into an industry component, a firm component, and an individual component, as is shown in columns (4) to (6) of the table. These tables provide the corresponding figures for splits of the data in different dimensions.

Overall, an interesting observation is that there was very little variation in wage growth between industries. This implies that either the agreements at the national level dominated the collective agreements at the industrial level or that these collective agreements played only a very small role in wage determination.

Wage growth differences at the firm level contributed on average for 12 percent to the differences in wage growth. The remaining 87 percent of the variation referred to individual differences. Wage growth in the Netherlands was thus mainly determined at the individual level. For men, the individual component was larger than for women. Differences between age

Table 4.7 **Decomposition of the variance of wage growth 2001–2002 in between-industry, between-firms, and between-individuals components, by gender, age group, firm size, and industry**

	Variance			Percentage		
	Between industries	Between firms	Between individuals	Industry	Firm	Individual
Overall	0.00022	0.00310	0.02456	0.89	11.73	87.38
Gender						
Male	0.00018	0.00258	0.02405	0.74	10.00	89.26
Female	0.00026	0.00366	0.02506	1.05	13.56	85.39
Age						
≤25	0.00022	0.00423	0.03019	0.74	13.25	86.00
26–35	0.00029	0.00433	0.03392	0.86	11.90	87.24
36–45	0.00024	0.00315	0.02368	1.01	12.29	86.70
46–55	0.00019	0.00249	0.01629	1.19	14.09	84.71
55+	0.00019	0.00252	0.01681	1.15	13.87	84.98
Firm size						
10–19	0.00026	0.01147	0.03100	0.82	36.17	63.01
20–49	0.00025	0.00802	0.03034	0.83	25.60	73.57
50–99	0.00025	0.00580	0.02936	0.86	18.90	80.24
100–499	0.00021	0.00281	0.02557	0.81	10.20	88.99
500–999	0.00024	0.00239	0.02501	0.95	8.61	90.45
1,000+	0.00024	0.00103	0.02102	1.16	3.72	95.12
Industry						
0 Agriculture	0.00004	0.00523	0.02376	0.18	21.83	77.99
1 Food and textile industry	0.00010	0.00306	0.02150	0.47	13.76	85.77
2 Chemical and metal industry	0.00007	0.00264	0.01981	0.38	12.95	86.67
3 Other industry	0.00007	0.00246	0.01640	0.43	14.59	84.97
4 Building industry	0.00007	0.00420	0.02309	0.30	17.90	81.80
5 Retail and catering	0.00010	0.00470	0.02774	0.37	16.57	83.06
6 Financial services and transport	0.00049	0.00390	0.02907	1.69	11.71	86.59
7 Governance and other services	0.00029	0.00360	0.02869	1.03	11.52	87.45
8 Education and care	0.00000	0.00142	0.02140	0.01	6.64	93.34
9 Culture	0.00006	0.00524	0.02962	0.20	17.48	82.32

Source: Own calculations based on the job files from the Social Statistical Database (SSB) made available by Statistics Netherlands (CBS).

groups are very small. A substantial difference in this respect was found when we compared firms of different sizes. In the smallest firms, of ten to nineteen employees, 36 percent of the variation in wages was at the firm level, while in the large firms of more than 1,000 employees, this is only 4 percent. This suggests that in small firms, which are in general less involved in negotiations for collective agreements, there was a strong tendency to give all workers approximately the same wage increase. In large firms, which sometimes even have their own collective agreement, not much of a firm effect was observed. Column (2) shows that this difference was to a large part due to the variation in average wage increases at the firm level.

There is much more variation between wage increases of smaller firms than between larger firms.

At the sectoral level (one-digit) the highest firm-specific components were observed in agriculture. In education and care, the between-firm variation was much smaller than in other industries. Here, apparently, firms followed national agreements in wage growth more closely than in other industries.

Apart from negotiating wages with their current employers, employees can of course also influence their wages by changing employer. To investigate whether wage developments at sector and firm levels were related to exit rates, we calculated for each worker the difference between the average wage increase in his or her sector or firm and the average economywide wage increase. We used only wage increases for workers who did not change firm. We determined 99 percentile groups, varying from very low relative wage growth in the sector or firm (0.5 to 1.5th percentile) to very high relative wage growth in the sector or firm (98.5 to 99.5th percentile). The thin line in figure 4.7 provides the exit rates for these 99 groups as a function of the sectoral wage growth. The dashed line provides a similar line for firm-level wage growth. The figure reveals that the exit rate in firms that experienced a relative decrease in wages was higher as the difference in wage development was larger. On the other hand, firms that paid higher wage increases than other firms in the same industry also experienced more

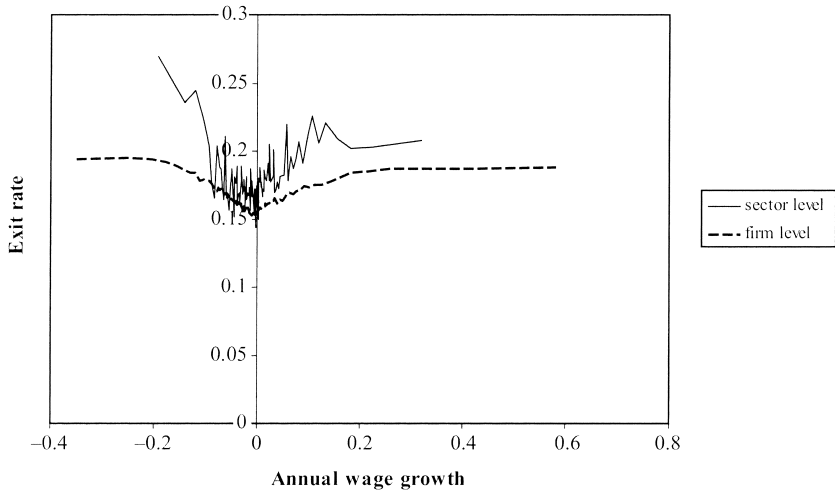

Fig. 4.7 Job mobility in 2001 related to the wage development in a sector or firm relative to the overall wage growth

Source: Own calculations based on the Job files from the Social Statistical Database (SSB) made available by Statistics Netherlands (CBS).

mobility when the difference in wage development was large. At the sector level, we found a similar pattern.

4.5 Conclusions

In this chapter, we documented the wage structure and labor mobility of the Dutch labor market between 1999 and 2003. The analyses are based on the administrative records collected by Statistics Netherlands that became available recently. The data allow for detailed descriptions of the wage structure between and within firms, following workers in time.

In the period 1999 to 2003, wage inequality increased. Especially workers in the lowest wage percentiles experienced lower wage increases than the median workers, while wage increases for top earners were substantially higher. The evidence in this chapter suggests that wage determination in the Netherlands is to a large extent determined by market forces. Workers with similar wages experience similar wage increases, irrespective of firm size. Wages for low-skilled workers in industries with a large increase in demand grow faster than in other industries, and between-industry and between-firm variation in wages is low compared to the individual component.

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