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Aslan Zorlu

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Núcleo de Investigação em Microeconomia Aplicada
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Do Ethnicity and Sex Matter in Pay?

Analyses of 8 Ethnic Groups in the Dutch Labour Market

Aslan ZORLU

NIMA, Universidade do Minho
aslan@eeg.uminho.pt

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Abstract

Using the CBS-micro survey, ethnic and gender wage differentials in the Netherlands are examined between native Dutch labourers and 7 ethnic minority groups that are highly differentiated in their human capital endowment and immigration history. Estimations indicate that wage discrimination occurs mainly on the basis of their ethnic background rather than gender. Moroccans suffer the largest wage gap due to discrimination. This result is likely an indication of employer's response on the deteroriating image of Moroccans in the Netherlands in recent years. Also, Eastern-European and non-European workers that are composed by more refugees and other recent immigrants are disfavoured, so are Caribbean and Indonesian men. Immigrants from the EU-countries rarely face wage discrimination.

In this research, data has been used from LSO 1997 (Wage Structure Survey) of Statistics Netherlands, which is available on-site at the Centre for Research of Economic Micro-data (CEREM). The views expressed in this paper do not necessarily reflect the policies of Statistics Netherlands.

1. Introduction

World wide, numerous studies have documented that women and ethnic minorities are vulnerable groups in the labour market. The weak labour market position of these groups is observable in the form of their concentration in unattractive jobs/sectors, low participation rates, and relatively low earnings. Some part of the employment- and earnings-gap can be explained by observable skill differences but a large part of this gap remains unexplained and is often attributed to labour market discrimination.

In the Netherlands, the sharply increasing participation rate of (married) women has drawn considerable attention from researchers from the 1980s onwards but immigrant women have remained outside of researcher's sight. Economic research on immigrants has focussed mainly on the labour market position of male immigrants. Female immigrants are simply neglected due to two main raisons. Firstly, the composition of immigrant workers have been dominated by (usually male) 'guest workers' arrived in the 1960s and 1970s. Secondly, the participation rate of immigrant women from the Mediterranean source countries of 'guest workers' such as Turkey and Morocco has been considerable low. Consequently the number of immigrant women in data sets that are scarcely available was too small to conduct statistical analyses. This paper studies wage differentials between native Dutch workers and seven ethnic minority groups by gender with an emphasis on whether ethnic minority women are double disadvantaged, using a large cross-section data of Statistics Netherlands (CBS) from 1997, called LSO. Other than earlier studies, this paper considers both successful immigrants and disadvantaged immigrant groups as well as 'new' immigrant groups[1].

The paper starts with a brief overview of the labour market position of ethnic minorities in the Netherlands. In section 3, models to estimate earnings equations, data used and a decomposition technique for the identification of gender- and ethnic wage gap are presented respectively. The estimated results on the components of earnings differentials between men and women as well as between native Dutch and ethnic minority groups are presented. The paper ends with conclusions.

2. Ethnic Minorities: a brief overview

This paper distinguishes seven ethnic minority groups: first group covers ethnic minorities[2] from European Union (EU) countries immigrants that consist of both earlier 'guest workers from Mediterranean area (Italy, Spain, Greece and Portugal) and those from other member countries of the EU. Second group covers ethnic minorities from Eastern European countries mainly composed by 'guest workers' from former Yugoslavia and early and late refugees. Third group covers all those who do not belong

[1] Research in the Netherlands has focused on immigrants who have a disadvantaged labour market position and who have been a target group of *minorities policy* designed since 1979, such as Surinamese, Antillean, South European, Turkish and Moroccan immigrants. For the first time, this paper also provides information about the wages of immigrants who have a similar labour market position as native Dutch workers and about the wages of recent immigrant groups.

[2] The notion *ethnic minority* here refers to a broad classification of non-native Dutch people, which is the official definition and called *allochtoon* in Dutch. According to this definition, anyone is considered *allochtoon* if s/he is born in the country of origin mentioned or if s/he has a mother or father who was born outside of the Netherlands. The official definition is used for data collection through which the identification of first and second-generation immigrants as well as children of immigrants becomes impossible.

to the groups mentioned here, and who are to small in numbers to be distinguished as a separate group. Turkish and Moroccan workers are categorised as fifth and sixth groups. Seventh group is the sum of those who are from the Dutch Antilles and Suriname, a former Dutch colony. This group is called Caribbeans henceforth. Workers originated in former Dutch colony, Indonesia compose the last group.

The labour market position of these ethnic minorities groups is characterised by strong differences and also similarities, just as their migration history. Workers from EU countries posses comparable labour market characteristics as native Dutch workers. Up to now, little is known about workers from the categories of Eastern European and non-European that possibly include many refugees[3]. This paper provides novel information about these groups. Immigrants from former colonies often speak the Dutch language before they arrive. They are also more familiar with Dutch society. However, we still observe significant differences within this category. Indonesian people immigrated right after WW II and their labour market position has strongly improved while Surinamese (most who entered after 1975), Dutch Antilleans and Arubans have less favourable positions, even though they have experienced noticeable improvements.

Immigrants who initially arrived as guest workers also strongly differ in their social career in the Netherlands. The Southern Europeans – Italians, Spanish, Portuguese, Greeks, and Yugoslavs, and their descendants - have improved their position significantly while Turks and Moroccans still occupy an unfavourable position (Lucassen and Penninx, 1997: 141-165; Van Ours and Veenman, 1999). Related to these differences, policy attention and research concentrate mainly on Moroccans, Turks, Surinamese, Antilleans and Arubans.

The low qualification level of ethnic minorities causes disadvantages in job level, labour market participation, earnings and unemployment. Especially notable is the low schooling level of Moroccan and Turkish workers. More than 40% of the Moroccan/Turkish labour force in the Netherlands only has a primary school education. Skill-upgrading takes places across the entire labour force and appears to be stronger for ethnic minority groups, especially Turks and Moroccans (Zorlu & Hartog 2002). Still, the educational gap for ethnic minorities is dramatic (but excepted for Antilleans). The poor educational achievement of second-generation immigrants is closely related to the age at arrival in the Netherlands (Van Ours and Veenman, 1999). Those who arrived young successfully participate in the Dutch educational system, while youngsters arriving in the middle of their school career have difficulties ‘catching-up’ with their classmates. Especially young people from non-Dutch-speaking countries who must first learn the Dutch language, in a handicapped parental environment with poor language skills and limited knowledge about Dutch society and educational system. Similar to first generation immigrants, the education gap is largest for Turks and Moroccans and smallest for Antilleans.

Lack of human capital explains only a part of the low employment level of immigrants. Van Ours and Veenman (1999) report on regressions of labour earnings for male household heads working a least 30 hours a week in 1994 controlling for education, occupation, employment in a supervisory position, work experience, age, and length of stay in the Netherlands. The factors explain a large share of the earnings gap with

[3] Refugees are not identifiable in labour force data.

native Dutch workers: 98% for Turks, 87% for Surinamese, 81% for Antilleans and 78% for Moroccans. Again, at first sight there is no relation to cultural or language distance. Kee (1993) uses small samples of these immigrant groups in 1984-1985, a period of high unemployment, for a deeper analysis of wage differences (for male household heads aged 18 to 65). For Turks and Moroccans, schooling and (potential) experience in the home country have no effect on wages. For Antilleans and Surinamese, schooling in the home country does raise earnings, at about the same rate as schooling obtained in the Netherlands. For all groups of immigrants, schooling in the Netherlands is rewarded less than for Dutch natives. Also for all immigrant groups, experience in the Netherlands is more highly rewarded than experience in the home country. But only for Surinamese is there a return to home country experience. The effect of Dutch language proficiency is not very well established. Simple dummies for self-reported proficiency are not significant in OLS regressions. Estimates generate no transparent results although many interaction effects with schooling and experience come out (Kee, 1993).

3. The Empirical model

Wage differentials between men and women as well as between native Dutch and ethnic minority labour for men and women are estimated separately. The standard procedure, to identify these wage differentials, is to estimate Mincerian wage functions by OLS and decompose wage differentials by the Oaxaca & Blinder method (Oaxaca 1973, Blinder 1973). However, Heckman (1979) and Lee (1976) show that conventional OLS estimates based on a subsample provide inconsistent estimates of the population parameters if this subsample is not a random sample of the original sample. If the sample selectivity occurs, the error terms of selection and wage equations are correlated. In this case, Heckman & Lee procedure suggests a consistent two-step estimates in which the selectivity coefficient (lambda) obtained by the estimation of a qualitative selection rule is included in wage regressions that may simply be estimated by conventional OLS technique.

The selectivity may be a serious problem for the data used. Since the focus here is on ethnic minority groups to which the Dutch language is not common and in which various languages are spoken, it is likely that people who do not speak Dutch or have a poor command of the language will have a higher chance of not being observed. The productivity of those who are included in this non-randomly selected sample may be different compared to that of those who are not included in the sample. That may cause a bias to the estimated coefficients of the earnings functions (Heckman 1979). To control for a possible sample selection bias, Heckman & Lee procedure is applied.

The sample selection rule is given by the following qualitative response equation.

$$y_{ij}^{*} = \alpha_j z_{ij} + \upsilon_{ij} \qquad (1)$$

where z_{ij} are a vector of the exogenous variables for individual i from subsample j which are thought to determine whether wages are observed or unobserved, α_j are corresponding coefficients, and υ_{ij} is random residuals which are assumed to be $N(0,1)$. Individuals are indexed by $i = 1, 2, ..., n$ and both ethnic groups and gender by

$j = 1, 2, ..., k$. y_{ij}^* is the outcome of the selection rule and is given by dichotomous variable y_{ij}

$$\begin{aligned} y_{ij} &= 1 \text{ if } y_{ij}^* > 0 \\ &= 0, \text{ otherwise} \end{aligned} \tag{2}$$

wages of individuals are observed when the selection rule is satisfied

$$\ln w_{ij} = \beta_j x_{ij} + \varepsilon_{ij} \ \ iff \ \ y_{ij} = 1 \tag{3}$$

where $\ln w_{ij}$ is the natural logarithm of weekly earnings, x_{ij} are vectors of exogenous regressors determining productivity of individual *i* from subsample *j*, β_j is a vector of corresponding coefficients and ε_{ij} is random residuals with $\varepsilon_{ij} \sim N(0, \sigma)$. The residuals of selection and wage equations are assumed to be jointly bivariate normally distributed, such that $corr(\varepsilon_{ij}, \upsilon_{ij}) = \rho$

Estimation of this equation by conventional OLS will provide inconsistent estimates because the truncation leads to $E(\varepsilon_{ij}) \neq 0$.

A regression function with the truncation may be written as

$$E(\ln w_{ij} \,|\, y_{ij} = 1) = \beta_j x_{ij} + E(\varepsilon_{ij} \,|\, \upsilon_{ij} > -\alpha_j z_{ij}) \tag{4}$$

In this case, the Heckman selection model suggests two-step consistent and asymptotically efficient estimates: estimate the selection equation by probit model and include the λ_{ij}, the non-selection hazard (or inverse Mill's ratio) obtained from the probit estimates in the regression model (Heckman 1976). This selectivity corrected regression model can be rewritten as (Greene 1997, pp. 976-978)

$$E(\ln w_{ij} \,|\, y_{ij} = 1) = \beta_j x_{ij} + \delta_j \lambda_{ij} \tag{5}$$

where the selectivity correction variable is given as $\lambda_{ij} = \phi(\alpha_j z_{ij}) / \Phi(\alpha_j z_{ij})$; $\phi(.)$ is the standard normal density and $\Phi(.)$ is the standard normal distribution function.

Including a disturbance term in equation (5), the full regression function can be written as

$$E(\ln w_{ij} \,|\, y_{ij} = 1) = \beta_j x_{ij} + \delta_j \lambda_{ij} + u_{ij} \tag{6}$$

We estimate the selection and earnings model given by equations (1) and (6) by the full maximum likelihood procedure as suggested by the Heckman selection model to obtain consistent parameter estimates for wage functions, which are our interest.

Data

For the analyses, we use the large and representative micro data (N=148948) collected by Statistics Netherlands (CBS), and called LSO 1997. This data is a combination of three separate data sets: the employment and wages survey (an employer's survey), the administrative data for insured people (VZA) which provide administrative earnings

information and the labour force survey (EBB). Unemployed and self-employed individuals are not included in the data since the employers' survey and VZA are taken as a base.

The LSO data set from 1997 is the first large representative micro data set including enough observations on ethnic minorities in the Netherlands to satisfactorily estimate separate earnings functions. Ethnic origin is defined by the birthplace of the respondent or by one of the parents' birthplace. Note that this definition is very broad and also covers children born in the Netherlands of immigrant parent(s). From the data it is impossible to identify birthplace, education acquired abroad and the proficiency of the Dutch language.

The earnings of the employed labour force are defined to be the dependent variable in the earnings equation. People who are not able to work (N=7513) and people who have a job but are seeking another job (N=3367) do not enter the wage equation. Thus, only equilibrium wages are considered, assuming that the population of job seekers is not randomly selected. However, these two groups enter the selection equation[4]. The former exclusion is conventional (and inevitable), the latter is novel.

Earnings of workers are defined as weekly earnings, which is calculated by dividing gross monthly earnings plus any bonus by four weeks. Seven education levels are given in the data and are included in the earnings functions as dummy variables in place of years of education because the latter does not take into account possible quality differences across education types. The lowest education is unfinished primary education, and the highest level is university education. The years of education is calculated on the basis of these seven education levels to approximate potential experience. Experience is 'potential' in that it is calculated as the respondents' age minus the number of schooling years minus five. Tenure indicates the years worked for current employer. Dummy variables are created for five occupation levels, residence in each of the four largest cities where immigrants are concentrated, marriage status, and public sector employment. Full-time and part-time employment indicators are also defined, as dummy variables, while flexible jobs serve as the reference category. Also six dummies are generated for having one or more children aged between 0-5, 6-11 and 12-17 years. For the estimations, sixteen sub-samples are constructed on basis of gender and ethnicity. In addition to Dutch workers, seven ethnic minority groups are distinguished. Both ethnic minorities who have disadvantaged position and who are successful, are included in this paper. As mentioned in section 2, there are significant differences between ethnic minority groups, which are characterised by their social, economic, demographic background and immigration history. To understand these differences across groups and to provide information for policy considerations, the entire sample is divided up into eight sub-samples on the basis of ethnic background as mentioned in section 2.

Table A.1 gives the descriptive statistics for all ethnic minority groups by gender. The percentage of lower educated individuals is notably high for Turks and Moroccans. These groups are also concentrated in low occupational levels, which corresponds, to

[4] Excluding these two groups facilitates the use of a Heckman selectivity model since non-participant, unemployed and self-employed people are not included in the wage data. Additionally, the number of people belonging to these two groups is small. Despite this, the selection model is applied because the selection coefficient (λ) is statistically significant for some sub-samples and OLS estimations provide similar wage differentials.

some extent, to their education level. More than half of women is employed in part-time jobs, ranging from 56 to 79 per cent for the Dutch and Caribbean respectively. The percentage of part-time employment for men is around 25 percent, except for Caribbean men (49%). Non-European, Turkish, Moroccan and Caribbeans men are more frequently employed in flexible jobs than other men. Further a high percentage of Turks and Moroccans is married and has more often children than native Dutch and other ethnic groups. It is also notable that the share of divorced women in the work force is twice as large as the share of divorced men. It is much higher for Turkish and Moroccan women compared to men from same ethnic background. Since the participation rate of Turkish and Moroccan women is in general low, this implies that especially divorced Turkish and Moroccan women tend to participate in the labour market. However, it should be noted that the percentage of married women among Turkish and Moroccan, is not low, compared to Dutch women. The percentage of married Turkish women is the highest (79%) of all groups, whereas the percentage of single women is the lowest among Turkish and Moroccan women (15%) compared to 38% among native Dutch. Finally, a high concentration of ethnic minorities in Amsterdam and Rotterdam is clearly observed. About 40% of Caribbean people work in the three largest cities.

2.2 Wage Differentials

After the estimation of earnings functions by Heckman's selectivity model for separate sub-samples, the observed wage differential can be decomposed by the standard Oaxaca (1973) & Blinder (1973) technique. Since we want to identify the double disadvantage of ethnic minority women, i.e. earnings difference between native Dutch men and ethnic minority women, an augmented version of the Oaxaca decomposition used by Shamsuddin (1998) may be applied. The differentials in the mean log of offered earnings between native Dutch male and ethnic minority women is given as

$$\overline{lnW}_N^m - \overline{lnW}_I^w = \left[\overline{lnW}_N^m - \overline{\ln W}_I^m\right] + \left[\overline{lnW}_I^m - \overline{\ln W}_I^w\right] \qquad (4)$$

Superscripts m and w indicate men and women. Subscripts N and I indicate native Dutch and immigrant groups with $I = 1, 2, ..., 7$. An alternative specification of double disadvantage is given as an earnings gap between native Dutch and ethnic minority women plus an earnings gap between native Dutch men and women:

$$\overline{lnW}_N^m - \overline{lnW}_I^w = \left[\overline{lnW}_N^w - \overline{\ln W}_I^w\right] + \left[\overline{lnW}_N^m - \overline{\ln W}_I^w\right] \qquad (5)$$

In the standard Oaxaca & Blinder technique, the male or female wage structure is assumed to be non-discriminatory wages. Wage discrimination and productivity differentials are measured as difference between wages of gender or ethnic groups with comparable observed characteristics. However, some theories suggest that discrimination not only lowers the wages of disfavoured groups but also leads to higher wages for favoured groups. In this context, a number of alternative specifications are used to obtain the non-discriminatory wage structure. Since the non-discriminatory wage structure is unobserved, it has been derived from estimated coefficients of wage functions by using weights. All suggested weights concern shares of ethnic/gender sub-samples in total labour force. Oaxaca and Ransom (1994), and Silber and Weber (1999) compare outcomes of different approaches. Evaluating their findings, Cotton's approach is applied in this study for two reasons. Firstly, the results will be comparable

with the earlier study of Kee (1995) on native-immigrant wage differentials for males in the Netherlands. Secondly, applying the original Oaxaca (1973) method, taking male wage structure as a norm, does not provide very different results[5]. Surprisingly, the last methodology does not produce a larger wage gap due to discrimination for all sub-samples but the decomposition outcome changes slightly for some groups. Cotton (1987) suggests a non-discriminatory wage structure that is sensitive to the relative proportions of various types of labour concerned. The unobserved non-discriminatory wage structure is given as: $\beta^* = \sum_{i=1}^{n} S_i \beta_i$, where *i=1,2,3,...,16* and S_i is the relative shares of different types of labour, $S_i = S_i / \sum_{i=1}^{n} S_i$.

For our analysis, the non-discriminatory wage structure may be defined, following Cotton (1987) and (Kee 1995), as follows

$$\beta^* = \sum_{i=1}^{8} S_i^m \beta_i^m + \sum_{i=1}^{8} S_i^w \beta_i^w \tag{4}$$

where S_i's are the relative proportions of the sixteen sub-samples, i.e. 8 ethnic groups times 2 gender, in the total employment and β_i's are vectors of the regression coefficients of these sixteen sub-samples.

Wage differentials between native Dutch and ethnic minority labour force as well as between women and men within same ethnic category will be decomposed into two components: productivity differentials and wage discrimination (Oaxaca 1973, Blinder 1973, Reimers 1981, Cotton 1987, Miller 1987, Kee 1995, Oaxaca and Ransom 1994).

Using the non- discriminatory wage structure, mean offered gender wage differentials within same ethnic group is given

$$\overline{\ln W_i}^m - \overline{lnW_i}^w = \left\{ \hat{\beta}_i^m \left(\overline{X}_i^m - \overline{X}_i^w \right) + \left[\overline{X}_i^m \left(\hat{\beta}_i^m - \hat{\beta}^* \right) + \overline{X}_i^w \left(\hat{\beta}^* - \hat{\beta}_i^w \right) \right] - \left(\hat{\gamma}_i^m \overline{\lambda}_i^m - \hat{\gamma}_i^w \overline{\lambda}_i^w \right) \right\} \tag{5}$$

where superscripts *m* and *w* refer to men and women, and subscripts *i* refers to native Dutch and ethnic minority groups, *i = 1,2,...,8*.

Mean offered ethnic wage differentials within same gender

$$\overline{\ln W_N^j} - \overline{\ln W_I^j} = \left\{ \hat{\beta}_N^j \left(\overline{X}_N^j - \overline{X}_I^j \right) + \left[\overline{X}_N^j \left(\hat{\beta}_N^j - \hat{\beta}^* \right) + \overline{X}_I^m \left(\hat{\beta}^* - \hat{\beta}_I^j \right) \right] - \left(\hat{\gamma}_N^j \overline{\lambda}_N^j - \hat{\gamma}_I^j \overline{\lambda}_I^j \right) \right\} \tag{6}$$

where $\hat{\beta}$ is the vector of the estimated coefficients in earnings equation and $\overline{X}_i$'s are the mean of productivity-determining characteristics. Superscript *j* indicates sex category*, men and women* (*j=m,w)*. β^* is non-discriminatory wage structure, which functions as the base category to measure wage differentials due to 'discrimination'.

[5] The results obtained from the decomposition based on the assumption of equality of native male wages and non-discriminatory wages are not presented here but available on request.

The intercept term of the regression equations is included the decomposition formula, and is treated as an element in the X-vector for which $X^m = X^w = 1$ and $X_N = X_i = 1$ for each observation (Cain 1986). Equations 4 and 5 decompose observed wage differentials into three components.

1. Explained differences: these are differences in characteristics of groups concerned, given by $\hat{\beta}_i(\overline{X}_i - \overline{X}_i)$
2. Unexplained differences: these are often attributed to 'discrimination' in the literature. It is composed by two parts
   2.1. The first term in the brackets refers to the overvaluation of group *i* characteristics, $\overline{X}_i\left(\beta_i - \beta^*\right)$
   2.2. The first term in the brackets refers to the undervaluation of group *i* characteristics, $\overline{X}_i\left(\beta^* - \beta_i\right)$
3. Explained differences due to selectivity bias, $\left(\hat{\gamma}_i\overline{\lambda}_i - \hat{\gamma}_i\overline{\lambda_i}\right)$

It should be noted that the decomposition technique would not generate a very precise measurement of wage discrimination because not all productivity-determining characteristics are available in the data, for instance, motivation and quality of schooling. There is also no information about the proficiency of the Dutch language, education, and experience in the country of origin for ethnic minorities.

2.4 Empirical Results

The earnings functions are simultaneously estimated the selection equations for all sub-samples. Including education and age as well as three dummy variables for the number of children aged 0-5, 6-11 and 12-17 in the selection equations but not in earnings functions facilitates the identification of parameters of earnings equation. The parameter estimates of the selection equations are not presented here[6] since the focus is on the parameters of earnings equations.

The results of the estimations of female earnings functions are presented in Table A.2 in Appendix. Since the focus is not on coefficients, some selected aspects of estimates are discussed in a comparative perspective here. The particular interest is the sign of lambda coefficients, which indicate the selectivity effect. A negative lambda coefficient suggests that for given observed characteristics, workers who are included in the wage and salary sector had lower wage offers than an average individual would have had, while a positive coefficient for lambda implies the opposite case. The coefficient of lambda is negative for all sub-samples, except Moroccan, Caribbean and Indonesian men. However, it is only statistically significant for native Dutch, Turkish and Caribbean women as well as for EU and non-European men. The mean selectivity bias, the Mills' ratio[7], is obtained from the simultaneously estimations of selection and earnings functions to include in the decomposition of offered wage differentials.

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[6] They are available on request

[7] The Mills' ratio or inverse hazard, λ_j for each observation *j* is computed as $\lambda_j = \frac{\phi(z_j\hat{\gamma})}{\Phi(z_j\hat{\gamma})}$, where ϕ is the normal density and Φ is the standard normal distribution.

Experience, tenure and working hours have, in general, a positive effect on the weekly earnings of women and men from all groups as expected although the extent and significance level of coefficients vary along the samples. The coefficients for education dummies may be, in general, low because dummies for job levels depress the effect of human capital variables downward. Working in one of the four largest cities, -- Amsterdam, Rotterdam, The Hague and Utrecht-- provides significant higher wages for native Dutch workers but this is not always the case for workers from ethnic minority groups. Having a job especially in Amsterdam and Rotterdam is often a disadvantage for workers from ethnic minority groups. Table A.2 presents the estimates of earnings functions for women by ethnic origin. With respect to education, university degree provides the highest wages for women, except for Moroccan women for whom the highest wages are generated by secondary vocational education. Indonesian and Turkish women who have a vocational education are worse off compared to general education at the same level while women from other samples with a vocational education earn the same or higher wages. Compared to flexible jobs, part-time jobs provide substantially higher wages for women from all ethnic groups with respect to full-time jobs, given the control for hours worked. Even, full-time jobs provide lower wages for women from EU and Eastern Europe, and for Caribbean and Moroccan women. The public sector pays higher wages for women, in particular for Turkish (21%) and Moroccan (17%) women in comparison to the private sector.

Table A.2 presents the estimates of wage functions for men by ethnicity. Especially, the low return to secondary and higher education for Turkish and Moroccan men is notable compared to men from the other ethnic groups. Men who are employed in part-time jobs have higher weekly wages than those who are employed in full-time jobs in comparison to flex jobs. Public sector provides higher weekly wages than private sector for men, especially for Turkish (13%) and Moroccan (15%) men, but the advantage of being employed in public sector is clearly greater for women than for men.

The decomposition results obtained by equations (5) and (6), using estimated coefficients and mean values of explanatory variables are presented in Table 8.1. The upper part of Table 8.1 presents the differences in mean log weekly offered wages between men and women for each ethnic group. The lower part of Table 8.1 shows mean weekly offered wage differentials between native Dutch and ethnic minority workers. The ethnic wage differentials are calculated for men and women separately. The decomposition results contain three main components of offered wage differentials as given by equations (5) and (6): the wage gap due to differences in average characteristics of the groups, due to the parameters of the wage functions, which are often addressed to as discrimination and due to selectivity bias. The discrimination is approximated by the unexplainable part of the mean log offered wage gap and is decomposed into two parts: advantage of favoured group and disadvantage of disfavoured group. The favoured group is the samples of males when gender wage gap is concerned. It is the Native Dutch sample when the ethnic wage gap is examined. Correspondingly, disfavoured groups are women and ethnic minorities.

The upper part of Table 8.1 shows that the difference in the mean log offered wage gap between men and women is largest for Dutch (0.669), Indonesian (0.622), and EU (0.597) and the smallest for Caribbean labour force (0.07). A large part of this gap is due to differences in observable characteristics. Discrimination explains a relative large part of the gender wage differentials for Moroccan (0.099) and Turkish women (0.073),

which is mainly caused by female treatment disadvantage. Especially Moroccan women are hit by a substantial amount of female treatment disadvantage (0.212). Also Moroccan men face the largest treatment disadvantage (0.112) which lowers the gender wage gap between Moroccan men and women. The gender wage differentials between Caribbean, Non-European and Indonesian workers are reduced by the treatment disadvantage of men from the same ethnic group, (-0.047), (-0.045) and (-0.026) respectively. The wage discrimination against Dutch women is mainly caused by male treatment advantage (0.037 which is 79 percent of total gender wage gap due to discrimination).

Table 1. Decomposition of log weekly offered wage differentials

	Dutch	EU	East-Euro	Non-Europe	Turk	Moroc	Carib.	Indon.
Gender Wage Gap (Male – Female)								
TOTAL (A+B-C)	**0.669**	**0.597**	**0.348**	**0.449**	**0.511**	**0.539**	**0.070**	**0.622**
A. DUE TO DIFFERENCES IN CHARACTERISTICS	0.634	0.562	0.313	0.422	0.437	0.453	0.065	0.678
B. DUE TO DISCRIMINATION (a+b)	0.047	0.067	0.067	0.031	0.073	0.099	0.008	0.003
a) Male treatment advantage	0.037	0.033	0.033	-0.045	0.033	-0.112	-0.047	-0.026
b) Female treatment disadv.	0.010	0.034	0.034	0.076	0.040	0.212	0.055	0.029
C. DUE TO SELECTIVITY	0.013	0.032	0.032	0.005	-0.001	0.013	0.002	0.059
ETHNIC WAGE GAP								
Dutch male – ethnic minority male								
TOTAL (D+E-F)		**-0.027**	**0.176**	**0.327**	**0.217**	**0.441**	**0.335**	**-0.119**
D. DUE TO DIFFERENCES IN CHARACTERISTICS		-0.029	0.151	0.244	0.248	0.303	0.249	-0.184
E. DUE TO DISCRIMINATION (c+d)		0.004	0.065	0.082	0.004	0.150	0.085	0.063
c) Dutch male treatment advantage		0.037	0.037	0.037	0.037	0.037	0.037	0.037
d) immigr. male treatment disadv.		-0.033	0.027	0.045	-0.033	0.112	0.047	0.026
F. DUE TO SELECTIVITY		0.001	0.040	0.000	0.035	0.012	-0.001	-0.002
Dutch female – ethnic minority female								
TOTAL (G+H-I)		**-0.066**	**-0.026**	**0.101**	**0.165**	**0.476**	**-0.217**	**-0.149**
G. DUE TO DIFFERENCES IN CHARACTERISTICS		-0.088	-0.073	0.035	0.170	0.286	-0.263	-0.170
H. DUE TO DISCRIMINATION (e+f)		0.024	0.087	0.066	0.031	0.202	0.046	0.019
e) Dutch female treatment advant.		-0.010	-0.010	-0.010	-0.010	-0.010	-0.010	-0.010
f) Immig. female treatment disadv.		0.034	0.097	0.076	0.040	0.212	0.055	0.029
I. DUE TO SELECTIVITY		0.001	0.040	0.000	0.035	0.012	-0.001	-0.002
DOUBLE DISADVANTAGE: (B+E) or (0.047+H)		**0.071**	**0.132**	**0.113**	**0.078**	**0.249**	**0.093**	**0.066**

The middle and lower parts of Table 8.1 show wage differentials due to ethnicity for separate gender categories. The components of differentials in the mean offered weekly wage between Dutch and ethnic minority male are presented in the middle part of Table 8.1. Men from Indonesia and EU-countries have a higher mean offered wage than Dutch men, generated by their observable labour market characteristics despite a

discrimination component, i.e. 0.063 for Indonesian and 0.004 for EU-men. The wage gap between Dutch and Moroccan men is the largest among all samples (0.44), followed by Caribbean and non-European men (around 0.33).

The largest part of ethnic wage gaps is due to characteristics. The ethnic wage gap due to discrimination is the largest for Moroccan men (0.15), followed by Caribbean (0.082) and non-European (0.085), Eastern European (0.065), Indonesian (0.063), Turkish and EU men (0.004). The discrimination is responsible for 37% of the total wage gap for Eastern European men, for 34% of the wage gap for Caribbean men and for 25% of the gap of Moroccan and non-European men. The Dutch male treatment advantage accounts for 0.037 percentage points of the average wage gaps. The negative sign for Turkish and EU men suggests an overvaluation of their characteristics while a negative sign indicates an under-valuation of their characteristics, which is significantly high for Moroccan men (0.112).

The lowest part of Table 8.1 reports the wage differentials between native Dutch women and ethnic minority women. A negative sign of mean offered weekly wage differentials indicates that Dutch women earn, for the same characteristics, lower wages than women from ethnic minority groups, e.g. Caribbean, Indonesian women and women from Eastern Europe and EU. This is attributable to the relative high human capital endowment of women from these ethnic groups. Effects of discrimination are the highest for Moroccan women (0.202) and the lowest for Indonesian women (0.019). Since the native Dutch females face a treatment disadvantage (-0.01), discrimination against women from ethnic minority groups is completely attributable to treatment disadvantage for ethnic minority women.

The double disadvantage, which measures differences in the average wage offers between Dutch men and ethnic minority women, is calculated by using equations 7 and 8, and is presented at the bottom of Table 8.1. It is especially high for Moroccan (0.249), Eastern European (0.132) and non-European women (0.113). This is relative low for Indonesian (0.066) and Turkish women (0.078). For women from EU countries and Turkey, 94% of the overall double disadvantage is attributable to gender wage discrimination, and for Eastern European women, this proportion is 51%. On the other hand, ethnicity is responsible for a large portion of double disadvantage for Indonesian (0.96), Caribbean (0.91), non-European (0.73) and Moroccan (0.60) women.

These results indicate the changing attitude of employers with regard to Turkish and Moroccan men in the course of time when we look at earlier study of Kee (1995). Kee uses a cross-section survey from 1985 to estimate ethnic wage differentials in the Netherlands. He reports that discrimination is present against Antillean and Turkish men. The mean offered wage level of Antillean men is 10.95 percentage point lower than that of the Dutch men due to discrimination. This figure is 6.29% for Turkish men. Almost the whole difference between mean offered wages of Dutch and Surinamese men is caused by differences in observable characteristics. On the contrary to the Kee's findings, this paper reports a low degree of wage discrimination against Turkish men (0.4 percentage point of average wage gap) but a higher degree of discrimination against the pooled sample of Surinamese, Antillean and Aruban males (8.5 percentage point of average wage gap). Surprisingly, Moroccan men were favoured in comparison to Dutch men in Kee's study, which is the exactly opposite of the findings in this paper, showing that discrimination is responsible for 34% of the wage gap of Moroccan men with respect to Dutch men. Concerning the gender wage gap for native Dutch workers,

this paper confirms the recent study of Bakker et al. (1999) with a low degree of wage discrimination against Dutch women with respect to Dutch men (only 4.7 percentage point of mean wage gap). They estimate gender wage differentials for native Dutch labour using Socio-economic panel survey 1993 and find no evidence that Dutch women are substantially underpaid due to discriminatory behaviour of employers. A gender wage gap of 0.363 is mainly caused by differences in occupational levels (which may reflect discriminatory allocation).

4. 4 Conclusions

The ranking of the estimated *gender wage gaps* along eight ethnic groups in the Dutch labour market is as follows. The highest wage gap is estimated among native Dutch (.69), followed by the gender wage gap among Indonesians, people from European Union countries, Moroccans, Turks, and Non Europeans (.45). No gender wage gap was estimated among Caribbeans. Most part of the gender wage gap among ethnic groups is explained by differences in characteristics. However within the Turkish and Moroccan groups, 14 to 18% of the gender wage is explained due to discrimination. Both Moroccan men and women face treatment disadvantage in earnings but this disadvantage is higher for Moroccan women than for Moroccan men.

The ranking of the estimated *ethnic wage gaps among men* is highest for Moroccans, followed by Caribbeans, Non-Europeans, Turkish, East Europeans, people from European Union and Indonesians. The part of this ethnic wage gap for men that occurs due to discrimination is the highest for East Europeans (37%), followed by Moroccans (34%) and Non Europeans and Caribbeans (both 25%). Turkish men do not face treatment disadvantage at all. The immigrant male treatment disadvantage of Moroccan men is more than double the treatment disadvantage for Non-European and Caribbean men.

The estimated *ethnic wage gap among women* is in general smaller than the ethnic wage gap for men. However the ethnic gap for Moroccan women is slightly higher (.48) than the ethnic wage gap for Moroccan men (.44). Furthermore 42% of the ethnic wage gap for Moroccan women is due to discrimination (for Moroccan males the corresponding percentage was 34%). Women originating from Eastern Europe are estimated to have higher wage offers than native Dutch women, which is mostly due to their characteristics. However the women from Eastern Europe are second in facing immigrant female treatment disadvantage. Although women originating from non-European countries do not face a high ethnic wage gap (.10), most of this gap is due to discrimination (65%).

From the analyses of ethnic and gender wage differentials we may conclude the following. First, the double disadvantage is highest for Moroccan women, followed by East European women and Non-European women. The highest ethnic wage gap for Moroccans seems to be a reflection of the deteriorating image of Moroccans in the Dutch society in recent years. Secondly, the analysis of wage discrimination, which has been estimated controlling for occupational status, type of work (part time, flexible) and other characteristics affects some ethnic minority groups more than others, and may pick up possible discrimination in job promotion. Without these controls, the measured ethnic wage gap might have been larger.

References

Altonji, J.G. and R.M. Blank (1999). Race and gender in the labor market. In: O. Ashenfelter and D. Card. *Handbook of Labor Economics*, Volume 3, 3143-3213

Bakker, B.F.M., K.G. Tijdens and J.W. Winkels. (1999). Explaining gender wage differences. *Netherlands Official Statistics*, 14, 36-41.

Blinder, A.S. (1973). Wage discrimination: reduced form and structural estimates. Journal of Human Resources, 18, 4, 436-455

Cain, G.G. (1986). Economic analysis of labour market discrimination: a survey. In O. Ashenfelter and R. Layard (eds.), *Handbook of Labor Economics.* Elsevier Science Publishers, 693-785

Heckman, J. (1979). Sample selection bias as a specification error. *Econometrica*. 47, 1, 153-161.

Kee, P. (1995). Native-immigrant wage differentials in the Netherlands: discrimination? *Oxford Economic Papers,*47, 302-317.

Miller, P.W. (1987). Gender differences in observed and offered wages in Canada, 1980. *Canadian Journal of Economics*, 20, 225-244

Neumark, D. (1988). Employer's discriminatory behaviour and the estimation of wage discrimination, *Journal of Human Resources*, 23,279-295.

Oaxaca, R.L. (1973). Male-female wage differentials in urban labour markets. *International Economic Review,*14, 693-709

Oaxaca, R.L. and M.R. Ransom (1994). On discrimination and the decomposition of wage differencials, *Journal of Econometrics,* 61, 5-22.

Oaxaca, R.L. and M.R. Ransom (1999). Identification in detailed wage decompositions, *The Review of Economics and Statistics, 8*1, 154-157.

Ours, J.C. van and J. Veenman (1999). The Netherlands: Old emigrants – young immigration country. *Discussion Paper* 80, IZA Bonn

Reimers, C. (1983). Labour market discrimination against Hispanic and black men, *The Review of Economics and Statistics,* 65, 570-579.

Shamsuddin, A.F.M. (1998). The double-negative effect on the earnings of foreign-born females in Canada, *Applied Economics*, 30, 1187-1201.

Silber, J. and M. Weber (1999). Labour market discrimination: are there significant differences between the various decomposition procedures? *Applied Economics,* 31, 359-365.

Zorlu, A. and J. Hartog (2001). Migration and immigrants: the case of the Netherlands. Tinbergen Institute Discussion Paper TI 2001-042/3

Table A.1. Descriptive statistics

	WOMEN								MEN							
Variable	Dutch	EU	EastEU	NonEU	Turk	Maroc	Carib.	Indones	Dutch	EU	EastEU	NonEU	Turk	Maroc	Carib.	Indones
Log weekly	6.18	6.22	6.09	6.08	5.89	5.74	6.36	6.27	6.82	6.81	6.55	6.42	6.46	6.36	6.44	6.90
Age	35.45	37.29	37.36	34.60	31.12	29.04	37.35	45.11	37.97	39.54	36.78	35.15	32.81	34.47	37.59	46.11
Experience (year)	17.28	19.07	18.94	16.95	15.71	13.40	20.16	27.22	19.84	21.52	18.54	17.45	17.17	18.71	20.36	27.60
Hours	25.88	27.26	26.79	26.09	26.03	24.36	31.85	26.63	37.63	37.77	35.36	34.12	36.25	35.05	33.15	37.42
Tenure (in months)	69.28	70.74	60.16	54.49	45.46	34.04	72.82	99.32	110.29	108.72	72.88	64.84	76.96	69.02	78.07	154.90
EDUCATION, %																
Primary	0.06	0.09	0.07	0.16	0.40	0.37	0.16	0.09	0.08	0.11	0.07	0.16	0.37	0.37	0.16	0.06
Ext. primary	0.10	0.08	0.09	0.13	0.10	0.12	0.13	0.14	0.06	0.08	0.08	0.08	0.11	0.11	0.12	0.08
Ext. primary (voc.)	0.12	0.09	0.14	0.08	0.14	0.12	0.14	0.11	0.17	0.14	0.24	0.12	0.20	0.17	0.16	0.14
Secondary	0.07	0.09	0.11	0.13	0.06	0.07	0.05	0.10	0.04	0.07	0.06	0.14	0.06	0.09	0.05	0.07
Secondary (voc.)	0.40	0.36	0.31	0.24	0.27	0.26	0.35	0.33	0.40	0.34	0.28	0.26	0.18	0.17	0.34	0.33
High vocational	0.19	0.19	0.12	0.18	0.03	0.05	0.12	0.14	0.17	0.14	0.14	0.15	0.05	0.07	0.13	0.21
University	0.06	0.09	0.16	0.08	0.01	0.01	0.04	0.08	0.08	0.12	0.14	0.09	0.03	0.03	0.04	0.11
EMPLOYMENT STATE, %																
Full-time	0.25	0.30	0.30	0.28	0.27	0.21	0.49	0.26	0.79	0.77	0.67	0.64	0.71	0.67	0.56	0.78
Part-time	0.63	0.57	0.59	0.57	0.56	0.63	0.38	0.64	0.15	0.15	0.20	0.20	0.15	0.19	0.32	0.15
Flex	0.12	0.13	0.11	0.15	0.17	0.16	0.12	0.10	0.06	0.07	0.13	0.16	0.14	0.14	0.12	0.06
OCCUPATION LEVEL, %																
Elementary (lev.1)	0.11	0.14	0.30	0.27	0.40	0.39	0.17	0.15	0.08	0.10	0.12	0.21	0.24	0.34	0.17	0.06
Lower	0.29	0.27	0.20	0.25	0.33	0.33	0.32	0.28	0.27	0.28	0.37	0.30	0.46	0.40	0.32	0.20
Medium	0.38	0.33	0.31	0.28	0.20	0.20	0.34	0.35	0.38	0.35	0.33	0.30	0.24	0.19	0.34	0.40
Higher	0.17	0.17	0.11	0.14	0.04	0.06	0.13	0.15	0.19	0.17	0.11	0.13	0.05	0.04	0.13	0.22
Scientific	0.05	0.08	0.07	0.06	0.03	0.02	0.04	0.07	0.08	0.10	0.07	0.06	0.02	0.04	0.05	0.12
MARITAL STATUS, %																
Married	0.54	0.55	0.64	0.50	0.79	0.62	0.50	0.63	0.63	0.62	0.64	0.60	0.87	0.76	0.53	0.74
Divorced	0.06	0.11	0.16	0.13	0.06	0.11	0.14	0.19	0.03	0.06	0.06	0.06	0.03	0.03	0.13	0.09
Widow	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.01	0.01
Single	0.38	0.32	0.19	0.36	0.14	0.27	0.35	0.16	0.33	0.31	0.29	0.34	0.10	0.21	0.33	0.16
NUMBER OF CHILD., %																
0-5 age group	0.24	0.23	0.21	0.26	0.43	0.44	0.29	0.12	0.29	0.26	0.35	0.43	0.62	0.67	0.31	0.18
6-11 age group	0.21	0.20	0.32	0.30	0.52	0.39	0.39	0.24	0.27	0.22	0.30	0.35	0.54	0.44	0.39	0.32
12-17 age group	0.27	0.22	0.27	0.32	0.47	0.46	0.40	0.37	0.30	0.24	0.25	0.24	0.40	0.30	0.38	0.39
LIVING IN %																
Amsterdam	0.06	0.10	0.11	0.11	0.05	0.11	0.16	0.08	0.05	0.09	0.10	0.10	0.06	0.08	0.15	0.09
Rotterdam	0.04	0.06	0.07	0.10	0.06	0.05	0.12	0.04	0.04	0.06	0.07	0.07	0.07	0.05	0.12	0.04
Den Haag	0.05	0.06	0.03	0.08	0.05	0.05	0.13	0.08	0.08	0.05	0.04	0.07	0.05	0.06	0.13	0.13
Utrecht	0.04	0.04	0.03	0.04	0.05	0.05	0.04	0.06	0.04	0.03	0.03	0.02	0.04	0.05	0.04	0.06
N	***57393***	***1022***	***308***	***737***	***354***	***256***	***1931***	***565***	***81329***	***1195***	***309***	***968***	***851***	***489***	***1989***	***784***

Table A.2. Maximum Likelihood estimates of log weekly wages, WOMEN

	Dutch		EU		EastEUR		NonEUR		Turk		Moroc		Carib.		Indier	
	Coeff	t	Coeff	t	Coeff	t	Coeff	t	Coeff	t	Coeff	t	Coeff	t	Coeff	t
Edu2	0.044	3.95	0.039	0.59	0.098	0.76	-0.014	-0.22	0.117	1.41	0.035	0.57	0.067	2.12	0.087	1.04
Edu3	0.044	4.21	0.087	1.21	0.157	1.11	0.025	0.32	0.028	0.44	0.151	2.91	0.068	2.25	-0.059	-0.69
Edu4	0.099	7.89	0.117	1.59	0.213	1.27	0.098	1.25	0.204	2.80	0.092	1.33	0.144	3.36	0.060	0.61
Edu5	0.141	13.90	0.126	2.06	0.091	0.61	0.130	1.96	0.116	1.72	0.206	3.90	0.153	5.64	0.048	0.58
Edu6	0.265	22.82	0.276	3.48	0.238	1.34	0.147	1.82	0.432	4.43	0.168	1.97	0.222	5.52	0.116	1.08
Edu7	0.426	30.88	0.371	3.65	0.397	2.23	0.320	3.36	0.601	4.29	0.199	1.42	0.363	5.18	0.193	1.32
Experience	0.040	52.91	0.040	6.40	0.022	2.02	0.037	4.18	0.035	3.11	0.031	3.50	0.031	7.80	0.026	2.52
Experience sq	-0.001	-42.63	-0.001	-4.90	0.000	-1.26	-0.001	-3.33	-0.001	-2.81	-0.001	-2.85	-0.001	-6.02	0.000	-2.17
Hours	0.049	162.82	0.052	18.50	0.048	8.22	0.050	19.82	0.042	13.97	0.051	16.24	0.054	30.03	0.048	17.92
Tenure	0.001	36.69	0.000	2.25	0.002	4.31	0.001	5.22	0.001	5.04	0.001	3.34	0.001	8.55	0.001	4.70
Full-time	0.076	7.50	-0.051	-0.80	-0.146	-0.83	-0.027	-0.32	0.101	1.19	-0.108	-1.35	-0.128	-2.88	0.022	0.22
Part-time	0.270	30.19	0.228	3.50	0.124	0.90	0.206	2.77	0.221	2.96	0.102	1.44	0.112	2.87	0.289	3.82
Married	0.039	10.39	0.018	0.62	0.027	0.43	0.005	0.13	0.031	0.52	0.080	1.44	0.051	3.06	0.074	1.83
Public sect.	0.093	21.67	0.060	1.66	0.135	2.51	0.105	2.63	0.214	3.71	0.169	2.18	0.073	3.58	0.075	1.43
Occup. Level2	0.043	5.31	0.022	0.47	0.021	0.16	-0.033	-0.55	0.007	0.12	0.000	-0.01	0.083	2.86	-0.052	-0.66
Occup. Level3	0.172	20.48	0.147	3.06	0.272	2.02	0.111	1.92	0.081	1.23	0.037	0.70	0.114	3.75	0.041	0.49
Occup. Level4	0.245	24.48	0.187	2.38	0.357	1.96	0.314	4.16	0.009	0.11	0.167	1.59	0.270	6.22	0.294	2.83
Occup. Level5	0.315	25.45	0.324	3.52	0.482	2.43	0.280	2.56	0.097	0.94	0.243	1.92	0.445	7.14	0.355	2.25
Amsterdam	0.030	4.52	-0.048	-0.90	0.005	0.07	0.003	0.06	0.045	0.82	-0.053	-0.81	-0.012	-0.47	0.060	0.91
Rotterdam	0.051	6.29	-0.044	-0.56	0.116	1.78	-0.036	-0.62	0.088	0.93	0.132	1.68	-0.008	-0.33	0.159	1.67
Hague	0.059	9.40	0.139	2.31	-0.163	-0.88	0.080	1.41	0.115	1.71	0.051	0.65	0.045	2.10	0.072	1.02
Utrecht	0.034	4.39	0.190	2.98	0.063	0.33	0.124	1.78	0.005	0.05	-0.053	-0.68	0.030	0.75	0.052	0.62
Constant	3.926	248.06	3.940	26.35	4.054	14.59	4.013	32.31	4.177	26.76	3.894	26.31	3.998	53.11	4.197	21.17
Lambda	-0.062	-19.13	-0.176	-1.41	-0.134	-0.40	-0.024	-0.68	-0.14	-2.40	-0.1339	-0.579	-0.03	-2.00	-0.4049	-1.74
N	57390		1022		308		737		354		256		1931		565	

The variables Edu1-Edu7 are the dummy variables, defined as *Edu1*=1 if primary school, *Edu2*=1 if Extended primary school, *Edu3*=1 if Extended primary vocational, *Edu4*=1 if secondary school, *Edu5*=1 if secondary vocational, *Edu6*=1 if high vocational and *Edu7*=1 if university.

Table A.3. Maximum likelihood estimates of log weekly wages, MEN

	Dutch		EU		EastEUR		NonEUR		Turk		Moroc		Carib.		Indier	
	Coeff	t	Coeff	t	Coeff	t	Coeff	t	Coeff	t	Coeff	t	Coeff	t	Coeff	t
Edu2	0.074	9.59	0.022	0.45	0.087	0.73	0.021	0.35	0.020	0.48	-0.215	-2.66	0.061	1.89	0.101	1.57
Edu3	0.081	14.37	0.098	2.57	-0.009	-0.08	0.096	1.95	0.078	2.06	-0.074	-1.03	0.042	1.46	0.058	1.06
Edu4	0.182	18.32	0.244	4.24	0.093	0.83	0.074	1.43	0.090	1.65	-0.082	-0.90	0.149	3.41	0.127	1.49
Edu5	0.154	27.56	0.111	3.02	0.101	0.97	0.157	3.38	0.088	2.06	0.101	1.38	0.144	5.27	0.183	3.34
Edu6	0.324	44.06	0.243	4.30	0.393	3.15	0.145	2.25	0.170	2.22	-0.067	-0.57	0.251	6.09	0.411	5.68
Edu7	0.494	53.32	0.473	7.64	0.329	2.44	0.452	4.86	0.181	1.35	-0.020	-0.11	0.421	6.49	0.603	6.15
Experience	0.046	74.17	0.049	9.35	0.023	2.10	0.037	4.71	0.034	5.73	0.017	1.39	0.032	8.10	0.033	3.14
Experience sq	-0.001	-57.42	-0.001	-8.14	0.000	-0.93	-0.001	-3.76	-0.001	-5.01	0.000	-1.16	-0.001	-6.47	0.000	-2.28
Hours	0.052	120.99	0.054	16.79	0.049	11.57	0.059	19.55	0.039	15.15	0.037	9.07	0.053	27.75	0.059	12.55
Tenure	0.000	22.88	0.001	4.60	0.001	2.13	0.001	4.50	0.001	5.67	0.001	2.55	0.001	8.43	0.000	1.82
Full-time	0.035	2.96	-0.166	-2.17	-0.173	-1.61	-0.207	-3.05	-0.036	-0.66	0.942	8.59	-0.094	-2.05	0.050	0.48
Part-time	0.146	12.62	-0.016	-0.22	-0.066	-0.73	0.015	0.24	0.018	0.34	0.994	10.28	0.122	2.99	0.184	1.64
Married	0.067	21.02	0.072	2.77	0.136	2.66	0.029	0.94	0.051	1.22	0.097	1.38	0.046	2.75	0.003	0.09
Public sect.	0.033	8.98	0.014	0.39	0.034	0.41	0.093	1.98	0.131	2.27	0.154	1.44	0.057	2.84	0.017	0.46
Occup. Level2	0.061	9.65	0.099	2.33	0.036	0.53	-0.012	-0.30	0.029	0.88	-0.055	-0.97	0.077	2.61	0.132	1.62
Occup. Level3	0.132	20.73	0.189	4.43	-0.026	-0.40	0.002	0.06	0.130	3.32	0.019	0.26	0.130	4.13	0.221	2.76
Occup. Level4	0.282	36.99	0.375	6.97	0.033	0.26	0.340	4.81	0.200	2.32	0.339	2.38	0.278	6.41	0.361	3.99
Occup. Level5	0.362	38.56	0.427	6.63	0.392	2.94	0.221	1.97	0.450	2.88	0.274	1.60	0.401	6.66	0.412	3.61
Amsterdam	0.077	12.22	0.066	1.60	0.127	1.54	0.106	2.13	-0.006	-0.10	-0.068	-0.75	-0.006	-0.26	0.082	2.10
Rotterdam	0.097	14.26	0.092	2.11	0.046	0.59	-0.006	-0.11	0.134	2.67	-0.021	-0.20	0.008	0.30	0.182	2.69
Hague	0.061	15.03	0.061	1.31	-0.040	-0.45	0.061	1.54	-0.087	-1.36	0.015	0.14	0.042	1.95	0.079	2.15
Utrecht	0.088	14.04	0.033	0.64	-0.048	-0.49	0.032	0.42	-0.025	-0.38	-0.180	-1.67	0.055	1.36	0.117	1.57
Constant	3.857	228.77	3.868	30.60	4.334	23.41	3.905	30.09	4.559	37.87	3.929	17.44	4.020	50.87	3.539	16.83
Lambda	-0.052	-1.51	-0.369	-16.0	-0.008	-0.24	-0.518	-2.78	-0.438	-1.34	0.00	-0.26	0.02	0.31	0.007	0.15
N	81290		1194		309		968		851		489		1989		782	

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