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# Finland

## Firm Factors in Wages and Wage Changes

Roope Uusitalo and Juhana Vartiainen

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### 5.1 Introduction

#### 5.1.1 General Motivation

The Finnish wage bargaining system has remained roughly unchanged over the last fifty years. Encompassing wage settlements were used as early as 1950 to 1951 to contain the inflationary pressures set off by the Korean war boom. In the 1960s, such cooperation between the labor unions, employer organizations, and the state was established on a more systematic basis. From 1969 onward, the unions and the employer organizations have formally negotiated wage agreements that cover the vast majority of workers. The government has also been actively involved in wage bargaining, and the wage settlements have often included various nonwage issues such as working hours, family policies, unemployment insurance, and pension arrangements.

Thus, and in contrast to the experience of some other countries, the Finnish wage policy has in some sense remained “centralized” up to the present. Yet this “centralization” has always been of a rather limited nature: throughout the post–World War II years, the centralized agreements have had to do with the general pace of wage increases, as well as minimum wage levels associated with specific tasks. Relative wages, however, have largely been determined by market forces. This difference is important,

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because the economic literature on wage coordination has been so incommensurately colored by the Swedish experience of the 1960s and 1970s. In that extremely solidaristic phase of Swedish pay bargaining, centralization came to be synonymous with an attempt to steer the entire structure of relative wages by collective regulations. That phase was transient even in Sweden, but outside commentators do not often realize that such centralistic wage policies were never nearly as strong in the other Nordic countries. In the following, we shall outline the fine print of Finnish pay bargaining in more detail.

The balance between centralized and industry-level agreements has stayed roughly unchanged over time. Perhaps a more significant change is that various firm-specific arrangements have become more common during the 1990s. For example, profit-sharing arrangements and productivity-related pay systems have become popular during the latter part of 1990s.

Indeed, one important conclusion of this chapter is that this largely unchanged pay bargaining system has been able to accommodate large economic restructuring and upheavals. While the wage bargaining system has remained quite stable, the macroeconomic environment within which the firms operate has been extremely unstable. The Finnish economy entered its largest peacetime recession in the beginning of 1990s. The unemployment rate rose from 3.2 percent in 1990 to almost 17 percent in 1994. Real gross domestic product (GDP) declined in four consecutive years. In 1991 alone, real GDP dropped by 6.4 percent. The recovery after the recession was also rapid. The average GDP growth rate between 1994 and 2000 was 4.4 percent.

The bust-boom cycle was also associated with a large reallocation of resources across industries and across firms within industries. These macroeconomic shocks affect all statistics on wage growth and worker mobility reported in this chapter. The post-Depression years have been associated with extremely high productivity growth in some firms and industries and a large reallocation of labor and capital to the growing electronic industry sectors.<sup>1</sup>

Thus, and in contrast to the common “from centralized to individual” narrative of pay bargaining, we argue that such binary simplification is misleading in the Finnish case: collective and individual elements have always been present in a pay bargaining system that has accommodated important structural changes.

Against this institutional background, this chapter presents an econometric analysis of the wage structure in Finnish manufacturing industries. The empirical material presented in this chapter comes entirely from the manufacturing industry. Thus, we cannot lay claim to a complete representativeness of the Finnish labor market. On the other hand, we have at our disposal the complete wage and salary records of all manufacturing

1. This has been analyzed in detail by Mika Maliranta (Maliranta 2003).

firms of at least twenty-five employees from 1980 through 2002. This means that we can carry out fairly detailed and reliable analyses on the specific questions that we want to address. Furthermore, as is the case with encompassing register data, sampling problems can be completely ignored, and statistical characterizations of the data apply directly to the universe of wage and salary earners.

Being part of an international comparative project on wage structures, this chapter uses the data material in two ways. The same distinction is reflected in the structure of the chapter.

First, we have computed the comparative tables on wages for Finland, according to the commonly agreed blueprint of the National Bureau of Economic Research (NBER) project on wage structures. To this end, we use the data on the entire Finnish manufacturing workforce for 1981, 1990, and 2000. Our data material, however, come from two separate sources, one for blue-collar hour-wage earners and another for salaried employees remunerated on a monthly basis. These comparative table computations required that these separate records be merged. This merging of blue-collar worker files with salaried employee files yields new insights and makes the tables more comparable to those of other countries, but it is also cumbersome and involves nontrivial decisions that are to some extent arbitrary, as the statistical framework for entering employee information differs between workers and salaried employees. The former group is remunerated by the hour, whereas the salaried employees command a monthly salary. Furthermore, these groups are covered by very different collective agreements and job classification systems.

That is why the other part of the chapter focuses on the group of salaried employees only. To compensate for this loss of generality, we provide a much more detailed analysis of these employees' wage structure in 1980 through 2002. In particular, we describe the changing role of the firm-specific factors as well as the career patterns of individuals.

### 5.1.2 Structure of the Chapter

The structure of the chapter is as follows. We start by providing a more detailed account of the Finnish collective agreement system and other pay-bargaining institutions. This discussion provides an institutional background against which many of the results reported in the chapter become intelligible.

We then move on to describe the data sets that we have used for this project. As explained in the preceding, these data encompass the entire Finnish manufacturing workforce for 1980 to 2002. For 1981, 1990, and 2000, we have merged the blue-collar and salaried employee files and computed the basic comparative tables motivated in the introductory part of this volume. We also briefly discuss the broad picture that emerges from these tables, in particular as to how the Finnish results compare with other countries.

In the next sections, we move on to report more detailed analyses of the salaried employees' wage structure. In particular, we show how the last ten years have meant a gradual increase in the importance of firm-specific factors in pay determination. We also provide quite detailed estimates of individual mobility across firms and tasks and characterize individual careers as a function of promotions and employer changes. The concluding section discusses the interplay of collective agreements and individual bargaining in the light of the main results and speculates on the future course of pay-bargaining institutions.

## **5.2 Wage-Setting Institutions**

As in the other Scandinavian countries, union density is high in Finland. Union density increased quickly in the 1960s and has been trending upward after that, reaching 82 percent in 1992. Since then, a slow decline has taken place, so that the unionization rate was by 2004 about 70 percent (see Böckerman and Uusitalo 2006).

The Finnish pay bargaining system is often characterized as centralized, but such a one-dimensional depiction is misleading, as wage setting in Finland is a mixture of collective and individual mechanisms. It is actually very hard to find an employee of a privately owned firm whose salary would be directly determined by some collective agreement or other collective intervention. A more accurate description would be to say that pay bargaining is local, but pay increases are coordinated by collectively agreed general wage increases, and, furthermore, there are minimum pay levels for the different occupational categories, as set out in the different collective agreements. There is no minimum wage legislation.

More precisely, the collective constraints put on the local bargaining consist of two elements. First, unions in each industry have established minimum tariff wages for occupational categories and job levels. Thus, when a firm hires an employee and bargains with him or her about the initial salary, both local parties are bound by these minimum tariffs. Most workers and employees of the manufacturing sector are, however, paid more than these minimum levels, so that these minimum tariffs are seldom directly binding.<sup>2</sup>

Second, in each bargaining round, the collective parties—that is, an industrial union and its corresponding employer association—agree on a general wage increase that is as a general rule applied to all workers, regardless of their initial wage. This increase is called the “general increase,” and it is most often defined in percentage terms, although the blue-collar unions and their central federation have in most bargaining rounds sought

2. Of course, they can indirectly affect the bargaining outcome even if the actual wage exceeds the minimum tariff wage.

to establish a minimum money increase as well, so that the lowest wages would, in fact, be increased relatively more than other wages.<sup>3</sup>

It is important to understand that the general increase is not a binding constraint for the local parties if they both are prepared to deviate from it. Of course, nothing prevents a firm from increasing an individual's wage by more than the general increase. On the other hand, if the firm finds its jobs threatened, it can initiate negotiations on lower pay increases or even pay cuts. If the local parties can agree on such an outcome, they are in general free to do so. The exact legal significance of the general increase is that an industrial peace clause is associated with it: once the union has signed a new collective agreement, the workers have relinquished their right to undertake strikes or other industrial actions. Similarly, the firms whose employer association has agreed on a general increase cannot anymore initiate lockouts or other conflictual actions.

Thus, the local parties can in principle deviate from that general wage increase, but a deviation requires the consent of both parties. Consequently, the general wage increase is in most cases rather mechanically applied to each person's wage. In that sense, the unions can effectively influence the speed of wage increases. The firms, on the other hand, can effectively affect the local wage structure: when recruiting a new worker, the wage can be set according to the firm's own personnel policy, as long as the wage exceeds the minimum tariff listed in the relevant collective agreement.

To sum up, the Finnish wage bargaining system, although centralized as to the determination of wage increases, has not been an instrument that would determine the entire structure of relative wages. Rather, its main and stated objective has been to control the average rate of wage growth while leaving relative wages to decentralized, plant-level, or individual decision making.

The general increases are formally negotiated at the industry level, between the worker and the employer organizations. Collective agreements cover even nonunion members in the sectors where at least half of the employers belong to an employer organization. In practice, this implies that 95 percent of the workers in Finland are covered by the union contracts.

The central labor market organizations have no binding mandate for bargaining on behalf of their members associations. However, most bargaining rounds have started with negotiations between the central employer and employee confederations, creating a high degree of de facto coordination in the individual union contracts. The union bargains have then been negotiated, taking as a starting point the wage increases agreed upon in the central agreement. There has been considerable variation in the degree of centralization between the different bargaining rounds. During the period 1980 to 2002, there have been six bargaining rounds (1980, 1983,

3. This is currently a point of contention in the Finnish pay-bargaining debate.

1988, 1994, 1995, and 2000) when no central bargain was reached and bargaining occurred at the industry level.

The outcomes of centralized rounds and industry rounds differ, but the main difference is that decentralized rounds usually generate a higher average rate of wage increases. As we shall see, the variance of pay increases across individuals does not radically differ between those two institutional outcomes. However, as shown in the following, the firm-specific variance component is more important when there is no centralized agreement. Thus, roughly, pay determination becomes slightly more firm- and industry-specific when bargaining is at the industry level, but there is no explosion in the variance of pay increases across individuals, and the main effect is to increase the average level of pay increases (see Uusitalo 2005). This is not surprising, because the industrial unions are able to impose a general level of pay increases on the firms of the industry, even if that general increase is not coordinated by economywide organizations.

The comprehensiveness of centralized bargaining does not necessarily imply a completely rigid structure of relative wages. The starting point for all employee-employer relationships is, of course, a local bargain. As long as a firm complies with the general increases, it can run its own personnel policies. *Wage drift*, defined as the difference between general increases and average actual wage increases, has accounted for approximately 40 percent of the wage growth between 1970 and 2000. This fraction has declined somewhat over time, but wage drift still accounted for 35 percent of wage growth in 1992 to 2000 (see Uusitalo 2005). The unions do not usually attempt to constrain the growth of local or individual wages as long as the minimum tariff levels are met and the general increases (which often hardly exceed the sum of inflation and average productivity growth) are applied. Thus, even when complying with the general increases, firms that can sustain a decent productivity growth rate do have at least some freedom as to their internal wage structures. Some industries operate quite sophisticated collective agreements that condition pay on the complexity of the task and give the firm the right to adjust a person's pay according to his or her individual performance.<sup>4</sup>

Furthermore, various performance-related pay components have become common. In 2000, more than half of the white-collar and about a third of the blue-collar workers in the sample received some performance-related pay components other than traditional piece-rate pay. On average, these components were 4.4 percent of the total pay (see Snellman, Uusitalo, and Vartiainen 2003). For white-collar employees, the inclusion of such performance-related pay elements into a total-compensation mea-

4. The collective agreement of the Finnish metalworking industry, nowadays called "technology industry," has such a sophisticated structure. It is described in some detail by Pekkariinen and Vartiainen (2006).

sure imply a far higher likelihood of pay cuts than what an analysis of the monthly salary would imply.

### 5.3 The Finnish Data Sets and Tables

#### 5.3.1 The Wage and Salary Register of the Finnish Employer Association

The principal data source contains payroll records of all firms that respond to the wage survey of the Confederation of Finnish Industry (TT). In 2000, these companies employed 500,000 employees, which is about a third of all private-sector employees in Finland. Most TT members are large firms in manufacturing and construction industries. The wage statistics cover roughly 70 percent of all employees in these sectors. The data are used to monitor wage growth in the manufacturing sector. The national statistics on earnings growth in manufacturing and construction are based mainly on these data. The data also serve as an information base for collective wage bargaining between the unions and the employer organizations.

The TT gathers information on the blue-collar workers (who receive an hourly wage) from the last quarter of each year and information on the white-collar workers (who receive a monthly salary) from each December. Answering the survey is compulsory for the member companies with more than thirty employees and voluntary for smaller companies. The survey gathers information on all employees of the firm. Only the top management and those working abroad are excluded. In 2000, the data contain information on 255,000 blue-collar and 172,000 white-collar employees. The records are stored at the individual level, and each individual is identified by a personal identity code.

Currently, we have complete wage records for both the blue-collar and the white-collar workers from 1980 to 2002. The last years of data (1996 to 2002) have been used previously by ourselves and by other researchers in Finland. Data up to 1995 have previously been available only for a smaller sample of individuals. Comprehensive data covering all employees and all years have been used only recently, and only in a handful of mainly ongoing studies. Therefore, not much is known about the quality of the data that covers the 1980s and early 1990s. Also, previous analyses have mainly used the white-collar and the blue-collar data separately. Combining white-collar and blue-collar worker data using firm identifiers is possible for the later years of data, but has not been previously done for the earlier period.

The wage records contain basic information on the employees and include details on all forms of compensation. The basic information on employees includes age, sex, job category, education, industry, occupation, and tenure (date of entry). The variable structure of this information differs between the blue-collar and the white-collar employees. The differences are



mainly due to the fact that wages are calculated at the hourly level for the blue-collar workers and at the monthly level for the white-collar workers.

For both groups of workers, the wages or salaries are reported in great detail. The blue collar data contain wages and hours divided into time-rate, piece-rate, and partial piece-rate (often also called “premium” pay) pay schemes.<sup>5</sup> Overtime pay, Sunday, and shift premiums, as well as performance-related bonuses are reported separately. Most workers receive compensation in several different forms (for example, some time-rate pay, some piece-rate pay, and some overtime pay). For the purposes of this chapter, we have defined the wage as total compensation divided by total hours. To make the white-collar workers data comparable, we have calculated the hourly wages based on the monthly wage and the usual weekly hours also for the white-collar workers.

The register data also contain a firm code and a respondent code that reveals who provided the wage information. Most often this respondent code refers to a plant. It is possible to create firm codes based on the respondent codes, essentially combining the respondent codes that refer to the same firm. For the last years of data, the procedure is reliable; for the early years, we are less certain. The firm code and the plant code have at times been subject to comprehensive registering changes, so that a certain amount of detective work was necessary to create a continuous series of codes that would allow the analysis of interfirm and interplant mobility.

### 5.3.2 Details on Variable Definitions and the Sample

In the tables based on the merging of blue-collar and white-collar employees files, comparable to the similar tables for the other countries involved in the project, we chose to analyze three years of data, namely 1981, 1990, and 2000. The motivation is to cover as long a time span as possible, skip the years that involve large changes in coding practice, and, at the same time, choose years that are comparable in terms of the business cycle (see figure 5.1 on macroeconomic conditions). To analyze wage growth and entry rates, we calculate all statistics from year  $t - 1$  to year  $t$ . For exits, we calculate changes from the year  $t$  to the year  $t + 1$ . Any restrictions on the firm size (at least twenty-five employees) will refer to the base year  $t$ .

Some employees appear several times in the same year. This may happen, for example, if the employee changes firms during the observation period or if he or she has several employers simultaneously. For these employees, we always select the observation that has the most hours and discard the other observations on the same person. We also require that an employee can be unambiguously identified and, therefore, delete any observations that do not have a valid personal ID number.

5. Thus, the idea of premium pay schemes is that there is a fixed base wage upon which a production-related bonus is added.

We calculate wages including all wage components (including bonuses, overtime, etc.) and divide the total wages by total hours. For white-collar workers, we calculate hourly wages dividing monthly wages by the average number of weeks per month and further dividing the result by usual weekly hours. All wages are deflated to year 2000 euros using the consumer price index. To get rid of extreme observations (possibly errors), we delete all observations where the hourly wage is larger than three times the median or less than a third of the median. This rather conservative trimming only affects approximately 0.5 percent of the employees but has a large effect on the estimates for the standard deviations.

We focus on full-time workers and, therefore, delete all observations where the usual weekly hours are less than thirty. We make no restrictions by worker status and retain, for example, trainees and workers with very short contracts.

Only after doing all the data cleaning, we limit the sample to the firms that have at least twenty-five employees. Imposing the size limit has little effect on our data because only the firms with more than thirty employees (this varies slightly by industry) are required to answer the wage survey. Note that in calculating statistics for the high-level and low-level jobs, we make no additional restrictions to the sample. It is, therefore, possible that a firm has only one high-level worker.

When computing the comparative tables on wage dynamics, we perform similar data-cleaning procedures for year  $t - 1$ , with the exception that we do not require that the firm had twenty-five employees in the previous year. Nor do we impose any limits on the firm's size for year  $t + 1$  in calculating the exit rates. The wage growth for the workers that enter the firm as well as the wage growth by tenure are naturally defined using the information on the date when the employer was hired to the current firm. In general, all measures where the observation is a person are easy to define. In contrast, the measures where the observation is a firm can be defined in several ways. For example, we have calculated the "average of firm average change in wage" by calculating the firm averages in year  $t$  and  $t - 1$ , taking the difference, and then the across-firm average of these differences. In this calculation, of course, the firm does not necessarily have the same employees in both years. One could equally well calculate the average growth of wages of individual workers by firm and then take the across-firm average, but it is not clear how one should treat the employees that changed the firm between  $t - 1$  and  $t$ . See the article by Lars Vilhuber (chapter 1 in this volume) for a more detailed account of the variable definitions.

### 5.3.3 On Low-Level and High-Level Jobs

The register data also include an occupation code for each employee. The new coding system also identifies a level for each job, but the older codes do not have such a hierarchical structure. There is also a code for the

job category that is different for each industry but constant within industries. These job categories are important for wage bargaining, as the union bargains typically set a minimum wage for each job category. In this sense, the job categories are ideal for the analysis of the wage structures because they are defined by the qualifications required for each job, and they are independent of the characteristics of the worker. Of course, these categories are to some extent arbitrary: if the employer wishes to give a worker a raise, he might promote a machinist to a senior machinist position without this change in title implying any changes in the tasks.

Despite the appeal of the job categories, we chose to define high-level and low-level jobs based on the occupation codes. The main reason is that there is a lot less missing data on the occupation codes. We therefore calculated the mean wage for each occupation code, sorted the data according to these occupation mean wages, and defined the employees who have the occupation mean wage in the top 20 percent as being in high-level jobs. In calculating entry and exit rates by quartiles and deciles, we first calculated the relevant percentiles at each firm and selected the high- or low-level jobs after that.

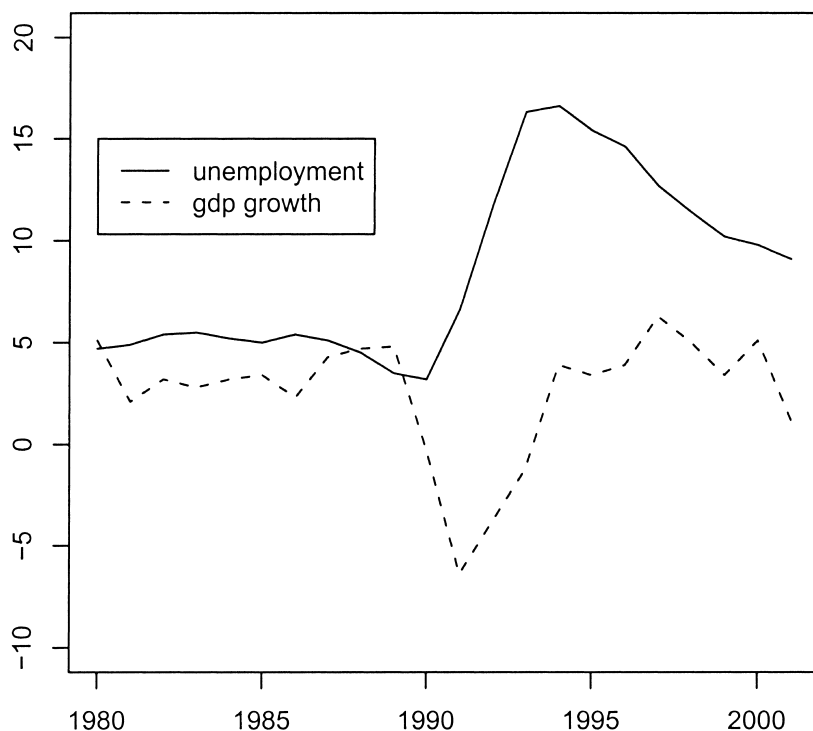
#### 5.4 Macroeconomic Conditions

The Finnish economy has been characterized by rapid but volatile growth, driven by export fluctuations that have often been all but reinforced by domestic fiscal and monetary policy. The volatility of exports is mostly due to the dominant position of a couple of manufacturing sectors like wood and pulp, metal and engineering, and, a latecomer of the 1990s, the electronics sector spearheaded by Nokia. Growth rates and unemployment rates are depicted in figure 5.1.

The 1990s were a particularly turbulent period. The unemployment rate increased from 3.2 percent in 1990 to 16.6 percent in 1994. Real GDP declined by 6.4 percent in 1991, and the recession continued during 1992 and 1993. Recovery from the recession was almost equally rapid. The average growth rate for 1994 to 2000 was 4.4 percent, clearly higher than in other Organization for Economic Cooperation and Development (OECD) economies. With disturbances this large, it is quite difficult to find a “typical” year in terms of business cycle. Our choice of 1981, 1990, and 2000 does not look too bad. In all these years, the unemployment rate remained almost unchanged. In all cases, however, the unemployment rate grew in the following year, which might overstate the exit rates in the “normal” times.

To sum up, it is useful to bear in mind the following rough categorization of the period under study when looking at the tables reported in this chapter:

- The first part of the 1980s: A period of comparatively normal economic growth



**Fig. 5.1 Macroeconomic environment: GDP growth rates and unemployment rates**  
*Source:* ASTIKA database, Statistics Finland.

- Years 1986 to 1990: An overheated boom with unemployment near 3 percent
- Years 1991 to 1994: An exceptionally severe depression with yearly increases of 4 to 5 percent in the unemployment rate and a wave of bankruptcies
- Years 1995 to 1998: Rapid economic growth as resource use grew again
- Year 1999 and onward: A normalization of economic growth with unemployment stuck at around 9 percent

## 5.5 Discussion on the Comparison Tables

The comparison tables (see the comparative table section of this volume) yield a picture of wage differentials that is broadly typical of a Nordic country. For example, the wage dispersion entries of table 5.2 are quite similar to the corresponding tables presented in the Sweden chapter. The average wage of the lowest decile is about 57 to 59 percent of the mean wage

in Finland, a couple of percentage points lower than in Sweden. This is not unexpected in the light of the Swedish trade unions' more ambitious egalitarian policies. The standard deviation of log wages is almost exactly the same in the two countries.

We explained in the preceding that the bargains on wage increases have been fairly tightly determined by collective agreements that set out a recommendation for general default wage increases. One would consequently expect that the standard deviation of wage changes would be low in Finland. The tables readily confirm this picture. The standard deviation of the year-to-year change in pay is in the order of 0.10, clearly lower than in Sweden, where the corresponding entry varies between 0.14 and 0.16—and manifestly lower than in less neocorporatist countries like France, where the standard deviation estimate is reported to vary between 0.29 and 0.34. In other countries, like Germany and the United States, the corresponding entries are even higher. Thus, whatever the merits or dismerits of this pattern, we see clearly that the Finnish wage-setting institutions lead to fairly uniform wage increases.

The mobility tables reveal fairly high mobility figures, like exit rates that vary between 12 percent and 23 percent. Compared to the United States, for example, these are high figures, and they do not shrink by much even if we only look at high-level jobs. Similar figures emerge in our analyses of salaried employees (see the following).

## 5.6 Salaried Employees: Decomposing Salaries

In this latter part of the chapter, we take a closer look at the variation of pay in the group of salaried employees. We lose some generality by leaving out hour-remunerated workers, but can instead carry out more detailed analyses on employees. We exploit this by describing our variation measures and other statistics for all years 1980 through 2002.

In an assessment of the workings of a pay-bargaining system as completely steered by collective agreements, as is the case for Finland, an analysis of variance for firm effects is a natural starting point. First, in tables 5.1 and 5.2, we report a variance decomposition for monthly salaries through 1980 to 2002.

We have taken, for each year, the individual log salaries of all full-time salaried employees and projected it to the set of firm dummies. In the tables, the first column, "Raw wage (SD)" reports the standard deviation of log salaries. The "between- $R^2$ " column reports the share of total variance explained by firm dummies.

The third and fourth column repeat the similar analysis, but, this time, for log salary residuals after the original log salaries were projected on three conventional Mincerian covariates: education, age, and gender. The last column reports the number of firms used in the analysis of variance.

The decomposition is carried out separately for the 1980s and 1990s, as

**Table 5.1** Variance decomposition for raw log salary and residual log salary for firms (1980–1989)

Year	Raw wage (SD)	Between $R^2$	Residual wage (SD)	Between $R^2$	No. of firms
1980	0.36	0.03	0.25	0.04	548
1981	0.34	0.03	0.24	0.04	592
1982	0.34	0.03	0.24	0.04	654
1983	0.34	0.03	0.24	0.04	683
1984	0.34	0.03	0.24	0.04	695
1985	0.34	0.03	0.25	0.04	691
1986	0.34	0.03	0.25	0.05	691
1987	0.34	0.04	0.25	0.05	700
1988	0.34	0.04	0.25	0.05	748
1989	0.34	0.04	0.26	0.06	801

*Notes:* Monthly salaries, including all bonuses, of white-collar workers working full time in a firm that belongs to the Confederation of Finnish Industry (TT). Residual wage refers to wage dispersion after controlling for gender, age, and education. SD = standard deviation.

**Table 5.2** Variance decomposition for raw log salary and residual log salary for firms (1990–2000)

Year	Raw wage (SD)	Between $R^2$	Residual wage (SD)	Between $R^2$	No. of firms
1990	0.34	0.10	0.26	0.13	2,690
1991	0.33	0.10	0.25	0.13	2,702
1992	0.33	0.10	0.25	0.13	2,423
1993	0.32	0.10	0.26	0.12	1,404
1994	0.32	0.11	0.22	0.12	1,545
1995	0.32	0.13	0.22	0.15	1,532
1996	0.31	0.12	0.22	0.11	1,568
1997	0.33	0.20	0.22	0.16	1,593
1998	0.33	0.27	0.23	0.18	1,637
1999	0.33	0.27	0.23	0.19	1,601
2000	0.33	0.29	0.24	0.22	1,714
2001	0.33	0.30	0.24	0.22	1,699
2002	0.33	0.27	0.24	0.22	1,679

*Note:* See table 5.1.

a comprehensive recoding of firms took place between years 1989 and 1990.<sup>6</sup> The recoding implied, inter alia, that the number of firms tripled, so that the firm coding became much less aggregated than what was the case

6. We have analyzed this reorganization of the firm partition of the register and tried to use plant code information to create a continuous time series of firm codes. Unfortunately, this analysis did not reveal sufficiently clear patterns of “linkages” between the old and the new firm codes. Year 1989 was an overheated year in which a lot of splits and mergers took place. These real economic changes are mingled with administrative reforms carried out within the register. Consequently, we have no continuity in firm codes between 1989 and 1990.

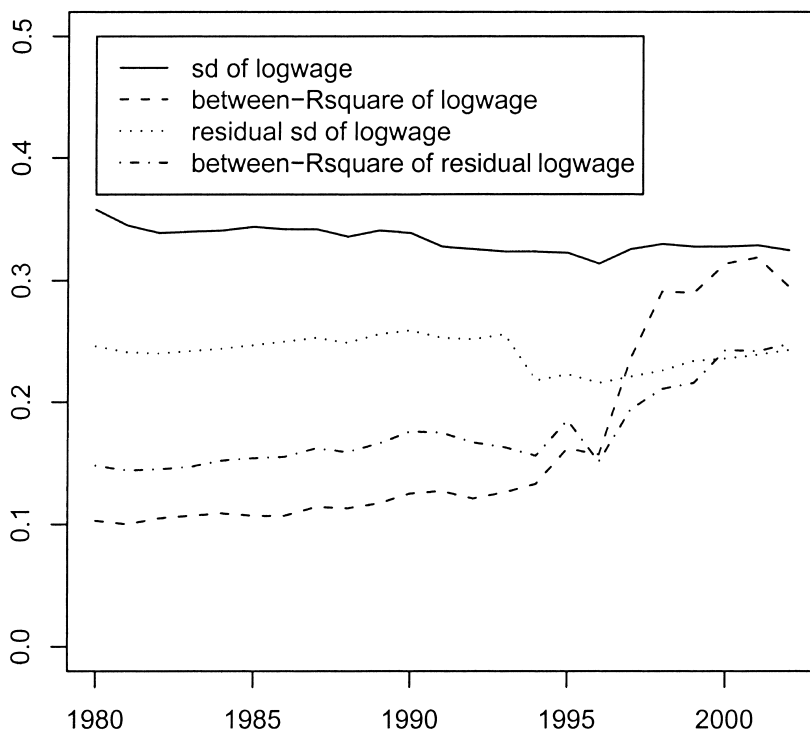
in the 1980s. Thus, it is hardly reasonable to draw inferences on the change of the variance components between these two years and, in general, to compare the analysis of variance (ANOVA) results for these two decades. The situation is clearer for plant (establishment) codes, for which we were able to construct a reliable and continuous time series for the entire time span of 1980 through 2002.

We see, first, that the across-firm variance is rather low to start with, in comparison with similar analyses conducted on comparable data sets from other countries (see the other chapters of this volume). The firm effects only explain a paltry 3 to 5 percent of salary variation in the 1980s. Through the 1980s, not very much is going on in these variables: overall salary variation is low and stays put, and mean wage differentials between firms are almost insignificant and do not increase either. Such results rhyme with the stylized facts of organized labor markets, as shown in other papers like that of Holmlund and Zetterberg (see Holmlund and Zetterberg 1991): unexplained wage differentials are low.

In the 1990s, there is more action in these variables. The latter part of the 1990s deserves particular attention. That was a time of large migration between firms, associated with a rapid productivity growth and reallocation of resources to the growing electronic industry (see Maliranta 2003). These trends are probably reflected in the growth of the firm-specific variance component. However, we see that the increase in the between-firms component is clearly larger for raw log wages than for residual log wages. This observation is consistent with the hypothesis that employees are increasingly allocated to firms that employ similar individuals: the highly educated work with highly educated, and the less-educated work with the less educated. Similar empirical results have been reported by Michael Kremer and Eric Maskin (1996), who also present a theoretical argument that explains the increasing sorting of similar skill levels into the same firms.

Another interesting result has to do with the first column of tables 5.1 and 5.2: there is no growth in the aggregate variation of wages. Thus, to sum up, we can say that wage differentials have not increased, but the differences across firms are increasing, and this is only partly accounted for by sorting between firms.

The next figure, figure 5.2, reports the results of the same exercise, computed for establishments. The establishment codes generate a finer partition of the employee material because one firm can consist of many establishments. Furthermore, there are no structural changes in the way the establishments are coded throughout our investigation span of years 1980 through 2002. We can see similar trends: differentials between establishments increased starkly in the buoyant recovery phase of the late 1990s, and this is only partly accounted for by sorting. Figure 5.2 confirms the idea that the massive resource reallocation of the recovery phase of years 1995 to 1998 is a kind of structural break. The share of variance explained by es-



**Fig. 5.2** Variance decomposition of log wages and residual log wages: the share of between- and within-firms components; monthly salaries, including all bonuses, of white-collar workers working full time in a firm that belongs to the Confederation of Finnish Industry (TT)

establishment indicators is almost stagnant from 1980 to 1995 but then takes a sharp turn upward. The explained variance share of salary residuals behaves in the same way, but the increase is less dramatic. Thus, again, we can conclude that this period was one of increased sorting of workers to firms according to productive capabilities, but, furthermore, between-establishments salary differentials that cannot be explained by individual characteristics increase as well.

### 5.7 Mobility between Firms and Establishments

We now turn to the incidence of employer changes and establishment changes. Table 5.3 reports the relative frequencies of an individual changing firm or changing establishment.

Because the exit rates are an interesting variable in intercountry comparisons, it is important to be clear on the procedures used to obtain the



**Table 5.3** Probability of firm and establishment exits of white-collar workers in firms that belong to the Confederation of Finnish Industry

Year	Firm exit rate	Estimated exit rate
1980	0.16	0.16
1981	0.15	0.15
1982	0.16	0.16
1983	0.17	0.18
1984	0.18	0.18
1985	0.19	0.19
1986	0.23	0.24
1987	0.22	0.23
1988	0.24	0.24
1989	n.a.	0.31
1990	0.26	0.31
1991	0.23	0.25
1992	0.33	0.41
1993	0.21	0.24
1994	0.22	0.28
1995	0.21	0.25
1996	0.16	0.25
1997	0.15	0.23
1998	0.19	0.22
1999	0.18	0.22
2000	0.24	0.25
2001	0.22	0.28

data of table 5.3. The table is based on a simple criterion: an exit takes place whenever the firm code or employer code of the individual changes from the base year to the consecutive year. However, we have also checked that those events are not based on potential code changes that affect all the individuals of a firm. More precisely, for any “exiter” individual, say individual  $i$  in firm  $j$ , we checked whether all the individuals in that particular base year firm  $j$  were exiters. If that was the case, we checked whether one could find at least 80 percent of the base year individuals of that firm  $j$  under some same but another consecutive year firm code  $k$ , and, furthermore, whether these “old” individuals coming from  $j$  and now in  $k$  made up at least 80 percent of firm  $k$ ’s personnel in the consecutive year (for establishments, we used a 60 percent criterion). Happily, this was never the case. In other words, whenever there was a complete mass exit from some firm or establishment code, the exiters were dispersed to a lot of other firm or establishment codes. Therefore, these exits do not simply reflect a change in the firm code caused by, for example, change in ownership.

For the year pair 1989 to 1990, it was impossible to compute a reliable estimate of mobility between firms, as a comprehensive overhaul of coding practices took place between these years, as explained in the preceding. For the other years, the numbers should be comparable. As seen in table 5.3, the

exit rates increased substantially after the mid-1980s. The exit rates were highest during the recession years in the beginning of 1990s, but seem to remain above the prerecession level even in the end of the century.

We turn next to mobility between tasks. For those who do not change employer or establishment, the probability of a task change (occupation change) is reported in table 5.4. Because task changes are mostly associated with above-average earnings growth, we also call them “promotions,” although clearly they may be demotions as well. Even though the promotion rates are exceptionally high in 1992, 1998, and 1997, no clear trend can be seen in table 5.4.

## 5.8 Job and Promotion Flows and Salary Changes

After documenting the levels of interfirm and intertask mobility, we use these data to describe differentials in wage increases with respect to these events. Throughout the following comparisons, we have defined an indi-

**Table 5.4** Incidence of promotions with unchanged firm and unchanged establishment of white-collar workers in firms that belong to the Confederation of Finnish Industry

Year	Probability of occupation changes	
	Firm unchanged	Estimated unchanged
1980	0.07	0.06
1981	0.06	0.06
1982	0.07	0.07
1983	0.08	0.07
1984	0.07	0.07
1985	0.07	0.07
1986	0.07	0.07
1987	0.08	0.07
1988	0.08	0.08
1989	n.a.	0.08
1990	0.12	0.06
1991	0.09	0.06
1992	0.18	0.07
1993	0.10	0.07
1994	0.12	0.06
1995	0.10	0.06
1996	0.17	0.06
1997	0.17	0.08
1998	n.a.	n.a.
1999	0.06	0.01
2000	0.06	0.04
2001	n.a.	n.a.

Note: n.a. = not available.

vidual's wage growth as the ratio of the money wage increase to the average of base year and subsequent year wage:

$$(1) \quad \frac{w_{t+1} - w_t}{\frac{w_t + w_{t+1}}{2}}$$

Figure 5.3 displays the mean year-to-year real salary increases for two groups of employees: those who remain with their employers and those who change to another firm in the register. When comparing these figures to those of other countries, it is important to bear in mind that we have no information on those who jump to firms outside the manufacturing industry. We have subtracted the increase of the consumer price index from the mean salary increase for each group so that these numbers tell the increase in the real earnings level.

There are quite large swings in the average growth of real earnings, as the numbers vary between  $-4$  and  $+8$  percent. Thus, in the early phases of the



**Fig. 5.3** Real wage increases for job stayers and job exiters; monthly salaries, including all bonuses, of white-collar workers working full time in a firm that belongs to the Confederation of Finnish Industry (TT)

1990s recession, average real salaries shrank. The general picture is that salary growth is more rapid for the job changers, but this differential shrinks to zero when the economy is in the deep recession of the early 1990s.

Figure 5.4, in turn, reports salary growth rates for three groups: all job stayers, those job stayers whose occupation code changes, and those who stay under their base year occupation code. Again, the curves are not very surprising: those who change occupation probably get promoted in most cases, and they do better than the rest. In the depression years, the difference is tiny, but it becomes quite large after year 1995. For many years the “non-promoted job stayers” dotted line corresponds exactly to the “all job stayers” continuous line and is therefore not visible in the figure.

It is an obvious hypothesis that job changers or task changers may face higher variability in their earnings growth. Table 5.5 reports the standard deviation of salary changes in all of the five groups discussed here: all individuals, those who stay with their employer, those who change employer, and, finally, two subsets of those who stay with the firm: the ones whose



**Fig. 5.4** Real wage increases for all job stayers, promoted job stayers, and nonpromoted job stayers; monthly salaries, including all bonuses, of white-collar workers working full time in a firm that belongs to the Confederation of Finnish Industry (TT)

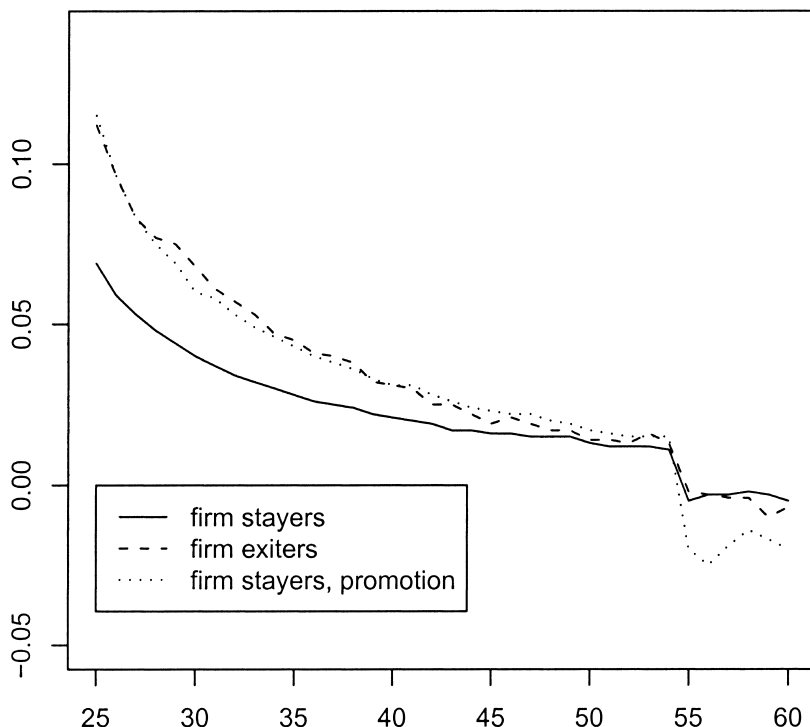
**Table 5.5** Standard deviation of variation of monthly changes, including all bonuses, of white-collar workers working full time in a firm that belongs to the Confederation of Finnish Industry

Year	Workers			Occupation changes	Occupation unchanged
	All	Stayers	Changers		
1980–1981	0.07	0.06	0.12	0.09	0.06
1981–1982	0.06	0.06	0.11	0.09	0.06
1982–1983	0.06	0.06	0.11	0.09	0.06
1983–1984	0.06	0.06	0.11	0.09	0.06
1984–1985	0.07	0.06	0.12	0.09	0.06
1985–1986	0.07	0.06	0.11	0.09	0.06
1986–1987	0.07	0.06	0.10	0.09	0.06
1987–1988	0.07	0.07	0.11	0.09	0.06
1988–1989	0.08	0.07	0.11	0.11	0.07
1989–1990	0.08	n.a.	n.a.	n.a.	n.a.
1990–1991	0.06	0.06	0.08	0.09	0.06
1991–1992	0.05	0.05	0.06	0.08	0.04
1992–1993	0.06	0.06	0.08	0.09	0.06
1993–1994	0.07	0.06	0.08	0.10	0.06
1994–1995	0.07	0.07	0.08	0.08	0.07
1995–1996	0.07	0.07	0.09	0.10	0.06
1996–1997	0.08	0.08	0.12	0.13	0.07
1997–1998	0.08	0.08	0.13	0.11	0.07
1998–1999	0.09	0.09	0.12	n.a.	n.a.
1999–2000	0.09	0.09	0.12	0.10	0.09
2000–2001	0.09	0.09	0.10	0.11	0.08
2001–2002	0.09	0.09	0.11	n.a.	n.a.

Note: n.a. = not available.

task changes and the ones with an unchanged task. As expected, those who change occupation or employer are, in general, exposed to higher variation of earnings growth.

These differences between groups may seem relatively low, and it is clear that they conceal important differences between the age groups. We know from the economic literature that younger employees typically gain more by changing jobs or occupations. Thus, repeating the same exercise separately for all age groups but aggregating over all years should yield additional information. Such a computation is reported in figure 5.5. For that figure, we have used the entire panel of employees and computed a similar breakdown of salary increases in the groups of firm stayers, firm changers, and firm stayers who change occupation (we leave out the curve for all employees because it is almost identical to that of firm stayers whose occupation is unchanged). A clear pattern emerges: young workers gain a lot by changing employers, but also by being promoted within the firm. After age fifty, promotions and job exits hardly make any difference, and, for the old-



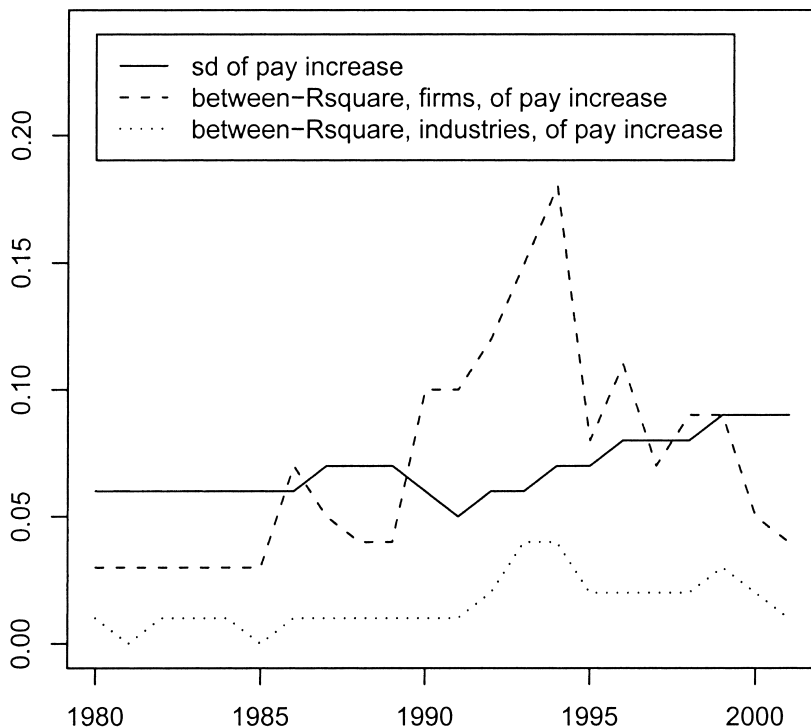
**Fig. 5.5** Real wage increases according to age for all job stayers, job changers, and promoted job stayers; monthly salaries, including all bonuses, of white-collar workers working full time in a firm that belongs to the Confederation of Finnish Industry (TT)

est workers, being allocated to new tasks within the firm is associated with a drop in real earnings.

### 5.9 The Variance of Wage Increases

As far as the “tightness” of the collective agreement system is concerned, one of the most interesting questions is the extent to which individual firms can steer their internal pay structures and to what extent they are just compelled to keep the existing pay structure and pay the general increase to everybody.

To shed light on this, figure 5.6 reports an ANOVA decomposition of yearly salary increases, with firm indicators as the conditioning variable, as in the computations reported in tables 5.1 and 5.2. We can see a slow increase in the overall variance of salary increases. As to the share of salary increase variation explained by firm indicators, one might also detect a



**Fig. 5.6 ANOVA for salary increases: The standard deviation of salary increases for job stayers and the share of variance (*R*-squared) explained by firm indicators and industry indicators; monthly salaries, including all bonuses, of white-collar workers working full time in a firm that belongs to the Confederation of Finnish Industry (TT)**

weak but increasing trend, but it is overwhelmed by upward and downward movements that seem to be associated with the outcome of centralization efforts. There were no centralized wage agreements in years 1993 and 1994. In the boom years of the late 1990s, economic policymakers again resorted to coordinated wage settlements in order to put a brake on inflation, and we can see a corresponding downward shift in the firm variance component in these years.

These shifts in the firm salary increase differentials are partly based on shifts in interindustry differentials in salary increases: when there is no centralized agreement on a general pay increase, different industries implement different pay increases that might still be fairly uniform between firms. However, as is apparent from figure 5.6, the interindustry differentials do not account for a large part of the pay increase variance, even in those years when the interfirm differentials are large. The shifts in the variance component of industry differentials are far weaker.

Thus, one natural interpretation of the result is that noncentralized rounds do, in general, result in higher pay increases in all the industries. This is also the result obtained by Uusitalo in an earlier study (2005). However, as we see a much stronger upward shift in the firm variance component in those very same years in which there is no centralized agreement, it seems that these industrywide agreements are written in such a way that they leave more room at firm-specific arrangements.

Thus, seen from the point of view of individual firms, noncentralized industry agreements are a mixed bag. They lead to more firm-specific adjustment in wages, but they also result in higher overall pay increases, which is probably particularly disadvantageous for those firms that suffer from below-average labor productivity growth. This is a classic feature of Nordic pay-bargaining models: they reward firms with high productivity growth, as local wage claims are controlled by central organizations, but they penalize entrepreneurs whose productivity growth is below average.

Anyway, we see that quite substantial shifts in variance components can occur within an unchanged institutional framework for wage determination. This does not mean that wage increases would be particularly firm specific in an international comparison. However, it shows that the firms can to some extent at least use wage changes as individual incentives and group incentives within a pay-bargaining system that aims at steering the overall pace of wage change.

### 5.10 Job and Occupation Transitions and Career Profiles

Finally, we characterize the career dynamics of a couple of cohorts of new entrants into the industry. We select two cohorts, one that enters the industry in 1981 and another that enters in 1987. We select all the entrants that were under thirty-five years of age in the initial year and who were not observable in the panel in the year preceding the initial year. From these cohorts, we further select all those who are observed in the industry for eleven consecutive years after the initial year. For each individual, we compute the sum of job changes within a current employer (promotion) and a change of employer (job exit). We measure the effect of such cumulated changes on the relative position of the employee. To this end, we start the analysis by computing, for each employee, his or her percentile rank in each year in the aggregate salary distribution. Note that we have used the entire salaried employee workforce to compute these ranks, not only the chosen cohort.

Our career variable is then the gain in the relative position of the employee during the eleven years of interest. This procedure abstracts from aggregate productivity and inflation shocks and other business-cycle phenomena and focuses solely on the relative performance of the employees.

We report two tables for both cohorts, one that reports the average relative position improvement as a function of promotions and job changes,



and another that reports the headcounts in each group. Table 5.6 reports the average increase in the relative position of the employees in the 1981 cohort. In each cell, the number in parentheses displays the standard deviation of the relative position change for that particular exits-promotion combination. The next table, table 5.7 reports the headcounts of all promotion-job exit combinations, from year 1981 to 1991. As one can see by comparing the two tables, we do not report the mean and standard deviation estimates for cells with less than five individuals.

The next tables, tables 5.8 and 5.9, report a similar exercise for the 1987 cohort.

For the earlier cohort, it seems clear that about four employer changes plus a few promotions lead to a high relative salary gain. The most interesting difference between the two cohorts has to do with the first column of tables 5.6 and 5.8. For the earlier cohort, it was not that advantageous to change employer many times without being promoted in the firm. This tells of a more traditional economy, in which tenure and internal career progress play a main role. The latter cohort has experienced the large interfirm mobility of the 1995 to 1997 recovery years, and for that cohort it is possible to improve one's performance a lot by changing employer but without any promotions.

We also note that the standard deviation figures are quite high, although one has to bear in mind that they are not directly related to uncertainty as to the money salary: we measure progress by the person's position in the distribution, and in the thick parts of the salary distribution, it is, of course, easier to move a lot in the salary distribution of employees without the

**Table 5.6** Cohort relative wage gains as a function of job changes (vertical direction downward) and internal promotions (horizontal direction) of white-collar workers who entered the industry in 1981

No. of exits	No. of promotions within firm							
	0	1	2	3	4	5	6	7
0-2	9 (15)	13 (25)	18 (21)	21 (28)	17 (29)	27 (29)		
3	10 (18)	15 (23)	14 (27)	25 (29)	26 (36)			
4	14 (24)	21 (25)	20 (26)	30 (23)				
5	12 (25)	20 (30)	23 (29)	24 (11)				
6	14 (30)	22 (31)	28 (20)					
7	18 (19)	4 (30)						
8								
9								

*Notes:* Each entry in the table reports the average percentile increase (standard deviation in brackets) within the wage distribution. For example, the first entry in the top left corner of the table shows that between 1981 and 1992 the worker who changed employer never, once, or twice and was not promoted while working with the same employer increased his or her relative position, on average, by 9 percentage points of the wage distribution.

**Table 5.7 Cohort headcounts according to number of job changes (vertical direction downward) and internal promotions (horizontal direction) of white-collar workers who entered the industry in 1981**

No. of exits	No. of promotions within firm							
	0	1	2	3	4	5	6	7
0-2	690	425	199	73	23	8	1	1
3	464	341	104	47	10	5	0	0
4	218	132	47	19	1	0	1	0
5	93	83	27	7	0	1	0	0
6	40	21	7	1	1	0	0	0
7	9	8	3	0	0	0	0	0
8	2	0	0	0	0	0	0	0
9	0	1	0	0	0	0	0	0

*Notes:* Each entry reports the number of individuals who experience a particular combination of employer changes and promotions. For example, there are 464 people who changed employer thrice but were never promoted within one employer.

**Table 5.8 1987 cohort relative wage gains as a function of job changes (vertical direction downward) and internal promotions (horizontal direction)**

No. of exits	No. of promotions within firm							
	0	1	2	3	4	5	6	7
0-2	13 (14)	20 (15)	23 (19)	28 (20)	34 (25)			
3	18 (17)	24 (19)	32 (22)	38 (21)				
4	21 (18)	26 (18)	27 (20)					
5	25 (17)	28 (23)	29 (25)					
6	35 (22)	34 (13)						
7								
8								

*Note:* See tables 5.6 and 5.7 notes.

**Table 5.9 1987 cohort headcounts according to number of job changes (vertical direction downward) and internal promotions (horizontal direction)**

No. of exits	No. of promotions within firm							
	0	1	2	3	4	5	6	7
0-2	327	161	92	35	6	0	0	1
3	251	161	59	15	5	0	0	0
4	138	71	47	5	3	0	0	0
5	43	27	11	5	0	0	0	0
6	19	10	4	0	0	0	0	0
7	2	3	0	0	0	0	0	0
8	1	0	0	0	0	0	0	0

*Note:* See table 5.7 notes.

salary changing a lot. This notwithstanding, the standard deviations are quite high—even the groups of individuals who have mostly stayed with the same employer and have experienced several promotions have, on average, a standard deviation of the career measure variable that is of the same order of magnitude as the value of the measure variable itself.

### 5.11 New Pay Forms and Pay Flexibility

We have so far confined our analyses to a narrowly defined base monthly salary. In the 1990s, new pay forms related to firm profits or some group or firm performance measures became increasingly popular in Finnish manufacturing. This may be due to at least two factors. Production technologies may evolve in a way that makes the measurement of individual performance more difficult at the same time when productivity becomes increasingly dependent on group performance. Another motivation for an increased use of performance-related pay may be disinflation: when inflation is low, maintaining a given downward real wage flexibility necessitates a higher propensity of nominal pay cuts (see Macleod and Malcomson 1993). Pay cuts are probably easier to carry out for such pay components as performance pay and profit sharing as they are not regulated by collective agreements and are at the discretion of management.

In the context of this chapter, one would expect that such new pay forms would also increase the firm-specific component in wage variation. We illustrate this with a table on the incidence of nominal pay cuts, computed for both narrowly defined monthly salary and the total salary, which is a sum of the narrow salary and eventual performance pay.

Table 5.10 shows that this effect can be quite important for salaried employees. In a similar vein, if we carry out an analysis of variance, similar to that reported for wage increases but this time taking into account new per-

**Table 5.10** Probability of a wage cut from base year to next and the coefficient of variation of pay changes, both computed for narrow and wide pay, job stayers of monthly salaries of white-collar workers working in a firm that belongs to the Confederation of Finnish Industry

Year	Prob(salary cut) and CV(salary change), job stayers			
	Salary no PP	Salary with PP	CV(salary no PP)	CV(with PP)
1996–1997	0.04	0.13	2.10	2.06
1997–1998	0.02	0.07	1.21	1.23
1998–1999	0.04	0.14	1.45	1.63
1999–2000	0.02	0.06	1.04	1.11

*Notes:* Prob = probability; CV = coefficient of variation. Columns “with PP” indicate the performance-related pay components that are typically based on the firm’s economic result in the previous year.

**Table 5.11** Probability of a wage cut from base year to next and the coefficient of variation of pay changes, both computed for narrow and wide pay, job stayers of hourly wages of blue-collar workers in firms that belong to the Confederation of Finnish Industry

Prob(wage cut) and CV(wage change), job stayers				
Year	Timewage	Timewage with PP	CV(timewage)	CV(timewage with PP)
1996–1997	0.22	0.21	1.88	1.81
1997–1998	0.19	0.19	1.60	1.52
1998–1999	0.25	0.27	2.06	2.13
1999–2000	0.15	0.15	1.31	1.28

*Note:* See table 5.10 notes.

formance pay schemes, we see that these new pay schemes greatly reinforce the move to a larger firm specificity of wage changes.

This trend is not general, however: for hourly paid blue-collar workers, there is no such effect, and the incidence of pay cuts is fairly high to start with. This is shown in table 5.11, in which we report the same exercise for blue-collar workers. There is much more downward flexibility in the worker wages to start with, and the introduction of performance pay schemes does not mean a momentous change in this respect.

## 5.12 Conclusions

We have surveyed the wage structure and wage dynamics of Finnish manufacturing employees in the last twenty-two years. One interesting background factor for this analysis is that the institutions of the wage bargaining system have hardly changed at all in that period. Consequently, we can regard the structural changes that we detect in the empirical material as due to the behavior of firms and individuals instead of institutional reforms.

In our view, the most important stylized facts that emerge out of these analyses are the following:

- The overall cross-section variance of salaries has changed very little. This is true for the distribution of final salaries but almost true even for salary residuals.
- In the 1980s, differences in the mean salaries of firms were very low. This was true both for final salaries as well as residuals after the salaries were projected to conventional Mincer-type regressors like education, age, and gender.
- The differentials between firms started to increase at the end of the 1980s, and this process accelerated after the deep slump of the 1990s. In other words, salaries became more firm specific.

- A large part of this increased importance of the firm-specific variance component is explained by a stronger sorting of employees according to productive characteristics.
- The increased importance of differentials between firm holds true even for Mincer wage residuals. In other words, there are more firm-specific wage differentials between similar individuals who work in different firms.
- A slight but similar development has taken place for the distribution of salary increases. Firm differentials in salary increases are more important now than in the 1980s. However, this trend is not monotone.
- Salary increase differentials between firms increase markedly when there is no centralized wage agreement. Firm differentials in salary increases were particularly large in the mid-1990s when no centralized agreements on salary increases were concluded, but they diminished again when centralized incomes policy again became operative from year 1996 onward.
- Salary increases differ between those who stay and those who leave a firm. In recessions, that difference is not large, but leavers do better in times of boom.
- A similar characterization holds for those who change occupation within a firm. In general, occupation changers increase their pay more than those who stay in their occupation.
- Both of the aforementioned effects depend starkly on age. Firm exits and promotions increase earnings up to the age of fifty years, after which such events do not, on average, improve a person's relative position.
- Finally, an analysis of individual careers over eleven years revealed that both exits and promotions play a role in salary growth. The variance of individual final pay after a career of ten years is large. Macroeconomic conditions can dramatically affect the expected pay and the variance of pay over the career span of an individual. After the deep slump of the early 1990s, employer changes even without internal promotions might have become a more attractive career pattern.

To sum up, wage setting is becoming a bit more firm specific, while centralized agreements on pay increases continue to be the main force that affects the growth in average pay. This kind of modest evolution toward more firm-specific pay firm seems to be well accommodated by the institutional and legal framework of pay bargaining.

There is no necessary contradiction between these trends of more microflexibility and macrocentralization. Indeed, according to some accounts, they would be a rational response to the economic environment. Recent theoretical research on the interplay of central bank policy and

wage bargaining suggests that the advent of the euro makes it even more important to coordinate the wage claims of unions. This conclusion has come out of several papers (see Coricelli, Cukierman, and Dalmazzo 2000; Holden 2005). The authors of these papers argue that the introduction of the single currency means that monetary policy becomes more accommodating from the point of view of national wage setters. This means that the incentives to coordinate wage claims increases, as there is no national central bank anymore that would discipline wage setters by threatening with high interest rates if wage claims are excessive. The same point has been made in the empirical industrial relations literature. Anke Hassel (2002) notes that European governments have been keen to use the collective wage bargaining system to get a better macroeconomic grip on average wage growth.

At the same time, it is not surprising that firms want to increase the scope for their specific personnel policies and wage schemes. As the importance of sheer physical labor recedes and production processes become more complicated, it becomes more important for the firm to introduce increasingly sophisticated incentive schemes. This means that pay is increasingly conditioned on team performance, which warrants the introduction of performance pay or even profit sharing. In our blue-collar register data, for example, we can observe a steady decrease in the share of pure individual piece-rate work and a corresponding increase in partial piece-rate or premium pay that is often based on team performance. Such trends in production techniques make it increasingly important for firms to design sophisticated incentive structures.

Against these two general trends, the gradual increase in microflexibility within the confines of an otherwise centralized macroeconomic control of wage increases might be at least a reasonable second-best reaction to economic circumstances. In this respect, Finland is hardly alone among the small European countries, of course. Recent institutional developments in Sweden tell a similar story: collective agreements are increasingly written so that relative wage differentials at the firm level are left to local negotiations, while the macroeconomic control of the speed of wage increases is tightened with the help of new neocorporatist institutions like the new National Mediation Office.<sup>7</sup> In the Netherlands, typical wage bargains also keep a centralized control of general wage increases but otherwise leave wage determination to the local level.<sup>8</sup>

7. This new organization was established in year 2000, and its aim is to enhance bargaining coordination and set guidelines for reasonable wage settlements.

8. See Teulings and Hartog (1998) for a sophisticated theoretical rationale of the Dutch wage bargaining model, not unlike the arguments that we have advanced in this paper.

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