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No. 541

Rita Asplund

THE GENDER WAGE GAP IN FINNISH INDUSTRY IN 1980-1994

An empirical analysis of non-manual workers

The paper was presented at the 15th Arne Ryde Symposium on ECONOMICS OF GENDER AND THE FAMILY held in Denmark, August 18-19, 1995. I want to thank my commentator at the symposium, Per-Anders Edin, for his many constructive suggestions. Any remaining errors and omissions are, of course, mine.

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ABSTRACT: This paper analyses the development of the male-female wage gap among non-manual workers in Finnish industry over the period 1980-1994, a time period covering both boom and deep recession. Of particular interest therefore is whether the relative labour market situation of female non-manual industrial workers has been notably affected by the dramatically changed economic situation in the early 1990s. The analysis utilizes 15 broad representative cross-section data sets sampled from the individual-level data base of the Confederation of Finnish Industry and Employers. The overall impression mediated by the reported results is that the deep recession that Finland dived into at the turn of the decade has markedly affected the relative labour market position of female non-manual workers in Finnish industry. But simultaneously results for 1994 indicate that the recovery of the Finnish economy is also slowly changing the labour market patterns of males and females back to the general course that prevailed prior to the recession.

Key words: gender, mobility, wages

Asplund, Rita, **MIESTEN JA NAISTEN VÄLISET PALKKAEROT SUOMEN TEOLLISUUDESSA 1980-1994. TOIMIHENILKÖITÄ KOSKEVA EMPIIRINEN TARKASTELU.** HELSINKI: ETLA, Elinkeinoelämän Tutkimuslaitos, The Research Institute of the Finnish Economy, 1995, 28 s. (Keskusteluaiheita, Discussion Papers, ISSN 0781-6847; no. 541).

TIIVISTELMÄ: Tutkimuksessa tarkastellaan naisten ja miesten välisten palkkaerojen kehitystä Suomen teollisuuden toimihenkilöillä ajanjaksolla 1980-1994. Tämä ajanjakso ei ole pelkästään tarpeeksi pitkä luotettavien trendien tunnistamiseksi. Lisäksi se kattaa sekä korkeasuhdanteen että syvän matalasuhdanteen vuosia. Erityisen mielenkiintoiseksi kysymykseksi nousee tästä syystä se, onko 1990-luvun alussa dramaattisesti muuttunut taloudellinen tilanne vaikuttanut merkittävästi Suomen teollisuuden naistoimihenkilöiden suhteelliseen asemaan työmarkkinoilla. Tutkimuksessa hyödynnetään 15 edustavaa poikkileikkausotosta, jotka on poimittu Teollisuuden ja Työnantajain Keskusliiton (TT) laajasta yksilötason palkka-aineistosta. Tutkimustulosten välittämä yleiskuva on, että 1990-luvun syvät lamavuodet Suomen taloudessa ovat merkittävästi vaikuttaneet teollisuuden naistoimihenkilöiden suhteelliseen työmarkkina-asemaan. Mutta samalla vuotta 1994 koskevat tulokset viittaavat siihen, että Suomen talouden elpymisen myötä myös naisten ja miesten suhteellisen työmarkkina-aseman kehitystrendit ovat hitaasti palautumassa ennen lamavuosia vallinneisiin uriin.

Avainsanat: liikkuvuus, palkat, sukupuoli

Summary

This paper analyses the development of the male-female wage gap among non-manual workers in Finnish industry over the period 1980-1994, a time period covering both boom and deep recession. Of particular interest therefore is whether the relative labour market situation of female non-manual industrial workers has been notably affected by the dramatically changed economic situation in the early 1990s with a loss of over 400,000 jobs within three years and unemployment rates exceeding 20 per cent. This question is addressed by using 15 representative cross-section data sets sampled from the large individual-level data base of the Confederation of Finnish Industry and Employers (TT).

The study focuses on three aspects of the gender wage gap. The first part of the study gives an overall view of trends in male and female non-manual wages in Finnish industry by comparing the overall dispersion of male and female wages as well as the wage levels of males and females for selected percentiles.

Underlying the observed trends in male-female wage differences is, *inter alia*, the pattern of wage mobility among male and female non-manual workers, that is the individuals' mobility within the wage distribution. As shown in the second part of the study, not only is the starting position, i.e. the origin wage decile, on average much lower for female than for male non-manual workers. There are also notable differences in the pattern of mobility of males and females within the wage distribution of non-manual industrial workers. Moreover, the deep recession years in the early 1990s have definitely had a negative impact on the relative wage position of female non-manual workers as well as on their possibilities of upward mobility within the wage distribution.

The third part of the study, finally, analyses trends in the male-female wage gap by estimating broad human capital wage equations for each year concerned. The gender effect is accounted for in two traditional ways. First, the wage equation is supplemented with a gender dummy variable taking the value of 1 if the individual is a female. This gives the proportion of the observed wage differentials between male and female non-manual workers that cannot be explained by the personal and job-related characteristics accounted for in the estimations. Secondly, separate wage equations are estimated for male and female non-manual workers in order to display whether they are differently rewarded for the same characteristics and, especially, for the same amount of acquired human capital.

This analysis suggests, *inter alia*, that the narrowing in the 1980s of the male-female non-manual wage gap as measured by the female dummy has been reversed during the deep recession years in the early 1990s. These estimation results also indicate that the gap between male and female non-manual workers in the returns to human capital has widened markedly over the past few years. Last but not least, the results imply that the amount of wage discrimination as measured by the Oaxaca index has remained roughly unchanged over the past 15 years.

On the whole, the overall impression mediated by the reported results is that the deep recession that Finland dived into at the turn of the decade has markedly affected the relative labour market position of female non-manual workers in Finnish industry. But simultaneously results for 1994 indicate that the recovery of the Finnish economy is also slowly changing the labour market patterns of males and females back to the general course that prevailed prior to the recession.

Yhteenveto

Tutkimuksessa tarkastellaan naisten ja miesten välisten palkkaerojen kehitystä Suomen teollisuuden toimihenkilöillä ajanjaksolla 1980-1994. Tämä ajanjakso ei ole pelkästään tarpeeksi pitkä luotettavien trendien tunnistamiseksi. Lisäksi se kattaa sekä korkeasuhdanteen että syvän matalasuhdanteen vuosia. Erityisen mielenkiintoiseksi kysymykseksi nousee tästä syystä se, onko 1990-luvun alussa dramaattisesti muuttunut taloudellinen tilanne vaikuttanut merkittävästi Suomen teollisuuden naistoimihenkilöiden suhteelliseen asemaan työmarkkinoilla. Vuosina 1990-93 eli kolmen vuoden sisällä poistui yli 400,000 työpaikkaa ja työttömyysaste nousi yli 20 prosenttiin. Tähän kysymykseen haetaan vastausta hyödyntämällä 15 edustavaa poikkileikkaus- aineistoa. Otokset on poimittu Teollisuuden ja Työnantajain Keskusliiton (TT) laajasta yksilötason palkka-aineistosta.

Miesten ja naisten välisiä palkkaeroja tutkitaan kolmesta eri näkökulmasta. Tutkimuksen ensimmäisessä osassa kuvataan Suomen teollisuuden mies- ja naistoimihenkilöiden palkkojen yleistä kehitystä vertailemalla miesten ja naisten palkkojen yleistä hajontaa sekä palkkajakauman eri tasoilla (persentiileillä) olevien naisten ja miesten palkkoja.

Miesten ja naisten välisten palkkaerojen muutoksiin vaikuttaa muun muassa heidän liikkuvuutensa palkkajakaumassa eli etenkin se, missä määrin ja miten nopeasti he liikkuvat palkkajakaumassa ylöspäin tai mahdollisesti myös alaspäin. Kuten tutkimuksen toisesta osasta ilmenee, naistoimihenkilöiden lähtöasema palkkajakaumassa, eli heidän alkuperäinen palkkadesiilinsä, on keskimäärin huomattavasti alhaisempi miestoimihenkilöihin verrattuna. Lisäksi teollisuuden nais- ja miestoimihenkilöiden välillä esiintyy varteenotettavia eroja palkkaliikkuvuudessa eli siirtymisissä palkkajakauman sisällä. Edelleen näyttää siltä, että 1990-luvun lamavuodet ovat heikentäneet naistoimihenkilöiden suhteellista palkka-asemaa kuten myös heidän mahdollisuuksiaan siirtyä palkka-jakaumassa ylöspäin eli parantaa palkkatasoaan suhteessa miestoimihenkilöihin.

Lopuksi, tutkimuksen kolmannessa osassa tarkastellaan miesten ja naisten välisten palkkaerojen kehitystä muodostamalla jokaiselle vuodelle (1980-94) laajoja inhimillisen pääoman teoriaan perustuvia palkkamalleja. Sukupuoleen liittyvää palkkavaikutusta yritetään arvioida kahta perinteistä menetelmää käyttäen. Ensiksi palkkamallia täydennetään sukupuolta kuvaavalla indikaattorilla, joka saa arvon 1, jos ko. henkilö on nainen. Tämän lähestymistavan avulla voidaan arvioida sitä osaa nais- ja miestoimi-henkilöiden välillä esiintyvistä palkkaeroista, joka ei ole selitettävissä palkkamalleissa

huomioiduilla, miesten ja naisten välillä esiintyvillä henkilökohtaisilla ja työhön liittyvillä ominaisuuksilla. Toiseksi muodostetaan nais- ja miestoimihenkilöille omat palkkamallit. Tällöin tarkoituksena on selvittää, jos ja missä määrin nais- ja miestoimihenkilöitä palkitaan eri tavalla (palkassa mitattuna) samoista ominaisuuksista ja erityisesti samasta koulutuksesta ja inhimillisestä pääomasta ylipäänsä.

Tämä tarkastelu osoittaa muun muassa sen, että 1980-luvulla tapahtunut mies- ja naistoimihenkilöiden välisten palkkaerojen kaventuminen on pysähtynyt. Näyttää siltä, että palkkaerot ovat peräti kääntyneet nousuun 1990-luvun lamavuosina. Tutkimustulokset viittaavat myös siihen, että inhimillisen pääoman (koulutus, työkokemus, työsuhteen kesto) tuottoero palkassa mitattuna nais- ja miestoimihenkilöiden välillä on kasvanut merkittävästi viime vuosien aikana. Edelleen tutkimustulokset osoittavat, että Oaxaca indeksillä mitatun palkkadiskriminoinnin laajuus Suomen teollisuuden toimihenkilöiden keskuudessa on pysynyt lähes muuttumattomana viimeisten 15 vuoden aikana.

Kaiken kaikkiaan tutkimustulosten välittämä yleiskuva on, että 1990-luvun syvät lamavuodet Suomen taloudessa ovat merkittävästi vaikuttaneet teollisuuden naistoimihenkilöiden suhteelliseen työmarkkina-asemaan. Mutta samalla vuotta 1994 koskevat tulokset viittaavat siihen, että Suomen talouden elpymisen myötä myös naisten ja miesten suhteellisen työmarkkina-aseman kehitystrendit ovat hitaasti palautumassa ennen lamavuosia vallinneisiin uriin.

1. INTRODUCTION

This paper analyses the development of the male-female wage gap in Finnish industry over the years 1980-1994, a time period covering both boom and deep recession. Of particular interest therefore is whether the relative labour market situation of female industrial workers has been notably affected by the dramatically changed economic situation in the early 1990s with a loss of over 400,000 jobs (over 130,000 industry jobs) within three years and unemployment rates exceeding 20 per cent.

The sample data used in the study come from individual-level data collected by the Confederation of Finnish Industry and Employers (TT). The data base comprises a large amount of information about personal and job-related characteristics as well as of wages and various pay compensations such as fringe benefits, shift pays and bonuses. The data set covers each year in the period 1980-1994, and has the properties of both panel and cross-section data. It thus opens a multitude of possibilities to examine in detail trends in the male-female wage gap in Finnish industry over the past 15 years.

The analysis is for several reasons restricted to non-manual industrial workers, with a further division according to occupational social status (technical, clerical and upper-level non-manual workers) and branch. One important reason for focusing on non-manual workers only is that the data base for non-manual industrial workers contains, *inter alia*, information on formal schooling (degree and field), work experience and seniority, while the corresponding data base for manual industrial workers does not. The 15 cross-section samples used in the study comprise between 6,400 and 9,600 individuals each.[1)] The share of women is throughout slightly less than 40 per cent. The variation in sample size over the investigated time period reflects variations in the size of the underlying population resulting from structural changes and business cycle effects.

The study focuses on three aspects of the gender wage gap. The first part of the study (Section 2) gives an overall view of trends in male and female non-manual wages in Finnish industry by comparing the overall dispersion of male and female wages as well as the wage levels of males and females for selected percentiles.

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1) The samples are restricted to non-manual workers in full-time employment. The exclusion of part-time workers is, however, not likely to bias to any notable extent the male-female results to be presented because of the small share of part-time workers in private-sector employment (Asplund et al., 1995a) and, especially, in private-sector manufacturing (around 1 per cent in total, 2.1 per cent for women and 0.5 per cent for men according to the 1987 Labour Force Survey).

Underlying the observed trends in male-female wage differences is, *inter alia*, the pattern of wage mobility among male and female non-manual workers, that is the individuals' mobility within the wage distribution. As shown in the second part of the study (Section 3), not only is the starting position, i.e. the origin wage decile, on average much lower for female than for male non-manual workers. There are also notable differences in the pattern of mobility of males and females within the wage distribution. Moreover, the deep recession years in the early 1990s have definitely had a negative impact on the relative wage position of female non-manual workers as well as on their possibilities of upward mobility within the wage distribution.

The third part of the study (Sections 4-6), finally, analyses trends in the male-female wage gap by estimating broad human capital wage equations for each year concerned. The gender effect is accounted for in two traditional ways. First, the wage equation is supplemented with a gender dummy variable taking the value of 1 if the individual is a female. This gives the proportion of the observed wage differentials between male and female non-manual workers that cannot be explained by the personal and job-related characteristics accounted for in the estimations. Of special interest is whether the narrowing in the 1980s of the male-female non-manual wage gap as measured by the female dummy has stopped or even been reversed during the deep recession years in the early 1990s. Secondly, separate wage equations are estimated for male and female non-manual workers in order to display whether they are differently rewarded for the same characteristics and, especially, for the same amount of acquired human capital. In Section 6 these estimation results are used to calculate the extent of wage discrimination in Finnish industry over the years 1980-1994. Concluding remarks are given in Section 7.

2. TRENDS IN WAGE LEVELS AND WAGE DISPERSION

In 1980, the nominal total hourly wage amounted to on average FIM 31,70 for male non-manual workers and to FIM 19,60 for female non-manual workers, indicating that the average female wage level was only some 62 per cent of the average male wage level among non-manual workers in private-sector industry. This very large gender wage gap is no doubt partly explained by the wage concept used, viz. total hourly wage, which includes apart from the normal wage also different types of pay compensation such as fringe benefits. It is by now a stylized fact that pay compensations are more heavily concentrated to male workers.

By 1994, the nominal hourly wage level of male non-manual workers had increased to FIM 82,90 which gives an average growth rate of 7.7 per cent a year. Among female non-manual workers the nominal hourly wage level had at the same time risen to FIM 57,00 giving an average growth rate of 8.6 per cent per annum. Because of this more rapid growth of female nominal wages also the female-male wage differential narrowed slightly over the time period investigated; in 1994 it amounted to some 69 per cent.

The dispersion of total hourly wages among female and male non-manual workers in Finnish industry over the years 1980-1994 is displayed in *Figures 1 and 2* using three different measures of wage dispersion. Overall dispersion is measured by the standard deviation of log total hourly wages. Changes in the two tailes of the wage distribution are captured by the LOG(P90/P10) distribution, where P90 and P10 refer to the wage level of the 90th and 10th percentiles, respectively. The LOG(P75/P25) distribution, in turn, displays whether eventual changes in the tails have been reflected throughout the wage distribution. This latter measure is of interest not least because a corresponding, roughly comparable series is available for Swedish non-manual workers in the private sector. Also this series is displayed in *Figure 2*.

The figures display a clearly higher overall dispersion of male than of female non-manual wages in Finnish industry. The gender gap in overall wage dispersion narrowed slightly towards the end of the 1980s due to a slow but fairly steady increase in the overall distribution of female wages during these boom years. The deep recession years in the early 1990s, in turn, saw a minor decline in wage dispersion among both male and female non-manual workers keeping the gender gap roughly unchanged. However, 1994 seems to have shifted the development back to the general course that was prevailing up to 1990. The same overall trends are observable also in the LOG(P90/P10) and LOG(P75/P25) wage distributions. Noteworthy are, however, the hugh gender gaps in these two tail distributions.[2)]

Comparisons with Sweden in *Figure 2* indicate that the LOG(P75/P25) wage distribution is highly similar among Finnish and Swedish female non-manual workers, and has also developed quite similarly (at least up to 1990). Except for the overall slightly increasing trend, the situation is very different for male non-manual workers in the two countries, with a much more compressed wage structure for male non-manual workers in Sweden. It would be most interesting to know whether also the Swedish series showed a downward trend in the early 1990s.

2) *Figures A1 and A2 in the Appendix* show the wage position of selected percentiles relative to the median separately for male and female non-manual workers.

Figure 1. Trends in overall wage dispersion measured as the standard deviation of log total hourly wages and in the LOG(P90/P10) wage distribution

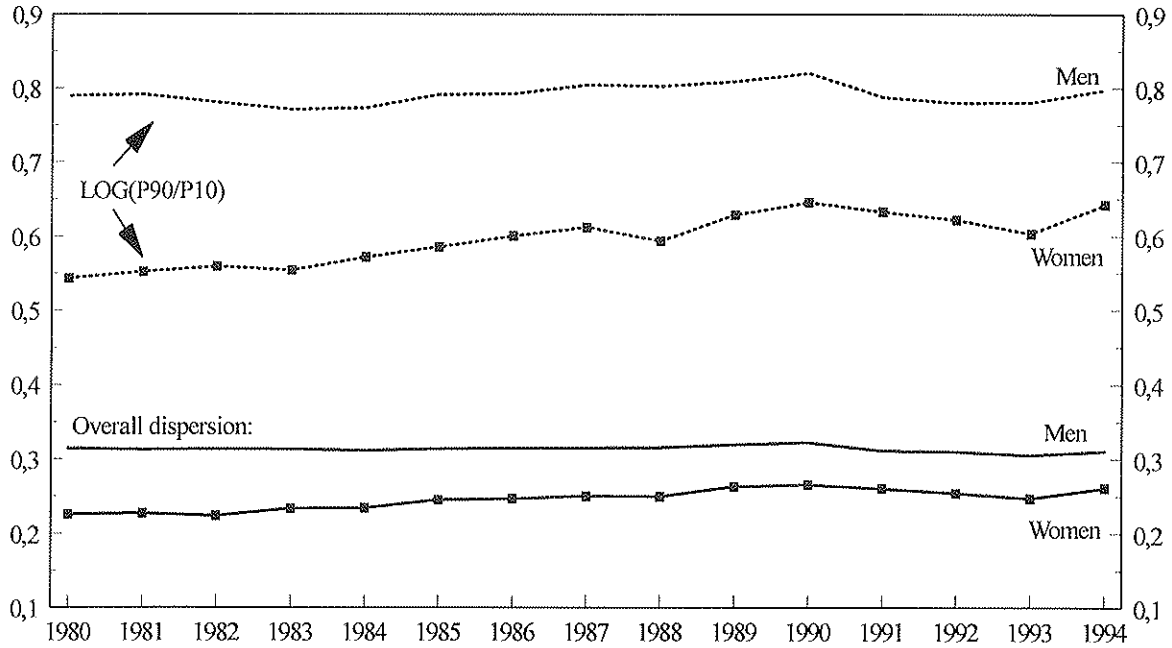
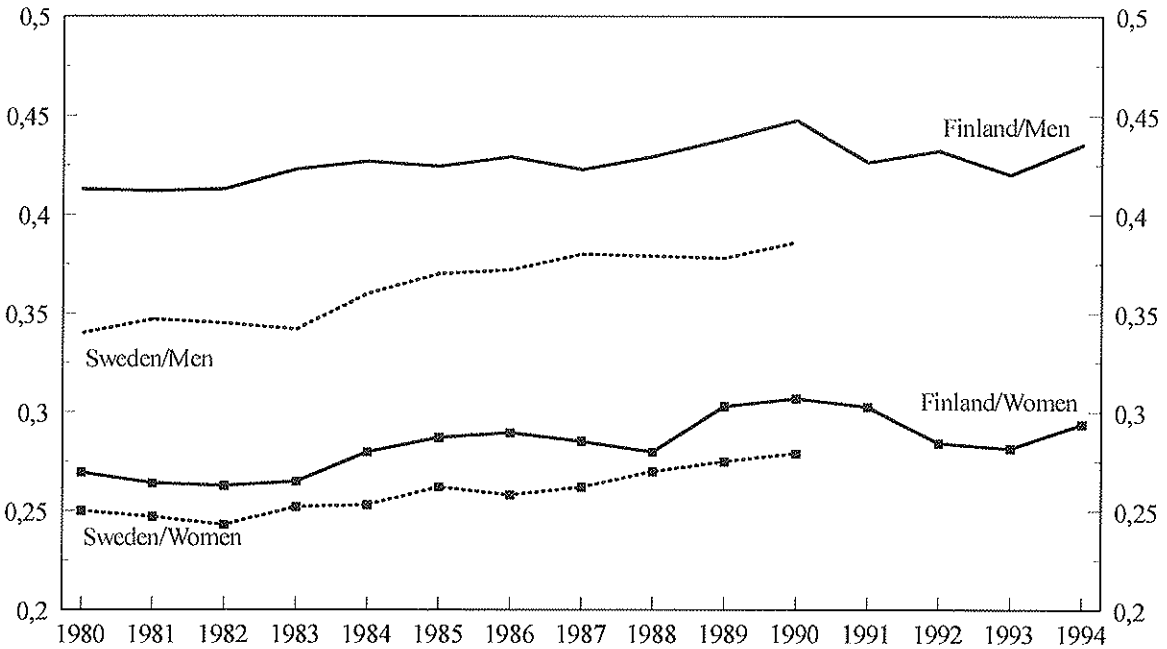


Figure 2. Trends in the LOG(P75/P25) wage distribution compared to male and female non-manual workers in the Swedish private sector



Source: The figures for Sweden are from Edin & Holmlund (1992).

3. WAGE MOBILITY

The distribution of male and female non-manual workers within the wage hierarchy of Finnish industry is very uneven. This is highly evident from *Figure 3*. The figure reports the distribution of males and females across deciles in four selected years – 1980, 1989, 1993 and 1994.

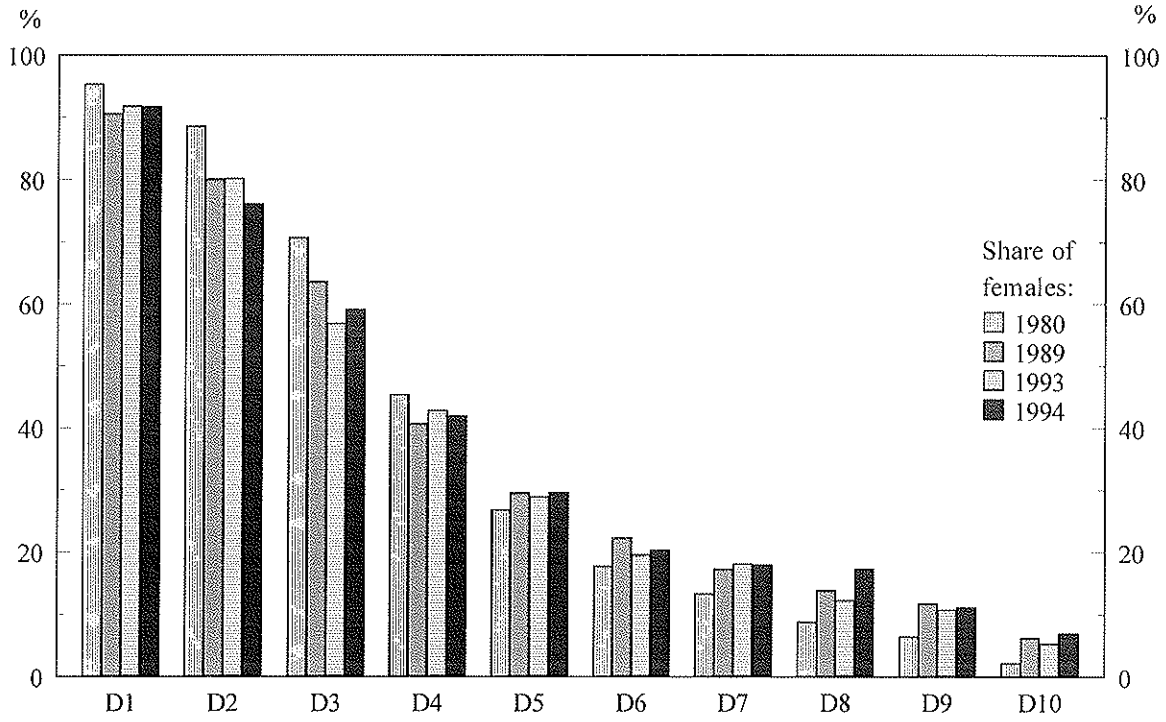
The dominance of females in the lower tail of the wage distribution and of males in the upper tail of the wage distribution is astounding. In 1980, over 95 per cent of the non-manual workers situated in the lowest wage decile (D1) were females, whereas some 98 per cent of the non-manual workers situated in the highest wage decile (D10) were males. Of all non-manual workers located in the lower half of the wage distribution some 65 per cent were women. In contrast, of all non-manual workers located in the upper half of the wage distribution over 90 per cent were men.

This situation changed slightly in the boom years of the 1980s. There was a clear, albeit modest, shift of females upwards in the wage distribution. Specifically, the share of females in the lower half of the wage distribution dropped to some 61 per cent, while their share in the upper half of the wage distribution rose to some 14 per cent. As can be seen from *Figure 3*, the deep recession years in the early 1990s put an end to and even slightly reversed this trend. But 1994 seems to have moved the development back to pre-recession tracks with slowly increasing shares of females in the higher deciles in the wage distribution.

It might also be of interest to briefly compare the stability and mobility within the wage distribution of male and female non-manual industrial workers. Is it possibly so that females do not only enter relatively low wage positions but, moreover, also tend to be locked into these low wage deciles for several years? Or is it maybe so that they have the possibility to rapidly move upwards in the wage distribution already within a few years?

For convenience, this analysis is restricted to two 4-year-periods: 1980-84 and 1990-94. This can be justified also because the results for the 4-year-periods up to the turn of the decade are quite similar to those obtained for the 1980-84 period (see Asplund, 1994). In order to further simplify the analysis, comparisons across genders are made for each wage decile only with respect to the shares of stayers, all downward movers and all upward movers *(Figures 4-5)*. In other words, the analysis focuses on the shares of those who four years later still were in the same wage decile or, alternatively, had shifted into a lower or

Figure 3. The distribution of male and female non-manual workers across deciles in four selected years – 1980, 1989, 1993 and 1994

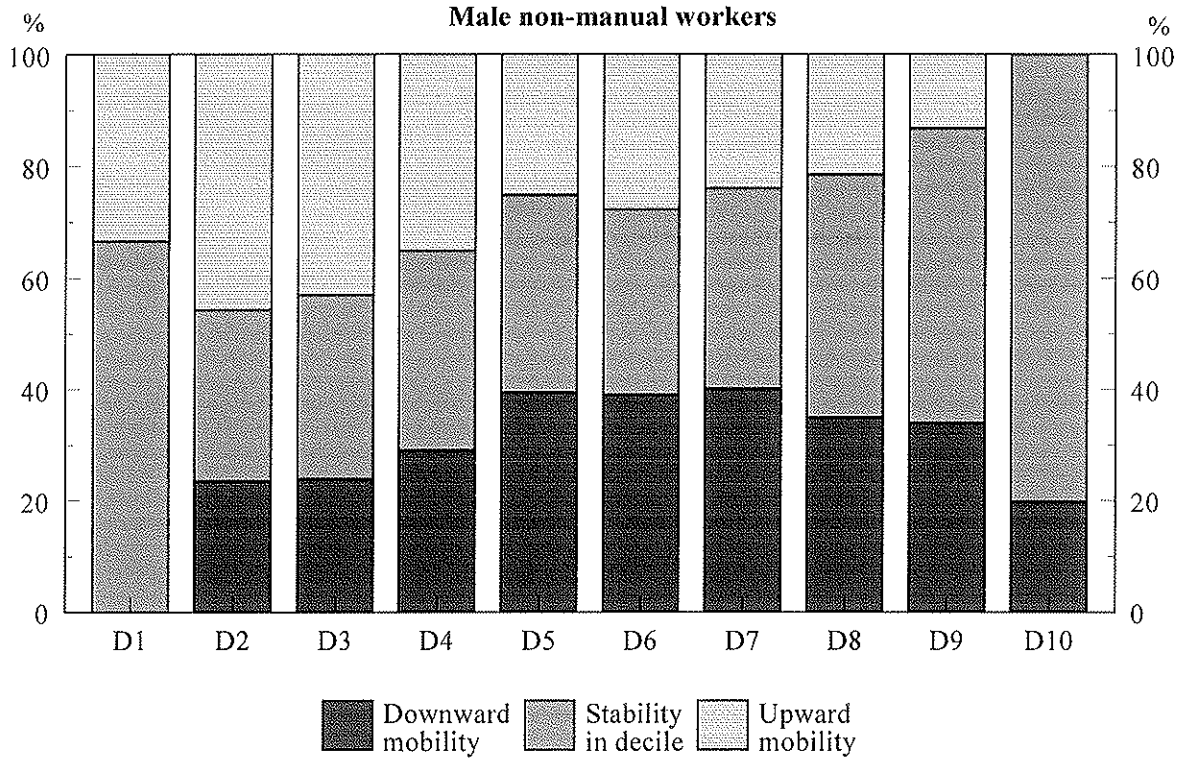


into a higher wage decile. The full transition matrices for male and female non-manual workers for the two periods considered are given in *Tables A1 and A2 in the Appendix*.

Figures 4-5 indicate, *inter alia*, the following. The probability of still belonging to the same wage decile four years later is much higher among female than among male non-manual workers in the lowest wage deciles. In addition, females have a clearly lower probability of retaining their relative wage position when being situated in the highest wage deciles. The recession years in the early 1990s do not seem to have affected these overall tendencies to any notable extent (cf. also *Figure A3 in the Appendix* for the 4-year-period 1989-93), albeit the period 1990-94 does point to a slight improvement in the stability of the relative wage position of female non-manual workers located in the upper tail of the wage distribution.

Of definitely greater importance are, however, the overall gender-specific mobility patterns and the changes in these patterns over time. As highlighted in *Figures 4 and 5*, female non-manual workers tend to experience a greater probability of moving **downward** in the wage distribution as compared to their male counterparts. This holds for practically all decile levels. It might, of course, be argued that this is at least partly due to the more

Figure 4. Stability and mobility patterns in the wage distribution of male and female non-manual workers in the 4-year-period 1980-84



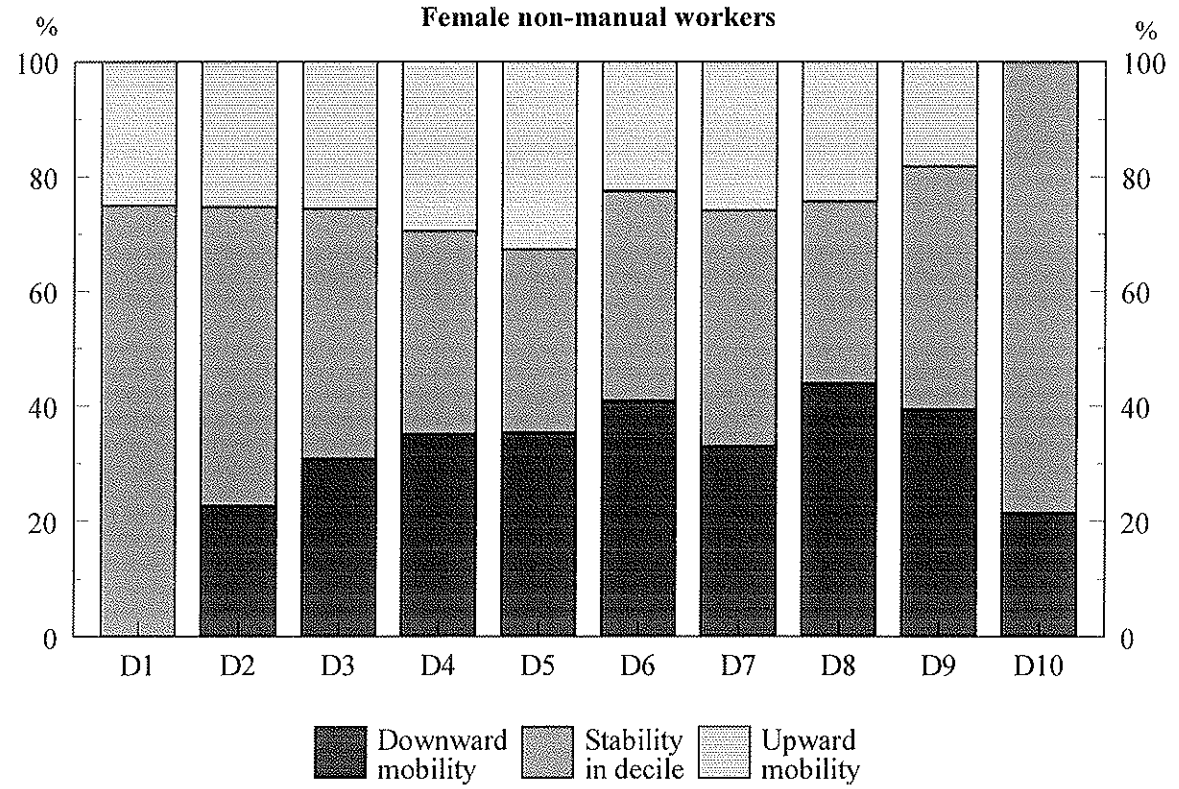
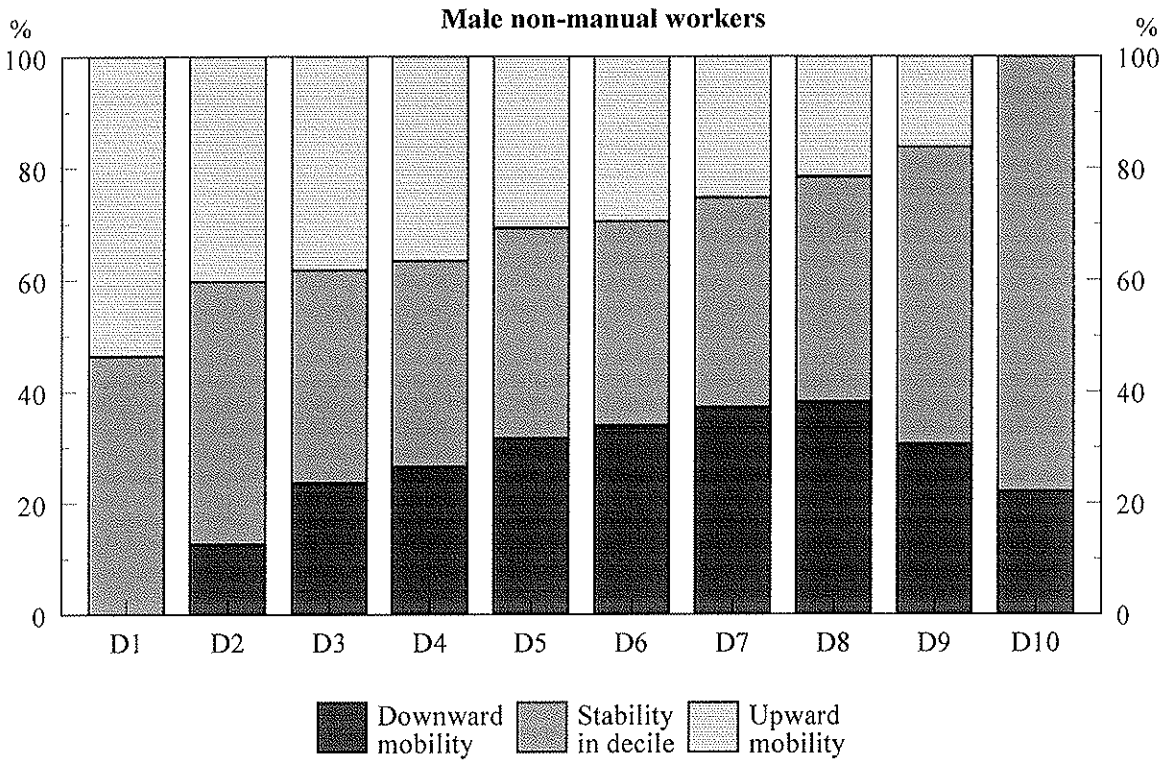
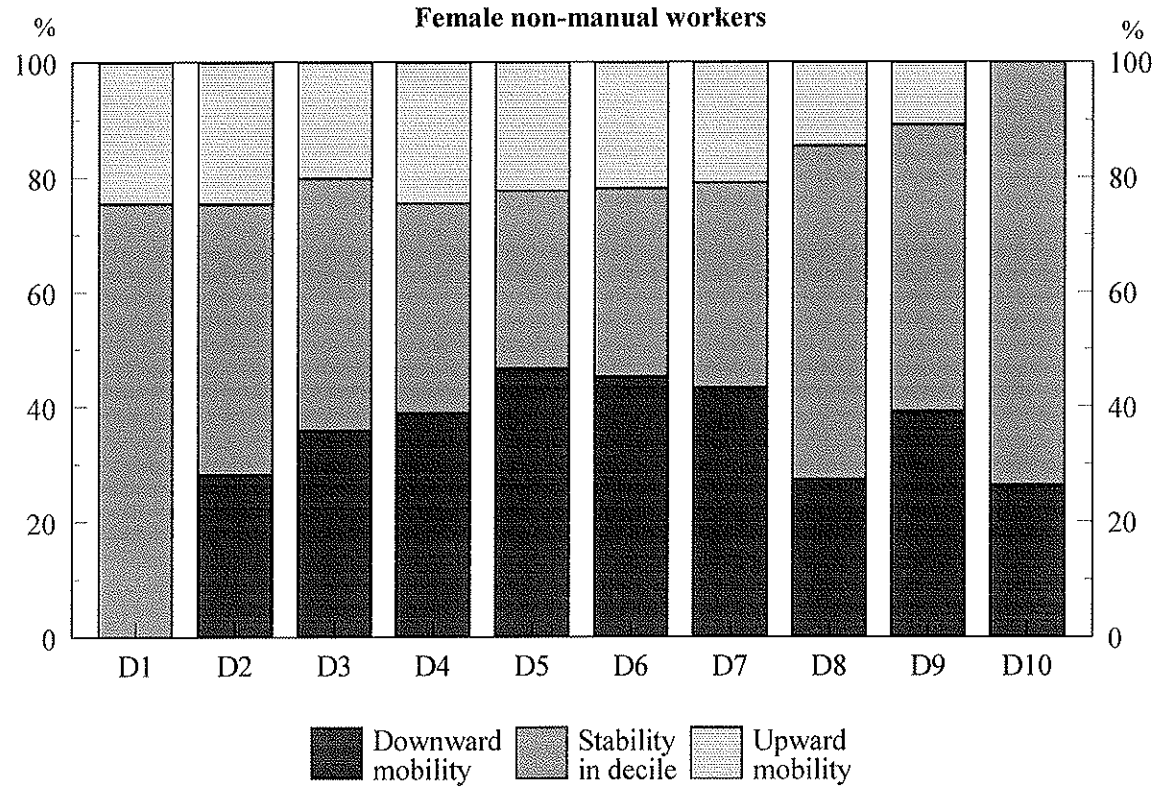


Figure 5. Stability and mobility patterns in the wage distribution of male and female non-manual workers in the 4-year-period 1990-94





compressed wage structure of female non-manual workers (cf. *Figure 1*) and the, consequently, higher probability of shifting between wage deciles.

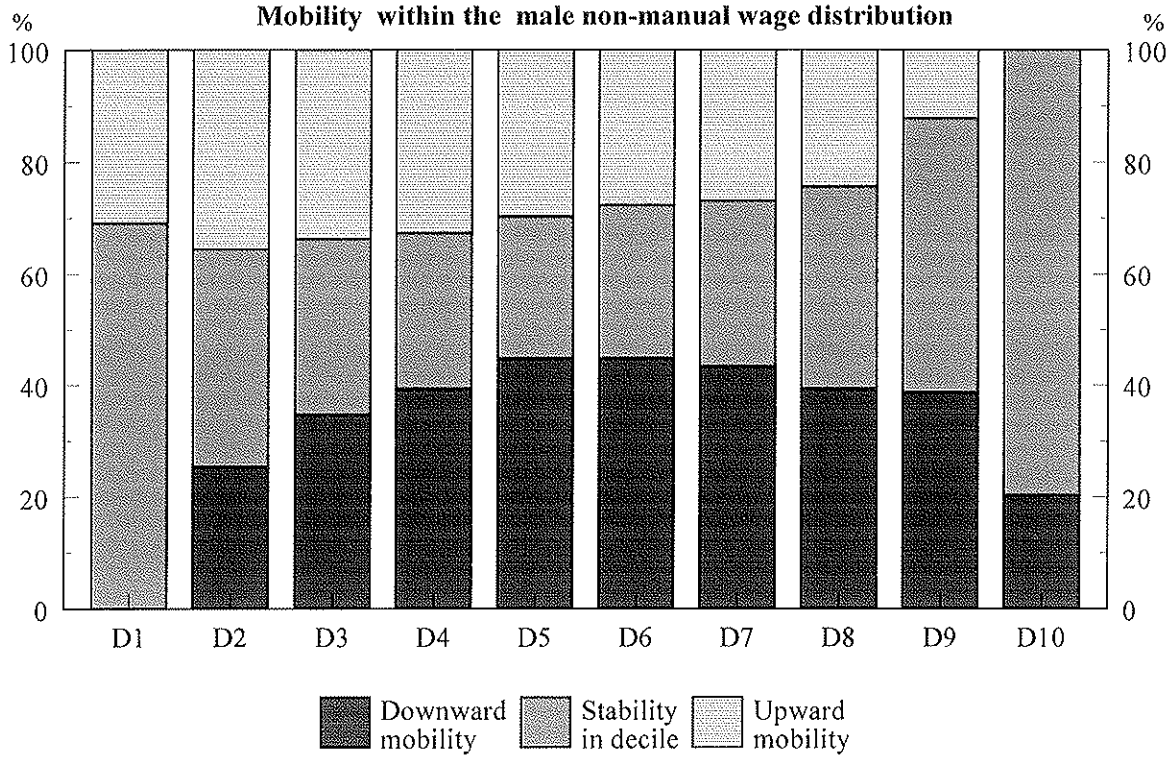
But this argument does not offer an explanation for the notable increase in the male-female difference in the probability of downward mobility documented in *Figures 4 and 5* (and in *Figure A3 in the Appendix*). When comparing the situation in the two 4-year-periods 1980-84 and 1990-94, the probability of downward mobility has declined substantially among male non-manual workers, while the trend for their female colleagues points to a marked increase in the probability of downward movement within the wage distribution.

These differences across genders in the patterns of downward mobility have their counterparts in the patterns of upward mobility within the wage distribution. In particular, the probability of moving upward from the lowest wage deciles over the next four years turns out to be much higher among male non-manual workers. This trend has strengthened considerably when comparing the early 1980s with the early 1990s, especially when it comes to the lowest wage decile (D1). Moreover, the aforementioned increase in the stability of females in the wage distribution over the period 1990-94 seems to have occurred primarily at the expense of upward mobility chances.

These gender-specific differences in mobility patterns within the non-manual wage distribution of Finnish industry mediate the combined effect of two underlying forces: first, the degree of mobility of females within the female wage distribution as compared to that of males within the male wage distribution and secondly, shifts of the female wage distribution relative to the male wage distribution. As illustrated in *Figure 6* for the 4-year-period 1990-94, the female wage distribution conceals a notably higher degree of mobility than the male wage distribution.

Over this same 4-year-period the female wage distribution remained roughly unchanged relative to the male wage distribution. *Figure 7* shows that in the early 1990s, the average female non-manual wage level was located at approximately the 12th percentile in the male non-manual wage distribution. In other words, nearly 90 per cent of the male non-manual workers in Finnish industry earned a higher wage than the average female non-manual worker. In 1980, this concerned no less than 95 per cent of the male non-manual workers! Shifts in the female wage distribution relative to the male wage distribution thus seem to have played a minor role. Instead the dominant explanation is found in major differences in the degree of mobility within the female resp. the male wage distribution. Further research on this aspect is definitely required.

Figure 6. Mobility of males within the male non-manual wage distribution and of females within the female non-manual wage distribution over the 4-year-period 1990-94



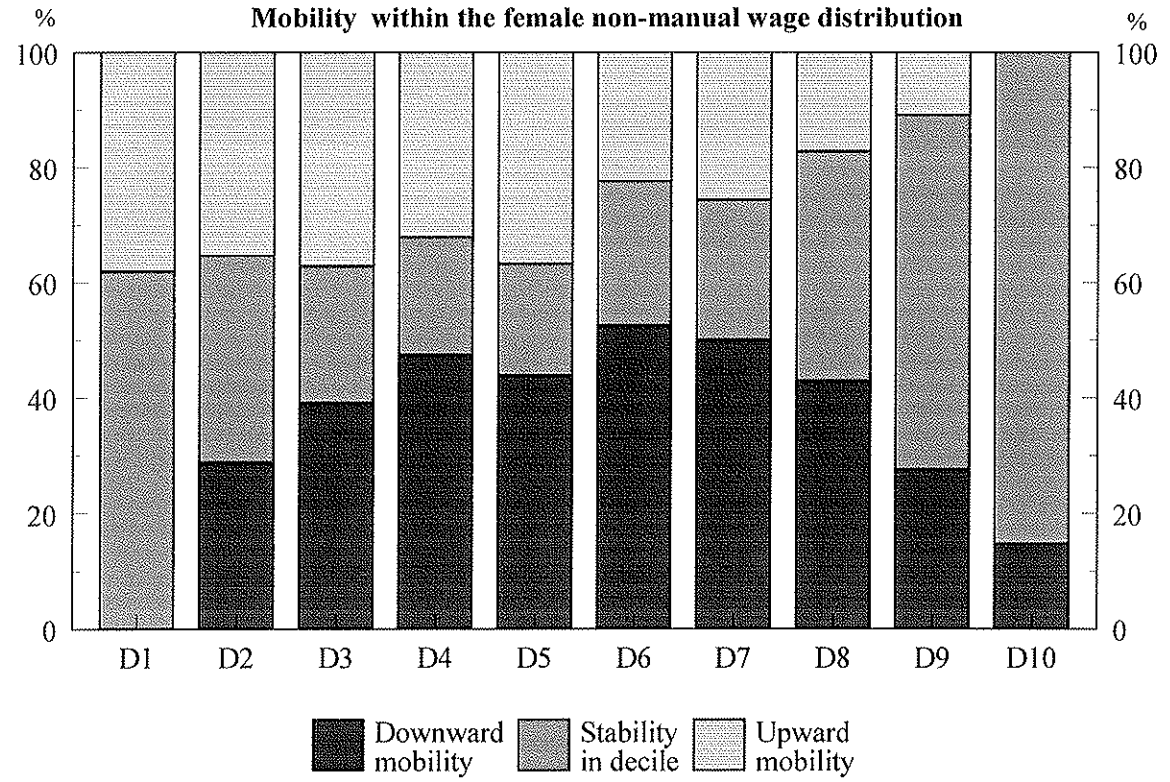
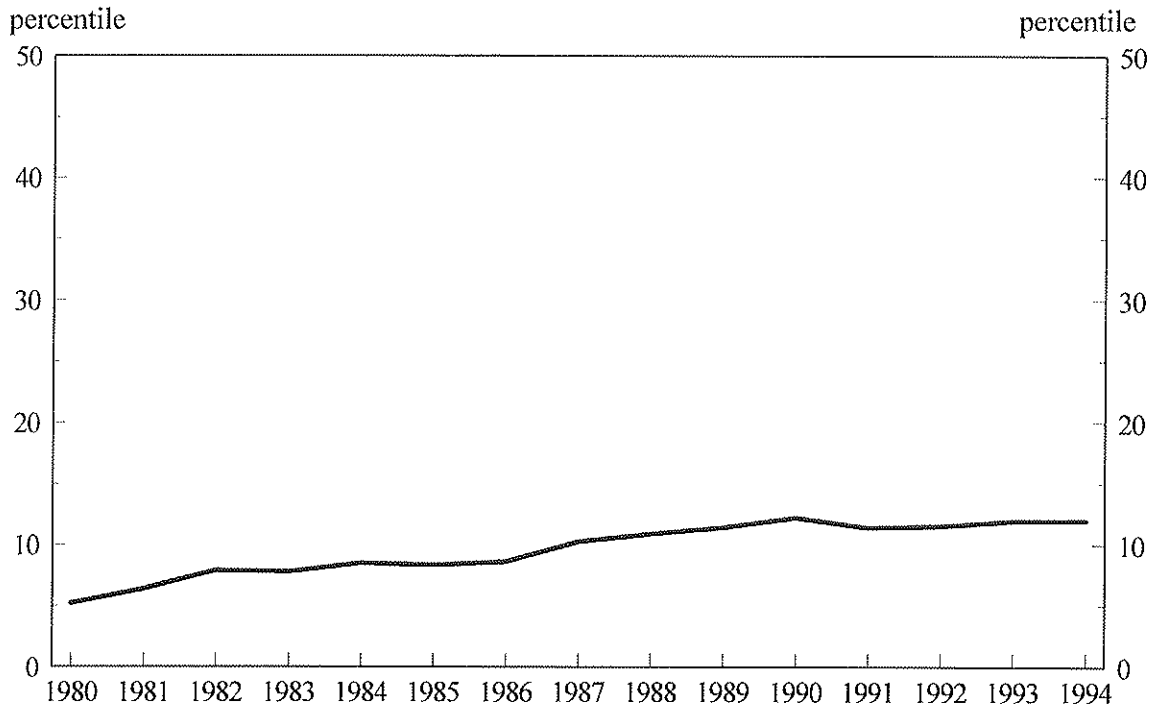


Figure 7. Shifts of the female non-manual wage distribution relative to the male non-manual wage distribution: percentile level of the average female non-manual wage in the male non-manual wage distribution, 1980-1994



As a concluding remark it should, however, be pointed out that the above analysis of wage mobility is done in a very traditional way in the sense that it focuses merely on those individuals for whom a positive wage is observed in both years. This approach can be criticized on at least two grounds. First, it ignores the potential sample selection biases associated with panel attrition, i.e. the impact on wage mobility of those who are no longer observed in the second year. Secondly, individuals start in different wage deciles depending on their background characteristics (cf. *Figure 3* concerning the highly different distribution of males and females within the non-manual wage distribution). Both types of selectivity are covered in two separate studies, one on wage mobility in Finnish industry (Asplund & Bingley, 1995) and one comparing wage mobility in Denmark and Finland (Asplund et al., 1995b).

4. THE MALE-FEMALE WAGE GAP

Direct comparison of male and female average wage levels can always be criticized for neglecting personal and job-related differences between men and women, differences that are more or less strongly reflected also in wages and thus in the gender wage gap. A frequently used way to circumvent this critique is to standardize for this type of differences by estimating wage equations comprising a broad set of wage-relevant variables.

This is also the approach used in the present study. More precisely, broadly defined wage equations of the Mincer type are estimated for all sample non-manual workers as well as for crucial non-manual subcategories (by occupational status and branch). In the whole-sample equations, log non-manual total hourly wages are regressed on a vector of explanatory variables including formal education (degree and field), total years of work experience, seniority (defined as years in the current employment relationship), type of working tasks (administration, production, etc.), region, plant size, occupational status (clerical, technical, upper-level), and branch (13 in all). Variables were also added reflecting the female dominance at each plant[3)] and the mobility of individuals[4)]. The gender aspect is accounted for in two different ways: first, by adding a gender dummy to the full-sample wage equation and secondly, by estimating separate wage equations for male and female non-manual workers.

The same analytical framework is applied to the various subcategories investigated. A distinction is thereby made between three occupational status categories: upper-level, technical and clerical non-manual workers. From the gender point-of-view these three categories are interesting mainly because they can be classified as typical male- or female-dominated worker categories. In 1980, the share of women among upper-level non-manual workers was less than 11 per cent and among technical non-manual workers less than 14 per cent *(Figure A4 in the Appendix)*. Despite a slight increase in the share of females (to around 17 and 18 per cent, respectively) over the past 15 years, these are still to be classified as typical male occupational status categories. In contrast, over 77 per cent of the non-manual workers in clerical jobs were women in 1980. By 1994 their share had increased to over 80 per cent.

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3) Dummy variable taking the value of 1 if over 50 per cent of the non-manual personnel are females.

4) Dummy variables were used for "entrants" (newcomers in the firms covered by the TT data base) and "leavers" (individuals no longer employed in a TT member firm in the next year).

Of the eight branches investigated, three can be classified as female-dominated at least when it comes to the non-manual personnel *(Figure A5 in the Appendix)*. These are clothing industries (over 70 per cent), textile industries (around 60 per cent), and printing and publishing (around 60 per cent). In the other five branches, the share of females is less than 50 per cent (chemical industries over 40 per cent, manufacturing of paper and wood products less than 40 per cent, manufacturing of metal products and construction less than 30 per cent).

The estimated gender wage gaps for the whole sample and for the various subcategories for the years 1980-94 are displayed in *Figures 8-10*, which for illustrative reasons had to be drawn using different scales. The results indicate that the overall male-female wage gap declined from some 26 per cent in 1980 to around 20 per cent in 1991. After this bottom year of the recession the overall gender wage gap among non-manual workers seems, however, to have increased slightly, amounting to some 21 per cent in 1994.[5)] These male-female wage gaps standardized for differences in personal and job-related characteristics across genders also show that the actual gender wage gap is, indeed, smaller than the male-female wage differential calculated from average wage levels (some 38 per cent in 1980 and around 31 per cent in 1994).

The same overall trend is reflected in the gender wage gap estimated for the three occupational status categories. The largest drop in the male-female wage gap is observed among upper-level non-manual workers: from 30 per cent in 1980 to 19 per cent in 1991, followed by minor (insignificant) variations over the years 1991-94. A strong decline in the gender wage gap has also occurred among technical non-manual workers, albeit the starting point was notably lower (some 23 per cent in 1980) than among upper-level non-manual workers. By 1991, the gender wage gap among technical non-manual workers had declined to below 16 per cent, but rose to nearly 18 per cent in 1994. Again, however, the changes after 1991 turn out not to be statistically significant. The female-dominated category of clerical non-manual workers displays a slowly but very "jumpingly" declining male-female wage gap. In 1980, the gender wage gap among clerical non-manual workers amounted to slightly more than 24 percent, and at the end of the investigated time period to some 22.5 per cent, a difference that is statistically insignificant according to a simple t-test. Since 1987, except in 1993, the gender wage gap has been highest in this strongly female-dominated occupational status category.

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5) These changes over time are statistically significant at the 1 per cent level according to a simple t-test. Unless otherwise indicated, this holds also for all other changes over time discussed below.

Figure 8. Estimated male-female wage gaps for all sample non-manual workers and by occupational status, 1980-1994

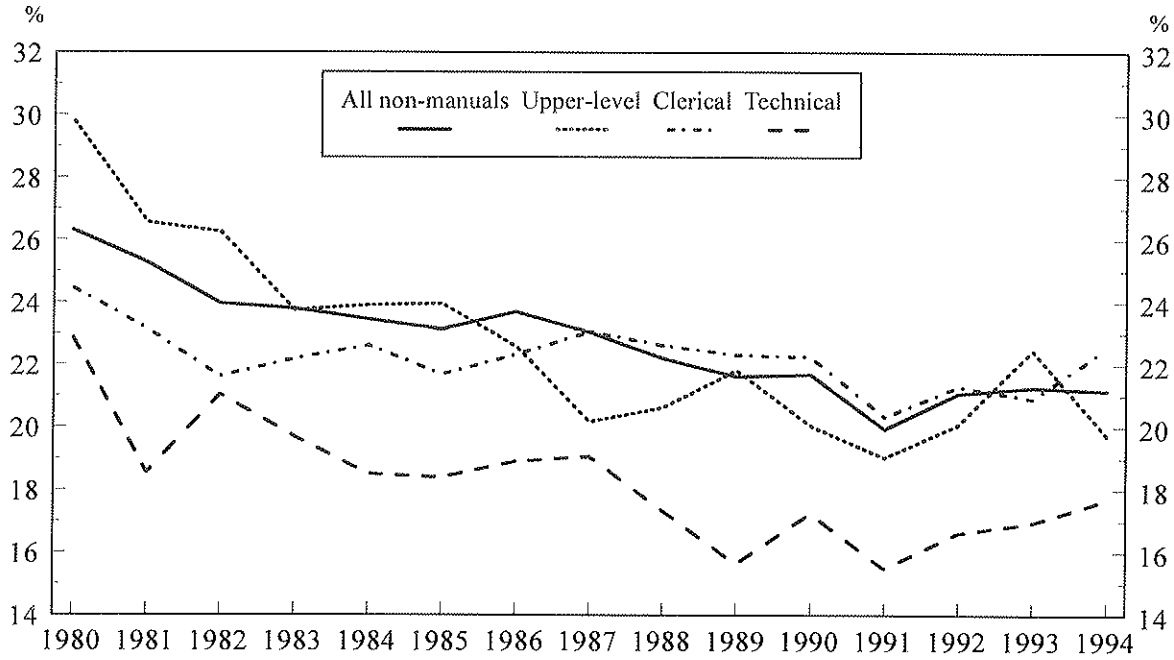


Figure 9. Estimated male-female wage gaps for branches with a relatively low share of female non-manual workers, 1980-1994

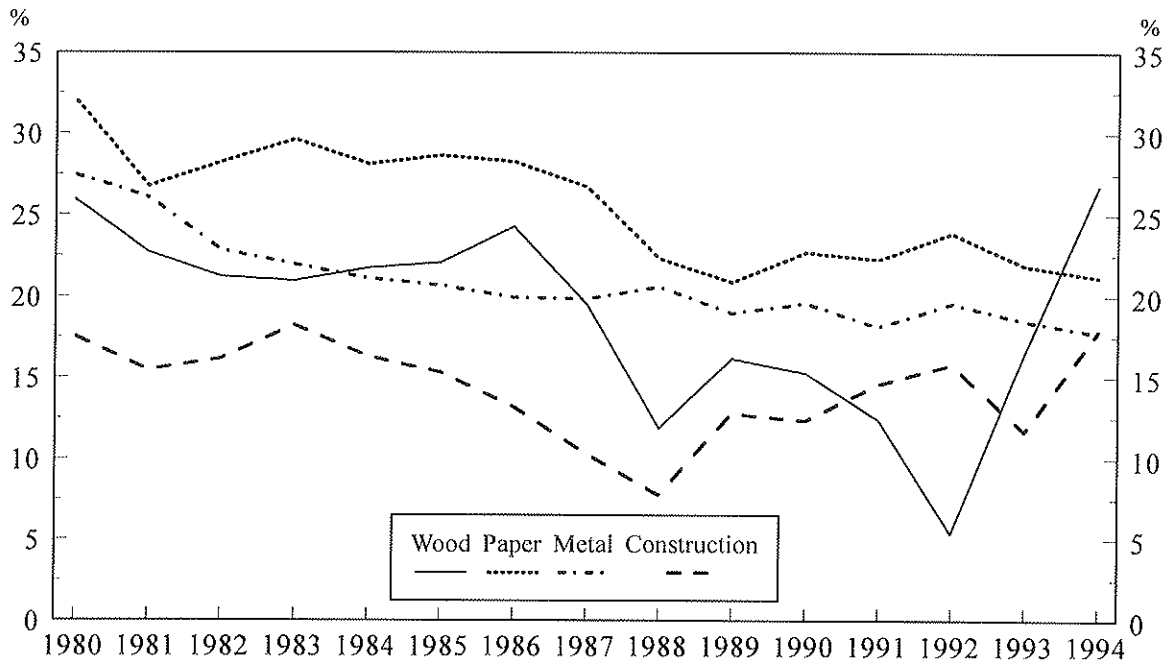
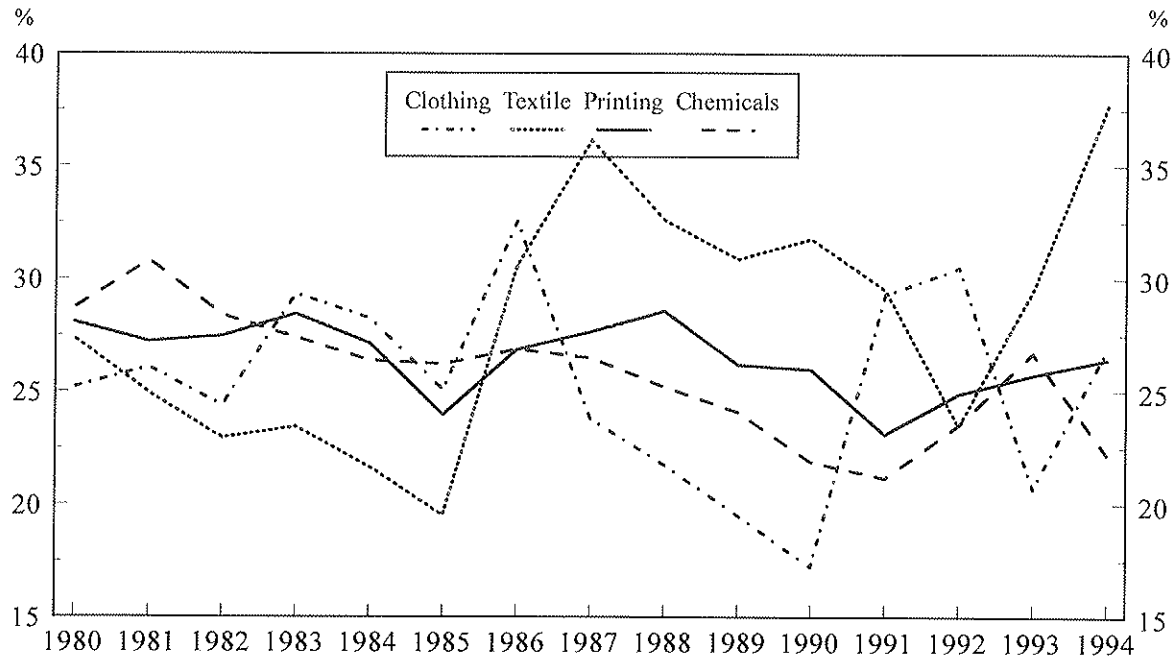


Figure 10. Estimated male-female wage gaps for branches with a relatively high share of female non-manual workers, 1980-1994



These same patterns are largely repeated in the eight branches investigated in the sense that the gender wage gap is on average smaller and displays a clearly declining trend among non-manual workers in the more male-dominated branches *(Figure 9)*. Thus the male-female wage gap in manufacturing of paper products dropped from some 32 per cent in 1980 to some 21 per cent in 1994. Non-manual workers in manufacturing of metal products experienced over the same time period a decline from around 27 per cent to some 18 per cent. Also in manufacturing of wood products the gender wage gap has narrowed, especially in the latter half of the investigated time period (from over 20 per cent to less than 20 per cent). By 1994, the gender wage gap in this particular branch had, however, returned to the 1980 level, or almost 27 per cent. The male-female wage gap has persistently been relatively small in construction (less than 20 per cent), and seems to imitate some kind of business cycle behaviour.

The estimation results point to clearly larger gender wage gaps in the more female-dominated branches *(Figure 10)*. A similar overall trend is observable among non-manual workers in printing and publishing and in chemical industries, with a jumpy drop in the gender wage gap up to 1991, followed by a clear "recovery" of male wages in the past few years. In particular, the male-female wage gap amounted to some 26 per cent in both branches in 1993 compared to some 28 per cent in 1980. (The drop in the gender

wage gap in chemical industries after 1993 is statistically insignificant.) No clear trends are discernable in the gender wage gap in the strongly female-dominated clothing and textile industries. Obviously this is partly due to the small sample sizes in these two branches.

5. MALE-FEMALE DIFFERENCES IN HUMAN CAPITAL RETURNS

As shown in the previous section, part of the wage differentials observed between male and female non-manual workers in Finnish industry is explained by differences in measurable personal and job-related characteristics. Simultaneously, however, a considerable part of the gender wag gap remains unexplained. Generally this unexplained share of the observed gender wage gap is argued to be, at least in part, due to discrimination of females in the labour market. This issue is discussed in more detail in the next section.

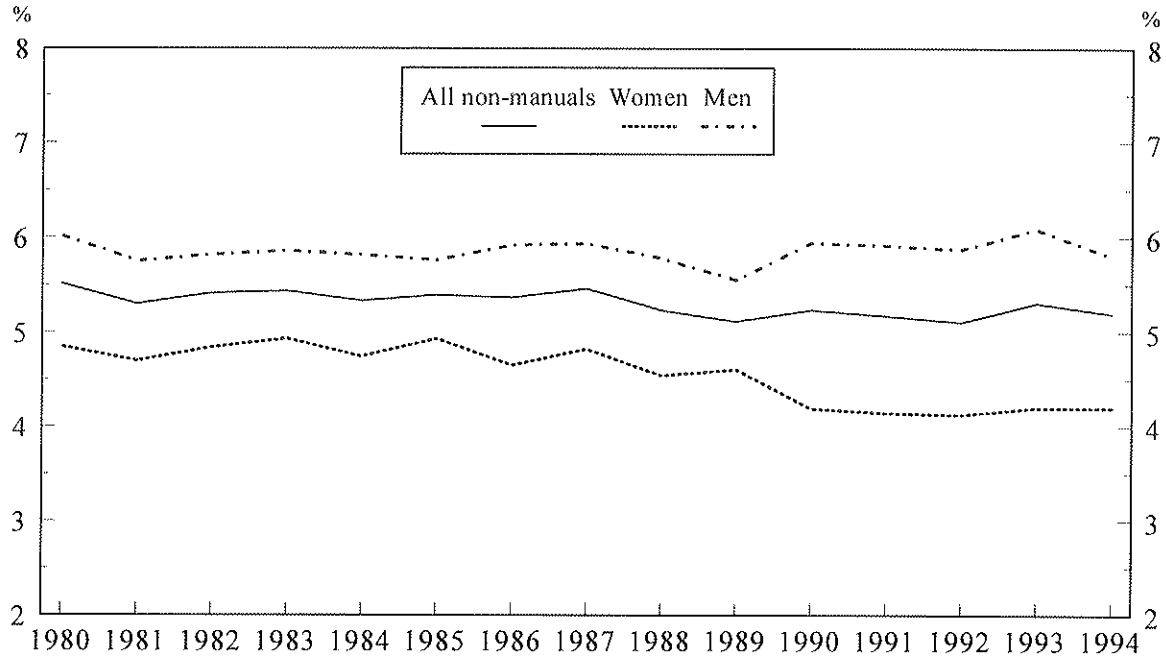
A frequently raised question thereby is why females are less rewarded for observationally equivalent qualifications and working tasks. So far the international literature can offer no widely-accepted explanation(s) for this phenomenon. Moreover, most of the effort has been directed towards providing convincing empirical evidence on the factually weaker labour market and, especially, wage situation of women. This is also the main purpose of the subsequent analysis.

In particular, this section explores eventual differences in the reward to human capital (formal education, work experience, seniority) between male and female non-manual workers in Finnish industry over the years 1980-94.[6] Such differences are of interest also in view of the rapidly growing share of female students, the relatively high education level of females and their high labour force participation rate, on the one hand, and the increasing emphasis in the international debate and research put on education, training and lifelong learning at the individual, firm and whole-economy levels, on the other.

The development of the estimated average return to an additional year in schooling for all sample non-manual workers and separately for males and females is displayed in *Figure 11*. As shown in the figure, the overall trend in the average wage effect of an additional

[6] Existing empirical evidence for Finland points to clearly lower returns to human capital of females employed in the private sector as compared both to those of their male counterparts and to those of their female colleagues in the public sector (Asplund, 1993).

Figure 11. Estimated average returns (%) to an additional year in schooling for all sample non-manual workers and separately for males and females



year in schooling was quite similar for male and female non-manual workers in the 1980s: small variations in the average return from year to year followed by a clear drop in the return to schooling in the boom years 1988-89. These variations over time are, however, not statistically signficant.

In the early 1990s, the average return to an additional year in schooling developed very differently among male and female non-manual workers: the average return of females dropped permanently to around 4 per cent per annum, whereas the average return of males rose, also as it seems permanently, to close to 6 per cent per annum, thus widening the gender gap in average returns to additional years in schooling to nearly 2 percentage points.[7] Probably even larger effects of the deep recession years in the early 1990s on the returns to schooling would have been obtained had it been possible to account for the high unemployment rates in these years (cf. Westergård-Nielsen, 1995).

These gender differences in the estimated returns to an additional year in schooling, however, conceal notable differences between male and female non-manual workers in the

[7] Unless otherwise indicated. the gender differences in the estimated wage effects of the various explanatory variables included in the estimated wage equations are statistically significant according to a simple t-test.

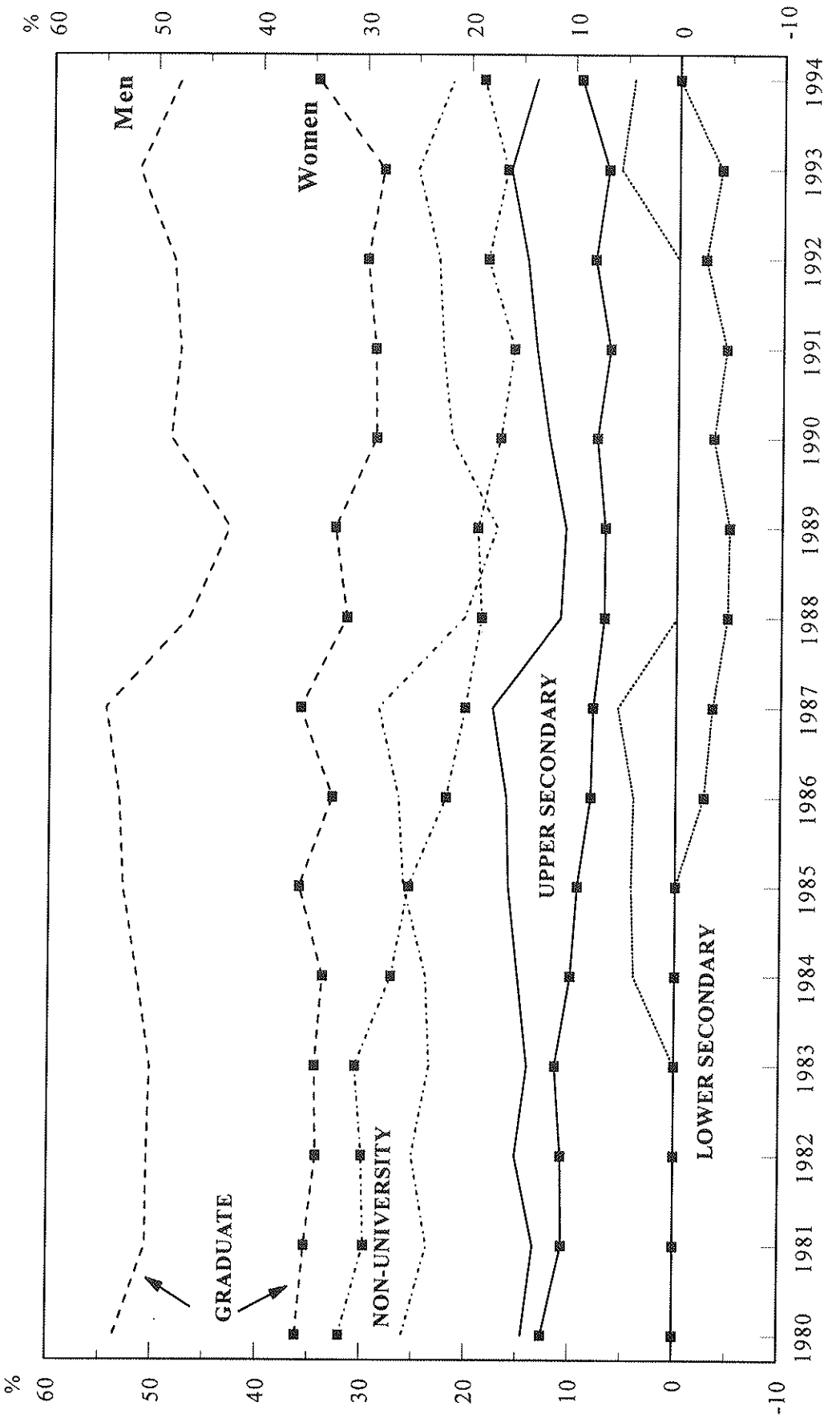


Figure 12. Estimated average returns to educational degrees compared to a basic education (= 9 years) only, by gender

average returns to educational degrees. These differences are shown in *Figure 12*. The figure contains a maximum of information, but still clearly reveals the following. First, with few exceptions the return to acquiring an additional degree after having completed compulsory schooling (= 9 years) is at all educational levels, on average, significantly lower for female than for male non-manual workers. The exceptions are vocational non-university degrees in the first half of the 1980s and in the late 1980s, and lower secondary degrees (vocational schools) in the early 1980s.

Secondly, the estimated returns to educational degrees have declined significantly among female non-manual workers. In contrast, among male non-manual workers the average returns to educational degrees declined only slightly or remained roughly unchanged in the 1980s, and have since the turn of the decade shown an upward trend. A most conspicuous finding is that this development had by 1993 resulted in a situation where the average return of females on a particular educational degree had dropped to the same level as the average return of males on the closest lower educational degree. More precisely, the average return of females to a university degree was in 1993 very close to the average return of males to a vocational non-university degree. Likewise, the average return of female non-manual workers to a vocational non-university degree (an upper secondary degree = vocational college) had by 1993 declined to that of the upper secondary level (lower secondary level) of male non-manual workers. There seems, however, to have occurred a break in this trend in 1994. In particular, the return to schooling seems to have increased slightly at all levels among female non-manual workers, whereas their male counterparts have on average experienced a clear decline in the returns to educational degrees. A t-test indicates, though, that these changes between 1993 and 1994 are for a majority of the education degree levels statistically insignificant.

A third noteworthy result is the finding of no wage effects in the early 1980s of acquiring a lower secondary degree as compared to a compulsory education only. In the mid-1980s the situation changed radically. For female non-manual workers the acquisition of a lower secondary degree turned into a dismerit, and stayed so up to 1993. Females seem, in other words, to be generally better off, at least in money terms, if they are contended with a basic education instead of investing in a few additional years of vocational education. This, of course, does not rule out the possibility that a lower vocational degree is still preferred because it might open the possibility of getting a nicer working environment and/or more meaningful working tasks. The situation is slightly better among male non-manual workers: the wage differential between a basic education and a lower secondary degree has been minor or negligible, but still throughout non-negative.

Hugh gender differences are also found in the wage effects of total work experience and of seniority measured as the length of the current employment relationship. Moreover, these gender gaps have expanded further in the recession years in the early 1990s, as can be seen from *Figures 13 and 14*. More specifically, the experience-wage-profiles of male and female non-manual industrial workers were very similar in shape in 1980, albeit with a substantially flatter curvature for the female experience-wage-profile. For both genders, the maximum point of the experience-wage-profile was reached after 31 years in the labour market.

By 1994, the situation had changed radically, not least for the female non-manual workers. The accumulation of work experience was reflected slightly more slowly but simultaneously slightly more strongly in male non-manual wages, resulting in a minor shift upwards of the top point of the experience-wage-profile. But it took, on the other hand, also seven more years in the labour market to reach it as compared to the corresponding situation 15 years earlier. Over the same time period the experience- induced growth in wages had declined notably among female non-manual workers, thus further widening the gender gap in the wage effects of work experience.

According to *Figure 14*, the wage effects of seniority tend to be very small but still clearly stronger among females than among males, at least up to the recession years in the early 1990s. This finding also supports results obtained in previous studies of wages in the Finnish labour market (e.g. Asplund, 1993). The situation has, however, varied markedly over the 15-year period investigated. In particular, the length of the current employment relationship is estimated to have had no significant effect on non-manual industrial wages in the early 1980s. This holds for both genders. After a short period of a weak positive effect (only some 1.5 per cent after 10 years' seniority), the seniority wage effect turned again negligible among female non-manual workers in the mid-1980s.

Simultaneously, however, the relative wage position of male non-manual workers having a long employment relationship weakened quite dramatically. In other words, when comparing two male non-manual workers differing only in the length of the current employment relationship, the newly hired male was paid more. If seniority is given a traditional human capital interpretation this means that the acquired firm-specific training had turned into a dismerit for male non-manual workers in Finnish industry.

Again a clear break in overall trends can be observed at the turn of the decade, and by 1993 the situation with respect to seniority wage effects had been reversed for male and

Figure 13. Estimated experience-wage profiles for 1980 and 1994, by gender

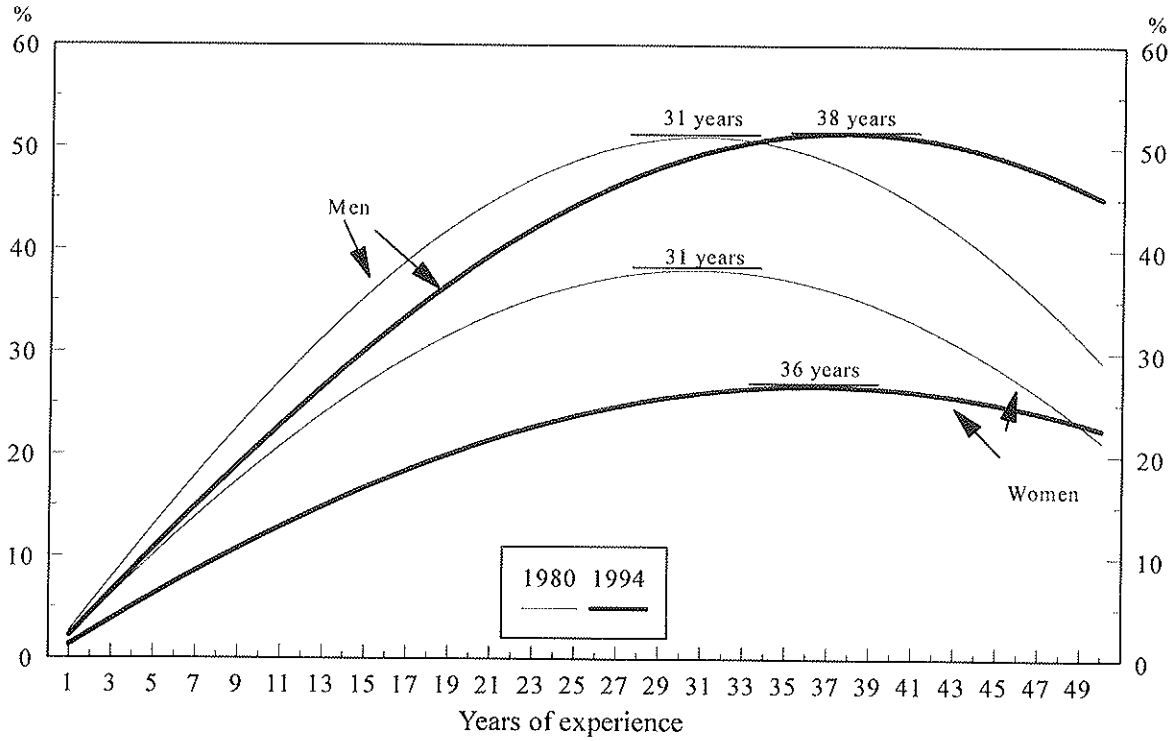
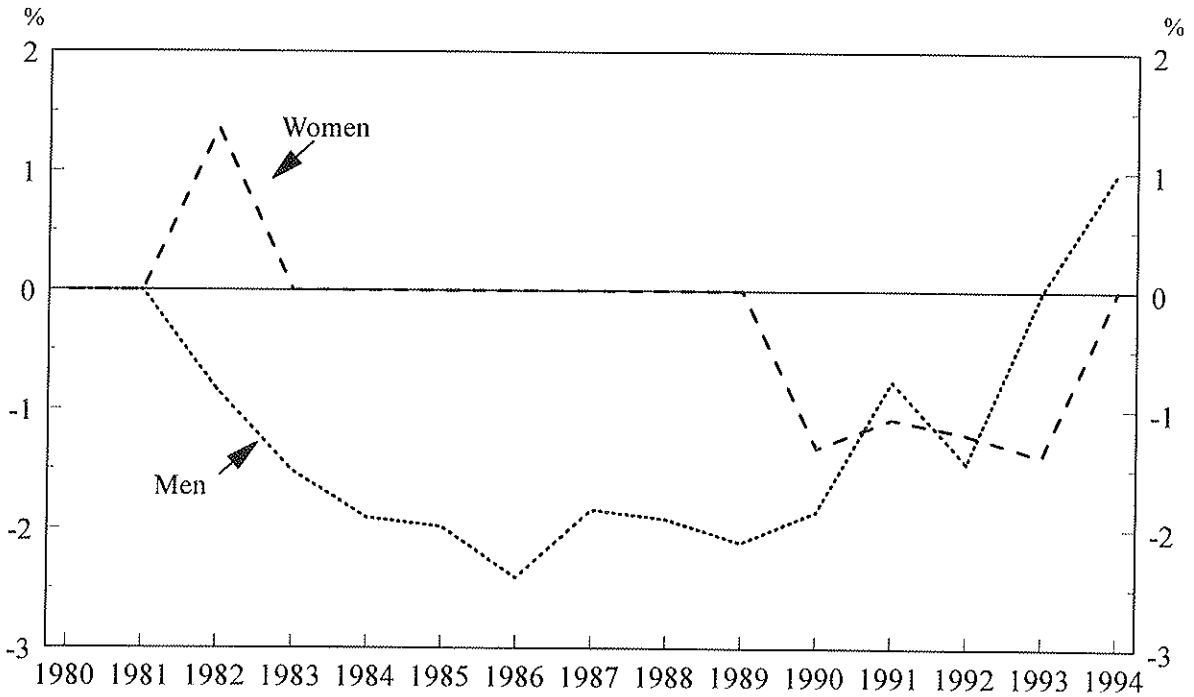


Figure 14. Estimated average wage premium (%) of 10 years of seniority compared with being newly hired (seniority is less than a year)



female non-manual workers. Specifically, the impact of longer seniority on female non-manual wages had turned negative, whereas the negative impact of seniority on male non-manual wages had turned into an insignificant effect. And in 1994 a weak positive wage effect of seniority is for the first time observed among male non-manual workers. Simultaneously the situation for female non-manual workers seems to have turned back to the "traditional" one with no significant effects on wages of the length of the current employment relationship.

6. WAGE DISCRIMINATION

Following Oaxaca (1973) and Chiplin (1979), a proxy measure of the extent of wage discrimination in the Finnish labour market for non-manual industrial workers over the years 1980-1994 can be calculated using the regression results obtained from estimating wage equations separately for male and female non-manual workers.[8)] In Section 5 above, these estimation results were discussed only in relation to the human capital variables accounted for in the estimated wage models.

In brief this Oaxaca index for discrimination splits the observed difference in average (log) hourly wages between male and female non-manual workers into two parts: one part that is interpreted as the wage difference originating in differing – observable – background characteristics, and a second part that can be interpreted as the discriminating component of the observed wage differential, or actually the male-female wage differential caused by different remuneration of the broad set of background characteristics accounted for in the estimated gender-specific wage equations.

Specifically, female non-manual wages are compared to male non-manual wages conditional on the explanatory variables included in the estimated wage models and the wage structure of male non-manual workers (as given by the estimated coefficients of the various explanatory variables). It is also noteworthy that compared with the wage gap measure – the coefficient of the female dummy variable – obtained from the pooled regressions as reported in Section 4 above, this Oaxaca measure of the male-female wage gap has the advantage of not being dependent on the gender composition of the labour force.

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8) For details and discussion of this particular measure of the amount of wage discrimination, see e.g. Asplund et al. (1995a).

Table 1. Components of the male-female gross wage differential among non-manual industrial workers over the years 1980-1994

Year	Observed male-female hourly wage ratio among non-manual workers	WITHIN OCCUPATION AND WORKING TASK CATEGORIES		BETWEEN OCCUPATION AND WORKING TASK CATEGORIES	
		Component from different wage-relevant background characteristics (1 + d)	Remuneration component originating in different coefficients (1 + c)	Component from different wage-relevant background characteristics (1 + d)	Remuneration component originating in different coefficients (1 + c)
1980	1.617	1.232	1.279	1.150	1.372
1981	1.565	1.195	1.278	1.130	1.352
1982	1.538	1.187	1.262	1.122	1.335
1983	1.538	1.187	1.266	1.115	1.347
1984	1.530	1.186	1.262	1.114	1.343
1985	1.538	1.201	1.255	1.113	1.354
1986	1.530	1.179	1.273	1.106	1.356
1987	1.509	1.165	1.271	1.096	1.352
1988	1.494	1.153	1.271	1.088	1.348
1989	1.488	1.158	1.263	1.087	1.345
1990	1.484	1.155	1.263	1.085	1.345
1991	1.472	1.166	1.245	1.090	1.331
1992	1.476	1.171	1.258	1.097	1.337
1993	1.476	1.154	1.258	1.073	1.353
1994	1.453	1.137	1.260	1.057	1.357

Note. Due to rounding errors the product of the two components yields only approximately the observed male-female wage ratio.

The development of the two components, the background characteristic component *(1 + d)* and the remuneration component *(1 + c)*, over the years 1980-1994 for non-manual workers in Finnish industry is illustrated in *Table 1*. The product of the two components gives – only approximately due to rounding errors – the male-female wage ratio observed on average for non-manual workers in Finnish industry.

The gross male-female wage ratio was extremely high in the beginning of the investigated time period – 1.62 in 1980. After a decline in the early 1980s, it has remained slightly below 1.50 since the mid-1980s. As is evident from *Table 1*, these fairly large gross

differences in male and female non-manual wages are caused by highly differing background characteristics consequent on a distinct labour market segmentation, especially when it comes to industry, occupational status and working tasks. The wage gap is, however, to an even larger extent attributable to unequal remuneration of these characteristics in the labour market of Finnish industry.

The wage gap due to differing background characteristics across male and female non-manual workers amounted to some 23 per cent in 1980, but has since then shown a declining trend with temporary increases in the mid-1980s and during the recession years in the early 1990s. By 1994, the wage gap caused by gender-specific differences in background characteristics had declined to less than 14 per cent out of a gross wage gap of some 45 per cent. In contrast, the wage gap due to discrimination, i.e. to different coefficients in the estimated wage models, has remained almost unchanged over the past 15 years; the amount of discrimination has throughout fallen in the interval 26 to 28 per cent, except in the deep recession year of 1991 when it was slightly lower, or 24.5 per cent.

The stability over time in the discrimination component is remarkable. One might, however, argue that this outcome is at least partly due to the accounting for occupational segregation effects in the estimation of gender-specific wage equations, i.e. to the inclusion of dummy indicator variables for occupational social status and working tasks. The analysis is thereby restricted to wage discrimination within occupational and working task categories. If, instead, allowing also for differences across genders in these particular job-related characteristics, the changes in the discrimination component over the past 15 years could be expected to be more pronounced. The results reported in the last two columns of *Table 1* do not seem, however, to support this hypothesis; the variation over time in the discrimination component is still surprisingly small.

When comparing these results with corresponding calculations for the whole Finnish labour market for the year 1987, both the overall gross wage gap and the background characteristics component and the discrimination component are remarkably high. According to calculations reported in Asplund et al. (1995), the gross male-female wage ratio in the Finnish labour market was 1.20 in 1987. The background characteristics of the male and female labour force were found to be remarkably equal; the wage gap due to the characteristics component was only 1.6 per cent. The discrimination component, on the other hand, was calculated to be close to 20 per cent, or clearly higher than in the other Nordic countries.

There are, no doubt, several reasonable explanations for these differences in results for the Finnish labour market as a whole and for non-manual workers in Finnish industry. Apart from the different data sets used and worker categories analysed, also the set of explanatory variables accounted for in the estimated wage models differs markedly. Moreover, the explanatory power of the non-manual wage equations is about double the explanatory power of the whole labour market wage equations. Of importance is also the use of total hourly wages (i.e. inclusive of fringe benefits and other bonuses) in the non-manual worker analysis instead of using only normal hourly wages as in the analysis for the whole Finnish labour market.

The overall impression thus is that the amount of wage discrimination among non-manual industrial workers has remained roughly unchanged over the past 15 years. A word of caution is, however, justified in this context. Since the remuneration component is actually a residual component, it may reflect not only discriminatory forces but also unobserved productivity differences across genders. This is because the estimated wage models do not account for all factors – observable as well as unobservable – that potentially influence the productivity of men and women. Although the explanatory power of the estimated wage functions is comparatively high (in the interval .634 to .553 for men and .595 to .550 for women), a considerable part of the observed gross wage differential between male and female non-manual workers in Finnish industry remains unexplained. Moreover, the explanatory power of the estimated wage functions for male non-manual workers has declined steadily over the investigated time period, indicating a growing importance of wage-related variables overlooked in the present model specifications. But on the other hand, also these unmeasured variables may reflect both discriminatory and productivity differences.

7. CONCLUDING REMARKS

The purpose of the present paper has been to uncover trends in wage levels, overall wage dispersion, wage mobility patterns and rates of return to human capital endowments among male and female non-manual workers in Finnish industry over the period 1980-94. Attempts have also been made to measure the extent of wage discrimination in this particular sector of the Finnish economy. The analysis has utilized 15 broad representative cross-section data sets sampled from the individual-level data base of the Confederation of Finnish Industry and Employers.

Comparison of the observed trends across genders indicates that the gender gap in overall wage dispersion narrowed slightly towards the end of the 1980s due to a steady, albeit modest increase in the overall distribution of female non-manual wages in the boom years of the late 1980s. The deep recession years in the early 1990s, in turn, point to a slight decline in wage dispersion among both male and female non-manual workers, a trend that seems to have been reversed in 1994. The gender wage gap has, nevertheless, remained roughly unchanged.

The analysis also reveals a very strong concentration of females into the lower half of the non-manual wage distribution and, especially, into the lowest wage deciles. Moreover, the minor shifts towards a more even distribution of males and females across wage deciles that could be observed in the 1980s, seem to have stopped in the recession years in the early 1990s. The female non-manual workers that are situated in the lowest wage deciles also turn out to have a relatively high probability of being locked into the lower tail of the wage distribution. Furthermore, female non-manual workers also tend to have a higher probability of shifting down into lower wage deciles. The analysis indicates that these tendencies have grown stronger during the recession years in the early 1990s.

The estimated gender wage gap implies that the male-female difference in non-manual wages in Finnish industry declined from some 26 per cent in 1980 to around 20 per cent in 1991. By 1994, the gender wage gap had increased to around 21 per cent. The same overall trend, with the bottom year of the recession (1991) marking a trend break, is largely reflected also in the gender wage gaps estimated for three occupational status categories and eight branches.

The overall trend in the estimated average wage effect of an additional year in schooling was fairly similar for male and female non-manual workers in the 1980s, retaining the male-female gap in the return to additional years in schooling at around one percentage point. In the early 1990s, however, the estimated average return of females dropped to close to 4 per cent per annum, whereas the average return of males rose to around 6 per cent per annum.

There are notable differences between male and female non-manual workers also in average returns to educational degrees. Moreover, the estimated returns to educational degrees turn out to have declined steadily among female non-manual workers during the investigated time period. In contrast, among male non-manual workers these returns changed on average only slightly in the 1980s, and have since the turn of the decade shown

a strong upward trend. By 1993, this development had resulted in a situation where the average return to a particular degree for females was approximately of the same magnitude as the average return to the closest **lower** educational degree for males. In 1994 the reward to education seems, however, to have increased at all levels among female non-manual workers but decreased among male non-manual workers.

Noteworthy is also the negligible gain - at least in money terms - from investing a few years in vocational training instead of being contended with only a basic (compulsory) education. For female non-manual workers this investment is found to give a negative, or at most a negligible return.

Hugh gender differences are also found in the wage effects of total work experience and of seniority measured as the length of the current employment relationship. Also these gender gaps have widened further in the recession years in the early 1990s.

Finally, calculations of the extent of wage discrimination among non-manual workers in Finnish industry using the Oaxaca index point to negligible changes over the past 15 years. The decline in the gross male-female wage ratio is, in other words, entirely attributable to a narrowing of the wage gap due to differing background characteristics of the male and female non-manual personnel in Finnish industry. These findings do definitely not support the conclusion recently drawn by Polachek and Siebert (1993) for the US: "...most of the difference in earnings between the sexes [adjusting for personal characteristics] is due to differences in human capital accumulation due to differences in life-cycle labourforce participation" (pp. 163-164).

All in all, then, the overall impression mediated by the reported results is that the deep recession that Finland dived into at the turn of the decade has markedly affected the relative labour market position of female non-manual workers in Finnish industry. But simultaneously results for 1994 indicate that the recovery of the Finnish economy is also slowly changing the labour market patterns of males and females back to the general course that prevailed prior to the recession.

References:

Asplund, R. (1993), *Essays on Human Capital and Earnings in Finland.* Helsinki: ETLA, The Research Institute of the Finnish Economy, Series A 18.

Asplund, R. (1994), *Wage Differentials, Wage Mobility and Skills in Finnish Industry.* Helsinki: ETLA, The Research Institute of the Finnish Economy, Discussion Papers No. 525.

Asplund, R. & Bingley, P. (1995), *Wage Mobility in Finnish Manufacturing 1980-1994.* Helsinki: ETLA, The Research Institute of the Finnish Economy. (forthcoming)

Asplund, R., Barth, E., Smith, N. & Wadensjö, E. (1995a), "The Male-Female Wage Gap in the Nordic Countries", in Westergård-Nielsen, N. (ed.), *Wage Differentials in the Nordic Countries.* Amsterdam: North-Holland. (forthcoming)

Asplund, R., Bingley P. & Westergård-Nielsen, N. (1995b), *Wage Mobility in Denmark and Finland. A Comparative Study for the Years 1980-1994.* Helsinki: ETLA, The Research Institute of the Finnish Economy. (forthcoming)

Chiplin, B. (1979), "An Evaluation of Sex Discrimination: Some Problems and a Suggested Reorientation", in Lloyd, C.B., Andrews, E.S. & Gilroy, C.L. (eds.), *Women in the Labour Market.* New York: Columbia University Press.

Edin, P-A. & Holmlund, B. (1992), *The Swedish Wage Structure: The Rise and Fall of Solidarity Policy?*, Uppsala University, Department of Economis, Working Paper 1992:13.

Oaxaca, R. (1973), "Male-Female Wage Differentials in Urban Labour Markets", *International Economic Review*, Vol. 14, pp. 693-709.

Polachek, S.W. & Siebert, W.S. (1993), *The Economics of Earnings.* Cambridge University Press.

Westergård-Nielsen, N. (ed.) (1995), *Wage Differentials in the Nordic Countries.* Amsterdam: North-Holland. (forthcoming)

APPENDIX

Figure A1. Relative wages of male non-manual industrial workers 1980-94

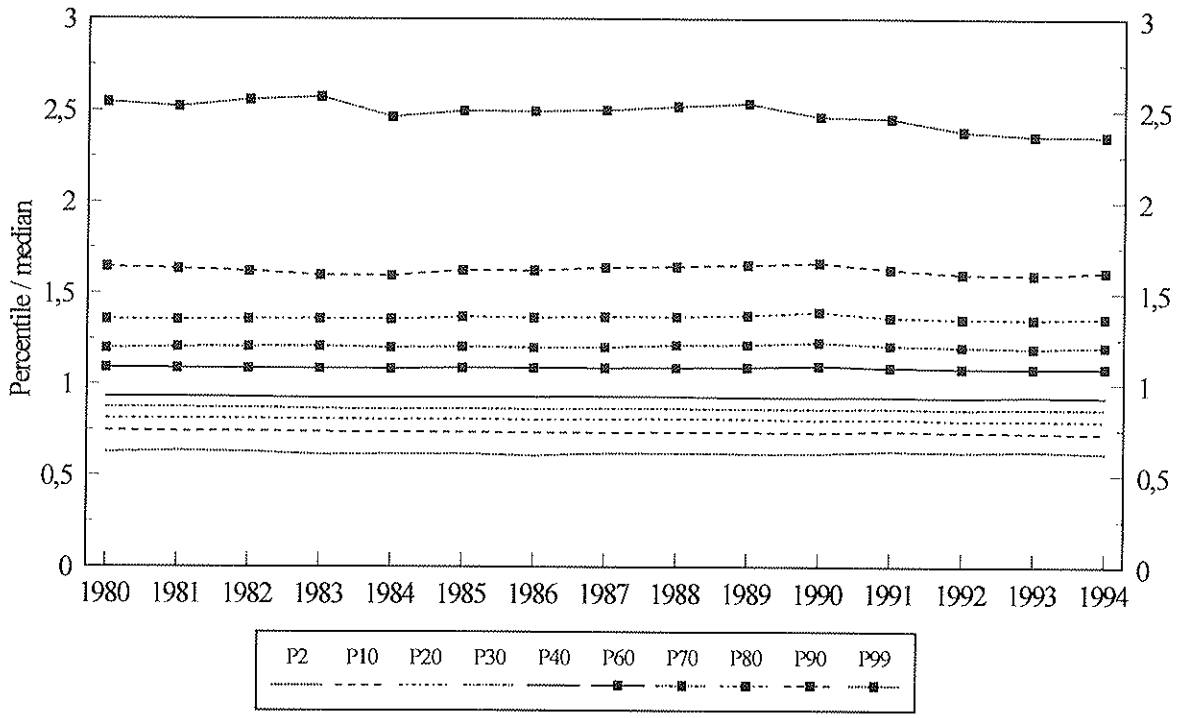


Figure A2. Relative wages of female non-manual industrial workers 1980-94

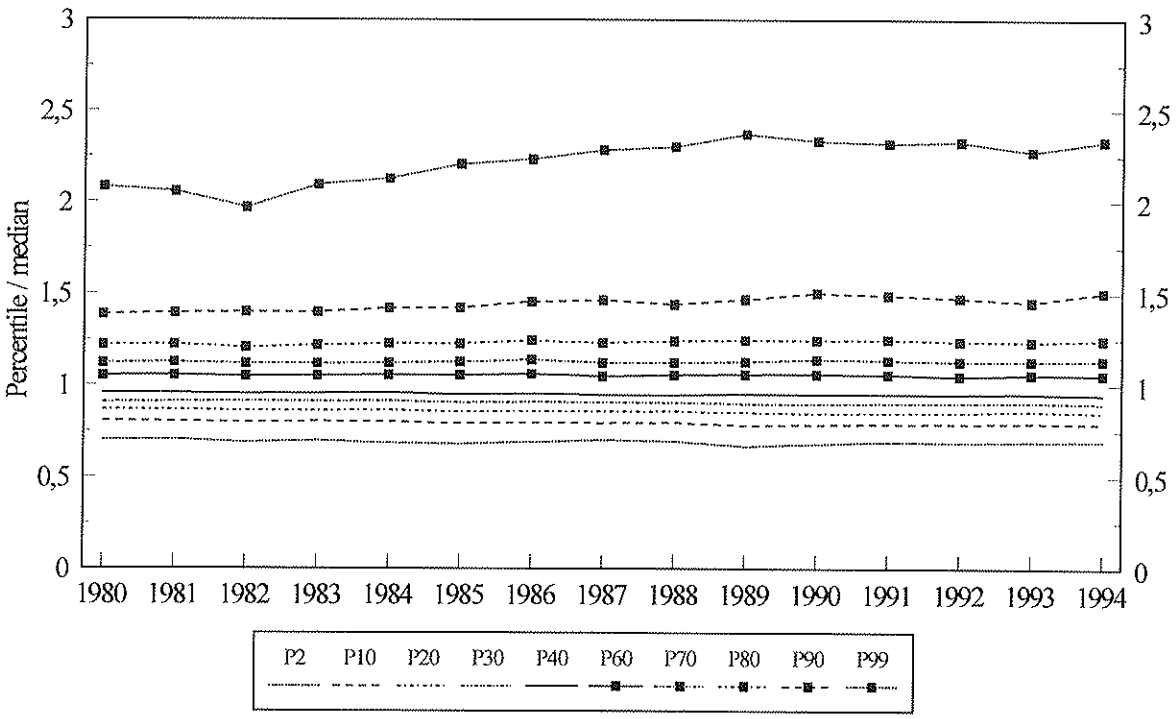
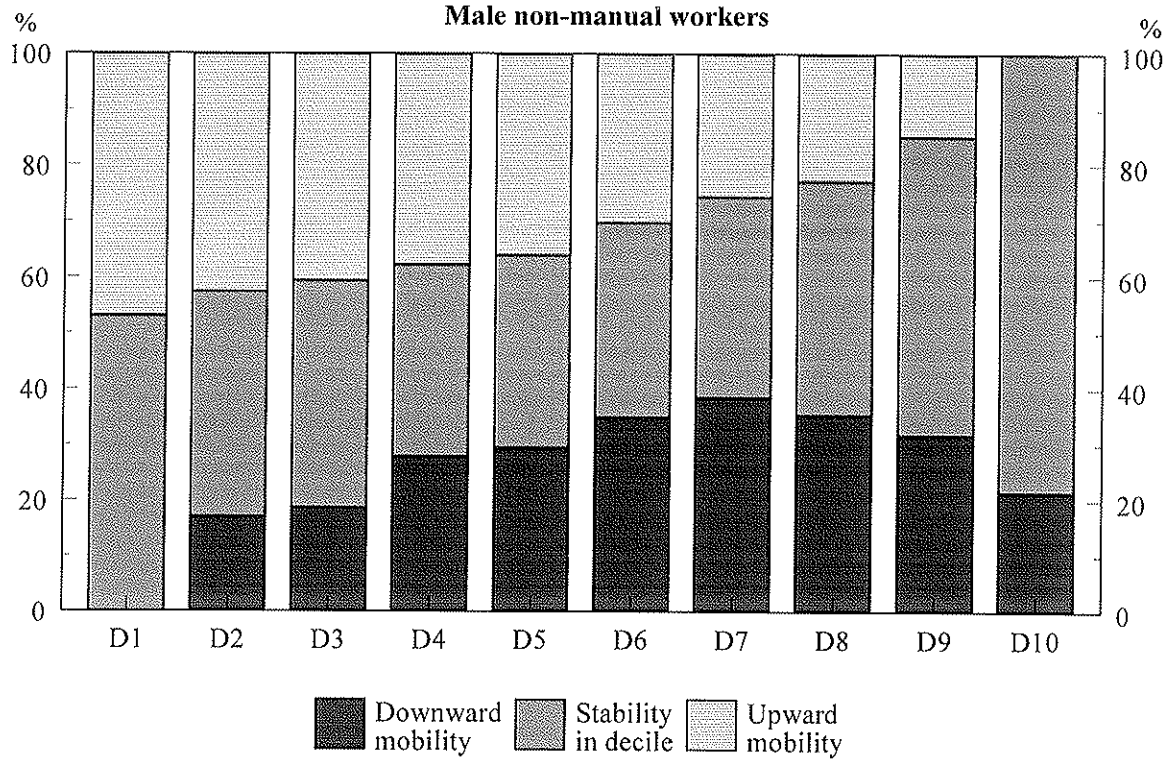


Figure A3. Stability and mobility patterns in the wage distribution of male and female non-manual workers in the 4-year-period 1989-93



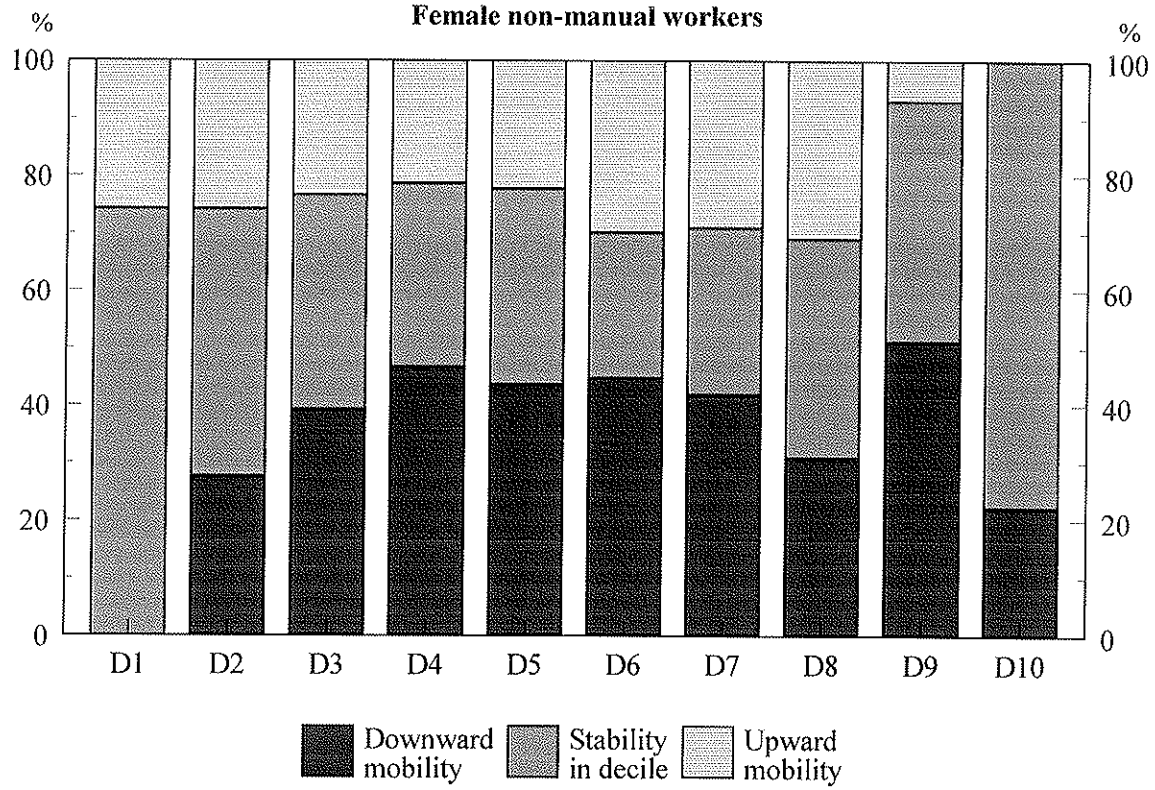


Figure A4. Female sample shares by occupational status

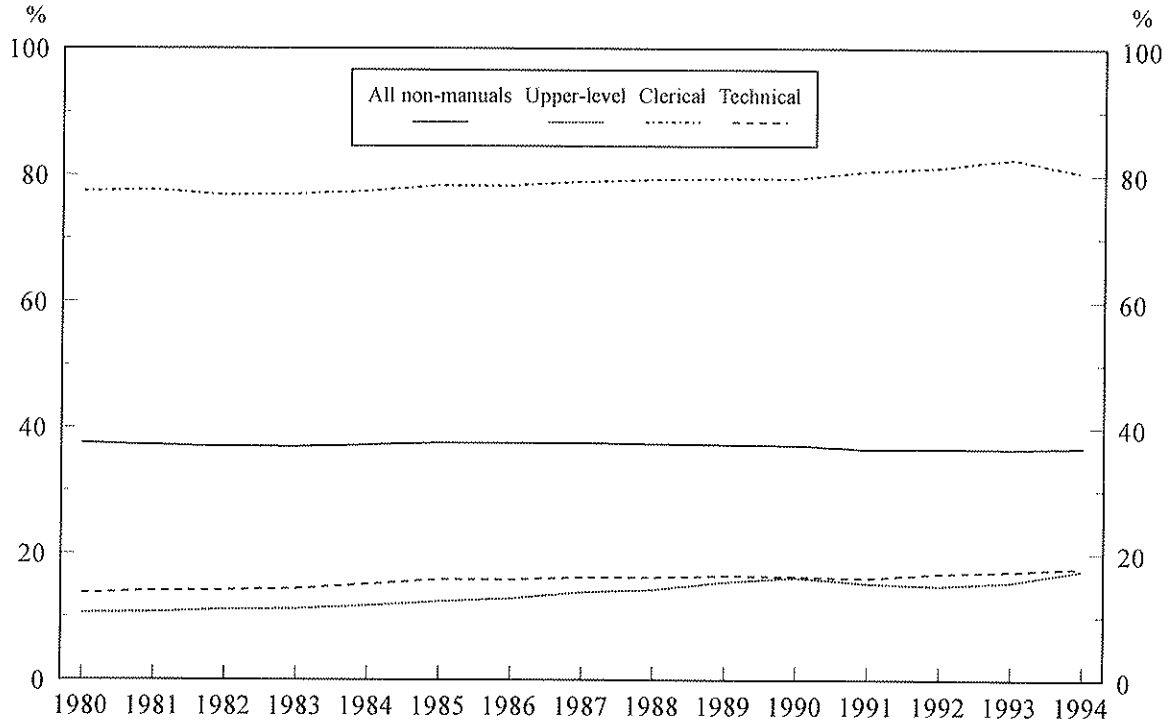


Figure A5. Female sample shares by branch

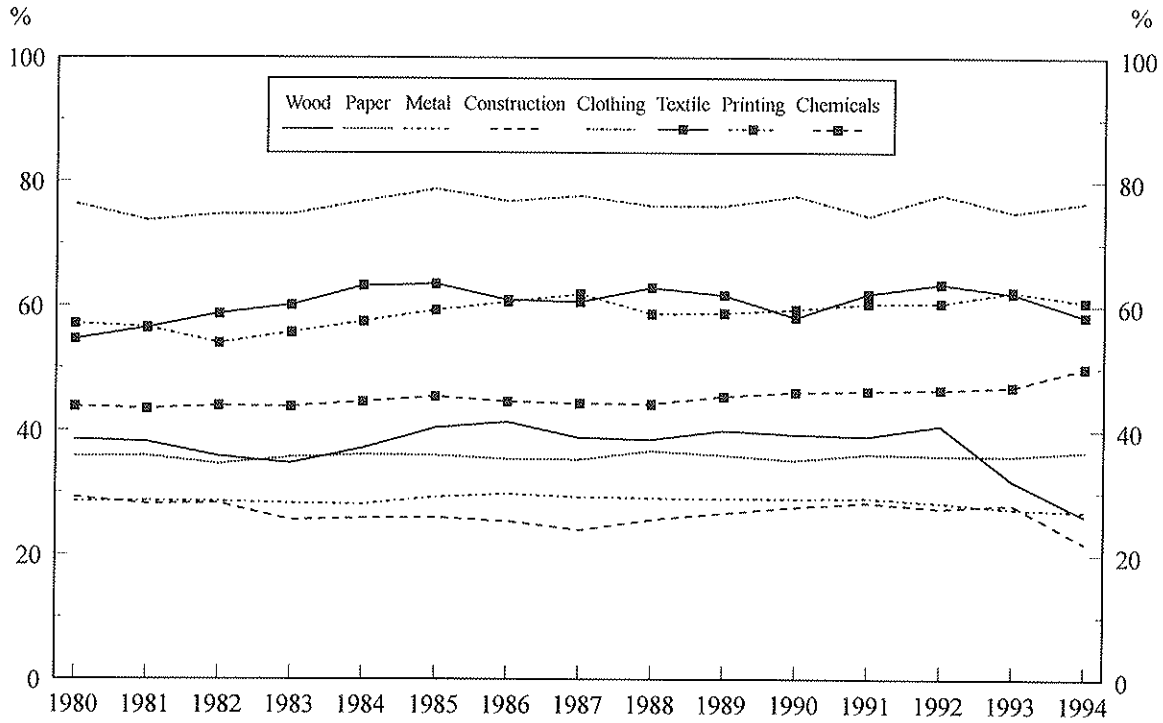


Table A1. Transition matrix for male non-manual workers in Finnish industry 1980-84

Wage decile in 1980	Wage decile in 1984 (%)											Share of males
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	Sum	
D1	**66.7**	6.7	0.0	6.7	13.3	0.0	0.0	0.0	0.0	6.7	100.0	2.5
D2	23.5	**30.9**	25.9	7.4	7.4	2.5	0.0	1.2	1.2	0.0	100.0	13.5
D3	1.0	22.8	**33.2**	21.8	9.8	7.3	2.1	1.6	0.5	0.0	100.0	32.2
D4	0.0	2.3	26.7	**35.9**	16.4	10.6	5.7	1.1	1.1	0.0	100.0	58.1
D5	0.0	0.0	6.0	33.4	**35.4**	15.4	5.8	2.0	1.6	0.4	100.0	75.0
D6	0.0	0.0	0.8	7.0	31.3	**33.3**	17.8	6.3	2.8	0.8	100.0	88.1
D7	0.2	0.0	0.8	1.4	7.0	30.7	**36.0**	17.5	5.1	1.4	100.0	85.8
D8	0.0	0.0	0.0	0.5	1.1	4.3	29.0	**43.5**	17.7	3.8	100.0	93.2
D9	0.2	0.0	0.0	0.2	0.2	1.1	3.2	29.2	**52.8**	13.3	100.0	94.5
D10	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.2	19.5	**80.2**	100.0	97.7

Table A2. Transition matrix for female non-manual workers in Finnish industry 1980-84

Wage decile in 1980	Wage decile in 1984 (%)											Share of females
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	Sum	
D1	**75.0**	21.6	3.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	100.0	97.5
D2	22.6	**52.1**	18.7	4.6	1.4	0.2	0.2	0.0	0.2	0.0	100.0	86.5
D3	2.5	28.3	**43.6**	15.8	6.9	1.7	1.0	0.2	0.0	0.0	100.0	67.8
D4	0.4	4.0	30.7	**35.5**	15.5	9.2	2.8	2.0	0.0	0.0	100.0	41.9
D5	0.0	0.0	9.3	26.0	**32.0**	22.7	8.7	0.7	0.0	0.7	100.0	25.0
D6	0.0	0.0	4.2	11.3	25.4	**36.6**	18.3	2.8	1.4	0.0	100.0	11.9
D7	0.0	0.0	0.0	0.0	9.4	23.5	**41.2**	17.6	7.1	1.2	100.0	14.2
D8	0.0	0.0	0.0	2.4	0.0	4.9	36.6	**31.7**	24.4	0.0	100.0	6.8
D9	0.0	0.0	0.0	0.0	0.0	0.0	3.0	36.4	**42.4**	18.2	100.0	5.5
D10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1	14.3	**78.6**	100.0	2.3

Table A3. Transition matrix for male non-manual workers in Finnish industry 1990-94

Wage decile in 1990	Wage decile in 1994 (%)											Share of males
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	Sum	
D1	**46.4**	35.7	3.6	3.6	3.6	3.6	0.0	0.0	3.6	0.0	100.0	6.4
D2	12.6	**47.1**	23.0	9.2	3.4	1.1	2.3	1.1	0.0	0.0	100.0	20.0
D3	1.1	22.5	**38.2**	20.2	9.6	2.2	3.9	1.1	0.6	0.6	100.0	40.9
D4	0.0	1.2	25.4	**36.9**	19.2	9.6	4.6	3.1	0.0	0.0	100.0	59.8
D5	0.0	0.3	3.3	28.0	**37.7**	19.0	6.9	3.3	1.5	0.0	100.0	76.3
D6	0.0	0.3	0.3	4.2	29.2	**36.5**	19.8	6.2	2.5	0.8	100.0	81.2
D7	0.0	0.5	0.3	2.4	5.2	28.8	**37.5**	17.7	6.3	1.4	100.0	84.6
D8	0.0	0.0	0.3	0.8	1.1	5.8	30.3	**40.3**	16.6	5.0	100.0	87.4
D9	0.0	0.0	0.0	0.0	0.3	1.3	2.1	27.0	**53.2**	16.2	100.0	89.4
D10	0.0	0.0	0.0	0.0	0.0	1.0	0.2	1.2	19.7	**77.9**	100.0	95.6

Table A4. Transition matrix for female non-manual workers in Finnish industry 1990-94

Wage decile in 1990	Wage decile in 1994 (%)											Share of females
	D1	D2	D3	D4	D5	D6	D7	D8	D9	D10	Sum	
D1	**75.4**	19.7	3.7	0.7	0.2	0.2	0.0	0.0	0.0	0.0	100.0	93.6
D2	28.2	**47.1**	17.5	5.5	1.4	0.0	0.0	0.0	0.0	0.0	100.0	80.0
D3	1.2	34.6	**44.0**	16.0	3.1	1.2	0.0	0.0	0.0	0.0	100.0	59.1
D4	0.0	1.7	37.1	**36.6**	18.3	3.4	1.1	1.1	0.6	0.0	100.0	40.2
D5	0.0	1.0	8.7	36.9	**31.1**	14.6	5.8	1.0	1.0	0.0	100.0	23.7
D6	1.2	0.0	2.4	8.5	32.9	**32.9**	17.1	4.9	0.0	0.0	100.0	18.8
D7	0.0	0.0	1.5	1.5	7.5	32.8	**35.8**	10.4	10.4	0.0	100.0	15.4
D8	0.0	0.0	0.0	1.8	1.8	1.8	21.8	**58.2**	12.7	1.8	100.0	12.6
D9	0.0	0.0	0.0	0.0	2.2	0.0	0.0	37.0	**50.0**	10.9	100.0	10.6
D10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	26.3	**73.7**	100.0	4.4

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