Within-Job Wage Discrimination and the Gender Wage Gap: The Case of Norway

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It has been established for the USA that men and women working in the same occupation for the same employer receive more or less the same pay. So-called within-job wage discrimination is hence not a driving force for the gender wage gap. Below we report the first comparative and the second comprehensive empirical study of wage differences between men and women in the same specific occupation within the same establishment for a European economy: Norway. We report three striking findings. The first is that wage differences are relatively small when one compares men and women who work in the same occupation and establishment: women on average earn 2–6 per cent less per hour than men. The second finding is that it is occupational segregation which really accounts for the existing wage differences and that establishment segregation accounts for less. The third finding is that the within-occupation gaps are relatively small, at less than 10 per cent. We conducted these analyses for two years, 1984 and 1990.

Introduction

Wage differences between men and women caused by discrimination can come about by several mechanisms (Petersen and Morgan, 1995). First, women may be differentially allocated to occupations and establishments that differ in the wages they pay. This may involve discrimination in the matching process at the point of hire, in subsequent promotions, and in firings. We call this process 'allocative discrimination'. Secondly, women receive lower wages than men within a given job or occupation within a given establishment. We call this process 'within-job wage discrimination'. Thirdly, occupations held primarily by women are paid lower wages than those held primarily by men, although skill requirements and other wage-relevant factors are the same, the issue addressed by analysis of comparable worth. We call this process 'valuative discrimination'.

In allocative and within-job wage discrimination, the discrimination is against specific individuals. Both forms are illegal in North America, Australia, and most European countries. In the USA, the former is covered by Title VII of the 1964 Civil Rights Act, the latter by the Equal Pay Act of 1963 (Treiman and Hartmann, 1981: 1–7); there are similar laws in Europe (Ellis, 1991; Rhoads, 1993). Valuative discrimination is discrimination against classes of jobs occupied primarily by women, but not discrimination against any specific individual. Its legal status is unclear in most countries.

These issues surrounding pay equality have been central for about 30 years, often seen as equally important to contemporary society as such rights as freedom of religion and equal opportunity regardless of race (Ellis, 1991: 1). They are, moreover, international in scope, with similar concerns in North America, Europe, and Australia, and with much diffusion and imitation of practices between nations. Over the last 30 years most First World countries have made within-job wage, as well as allocative discrimination illegal, as was done in the USA in 1963.[1]

One conjecture currently accepted by many researchers and policy-makers is that today wage differences are less a question of within-job wage discrimination and more a matter of allocative and valuative processes. For the US case, but also with relevance for Europe and elsewhere, Treiman and Hartmann (1981: 92–93) write: 'Although the committee recognizes that instances of unequal pay for the same work have not been entirely eliminated, we believe that they are probably not now the major source of differences in earnings.' In Norway, during the debate prior to the passing of an Equal Pay Act in 1978, a female member of parliament from the socialist party stated: 'What has been achieved is that men and women working for the same employer, doing the same work, receive the same pay. For this we do not need a new law. It has already been accomplished.' (see Forhandlinger i Lagtinget, 1977–8: 70, our translation).

Except for one study covering the USA, it has not been established that men and women receive more or less equal pay within given jobs or occupations in given establishments, or that within-job wage discrimination is less important. Petersen and Morgan (1995) analysed wage differences between men and women employed in the same detailed occupation and establishment, using data collected by the US Bureau of Labor Statistics covering about 1.5 million employees in the period 1974–83. Within given occupation–establishment units, wage differences were relatively small: on average women earned 1.7 per cent less than men among blue-collar and clerical employees, and on average 3.1 per cent less in seven professional and three administrative occupations. Hence, in the USA within-job wage discrimination is no longer a central source of the gender-wage gap.

Yet nothing is currently known, and might never be known on a large scale, about the extent to which these legal and other efforts have been successful elsewhere, whether within-job wage discrimination still is a significant source of wage differences in other countries.[2]

Against this broader background and against the results in Petersen and Morgan (1995), this article therefore reports a first comparative and similar but more comprehensive analysis of data from the private sector in a European economy – Norway – drawing on an earlier article published in

Norwegian (Petersen, Becken, and Snartland, 1994). We use data on entire populations of establishments in several important sectors of the Norwegian economy, covering about 40 per cent of employees in the private sector. We have access to individual-level wage data at the occupation–establishment level, so that we can compare men and women working in the same occupation in the same establishment.[3] We analyse data from two years – 1984 and 1990 – and so are able to address some crucial historical trends.

Even though the theoretical questions we address are not deep, our contribution being mainly empirical, the implications of our findings are important: They are unambiguous for policy, theory, and future research. And the knowledge provided can be gained only by analysing the same type of data as is analysed here, being inaccessible through more standard regression analysis of the wage gap based on, for example, national probability samples. It is the uniqueness of the data that validates the simple analysis that will follow, an analysis that in spite of being simple provides unambiguous answers to difficult questions.

Four issues will be addressed:

1. What is the wage gap at the occupation–establishment level?
2. What is more important for the raw wage gap, segregation on establishments or segregation on occupations?
3. What are the changes over time in 1 and 2 above?
4. How does what is reported in 1 and 2 compare with the US experience, the only other country for which such a study has been conducted?

The Setting

Although Norway may not be the most strategic research site for investigating these questions – it was chosen mainly because the unusual data needed for this kind of study were made available there – it is not without interest either.[4]

First, an Equal Pay Act was passed in 1978, similar to the US Equal Pay Act of 1963 and Title VII of the 1964 Civil Rights Act and also similar to equal pay legislation in the European Union (Ellis, 1991; Rhoads, 1993). Both before and since 1978 Norway has pursued vigorous policies to diminish wage

differences between men and women. The 1978 law made within-job wage discrimination illegal.[5] The comparison of conditions in 1984 and 1990, six and twelve years after the passing of the 1978 law, will be particularly interesting, giving information relevant to both theory and social policy.

Second, the legal systems and legal cultures are quite different in Norway and the USA, both generally and more specifically when it comes to the enforcement of equal pay legislation, to which we return in our concluding discussion.

Third, and most distinctively, Norway is a society with strong egalitarian traditions, which has allowed much less inequality in pay than the USA (see Høgsnes, 1989). The two countries are at opposite ends of the spectrum with respect to wage, income, and other forms of inequality. Inequality is so important in Norway that every Norwegian, including quite young people, is familiar with the first commandment of the Law of Jante, proclaimed by a Danish–Norwegian novelist, and meant to characterize part of Danish and Norwegian culture (Sandemose, 1936: 77): 'Thou shalt not believe thou *art* something.' And while this 'law' should in part be read as a call for humility, it is also about inequality and is understood as such, as an expression of the wide sentiment against it. As an example, during the annual wage negotiations in 1986, there was a strong move to improve wages for those at the bottom of the wage hierarchy, and the then leader of the Norwegian Confederation of Employers, Pål Kraby, lamented that the concern for equality had gone too far. Immediately, the sociologist Gudmund Hernes (1986) clarified that: 'Pål Kraby is right when he says that Norway is the country in the world with the best paid workers and the worst paid managers. But that is exactly what Norway is, our social configuration. Most Norwegians do not want American or British class differences. It is this deep Norwegian conviction that the employer's association has underestimated' (see also Høgsnes, 1995a). In his comparative study of Denmark, Norway, and Sweden, Esping-Andersen (1985: 174, 176, 323) makes clear that Norway has had an 'exceptionally aggressive drive for equality' and provides evidence showing considerably less income inequality between occupational groups in Norway than in Denmark or Sweden (see also OECD, 1995). As for comparative survey evidence on public opinion

towards inequality, there is little on Norway but much on Sweden, which in this respect is likely to be similar.[6] In their comparison of Japan, Sweden, and the USA, Verba *et al.* (1987: 363) conclude: 'the most egalitarian group in the United States favors a wider income gap than that favored by the most conservative group in Sweden.' We ascertain whether this Norwegian aversion against inequality also translates into smaller social differences between the sexes, addressing how the overall stratification system intersects with gender inequality.

Finally, in Norway there is great concern for equality between the sexes, which has had a particularly strong impact in the political sphere (Skjeie, 1991), with high levels of participation by women in government, political leadership, including a female prime minister in the period 1988–96 and a 40 per cent share of female members of parliament.

Data

The data were compiled by the Norwegian Central Bureau of Statistics and the main employer's association in Norway, the Confederation of Business and Employers (NHO). They are based on establishment records. Norwegian employers are bound by law to collect and report the data (see e.g. Central Bureau of Statistics, 1991a: 120–123), mostly having standard routines for assembling the data and reporting the statistics. These in turn serve as important inputs in wage bargaining and economic planning. They should be very reliable compared with information from standard sample surveys with personal reports of pay rates and hours worked.

Comprehensive wage data are available for two years, 1984 and 1990, with information on 445,053 and 444,924 employees respectively, covering virtually every employee in the sectors studied here and approximately 40 per cent of employees in the private sector in the Norwegian economy, a country of 4.3 million inhabitants (see NOU, 1993: 175, Table 8.3a). Among important exclusions is employment in the public and primary sectors. In the public sector there is practically no wage gap at the occupation–establishment level (Myrvold, 1989), while in the primary sector wages are either hard to record or self-employment is widespread. In 1990, the data cover 25,303 establishments and 1,705

occupations. We can compare men and women working in the same occupation for the same employer.

The following six broad sectors are included:

1. blue-collar workers in manufacturing, oil extraction, mining, quarrying, and auto repair shops, for simplicity referred to as 'blue-collar workers';
2. white-collar workers in manufacturing, oil extraction, mining, quarrying, transportation, storage, communication, and various other industries, for simplicity referred to as 'white-collar workers';
3. employees in business services;
4. employees in the wholesale and retail trade;
5. employees in banking; and
6. employees in insurance.

The data for the first sector consist of blue-collar workers, while the data for the five remaining sectors consist of white-collar, technical, professional, administrative, and managerial employees. In principle the data cover the entire populations of establishments with five or more employees in five

of the six sectors we analyse (sectors 1 and 3–6), and the entire population of establishments organized by the main employer's organization in Norway (NHO) in one of the sectors (sector 2).

For the manufacturing industries, including some additional industries (see notes *a* and *b* to Table 1 and the text above), we have made a subdivision into two groups of employees: blue- and white-collar workers. Each group is treated as a separate sector. This is done in part because the remaining four sectors (sectors 3–6 above) in our data cover mostly white-collar workers. The subdivision allows us first, to compare blue- with white-collar workers within manufacturing and secondly, to compare white-collar workers in manufacturing to white-collar workers in the four other sectors. This subdivision is also made in part because it corresponds to the way the wage data were collected as well as the way they are used in governmental statistics in Norway (see Central Bureau of Statistics, 1991*b*).[7]

The data cover practically the entire occupational spectrum. Some minor groups for which it is

Table 1. *Documentation of data for the six sectors, by sector and by year*

Sector	N	N_f	N_m	%f	N_o	N_e	N_{oe}	N_i	$\bar{w}$	$\bar{w}_f$	$\bar{w}_m$
	1	2	3	4	5	6	7	8	9	10	11
Panel A – 1990:											
Blue-collar workers[a]	165,249	31,437	133,812	19.02	317	6,200	24,502	149	84.71	76.61	86.62
White-collar workers[b]	99,486	31,069	68,417	31.23	210	2,599	31,696	115	115.11	91.93	125.64
Wholesale and retail trade	104,069	54,960	49,109	52.81	90	11,054	43,429	64	85.70	73.11	99.79
Business services	35,004	14,664	20,340	41.89	1,004	3,953	15,974	12	120.88	96.37	138.55
Banking	30,993	17,643	13,350	56.93	33	774	6,276	2	104.33	91.12	121.78
Insurance	10,123	5,623	4,500	55.55	51	724	2,480	2	120.37	100.37	145.37
Panel B – 1984:											
Blue-collar workers[a]	197,694	36,921	160,773	18.68	307	6,635	27,828	150	53.32	47.22	54.72
White-collar workers[b]	84,725	18,710	66,015	22.08	202	2,501	28,990	124	76.24	57.25	81.62
Wholesale and retail trade	105,070	58,063	47,007	55.26	89	15,694	46,979	67	52.66	45.02	62.10
Business services	20,871	8,160	12,711	39.10	128	2,007	8,892	10	79.40	61.55	90.85
Banking	28,852	15,463	13,389	53.59	38	799	5,532	2	64.59	56.00	74.50
Insurance	8,168	4,359	3,809	53.37	46	599	1,935	2	76.31	61.04	93.78

Note: N=total number of employees, N_f=number of women, N_m=number of men, %f=percent women, N_o=number of occupations, N_e=number of establishments, N_{oe}=number of occupation–establishment units, N_i=number of industries, $\bar{w}$=mean wage, $\bar{w}_f$=women's mean wage, and $\bar{w}_m$=men's mean wage.

[a] This sector encompasses blue-collar workers in the following industries: oil extraction, mining and quarrying, manufacturing, and auto repair shops. For simplicity we refer to this group as 'blue-collar workers'.

[b] This sector encompasses white-collar workers in the following industries: oil extraction, mining and quarrying, manufacturing, transportation, storage, and communication, and various other industries. For simplicity we refer to this group as 'white-collar workers'.

difficult to collect wage data are excluded: owners who do not draw a salary, employees who are pre-dom-inantly paid on a commission basis or who do not have set hours of work, temporary construc-tion-site workers, and custodiary personnel. Blue-collar workers in manufacturing paid on a piece-rate basis are included. Among white-collar workers in manufacturing the excluded groups are company presidents, editors, and journalists.

For every employee information was obtained on sex, age, occupation (sector-specific codes), wage form (time- versus incentive-rated), and in some sectors on education, tenure, and work experience. Wages and hours worked are reported separately for regular and overtime hours, as well as separately by the type of wage form under which they are earned. The occupational classification is detailed, in 1990 ranging from 33 different occupational codes in banking to 1,004 different codes in business ser-vices.[8] It is based on the classifications developed by firms and the employer's associations in each of the sectors, usually coinciding with actual job titles. A job is customarily defined as a 'particular task within a particular work group in a particular com-pany or establishment performed by one or more individuals' (Reskin and Hartmann, 1986: 9), while an occupation is an aggregation of jobs. We use the term within-job wage discrimination but refer to the jobs interchangeably as jobs or occupations.

There is a question as to what is the appropriate level of detail for occupational or job titles, because if they get too detailed, the titles may just be indica-tors of wage levels rather than distinguishing the content of work performed. The titles in the present data do predominantly indicate content of work, including aspects of the amount of responsibility involved, such as whether the incumbent is in a posi-tion of leadership or supervision. For example, in the blue-collar sector, the fishing industry has nine jobs or occupational titles, among them, fillet cutter, worker in a cold-storage plant, and cutter, packer, and weigher of fillets. Within the wholesale and retail sector, office employees who do work which requires some level of qualification are grouped into ten titles, such as data processing operator, secretary/stenographer, order assistant. Those involved in transportation activities are grouped into seven positions, such as warehouse driver, van salesperson, and warehouse supervisor. It is

naturally a question of judgement when titles are too fine or too coarse. We have worked with these data over several years, have good knowledge of the occupational titles, and it is our judgement that these titles mostly correspond to distinctions about the kind of work performed and that they are not synonymous with wage levels. We also support this claim with statistics presented in the section on wages and positions below. Had we used broader job or occupational categories the gap would most likely have been larger. But given the goals of our analysis, there is no justification for using broader categories. The central intention of equal-pay initia-tives is that like should be treated alike, but no claim is made for equality of unlikes, and as long as the titles delineate differences in the content of work and responsibilities they should be treated as unlike jobs.

We use the information on hourly wages earned for regular hours.[9] Thus, we do not conflate pay earned during regular hours with pay earned on overtime and irregular hours, making the wage data less prone to bias than other data used for asses-sing wage discrimination, since women in Norway as in many other countries tend to work fewer over-time hours than men.

Methods

We report the relative wages between men and women at various levels, following Petersen and Morgan (1995: sect. 3), with technical details given in the Appendix. For each sector we first compute the average female wage as a percentage of the aver-age male wage, where, for example, the number 88 per cent means that on average women earn 12 per cent less than men. The relative wages we then decompose in four ways, separately by sector. We start by computing separately for each industry, each occupation, each establishment, and each occupation–establishment pair the average female wage as a percentage of the average male wage. This can only be done for industries, occupations, estab-lishments, and occupation–establishment units that are sex-integrated. For example, at the occupation–establishment level we compute the average female wage as a percentage of the average male wage in each sex-integrated occupation–establishment pair.

Next, we compute the average of these relative wages across the sex-integrated units within a level, that is, for industries, occupations, establishments, and occupation−establishment units. For example, at the occupation−establishment level, we compute the average of the relative wages at that level across the sex-integrated occupation−establishment units in the sector.[10]

These computations give the average relative wages for each of four levels: industry, occupation, establishment, and occupation−establishment. The wage gap itself is calculated as 100 minus the relative wages. We additionally report the percentage of the raw wage gap explained separately by each of the four levels.[11]

The average wage gap at the occupation−establishment level gives an estimate of an upper bound on the amount of within-job wage discrimination, the quantity of greatest interest here. But also the within-occupation and within-establishment gaps are of interest, as they document the extent to which differential distribution of men and women in occupations and establishments can account for the overall gender wage gap.

Wages and Positions

One issue requires attention before presenting our results. In Norway and in most European countries, firm-internal wage structures are quite rigid: a fixed wage or salary is often attached to each position. For example, until 1992 the University of Oslo employees were remunerated on an entirely fixed salary scale: the annual salaries in 1995 figures were $28,000, $38,000, and $44,000 for assistant, associate, and full professors, respectively. Somewhat facetiously one may say that European personnel managers in many ways act as if they were Weberians, following his description of a bureaucracy where the sixth characteristic reads (Weber, [1922−3]1978: 220): 'They are remunerated by fixed salaries in money'.

This is quite foreign to practices in the USA, where within given occupations or jobs for the same employer, there typically is a wide range of rates of pay. Equally facetiously one might go so far as to suggest that US personnel managers in many ways act as if they were Marxists, adhering to Marx's

description of work and rewards under capitalism and the first stage of communism, as laid out in the *Critique of the Gotha Program* (Marx, [1875]1972: 15−17), paraphrased as: 'From each according to ability, to each according to contribution'.

Against this background, that is noticeably different from the US system, one may object to our research, as in fact several Norwegian researchers and policy-makers initially did, on the grounds that once we focus on wages at the occupation−establishment level there is by definition or by practice no variation in pay. Everyone will receive the same pay, so our analysis becomes tautological. We therefore address this concern, reporting the amount of wage differentiation that occurs within the occupations and occupation−establishment units we analyse.

We report the percentage range in wages at the occupation and the occupation−establishment level. We first computed by how many per cent the highest wage was above the lowest wage in each occupation and each occupation−establishment unit. Thereafter we took the average of this per cent across all occupations and all occupation−establishment units, for each of the six sectors.

The results are reported in Table 2, for 1990 and 1984 in panels A and B. Columns 1 and 2 give the average of the percentage ranges within occupations, first for all occupations and next for sex-integrated occupations. Columns 3 and 4 give the same averages at the occupation−establishment level, first for all occupation−establishment units and next for sex-integrated units.

Table 2 shows, quite strikingly, that there is considerable variation in wages at the occupation and the occupation−establishment level, in each of the sectors for both years. The variation is always larger at the occupation level. It is also larger in units that are sex integrated, at the occupation and the occupation−establishment levels. For sex-integrated units, the range is three to ten times larger at the occupation level than at the occupation−establishment level. At the latter level, which is the most relevant here, the average of the percentage range in 1990 goes from 22 to 34 per cent, meaning that the best paid person on average earned 22−34 per cent more than the lowest paid person: a considerable range. We have shown that variation in pay at the occupation−establishment level is possible and

Table 2. *Average sample range (in per cent) of hourly wages within occupation and occupation–establishment for all and for integrated units*

Sector	Sample range (%)				Number of units (N)			
	Occupation		Occup-estab		Occupation		Occup-estab	
	All	Integ.	All	Integ.	All	Integ.	All	Integ.
	1	2	3	4	5	6	7	8
Panel A − 1990:								
Blue-collar workers[a]	134.85	181.50	17.95	29.63	259	178	15,443	3,813
White-collar workers[b]	115.89	126.14	19.47	29.30	206	179	13,367	3,816
Wholesale and retail trade	271.34	274.06	22.65	33.88	90	88	16,429	5,086
Business services	101.28	123.13	21.77	32.79	814	557	5,422	1,744
Banking	139.50	139.77	18.84	21.81	33	32	3,310	1,886
Insurance	86.92	89.17	20.75	30.07	51	45	1,114	430
Panel B − 1984:								
Blue-collar workers[a]	116.30	144.38	16.92	30.05	274	192	18,097	3,706
White-collar workers[b]	109.85	122.76	19.55	29.61	200	151	11,267	2,658
Wholesale and retail trade	320.27	327.39	21.38	32.33	88	85	17,615	4,588
Business services	200.89	216.78	22.65	34.29	127	111	3,424	982
Banking	148.08	157.63	24.27	29.45	38	34	2,664	1,539
Insurance	96.33	106.42	24.19	35.71	45	31	804	269

Note: The figures represent the average percentage ranges of wages at the occupation and occupation–establishment levels, calculated for occupations and occupation–establishment units with two or more employees, separately for all units and for integrated units. We first computed how many per cent the highest wage was above the lowest wage in each occupation and each occupation–establishment unit. Thereafter we took the average of this percentage across all occupations and all occupation–establishment units, in each of the six sectors. Consider blue-collar workers in 1990, with 259 different occupations employing two or more persons (see col. 5). The average sample range (in per cent) for these 259 occupations is 134.85. 'Occup-estab' stands for occupation–establishment and 'Integ.' stands for integrated.
[a] See note a to Table 1.
[b] See note b to Table 1.

does occur even in Norway. Moreover, it shows that our occupational titles, although quite detailed, are not synonymous with wage levels, a question addressed more abstractly in the section describing the data above.

The Wage Gap

The Wage Gap in 1990

Earlier investigations have shown that the average wage for women is about 20 per cent below that for men in Norway (e.g. Birkelund, 1992). We focus on employees in the private sector, showing a similar gap. In 1990, women on average earned 21.4 per cent less than men across the six sectors we consider (see Table 3).

Table 3 reports averages of the relative wages as well as various measures of dispersion for each of the six sectors. Within each sector, column 1 gives the average female wage as a percentage of the average male wage: overall in the sector (row 1), and by industry, occupation, establishment, and occupation–establishment respectively (rows 2–5). Equations (1)–(5) in the Appendix were used for computing the ratios. Rows 2–5 of the second column give the percentages of the raw wage gap explained by industry, occupation, establishment, and occupation–establishment respectively, from equation (6) in the Appendix. Columns 3–5 give standard deviations and minimum and maximum values for the numbers that were used to compute the figures in column 1. Column 6, denoted N, gives in row 1 the total number of employees in the sector, while rows 2–5 give the number of

Table 3. *Women's wages relative to men's (in per cent), in six private sectors in Norway, by overall, industry, occupation, establishment, and occupation–establishment, in 1990*

Sector	Mean	% Ex.	St. dev.	Min.	Max.	N	Women	Men
	1	2	3	4	5	6	7	8
Blue-collar workers[a]								
Overall	88.44					165,249	31,437	133,812
Industry	91.74	28.5	5.85	69.15	103.77	148	31,437	133,801
Occupation	93.74	45.8	8.16	65.82	121.24	178	31,390	132,082
Establishment	91.00	22.1	12.40	28.72	162.54	2,980	30,881	100,697
Occ–establishment	96.72	71.4	11.02	37.91	265.20	3,813	25,757	58,595
White-collar workers[b]								
Overall	73.17					99,486	31,069	68,417
Industry	73.53	1.3	6.18	54.89	95.74	113	31,083	68,427
Occupation	92.40	71.1	7.38	`70.01	121.36	179	31,069	67,270
Establishment	74.95	6.6	11.38	40.50	167.50	2,209	30,845	67,506
Occ–establishment	93.88	77.2	11.28	21.87	190.97	3,816	16,434	26,364
Wholesale and retail trade								
Overall	73.26					104,069	54,960	49,109
Industry	79.02	21.5	6.51	57.16	92.01	64	54,960	49,109
Occupation	90.87	65.9	7.96	67.67	112.57	88	54,960	48,987
Establishment	83.51	38.3	18.84	23.29	302.40	7,535	44,864	45,639
Occ–establishment	97.74	91.5	17.69	24.45	264.25	5,086	21,736	14,763
Business services								
Overall	69.56					35,004	14,664	20,340
Industry	72.21	8.7	6.69	65.86	87.63	12	14,664	20,340
Occupation	91.66	72.6	16.21	40.38	193.40	557	14,155	18,801
Establishment	72.67	10.2	18.72	21.00	228.69	2,855	13,505	18,813
Occ–establishment	94.03	80.4	15.77	29.62	240.00	1,744	5,059	7,187
Banking								
Overall	74.82					30,993	17,643	13,350
Industry	75.42	2.4	1.92	74.06	76.78	2	17,643	13,350
Occupation	95.63	82.6	7.59	73.92	112.84	32	17,567	13,350
Establishment	78.20	13.4	8.89	40.22	122.82	750	17,579	13,340
Occ–establishment	97.41	89.7	8.07	51.56	135.52	1,886	13,643	9,428
Insurance								
Overall	69.04					10,123	5,623	4,500
Industry	70.34	4.2	2.69	68.44	72.24	2	5,623	4,500
Occupation	92.18	74.7	5.48	78.33	103.39	45	5,500	4,234
Establishment	70.00	3.1	11.34	38.71	124.61	352	5,171	4,420
Occ–establishment	94.61	82.6	10.21	60.00	128.45	430	3,519	2,777
Across sectors	78.61					444,924	155,396	289,528

Note: Within each of the six sectors the figures in the first column are calculated as follows. The raw relative wage is reported in the first row and is calculated as women's average wage as a percentage of men's average wage. The raw relative wage is then decomposed in four ways. First, in row 2, we calculate, separately for each industry in each sector, women's average wage as a percentage of men's average wage. This figure may only be calculated for integrated industries, that is, industries where both men and women work. We present the mean of these percentages across industries in each sector. Analogous with the industry figures we calculate by occupation in row 3, by establishment in row 4, and by occupation–establishment in row 5. The row named 'Across Sectors' gives the weighted mean of the raw relative wages in the six sectors, the total number of employees, women and men, across the sectors. '% Ex.' denotes the per cent of the raw wage gap explained by each of the four levels separately, while 'st. dev.','Min.', and 'Max.' denote the standard deviation, the minimum, and maximum values respectively of the numbers used to compute column 1. See the Appendix for the technical details.
[a] See note a to Table 1.
[b] See note b to Table 1.

sex-integrated units, that is, the number of units where both men and women are employed in the same industry, same occupation, same establishment, and same occupation–establishment respectively. The number of women and men used for computing the ratios in column 1 are given in columns 7–8. To illustrate, consider the occupation–establishment level (row 5) for blue-collar workers. There are 3,813 sex-integrated occupation–establishment units (column 6), employing 25,757 women and 58,595 men (columns 7–8), a total of 84,352 workers. From row 1 of column 6 we see further that there are 165,249 workers in the sector. Hence, a total of 80,897 (=165,249–84,706) workers are excluded from the computation of the wage gap at the occupation–establishment level because they work in units that are entirely segregated by sex.

There are three striking results evident from Table 3. The first is that the wage gaps are quite small when we compare men and women working in the same occupation for the same employer. At the occupation–establishment level, the gap is lowest in the wholesale and retail trade, at about 2 per cent, while it is largest in the white-collar sector, primarily in the manufacturing industries, at about 6 per cent.[12] Across the six sectors, the weighted average of the gaps after controlling for industry, occupation, establishment, and occupation–establishment are 17.4, 7.8, 18.6, and 3.9 per cent respectively (the numbers are not reported in the table).

The second result is that occupational segregation is considerably more important for the gender wage gap than establishment segregation, meaning that differential allocation of men and women in establishments does not account for a large portion of the wage gap. Taking a weighted average of the percentage explained in each of the six sectors, occupational segregation explains 64 per cent and establishment segregation only 19 per cent of the wage gap (the numbers are not reported in table). The unweighted averages, most comparable to the US numbers in Petersen and Morgan (1995), are 69.0 and 15.6 per cent for occupational and establishment segregation respectively.

The third result is that the within-occupation gaps are relatively small, less than 10 per cent within each sector. This reflects that within an occupation, wage levels are quite uniform across firms. So even

if men and women are differentially distributed across firms, this does not necessarily translate into a large wage gap, as long as occupation is held constant. We shall return to this in our concluding discussion.

The conclusion is straightforward: within-job wage discrimination is in Norway, as in the USA, no longer a central force in explaining the gender wage gap.

Comparison of the Wage Gaps in 1984 and 1990

We give the corresponding results for the year 1984, to address changes over time. The year 1984 was chosen simply because that is the other year for which comprehensive wage statistics are available from the Central Bureau of Statistics. The results are reported in Table 4, following the same structure as Table 3. In 1984 the average female wage was 22 per cent below the average male wage across the six sectors, about the same gap as in 1990. Across the six sectors, the weighted average of the gaps controlling for industry, occupation, establishment, and occupation–establishment are 19.5, 8.3, 17.6, and 4.2 per cent respectively (the numbers are not reported in the table). Thus, across the six sectors, the gap at the occupation–establishment level decreased between 1984 and 1990 from 4.2 to 3.9 per cent.

In five of the six sectors the overall gender wage gap became smaller from 1984 to 1990, with an increase only in the banking sector. The largest decrease was found in the insurance industry.

At the occupation–establishment level, the three smaller sectors – business services, banking, and insurance – experienced a small increase of about 1 per cent in the wage gap between 1984 and 1990. In the three larger sectors – blue-collar workers, white-collar workers (in both sectors mostly in manufacturing), and the retail trade – there has been a decrease in the gap at the occupation–establishment level: on average the gap went down by about 1 per cent.

Discussion

We have reported the second large-scale empirical investigation of wage differences between men and women working in the same occupation for the same employer, and providing the first results

Table 4.· *Women's wages relative to men's (in per cent), in six private sectors in Norway, by overall, industry, occupation, establishment, and occupation–establishment, in 1984*

Sector	Mean	% Ex.	St. dev.	Min.	Max.	N	Women	Men
	1	2	3	4	5	6	7	8
Blue-collar workers[a]								
Overall	86.29					197,694	36,921	160,773
Industry	90.89	33.6	7.30	72.98	145.21	148	36,921	160,516
Occupation	92.50	45.3	7.99	68.97	117.20	192	36,895	151,525
Establishment	90.97	34.1	10.80	37.11	232.40	3,009	35,996	118,281
Occ–establishment	95.86	69.8	11.51	37.16	334.50	3,707	28,475	58,087
White-collar workers[b]								
Overall	70.14					84,725	18,710	66,015
Industry	72.09	6.5	6.16	53.72	96.04	121	18,704	66,013
Occupation	90.80	69.2	7.04	64.64	113.60	151	18,564	62,657
Establishment	74.37	14.2	11.26	34.90	125.85	1,930	18,500	63,925
Occ–establishment	92.48	74.8	11.01	54.01	147.15	2,658	9,787	18,008
Wholesale and retail trade								
Overall	72.50					105,070	58,063	47,007
Industry	79.85	26.7	5.74	63.89	102.67	67	58,063	47,007
Occupation	91.00	67.3	11.27	65.12	153.68	85	58,058	46,833
Establishment	83.57	40.3	19.63	25.63	400.00	8,598	43,019	41,731
Occ–establishment	97.09	89.4	17.76	10.81	291.02	4,588	19,048	11,365
Business services								
Overall	67.75					20,871	8,160	12,711
Industry	71.19	10.7	5.50	65.30	82.64	10	8,160	12,711
Occupation	90.85	71.6	12.62	38.82	127.80	111	8,109	8,185
Establishment	73.09	16.6	19.33	29.43	416.45	1,472	7,585	12,011
Occ–establishment	95.37	85.6	15.52	23.67	180.04	982	2,692	4,112
Banking								
Overall	75.17					28,852	15,463	13,389
Industry	75.77	2.4	2.17	74.24	76.30	2	15,463	13,389
Occupation	92.96	71.6	5.62	78.13	102.17	34	15,463	13,195
Establishment	76.94	7.1	8.03	50.40	118.27	773	15,421	13,372
Occ–establishment	97.92	91.6	10.15	49.67	140.13	1,539	12,799	9,172
Insurance								
Overall	65.09					8,168	4,359	3,809
Industry	66.08	2.8	2.55	64.28	67.89	2	4,359	3,809
Occupation	94.94	85.5	12.49	76.99	138.30	31	4,220	3,547
Establishment	69.68	13.1	13.28	41.11	127.19	257	3,943	3,744
Occ–establishment	94.73	84.9	12.54	56.49	167.35	269	2,881	2,069
Across sectors	77.97					445,380	141,676	303,704

Note: See the note to Table 3.
[a] See note a to Table 1.
[b] See note b to Table 1.

comparable with the earlier US study (Petersen and Morgan, 1995).

We report three striking results, focusing on the year 1990. The first is that the wage gap is quite small when we compare men and women working in the same occupation for the same employer: at the occupation–establishment level, the gap is lowest in the wholesale and retail trade, at about 2 per cent, while

it is largest in the white-collar sector, mostly in the manufacturing and similar industries, at about 6 per cent. Across the six sectors, the average gap at the occupation–establishment level was 3.9 per cent.

We underline that these results are novel. More specifically, as we will now elaborate, they could not be obtained from standard regression analysis of data from national probability or similar samples. In the latter, the real mechanisms are obscured. One compares men and women working in broadly similar occupations but invariably in different firms. A large wage gap is usually found and the researcher often concludes that there is wage discrimination, implying that men and women doing the same work for the same employer are paid differentially. But no such conclusion can be drawn and the analysis is inconclusive. All such studies show is that men and women doing broadly similar kinds of work with about the same amount of education and experience, tend to earn different wages. But this does not imply that the differential pay is the outcome of any given employer treating men and women differentially. Such results may just as well reflect that men and women tend to work for different employers. But more importantly, the occupational classifications used are mostly too broad to allow much inference regarding discrimination.

The second result is that establishment segregation is considerably less important for the gender wage gap than occupational segregation, each explaining 19 and 64 per cent of the gap respectively, meaning that differential allocation of men and women in establishments does not account for a large portion of the wage gap.

The third result is that the within-occupation gaps are relatively small, less than 10 per cent within each sector. This reflects that within an occupation, wage levels are quite uniform across firms. Since the 1950s it has been an objective of the central labour union to make wages in a given line of work independent of who you are and where you work, so that with respect to the female wage gap, it is less a matter of where women work than what they do.

We also compared conditions in 1990 with those in 1984, to see if the Equal Pay Act of 1978 had had a delayed impact. The overall wage gap was about the same in both years at 22 per cent. At the occupation and occupation–establishment level, the size of the wage gaps were similar in the two years, with a small decline in the three larger sectors and a small increase in the three smaller sectors. Thus, no major changes occurred between 1984 and 1990. Across the six sectors, the average gap at the occupation–establishment level declined from 4.2 to 3.9 per cent between 1984 and 1990.

In comparison to the USA, we have found somewhat larger gender wage gaps at the occupation–establishment level (see Petersen and Morgan, 1995). This is surprising given the higher flexibility of pay in the USA than in Norway and Europe elsewhere. The difference, albeit small, may reflect several factors. One may be dissimilarities in the occupational classifications used in the two countries, where perhaps the Norwegian classification is based on broader categories which in turn will translate into a larger gap, as well as the fact that the Norwegian data comprise a larger spectrum of the occupations than in data for the USA, where the gap may be higher in more managerial, administrative, and professional occupations. This issue is not easy to settle because detailed occupational classifications are difficult to compare across countries. Another reason may be that an Equal Pay Act has been in operation for a longer time in the USA than Norway, so that there has been more time to deal with this type of inequality. A third reason may be differences in the legal systems and legal cultures in the two countries; the more litigious culture in the USA may put employers at higher risk of being sued and hence possibly more on guard. But perhaps more importantly, in Norway equal pay cases typically are and have to be initiated *vis-à-vis* the legal system by individuals (Stabel, 1991), as in Britain (Wilborn, 1989), whereas in the USA a proportion of cases are brought to the courts as class action suits often covering large groups of employees (see Rhoads, 1993). And even though few class action suits are currently being filed – the number is down from 1,106 in 1975 to 51 in 1989 (Donohue and Spiegelman, 1991: 1019) – these were an important feature of 1974–83 period covered by the data analysed by Petersen and Morgan (1995), and may still cover a large number of individuals and act as a deterrent. This creates a legal climate where the costs of litigation and of subsequent conviction can be high for employers and hence the deterrents against discrimination are stronger.

As the wage gap at the occupation–establishment level is quite small in both countries, within-job wage discrimination is no longer a driving force for wage differences between men and women. This conclusion is also likely to hold for many other European countries. Although there are large differences in industrial and organizational structures and cultures between European nations, Norwegian equal pay laws are very similar to those in the European Union (see Ellis, 1991; Rhoads, 1993). There may also be great variations in the enforcement of such laws, but as within-job wage discrimination is the most straightforward to deal with, this is the form that is probably the least important. One should expect the Norwegian case to be most similar to other Scandinavian and Central European countries as well as to the United Kingdom.

Regarding the relative importance of establishments versus occupations in explaining the wage gap, some informative juxtaposition between Norway and the USA can be made, even though the data are not entirely comparable. The blue-collar sector in Norway is quite similar to the eleven US manufacturing industries used in part of the analysis in Petersen and Morgan (1995: Table 2), where the latter mostly cover blue-collar workers. In Norway the percentages of the raw wage gap explained by occupation and establishment respectively are 45.8 and 22.1 per cent, while in the US they are 47.4 and 27.0 per cent (using an unweighted average across the 11 industries). The data on the banking and insurance industries are also comparable, the main difference being that the Norwegian data include managerial, administrative, and professional positions, whereas the US data focus on clerical jobs. The percentages of the raw wage gaps explained by occupation and establishment in Norway are respectively 82.6 and 13.4 per cent for banking and 74.7 and 3.1 per cent for insurance. The similar US data give 92.4 and 2.3 per cent for banking and 94.8 and 0.0 per cent for insurance. So overall, the importance of occupation versus establishment is quite similar in the two countries, occupation being by far the most important factor for explaining the raw wage gap.

We were somewhat puzzled by the similarities between the countries in terms of the impact of the establishment on the wage gap. It may be instructive to reflect briefly on the source of our surprise here,

although without being able to offer a resolution. Norway is a highly egalitarian society: wage differences between firms and sectors in the economy are quite limited, and at times the government interferes when an industry or set of firms moves too far out of alignment with other industries or firms, for example in a round of annual wage negotiations (e.g. Høgsnes, 1989). It is difficult to bid up wages, and it is not uncommon for newspapers to scorn firms that do so and to expose the individuals or groups who are the beneficiaries. Moreover, since 1980 a so-called low-wage guarantee has been in operation in all firms that are covered by agreements entered into by the main employer's association in Norway, the Norwegian Confederation of Business and Employers. Here, establishments with an average wage less than 85 per cent of the average wage in a benchmark sector, mostly manufacturing, are required to increase wages in order to reach the 85 per cent threshold (see Høgsnes, 1995b). This arrangement covers a large proportion of Norwegian private-sector employees and occurs during the annual wage negotiations. It has benefited female employees disproportionally, since they are often found in establishments with a predominance of low-paying occupations.

Under such institutional arrangements one would expect establishment segregation to be considerably less important in Norway than in the USA because similar structures are absent in the USA. But that is not quite what we found. So although firms or establishments matter for the wage gap in both countries, it really is occupations and the matching of occupations and establishments that drive the gap. Ironically, with respect to the relative importance of occupations versus establishments for the gender wage gap, the same outcome is achieved in both countries. In Norway this is in part through concerted co-ordination aimed at minimizing wage differences between establishments; in the USA it is achieved through market competition. This clearly warrants further investigation, but not in the present article.

As for research and policy, the implications of our findings are straightforward. Research as well as policy should focus less on studying within-job wage discrimination and more on studying differential access to occupations and establishments, differential rates of promotion, and differential rates of pay

for lines of work done primarily by women. The analysis of differential access requires addressing the hiring process, in terms of procedures for recruitment, in terms of who receives offers and who does not, and for conditions offered among those who receive offers of employment, a process that hardly has been studied (see e.g. Granovetter, 1995 [1974]; Collinson, Knights, and Collinson, 1990). The analysis of the promotion processes is more developed (e.g. Spilerman, 1986; Rosenfeld, 1992), but has not been extensively studied, while the analysis of valuative discrimination, the differential pay in occupations held primarily by women, has been carefully addressed in a large number of studies in many countries (see e.g. England, 1992). These two other forms of discrimination, allocative and valuative, are obviously harder to deal with, but that is also where the highest pay-off can be realized, which is clearly of importance for policy, and has relevance for research as well.

Appendix

We give the equations used for computing the decompositions in column 1 of Tables 3 and 4. The average wages for women, for men, the relative wages, and the number of sex-integrated units [only in (2)–(5)] are given by (1) in a sector, $\bar{w}_f$, $\bar{w}_m$, and $w_{r,r} = \bar{w}_f/\bar{w}_m$; (2) in industry b, $\bar{w}_{b,f}$, $\bar{w}_{b,m}$, $w_{b,r} = \bar{w}_{b,f}/\bar{w}_{b,m}$, and $N_{b(I)}$; (3) in occupation o, $\bar{w}_{o,f}$, $\bar{w}_{o,m}$, $w_{o,r} = \bar{w}_{o,f}/\bar{w}_{o,m}$, and $N_{o(I)}$; (4) in establishment e, $\bar{w}_{e,f}$, $\bar{w}_{e,m}$, $w_{e,r} = \bar{w}_{e,f}/\bar{w}_{e,m}$, and $N_{e(I)}$; (5) in occupation–establishment oe, $\bar{w}_{oe,f}$, $\bar{w}_{oe,m}$, $w_{oe,r} = \bar{w}_{oe,f}/\bar{w}_{oe,m}$, and $N_{oe(I)}$.

The *raw* relative wages between men and women is given as the ratio of average women's to average men's wages (multiplied by 100):

$$w_{(r,r)} = \frac{\bar{w}_f}{\bar{w}_m} \times 100. \qquad (1)$$

The relative wages controlling for industry is calculated as

$$w_{(b,r)} = \frac{1}{N_{b(I)}} \sum_{b=1}^{N_{b(I)}} w_{b,r} \times 100 = \frac{1}{N_{b(I)}} \sum_{b=1}^{N_{b(I)}} \frac{\bar{w}_{b,f}}{\bar{w}_{b,m}} \times 100. \qquad (2)$$

The relative wages controlling for occupation, is calculated as

$$w_{(o,r)} = \frac{1}{N_{o(I)}} \sum_{o=1}^{N_{o(I)}} w_{o,r} \times 100 = \frac{1}{N_{o(I)}} \sum_{o=1}^{N_{o(I)}} \frac{\bar{w}_{o,f}}{\bar{w}_{o,m}} \times 100. \qquad (3)$$

The relative wages controlling for establishment is calculated as

$$w_{(e,r)} = \frac{1}{N_{e(I)}} \sum_{e=1}^{N_{e(I)}} w_{e,r} \times 100 = \frac{1}{N_{e(I)}} \sum_{e=1}^{N_{e(I)}} \frac{\bar{w}_{e,f}}{\bar{w}_{e,m}} \times 100. \qquad (4)$$

The relative wages controlling for occupation–establishment is calculated as

$$w_{(oe,r)} = \frac{1}{N_{oe(I)}} \sum_{oe=1}^{N_{oe(I)}} w_{oe,r} \times 100 = \frac{1}{N_{oe(I)}} \sum_{oe=1}^{N_{oe(I)}} \frac{\bar{w}_{oe,f}}{\bar{w}_{oe,m}} \times 100. \qquad (5)$$

The percentage of the raw wage gap — that is, 100 minus $w_{(r,r)}$, where $w_{(r,r)}$ comes from (1) — due to occupation–establishment segregation alone is given by

$$\% w_{(oe,r)} = \frac{w_{(oe,r)} - w_{(r,r)}}{100 - w_{(r,r)}} \times 100. \qquad (6)$$

The percentage due to industry, occupation, or establishment alone, obtains by replacing $w_{(oe,r)}$ in (6) with $w_{(b,r)}$, $w_{(o,r)}$, or $w_{(e,r)}$.

Notes

1 For example, Great Britain passed an Equal Pay Act in 1970, which became effective in 1975, while Sweden passed an act in 1979. In the European Union, Article 119 of the 1957 Treaty made within-job wage discrimination illegal, but the actual implementation of the law was slower, speeding up in the 1970s with the passing of additional legislation (see Ellis, 1991; Rhoads, 1993: chap. 5).

2 In many countries within-job wage discrimination was not only legal but was in fact built into the institutional structure of the labour market, as in Australia and Great Britain, where union agreements stipulated different rates for men and women doing the same work up until 1970, practices that have been made illegal since passing of equal pay acts.

3 Although there is a substantial literature addressing the gender wage gap in Norway (e.g. Birkelund, 1992), no study addresses the gap at the level used here: the occupation–establishment level.

4 The first author gained access to the data after being hired together with other social scientists by a governmental commission to investigate inequality in Norway, and received considerable co-operation from the commission in accessing the data, having

to produce a report for presentation to the government (see NOU, 1993).

5   More institutional details are given in Petersen, Becken, and Snartland (1994).

6   Norway is included in the 1992 version of the Ideology of Inequality module of the International Social Survey Programme (ISSP). Results from this cross-national survey have yet to be published. See Kelley and Evans (1993) for an analysis of the comparable 1987–8 survey.

7   In fact, this corresponds to the way the comparable US data were collected and used by the Bureau of Labor Statistics (see Petersen and Morgan, 1995).

8   The large number of occupational titles in the business services sector in 1990 reflects the fact that each of the 12 industries within the sector uses separate occupational codes, but that these to some extent overlap. The amount of actual occupational differentiation is hence less than the number of titles would indicate.

9   The exchange rate for the Norwegian kroner in 1995 hovered around 1 US dollar=6.50 Norwegian kroner and 1 German mark=4.40 Norwegian kroner.

10 We have tried a variety of alternative decomposition weights, with only negligible changes in the qualitative pattern of our results. For example, at the occupation–establishment level, we computed the average relative wages, weighting the relative wages in each sex-integrated occupation–establishment unit with respectively the proportion of workers, of male workers, or of female workers who are employed in the integrated occupation–establishment unit. The basis for the proportion is the number of workers, of males, or of females employed in integrated occupation–establishment units in the given sector.

11 This is computed first by taking the difference between the raw relative wages and the relative wages at the level in question, then dividing this difference by 100 minus the raw relative wages, and finally multiplying the ratio by 100, as in Petersen and Morgan (1995). See equation (6) in the Appendix.

12 The overall pattern of these results is also replicated in a regression analysis, using so-called fixed-effects models for the occupation–establishment level. These models add no new information relative to the more translucent descriptive results in Table 3, as was also the case in Petersen and Morgan (1995).

Acknowledgements

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