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HUMAN CAPITAL AND INDUSTRY WAGE DIFFERENTIALS IN FINLAND

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ABSTRACT: The main purpose of the present paper is to contribute to the limited knowledge of wage differentials across Finnish industries based on individual data. The analysis is undertaken for all employees and separately for female and male employees using Labour Force Survey data for 1987. A distinction is also made between the labour market as a whole and the private-sector labour market. A frequently adopted approach is used to assess the impact and importance of inter-industry wage differentials from cross-sectional micro data. More exactly, a simple earnings model comprising industry indicator variables only is stepwise completed with variables controlling for differences in observable personal and job characteristics across industries.

The empirical results suggest that substantial industry-related wage differentials remain even after controlling for a broad set of personal and job characteristics. But the estimation results also indicate that these characteristics explain more of the observed industry wage structure than does the individuals' industry affiliation. Indeed, nearly a half of the wage variance among Finnish industries can be attributable to differences in observable personal and job characteristics across industries. These overall patterns seem to largely hold for both genders.

KEY WORDS: human capital, inter-industry wage differentials

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TIIVISTELMÄ: Tutkimuksessa tarkastellaan toimialoittaisia palkkaeroja Suomen koko työmarkkinoilla ja erikseen yksityisessä sektorissa. Tarkastelu tehdään toisaalta kaikille palkansaajille ja toisaalta erikseen nais- ja miespalkansaajille. Aineistona käytetään Tilastokeskuksen työvoimatiedustelua vuodelta 1987. Toimialoittaisten palkkaerojen vaikutusta ja merkitystä tutkittaessa on usein käytetty seuraavaa, myös tässä tutkimuksessa omaksuttua lähestymistapaa. Ensin estimoidaan yksinkertainen, pelkästään toimialoittaisia indikaattoreita sisältävä palkkayhtälö, joka antaa karkean kuvan toimialojen välillä esiintyvistä palkkaeroista. Tämän jälkeen palkkayhtälöön lisätään asteittain erilaisia muuttujia, jotka heijastavat toimialojen työvoiman ominaisuuksiin ja työtehtäviin liittyviä, mitattavissa olevia tekijöitä.

Tutkimustulokset osoittavat, että huomattavia toimialoittaisia palkkaeroja esiintyy senkin jälkeen, kun suuri määrä toimialojen työvoimaan ja työtehtäviin liittyviä eroja on otettu huomioon. Samantyyppisissä tehtävissä olevien identtisten henkilöiden palkat vaihtelevat siis sen mukaan, millä toimialalla henkilö työskentelee. Samalla tutkimustulokset viittaavat siihen, että palkansaajiin ja työtehtäviin liittyvät ominaisuudet selittävät enemmän palkkaeroista kuin pelkkä henkilön toimiala. Tutkimustulosten mukaan lähes puolet toimialoittaisista palkkaeroista Suomessa selittyy erilaisilla työvoimaan liittyvillä ominaisuuksilla. Samanlaisiin tuloksiin päädytään sekä mies- että naispalkansaajien osalta.

AVAINSANOJA: inhimillinen pääoma, toimialoittaisia palkkaeroja

1. INTRODUCTION

There is a growing international literature on large and persistent inter-industry wage differentials, even after controlling for differences in worker and job characteristics among industries. Moreover, these differentials have been found to be remarkably stable over time and very similar across countries despite of differing institutional labour market characteristics. A most conspicuous feature of the inter-industry wage pattern is its stability also across occupations.

The empirically established stability of inter-industry wage differentials is clearly at variance with the standard competitive model of the labour market, according to which competition between industries will force equilibrium wages to reflect merely differentials compensating for differences in personal and job-related characteristics across industries. More exactly, although compensating differentials are without doubt important determinants of industry wages (e.g. Rosen, 1986)[1], this hypothesis can provide only part of an explanation of the substantial, mostly highly significant and very stable wage differentials observed across industries.

Several theoretical hypotheses have been put forth as an explanation of the persistence of non-competitive wage differentials in situations with involuntary unemployment. Presumably the most prominent explanations are offered by the efficiency wage theory, the search theory, the insider-outsider hypothesis, and bargaining models. The efficiency wage theory suggests that the observed wage premiums are due to differences between firms and industries in, inter alia, monitoring possibilities and turnover costs. The search theory and the insider-outsider theory, on the other hand, suggest that the wage premiums are attributable to differences in, respectively, costs of vacancies and costs of firing and hiring. The bargaining models, finally, emphasize the institutional features of the labour market, especially the trade union power in influencing wage determination.[2]

Of these alternative hypotheses only the efficiency wage theory is discussed at some length in Section 2 of this paper. This may be justified by recent attempts to test empirically predictions of efficiency wage models of wage-setting behaviour, attempts which have mainly focussed on explaining measured industry wage differentials in terms of efficiency wage arguments. Some of the existing empirical evidence is reviewed in Section 3.

There is, so far, very little empirical evidence on wage differentials across Finnish industries based on individual data. Eriksson (1991) uses preliminary estimation results from the present study. Vainiomäki & Laaksonen (1992) estimate inter-industry wage differentials for the private sector from wage-level as well as first-differenced wage equations using longitudinal population census data covering the period 1975-85. They also make an attempt to explain the measured industry wage premiums by means of industry characteristics.

The labour force survey data used in the present study are fairly rich in personal and job characteristics and have in this respect a strong advantage over population census data. However, the labour force surveys do not provide panel data and have, in fact, been supplemented with income data for two years only (1987 and 1989). A common feature of the labour force surveys and the population censuses is that both lack information on firm and industry characteristics such as working conditions and employer size. Hence, the database used in the subsequent analysis can, at most, indicate the degree to which the observed industry-related wage differentials reflect compensating (competitive) differentials captured by the available information on background characteristics; it does not allow discriminating tests of alternative explanations to the existence of non-competitive wage differentials across industries.

The empirical analysis uses a frequently adopted approach to assessing the impact and importance of inter-industry wage differentials from cross-sectional micro data. More exactly, a simple earnings model comprising industry indicator variables only is gradually completed with variables controlling for differences in observable personal and job characteristics across industries. The empirical specifications of the earnings model and the data used are presented in Section 4. The earnings equations are estimated jointly and separately by gender for all employees, on the one hand, and for private-sector employees, on the other. The analysis is throughout restricted to non-agricultural employees.

The regression results obtained from estimating the overall and the gender-specific earnings equations are discussed in Section 5. Section 6 reports a simple attempt to display the influence of a limited number of industry characteristics on the measured wage differentials across Finnish private-sector industries. Concluding remarks are given in Section 7.

2. EFFICIENCY WAGE THEORIES

Perhaps the most distinguishing feature of efficiency wage theories is that firms may profit from setting wages above the market-clearing wage rate because the increase in wages will boost workers' effort or productivity. And since the degree of dependence between productivity and the level of compensation, i.e. the extent to which efficiency wages are utilized, will vary - possibly systematically - among firms and industries due to their heterogeneity, wage dispersion will arise. In other words, equally able individuals will be paid differently depending on the firm or industry in which they are employed.

This relationship between the wage level and worker productivity has been rationalized in four different ways. In particular, justification for efficiency wage models has been provided in terms of shirking, adverse selection, labour turnover, and on sociological grounds. A similar theoretical approach is adopted in the shirking and adverse selection versions of the efficiency wage theory in the sense that both sets of models analyse the consequences of firms' asymmetric information by relaxing the perfect information assumption underlying the standard micro model of the labour market. The turnover and the sociological models, on the other hand, attempt to introduce new dimensions into the standard competitive model. Since there are excellent surveys of the efficiency wage literature[3], only the basic features of the different models are outlined below.

2.1. Shirking models

The assumption of perfect observability of actual labour productivity is without doubt incompatible with the real world, where firms mostly have only limited information about the workers' actual productivity. This fairly strong assumption is relaxed in the shirking model of efficiency wage theory (e.g. Calvo (1979,1985), Eaton & White (1983), Shapiro & Stiglitz (1984), Bowles (1985), Bowles & Summers (1986), Summers (1988), Albrecht & Vroman (1992)).[4] The shirking model predicts that relatively high wages should be paid in industries which face high monitoring costs and/or bear relatively high costs of shirking.

The point of departure is that firms are unable to observe actual labour productivity because of monitoring difficulties. Workers may, as a consequence, choose to shirk, i.e. to supply substandard effort. There is some chance that shirking workers will be caught, with the risk of being fired. However, the loss due to shirking is minor if, as in the conventional model, markets are assumed to clear; i.e., there is no unemployment as workers will immediately find an equivalent job at the same rate of pay. In such a situation, firms may choose to pay wage premiums (efficiency wages) in order to prevent workers from shirking; the economic rent increases the cost of shirking (job loss) and thus provides workers with incentives not to shirk or, put differently, to increase work effort.

In equilibrium, all firms are paying premium wages, whereby the market wage will be above the market-clearing level. The resulting unemployment is involuntary thereby acting as a worker discipline device; the unemployed are willing to work for a lower pay than the going wage but the employers refuse the opportunity of lowering wages as this is taken to lead to a lower average productivity and thus to reduced profits. A dynamic version of this standard shirking efficiency wage model is derived and tested by Mackin & Manning (1992).

In the standard shirking efficiency wage model uncertainty is reduced to the risk of being detected if shirking. In other words, workers are assumed to have perfect information about the employer's minimum effort requirement. Arai (1989) introduces worker uncertainty about the level of effort that the employer considers as shirking, and shows that under circumstances when worker effort is hard to observe, intensified monitoring is not only costly but may result in a decline in average worker effort since it reduces workers' uncertainty about the employer's minimum effort requirement. In that case, wages above the market-clearing level may be chosen not only because of costly monitoring, as claimed in the standard shirking model, but also because of the inefficiency of monitoring in increasing worker effort.

The shirking model has occasionally been claimed to overlook the possibility of bonding as a means of preventing workers from shirking. Lazear (1979,1981,1986), for example, has argued that there is no need for efficiency wages as rising wage profiles, i.e. performance bonding, will prevent workers from shirking. Akerlof & Katz (1989), however, argue that rising wage profiles are not a perfect substitute for explicit bonding in situations where workers discount future gains at a higher rate than firms. In that case, firms may find it profitable to raise wages above the workers' opportunity cost, implying that workers may be paid rents even when explicit bonding is allowed. Macleod & Malcomson (1989) show that this is a potential outcome in a perfect equilibrium of a repeated game.

2.2. Adverse selection models

A second set of efficiency wage models relaxes the assumption that the quality of workers, either as applicants or on the job, is known to the firm (Weiss (1980), Greenwald (1986)). In particular, the adverse selection model posits that if workers' quality is not observable at reasonable costs, firms may use wage premiums as a selection method; by raising wages firms can attract an applicant pool of higher average quality, which will increase the firm's probability of hiring workers with higher productivity. The empirical implication is that relatively high wages should be offered by industries which are more sensitive to quality differences or have higher costs of measuring quality.

The formal adverse selection model developed by Weiss (1980) has no unemployment. An extension in this respect is suggested by Greenwald (1986), who draws on the adverse selection phenomenon described by Akerlof (1970). More formally, Greenwald shows that adverse selection in the labour market may seriously impair a worker's freedom to change jobs; since current employers are generally better informed about the quality of their workers than potential alternative employers, they will probably concentrate on keeping their more able workers by raising the wages. If the employers succeed in their efforts to prevent turnover on their more able workers, then the job-changing pool should be composed disproportionately of less capable workers. Workers entering this "secondhand" labour market may, as a consequence, experience involuntary unemployment as they are marked as being part of an inferior group; firms are unwilling to hire from the job-changing pool, except at low wages, i.e. at rates that reflect the expected average ability (productivity) of this inferior group of workers. Whenever employers seek to fill jobs that require more capable workers they may instead rely on internal labour pools.

2.3. Turnover models

Generally speaking, the turnover models have a formal structure similar to that of shirking models, but here a high relative wage and/or a high level of unemployment is assumed to increase worker productivity by increasing workers' quitting costs and thereby reducing costly labour turnover (e.g. Salop (1979), Stiglitz (1974,1985)). In brief, a wage rate above the worker's opportunity cost will make the job more attractive and, as a consequence, fewer workers will find it profitable to change jobs. Accordingly the turnover model predicts that the high-wage industries are those which face the highest turnover costs.

2.4. Sociological models

The sociological models of efficiency wage theory explain the wage-worker productivity relationship by emphasizing the role that social conventions and principles of appropriate behaviour have in the individuals' effort decisions (Solow (1979), Akerlof (1982,1984), Akerlof & Yellen (1990)). More exactly, Akerlof's partial gift exchange model predicts that it may be profitable for the firm to pay wages above competitive wages since this gift of wages can be expected to raise the firm's group work norms and thereby boost average productivity by making grateful workers feel that they must reciprocate their good treatment.

Akerlof & Yellen (1990) extend this sociological foundation for the efficiency wage theory by arguing that workers will exert more effort if they think they are being paid fairly; i.e., worker effort is taken to depend on the ratio between actual pay and fair pay. This fair wage-effort hypothesis, which also involves unemployment, is seen to be consistent with cross-section wage differentials as well as with unemployment patterns (cf. Thaler, 1989).

In breviety, the sociological models predict that the high-pay industries will be those with high profits and/or with teamwork and worker cooperation playing an important role.

3. EXISTING EVIDENCE - WHAT DOES IT IMPLY?

By regarding worker productivity as an increasing function of the wage level, the efficiency wage models offer a potential explanation of several important aspects of the labour market, such as involuntary unemployment, non-degenerate wage distribution for apparently identical workers, labour market segmentation, and discrimination. The issue of whether or not the efficiency wage hypotheses are robust to allowing alternative contracts has been lively discussed (e.g. Akerlof & Yellen (1986) and Katz (1986)).

Most of the research in this area has been theoretical. However, despite the difficulties of testing the efficiency wage theory, attempts have been made, in more recent years, to assess empirically the validity of the efficiency wage hypotheses.

Following Machin & Manning (1992), principally two approaches can be distinguished: a more direct approach which attempts to test specific predictions of efficiency wage models, and a more indirect approach which focuses on explaining measured wage differentials across industries in terms of the efficiency wage theory by eliminating alternative explanations generally derived from competitive models of labour markets. Existing empirical evidence obtained from using these two approaches is briefly reviewed below.

3.1. Direct testing of efficiency wage hypotheses

Raff & Summers (1987) argue that Henry Ford's decision in 1913 to double wages increased productivity and profits significantly, and that this decision was most likely dictated by the kind of wage-productivity relations covered by efficiency wage models.

Cappelli & Chauvin (1991) provide a direct test of the main implications of the shirking model of efficiency wage theory by examining the relation between disciplinary dismissals and relative wage premiums using plant-level data from the same firm. They find evidence supporting the hypothesis that wage premiums are associated with reductions in shirking as measured by disciplin rates. It is, however, less clear whether the value of the reduction in shirking is enough to offset the costs of the wage premium.

Wadhwani & Wall (1991) test, using panel data on 219 U.K. manufacturing companies, two predictions of efficiency wage theory, viz. that changes in unemployment will affect a firm's productivity, and that a high relative wage in a firm will make it more productive than its counterparts. The authors estimate production functions and provide evidence in favour of both predictions: firm-level productivity is found to increase when either relative wages rise, or the level of unemployment rises. They also report some support for the idea that a change in the relative wage increases productivity. However, Wadhwani & Wall acknowledge that their results are also consistent with the existence of unobserved human capital and of rent-sharing. They attempt, therefore, to discriminate between these alternative explanations, and conclude from this that the efficiency wage model is a more plausible interpretation of the obtained results.

Machin & Manning (1992) continue on this topic. In particular, they estimate Euler equations using panel data on 486 U.K. companies to test three dynamic models of worker effort determination. These models are derived from a shirking efficiency wage model, a compensating differentials model, and a union-firm bargaining model. Their discriminating test provides evidence in support of the shirking model in firms with low levels of unionization but of the bargaining model in highly unionized industries.

Barth (1992), finally, tests implications of efficiency wage theory, agency theory and union bargaining theory on Norwegian firm-level data, and finds evidence in support of all three types of non-market clearing models. The empirical results obtained also suggest that the three theories under study do not reinforce each other; instead the firms' wage premiums tend to serve several purposes at a time.

All in all, the efficiency wage models have, so far, little direct empirical support. This is without doubt mainly due to the lack of empirical data suitable for evaluating the different models and their predictions.

3.2. Evidence on inter-industry wage differentials

According to the standard competitive theory of labour markets, the observed wage differentials across industries should merely reflect differences in worker and job characteristics. However, several studies provide evidence of substantial and highly persistent inter-industry wage differentials which, moreover, have been found to be very similar across countries.

Slichter (1950) and Cullen (1956) found, using aggregated data for the United States, remarkably stable patterns of inter-industry wage differentials: Cullen (1956) estimated the rank correlation between industry wages in 1899 and 1950 to be 0.66, while Slichter (1950) reported a rank correlation between 1923 and 1946 of 0.73. Krueger & Summers (1987) compared the 1923 pattern with data for 1984 and reported a correlation of industry wages of 0.56 in these two years. Based on this evidence they concluded that the wage structure in the United States has remained relatively stable over a very long period of time. These findings are supported by recent empirical evidence obtained from U.S. census data. In particular, Helwege (1992) finds that very little has changed in the U.S. industrial wage structure over the years 1940-80; the correlations of the estimated industry effects are always significantly positive and over 0.7.

A notable stability over time in inter-industry wage structures has also been found for the Nordic countries. Holmlund & Zetterberg (1989) report from aggregate data high correlations between manufacturing wages in 1965 and 1985 for five countries, including Finland, Norway and Sweden. Similar results have been obtained from individual data. Thus Arai (1992) finds that despite a substantial fall in the absolute size of industry wage effects in Sweden during the period 1968-81, the ranking of the measured inter-industry wage differentials remained relatively stable with the correlations between industry premiums after control ranging from 0.62 to 0.90. Vainiomäki & Laaksonen (1992) report for Finland correlations between private-sector industry wage premiums after control in the interval 0.83 to 0.93 for the period 1975-85.

As to cross-country similarities, both Krueger & Summers (1987) and Katz & Summers (1989) report high correlations of log manufacturing wages across countries. Krueger & Summers (1987) argue that the remarkably similar patterns of inter-industry wage differentials across countries imply that the differences cannot be explained by country-specific institutional factors but are instead due to some common thread across countries, such as technology. Katz & Summers (1989) make the same conclusion in arguing that the observed stability in cross-country wage differentials is not the outcome of particular collective bargaining systems or government interactions in the labour market but reflect the impact of factors fundamental to the operation of industrial economies.

However, this evidence on a similar pattern of inter-industry wage differentials across countries is based on aggregated data, implying that differences in labour quality characteristics are not accounted for. For example, Edin & Zetterberg (1992) show for Sweden and the United States that aggregate data may, as a consequence, overstate cross-country correlations considerably.

The past few years have produced several studies comparing the pattern of industry wage differentials across countries using micro-level data. The findings are, however, quite mixed. Wagner (1990) estimates identically specified earnings functions for men from five countries[5] using internationally comparable micro data and notes that the pattern of inter-industry wage differentials varies a lot across the investigated countries. This evidence is interpreted as clearly contradicting previous conclusions drawn from studies using aggregated data.

Barth & Zweimüller (1992), on the other hand, find when comparing the industry wage structure of a slightly different set of OECD countries[6] that the patterns of the inter-industry pay structure tend to be remarkably similar across the countries under study and thus largely independent of the countries' highly different labour market institutions. They also argue that their results are more reliable than those of Wagner (1990) because of their much larger samples. Perhaps less surprising is the finding of very similar industry wage patterns across the Nordic countries (Albæk et al., 1993).

A common feature of micro-level studies of inter-industry wage differentials is the strong evidence on large and mostly highly significant industry wage premiums also after controlling for observable individual and job characteristics. Thus Krueger & Summers (1988) report the weighted and adjusted standard deviation of wage premiums (WASD)[7] across U.S. industries to be 13.2 per cent in 1974, 10.8 per cent in 1979 and 14.0 per cent in 1984. Dickens & Katz (1987) obtained similar results and found little difference between a sample of union workers and non-union workers.

Cross-sectional estimates of inter-industry wage differentials for Sweden reported by Arai (1992) suggest that the weighted and adjusted standard deviation of wage differentials varies between 0.071 in 1968 and 0.026 in 1981. These differentials are noted to be about half of the corresponding differentials for the U.S. in 1968 and about 25 per cent in 1981. Edin & Zetterberg (1992) report a variability of only 1.3 per cent in Swedish industry wages for 1984. The weighted and adjusted standard deviation is calculated to be 5.3 per cent for Norway (Barth & Zweimüller, 1992), 3.2 and 5.5 per cent for Austria (Barth & Zweimüller (1992) resp. Winter-Ebmer (1992)), and 7.2 per cent for Germany (Zanchi, 1991). The corresponding figure for Finland is estimated at 8.5 per cent in 1975, 7.5 per cent in 1980, and 7.9 per cent in 1985 (Vainiomäki & Laaksonen, 1992). Obviously, the slightly higher standard deviation calculated for Finnish industries as compared to the other Nordic countries is partly due to the fact that the Finnish figures are not adjusted for sampling error.

Finally, the inter-industry wage differentials have been found to be significant and very stable also across occupations, implying that virtually all occupations tend to be better paid in high-wage industries than in low-wage industries. Early evidence on this issue is provided by Dunlop (1957), who finds when studying wages in Boston in 1951 that a truck driver in a high-paid industry is paid almost twice as much as a truck driver in a low-paid industry. Leonard (1987) reports substantial inter-firm wage differentials for 290 occupational definitions in the high-technology sector in one state of the United States. Katz & Summers (1989), in turn, calculate industry wage differentials for secretaries, janitors, and managers and find significant industry differentials of roughly the same magnitude as for all workers. Groshen & Krueger (1990) examine pay in four occupations using data on 300 U.S. hospitals and find a strong hospital-specific effect on wages that cut across occupations.

In contrast to the above evidence, Helwege (1992) finds when analysing 11 narrowly defined occupations from U.S. census data that "the industry rankings for each occupation scarcely strayed from the industry ranking of the entire sample" (p. 77), but that few of the occupations "had wages that were significantly different across industries, suggesting that efficiency wages are not paid, or at least not for the same occupation" (p. 83).

3.3. Do industry premiums reflect efficiency wage aspects?

Attempts have been made, in more recent years, to unravel the determinants of the substantial industry wage premiums that tend to remain also after controlling for a large set of productivity- and job-related background factors. As noted earlier, much of this effort has been directed towards testing predictions of efficiency wage models. A major part of this research work has been done in order to rule out other potential explanations of the measured industry effects, such as unobserved differences across industries in workers' productive abilities and/or working conditions. However, a brief look at the existing empirical evidence on this issue makes one inclined to agree with Thaler (1989) who qualifies the non-competitive wage differentials as an anomaly, i.e. as an empirical result that is difficult to rationalize, or to explain within the paradigm without imposing implausible assumptions.

Krueger & Summers (1988) find that the remaining industry-related wage differentials are not due to unmeasured worker ability[8] or compensating differentials but can at least partly be explained by wage premiums paid by employers in order to avoid costly labour turnover. They conclude, therefore, that the evidence on the industry wage structure in the United States is not consistent with competitive theory but is instead supportive of the turnover model of efficiency wage theory. Blackburn & Neumark (1988) and Gibbons & Katz (1989) obtain similar results regarding the impact of ability bias. In particular, Blackburn & Neumark (1988) provide evidence suggesting that neither inter-industry nor inter-occupation wage differentials can be attributable to differences in unobserved worker ability. Gibbons & Katz (1989), in turn, find that their "empirical findings...are difficult to reconcile with either pure unmeasured-ability or pure industry-effects explanations" (p. 25), but conclude that "a modified version of the true-industry-effects explanation fits more easily than does any (existing) version of the unmeasured-ability explanation" (pp. 3-4).

This evidence rejecting classical competitive theories of wage determination is not uncontroversial, however. Murphy & Topel (1987), Dickens & Katz (1987), and Topel (1989), for example, give the data an alternative interpretation. Murphy & Topel (1987) provide evidence in support of the unobserved ability model, and conclude that a major part of the measured industry (and occupational) effects is primarily due to unobserved productive ability among workers and not to equalizing wage differences or efficiency wages. Dickens & Katz (1987) and Topel (1989) also argue that the forces that cause sorting by measured human capital (more human capital is associated with higher-wage industries) cause similar sorting by unmeasured human capital and thus overestimation of actual industry wage premiums.

Empirical results for Sweden also provide mixed evidence on the impact of unmeasured worker ability. Edin & Zetterberg (1992) fail to establish significant industry wage effects when estimating fixed effect models from Swedish survey data. In contrast, Arai (1992) using another survey data set finds that a substantial part of the industry-related wage differentials obtained from wage-level estimations remains also after controlling for unobserved worker productivity. Evidence for Finland reported by Vainiomäki & Laaksonen (1992), in turn, indicates that at least part of the estimated cross-section industry wage effects seems to be explained by differences in unobserved worker quality and sorting of individuals by endogenous mobility.

The determinants of quit rates in U.S. industries have been studied by e.g. Pencavel (1970), Akerlof et al. (1988), Krueger & Summers (1988), and Katz & Summers (1989), and all find a strong negative correlation between inter-industry wage differentials and quit rates; i.e. high-wage industries tend to have lower quit rates, which is interpreted as supportive of the hypothesis that workers in high-wage industries receive non-competitive rents. This clearly violates the compensating wage hypothesis. These findings for the United States are, however, rejected for Sweden by Arai (1992), who finds that the probability of shifting to another industry is positively and significantly dependent on the industry wage premiums. Arai argues, though, that due to data limitations neither the Swedish nor the U.S. findings can reject or confirm the hypothesis of the turnover model. A weak support of the turnover model is, on the other hand, seen to be provided by the positive and significant correlation between industry wage premiums and individual tenure obtained both for Sweden (Arai (1992), Edin & Zetterberg (1992)) and the United States (Krueger & Summers, 1988).

Arai (1992) also finds a large and highly significant negative correlation between industry wage premiums and the extent of monitoring measured by workers' autonomy in setting hours and work pace. This evidence on industry effects being an increasing function of the degree of the workers' job autonomy is seen to support the shirking model. When extending the analysis to the private and the public sector in Sweden, Arai (1991) finds a positive wage-job autonomy relation in the private sector as predicted by the shirking model and a negative relation in the public sector, which is consistent with the predictions of the theory of compensating wage differentials.

A few recent studies supporting the efficiency wage hypothesis that wages increase with employer size may also be mentioned. Rebitzer & Robinson (1991), for example, test this hypothesis for primary and secondary labour markets using U.S. survey data and find evidence compatible with the predictions of Bulow & Summer's (1986) efficiency wage model of dual labour markets. A positive wage effect of plant and firm size is also reported for Sweden by Arai (1991,1992). These findings are consistent not only with the predictions of the shirking model (larger firms have more monitoring difficulties) but also with those of the sociological model (larger firms have greater incentives to increase worker morale and loyalty because of less personal employee-employer relations).

As to the large inter-industry wage differentials observed across occupations, Leonard (1987) tests the predictions of the shirking model by using the ratio of supervisors to workers as an indicator of monitoring intensity, but finds little evidence in support of this efficiency wage argument. Groshen & Krueger (1990), on the other hand, find a negative relation between wages and the extent of supervision measured by the ratio of supervisors to staff, a finding which is consistent with the shirking hypothesis. On the whole, though, neither the efficiency wage hypotheses nor the theory of compensating wage differentials seems to be capable of explaining the observed uniformity of inter-industry wage differentials across occupations (cf. e.g. Thaler (1989), Gibbons & Katz (1990)).

4. METHODOLOGY AND DATA

The subsequent empirical analysis uses a frequently adopted approach to assessing the impact and importance of inter-industry wage differentials from cross-sectional micro data. More formally, standard earnings equations are estimated in three steps. In the first step, the dispersion of individual log earnings (lnEARN) is explained merely in terms of a vector (INDU) of primarily two-digit industry control variables in order to obtain crude measures of industry-related wage differentials. In the next two steps, attempts are made to test for competitive theories of wage determination by, first, adding a vector (HUMCAP) of human capital variables to the earnings equation, and second, a vector (OTHER) comprising a broad set of other personal and job characteristics. This yields three earnings equations of the following general form

$$(1)\ \ln EARN_{i1} = \alpha_1 + \sum_{k=1}^{K} \beta_{k1}\mathrm{INDU}_{i1} + \varepsilon_{i1}, \qquad \varepsilon_{i1}, \varepsilon_{i2}, \varepsilon_{i3} \sim N(0, \sigma^2)$$

$$(2)\ \ln EARN_{i2} = \alpha_2 + \sum_{k=1}^{K} \beta_{k2}\mathrm{INDU}_{i2} + \sum_{l=1}^{L} \gamma_{l2}\mathrm{HUMCAP}_{i2} + \varepsilon_{i2}, \qquad i=1,\ldots,n$$

$$(3)\ \ln EARN_{i3} = \alpha_3 + \sum_{k=1}^{K} \beta_{k3}\mathrm{INDU}_{i3} + \sum_{l=1}^{L} \gamma_{l3}\mathrm{HUMCAP}_{i3} + \sum_{m=1}^{M} \delta_{m3}\mathrm{OTHER}_{i3} + \varepsilon_{i3}$$

where subscript i refers to the i^{th} individual, the α_js are constant terms, the β_js, γ_js and δ_js are vectors of unknown parameters, and the ϵ_js are disturbance terms.

These earnings equations are estimated for all non-agricultural employees, on the one hand, and for non-agricultural private-sector employees, on the other. The gender aspect is accounted for in two different ways: first, by estimating the earnings equations for all employees in respective category with gender appearing as an explanatory variable, and second, by estimating separate earnings equations for male and female employees.

The cross-sectional micro data used in the estimations come from the Labour Force Survey for 1987 conducted by Statistics Finland. The data set is supplemented with income data from the tax rolls. When the data are sorted out with respect to missing and incomplete information on crucial variables and restricted to wage and salary earners at the age 16 to 64 not employed in the agricultural sectors (SIC11-13), the sample of employees retained in the actual estimating data shrinks to covering a total of 3748 individuals. Of these, nearly two thirds are in private-sector employment.

The dependent variable is chosen to be average before-tax hourly earnings in order to allow for interpersonal differences in weekly working hours and in months worked, and to make the earnings of full-time and part-time employees comparable. The earnings data used comprise most types of compensation, including overtime and vacation pay and the tax value of fringe benefits.

The Finnish Labour Force Survey is fairly rich in information about the individuals' acquired human capital. In particular, the survey comprises register data on the highest single education completed by each sample individual as well as self-reported information on the individuals' total years of labour market experience, their years with the present employer, and their participation in formal on-the-job training programmes during the survey year. Other relevant information provided in the survey and utilized in the subsequent empirical analysis concerns a wide variety of other personal and job characteristics: marital status, family size, location of residence, temporary employment, part-time job, pay system, working-time scheme, temporary unemployment or layoffs, union membership, and occupational social status.

A summary of definitions of the variables employed in the empirical analysis is given in Table A of Appendix. The employee categories investigated are described in terms of these variables in Tables B and C of Appendix. A detailed presentation of the underlying data, definitions of variables used and estimation results for alternative definitions of crucial variables is given in Asplund (1992a).

The earnings equations in (1)-(3) are estimated using ordinary least squares (OLS) techniques with standard errors adjusted for heteroscedasticity according to White (1980). This means that the disturbance terms in the above earnings models are assumed to be randomly distributed among the population, with an expected value equal to zero.

Two potential sources of selection bias are thereby overlooked. First, the sample individuals recorded as being in employment represent persons who were employed during the week of the questionnaire, excluding all individuals who, for some reason, were not in employment at that particular time. Second, the allocation of employees into the private sector may not be the outcome of a random drawing, allowing sector employment to be treated as exogenously given. Instead it can be expected to be the outcome of the individuals' preferences for employment in the private sector. Given that these potential sources of selection bias have a non-negligible influence on the estimation results, OLS-estimation of the earnings equations in (1)-(3) will produce inconsistent parameter estimates.

The decision not to adjust the estimation results for potential sample selectivity bias can be justified in at least two ways. Estimation results reported in Asplund (1992b,1992c,1993) point to no serious selection biases arising from the individuals' decisions on labour force participation and sector employment. Moreover, when the earnings models in (1)-(3) were reestimated using the more sophisticated estimation methods employed in these three previous studies, the estimated selection coefficients were mostly statistically insignificant at conventional levels, and the parameter estimates of the included explanatory variables were very close to those obtained when using OLS.

5. ESTIMATED INTER-INDUSTRY WAGE DIFFERENTIALS

5.1. Empirical evidence for all employees

The regression results obtained from estimating the conventional earnings equations in (1)-(3) for all non-agricultural employees are reported in column 1 of Tables D1-3 in Appendix. The corresponding estimates for non-agricultural private-sector employees are given in column 1 of Tables F1-3 in Appendix.

As can be seen from these tables, about half or more of the estimated coefficients for the included, primarily two-digit[9] industry indicator variables remain statistically significant at conventional levels also after controlling for differences in acquired human capital and job-related characteristics of the labour force across different industries. Indeed, F-tests suggest that the null hypothesis that the earnings effect of the industry controls is jointly equal to zero can be rejected at a 0.0001 per cent risk level, implying that the estimated industry effects are highly significant.

The importance of industry affiliation in explaining the observed dispersion in log hourly earnings across Finnish industries may also be examined in terms of the standard error of the regression (SEE).[10] Thus the SEE declines by roughly 1.7 per cent for the labour market as a whole and by nearly 2.4 per cent for the private-sector labour market when the industry controls are added to the earnings equation already controlling for human capital, gender, and other personal and job characteristics. Larger drops in the SEE occur when the gender indicator (close to 2.4 per cent in the labour market as a whole, and some 3 per cent in the private sector), the human capital variables (4.2 resp. 3.6 per cent) and the broad set of other personal and job characteristics (over 7 per cent in both markets) are, by turn, introduced into the earnings equation.

In sum, the empirical evidence suggests that the relative importance of industry affiliation in explaining the observed variation in hourly earnings across Finnish industries is quite small. Similar results have been obtained for Sweden (Arai (1992), Edin & Zetterberg (1992)), Norway (Barth & Zweimüller,

Table 1. Estimated inter-industry log wage differentials for non-agricultural employees. Employment-weighted mean wage differentials for primarily two-digit industries.

Industry	Uncon-trolled diff.	Human capital controls	All controls
Mining	-0.0202	-0.0514	-0.0126
Food manufacturing	-0.1144	-0.0501	-0.0385
Textile industries	-0.2571	-0.1089	-0.0935
Wood products	-0.1227	-0.0879	-0.0783
Furniture	-0.2235	-0.1418	-0.1372
Paper products	0.1661	0.1483	0.1621
Printing etc. industries	0.1655	0.1872	0.1402
Chemicals	0.0947	0.0518	0.0524
Non-metallic products	-0.0295	-0.0260	-0.0087
Basic metal industries	0.1865	0.1043	0.1282
Metal products	-0.0002	-0.0185	-0.0119
Other manufacturing	0.2650	0.1777	0.1170
Electricity etc.	0.0744	0.0322	0.0658
Construction	-0.0045	-0.0080	0.0452
Wholesale trade	0.1179	0.0690	0.0155
Retail trade	-0.1738	-0.0900	-0.1016
Restaurants, hotels	-0.1111	0.0298	0.0131
Transport	-0.0105	-0.0091	0.0196
Communication	-0.0160	-0.0298	0.0339
Financing	0.1382	0.1479	0.1286
Insurance	0.2190	0.1098	0.1037
Real estate	0.0764	0.0415	0.0010
Public administration	0.0461	-0.0146	0.0045
Sanitary services	-0.1955	-0.0609	-0.0910
Social services	0.0220	-0.0142	-0.0310
Recreational services	0.0568	0.1083	0.0345
Personal services	-0.1669	-0.1288	-0.0620
No. of observations	3748	3748	3748
R^2 adj.	0.0641	0.3382	0.4355
SD	0.1390	0.0927	0.0804
ASD	0.1282	0.0809	0.0683
WSD	0.1029	0.0691	0.0642
WASD	0.0970	0.0626	0.0575
F-all variables	10.87	54.19	52.62
F-industry controls		6.72	5.88

Source: Calculations based on the employment shares and industry coefficients reported in Tables B and D1-3 of Appendix.

Table 2. Estimated inter-industry log wage differentials for non-agricultural private-sector employees. Employment-weighted mean wage differentials for primarily two-digit industries.

Industry	Uncon-trolled diff.	Human capital controls	All controls
Mining	0.0060	-0.0196	0.0227
Food manufacturing	-0.1058	-0.0525	-0.0344
Textile industries	-0.2466	-0.1053	-0.0848
Wood products	-0.1141	-0.0939	-0.0754
Furniture	-0.2149	-0.1447	-0.1385
Paper products	0.1747	0.1344	0.1629
Printing	0.1740	0.1780	0.1359
Chemicals	0.1033	0.0392	0.0476
Non-metallic products	-0.0209	-0.0373	-0.0129
Basic metal industries	0.1950	0.0735	0.1127
Metal products	0.0085	-0.0321	-0.0222
Other manufacturing	0.2059	0.1153	0.0658
Electricity etc.	0.0818	0.0147	0.0548
Construction	0.0230	0.0101	0.0553
Wholesale trade	0.1366	0.0599	0.0035
Retail trade	-0.1710	-0.1062	-0.1064
Restaurants, hotels	-0.1095	0.0304	0.0178
Transport	-0.0501	-0.0406	0.0003
Communication	0.0959	-0.0002	0.0150
Financing	0.1643	0.1469	0.1299
Insurance	0.2276	0.0879	0.0798
Real estate	0.0930	0.0310	-0.0232
Sanitary services	-0.2501	-0.1220	-0.1702
Social services	0.0681	0.0319	-0.0297
Recreational services	0.2010	0.2598	0.1562
Personal services	-0.1651	-0.1542	-0.0954
No. of observations	2416	2416	2416
R^2 adj.	0.1030	0.3276	0.4180
SD	0.1500	0.1022	0.0885
ASD	0.1369	0.0882	0.0734
WSD	0.1311	0.0885	0.0798
WASD	0.1247	0.0814	0.0723
F-all variables	12.09	34.62	32.54
F-industry controls		6.99	5.72

Source: Calculations based on the employment shares and industry coefficients reported in Tables C and F1-3 of Appendix.

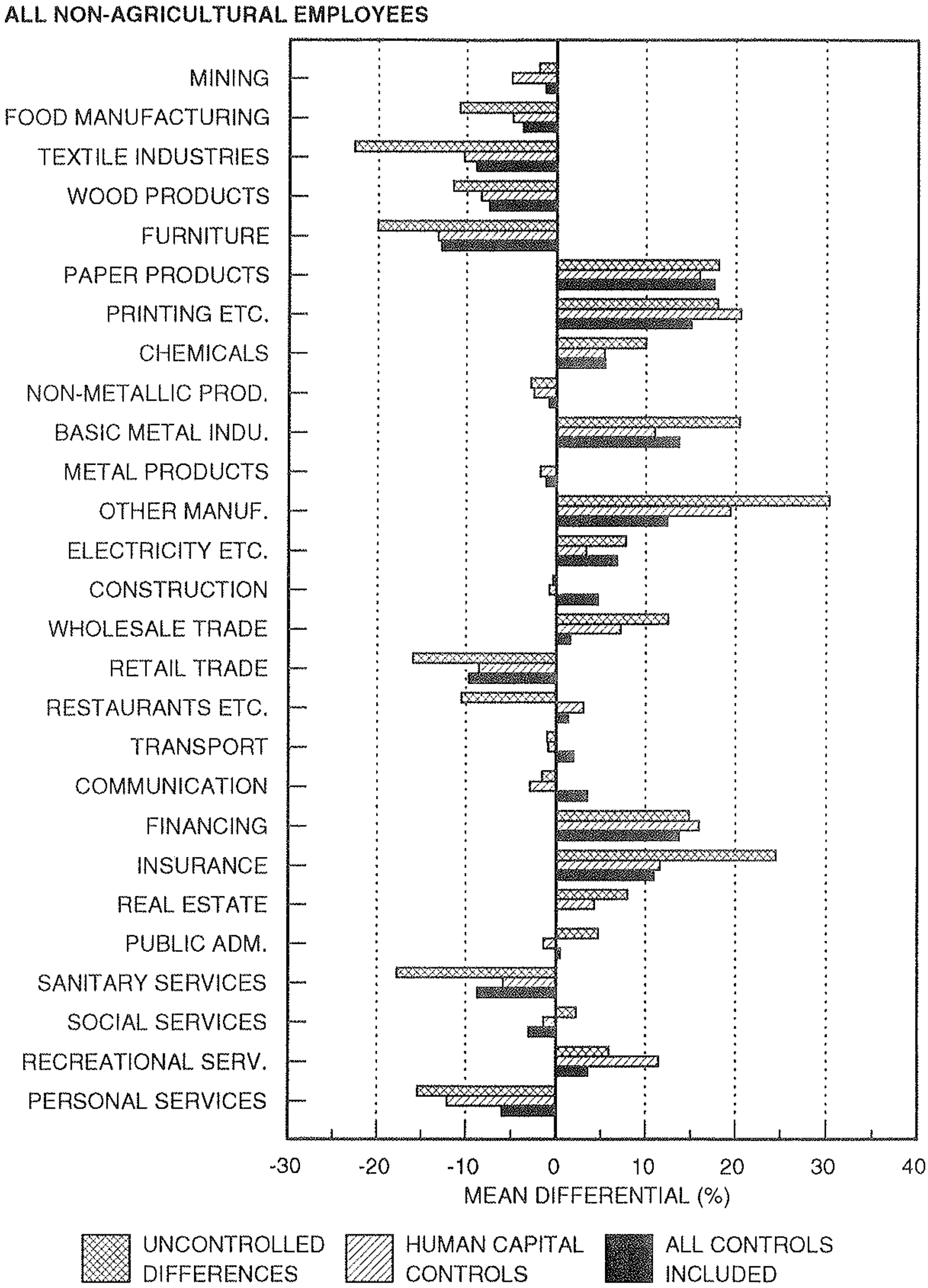
1992), Austria (Barth & Zweimüller, 1992), and the UK (Elliott et al., 1992), while the results for the United States point to a markedly stronger explanatory power of industry affiliation than of worker and job characteristics (e.g. Krueger & Summers, 1988).

The estimated industry coefficients are turned into employment-weighted mean differentials in Tables 1 and 2 for, respectively, all employees and private-sector employees in non-farm jobs. Put differently, the industry wage premiums indicated by the estimated industry coefficients are normalized to measure the proportional difference in hourly earnings between an employee in the given industry and the average employee.[11] The tables also display four widely-used summary measures of the importance of estimated industry coefficients, namely the standard deviation of the measured industry wage premiums. The unweighted standard deviation (SD) measures the industry effect for a randomly chosen industry, while the weighted (by employment shares) standard deviation (WSD) measures the effect for a randomly chosen individual. The ASD and WASD give the corresponding measures adjusted for the least squares sampling error.[12]

As shown in Tables 1 and 2, the (probably underestimated)[13] WASD-measure drops to 0.063 in the labour market as a whole and to 0.081 in the private-sector labour market after controlling for differences in observable labour quality across industries. A notably smaller drop occurs when further controlling for a wide set of other personal and job characteristics: the WASD falls to 0.058 in the labour market as a whole and to 0.072 in the private-sector labour market. These figures are almost doubled when no differences in individual and job characteristics are accounted for in the estimations, suggesting that nearly half of the observed wage dispersion among Finnish industries is attributable to differences in worker and job characteristics. It is also worth noting that the WASDs calculated for private-sector employees are throughout larger than for employees of both the private and the public sector. Similar results are reported for Sweden by Arai (1992).

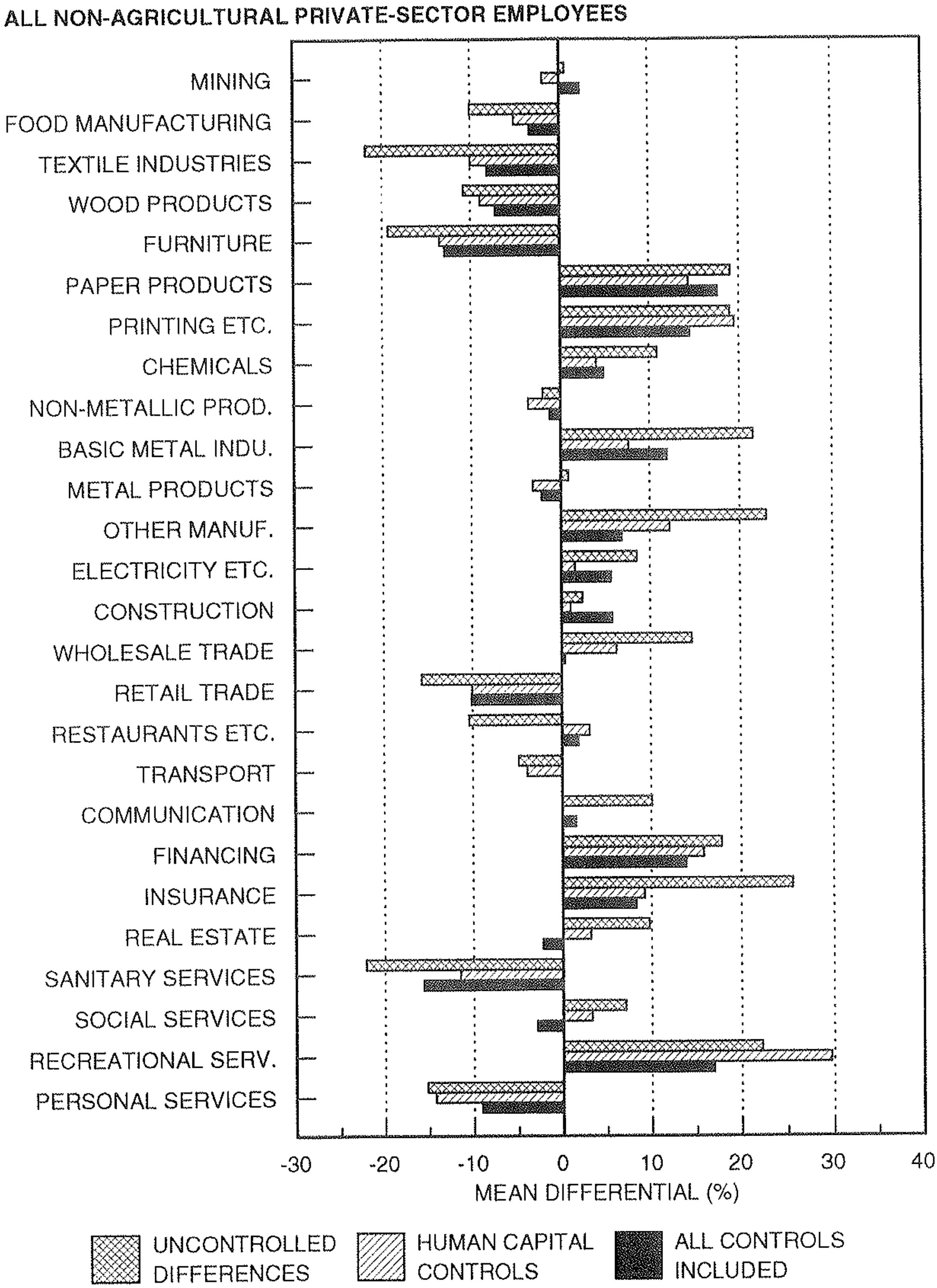
The obtained patterns of industry wage effects for the Finnish labour market as a whole and separately for the private sector

Figure 1. Estimated inter-industry wage differentials for non-agricultural employees. Employment-weighted mean wage differentials for primarily two-digit industries.



Source: Antilogs of the differentials reported in Table 1.

Figure 2. Estimated inter-industry wage differentials for non-agricultural private-sector employees. Employment-weighted mean wage differentials for primarily two-digit industries.



Source: Antilogs of the differentials reported in Table 2.

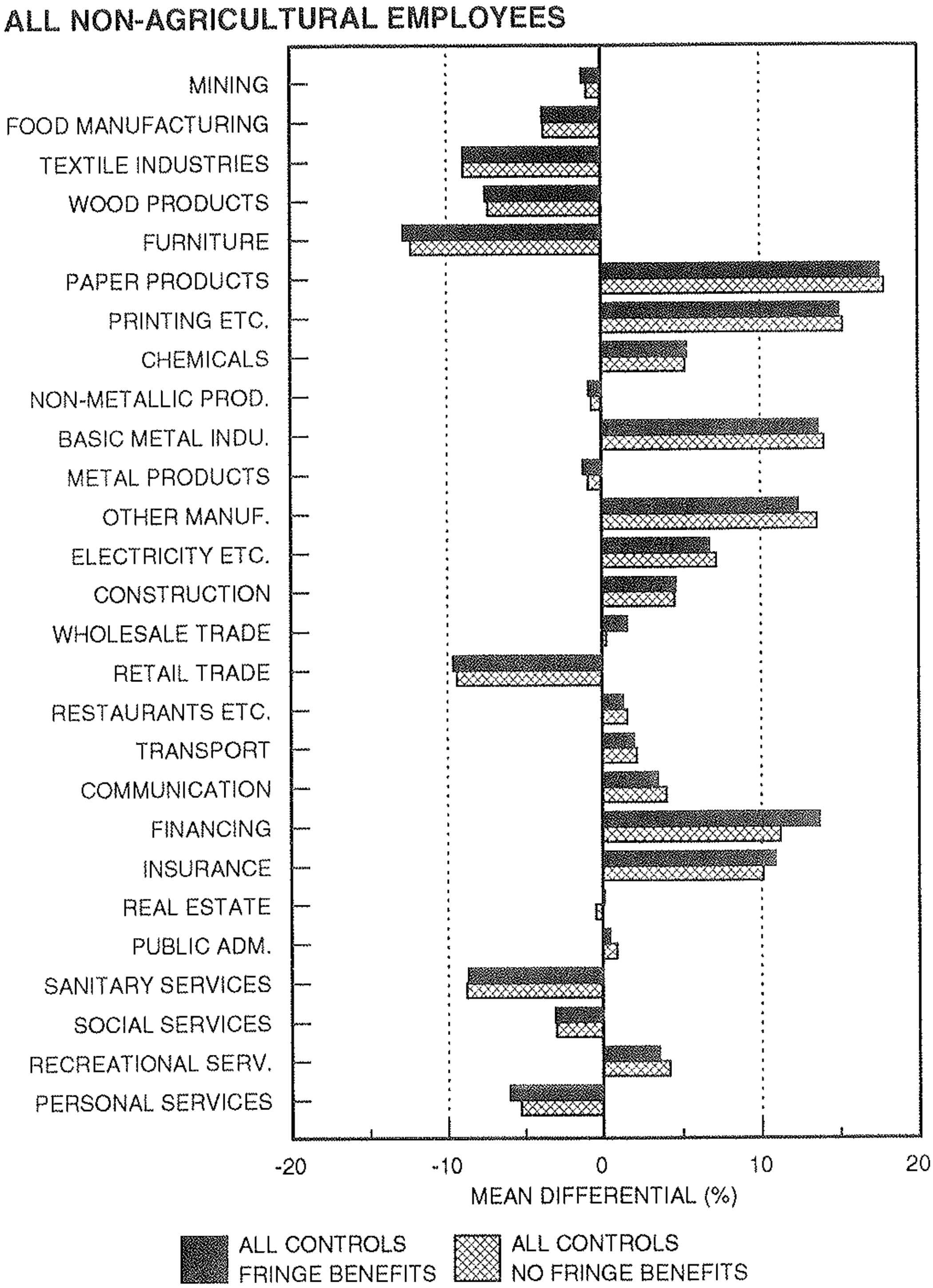
stand out more clearly in Figures 1 and 2. The figures show that the overall pattern of industry wage premiums largely remains also after controlling for a wide variety of personal and job characteristics. In particular, the rank correlation between the uncontrolled (column 1) and the fully controlled (column 3) industry wage structure is 0.887 for the labour market as a whole and 0.871 for the private-sector labour market.

Another general trend is that the measured wage premiums tend to decline when more controls are added. However, there are clear high-pay and low-pay industries even after control. Thus the hourly earnings of an average employee in manufacturing of paper products, printing and publishing industries, basic metal industries, financing, and insurance were in 1987 more than 10 per cent above the hourly earnings of an average employee in the Finnish labour market (Figure 1). In contrast, the hourly earnings of an average employee in the textile and wood (wood products and furniture) industries, retail trade and sanitary services were some 10 per cent or more below the hourly earnings of the average Finnish employee with identical characteristics.

These wage premiums and dispremiums show up strongly also in the private-sector labour market for the simple reason that the public-sector employment in these industries is relatively small; the rank correlation between the whole-economy and the private-sector industry wage premiums after control is 0.940.[14] There is, however, one notable difference between Figures 1 and 2, which relates to the service sector (SIC9). In particular, both the positive and the negative industry effects turn out to be much more pronounced in the private sector, especially in sanitary services and in recreational and cultural services. Possibly this reflects a phenomenon similar to that observed for Sweden by Arai (1991), namely that the public sector seems to have much weaker possibilities and incentives to pay higher wages in order to increase productivity as compared to private-sector employers.

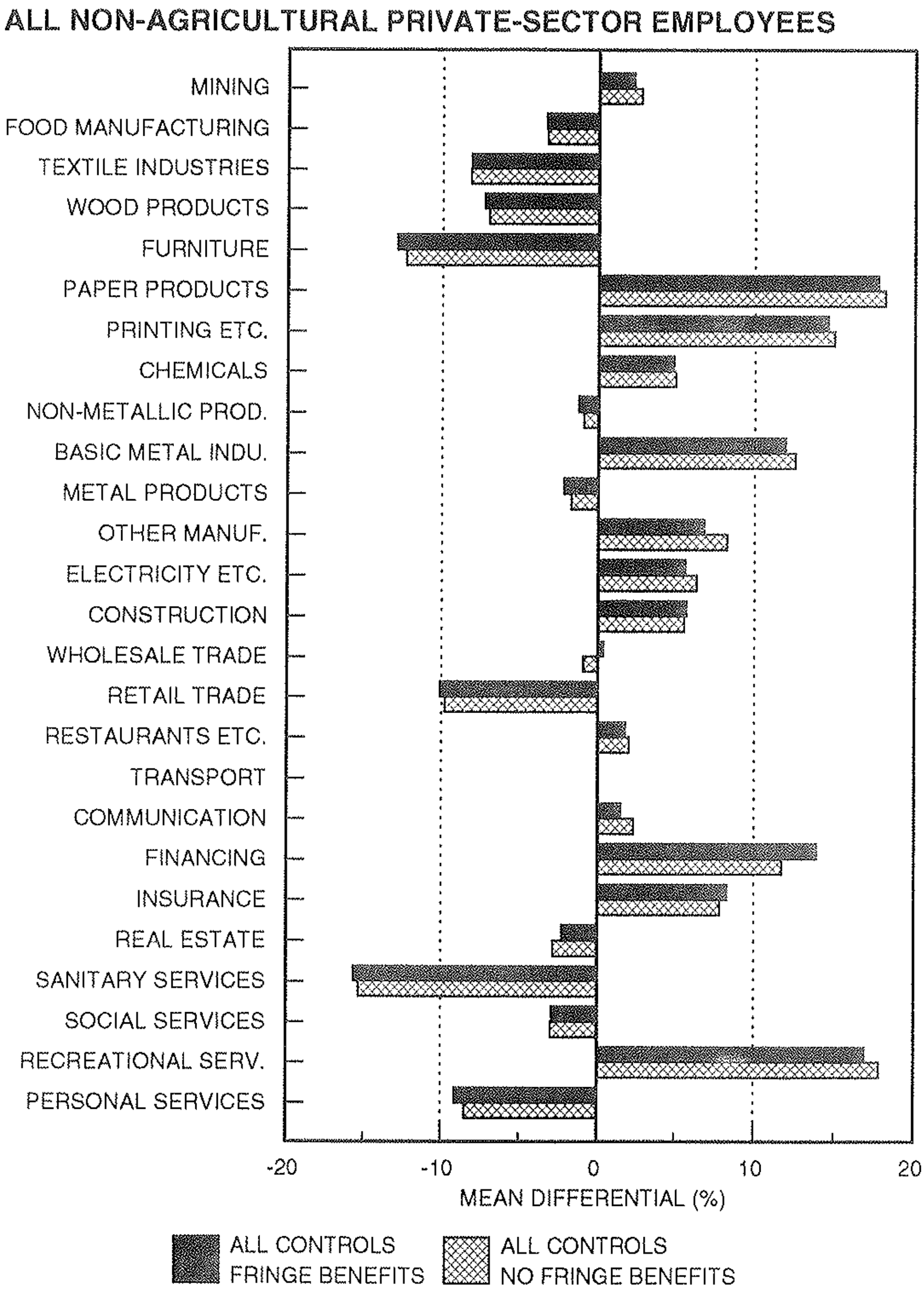
Finally it may be of interest to briefly examine the impact of fringe benefits on the measured industry wage premiums. As noted earlier, the earnings data used in the present paper comprise most types of compensation, including the taxable value of fringe

Figure 3. Controlled inter-industry wage differentials for non-agricultural employees, with hourly earnings including and excluding fringe benefits. Employment-weighted mean differentials for primarily two-digit industries.



Source: Antilogs of the differentials reported in Table 1 and corresponding calculations from the non-fringe estimates reported in Tables E1-3 of Appendix.

Figure 4. Controlled inter-industry wage differentials for non-agricultural private-sector employees, with hourly earnings including and excluding fringe benefits. Employment-weighted mean differentials for primarily two-digit industries.



Source: Antilogs of the differentials reported in Table 2 and corresponding calculations from the non-fringe estimates reported in Tables G1-3 of Appendix.

benefits as recorded in the tax rolls. In 1987, the taxable value of fringe benefits was, on average, some 80 per cent of their market value. Moreover, virtually all fringe benefits are subject to taxation, the most important exceptions being reasonable health and recreational benefits financed by the employer.

As can be seen from Figures 3 and 4, the size of the measured industry wage effects does not change much when fringe benefits are excluded from the dependent variable. The most conspicuous exception is the financing sector for which the exclusion of fringe benefits results in a notable drop in the wage premium of the average financing employee. These minor differences in measured industry wage premiums from including and excluding fringe benefits are perhaps somewhat surprising in the sense that the progressive income tax system would be expected to create strong incentives to compensate employees with fringe benefits at least at higher income levels. Evidence in support of this hypothesis is provided by Krueger & Summers (1988).

5.2. Empirical evidence by gender

In this subsection, the previous analysis for all employees is repeated for female and male employees in the Finnish labour market and separately for females and males in private-sector employment. A distinction by gender may be justified not least in view of the different distribution of men and women across industries (cf. Tables B and C of Appendix). The regression results underlying the employment-weighted mean differentials reported for non-agricultural female employees in Tables 3-4 and for non-agricultural male employees in Tables 5-6 are displayed in columns 2 and 3 of Tables D1-3 and F1-3 in Appendix.

A brief examination of the relative importance of the individuals' industry affiliation in explaining the observed dispersion of, respectively, female and male log hourly earnings across Finnish industries indicates the following. For male employees, nearly half of the estimated coefficients for the included industry controls remain statistically significant at conventional levels, even after controlling for differences in

Table 3. Estimated inter-industry log wage differentials for non-agricultural female employees. Employment-weighted mean wage differentials for primarily two-digit industries.

Industry	Uncon-trolled diff.	Human capital controls	All controls
Mining	0.0545	-0.0278	-0.0178
Food manufacturing	-0.1352	-0.0713	-0.0147
Textile industries	-0.2258	-0.1444	-0.0367
Wood products	-0.0962	-0.0645	-0.0074
Furniture	-0.1788	-0.1134	-0.0704
Paper products	0.0137	0.0254	0.0969
Printing etc. industries	0.2265	0.1928	0.1475
Chemicals	-0.0117	-0.0423	0.0130
Non-metallic products	-0.1810	-0.1355	-0.0261
Basic metal industries	-0.0401	-0.0033	0.0221
Metal products	-0.1453	-0.0863	-0.0034
Other manufacturing	0.4531	0.3688	0.2620
Electricity etc.	-0.1280	-0.0841	-0.0418
Construction	-0.0550	-0.0005	0.0305
Wholesale trade	0.0446	0.0318	0.0184
Retail trade	-0.1444	-0.0901	-0.1357
Restaurants, hotels	-0.0433	0.0305	0.0180
Transport	0.0661	0.0840	0.0618
Communication	-0.0160	-0.0095	0.0537
Financing	0.1445	0.1395	0.1383
Insurance	0.1148	0.0947	0.0896
Real estate	0.0095	0.0134	0.0036
Public administration	0.0221	-0.0029	0.0290
Sanitary services	-0.1209	-0.0163	-0.0011
Social services	0.0535	0.0057	-0.0173
Recreational services	0.1707	0.1454	0.0544
Personal services	-0.0845	-0.0039	-0.0004
No. of observations	1949	1949	1949
R^2 adj.	0.0703	0.2416	0.3588
SD	0.1444	0.1088	0.0788
ASD	0.1157	0.0874	0.0503
WSD	0.1060	0.0736	0.0649
WASD	0.0950	0.0596	0.0502
F-all variables	6.67	18.73	20.82
F-industry controls		3.69	2.88

Source: Calculations based on the employment shares and industry coefficients reported in Tables B and D1-3 of Appendix.

Table 4. Estimated inter-industry log wage differentials for non-agricultural private-sector female employees. Employment-weighted mean wage differentials for primarily two-digit industries.

Industry	Uncon-trolled diff.	Human capital controls	All controls
Mining	0.0912	-0.0002	-0.0150
Food manufacturing	-0.0986	-0.0604	-0.0102
Textile industries	-0.1874	-0.1360	-0.0480
Wood products	-0.0595	-0.0514	0.0061
Furniture	-0.1421	-0.1007	-0.0643
Paper products	0.0504	0.0382	0.1018
Printing	0.2632	0.2059	0.1599
Chemicals	0.0250	-0.0247	0.0197
Non-metallic products	-0.1444	-0.1232	-0.0232
Basic metal industries	-0.0034	0.0246	0.0360
Metal products	-0.1087	-0.0907	-0.0171
Other manufacturing	0.1083	0.1136	0.0826
Electricity etc.	-0.1631	-0.1292	-0.0444
Construction	0.0190	0.0291	0.0491
Wholesale trade	0.0788	0.0223	-0.0066
Retail trade	-0.1175	-0.0999	-0.1233
Restaurants, hotels	-0.0191	0.0310	0.0198
Transport	0.0689	0.0403	0.0181
Communication	-0.0882	-0.0971	-0.0457
Financing	0.1973	0.1590	0.1664
Insurance	0.1515	0.0947	0.0831
Real estate	0.0399	0.0034	-0.0229
Sanitary services	-0.1674	-0.1045	-0.1192
Social services	0.1369	0.1048	-0.0000
Recreational services	0.3014	0.3030	0.1674
Personal services	-0.0478	-0.0167	-0.0308
No. of observations	1076	1076	1076
R^2 adj.	0.1190	0.2064	0.2963
SD	0.1326	0.1082	0.0767
ASD	0.1054	0.0796	0.0304
WSD	0.1356	0.1079	0.0879
WASD	0.1236	0.0945	0.0724
F-all variables	6.81	9.22	9.38
F-industry controls		4.33	2.58

Source: Calculations based on the employment shares and industry coefficients reported in Tables C and F1-3 of Appendix.

Table 5. Estimated inter-industry log wage differentials for non-agricultural male employees. Employment-weighted mean wage differentials for primarily two-digit industries.

Industry	Uncon-trolled diff.	Human capital controls	All controls
Mining	-0.1134	-0.0452	-0.0333
Food manufacturing	-0.0724	-0.0302	-0.0266
Textile industries	-0.0688	-0.0015	-0.0014
Wood products	-0.1988	-0.0865	-0.1109
Furniture	-0.2802	-0.1763	-0.1756
Paper products	0.1616	0.1852	0.1893
Printing etc. industries	0.0941	0.1941	0.1258
Chemicals	0.0754	0.0830	0.0668
Non-metallic products	-0.0775	-0.0038	-0.0192
Basic metal industries	0.1246	0.0814	0.1016
Metal products	-0.0220	-0.0030	-0.0328
Other manufacturing	0.1303	0.1404	0.0818
Electricity etc.	0.0546	0.0414	0.0479
Construction	-0.0926	-0.0016	0.0306
Wholesale trade	0.1282	0.0885	-0.0096
Retail trade	-0.1648	-0.1049	-0.0658
Restaurants, hotels	-0.0930	-0.0079	-0.0485
Transport	-0.1076	-0.0385	0.0090
Communication	-0.0495	-0.0524	0.0223
Financing	0.4635	0.2450	0.1568
Insurance	0.3420	0.1254	0.1475
Real estate	0.1312	0.0648	0.0032
Public administration	0.0942	-0.0300	-0.0198
Sanitary services	-0.2504	-0.2001	-0.3010
Social services	0.1753	-0.0596	-0.0515
Recreational services	-0.0894	0.0004	-0.0464
Personal services	-0.2647	-0.1865	-0.1257
No. of observations	1799	1799	1799
R^2 adj.	0.1149	0.3754	0.4716
SD	0.1751	0.1107	0.1033
ASD	0.1606	0.0922	0.0851
WSD	0.1360	0.0830	0.0709
WASD	0.1283	0.0734	0.0597
F-all variables	9.97	31.87	30.17
F-industry controls		5.21	3.99

Source: Calculations based on the employment shares and industry coefficients reported in Tables B and D1-3 of Appendix.

Table 6. Estimated inter-industry log wage differentials for non-agricultural private-sector male employees. Employment-weighted mean wage differentials for primarily two-digit industries.

Industry	Uncon-trolled diff.	Human capital controls	All controls
Mining	-0.0678	0.0188	0.0192
Food manufacturing	-0.0595	-0.0501	-0.0345
Textile industries	-0.0560	-0.0218	-0.0054
Wood products	-0.1859	-0.1034	-0.1168
Furniture	-0.2673	-0.1944	-0.1892
Paper products	0.1745	0.1632	0.1818
Printing	0.1070	0.1737	0.1178
Chemicals	0.0883	0.0613	0.0561
Non-metallic products	-0.0646	-0.0223	-0.0250
Basic metal industries	0.1375	0.0561	0.0924
Metal products	-0.0085	-0.0224	-0.0419
Other manufacturing	0.1432	0.1205	0.0782
Electricity etc.	0.0898	0.0323	0.0385
Construction	-0.0614	0.0215	0.0469
Wholesale trade	0.1598	0.0805	-0.0104
Retail trade	-0.1519	-0.1266	-0.0818
Restaurants, hotels	-0.0545	0.0089	-0.0388
Transport	-0.1475	-0.0561	0.0232
Communication	0.0911	-0.0009	0.0261
Financing	0.4766	0.2034	0.1001
Insurance	0.3549	0.0895	0.1211
Real estate	0.1606	0.0634	-0.0072
Sanitary services	-0.2435	-0.2093	-0.2993
Social services	0.0920	-0.1370	-0.1184
Recreational services	0.1485	0.1417	0.0885
Personal services	-0.2614	-0.2181	-0.1504
No. of observations	1340	1340	1340
R^2 adj.	0.1158	0.3399	0.4377
SD	0.1799	0.1147	0.1056
ASD	0.1593	0.0891	0.0783
WSD	0.1399	0.0938	0.0814
WASD	0.1304	0.0827	0.0684
F-all variables	8.01	21.28	20.30
F-industry controls		4.72	3.67

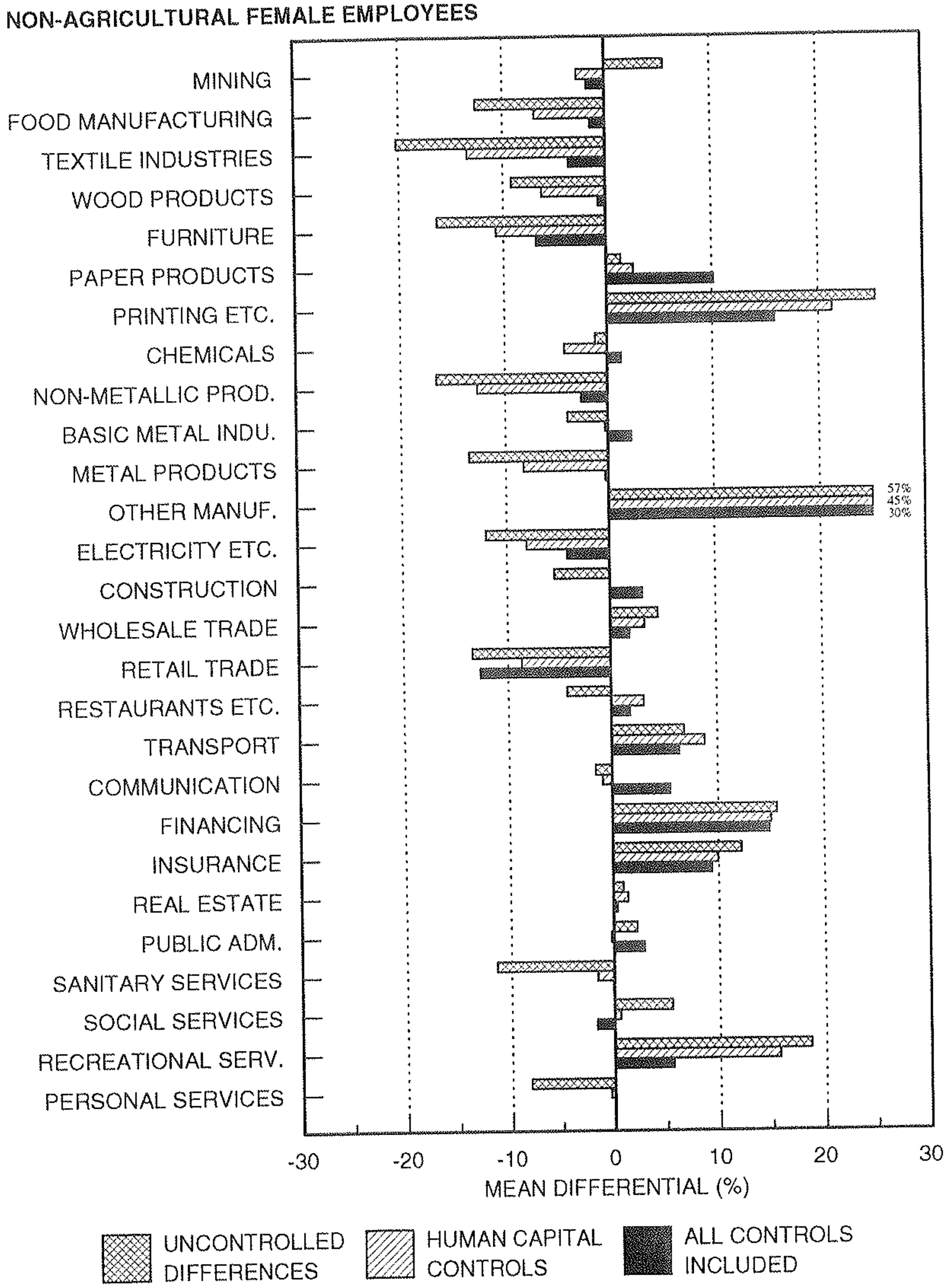
Source: Calculations based on the employment shares and industry coefficients reported in Tables C and F1-3 of Appendix.

in personal and job characteristics. For women, only about one fifth of the industry coefficients remain significant after control. Nevertheless, F-tests suggest that for both genders, the null hypothesis that the investigated set of industry controls has no significant influence on hourly earnings can be rejected at a 0.0001 per cent risk level.

Further, the standard error of the regression (SEE) declines by slightly more for men (2.1 per cent in the labour market as a whole, and 2.5 per cent in the private sector) than for women (1.3 resp. 1.9 per cent) when industry indicator variables are added to the gender-specific earnings equations already controlling for differences in acquired human capital and other personal and job characteristics. For both genders, larger drops in the SEE occur when the human capital variables (4.6 resp. 4.0 per cent for men, and 3.8 resp. 3.1 per cent for women) and the large set of other individual and job-related variables (8.0 resp. 7.7 per cent for men, and 8.2 resp. 6.0 per cent for women) are, by turn, introduced into the earnings equation. All in all, then, industry affiliation seems to be of relatively small importance in explaining the observed dispersion in hourly earnings among both male and female employees.

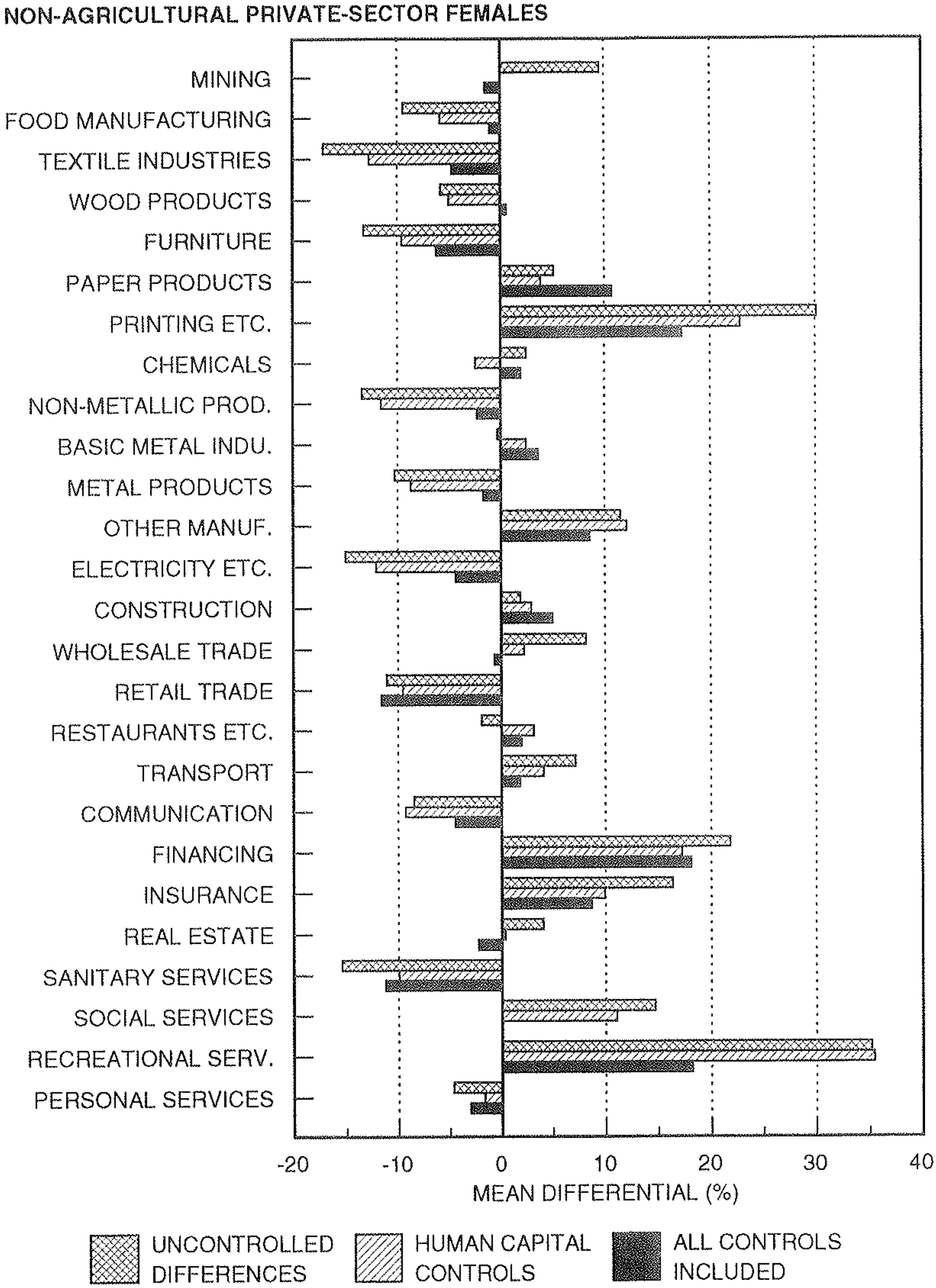
As shown in Tables 3 and 4, the weighted and adjusted standard deviation (WASD) of the measured industry wage premiums drops from 9.5 per cent to 5.0 per cent after control for all female employees, and from 12.4 per cent to 7.2 per cent after control for females in private-sector employment. The corresponding measures for men are found in Tables 5 and 6. Thus the WASD falls from 12.8 per cent to 6.0 per cent after control for all male employees, and from 13.0 per cent to 6.8 per cent after control for males employed in the private sector. For both genders, controlling for differences in observable labour quality causes a major part of the decline in the WASD-measure. Another similarity across genders is the larger variability in industry wages, as measured by the WASD, for private-sector employees as compared to private- and public-sector employees taken together. It is also to be noted that the WASD after control is slightly higher for private-sector women than for private-sector men, whereas the reverse holds when examining the labour market as a whole.[15]

Figure 5. Estimated inter-industry wage differentials for non-agricultural female employees. Employment-weighted mean wage differentials for primarily two-digit industries.



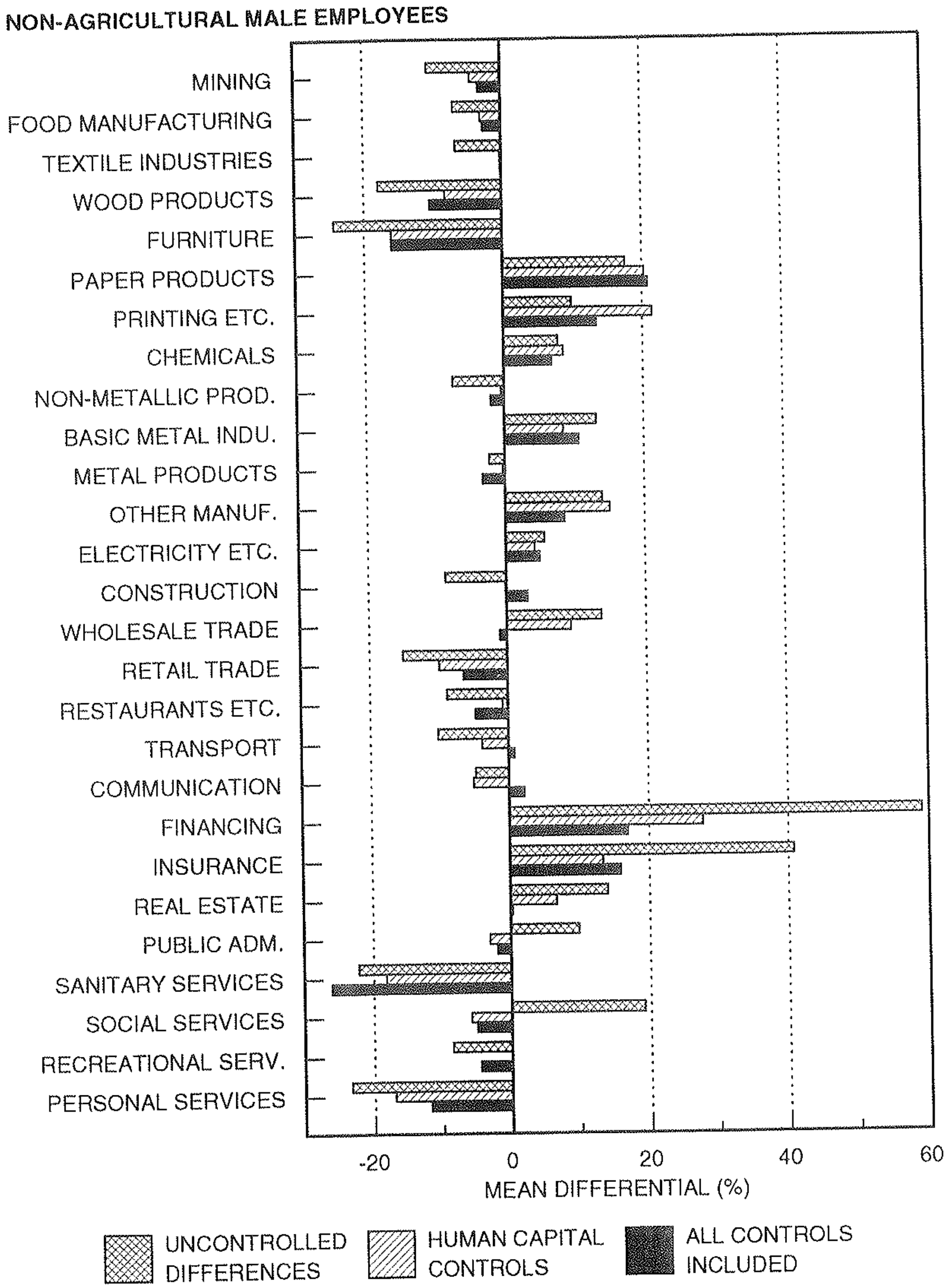
Source: Antilogs of the differentials reported in Table 3.

Figure 6. Estimated inter-industry wage differentials for non-agricultural private-sector female employees. Employment-weighted mean wage differentials for primarily two-digit industries.



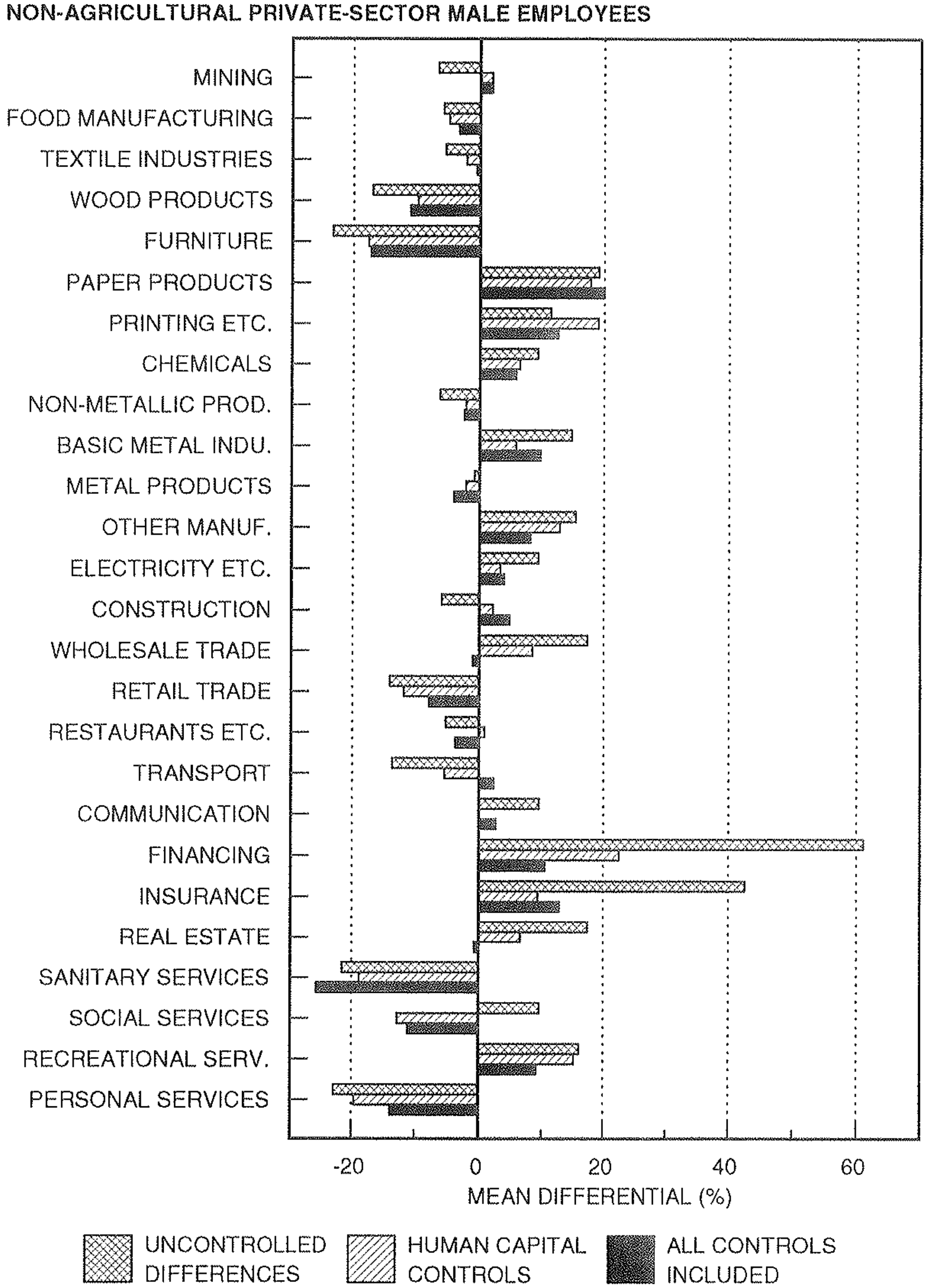
Source: Antilogs of the differentials reported in Table 4.

Figure 7. Estimated inter-industry wage differentials for non-agricultural male employees. Employment-weighted mean wage differentials for primarily two-digit industries.



Source: Antilogs of the differentials reported in Table 5.

Figure 8. Estimated inter-industry wage differentials for non-agricultural private-sector male employees. Employment-weighted mean wage differentials for primarily two-digit industries.



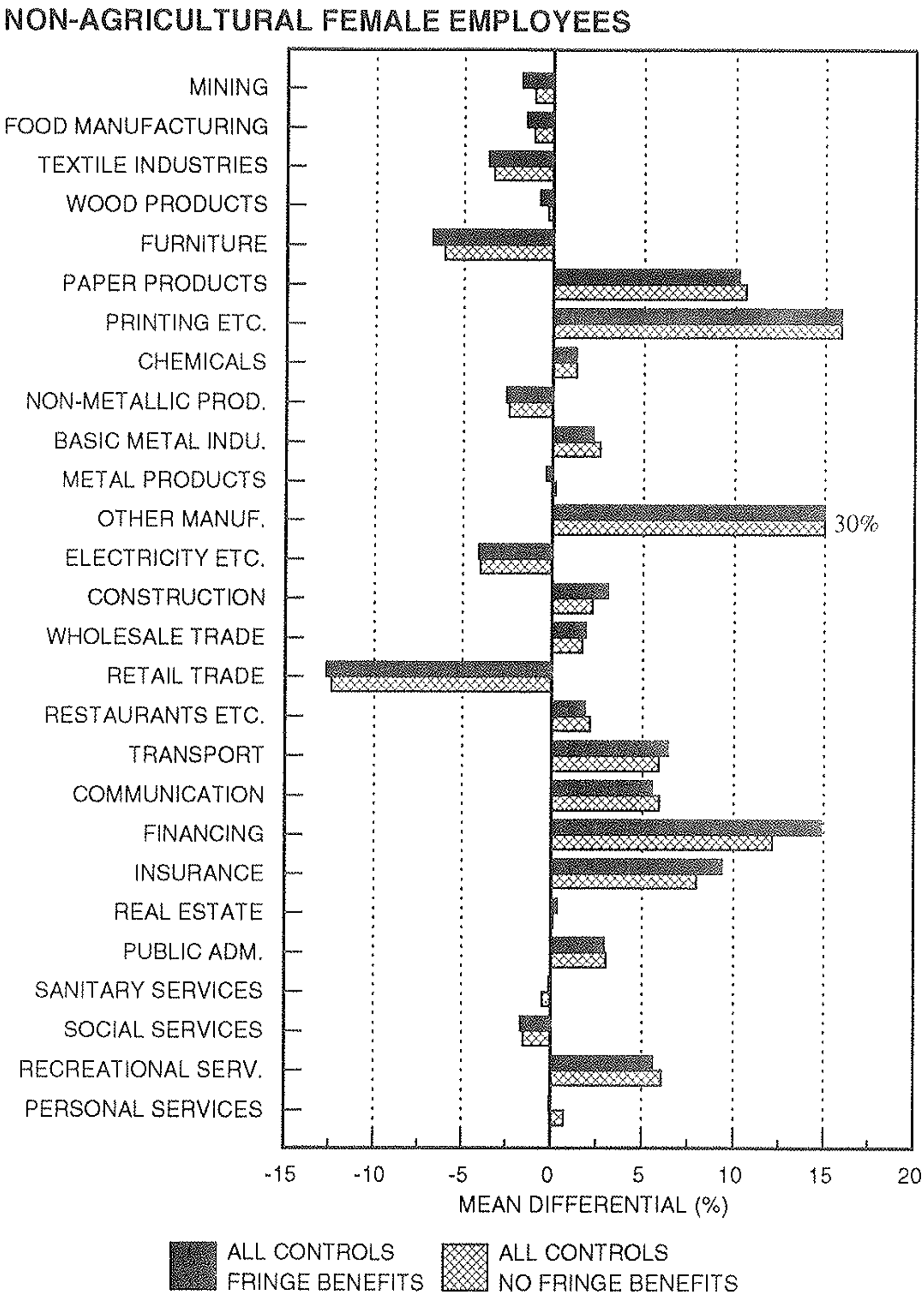
Source: Antilogs of the differentials reported in Table 6.

The gender-specific patterns of industry wage premiums obtained for the labour market as a whole and separately for the private-sector labour market are displayed in Figures 5-8. If disregarding the service sector (SIC9) and the small and very heterogeneous sector of 'other manufacturing', the largest industry wage premiums among female employees are received by females employed in the paper industries (paper products and printing) and in the financing and insurance sectors (Figures 5-6); the hourly earnings of an average female employee in these industry sectors were in 1987 some 10 per cent or more above the hourly earnings of the average female employee. The average female employee in retail trade, on the other hand, earned over 10 per cent less than the average female employee with identical characteristics.

The pattern of remaining industry wage premiums obtained for male employees resembles quite strongly that of female employees; the rank correlation between the male and the female industry wage structure after control is 0.731 (compared to 0.523 without control) for the labour market as a whole, and 0.742 (compared to 0.633 without control) for the private-sector labour market. Specifically, substantial wage premiums are also estimated for the average male employee in the paper industries (paper products and printing) and in the financing and insurance sectors (Figures 7-8). However, the largest wage dispremium among male employees is not obtained for those in retail trade, but for those in manufacturing of wood products and of furniture and fixtures.

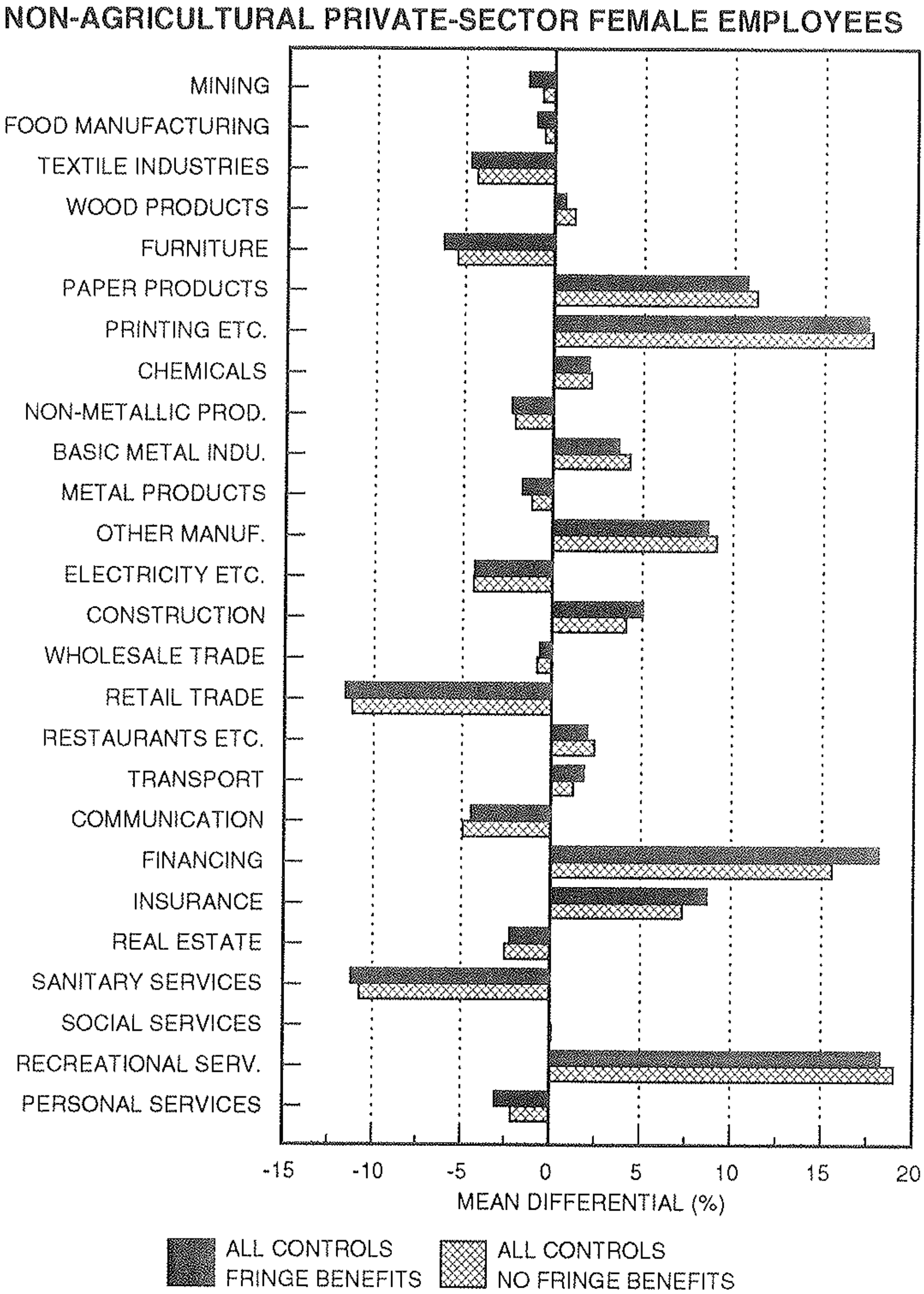
Figures 9-12, finally, show that the exclusion of fringe benefits from the analysis affects the gender-specific industry wage structures only marginally. Again the most conspicuous difference occurs for the financing sector, especially among female employees.

Figure 9. Controlled inter-industry wage differentials for non-agricultural female employees, with hourly earnings including and excluding fringe benefits. Employment-weighted mean differentials for primarily two-digit industries.



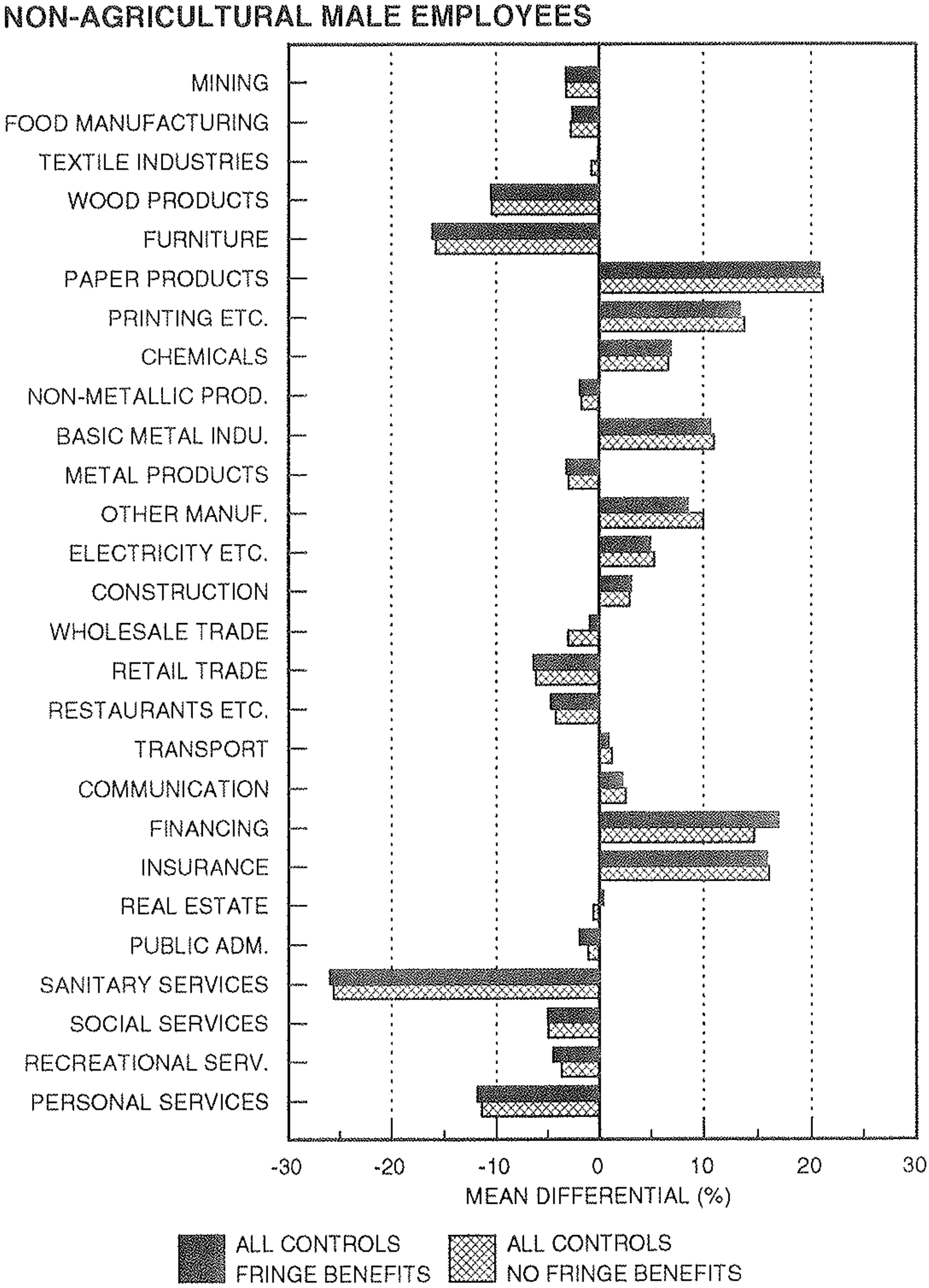
Source: Antilogs of the differentials reported in Table 3 and corresponding calculations from the non-fringe estimates reported in Tables E1-3 of Appendix.

Figure 10. Controlled inter-industry wage differentials for non-agricultural private-sector female employees, with hourly earnings including and excluding fringe benefits. Employment-weighted mean differentials for primarily two-digit industries.



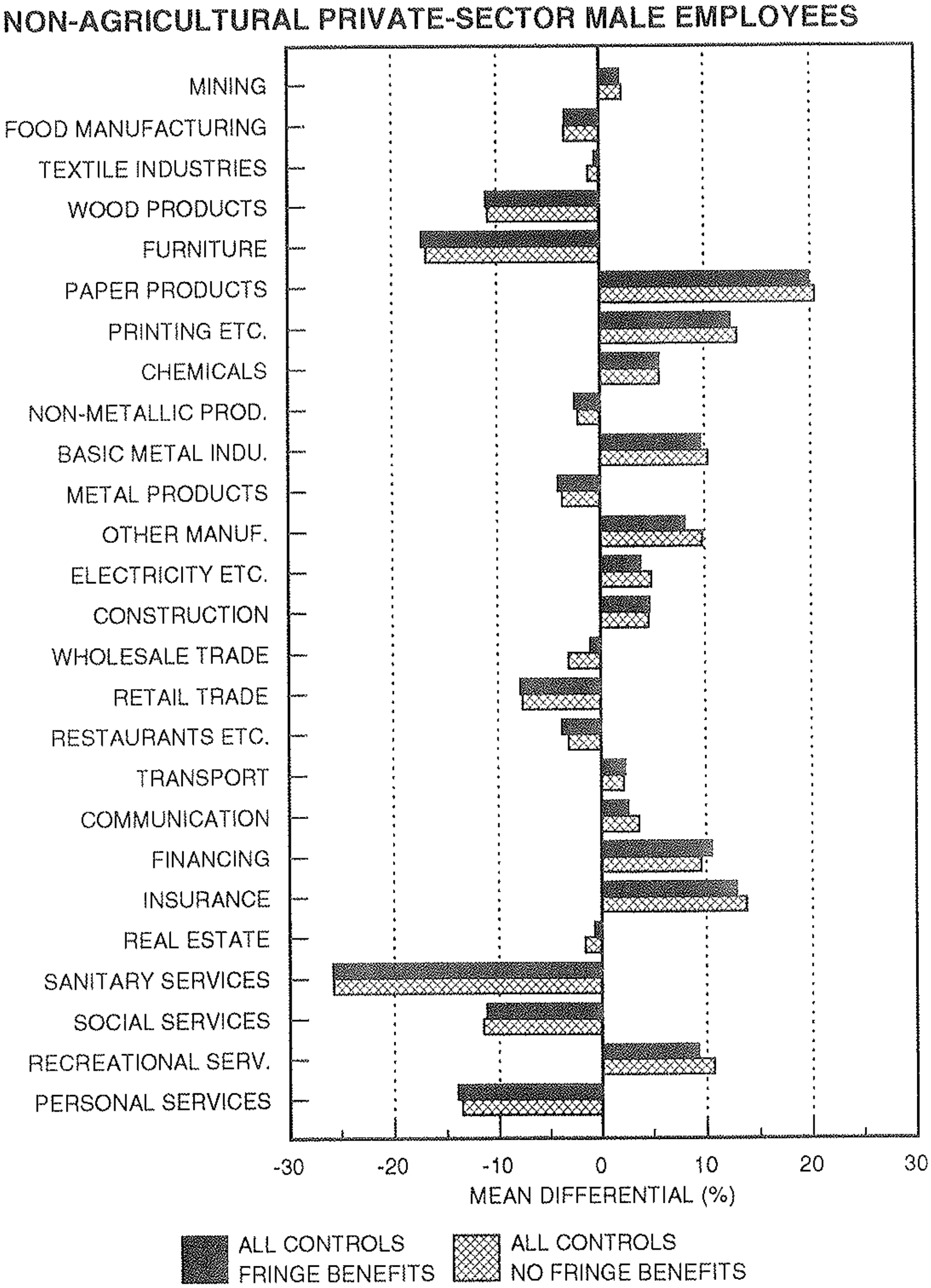
Source: Antilogs of the differentials reported in Table 4 and corresponding calculations from the non-fringe estimates reported in Tables G1-3 of Appendix.

Figure 11. Controlled inter-industry wage differentials for non-agricultural male employees, with hourly earnings including and excluding fringe benefits. Employment-weighted mean differentials for primarily two-digit industries.



Source: Antilogs of the differentials reported in Table 5 and corresponding calculations from the non-fringe estimates reported in Tables E1-3 of Appendix.

Figure 12. Controlled inter-industry wage differentials for non-agricultural private-sector male employees, with hourly earnings including and excluding fringe benefits. Employment-weighted mean differentials for primarily two-digit industries.



Source: Antilogs of the differentials reported in Table 6 and corresponding calculations from the non-fringe estimates reported in Tables G1-3 of Appendix.

6. POTENTIAL SOURCES OF ESTIMATED INDUSTRY WAGE PREMIUMS

The empirical evidence presented in the previous section suggests that substantial industry wage differentials remain also after controlling for a broad set of personal and job characteristics. Indeed, these background factors succeed in explaining only about half or less of the observed dispersion in hourly earnings across Finnish industries. How then is the other half of the measured industry wage premiums to be explained? As discussed in Section 3, the economics literature has so far failed to give these wage premiums a satisfactory explanation. Empirical tests of the predictions of alternative hypotheses do not provide conclusive evidence, either.

In this section, potential sources of the industry wage premiums measured for the private sector in Finland (Table 2) are briefly discussed. Unfortunately, the data used in the present study allow, at most, simple tests of alternative hypotheses contributing to the explanation of these wage premiums.

The competitive theory of labour markets predicts that wage differentials for identical employees should vanish in the long run due to market forces. Hence, the industry wage structure measured from a single cross section may be seen to be compatible with this standard theory only if the wage premiums can be argued to reflect a transitory phenomenon due to short-run immobility of labour, unmeasured worker ability, and/or unobserved working conditions. These potential explanations cannot be ruled out based on the available data. However, comparison with other studies suggests that they can hardly offer a full explanation of the remaining industry-related wage differentials. As noted earlier, the empirical findings of Vainiomäki & Laaksonen (1992) obtained from Finnish population census data indicate that the private-sector industry wage structure has remained fairly stable over the period 1975-85, and that only part of the measured industry wage effects seems to reflect unobserved worker quality.

Moreover, if high-ability employees were systematically allocated into high-pay industries, then addition of labour quality variables to the earnings equation should substantially reduce observed industry wage effects. As can be seen from Table 2, the introduction of proxy measures of human capital (educational attainment, total work experience, seniority, participation in on-the-job training programmes) results in a reduction in the weighted and adjusted standard deviation (WASD) of industry wage differentials by one third only. If it is assumed, as in Krueger & Summers (1988), that unmeasured labour quality is correlated with measured quality and that the variation in measured labour quality is much more important than the variation in unmeasured labour quality, then it may be concluded that differences in unobserved worker ability can offer only part of an explanation to the remaining industry wage premiums. In view of the broad set of job-related characteristics controlled for in the estimations, the same conclusion can probably be drawn with respect to the influence of unobservable working conditions.

The next question to ask then is whether the inter-industry wage structure is attributable to specific characteristics of industries, not least in an organizational and technological sense, as predicted by non-market clearing theories. The problem, however, is that the estimated wage effects of industry characteristics are generally consistent with the predictions of more than one labour market model. Neglecting the underlying theoretical reasoning, existing evidence points to a fairly strong relationship between the level of compensation and the following four industry characteristics: firm size, profits and monopoly power, capital intensity, and union density (Thaler, 1989).

Empirical findings suggest that large firms tend to pay higher wages than small firms. This positive effect of firm size on wages has been found to remain also after controlling for various worker and job characteristics (e.g. Brown & Medoff (1989) and Schmidt & Zimmermann (1991)). Accordingly, industries may show up as high-pay industries because they have large average firm/plant sizes (cf. Arai, 1992).

Empirical evidence on the correlation between capital intensity and industry wage rates indicates that industries with high capital-labour ratios tend to pay higher wages (e.g. Slichter (1950), Lawrence & Lawrence (1985), Dickens & Katz (1987)). These findings can be interpreted as suggesting that high-pay industries try to substitute capital for expensive labour or, alternatively, that highly capital-intensive industries use technologies which induce them to pay more (e.g. because of complementarity between capital and skills not captured by the human capital variables included in the earnings equation).[16] Results for Finland (Vainiomäki & Laaksonen, 1992) and Sweden (Arai, 1992) point to no significant influence of the capital-labour ratio on the industry wage structure.

Finally, the percentage of the employees in an industry who are unionized (i.e. the union density) has typically been found to increase wages in the industry.

Of these industry characteristics, the labour force survey data used in the present study can only provide information on the unionization rate within each industry. The average firm/plant size of each industry is not known, while information on profitability and capital intensity by industry can be calculated from National Accounts data. Other industry characteristics, which have been frequently used when trying to explain measured industry wage premiums, are: average years of schooling, average years of experience, fraction of females, and fraction of manual workers. These industry-specific means of individual characteristics are available from the survey data.

A simple attempt is made using this limited information to explain the log industry wage differentials measured for the Finnish private-sector labour market (column 3 of Table 2). However, regression of industry wage premiums on industry characteristics is generally coupled with problems of highly correlated explanatory variables (cf. Table I of Appendix). Hence, it is easy to obtain a relatively high explanatory power in terms of R^2 but often at the expense of "wrong-signed" coefficients. The estimation results displayed in Table 7 show that the different combinations of a selected set of less correlated explanatory variables can explain only a small part of the overall variation in the private-sector industry wage structure. A statistically significant coefficient is obtained for two variables only, namely the average number of years of schooling and the union density of the different industries.

Table 7. Regression of log industry wage premiums after control measured for Finnish private-sector employees (column 3 of Table 2) on different combinations of selected industry-specific characteristics[1]

Variable	Equation (1)	(2)	(3)	(4)
Constant	-0.3216	-0.2921	-0.0560	0.0774
	(.2007)	(.2151)	(.2765)	(.2595)
Average years of above-primary schooling	0.0851*	0.0824*	0.0215	-0.0268
	(.0435)	(.0448)	(.0637)	(.0624)
Average years of experience	0.0034	0.0030	-0.00002	-0.0087
	(.0106)	(.0108)	(.0109)	(.0108)
Capital-labour ratio[2]	11.2076	9.4308	17.4194	
	(39.5156)	(40.5211)	(40.2056)	
Productivity[2]				0.0013*
				(.0006)
Profitability[2]	-0.2049	-0.1713	-0.1611	-0.3209
	(.2895)	(.3048)	(.2991)	(.2776)
Average union density	0.2176*	0.2080*	0.2159*	0.1803
	(.1158)	(.1201)	(.1180)	(.1074)
Average share of females		-0.0377	-0.0739	-0.0467
		(.0839)	(.0867)	(.0801)
Average share of manual workers			-0.1424	-0.1535
			(.1078)	(.0973)
R^2	0.2801	0.2877	0.3506	0.4631
R^2 adj.	0.1001	0.0627	0.0981	0.2543
F-value	1.56	1.28	1.39	2.22
No. of obs.	26	26	26	26

[1] Standard errors are given in parentheses. The variables are industry-specific means calculated from the labour force survey data used in the present study, if not otherwise indicated. Variable means and correlations are reported in, respectively, Table H and Table I of Appendix.

[2] Variable calculated from National Accounts data. The capital-labour ratio is defined as the ratio of the gross fixed capital stock to hours worked, productivity as the ratio of real value added to hours worked, and profitability as the ratio of net operating profit to gross output.

* Denotes significant estimate at a 5 % risk level.

A positive effect of schooling, even after having eliminated individual returns on education in the earnings regression, has also been obtained by e.g. Dickens & Katz (1987), Arai (1992) and Winter-Ebmer (1992). Moreover, Winter-Ebmer (1992) interprets this evidence as supporting Lucas' (1988) model of endogenous growth, according to which human capital investments of an individual have external effects upon his or her co-workers, thereby boosting overall productivity. However, the effect of schooling becomes insignificant when a variable measuring the share of manual workers in each industry is added to the equation. This can be ascribed to the high correlation between the two variables. Probably the inclusion of both variables also explains the insignificant effect of schooling on the industry wage premiums of the Finnish private sector obtained by Vainiomäki & Laaksonen (1992).

The positive effect of union density indicates that industries with a higher unionization rate tend to pay higher wages. The other industry characteristics listed in Table 7 seem to have no significant influence on industry wages, except for productivity (column 4). However, also the productivity variable is highly correlated with the schooling variable, suggesting that its coefficient should be interpreted with caution.

7. CONCLUDING REMARKS

The main purpose of the present paper has been to contribute to the limited knowledge of wage differentials across Finnish industries based on individual data. The analysis has been undertaken for all employees and separately for female and male employees. A distinction has also been made between the labour market as a whole and the private-sector labour market.

The empirical results display that substantial industry-related wage differentials remain even after controlling for a broad set of personal and job characteristics. Indeed, F-tests suggest that the null hypothesis that the earnings effect of the industry indicator variables is jointly equal to zero is clearly rejected for all employee categories under study. But simultaneously the estimation results indicate that worker and job characteristics explain relatively more of the observed industry wage structure than does the individuals' industry affiliation. This holds for both genders.

The measured wage premiums across industries tend to decline when more labour force characteristics are controlled for in the estimations. Yet, the overall pattern of inter-industry wage premiums largely remains; the rank correlation between the uncontrolled and the controlled wage premiums in the labour market as a whole (resp. in the private-sector labour market) is 0.739 (0.821) for female employees and 0.736 (0.734) for male employees. In other words, the uncontrolled industry wage differentials provide a relatively good prediction of the pattern of industry wage premiums that emerges after controlling for a wide variety of relevant individual and job characteristics. In particular, industries paying above-average/below-average wages generally stay high-pay/low-pay industries also after control.

Moreover, the pattern of remaining industry wage differentials shows striking similarities across genders; the rank correlation between the male and the female industry wage structure after control is 0.731 for the labour market as a whole and 0.742 for the private-sector labour market. For both genders, the paper industries and the financing and insurance sectors show up as high-pay industries also after control. These patterns change only marginally when fringe benefits are excluded from the analysis.

The weighted and adjusted standard deviation (WASD) of the measured industry wage differentials drops from 9.7 to 5.8 per cent after control for the labour market as a whole, and from 12.5 to 7.2 per cent after control for the private-sector labour market. The corresponding figures for male and female employees display much the same trend. The standard deviation calculated for the private sector after control is, in fact, very close to the standard deviation calculated by Vainiomäki & Laaksonen (1992) from census data. Obviously the difference (7.2 vs. 7.9 per cent) is partly explained by the fact that Vainiomäki and Laaksonen are not able to control for other differences in job characteristics than occupation, and that they do not adjust the standard deviation for sampling error.

The Finnish results imply that the overall variability in industry wages is somewhat higher in Finland than in the other Nordic countries, but still clearly lower than in the United States. Similar results are obtained in a Nordic comparison reported in Albæk et al. (1993). Hence, the industry wage structure in Finland, as in the other Nordic countries, can be argued to show more resemblance to the competitive model of the labour market than does the U.S. industry wage structure (cf. Holmlund & Zetterberg (1989), Edin & Zetterberg (1992)). The results for Finland may also be interpreted as supporting the assertion that wage inequality among similar workers is smaller in countries with centralized bargaining (cf. Bart & Zweimüller, 1992).

Further, the standard deviation of the measured industry wage premiums indicates that nearly half of the observed wage dispersion among Finnish industries can be attributable to differences in observable personal and job characteristics across industries. Again this seems to largely hold for both genders. Obviously the remaining inter-industry wage differentials reflect some combined effect of alternative explanations such as unmeasured worker ability, unobservable working conditions, collective bargaining, and efficiency wages. Indeed, despite a highly unionized labour market and central wage setting, efficiency wage mechanisms may, nevertheless, be present in the Finnish economy; since firms and industries can set some part of the wages (wage drift), the industry wage distribution may be affected by employer differentials through these industry- and firm-level negotiations (cf. Arai, 1991).

However, the data used in the present study do not allow discriminating tests of alternative models of the labour market. A simple attempt was made to explain the industry wage premiums measured for the private sector, an attempt which proved to be less successful because of the small number of industries under study and the high correlation between explanatory variables. Yet, the estimation results suggest that the rewards to education differ across industries, and that industries with a higher unionization rate tend to pay higher wages.

In sum, the overall impression mediated by the empirical results presented in this paper is that the inter-industry wage structure in Finland is less rigid than in many other countries. Yet, the fact remains that there are significant industry wage premiums also in Finland, even after controlling for differences in personal and job characteristics of the labour force in different industries. But simultaneously it should be emphasized that the examination of inter-industry wage differentials is, in the last resort, quite an approximate way of addressing the question why employees with identical characteristics are paid differently; sources of inter-industry wage variation operate also within industry, as shown by e.g. Groshen (1991) and Barth (1992). Future research in this field should therefore be directed at a more disaggregated level also in Finland.

Footnotes:

1. Most prior empirical work on compensating wage differentials has been based on the estimation of a single wage equation using cross-sectional labour market data. Underlying this work is the implicit assumption that the bias arising from the inability to observe workers' full labour market productivity is not significant. However, Hwang et al. (1992) show that the size of this bias may "cause estimates to underestimate true compensating differentials by a factor of 50 percent or more, and even to result in wrong-signed coefficients" and state that "contemporary labour market studies may severely underestimate workers' marginal willingness to pay for job attributes" (p. 837).
More recent research in this field has focussed on developing simultaneous models of job choice, labour supply and wages to estimate the magnitude of compensating wage differentials (e.g. Woittiez (1990) and the references therein).

2. For a survey of the search theory, see e.g. Mortensen (1986), and of the insider-outsider theory, see e.g. Lindbeck & Snower (1988). There is so far very little theoretical work on the connection between bargaining institutions and wage inequality; both the theoretical and the empirical work on bargaining institutions is almost exclusively concerned with macro-economic performance (see e.g. the discussion and references in Barth & Zweimüller, 1992).

3. Surveys of the efficiency wage literature can be found in e.g. Yellen (1984), Akerlof & Yellen (1986), Katz (1986), Stiglitz (1987), and Weiss (1991). The comprehensive survey in Finnish by Kurjenoja (1992) also deserves to be mentioned.

4. Cf. also Weisskopf et al. (1983).

5. The investigated countries are Austria, the Federal Republic of Germany, Great Britain, Switzerland, and the United States.

6. The analysis focuses on Austria, Norway and the United States, but is also supplemented with similar figures from Canada, Sweden and Germany.

7. For a definition of this measure, see footnote 12.

8. The unobserved ability hypothesis and the approach used to explore the hypothesis are analogous to the concern of controlling for unobserved ability in estimating the return to schooling. (Cf. the theoretical discussion in Asplund (1992d).)

9. Because of the very different nature of manufacturing of paper products (SIC331) and the printing and publishing industries (SIC332), on the one hand, and of manufacturing of wood products (SIC341) and manufacturing of furniture and fixtures (SIC342), on the other, these industries were not aggregated to the two-digit level.

10. Following Arai (1992), the explanatory power of variables is examined by comparing the standard error of the regression including all explanatory variables, i.e. eq. (3), with the standard error of the regression omitting the given variable(s).

11. More formally, the wage premium ($PREMIUM_k$) received in industry k (k = 1,...,K) is calculated as

$$PREMIUM_k = \beta_k - \sum_{k=1}^{K} e_k \beta_k$$

where $\hat{\beta}_k$ is the estimated coefficient for the k^{th} industry and e_k is its employment share in the sample. A value of zero is assigned to the omitted industry (= employment in manufacturing of metal products, SIC38).

12. The unweighted standard deviation (SD) is calculated as

$$SD(\beta) = \left[\sum_{k=1}^{K} (\beta_k - \sum_{k=1}^{K} e_k \beta_k)^2 / K\right]^{\frac{1}{2}}$$

the adjusted standard deviation (ASD) as

$$ASD(\beta) = \left[SD(\beta)^2 - \sum_{k=1}^{K} \hat{\sigma}_k^2 / K + \sum_{j=1}^{J} \sum_{K=1}^{K} \hat{\sigma}_{jk} / K^2\right]^{\frac{1}{2}}$$

the weighted standard deviation (WSD) as

$$WSD(\beta) = \left[\sum_{k=1}^{K} e_k (\beta_k - \sum_{k=1}^{K} e_k \beta_k)^2\right]^{\frac{1}{2}}$$

and the weighted and adjusted standard deviation (WASD) as

$$WASD(\beta) = \left[WSD(\beta)^2 - \sum_{k=1}^{K} e_k \hat{\sigma}_k^2 + \sum_{j=1}^{J} \sum_{K=1}^{K} \hat{\sigma}_{jk} / K^2\right]^{\frac{1}{2}}$$

where e_k is the sample employment share of each industry k (k =

1,...,K), $\hat{\sigma}_k$ is the estimated standard error of the industry coefficients ($\hat{\beta}_k$) obtained from estimating eqs. (1)-(3) in the text, and $\hat{\sigma}_{jk}$ is the covariance among the $\hat{\epsilon}_k$s.
The reason for undertaking the adjustment in the ASD and WASD measures is that, although the estimated wage differential ($\hat{\beta}_k$) for each industry is an unbiased estimate of the true differential (β_k), the standard deviation of $\hat{\beta}$ is an upwardly biased estimate of the standard deviation of β due to sampling error. In particular, this bias occurs because $\hat{\beta}_k = \beta_k + \hat{\epsilon}_k$, where $\hat{\epsilon}_k$ is a least squares sampling error.
It is to be noted that the adjustment undertaken in the ASD and WASD measures reported in the present paper neglects the covariance term (i.e. the third term on the right-hand side of the above expressions for ASD and WASD), implying that the true standard deviation of β is underestimated. However, the amount of sampling error in the estimates seems to be quite small in view of the mostly small drop in the standard deviation when adjusted in this respect.

13. See footnote 12 for an explanation of this assertion.

14. Maliranta (1992) provides a more detailed analysis of the private-sector wage structure of Finnish manufacturing industries based on the estimating data used in the present study.

15. Barth & Zweimüller (1992) report the WASD for men/women to be 0.037/0.029 for Austria and 0.055/0.051 for Norway as compared to 0.124/0.118 for U.S. union workers and 0.123/0.126 for U.S. non-union workers. Empirical evidence reported by Edin & Zetterberg (1992) indicates that industry affiliation has a stronger impact on male than on female wages also in the Swedish labour market (the WASD after control is approximately zero for females and 4.5 per cent for males).

16. A negative relationship between industry wages and the capital-labour ratio is to be expected if higher wages give rise to a higher labour share.

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APPENDIX

Table A. Summary of definitions of included variables

Variable	Definition
EARN	Average hourly earnings (in FIM) calculated from the before-tax annual wage/salary income (incl. fringe benefits) recorded in the tax rolls and an estimated amount of annual normal working hours.
ln EARN	Natural logarithm of EARN.
BASIC	Indicator for persons with basic education only (about 9 years or less).
LOWER VOCATIONAL	Indicator for persons with completed lower-level of upper secondary education (about 10-11 years).
UPPER VOCATIONAL	Indicator for persons with completed upper-level of upper secondary education (about 12 years).
SHORT NON-UNIV	Indicator for persons with completed lowest level of higher education (about 13-14 years).
UNDERGRADUATE	Indicator for persons with completed undergraduate university education (about 15 years).
GRADUATE	Indicator for persons with completed graduate university education (more than 16 years).
EXP	Self-reported total years of labour market experience.
SEN	Seniority, i.e. self-reported years with the present employer.
OJT	Indicator for persons who self-reportedly have received employer-sponsored formal on-the-job-training during the survey year.
WOM	Indicator for gender.
MARRIED	Indicator for married persons and singles living together.
$CHILD^{0-6}$	Indicator for children aged 0 to 6 living at home.
$CHILD^{7-17}$	Indicator for children aged 7 to 17 living at home.
CAPITAL	Indicator for residence within the capital region (the region of Helsinki).
TEMPEMPL	Indicator for persons who self-reportedly are in temporary employment.
PART-TIME	Indicator for persons who self-reportedly are in part-time employment.
PIECE-RATE	Indicator for persons who are not being paid on an hourly, weekly, or monthly basis.
NODAYWORK	Indicator for persons who are not in regular day-time work.
UNEMPL	Indicator for persons who have been temporarily unemployed or laid off during the survey year.
UNION	Indicator for unionized employees.
INDU20	Employment in mining and quarrying.
INDU31	Indicator for employment in food manufacturing.

INDU32	Indicator for employment in textile industries.
INDU331	Indicator for employment in manufacturing of wood products, except furniture.
INDU332	Indicator for employment in manufacturing of furniture and fixtures, except primarily of metal.
INDU341	Indicator for employment in manufacturing of paper and paper products.
INDU342	Inducator for employment in printing, publishing and allied industries.
INDU35	Indicator for employment in manufacturing of chemicals.
INDU36	Indicator for employment in manufacturing of non-metallic products.
INDU37	Indicator for employment in basic metal industries.
INDU38	Indicator for employment in manufacturing of metal products.
INDU39	Indicator for employment in other manufacturing.
INDU40	Indicator for employment in electricity.
INDU50	Indicator for employment in construction.
INDU61	Indicator for employment in wholesale trade.
INDU62	Indicator for employment in retail trade.
INDU63	Indicator for employment in restaurants.
INDU71	Indicator for employment in transport.
INDU72	Indicator for employment in communication.
INDU81	Indicator for employment in financing.
INDU82	Indicator for employment in insurance.
INDU83	Indicator for employment in real estate.
INDU91	Indicator for employment in public administration.
INDU92	Indicator for employment in sanitary services.
INDU93	Indicator for employment in social services.
INDU94	Indicator for employment in recreational and cultural services.
INDU95	Indicator for employment in personal and household services.
OCC31	Indicator for senior officials and upper management.
OCC32	Indicator for senior officials and employees in research and planning.
OCC33	Indicator for senior officials and employees in education and training.
OCC34	Indicator for other senior officials and employees.
OCC41	Indicator for supervisors.
OCC42	Indicator for clerical and sales workers, independent work.
OCC43	Indicator for clerical and sales workers, routine work.
OCC44	Indicator for other lower-level employees with admin. and clerical occupations.
OCC52	Indicator for manufacturing workers.
OCC53	Indicator for other production workers.
OCC54	Indicator for distribution and service workers.

Table B. Sample mean characteristics of all nonfarm employees retained in the actual estimating data and separately for male and female employees

Variable	All obs. Mean	Women Mean	Men Mean
EARN	45.46	41.17	50.10
ln EARN	3.73	3.63	3.83
$EARN^{NO\ FRINGES}$	45.03	40.88	49.53
ln $EARN^{NO\ FRINGES}$	3.72	3.63	3.81
BASIC (1,0)	0.3562	0.3679	0.3436
LOWER VOCATIONAL (1,0)	0.3074	0.2807	0.3363
UPPER VOCATIONAL (1,0)	0.2006	0.2165	0.1834
SHORT NON-UNIV (1,0)	0.0582	0.0611	0.0550
UNDERGRADUATE (1,0)	0.0267	0.0359	0.0167
GRADUATE (1,0)	0.0510	0.0380	0.0650
EXP	16.74	16.17	17.37
SEN	8.93	8.65	9.24
OJT (1,0)	0.3703	0.3802	0.3596
WOM (1,0)	0.5200	-	-
MARRIED (1,0)	0.7399	0.7322	0.7482
$CHILD^{0-6}$ (1,0)	0.2321	0.2098	0.2562
$CHILD^{7-17}$ (1,0)	0.3527	0.3725	0.3313
CAPITAL (1,0)	0.2004	0.2098	0.1901
TEMPEMPL (1,0)	0.0974	0.1180	0.0750
PART-TIME (1,0)	0.0368	0.0595	0.0122
PIECE-RATE (1,0)	0.0859	0.0652	0.1084
NODAYWORK (1,0)	0.2359	0.2447	0.2262
UNEMPL (1,0)	0.1003	0.0970	0.1040
UNION (1,0)	0.7759	0.8040	0.7454
INDU20 (1,0)	0.0016	0.0010	0.0022
INDU31 (1,0)	0.0336	0.0359	0.0311
INDU32 (1,0)	0.0280	0.0441	0.0106
INDU331 (1,0)	0.0187	0.0103	0.0278
INDU332 (1,0)	0.0067	0.0062	0.0072
INDU341 (1,0)	0.0280	0.0154	0.0417
INDU342 (1,0)	0.0237	0.0221	0.0256
INDU35 (1,0)	0.0208	0.0118	0.0306
INDU36 (1,0)	0.0101	0.0036	0.0172
INDU37 (1,0)	0.0069	0.0015	0.0128
INDU38 (1,0)	0.0819	0.0400	0.1273
INDU39 (1,0)	0.0021	0.0010	0.0033
INDU40 (1,0)	0.0133	0.0056	0.0217
INDU50 (1,0)	0.0795	0.0149	0.1495
INDU61 (1,0)	0.0371	0.0287	0.0461
INDU62 (1,0)	0.0792	0.0959	0.0611
INDU63 (1,0)	0.0256	0.0400	0.0100
INDU71 (1,0)	0.0547	0.0272	0.0845
INDU72 (1,0)	0.0277	0.0226	0.0334
INDU81 (1,0)	0.0371	0.0590	0.0133
INDU82 (1,0)	0.0085	0.0087	0.0083
INDU83 (1,0)	0.0422	0.0400	0.0445
INDU91 (1,0)	0.0654	0.0703	0.0600
INDU92 (1,0)	0.0088	0.0118	0.0056
INDU93 (1,0)	0.2278	0.3504	0.0950
INDU94 (1,0)	0.0179	0.0241	0.0111
INDU95 (1,0)	0.0128	0.0077	0.0183
OCC31 (1,0)	0.0368	0.0097	0.0661
OCC32 (1,0)	0.0347	0.0154	0.0556
OCC33 (1,0)	0.0448	0.0487	0.0406
OCC34 (1,0)	0.0552	0.0636	0.0461
OCC41 (1,0)	0.0726	0.0421	0.1056
OCC42 (1,0)	0.1371	0.2068	0.0617
OCC43 (1,0)	0.0728	0.1324	0.0083
OCC44 (1,0)	0.1118	0.1821	0.0356
OCC52 (1,0)	0.2161	0.1078	0.3335
OCC53 (1,0)	0.0763	0.0554	0.0989
OCC54 (1,0)	0.1417	0.1360	0.1479
Number of obs.	3748	1949	1799

Table C. Sample mean characteristics of all nonfarm private-sector employees retained in the actual estimating data and separately for male and female employees

Variable	All obs. Mean	Women Mean	Men Mean
EARN	45.16	39.73	49.52
ln EARN	3.72	3.60	3.82
$EARN^{NO\ FRINGES}$	44.60	39.34	48.82
ln $EARN^{NO\ FRINGES}$	3.71	3.59	3.81
BASIC (1,0)	0.4069	0.4535	0.3694
LOWER VOCATIONAL (1,0)	0.3175	0.2667	0.3582
UPPER VOCATIONAL (1,0)	0.2016	0.2221	0.1851
SHORT NON-UNIV (1,0)	0.0323	0.0214	0.0410
UNDERGRADUATE (1,0)	0.0128	0.0214	0.0060
GRADUATE (1,0)	0.0290	0.0149	0.0403
EXP	16.67	16.25	17.01
SEN	8.50	8.43	8.56
OJT (1,0)	0.3208	0.3178	0.3231
WOM (1,0)	0.4454	-	-
MARRIED (1,0)	0.7322	0.7258	0.7373
$CHILD^{0-6}$ (1,0)	0.2322	0.1961	0.2612
$CHILD^{7-17}$ (1,0)	0.3386	0.3606	0.3209
CAPITAL (1,0)	0.2119	0.2351	0.1933
TEMPEMPL (1,0)	0.0629	0.0669	0.0597
PART-TIME (1,0)	0.0339	0.0660	0.0082
PIECE-RATE (1,0)	0.1291	0.1134	0.1418
NODAYWORK (1,0)	0.2285	0.2435	0.2164
UNEMPL (1,0)	0.1047	0.0939	0.1134
UNION (1,0)	0.7194	0.7398	0.7030
INDU20 (1,0)	0.0021	0.0019	0.0022
INDU31 (1,0)	0.0522	0.0651	0.0418
INDU32 (1,0)	0.0430	0.0790	0.0142
INDU331 (1,0)	0.0290	0.0186	0.0373
INDU332 (1,0)	0.0103	0.0112	0.0097
INDU341 (1,0)	0.0435	0.0279	0.0560
INDU342 (1,0)	0.0368	0.0400	0.0343
INDU35 (1,0)	0.0323	0.0214	0.0410
INDU36 (1,0)	0.0157	0.0065	0.0231
INDU37 (1,0)	0.0108	0.0028	0.0172
INDU38 (1,0)	0.1250	0.0716	0.1679
INDU39 (1,0)	0.0029	0.0009	0.0045
INDU40 (1,0)	0.0128	0.0065	0.0179
INDU50 (1,0)	0.0973	0.0232	0.1567
INDU61 (1,0)	0.0555	0.0502	0.0597
INDU62 (1,0)	0.1221	0.1719	0.0821
INDU63 (1,0)	0.0348	0.0641	0.0112
INDU71 (1,0)	0.0534	0.0362	0.0672
INDU72 (1,0)	0.0070	0.0037	0.0097
INDU81 (1,0)	0.0480	0.0883	0.0157
INDU82 (1,0)	0.0132	0.0158	0.0112
INDU83 (1,0)	0.0579	0.0632	0.0537
INDU92 (1,0)	0.0103	0.0167	0.0052
INDU93 (1,0)	0.0509	0.0790	0.0284
INDU94 (1,0)	0.0137	0.0204	0.0082
INDU95 (1,0)	0.0194	0.0139	0.0239
OCC31 (1,0)	0.0538	0.0177	0.0828
OCC32 (1,0)	0.0315	0.0121	0.0470
OCC33 (1,0)	0.0025	0.0019	0.0030
OCC34 (1,0)	0.0455	0.0530	0.0396
OCC41 (1,0)	0.0757	0.0428	0.1022
OCC42 (1,0)	0.1730	0.2928	0.0769
OCC43 (1,0)	0.0708	0.1496	0.0075
OCC44 (1,0)	0.0319	0.0539	0.0142
OCC52 (1,0)	0.3166	0.1942	0.4149
OCC53 (1,0)	0.0778	0.0493	0.1008
OCC54 (1,0)	0.1209	0.1329	0.1112
Number of obs.	2416	1076	1340

Table D1. Regression results for non-agricultural employees. Estimation of earnings equations including industry sector controls only using OLS-techniques.[1] The dependent variable is log hourly earnings *inclusive* of fringe benefits.

Variable	All obs.	Women	Men
CONSTANT	3.7291** (.0194)	3.4880** (.0308)	3.8112** (.0212)
INDU20 (mining)	-0.0199 (.1195)	0.1999 (.1750)	-0.0914 (.1557)
INDU31 (food manuf.)	-0.1142** (.0372)	0.0101 (.0449)	-0.0504 (.0564)
INDU32 (textile)	-0.2569** (.0357)	-0.0804* (.0437)	-0.0468 (.0529)
INDU331 (wood prod.)	-0.1225** (.0355)	0.0491 (.0571)	-0.1768** (.0420)
INDU332 (furniture)	-0.2233** (.0522)	-0.0334 (.0727)	-0.2582** (.0712)
INDU341 (paper prod.)	0.1663** (.0365)	0.1590** (.0445)	0.1836** (.0413)
INDU342 (printing)	0.1657** (.0488)	0.3719** (.0691)	0.1161* (.0676)
INDU35 (chemicals)	0.0949* (.0490)	0.1337* (.0642)	0.0974* (.0594)
INDU36 (non-metallic)	-0.0292 (.0581)	-0.0357 (.0753)	-0.0555 (.0646)
INDU37 (basic metal)	0.1867** (.0525)	0.1053* (.0622)	0.1466** (.0526)
INDU38 (metal products)	0	0	0
INDU39 (oth. manuf.)	0.2652** (.1090)	0.5985* (.2715)	0.1524 (.1104)
INDU40 (electricity)	0.0746* (.0436)	0.0174 (.0529)	0.0766* (.0446)
INDU50 (construction)	-0.0043 (.0281)	0.0903 (.0570)	-0.0706* (.0303)
INDU61 (wholesale trade)	0.1182** (.0428)	0.1900** (.0541)	0.1502** (.0570)
INDU62 (retail trade)	-0.1736** (.0304)	0.0009 (.0415)	-0.1428** (.0447)
INDU63 (restaurants)	-0.1108** (.0373)	0.1020* (.0476)	-0.0709 (.0597)

Table D1. (cont.)

Variable	All obs.	Women	Men
INDU71 (transport)	-0.0102 (.0284)	0.2115** (.0554)	-0.0856** (.0312)
INDU72 (communication)	-0.0158 (.0324)	0.1293** (.0418)	-0.0275 (.0430)
INDU81 (financing)	0.1384** (.0376)	0.2899** (.0417)	0.4855** (.0881)
INDU82 (insurance)	0.2192** (.0620)	0.2601** (.0769)	0.3640** (.0585)
INDU83 (real estate)	0.0766* (.0367)	0.1548** (.0512)	0.1532** (.0448)
INDU91 (public adm.)	0.0463 (.0288)	0.1674** (.0365)	0.1162** (.0423)
INDU92 (sanitary)	-0.1953* (.0861)	0.0244 (.1076)	-0.2284 (.1430)
INDU93 (social)	0.0222 (.0243)	0.1989** (.0344)	0.1973** (.0388)
INDU94 (cultural)	0.0570 (.0632)	0.3160** (.0839)	-0.0674 (.0853)
INDU95 (personal)	-0.1667** (.0402)	0.0608 (.0874)	-0.2427** (.0412)
R^2 adj.	0.0641	0.0703	0.1149
SEE	0.3749	0.3553	0.3583
F-all variables	10.87	6.67	9.97
Number of obs.	3748	1949	1799

[1] Standard errors are given in parentheses below the estimates and are adjusted for heteroscedasticity according to White (1980). A simple Chow test suggests that the hypothesis of the parameter estimates being equal for male and female employees can be rejected at a 0.1 % risk level.

* Denotes significant estimate at a 5 % risk level.

** Denotes significant estimate at a 1 % risk level.

Table D2. Regression results for non-agricultural employees. Estimation of earnings equations including human capital variables as well as industry sector controls using OLS-techniques.[1] The dependent variable is log hourly earnings *inclusive* of fringe benefits.

Variable	All obs.	Women	Men
CONSTANT	3.4919** (.0263)	3.3531** (.0429)	3.3910** (.0320)
BASIC EDUCATION	0	0	0
LOWER VOCATIONAL	0.0380** (.0135)	-0.0054 (.0194)	0.0781** (.0182)
UPPER VOCATIONAL	0.2040** (.0181)	0.1551** (.0253)	0.2354** (.0257)
SHORT NON-UNIV	0.3793** (.0253)	0.3304** (.0343)	0.4188** (.0375)
UNDER-GRADUATE	0.4829** (.0312)	0.4918** (.0361)	0.4293** (.0592)
GRADUATE	0.6007** (.0274)	0.5818** (.0407)	0.6034** (.0373)
EXP	0.0138** (.0022)	0.0054* (.0033)	0.0222** (.0028)
EXP^2 /1000	-0.2238** (.0488)	-0.0902 (.0720)	-0.3669** (.0639)
SEN	0.0039** (.0008)	0.0052** (.0011)	0.0027* (.0012)
OJT	0.0583** (.0110)	0.0029 (.0146)	0.1190** (.0166)
WOM	-0.1917** (.0116)		
Industry sector indicators:			
INDU20 (mining)	-0.0328 (.0944)	0.0585 (.1108)	-0.0422 (.1420)
INDU31 (food manuf.)	-0.0316 (.0298)	0.0150 (.0410)	-0.0272 (.0482)
INDU32 (textile)	-0.0904** (.0301)	-0.0580 (.0413)	0.0015 (.0423)
INDU331 (wood prod.)	-0.0694* (.0310)	0.0218 (.0538)	-0.0835* (.0377)
INDU332 (furniture)	-0.1233** (.0511)	-0.0270 (.0732)	-0.1733** (.0642)
INDU341 (paper prod.)	0.1669** (.0293)	0.1117** (.0409)	0.1882** (.0367)
INDU342 (printing)	0.2058** (.0423)	0.2791** (.0593)	0.1971** (.0596)
INDU35 (chemicals)	0.0703* (.0383)	0.0440 (.0507)	0.0860* (.0485)

Table D2. (cont.)

Variable	All obs.	Women	Men
INDU36 (non-metallic)	-0.0074 (.0569)	-0.0492 (.0734)	-0.0008 (.0702)
INDU37 (basic metal)	0.1228** (.0374)	0.0830 (.0591)	0.0844* (.0417)
INDU38 (metal products)	0	0	0
INDU39 (oth. manuf.)	0.1963* (.0880)	0.4551** (.1339)	0.1435 (.1144)
INDU40 (electricity)	0.0507 (.0334)	0.0022 (.0483)	0.0444 (.0397)
INDU50 (construction)	0.0106 (.0229)	0.0858 (.0561)	0.0014 (.0250)
INDU61 (wholesale trade)	0.0876** (.0339)	0.1181** (.0485)	0.0915* (.0453)
INDU62 (retail trade)	-0.0714** (.0264)	-0.0038 (.0389)	-0.1019** (.0394)
INDU63 (restaurants)	0.0483 (.0335)	0.1168** (.0448)	-0.0049 (.0566)
INDU71 (transport)	0.0094 (.0242)	0.1703** (.0547)	-0.0355 (.0263)
INDU72 (communication)	-0.0112 (.0248)	0.0768* (.0391)	-0.0494 (.0339)
INDU81 (financing)	0.1664** (.0292)	0.2258** (.0385)	0.2480** (.0699)
INDU82 (insurance)	0.1284** (.0405)	0.1810** (.0706)	0.1284** (.0395)
INDU83 (real estate)	0.0600* (.0284)	0.0997* (.0483)	0.0678* (.0338)
INDU91 (public adm.)	0.0039 (.0212)	0.0834** (.0322)	-0.0270 (.0324)
INDU92 (sanitary)	-0.0424 (.0858)	0.0700 (.1087)	-0.1971* (.1103)
INDU93 (social)	0.0043 (.0205)	0.0920** (.0323)	-0.0566* (.0342)
INDU94 (cultural)	0.1268* (.0631)	0.2317** (.0826)	0.0034 (.0825)
INDU95 (personal)	-0.1103** (.0335)	0.0824 (.0707)	-0.1834** (.0324)
R^2 adj.	0.3382	0.2416	0.3754
SEE	0.3152	0.3209	0.3010
F-all variables	54.19	18.73	31.87
F-industry controls	6.72	3.69	5.21
Number of obs.	3748	1949	1799

[1] For notes, see Table D1.

Table D3. Regression results for non-agricultural employees. Estimation of earnings equations controlling for a large set of personal and job characteristics using OLS-techniques.[1] The dependent variable is log hourly earnings *inclusive* of fringe benefits.

Variable	All obs.	Women	Men
CONSTANT	3.4626** (.0399)	3.3515** (.0589)	3.4168** (.0521)
BASIC EDUCATION	0	0	0
LOWER VOCATIONAL	0.0460** (.0126)	0.0052 (.0183)	0.0758** (.0168)
UPPER VOCATIONAL	0.1357** (.0193)	0.1200** (.0268)	0.1355** (.0266)
SHORT NON-UNIV	0.2408** (.0291)	0.2211** (.0386)	0.2309** (.0432)
UNDER-GRADUATE	0.2710** (.0354)	0.2996** (.0422)	0.1764** (.0592)
GRADUATE	0.3818** (.0351)	0.3821** (.0500)	0.3633** (.0467)
EXP	0.0103** (.0022)	0.0080** (.0031)	0.0130** (.0031)
EXP^2 /1000	-0.1526** (.0486)	-0.1282* (.0668)	-0.1996** (.0669)
SEN	0.0042** (.0008)	0.0056** (.0010)	0.0024* (.0011)
OJT	0.0498** (.0101)	0.0194 (.0138)	0.0856** (.0150)
WOM	-0.1684** (.0122)		
MARRIED	0.0086 (.0119)	-0.0193 (.0154)	0.0307 (.0186)
$CHILD^{0-6}$	0.0149 (.0125)	0.0239 (.0200)	-0.0096 (.0156)
$CHILD^{7-17}$	0.0254** (.0102)	0.0077 (.0133)	0.0450** (.0157)
CAPITAL	0.1075** (.0142)	0.0902** (.0185)	0.1283** (.0220)
TEMPEMPL	0.0136 (.0252)	0.0610* (.0326)	-0.0802* (.0383)
PART-TIME	0.2975** (.0489)	0.3002** (.0501)	0.2113 (.1428)
PIECE-RATE	0.0762** (.0190)	0.0394 (.0361)	0.1039** (.0213)
NODAYWORK	0.1075** (.0133)	0.1611** (.0190)	0.0509** (.0177)

Table D3. (cont.)

Variable	All obs.	Women	Men
UNEMPL	-0.0230 (.0215)	0.0103 (.0310)	-0.0476* (.0288)
UNION	-0.0137 (.0147)	-0.0283 (.0228)	-0.0034 (.0190)
Occupational status indicators:			
OCC31 (management)	0.4005** (.0408)	0.3629** (.0628)	0.3768** (.0588)
OCC32 (education)	0.1796** (.0384)	0.0922 (.0601)	0.1990** (.0565)
OCC33 (research)	0.2914** (.0363)	0.3274** (.0423)	0.2619** (.0670)
OCC34 (oth. seniors)	0.1446** (.0318)	0.1615** (.0374)	0.1405** (.0563)
OCC41 (supervisors)	0.0768** (.0246)	0.0846** (.0321)	0.0677 (.0418)
OCC42 (indep. clericals)	0.0050 (.0260)	0.0430 (.0302)	-0.0724 (.0515)
OCC43 (routine clericals)	-0.0124 (.0257)	0.0048 (.0282)	0.0021 (.1136)
OCC44 (oth. lower-level non-manuals)	0	0	0
OCC52 (manufacturing)	-0.0292 (.0256)	-0.0871** (.0355)	-0.0146 (.0427)
OCC53 (oth. production)	-0.0939** (.0252)	-0.1196** (.0306)	-0.0935* (.0433)
OCC54 (service)	-0.1014** (.0249)	-0.0946** (.0315)	-0.1023** (.0410)
Industry sector indicators:			
INDU20 (mining)	-0.0007 (.0860)	-0.0144 (.1258)	-0.0005 (.1215)
INDU31 (food manuf.)	-0.0265 (.0293)	-0.0114 (.0393)	0.0062 (.0456)
INDU32 (textile)	-0.0815** (.0301)	-0.0334 (.0425)	0.0314 (.0451)
INDU331 (wood prod.)	-0.0664* (.0287)	-0.0040 (.0515)	-0.0782* (.0345)
INDU332 (furniture)	-0.1253** (.0407)	-0.0670 (.0616)	-0.1429** (.0494)
INDU341 (paper prod.)	0.1740** (.0275)	0.1003** (.0398)	0.2220** (.0352)
INDU342 (printing)	0.1521** (.0350)	0.1508** (.0487)	0.1586** (.0510)
INDU35 (chemicals)	0.0643* (.0384)	0.0163 (.0491)	0.0996* (.0476)

Table D3. (cont.)

Variable	All obs.	Women	Men
INDU36 (non-metallic)	0.0032 (.0495)	-0.0227 (.0578)	0.0135 (.0632)
INDU37 (basic metal)	0.1402** (.0350)	0.0254 (.0895)	0.1343** (.0392)
INDU38 (metal products)	0	0	0
INDU39 (oth. manuf.)	0.1289 (.0845)	0.2654** (.1019)	0.1146 (.1092)
INDU40 (electricity)	0.0777** (.0321)	-0.0385 (.0375)	0.0806* (.0394)
INDU50 (construction)	0.0572** (.0221)	0.0338 (.0482)	0.0633** (.0244)
INDU61 (wholesale trade)	0.0274 (.0306)	0.0218 (.0460)	0.0231 (.0416)
INDU62 (retail trade)	-0.0896** (.0278)	-0.1324** (.0401)	-0.0330 (.0409)
INDU63 (restaurants)	0.0250 (.0347)	0.0213 (.0444)	-0.0158 (.0622)
INDU71 (transport)	0.0315 (.0261)	0.0651 (.0534)	0.0418 (.0309)
INDU72 (communication)	0.0459* (.0259)	0.0570 (.0392)	0.0551 (.0348)
INDU81 (financing)	0.1405** (.0313)	0.1417** (.0395)	0.1896** (.0725)
INDU82 (insurance)	0.1156** (.0454)	0.0929 (.0710)	0.1802** (.0481)
INDU83 (real estate)	0.0130 (.0279)	0.0070 (.0451)	0.0359 (.0341)
INDU91 (public adm.)	0.0164 (.0218)	0.0323 (.0315)	0.0129 (.0336)
INDU92 (sanitary)	-0.0790 (.0770)	0.0023 (.0910)	-0.2683** (.1119)
INDU93 (social)	-0.0191 (.0227)	-0.0139 (.0323)	-0.0187 (.0389)
INDU94 (cultural)	0.0464 (.0579)	0.0578 (.0732)	-0.0136 (.0772)
INDU95 (personal)	-0.0500 (.0327)	0.0029 (.0628)	-0.0930** (.0396)
R^2 adj.	0.4355	0.3588	0.4716
SEE	0.2911	0.2950	0.2769
F-all variables	52.62	20.82	30.17
F-industry controls	5.88	2.88	3.99
Number of obs.	3748	1949	1799

[1] For notes, see Table D1.

Table E1. Regression results for non-agricultural employees. Estimation of earnings equations including industry sector controls only using OLS-techniques.[1] The dependent variable is log hourly earnings *exclusive* of fringe benefits.

Variable	All obs.	Women	Men
CONSTANT	3.7247** (.0190)	3.4877** (.0307)	3.8054** (.0207)
INDU20 (mining)	-0.0167 (.1190)	0.2002 (.1750)	-0.0873 (.1548)
INDU31 (food manuf.)	-0.1141** (.0366)	0.0088 (.0449)	-0.0523 (.0553)
INDU32 (textile)	-0.2567** (.0354)	-0.0824* (.0436)	-0.0536 (.0530)
INDU331 (wood prod.)	-0.1209** (.0347)	0.0495 (.0571)	-0.1750** (.0407)
INDU332 (furniture)	-0.2190** (.0520)	-0.0331 (.0726)	-0.2525** (.0710)
INDU341 (paper prod.)	0.1685** (.0362)	0.1585** (.0442)	0.1866** (.0408)
INDU342 (printing)	0.1644** (.0478)	0.3659** (.0678)	0.1167* (.0662)
INDU35 (chemicals)	0.0911* (.0487)	0.1291* (.0623)	0.0936 (.0593)
INDU36 (non-metallic)	-0.0272 (.0586)	-0.0385 (.0762)	-0.0519 (.0652)
INDU37 (basic metal)	0.1902** (.0523)	0.1051* (.0620)	0.1515** (.0525)
INDU38 (metal products)	0	0	0
INDU39 (oth. manuf.)	0.2683** (.1082)	0.5936* (.2678)	0.1582 (.1103)
INDU40 (electricity)	0.0773* (.0435)	0.0142 (.0532)	0.0812* (.0443)
INDU50 (construction)	-0.0062 (.0276)	0.0761 (.0550)	-0.0702** (.0297)
INDU61 (wholesale trade)	0.0938* (.0408)	0.1809** (.0536)	0.1143* (.0538)
INDU62 (retail trade)	-0.1750** (.0297)	-0.0016 (.0412)	-0.1475** (.0434)
INDU63 (restaurants)	-0.1095** (.0372)	0.1003* (.0476)	-0.0727 (.0605)
INDU71 (transport)	-0.0101 (.0282)	0.2012** (.0566)	-0.0818** (.0306)

Table E1. (cont.)

Variable	All obs.	Women	Men
INDU72 (communication)	-0.0119 (.0323)	0.1285** (.0420)	-0.0217 (.0428)
INDU81 (financing)	0.1094** (.0374)	0.2596** (.0420)	0.4442** (.0867)
INDU82 (insurance)	0.2048** (.0619)	0.2412** (.0768)	0.3515** (.0583)
INDU83 (real estate)	0.0636* (.0358)	0.1450** (.0507)	0.1346** (.0435)
INDU91 (public adm.)	0.0478* (.0286)	0.1635** (.0364)	0.1210** (.0421)
INDU92 (sanitary)	-0.1999** (.0859)	0.0144 (.1083)	-0.2285* (.1397)
INDU93 (social)	0.0215 (.0240)	0.1951** (.0344)	0.1940** (.0386)
INDU94 (cultural)	0.0609 (.0631)	0.3156** (.0839)	-0.0616 (.0852)
INDU95 (personal)	-0.1629** (.0401)	0.0612 (.0874)	-0.2377** (.0410)
R^2 adj.	0.0619	0.0668	0.1107
SEE	0.3709	0.3538	0.3529
F-all variables	10.51	6.36	9.61
Number of obs.	3748	1949	1799

[1] Standard errors are given in parentheses below the estimates and are adjusted for heteroscedasticity according to White (1980). A simple Chow test suggests that the hypothesis of the parameter estimates being equal for male and female employees can be rejected at a 0.1 % risk level.

* Denotes significant estimate at a 5 % risk level.

** Denotes significant estimate at a 1 % risk level.

Table E2. Regression results for non-agricultural employees. Estimation of earnings equations including human capital variables as well as industry sector controls using OLS-techniques.[1] The dependent variable is log hourly earnings *exclusive* of fringe benefits.

Variable	All obs.	Women	Men
CONSTANT	3.4878** (.0260)	3.3496** (.0426)	3.3901** (.0317)
BASIC EDUCATION	0	0	0
LOWER VOCATIONAL	0.0388** (.0134)	-0.0048 (.0193)	0.0792** (.0180)
UPPER VOCATIONAL	0.2009** (.0178)	0.1556** (.0252)	0.2293** (.0252)
SHORT NON-UNIV	0.3767** (.0250)	0.3290** (.0343)	0.4148** (.0364)
UNDER-GRADUATE	0.4795** (.0310)	0.4917** (.0360)	0.4160** (.0581)
GRADUATE	0.5909** (.0272)	0.5783** (.0403)	0.5886** (.0371)
EXP	0.0137** (.0022)	0.0057* (.0033)	0.0219** (.0028)
EXP^2 /1000	-0.2233** (.0485)	-0.0943 (.0715)	-0.3620** (.0634)
SEN	0.0040** (.0008)	0.0052** (.0011)	0.0029** (.0012)
OJT	0.0559** (.0109)	0.0030 (.0146)	0.1141** (.0163)
WOM	-0.1880** (.0115)		
Industry sector indicators:			
INDU20 (mining)	-0.0306 (.0938)	0.0577 (.1105)	-0.0406 (.1406)
INDU31 (food manuf.)	-0.0334 (.0296)	0.0135 (.0410)	-0.0297 (.0478)
INDU32 (textile)	-0.0934** (.0299)	-0.0602 (.0413)	-0.0062 (.0416)
INDU331 (wood prod.)	-0.0690* (.0302)	0.0221 (.0538)	-0.0841** (.0363)
INDU332 (furniture)	-0.1208** (.0509)	-0.0269 (.0733)	-0.1695** (.0640)
INDU341 (paper prod.)	0.1684** (.0292)	0.1114** (.0407)	0.1900** (.0366)
INDU342 (printing)	0.2040** (.0414)	0.2736** (.0585)	0.1971** (.0584)
INDU35 (chemicals)	0.0669* (.0385)	0.0401 (.0502)	0.0822* (.0490)

Table E2. (cont.)

Variable	All obs.	Women	Men
INDU36 (non-metallic)	-0.0059 (.0574)	-0.0515 (.0739)	0.0012 (.0707)
INDU37 (basic metal)	0.1270** (.0373)	0.0825 (.0587)	0.0903* (.0415)
INDU38 (metal products)	0	0	0
INDU39 (oth. manuf.)	0.2004* (.0876)	0.4499** (.1305)	0.1495 (.1146)
INDU40 (electricity)	0.0533 (.0334)	-0.0007 (.0492)	0.0489 (.0395)
INDU50 (construction)	0.0088 (.0225)	0.0712 (.0539)	0.0008 (.0246)
INDU61 (wholesale trade)	0.0639* (.0322)	0.1089* (.0478)	0.0576 (.0426)
INDU62 (retail trade)	-0.0744** (.0259)	-0.0065 (.0386)	-0.1064** (.0383)
INDU63 (restaurants)	0.0472 (.0336)	0.1151** (.0449)	-0.0065 (.0574)
INDU71 (transport)	0.0092 (.0241)	0.1601** (.0560)	-0.0332 (.0259)
INDU72 (communication)	-0.0081 (.0247)	0.0755* (.0392)	-0.0435 (.0337)
INDU81 (financing)	0.1370** (.0291)	0.1954** (.0388)	0.2146** (.0687)
INDU82 (insurance)	0.1163** (.0407)	0.1623* (.0703)	0.1242** (.0405)
INDU83 (real estate)	0.0476* (.0278)	0.0898* (.0478)	0.0522 (.0330)
INDU91 (public adm.)	0.0059 (.0210)	0.0795** (.0322)	-0.0186 (.0321)
INDU92 (sanitary)	-0.0488 (.0858)	0.0601 (.1095)	-0.1962* (.1078)
INDU93 (social)	0.0035 (.0202)	0.0887** (.0322)	-0.0527 (.0340)
INDU94 (cultural)	0.1300* (.0630)	0.2319** (.0827)	0.0092 (.0822)
INDU95 (personal)	-0.1070** (.0334)	0.0825 (.0706)	-0.1792** (.0334)
R^2 adj.	0.3346	0.2392	0.3693
SEE	0.3124	0.3195	0.2972
F-all variables	53.34	18.50	31.09
F-industry controls	6.30	3.37	4.91
Number of obs.	3748	1949	1799

[1] For notes, see Table E1.

Table E3. Regression results for non-agricultural employees. Estimation of earnings equations controlling for a large set of personal and job characteristics using OLS-techniques.[1] The dependent variable is log hourly earnings *exclusive* of fringe benefits.

Variable	All obs.	Women	Men
CONSTANT	3.4559** (.0393)	3.3461** (.0579)	3.4094** (.0519)
BASIC EDUCATION	0	0	0
LOWER VOCATIONAL	0.0465** (.0125)	0.0055 (.0181)	0.0765** (.0168)
UPPER VOCATIONAL	0.1366** (.0191)	0.1210** (.0266)	0.1374** (.0264)
SHORT NON-UNIV	0.2421** (.0289)	0.2201** (.0386)	0.2338** (.0425)
UNDER-GRADUATE	0.2731** (.0352)	0.3019** (.0421)	0.1731** (.0589)
GRADUATE	0.3792** (.0350)	0.3809** (.0497)	0.3603** (.0466)
EXP	0.0105** (.0022)	0.0082** (.0031)	0.0132** (.0031)
EXP^2 /1000	-0.1557** (.0484)	-0.1305* (.0662)	-0.2015** (.0668)
SEN	0.0042** (.0008)	0.0056** (.0010)	0.0025* (.0011)
OJT	0.0485** (.0101)	0.0192 (.0137)	0.0830** (.0150)
WOM	-0.1663** (.0122)		
MARRIED	0.0061 (.0118)	-0.0208 (.0154)	0.0283 (.0183)
$CHILD^{0-6}$	0.0147 (.0125)	0.0237 (.0200)	-0.0094 (.0154)
$CHILD^{7-17}$	0.0246** (.0101)	0.0073 (.0132)	0.0441** (.0156)
CAPITAL	0.1056** (.0141)	0.0910** (.0183)	0.1235** (.0219)
TEMPEMPL	0.0166 (.0251)	0.0628* (.0324)	-0.0766* (.0382)
PART-TIME	0.2926** (.0487)	0.2926** (.0498)	0.2223 (.1422)
PIECE-RATE	0.0736** (.0188)	0.0401 (.0359)	0.1005** (.0210)
NODAYWORK	0.1082** (.0133)	0.1635** (.0190)	0.0490** (.0177)
UNEMPL	-0.0243 (.0214)	0.0090 (.0310)	-0.0483* (.0287)

Table E3. (cont.)

Variable	All obs.	Women	Men
UNION	-0.0081 (.0147)	-0.0230 (.0227)	0.0031 (.0189)
Occupational status indicators:			
OCC31 (management)	0.3671** (.0403)	0.3393** (.0634)	0.3444** (.0584)
OCC32 (education)	0.1760** (.0382)	0.0916 (.0594)	0.1959** (.0562)
OCC33 (research)	0.2870** (.0362)	0.3230** (.0422)	0.2593** (.0669)
OCC34 (oth. seniors)	0.1406** (.0320)	0.1612** (.0374)	0.1318** (.0567)
OCC41 (supervisors)	0.0725** (.0245)	0.0834** (.0321)	0.0631 (.0418)
OCC42 (indep. clericals)	0.0023 (.0259)	0.0430 (.0302)	-0.0793 (.0512)
OCC43 (routine clericals)	-0.0153 (.0256)	0.0037 (.0281)	0.0058 (.1144)
OCC44 (oth. lower-level non-manuals)	0	0	0
OCC52 (manufacturing)	-0.0273 (.0255)	-0.0875** (.0354)	-0.0116 (.0428)
OCC53 (oth. production)	-0.0951** (.0251)	-0.1255** (.0304)	-0.0899* (.0434)
OCC54 (service)	-0.0999** (.0248)	-0.0936** (.0314)	-0.0983** (.0409)
Industry sector indicators:			
INDU20 (mining)	-0.0003 (.0853)	-0.0122 (.1267)	-0.0021 (.1203)
INDU31 (food manuf.)	-0.0288 (.0292)	-0.0126 (.0393)	0.0023 (.0453)
INDU32 (textile)	-0.0848** (.0302)	-0.0352 (.0424)	0.0223 (.0485)
INDU331 (wood prod.)	-0.0671** (.0284)	-0.0046 (.0516)	-0.0796** (.0340)
INDU332 (furniture)	-0.1224** (.0405)	-0.0648 (.0611)	-0.1411** (.0499)
INDU341 (paper prod.)	0.1734** (.0274)	0.0988** (.0397)	0.2218** (.0353)
INDU342 (printing)	0.1510** (.0347)	0.1458** (.0485)	0.1600** (.0503)
INDU35 (chemicals)	0.0600 (.0387)	0.0112 (.0481)	0.0949* (.0485)

Table E3. (cont.)

Variable	All obs.	Women	Men
INDU36 (non-metallic)	0.0021 (.0501)	-0.0264 (.0580)	0.0128 (.0637)
INDU37 (basic metal)	0.1404** (.0349)	0.0239 (.0891)	0.1350** (.0392)
INDU38 (metal products)	0	0	0
INDU39 (oth. manuf.)	0.1364* (.0827)	0.2617** (.1002)	0.1258 (.1079)
INDU40 (electricity)	0.0785** (.0320)	-0.0424 (.0379)	0.0820* (.0393)
INDU50 (construction)	0.0534** (.0219)	0.0203 (.0469)	0.0596** (.0242)
INDU61 (wholesale trade)	0.0115 (.0296)	0.0148 (.0452)	-0.0004 (.0401)
INDU62 (retail trade)	-0.0896** (.0276)	-0.1345** (.0400)	-0.0332 (.0405)
INDU63 (restaurants)	0.0245 (.0346)	0.0190 (.0444)	-0.0130 (.0620)
INDU71 (transport)	0.0303 (.0261)	0.0555 (.0551)	0.0423 (.0304)
INDU72 (communication)	0.0481* (.0258)	0.0558 (.0393)	0.0557 (.0346)
INDU81 (financing)	0.1153** (.0312)	0.1129** (.0397)	0.1675** (.0718)
INDU82 (insurance)	0.1053** (.0450)	0.0746 (.0707)	0.1794** (.0469)
INDU83 (real estate)	0.0044 (.0276)	-0.0006 (.0449)	0.0239 (.0335)
INDU91 (public adm.)	0.0177 (.0217)	0.0280 (.0314)	0.0192 (.0336)
INDU92 (sanitary)	-0.0833 (.0767)	-0.0066 (.0913)	-0.2654** (.1099)
INDU93 (social)	-0.0218 (.0225)	-0.0174 (.0323)	-0.0206 (.0392)
INDU94 (cultural)	0.0496 (.0579)	0.0572 (.0735)	-0.0074 (.0776)
INDU95 (personal)	-0.0454 (.0325)	0.0054 (.0629)	-0.0906* (.0392)
R^2 adj.	0.4271	0.3553	0.4584
SEE	0.2899	0.2941	0.2754
F-all variables	50.88	20.52	28.67
F-industry controls	5.63	2.63	3.94
Number of obs.	3748	1949	1799

[1] For notes, see Table E1.

Table F1. Regression results for non-agricultural private-sector employees. Estimation of earnings equations including industry sector controls only using OLS-techniques.[1] The dependent variable is log hourly earnings *inclusive* of fringe benefits.

Variable	All obs.	Women	Men
CONSTANT	3.7292** (.0197)	3.4880** (.0312)	3.8118** (.0216)
INDU20 (mining)	-0.0026 (.1416)	0.2000 (.1751)	-0.0593 (.0203)
INDU31 (food manuf.)	-0.1144** (.0373)	0.0102 (.0452)	-0.0510 (.0566)
INDU32 (textile)	-0.2551** (.0361)	-0.0787* (.0442)	-0.0475 (.0530)
INDU331 (wood prod.)	-0.1227** (.0357)	0.0492 (.0573)	-0.1775** (.0422)
INDU332 (furniture)	-0.2235** (.0523)	-0.0334 (.0728)	-0.2588** (.0713)
INDU341 (paper prod.)	0.1662** (.0367)	0.1591** (.0447)	0.1829** (.0414)
INDU342 (printing)	0.1655** (.0489)	0.3720** (.0692)	0.1155* (.0677)
INDU35 (chemicals)	0.0947* (.0491)	0.1337* (.0644)	0.0968 (.0595)
INDU36 (non-metallic)	-0.0294 (.0582)	-0.0356 (.0755)	-0.0561 (.0647)
INDU37 (basic metal)	0.1865** (.0526)	0.1053* (.0624)	0.1460** (.0528)
INDU38 (metal products)	0	0	0
INDU39 (oth. manuf.)	0.1974* (.1009)	0.2171** (.0312)	0.1517 (.1105)
INDU40 (electricity)	0.0733 (.0584)	-0.0543 (.0587)	0.0983* (.0562)
INDU50 (construction)	0.0145 (.0309)	0.1277* (.0603)	-0.0529 (.0336)
INDU61 (wholesale trade)	0.1281** (.0438)	0.1876** (.0555)	0.1682** (.0576)
INDU62 (retail trade)	-0.1795** (.0304)	-0.0088 (.0414)	-0.1434** (.0449)
INDU63 (restaurants)	-0.1180** (.0383)	0.0896* (.0482)	-0.0460 (.0613)
INDU71 (transport)	-0.0586* (.0327)	0.1776** (.0512)	-0.1390** (.0394)

Table F1. (cont.)

Variable	All obs.	Women	Men
INDU72 (communication)	0.0873 (.0822)	0.0205 (.1755)	0.0996 (.0747)
INDU81 (financing)	0.1558** (.0405)	0.3060** (.0447)	0.4851** (.0888)
INDU82 (insurance)	0.2191** (.0621)	0.2602** (.0771)	0.3633** (.0586)
INDU83 (real estate)	0.0844* (.0397)	0.1486** (.0553)	0.1691** (.0480)
INDU92 (sanitary)	-0.2587** (.0915)	-0.0587 (.1001)	-0.2350 (.2007)
INDU93 (social)	0.0595 (.0459)	0.2456** (.0576)	0.1005 (.0788)
INDU94 (cultural)	0.1924* (.0933)	0.4101** (.1322)	0.1570* (.0951)
INDU95 (personal)	-0.1736** (.0405)	0.0609 (.0875)	-0.2530** (.0412)
R^2 adj.	0.1030	0.1190	0.1158
SEE	0.3707	0.3410	0.3618
F-all variables	12.09	6.81	8.01
Number of obs.	2416	1076	1340

[1] Standard errors are given in parentheses below the estimates and are adjusted for heteroscedasticity according to White (1980). A simple Chow test suggests that the hypothesis of the parameter estimates being equal for male and female employees can be rejected at a 0.1 % risk level.

* Denotes significant estimate at a 5 % risk level.

** Denotes significant estimate at a 1 % risk level.

Table F2. Regression results for non-agricultural private-sector employees. Estimation of earnings equations including human capital variables as well as industry sector controls using OLS-techniques.[1] The dependent variable is log hourly earnings *inclusive* of fringe benefits.

Variable	All obs.	Women	Men
CONSTANT	3.4768** (.0314)	3.3490** (.0540)	3.3856** (.0362)
BASIC EDUCATION	0	0	0
LOWER VOCATIONAL	0.0313* (.0167)	-0.0347 (.0256)	0.0789** (.0216)
UPPER VOCATIONAL	0.2000** (.0230)	0.1189** (.0353)	0.2506** (.0312)
SHORT NON-UNIV	0.3760** (.0420)	0.3277** (.0870)	0.3930** (.0487)
UNDER-GRADUATE	0.5130** (.0618)	0.4899** (.0675)	0.4487** (.1385)
GRADUATE	0.5439** (.0505)	0.4276** (.1053)	0.6183** (.0548)
EXP	0.0166** (.0028)	0.0086* (.0046)	0.0221** (.0033)
EXP^2 /1000	-0.2801** (.0604)	-0.1558 (.0992)	-0.3668** (.0740)
SEN	0.0026** (.0010)	0.0022 (.0014)	0.0029* (.0015)
OJT	0.0994** (.0150)	0.0469* (.0208)	0.1340** (.0212)
WOM	-0.2142** (.0144)		
Industry sector indicators:			
INDU20 (mining)	0.0125 (.1041)	0.0905 (.1147)	0.0411 (.1660)
INDU31 (food manuf.)	-0.0203 (.0301)	0.0302 (.0404)	-0.0277 (.0484)
INDU32 (textile)	-0.0732** (.0302)	-0.0453 (.0410)	0.0005 (.0429)
INDU331 (wood prod.)	-0.0617* (.0312)	0.0393 (.0524)	-0.0810* (.0379)
INDU332 (furniture)	-0.1125* (.0512)	-0.0100 (.0724)	-0.1720** (.0648)
INDU341 (paper prod.)	0.1665** (.0295)	0.1289** (.0409)	0.1855** (.0375)
INDU342 (printing)	0.2101** (.0422)	0.2966** (.0607)	0.1961** (.0597)
INDU35 (chemicals)	0.0713* (.0382)	0.0660 (.0506)	0.0837* (.0484)

Table F2. (cont.)

Variable	All obs.	Women	Men
INDU36 (non-metallic)	-0.0051 (.0572)	-0.0325 (.0770)	0.0001 (.0705)
INDU37 (basic metal)	0.1056** (.0371)	0.1153* (.0648)	0.0785* (.0426)
INDU38 (metal products)	0	0	0
INDU39 (oth. manuf.)	0.1474 (.0910)	0.2043** (.0363)	0.1429 (.1122)
INDU40 (electricity)	0.0469 (.0421)	-0.0385 (.0482)	0.0547 (.0504)
INDU50 (construction)	0.0423 (.0260)	0.1198* (.0601)	0.0439 (.0287)
INDU61 (wholesale trade)	0.0921** (.0341)	0.1130** (.0466)	0.1029* (.0454)
INDU62 (retail trade)	-0.0741** (.0266)	-0.0092 (.0385)	-0.1042** (.0395)
INDU63 (restaurants)	0.0626* (.0343)	0.1216** (.0455)	0.0313 (.0528)
INDU71 (transport)	-0.0084 (.0293)	0.1310** (.0512)	-0.0337 (.0358)
INDU72 (communication)	0.0320 (.0620)	-0.0064 (.1820)	0.0215 (.0570)
INDU81 (financing)	0.1791** (.0323)	0.2497** (.0414)	0.2257** (.0791)
INDU82 (insurance)	0.1200** (.0412)	0.1854** (.0710)	0.1118** (.0440)
INDU83 (real estate)	0.0631* (.0308)	0.0941* (.0516)	0.0858** (.0364)
INDU92 (sanitary)	-0.0899 (.0856)	-0.0138 (.0984)	-0.1869 (.1549)
INDU93 (social)	0.0641 (.0459)	0.1955** (.0584)	-0.1147 (.0780)
INDU94 (cultural)	0.2919** (.0930)	0.3937** (.1272)	0.1640 (.1052)
INDU95 (personal)	-0.1221** (.0338)	0.0739 (.0680)	-0.1958** (.0335)
R^2 adj.	0.3276	0.2064	0.3399
SEE	0.3210	0.3237	0.3126
F-all variables	34.62	9.22	21.28
F-industry controls	6.99	4.33	4.72
Number of obs.	2416	1076	1340

[1] For notes, see Table F1.

Table F3. Regression results for non-agricultural private-sector employees. Estimation of earnings equations controlling for a large set of personal and job characteristics using OLS-techniques.[1] The dependent variable is log hourly earnings *inclusive* of fringe benefits.

Variable	All obs.	Women	Men
CONSTANT	3.5224** (.0674)	3.4474** (.0963)	3.4042** (.1031)
BASIC EDUCATION	0	0	0
LOWER VOCATIONAL	0.0408** (.0156)	-0.0150 (.0246)	0.0715** (.0199)
UPPER VOCATIONAL	0.1275** (.0249)	0.0977** (.0382)	0.1424** (.0320)
SHORT NON-UNIV	0.2520** (.0491)	0.2507** (.0951)	0.2215** (.0558)
UNDER-GRADUATE	0.3548** (.0587)	0.4033** (.0699)	0.2063* (.1081)
GRADUATE	0.3411** (.0564)	0.3087** (.1103)	0.3734** (.0634)
EXP	0.0114** (.0028)	0.0116** (.0042)	0.0118** (.0036)
EXP^2 /1000	-0.1844** (.0617)	-0.2247** (.0912)	-0.1828* (.0793)
SEN	0.0031** (.0010)	0.0031** (.0013)	0.0026* (.0014)
OJT	0.0808** (.0136)	0.0566** (.0193)	0.0937** (.0195)
WOM	-0.1945** (.0157)		
MARRIED	0.0194 (.0151)	-0.0038 (.0215)	0.0372* (.0219)
$CHILD^{0-6}$	0.0106 (.0150)	0.0071 (.0264)	-0.0015 (.0184)
$CHILD^{7-17}$	0.0209 (.0131)	-0.0060 (.0182)	0.0425* (.0191)
CAPITAL	0.1280** (.0190)	0.1016** (.0268)	0.1443** (.0274)
TEMPEMPL	-0.0111 (.0403)	0.0516 (.0593)	-0.0820 (.0520)
PART-TIME	0.2924** (.0628)	0.2818** (.0603)	0.1879 (.2517)
PIECE-RATE	0.0761** (.0192)	0.0593* (.0361)	0.0993** (.0216)
NODAYWORK	0.0827** (.0170)	0.1128** (.0255)	0.0473* (.0222)

Table F3. (cont.)

Variable	All obs.	Women	Men
UNEMPL	-0.0222 (.0248)	0.0071 (.0384)	-0.0393 (.0320)
UNION	-0.0298* (.0173)	-0.0703** (.0292)	-0.0012 (.0214)
Occupational status indicators:			
OCC31 (management)	0.3182** (.0627)	0.2410** (.0806)	0.3765** (.1104)
OCC32 (education)	0.1144 (.0718)	-0.0741 (.1166)	0.2046* (.1155)
OCC33 (research)	0.0229 (.1475)	0.1467 (.1023)	0.1015 (.1846)
OCC34 (oth. seniors)	0.0990 (.0616)	0.0885 (.0734)	0.1387 (.1113)
OCC41 (supervisors)	0.0404 (.0528)	0.0050 (.0616)	0.0933 (.1007)
OCC42 (indep. clericals)	-0.0510 (.0528)	-0.0580 (.0576)	-0.0492 (.1056)
OCC43 (routine clericals)	-0.0536 (.0551)	-0.0892 (.0591)	0.1508 (.1719)
OCC44 (oth. lower-level non-manuals)	0	0	0
OCC52 (manufacturing)	-0.0710 (.0530)	-0.1524** (.0613)	0.0012 (.0998)
OCC53 (oth. production)	-0.1261* (.0555)	-0.1523* (.0660)	-0.0722 (.1027)
OCC54 (service)	-0.1470** (.0558)	-0.1625** (.0649)	-0.1148 (.1021)
Industry sector indicators:			
INDU20 (mining)	0.0449 (.1027)	0.0021 (.1237)	0.0611 (.1508)
INDU31 (food manuf.)	-0.0121 (.0296)	0.0069 (.0385)	0.0075 (.0457)
INDU32 (textile)	-0.0625* (.0303)	-0.0309 (.0414)	0.0365 (.0438)
INDU331 (wood prod.)	-0.0531* (.0290)	0.0232 (.0523)	-0.0749* (.0343)
INDU332 (furniture)	-0.1162** (.0402)	-0.0472 (.0600)	-0.1472** (.0491)
INDU341 (paper prod.)	0.1851** (.0287)	0.1189** (.0418)	0.2237** (.0366)
INDU342 (printing)	0.1582** (.0358)	0.1770** (.0516)	0.1597** (.0522)

Table F3. (cont.)

Variable	All obs.	Women	Men
INDU35 (chemicals)	0.0699* (.0384)	0.0368 (.0508)	0.0980* (.0478)
INDU36 (non-metallic)	0.0094 (.0498)	-0.0061 (.0597)	0.0169 (.0622)
INDU37 (basic metal)	0.1350** (.0353)	0.0531 (.0886)	0.1344** (.0406)
INDU38 (metal products)	0	0	0
INDU39 (oth. manuf.)	0.0881 (.0898)	0.0997* (.0461)	0.1202 (.1101)
INDU40 (electricity)	0.0770* (.0402)	-0.0273 (.0429)	0.0805 (.0518)
INDU50 (construction)	0.0776** (.0252)	0.0662 (.0518)	0.0889** (.0285)
INDU61 (wholesale trade)	0.0257 (.0311)	0.0105 (.0449)	0.0315 (.0431)
INDU62 (retail trade)	-0.0842** (.0282)	-0.1062** (.0407)	-0.0399 (.0417)
INDU63 (restaurants)	0.0401 (.0378)	0.0370 (.0482)	0.0031 (.0690)
INDU71 (transport)	0.0225 (.0321)	0.0352 (.0535)	0.0652 (.0421)
INDU72 (communication)	0.0372 (.0630)	-0.0286 (.1694)	0.0681 (.0485)
INDU81 (financing)	0.1522** (.0361)	0.1836** (.0456)	0.1421* (.0812)
INDU82 (insurance)	0.1020* (.0468)	0.1002 (.0714)	0.1630** (.0506)
INDU83 (real estate)	-0.0001 (.0308)	-0.0058 (.0487)	0.0347 (.0378)
INDU92 (sanitary)	-0.1479* (.0744)	-0.1021 (.0773)	-0.2573 (.1663)
INDU93 (social)	-0.0074 (.0414)	0.0171 (.0497)	-0.0764 (.0810)
INDU94 (cultural)	0.1785* (.0868)	0.1845 (.1176)	0.1304 (.0946)
INDU95 (personal)	-0.0732* (.0352)	-0.0137 (.0679)	-0.1085** (.0424)
R^2 adj.	0.4180	0.2963	0.4377
SEE	0.2986	0.3048	0.2885
F-all variables	32.54	9.38	20.30
F-industry controls	5.72	2.58	3.67
Number of obs.	2416	1076	1340

[1] For notes, see Table F1.

Table G1. Regression results for non-agricultural private-sector employees. Estimation of earnings equations including industry sector controls only using OLS-techniques.[1] The dependent variable is log hourly earnings *exclusive* of fringe benefits.

Variable	All obs.	Women	Men
CONSTANT	3.7248** (.0193)	3.4876** (.0311)	3.8059** (.0210)
INDU20 (mining)	0.0005 (.1410)	0.2003 (.1751)	-0.0557 (.2023)
INDU31 (food manuf.)	-0.1142** (.0368)	0.0088 (.0452)	-0.0528 (.0555)
INDU32 (textile)	-0.2549** (.0357)	-0.0807* (.0441)	-0.0541 (.0532)
INDU331 (wood prod.)	-0.1210** (.0348)	0.0495 (.0573)	-0.1755** (.0409)
INDU332 (furniture)	-0.2191** (.0521)	-0.0330 (.0728)	-0.2530** (.0711)
INDU341 (paper prod.)	0.1684** (.0363)	0.1586** (.0445)	0.1861** (.0410)
INDU342 (printing)	0.1643** (.0479)	0.3660** (.0680)	0.1162* (.0663)
INDU35 (chemicals)	0.0910* (.0488)	0.1292* (.0625)	0.0931 (.0595)
INDU36 (non-metallic)	-0.0273 (.0587)	-0.0384 (.0763)	-0.0524 (.0653)
INDU37 (basic metal)	0.1901** (.0524)	0.1051* (.0622)	0.1510** (.0526)
INDU38 (metal products)	0	0	0
INDU39 (oth. manuf.)	0.2018* (.1008)	0.2174** (.0311)	0.1576 (.1104)
INDU40 (electricity)	0.0765 (.0585)	-0.0595 (.0584)	0.1042* (.0560)
INDU50 (construction)	0.0110 (.0304)	0.1112* (.0583)	-0.0538 (.0330)
INDU61 (wholesale trade)	0.1028** (.0416)	0.1781** (.0550)	0.1309** (.0544)
INDU62 (retail trade)	-0.1808** (.0297)	-0.0114 (.0411)	-0.1480** (.0435)
INDU63 (restaurants)	-0.1159** (.0382)	0.0887* (.0483)	-0.0471 (.0625)
INDU71 (transport)	-0.0608* (.0325)	0.1636** (.0534)	-0.1364** (.0387)
INDU72 (communication)	0.0889 (.0833)	0.0083 (.1804)	0.1055 (.0746)

Table G1. (cont.)

Variable	All obs.	Women	Men
INDU81 (financing)	0.1270** (.0403)	0.2751** (.0450)	0.4487** (.0871)
INDU82 (insurance)	0.2048** (.0620)	0.2413** (.0769)	0.3509** (.0584)
INDU83 (real estate)	0.0694* (.0387)	0.1373** (.0547)	0.1480** (.0466)
INDU92 (sanitary)	-0.2589** (.0904)	-0.0616 (.0999)	-0.2376 (.1959)
INDU93 (social)	0.0521 (.0452)	0.2382** (.0565)	0.0851 (.0799)
INDU94 (cultural)	0.1958* (.0933)	0.4089** (.1323)	0.1629* (.0950)
INDU95 (personal)	-0.1697** (.0403)	0.0612 (.0875)	-0.2479** (.0409)
R^2 adj.	0.1000	0.1114	0.1107
SEE	0.3647	0.3383	0.3547
F-all variables	11.73	6.39	7.66
Number of obs.	2416	1076	1340

[1] Standard errors are given in parentheses below the estimates and are adjusted for heteroscedasticity according to White (1980). A simple Chow test suggests that the hypothesis of the parameter estimates being equal for male and female employees can be rejected at a 0.1 % risk level.

* Denotes significant estimate at a 5 % risk level.

** Denotes significant estimate at a 1 % risk level.

Table G2. Regression results for non-agricultural private-sector employees. Estimation of earnings equations including human capital variables as well as industry sector controls using OLS-techniques.[1] The dependent variable is log hourly earnings *exclusive* of fringe benefits.

Variable	All obs.	Women	Men
CONSTANT	3.4748** (.0310)	3.3445** (.0533)	3.3881** (.0358)
BASIC EDUCATION	0	0	0
LOWER VOCATIONAL	0.0329* (.0165)	-0.0336 (.0252)	0.0802** (.0213)
UPPER VOCATIONAL	0.1955** (.0226)	0.1210** (.0350)	0.2424** (.0305)
SHORT NON-UNIV	0.3739** (.0410)	0.3291** (.0874)	0.3896** (.0465)
UNDER-GRADUATE	0.5096** (.0610)	0.4949** (.0671)	0.4173** (.1326)
GRADUATE	0.5188** (.0499)	0.4157** (.1010)	0.5888** (.0547)
EXP	0.0164** (.0027)	0.0089* (.0045)	0.0216** (.0033)
EXP^2 /1000	-0.2754** (.0597)	-0.1586 (.0980)	-0.3581** (.0733)
SEN	0.0026** (.0010)	0.0021 (.0014)	0.0031* (.0015)
OJT	0.0949** (.0148)	0.0467* (.0207)	0.1266** (.0208)
WOM	-0.2088** (.0142)		
Industry sector indicators:			
INDU20 (mining)	0.0136 (.1040)	0.0893 (.1139)	0.0394 (.1655)
INDU31 (food manuf.)	-0.0230 (.0299)	0.0288 (.0404)	-0.0304 (.0482)
INDU32 (textile)	-0.0780** (.0300)	-0.0474 (.0409)	-0.0079 (.0421)
INDU331 (wood prod.)	-0.0624* (.0303)	0.0396 (.0524)	-0.0831* (.0365)
INDU332 (furniture)	-0.1115* (.0510)	-0.0098 (.0726)	-0.1696** (.0646)
INDU341 (paper prod.)	0.1680** (.0294)	0.1290** (.0407)	0.1870** (.0374)
INDU342 (printing)	0.2084** (.0414)	0.2919** (.0601)	0.1955** (.0584)

Table G2. (cont.)

Variable	All obs.	Women	Men
INDU35 (chemicals)	0.0687* (.0384)	0.0633 (.0500)	0.0801* (.0488)
INDU36 (non-metallic)	-0.0039 (.0576)	-0.0349 (.0777)	0.0014 (.0708)
INDU37 (basic metal)	0.1110** (.0370)	0.1152* (.0643)	0.0854* (.0422)
INDU38 (metal products)	0	0	0
INDU39 (oth. manuf.)	0.1530* (.0913)	0.2048 (.0363)	0.1483 (.1124)
INDU40 (electricity)	0.0505 (.0423)	-0.0432 (.0489)	0.0614 (.0502)
INDU50 (construction)	0.0380 (.0256)	0.1024* (.0577)	0.0401 (.0283)
INDU61 (wholesale trade)	0.0677* (.0324)	0.1031* (.0459)	0.0682 (.0427)
INDU62 (retail trade)	-0.0781** (.0261)	-0.0120 (.0382)	-0.1091** (.0384)
INDU63 (restaurants)	0.0604* (.0344)	0.1206** (.0456)	0.0294 (.0539)
INDU71 (transport)	-0.0117 (.0293)	0.1168* (.0535)	-0.0346 (.0353)
INDU72 (communication)	0.0348 (.0631)	-0.0179 (.1861)	0.0288 (.0572)
INDU81 (financing)	0.1504** (.0323)	0.2186** (.0417)	0.2040** (.0784)
INDU82 (insurance)	0.1109** (.0415)	0.1672** (.0708)	0.1136** (.0446)
INDU83 (real estate)	0.0487 (.0303)	0.0822 (.0509)	0.0685* (.0358)
INDU92 (sanitary)	-0.0940 (.0849)	-0.0163 (.0982)	-0.1888 (.1514)
INDU93 (social)	0.0583 (.0453)	0.1885** (.0571)	-0.1181 (.0789)
INDU94 (cultural)	0.2936** (.0929)	0.3927** (.1275)	0.1712* (.1043)
INDU95 (personal)	-0.1195** (.0336)	0.0741 (.0679)	-0.1921** (.0334)
R^2 adj.	0.3208	0.2014	0.3289
SEE	0.3168	0.3207	0.3081
F-all variables	33.58	8.98	20.30
F-industry controls	6.82	4.08	4.67
Number of obs.	2416	1076	1340

[1] For notes, see Table G1.

Table G3. Regression results for non-agricultural private-sector employees. Estimation of earnings equations controlling for a large set of personal and job characteristics using OLS-techniques.[1] The dependent variable is log hourly earnings *exclusive* of fringe benefits.

Variable	All obs.	Women	Men
CONSTANT	3.5173** (.0657)	3.4411** (.0927)	3.4033** (.1027)
BASIC EDUCATION	0	0	0
LOWER VOCATIONAL	0.0417** (.0155)	-0.0141 (.0242)	0.0726** (.0198)
UPPER VOCATIONAL	0.1291** (.0246)	0.1005** (.0378)	0.1445** (.0318)
SHORT NON-UNIV	0.2565** (.0485)	0.2516** (.0951)	0.2283** (.0544)
UNDER-GRADUATE	0.3598** (.0585)	0.4083** (.0700)	0.1957* (.1069)
GRADUATE	0.3279** (.0562)	0.2996** (.1078)	0.3601** (.0631)
EXP	0.0116** (.0028)	0.0118** (.0041)	0.0118** (.0036)
EXP^2 /1000	-0.1865** (.0612)	-0.2282** (.0899)	-0.1820* (.0791)
SEN	0.0031** (.0010)	0.0030* (.0013)	0.0027* (.0014)
OJT	0.0780** (.0135)	0.0558** (.0192)	0.0894** (.0194)
WOM	-0.1909** (.0157)		
MARRIED	0.0164 (.0150)	-0.0050 (.0214)	0.0339 (.0217)
$CHILD^{0-6}$	0.0099 (.0149)	0.0047 (.0264)	-0.0012 (.0182)
$CHILD^{7-17}$	0.0197 (.0130)	-0.0076 (.0181)	0.0427** (.0190)
CAPITAL	0.1256** (.0189)	0.1025** (.0264)	0.1388** (.0273)
TEMPEMPL	-0.0081 (.0400)	0.0528 (.0591)	-0.0795 (.0519)
PART-TIME	0.2809** (.0622)	0.2679** (.0593)	0.2044 (.2503)
PIECE-RATE	0.0736** (.0190)	0.0605* (.0359)	0.0960** (.0214)
NODAYWORK	0.0821** (.0169)	0.1143** (.0253)	0.0442* (.0222)

Table G3. (cont.)

Variable	All obs.	Women	Men
UNEMPL	-0.0230 (.0248)	0.0058 (.0382)	-0.0389 (.0319)
UNION	-0.0235 (.0172)	-0.0640* (.0290)	0.0059 (.0213)
Occupational status indicators:			
OCC31 (management)	0.2839** (.0617)	0.2186** (.0801)	0.3391** (.1098)
OCC32 (education)	0.1080 (.0710)	-0.0730 (.1138)	0.1941* (.1150)
OCC33 (research)	0.0354 (.1437)	0.1490 (.1021)	0.1154 (.1847)
OCC34 (oth. seniors)	0.0935 (.0612)	0.0903 (.0725)	0.1247 (.1115)
OCC41 (supervisors)	0.0327 (.0522)	0.0007 (.0608)	0.0817 (.1006)
OCC42 (indep. clericals)	-0.0544 (.0520)	-0.0579 (.0564)	-0.0607 (.1052)
OCC43 (routine clericals)	-0.0596 (.0543)	-0.0919 (.0579)	0.1526 (.1725)
OCC44 (oth. lower-level non-manuals)	0	0	0
OCC52 (manufacturing)	-0.0702 (.0522)	-0.1529** (.0600)	-0.0011 (.0997)
OCC53 (oth. production)	-0.1258* (.0548)	-0.1564** (.0648)	-0.0719 (.1026)
OCC54 (service)	-0.1435** (.0549)	-0.1610** (.0637)	-0.1092 (.1017)
Industry sector indicators:			
INDU20 (mining)	0.0450 (.1021)	0.0046 (.1242)	0.0591 (.1490)
INDU31 (food manuf.)	-0.0154 (.0295)	0.0059 (.0385)	0.0029 (.0454)
INDU32 (textile)	-0.0675* (.0305)	-0.0328 (.0413)	0.0263 (.0472)
INDU331 (wood prod.)	-0.0547* (.0287)	0.0023 (.0523)	-0.0773* (.0338)
INDU332 (furniture)	-0.1142** (.0402)	-0.0444 (.0599)	-0.1464** (.0496)
INDU341 (paper prod.)	0.1844** (.0287)	0.1183** (.0417)	0.2234** (.0367)
INDU342 (printing)	0.1574** (.0355)	0.1736** (.0514)	0.1602** (.0513)

Table G3. (cont.)

Variable	All obs.	Women	Men
INDU35 (chemicals)	0.0664* (.0388)	0.0324 (.0500)	0.0934* (.0487)
INDU36 (non-metallic)	0.0081 (.0504)	-0.0097 (.0602)	0.0154 (.0625)
INDU37 (basic metal)	0.1361** (.0352)	0.0535 (.0871)	0.1354** (.0405)
INDU38 (metal products)	0	0	0
INDU39 (oth. manuf.)	0.0972 (.0880)	0.0988* (.0460)	0.1306 (.1086)
INDU40 (electricity)	0.0792* (.0402)	-0.0335 (.0426)	0.0853* (.0515)
INDU50 (construction)	0.0720** (.0250)	0.0519 (.0504)	0.0831** (.0283)
INDU61 (wholesale trade)	0.0084 (.0302)	0.0033 (.0441)	0.0055 (.0416)
INDU62 (retail trade)	-0.0852** (.0279)	-0.1077** (.0406)	-0.0416 (.0413)
INDU63 (restaurants)	0.0379 (.0376)	0.0353 (.0482)	0.0054 (.0679)
INDU71 (transport)	0.0178 (.0321)	0.0237 (.0561)	0.0591 (.0414)
INDU72 (communication)	0.0408 (.0635)	-0.0390 (.1721)	0.0733 (.0484)
INDU81 (financing)	0.1290** (.0362)	0.1561** (.0458)	0.1289 (.0817)
INDU82 (insurance)	0.0935* (.0464)	0.0819 (.0711)	0.1663** (.0495)
INDU83 (real estate)	-0.0111 (.0305)	-0.0143 (.0484)	0.0206 (.0373)
INDU92 (sanitary)	-0.1485* (.0738)	-0.1020 (.0776)	-0.2606 (.1628)
INDU93 (social)	-0.0129 (.0412)	0.0124 (.0488)	-0.0848 (.0830)
INDU94 (cultural)	0.1816* (.0872)	0.1851 (.1182)	0.1388 (.0953)
INDU95 (personal)	-0.0705* (.0350)	-0.0099 (.0677)	-0.1083** (.0420)
R^2 adj.	0.4038	0.2879	0.4182
SEE	0.2968	0.3029	0.2869
F-all variables	30.74	9.05	18.82
F-industry controls	5.61	2.41	3.72
Number of obs.	2416	1076	1340

[1] For notes, see Table G1.

Table H. Industry means for 26 private-sector industries, 1987

Industry	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Mining	1.00	21.20	0.762	114.00	0.075	0.400	0.400	0.800
Food manufacturing	1.29	18.44	0.340	98.44	0.063	0.818	0.556	0.754
Textile industries	1.00	17.71	0.146	65.24	0.085	0.846	0.817	0.865
Wood products	1.03	18.89	0.262	77.44	0.044	0.829	0.286	0.771
Furniture	1.36	16.80	0.160	83.39	0.154	0.800	0.480	0.800
Paper products	1.37	18.90	0.893	158.12	0.065	0.895	0.286	0.705
Printing	1.73	15.57	0.174	107.28	0.119	0.786	0.483	0.562
Chemicals	1.94	16.86	0.558	138.14	0.111	0.846	0.295	0.577
Non-metallic products	1.18	18.18	0.273	108.28	0.160	0.868	0.184	0.842
Basic metal industries	1.35	19.50	0.555	117.56	0.036	1.000	0.115	0.769
Metal products	1.84	16.02	0.177	99.30	0.130	0.798	0.255	0.676
Other manufacturing	2.14	13.14	0.151	83.67	0.138	0.571	0.143	0.286
Electricity etc.	1.87	18.84	2.270	206.65	0.098	0.839	0.226	0.548
Construction	1.46	16.19	0.064	91.09	0.086	0.723	0.106	0.774
Wholesale trade	2.08	17.74	0.313	111.53	0.110	0.478	0.403	0.239
Retail trade	1.21	17.48	0.209	64.38	0.050	0.661	0.627	0.186
Restaurants, hotels	1.54	15.19	0.095	62.47	0.072	0.702	0.821	0.690
Transport	1.40	15.66	0.560	112.75	0.126	0.620	0.302	0.651
Communication	1.47	17.88	0.473	106.96	0.157	0.941	0.235	0.471
Financing	2.09	17.51	0.270	132.48	0.247	0.759	0.819	0.034
Insurance	2.91	16.06	0.597	129.71	0.174	0.656	0.531	0.031
Real estate	2.72	14.22	0.563	157.83	0.252	0.500	0.486	0.200
Sanitary services	1.36	13.00	1.129	90.78	0.143	0.400	0.720	0.840
Social services	2.85	15.37	0.122	155.31	0.410	0.658	0.691	0.130
Recreational services	1.55	13.82	0.322	129.66	0.240	0.788	0.667	0.333
Personal services	1.40	15.32	0.078	71.28	0.211	0.574	0.319	0.808

(1) Average years of above-primary schooling.
(2) Average years of experience.
(3) Capital-labour ratio, calculated from National Accounts data as the ratio of the gross fixed capital stock to hours worked. (The means are multiplied by 10^3.)
(4) Productivity, calculated from National Accounts data as the ratio of real value added to hours worked.
(5) Profitability, calculated from National Accounts data as the ratio of net operating profit to gross output.
(6) Average union density.
(7) Average share of females.
(8) Average share of manual workers.

Table I. Correlations between the industry wage premiums measured for private-sector employees (column 3 of Table 2 in the text) and the industry characteristics in Table H above.

Industry	1.	2.	3.	4.	5.	6.	7.	8.	9.
1. Wage premium	1.00								
2. Average years of above-primary schooling	0.26	1.00							
3. Average years of experience[1]	0.11	-0.43	1.00						
4. Capital-labour ratio	0.12	0.04	0.24	1.00					
5. Productivity	0.50	0.52	0.15	0.68	1.00				
6. Profitability	0.01	0.65	-0.49	-0.17	0.35	1.00			
7. Average union density	0.34	-0.25	0.39	-0.01	0.12	-0.23	1.00		
8. Average share of females	-0.20	0.12	-0.26	-0.17	-0.16	0.32	-0.24	1.00	
9. Average share of manual workers	-0.32	-0.78	0.28	0.05	-0.36	-0.54	0.22	-0.29	1.00

* The industry means of average seniority, i.e. average years at the present employer, were not included because of the strong multicollinearity between average years of total work experience and seniority (the simple correlation is 0.85).

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