

Does High Product Market Competition Benefit Women and Immigrants?

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February 2006

Abstract

We analyse whether high product market competition reduce problems caused by preference-based discrimination against women and immigrants. We use firm-level data to analyse the relationship between the sex and immigrant composition at the firm and firm profitability. The results show that among firms that hire and employ relatively more women, profits are higher, and this positive relationship is especially strong among firms operating in product markets with low competition. This result is in line with Becker's theory of employer discrimination. For non-western immigrants we find no significant relationship between the share of immigrants and firm profits in low competition markets. The sex discrimination result is sustained after controlling for endogeneity by running a 2SLS estimation procedure.

Index terms: Discrimination, profits, competition

JEL codes: J15, J16

* Thanks to colleagues and seminar participants at the Institute for Social Research, as well as seminar participants at the employer-employee work shop in Oslo in January 2006 for valuable for comments to an earlier version. Institute for Social Research, PB 3233 Elisenberg, N-0208 Oslo, Norway. Tel.: + 47 23 08 61 82. E-mail: Psc@samfunnsforskning.no. Financial support from The Research Council of Norway (project number 156035/50) is gratefully acknowledged.

1. Introduction

In Gary Becker's theory of employer discrimination (Becker 1971) one of the important implications is that increased product market competition will reduce preference based wage discrimination in the long run. The dynamic part the theory implies that changes in the product market competition will induce changes in the relative wages of the groups initially exposed to discrimination.

In this paper we test the preference based discrimination hypothesis by analysing the relationship between firm profits and the share of women and immigrants at the firm. We use firm level data to analyse profitability for firms operating in competitive and non-competitive product market environments.

If there is no discrimination based on preferences we should not expect to find any relationship between the sex and immigrant composition at the firm and firm profitability. On the other hand, if firms that have a higher share of women and immigrants in their workforce earn higher profits, this is indicators of gender and ethnical discrimination. However, this is not a direct test of the Becker hypothesis saying that sex and ethnical discrimination is only sustainable in markets where product market competition is low. We analyse this hypothesis by using employer reported information on the level of product market competition in the firm's main market. We analyse whether there is only among firms reporting that product market competition is low, that there is positive relationship between that share of women and the share of immigrants and firm profit. This is a test of the Becker discrimination hypothesis because there is only in low competitive markets that discriminatory employers will have the opportunity to follow their discriminatory preferences against women and immigrants. Therefore, according to the Becker hypothesis, in markets with low competition, discriminatory firms will hire fewer women and fewer immigrants and because of their tastes run lower profits compared to non-discriminatory firms. Accordingly, an indicator of discriminatory behaviour in such markets is a positive relationship between the share of women, the share of immigrants and profits.

Economic research on discrimination has broadly emphasised two types of discrimination; firstly the taste-based discrimination described above, and secondly statistical discrimination by employers faced with imperfect competition related to skills or preferences of one minority group of people. The important difference between these two types of approaches is that competition is assumed to sweep away taste-based discrimination, while

the latter approach predicts long run equilibrium where differences persist. During the last 15 years, theoretical work has tried to combine these two strands by introducing uncertainty into the taste-based models. Borjas and Bronars (1989), Black (1995), and Bowlus and Eckstein (1998) have pointed out that imperfect information about preferences and locations of employees, customers and employers may limit the capability of product market competition to eliminate the effects of discrimination. These approaches have among other things broadened the definition and concept of what is “taste-based” discrimination. By combining the taste-based model of Becker with search models focusing on different types of imperfect information, the discriminatory concept gets more applicable to a broader range of employers, treating workers who are equally productive differently. In this paper we do not test the validity of these new approaches, but when interpreting the results, we try to emphasise that the results may be applicable to a wider range of employers than the pure discriminatory ones, operating in environments with complete information.

Immigrants are of course a very heterogeneous group of individuals, and too heterogeneous to be used as a single group in analyses of discrimination. In this paper we distinguish between western and non-western immigrants. By non-western immigrants we refer to immigrants from relatively poor countries outside Europe and in the Central and Eastern European (CEEC) region. The immigrants’ share of the total population in Norway has increased considerably during the last thirty years; from approximately 2 percent in 1980 to almost 8 percent in 2005. During the same period, the composition of the immigrant population has changed, from being dominated by immigrants from western and Nordic countries to at present being dominated by immigrants from so-called non-western countries. Thirdly, the immigrant share of the Norwegian population is likely to continue to grow in the future. From 2004 to 2005 the growth rate of the native share of the Norwegian population was zero, while the rate for immigrants was close to five percent (Statistics Norway 2005). In Norway, as in most other countries non-western immigrants are found to have lower wages than natives, and while the wage developments of western immigrants to Norway is similar to that of the native population, there are clear indications that non-western immigrants face severe problems in the labour market. Compared to natives with similar demographic and skill characteristics, this group of immigrants has a higher rate of unemployment, is more vulnerable to business cycles, and has a lower labour force participation rate (Østby 2004, Barth et al. 2004). Apart from a brief period of liberalisation 1957—1975, Norway has always had considerable restrictions on labour immigration, and has had an immigration stop since 1975. The number of immigrants since then has been increasing partly because of an influx of

refugees, asylum seekers and family reunifications. Non-western immigrants are also clearly over-represented among workers in low-paid jobs, and even though there is a positive relationship between time spent in Norway and wage developments, the group does not catch up with natives during their working career (Barth et al. 2004).

The wage gap between men and women has been thoroughly documented in a large body of research from many countries (for an overview see e.g., Altonji and Blank 1999). In almost all the studies of gender differences in wages, a gender wage gap in women's disfavour is found. This is true also for the Norwegian labour market, although the wage gap in Norway is fairly small compared to most other OCED countries. The Norwegian working life legislation has strict rules against discrimination against women ("Likestillingsloven" from 1978). The main purpose with the law is to prohibit discrimination in the labour market based on gender, and generally to promote gender equality and improve the relative position of women in the labour market. The gender wage gap in Norway has narrowed during the last thirty years. During the same period the female labour force participation has risen from approximately 45 per cent in the mid 1970's to almost 70 per cent by 2004, and almost on par with men's participation rate. The female labour force participation rate in Norway is also among the highest in OCED. The high labour force participation rate among Norwegian has partly been attributed to the generous family policy regime in Norway. In an international context, Norway has a tradition of very generous family policies – long paid maternity leave and subsidised day-care services are two examples. This may enable mothers to combine family life and working life. But there are signs of persistency in the wage gap, and the last part of the gap seems to be difficult to close. Recent studies show that the narrowing of the gender wage gap has stopped, and we still find a fairly large wage difference between men and women with fairly equal qualifications (see e.g., Barth and Dale-Olsen 2004).

Studies in the field of gender and ethnical wage differences have focused on a wide variety of explanatory factors, including differences in human capital endowments, differences in responsibilities outside the labour market, and discrimination (see e.g., Altonji and Blank 1999, Polachek 2004, Skyt Nielsen et al 2004). Traditionally, the approach to uncover sex and racial discrimination in wages has been to analyse wage differences at the individual level, based on wage decomposition a la Oaxaca (1973), after controlling for a series of observable characteristics assumed to affect wages. Individual wage difference analyses to uncover wage discrimination has in recent been criticised by several authors for being unable to say anything about discriminatory behaviour from employers (Hellerstein, Neumark and Troske 2005). Their argument is that wages are not only rough measures of

productivity, what is needed is a more direct measure of performance, either for employees or employers. Performance measures on the individual level (besides wages) are rarely available. Instead they recommend analyses using matched employer-employee data set, with performance measures on the firm level. A similar view is found in Altonji and Blank (1999), they argue that different firm-level analyses of different performance measures to be more fruitful than further employee level analyses of the “unexplained” wage differential.

In this paper we present new evidence on the existence of both gender and ethnical discrimination in wages, and whether competitive market forces help to reduce discrimination. Examples of empirical firm level analyses of racial wage discrimination are few. One recent example though is Coleman (2004). Using US data from The Multi-City Study of Urban Inequality (MCSUI) containing both household level and firm level information, he finds that increased competition has no impact on different indicators on racial discrimination. He concludes that increased competition cannot be trusted to reduce racial discrimination. Coleman’s study and our study relate since both use firm-level data, but our approach to uncover discrimination is quite different. We use variation in firm profits; Coleman uses a number of discrimination reports, racial wage differences, and racial demographics of the workforce.

Regarding empirical analyses of gender discrimination using firm-level data, the number of studies is also scant. Hellerstein et al. (1999) and Hellerstein et al. (2002) are two exceptions. Hellerstein et al. (1999) use US firm level data for manufacturing firms to estimate relative wage and productivities of various groups of workers. One of their estimates show that women are 15 per cent less productive than men but are paid 32 per cent less, which implies that more than half of the wage gap could be attributed to discrimination. They find no evidence of racial discrimination. Hellerstein et al. (2002) use the Worker Establishment Characteristics Database to test for sex discrimination by analysing whether there exists a cross-sectional relationship between profits for a firm and the sex composition of the workforce. Their main finding is that among plants with high level of product market power, those who employ more women are more profitable. This result is in line with Becker’s sex discrimination hypothesis. Our study relates to Hellerstein et al. (2002), in the way we also use firm level data on profits to analyse discrimination. We extend the study in several ways: *Firstly*, we include ethnical discrimination as another type of employer discrimination. Hellerstein et al. include the proportion of blacks as a control variable, but they do not carry out any formal discrimination test for this variable. *Secondly*, we use employer reported information on the level of product market competition in the main market. This gives a direct

measure on the level of competition. *Thirdly*, we exploit the panel dimension of the data to analyse whether firms that goes from one state of competition to another, experience a change in the relationship between the share of women, the of immigrants and profits. *Fourthly*, to further deepen the understanding of the discrimination process, we include an analysis using individual information on the firms hiring practices. *Fifthly*, we analyse the relationship between sex discrimination, immigrant discrimination and firm survival. *Finally*, we seek to control for endogenous employment shares in the profit function by running a two stage least square estimation procedure.

The paper proceeds as follows. Section 2 gives a brief presentation of the theoretical framework. Section 3 presents the data, the sample and the variables. Section 4 presents the results, while section 5 concludes.

2. Theoretical framework

In Becker's seminal work on employer discrimination it is the employers' preferences which are the source for discrimination. Some employer's has a taste for discrimination and are willing to pay a price for this taste. Employers' with distaste for women and non-western immigrant will hire relatively fewer of them compared to profit maximising and non-discriminatory firms.

In the following we illustrate the Becker model by using natives and non-western immigrants as the two groups the employers have preferences for. The discriminatory firm maximises a utility function which is the sum of profits plus the monetary value of utility from employing workers from a specific group. We have:

$$(1) U = pF(N_n + N_m) - w_n N_n - w_m (1 + d) N_m$$

Where p is product price, N_n is number of natives, N_m is number of non-western immigrants, w_n and w_m is wages for natives and non-western immigrants, and d is the discrimination factor. The employer has preferences for natives, i.e., $d > 0$. For discriminatory firms, i.e., for firm which $d > 0$, the price of employing non-western immigrants are $w_m(1+d)$.

The optimal number of workers is determined by:

$$(2) \frac{\partial U}{\partial N_n} \Rightarrow pF'(N_n) = w_n$$

$$\frac{\partial U}{\partial N_m} \Rightarrow pF'(N_m) = w_m (1 + d)$$

The larger is d the lower is wages of non-western immigrants (w_m) compared to natives (w_n).

Wages are determined by equality between aggregate demand and aggregate supply for the two groups of workers in the economy.

Firms with discriminatory tastes will tend to hire relatively fewer non-western immigrants and relatively more native workers, and vice versa. Thus, it is the taste that provides the exogenous source of variation in the composition of non-western immigrants. The larger the number of discriminatory firms or the higher the intensity of discrimination is, the higher the wage gap will be. In the presence of discrimination non-western immigrants will be paid less than their marginal productivity, therefore non-discriminatory firms that employ more non-western immigrants will earn higher profits. This is the basis of the test we carry out in the empirical analyses.

3. The data

The data comes from a employer-employee panel data set, consisting of both survey- and register information. The starting point is an establishment level survey for a representative sample of Norwegian establishments conducted by the Institute for Social Research and Statistics Norway in 1997. The sample of establishments is representative for private and public establishments in Norway with more than 10 employees. In 2003, the survey was repeated. All firms participating in 1997 were asked to participate again. In this paper we limit the analyses to private sector firms present in both 1997 and 2003. The net sample consists of 640 observations.

To the survey establishment's Statistics Norway has linked register information from several public administrative registers, including both employee and employer level information. We have employee level information on country of origin, gender, level of education, age, working time, union membership and place of residence, all taken from public registers. Regarding country of origin, we distinguish between three groups: i) natives, ii) western immigrants and iii) non-western immigrants. Non-western immigrants include those from: Asia (including Turkey), Africa, Southern and Central America and Eastern Europe. Descriptive statistics in Appendix Table A show that the average share of non-western immigrants in total employees are 2.9 percent, while the average share of western immigrants are 4.8 per cent. The rest; 92,3 per cent are natives. The average female share is 31 per cent.

We have employer level information on firm profit, product market competition, number of employees, industry, age of firm, whether the firm is part of larger company, and the level of capital stock at the firm.

Our two measures of firm profit are:

1.
$$\frac{\text{Firm profit from ordinary operations}}{\text{Turnover}}$$
2.
$$\frac{\text{Firm profit from ordinary operations}}{\text{Total assets}}$$

Profit on ordinary operations is defined as income minus costs from the firm's basic activities, not included extraordinary revenues and expenses. Firm profit from ordinary operations is an approximation of the firm's mark up. Firm profit is divided by the firm's turnover and total assets, to get relative measures. The average firm profit as percentage of turnover is equal to 6 per cent, while the average firm profit as percentage of net assets is equal to 12 per cent.

The key explanatory variable is firm reported measure of the level of *product market competition*, based on answers to the following question: "Is the firm exposed to a large, some, small, or no degree of competition in the main market today?" The distribution of answers on this question is as following: Approximately 52 per cent answer "large", 37 per cent answer "some", 8.5 percent answer "small", and only 2.5 per cent answer "no degree". From the answers to this question we construct a dummy variable: *High competition*, taking the value 1 if the respondent answers "large" and 0 otherwise. Therefore, according to this definition, approximately 52 per cent of the firms operate in product markets with high competition.

The control variables are constructed as follows: Educational attainment is measured by four dummy variables: compulsory school, secondary school, college or university degree low level (4 years or less at college or university), and college or university degree high level (more than 4 years at college or university). Age of the workforce is measured by four dummy variables, varying from less than 30 years, to 58 years or older. Working time is measured by a dummy variable, taking the value 1 if the worker is a full-time worker (30 hours or more per week). Union membership is measured by a dummy variable, taking the value 1 if the worker is registered as a union member (taken from individual register data), and 0 otherwise. All employee level variables are in turn aggregated up to mean values at the firm level. Firm capital is proxied by the firm's sum of equity and debt. Number of employees is measured by five dummy variables, varying from less than 20 employees, to 200 employees and more. Industry is measured by 7 dummy variables, based on NACE code. Firm age is measured by four dummy variables, varying from 15 years or less, to more than 80 years.

4. Results

We start by presenting OLS profit estimates, using the two measures of firm performance. This is presented in Table 1. In addition to including measures of the gender composition and the ethnical composition we include a series of employee level and firm level control variables that may affect profitability.

Table 1. Profit estimates. Effects of sex and immigrant composition on firm profit. OLS estimates. Pooled cross section 1997 and 2003

	<i>Firm profit from ordinary operation</i>		<i>Firm profit from ordinary operation.</i>	
	<i>Turnover</i>		<i>Total assets</i>	
	Est. coeff	St.error	Est. coeff	St.error
Intercept	-0.022	0.031	0.273	0.056
Year 2003	-0.008	0.004	0.002	0.008
Women	0.027	0.012	0.012	0.022
Non-western immigrants	-0.002	0.038	0.000	0.068
Western immigrants	-0.088	0.047	-0.118	0.084
Secondary school	0.000	0.023	-0.008	0.041
Higher education I	-0.004	0.023	-0.016	0.041
Higher education II	0.052	0.034	-0.044	0.060
30<=Age<40	-0.031	0.023	-0.030	0.041
40<=Age<50	-0.027	0.022	-0.043	0.039
50<=Age<=67	-0.030	0.019	-0.101	0.034
Union member	-0.015	0.008	-0.034	0.015
Full-time	-0.016	0.016	-0.042	0.029
Oslo	0.021	0.007	0.039	0.012
Part of a multiform company	0.011	0.005	-0.012	0.009
Log of capital	0.011	0.002	-0.007	0.003
20<=Employees<50	-0.010	0.006	0.009	0.011
50<=Employees<100	-0.017	0.007	0.015	0.013
100<=Employees<200	-0.015	0.008	0.027	0.014
Employees>=200	-0.018	0.010	0.045	0.018
Agriculture, hunting and forestry; Fishing; Mining and quarrying	0.083	0.036	0.167	0.063
Manufacturing	0.003	0.008	0.014	0.014
Wholesale and retail trade	-0.031	0.008	-0.011	0.014
Transport, storage and communication	-0.002	0.011	-0.002	0.019
Real estate, renting and business activities	-0.008	0.012	0.002	0.021
Other community, social and personal service activities	0.095	0.029	-0.031	0.052
16<=Firm age<51	0.015	0.005	-0.001	0.010
51<=Firm age<81	0.012	0.006	0.006	0.011
Firm age>81	0.015	0.007	-0.013	0.012
Low competition	0.017	0.004	0.024	0.007
R-sq.	0.180		0.105	
Number of observations	640		640	

Note: Reference category for education is compulsory education. Reference category for age is less than 30 years. Reference category for number of employees is less than 20 employees. Reference category for industry is Electricity, gas and water supply (NACE 40) and Construction (NACE 45). Reference category for firm age is less than 16 years.

Using the first profit measure we find that firms with a higher share of women have higher profits; this is evidence in favour of labour market discrimination. The point estimate suggest that increasing the share of women at the firm by 10 percentage points increase the profit by 0.27 percentage point. This effect is somewhat smaller compared to the one reported in Hellerstein et al. (2002), equal to 0.46 percentage point increase from a 10 percentage point increase in the share of females. For the two groups of immigrants we find no significant relationship between the shares and profits. This is hat we would expect to find in a labour market with no ethnical discrimination.

The last row shows that firms that have low competition in their main product market, experience higher profits compared to firms that face high competition. The difference is estimated to 1.7 percentage points. This result is an important premise for our analyses, because there is only in product markets with low competition that firms will be able follow their discriminatory preferences against women and immigrants.

Regarding the control variables, we find a negative relationship between union density and firm profit. If unions are associated with higher wages, as most studies find (see e.g. Blanchflower and Bryson 2004), this may lead to reduced profits compared to firms with lower union density. A negative relationship between unions and firm profits is also in line with results from a series of empirical studies in the field (e.g., Freeman and Medoff 1984; Hirsh and Connolly 1987; Becker and Olson 1992). The point estimates in Table 1 suggest that the negative relationship between unions and profit is in the range of 1.5 - 3.4 percentage points, depending on profit measure. This implies that if you compare a firm with no union members and a firm where all workers are union members, the profit is 1.5 - 3.4 percentage point lower in the latter type of firm.

A positive relationship between the share of women and firm profitability adds support to a hypothesis of sex discrimination in the labour market. However, it does not tell anything about the channel which this develops. Table 2 analyses the importance of the product market competition hypothesis, by interacting the gender and the ethnical variables with the dummy variable for product market competition.

Table 2. Profit estimates. Effects of sex and immigrant composition and the level of competition on firm profit. OLS estimates. Pooled cross section 1997 and 2003

	<i>Firm profit from ordinary operations</i>		<i>Firm profit from ordinary operations</i>	
	<i>Turnover</i>		<i>Total assets</i>	
	Est. coeff	St.error	Est. coeff	St.error
Intercept	-0.016	0.032	0.288	0.055
Year 2003	-0.008	0.004	0.001	0.008
Women	0.015	0.014	-0.033	0.025
Non-western immigrants	0.005	0.043	0.028	0.076
Western immigrants	-0.149	0.067	-0.186	0.118
Secondary school	-0.001	0.023	-0.011	0.041
Higher education I	-0.004	0.024	-0.023	0.041
Higher education II	0.049	0.034	-0.050	0.059
30<=Age<40	-0.035	0.023	-0.042	0.041
40<=Age<50	-0.027	0.022	-0.039	0.039
50<=Age<=67	-0.032	0.019	-0.101	0.034
Union member	-0.016	0.008	-0.038	0.015
Full-time	-0.015	0.016	-0.038	0.029
Oslo	0.021	0.007	0.040	0.012
Part of a multiform company	0.011	0.005	-0.012	0.008
Log of capital	0.011	0.002	-0.007	0.003
20<=Employees<50	-0.011	0.006	0.008	0.011
50<=Employees<100	-0.017	0.007	0.016	0.013
100<=Employees<200	-0.016	0.008	0.027	0.014
Employees>=200	-0.019	0.010	0.044	0.017
Agriculture, hunting and forestry; Fishing; Mining and quarrying	0.083	0.036	0.169	0.062
Manufacturing	0.002	0.008	0.012	0.013
Wholesale and retail trade	-0.032	0.008	-0.013	0.014
Transport, storage and communication	-0.001	0.011	0.002	0.019
Real estate, renting and business activities	-0.009	0.012	0.002	0.021
Other community, social and personal service activities	0.091	0.029	-0.043	0.052
16<=Firm age<51	0.015	0.005	-0.003	0.010
51<=Firm age<81	0.013	0.006	0.004	0.011
Firm age>81	0.015	0.007	-0.016	0.012
Low competition	0.004	0.007	-0.011	0.013
Low competition X Women	0.026	0.018	0.109	0.031
Low competition X Non-western immigrants	-0.002	0.052	-0.051	0.092
Low competition X Western immigrants	0.104	0.085	0.102	0.150
R-sq.	0.177		0.115	
Number of observations	640		640	

Note: Note: Reference category for education is compulsory education. Reference category for age is less than 30 years. Reference category for number of employees is less than 20 employees. Reference category for industry is Electricity, gas and water supply (NACE 40) and Construction (NACE 45). Reference category for firm age is less than 16 years.

In the second model we find a positive relationship between low competition, the share of women and profitability. Thus, firms that hire more women and operate in product markets with low competition have higher profits than firms operating in the same markets but with

lower shares of women. This result adds support to the Becker hypothesis of sex discrimination. This result is even stronger using the second measure of firm performance. On the other hand, regarding ethnical discrimination, in neither models we find any evidence of discrimination against non-western immigrants.¹

Development over time

In this section we use repeated information about the production market competition in 1997 and 2003 to analyse whether the relationship between the share of women, the share of immigrants and profits changes for firms experiencing a change in their product market competition situation between 1997 and 2003. We define two groups of firms:

1. Firms that are faced with high competition in both periods, and
2. Firms that go from high competition in 1997 to low competition in 2003.

Among those firms that experience a change in their product market competition situation, if some of these firms are latent discriminatory against women and/or immigrants we expect them to take advantage of their new opportunity to follow these preferences, and start discriminating. If so, we expect to find a positive relationship between the change in product market competition (from high competition to low competition), the female and immigrant composition, and profits. Table 3 presents the results.

¹ Regarding industry, to control for the fact that immigrant workers are disproportionally located in some industries, we have also run regressions controlling for more detailed industry specifications. This did not alter the results.

Table 3. Profit estimates. Development over time. Effects of sex and immigrant composition and the level of competition on firm profit. OLS estimates. Pooled cross section 1997 and 2003

	<i>Firm profit from ordinary operations</i>		<i>Firm profit from ordinary operations</i>	
	<i>Turnover</i>		<i>Total assets</i>	
	Est. coeff	St.error	Est. coeff	St.error
Intercept	0.001	0.039	0.244	0.070
Year 2003	-0.007	0.006	0.002	0.010
Women	0.011	0.016	-0.031	0.029
Non-western immigrants	-0.003	0.050	0.046	0.088
Western immigrants	-0.113	0.071	-0.153	0.127
Low competition	-0.006	0.012	-0.042	0.022
Low competition X Women	0.064	0.029	0.244	0.051
Low competition X Non-western immigrants	-0.003	0.063	-0.111	0.112
Low competition X Western immigrants	0.015	0.121	-0.041	0.216
Included control variables?	Yes		Yes	
R-sq.	0.131		0.105	
Number of observations	398		398	

Note: Note: Reference category for education is compulsory education. Reference category for age is less than 30 years. Reference category for number of employees is less than 20 employees. Reference category for industry is Electricity, gas and water supply (NACE 40) and Construction (NACE 45). Reference category for firm age is less than 16 years.

The coefficients of main interest are the interaction coefficients between low competition and worker group. Irrespective of profit measure, we find that in firms that go from high competition to low competition, those who employ more women in the post period, have higher profits. This result is in line with the Becker hypothesis of wage discrimination against women. For immigrants, we still find no results suggesting preference based wage discrimination against this group.

Hiring practices

The data material contains individual information on all hirings undertaken by the firm, with detailed information on the time of hiring. This gives us the opportunity to analyse whether there are differences in hiring practices between firms in competitive and non-competitive markets, and whether the relationship between relative hirings of women and immigrants and profits differ between firms in competitive and non-competitive product markets. This will supplement the employment share results presented earlier. We would expect the hiring results to be similar to the employment share results presented in Table 2. Table 4 presents the results.

Table 4. Profit estimates. Effects of sex and immigrant hirings and the level of competition on firm profit. OLS estimates. Pooled cross section 1997 and 2003

	<i>Firm profit from ordinary operations</i>		<i>Firm profit from ordinary operation</i>	
	<i>Turnover</i>		<i>Total assets</i>	
	Est. coeff	St.error	Est. coeff	St.error
Intercept	-0.021	0.032	0.292	0.056
Year 2003	-0.011	0.004	0.000	0.008
Women	0.013	0.011	-0.024	0.019
Non-western immigrants	0.034	0.030	0.062	0.052
Western immigrants	-0.029	0.027	-0.009	0.047
Low competition	0.007	0.007	0.000	0.012
Low competition X				
Women	0.019	0.014	0.082	0.025
Low competition X				
Non-western immigrants	0.010	0.040	-0.032	0.070
Low competition X				
Western immigrants	0.063	0.045	0.0001	0.078
Included control variables	Yes		Yes	
R-sq.	0.179		0.11648	
Number of observations	618		618	

Note:

We register all hires at the firm during the past three years (1995, 1996 and 1997 for the 1997 observation year, and 2001, 2002, and 2003 for the 2003 observation year). We confine the analyses to those firms that are registered with hires in the period, as a consequence the number of observations are reduced somewhat (n=618).

In short, the results for hirings are quit similar to the share of the employee results in Table 2: using the second profit measure we find a positive relationship between low competition, the hiring share of women and profits. This result is in line with the Becker hypothesis of sex discrimination.

Are discriminatory firms driven out of business?

The dynamic part of the Becker hypothesis is that market forces will reduce or eliminate preference-based discrimination as the more profitable ones will grow faster. Firms with market power that follow their preferences for discrimination will grow slower, be bought up by other firms or be eliminated. In this section we analyse the latter prediction, i.e., if there are any relationship between discrimination and firm survival. Panel information from 1997 and 2003 are utilised.

The starting point is all firms operative in 1997. Then, we analyse the relationship between the level of product market competition, and the share of females, the share of non-western and western immigrants, and the probability of exiting between 1997 and 2003. The

hypothesis is that among those firms that had low product market competition in 1997, those who employed more women and/or more immigrants are less likely to exit.

To analyse the relationship between employee composition, the level of competition and firm exit we estimate a simple proportional hazard model (Box Cox regression model). The panel dimension of the data enables us to observe firm exits in each year in the period 1997-2003. We start up with 525 firms in 1997. In 1998, 36 firms are exiting, in 1999 27 firms are exiting, in 2000 34 firms are exiting, and so forth. By 2003, 205 of the 496 firms have exited.²

Based on the previous results we expect to find a positive relationship between the share of females at the firm and survival. Table 5 presents the results. The estimated coefficients measure the hazards, i.e. the probability of not surviving.

Table 5. Hazard estimates. Effects of sex and immigrant composition on the probability of exiting in the period 1997-2003. Firms operative in 1997. Proportional hazard model.

	Est. coeff	St.error
Women	0.138	0.437
Non-western immigrants	0.950	1.367
Western immigrants	1.498	0.952
Low competition	0.092	0.269
Low competition X Women	-0.207	0.585
Low competition X Non-western immigrants	1.013	1.649
Low competition X Western immigrants	-1.678	2.190
Included control variables	Yes	
- 2 Log Likelihood	1272.7	
Non censored observations	205	
Number of observations	525	

Note:

The results in Table 5 reveal no significant relationship between the level of competition, the employee composition and firm survival. The coefficient for the interaction term between low competition and the female share is negative, suggesting that among those firms operating in markets with low competition, those that employ more women are less likely to exit. This is as expected, but, the coefficient is far from significant, therefore, we get no support for Becker's dynamic hypothesis that market forces will reduce or eliminate preference-based discrimination in the long run.

Regarding the control variables, we find a positive relationship between union density at the firm and the probability of firm exit. This result can be seen together with the negative

² The 496 firms consist of 291 panel firms, i.e., those firms that are present in both years, and 205 exit firms, i.e., firms that exit during the period 1997-2003. We define the firm as an "Exit firm" if the firm is not registered with any employees on a given reference date in each year (May 16th). If the firm exits in one of the intermediate years, but comes back with the same identification number, and is registered as operative in 2003, the firm is registered as a surviving firm.

relationship between unions and profits in Table 1. The positive relationship between unions and the likelihood of firm exit may add support to analyses reporting that unions increase the probability that a firm go out of business (Addison et al. 2001, Bryson 2004). However, empirical analyses of economic effects of unionism on firm closures do not provide a clear answer on this question. Machin (1995) finds using UK data that unions had no impact on workplace closures in the 1980's. Freeman and Kleiner (1999) using US data find little support for the hypothesis that unionisation increase the insolvency of firms.

Furthermore, firms located in the capital area (Oslo), large firms (firms with many employees), and older firms are more likely to survive compared to firms located outside Oslo, small firms, and younger firms. Regarding the educational attainment we find no significant relationship between the level of education and firm survival.

Single firms only

Having found no long term support for the Becker's hypothesis we return to the short term relationship predictions. Measures of profits in our data are given at the enterprise level, while the other variables are given at the firm-level. We have controlled for this by including a dummy variable measuring whether the firm is a single firm or not. In the following we control for this level discrepancy by limiting the analyses to single firms. In this way we should avoid the problem of having profit measure at the enterprise level and the other measures at the firm level. Table 6 presents results from re-estimating Table 2 for single firms.

Table 6. Profit estimates. Effects of sex and immigrant composition and the level of competition on firm profit. OLS estimates. Single firms. Pooled cross section 1997 and 2003

	<i>Firm profit from ordinary operations</i>		<i>Firm profit from ordinary operations</i>	
	<i>Turnover</i>		<i>Total assets</i>	
	Est. coeff	St.error	Est. coeff	St.error
Intercept	-0.048	0.040	0.268	0.072
Year 2003	-0.008	0.005	-0.005	0.010
Women	0.018	0.019	-0.022	0.035
Non-western immigrants	0.016	0.050	0.010	0.090
Western immigrants	-0.125	0.083	-0.163	0.151
Low competition	0.002	0.009	-0.003	0.016
Low competition X Women	0.040	0.022	0.113	0.040
Low competition X Non-western immigrants	-0.017	0.052	-0.055	0.095
Low competition X Western immigrants	0.018	0.103	-0.051	0.188
Included control variables	Yes			
R-sq.	0.167		0.170	
Number of observations	372		372	

Note: Note: Reference category for education is compulsory education. Reference category for age is less than 30 years. Reference category for number of employees is less than 20 employees. Reference category for industry is Electricity, gas and water supply (NACE 40) and Construction (NACE 45). Reference category for firm age is less than 16 years.

We find a positive relationship between low competition, the share of women at the firm and profits, in line with the results in Table 2. The relationship is significant using both profit measures. Also in line with the results in Table 2 are the non-significant relationships between competition, immigrants and profits.

High skilled and low skilled workers

So far we have distinguished between non-western and western immigrants. It could be argued that we within each group should distinguish between low and high skilled workers. This could be important if preference based discrimination to a larger extent affects low skilled workers than high skilled workers We check for this by distinguishing between two groups of immigrants: *Low skilled* (primary and secondary school), and *high skilled* (college or university degree). Table 7 presents results from re-estimating Table 2 with this specification.

Table 7. Profit estimates. Effects of sex and immigrant composition and the level of competition on firm profit. OLS estimates. High and low skilled workers. Pooled cross section 1997 and 2003

	<i>Firm profit from ordinary operations</i>		<i>Firm profit from ordinary operations</i>	
	<i>Turnover</i>		<i>Total assets</i>	
	Est. coeff	St.error	Est. coeff	St.error
Intercept	-0.024	0.032	0.274	0.056
Year 2003	-0.009	0.004	0.000	0.008
Women	0.015	0.014	-0.035	0.025
Non-western immigrants – Low skilled	0.015	0.053	0.064	0.093
Non western immigrants – High skilled	-0.066	0.285	-0.217	0.500
Western immigrants - Low skilled	-0.216	0.079	-0.282	0.139
Western immigrants – High skilled	0.091	0.158	0.138	0.278
Low competition	0.003	0.007	-0.012	0.013
Low competition X Women	0.029	0.018	0.110	0.031
Low competition X Low skilled non-western immigrants	-0.019	0.063	-0.086	0.111
Low competition X High skilled non-western immigrants	0.131	0.365	0.095	0.642
Low competition X Low skilled western immigrants	0.188	0.106	0.308	0.185
Low competition X High skilled western immigrants	-0.148	0.181	-0.431	0.318
Included control variables	Yes			
R-sq.	0.171		0.115	
Number of observations	640		640	

Note: Note: Reference category for education is compulsory education. Reference category for age is less than 30 years. Reference category for number of employees is less than 20 employees. Reference category for industry is Electricity, gas and water supply (NACE 40) and Construction (NACE 45). Reference category for firm age is less than 16 years.

Table 7 shows among firms that operate in product markets with low competition, those that employ more low skilled western immigrants have higher profits. This result is in line with the hypothesis that taste based discrimination will affect low skilled immigrants more than high skilled immigrants. On the other hand, the results are at odds with the hypothesis that taste based discrimination should be more severe for non-western immigrants than for western immigrants.

Domestic versus foreign markets

Black and Brainerd (2004) analyse the link between competition and discrimination by analysing whether increased globalisation – measured by increased international trade – in the US manufacturing industry has affected the gender wage discrimination in this industry. They find that increased trade benefit women by reducing the ability of firms to discriminate. In this section we use employer reported measure of the firm’s main market to analyse the importance of globalisation on discrimination. Information on the firm’s main market is based on answers to the following question: “What is the firm’s main market?” Six alternatives are given: 1) This municipality; 2) This part of the country; 3) Norway; 4) Scandinavia; 5) Europe besides Scandinavia; 6) Other foreign countries. We construct a dummy variable: *Domestic*, taking the value 1 if the respondent answers 1, 2 or 3, and 0 otherwise. According to this definition, approximately 80 per cent of the firms operate in a domestic product market.

The domestic variable is then we interact this variable with the competition variable. This produces four categories:

- i) Low competition and Domestic (36 %),
- ii) High competition and Domestic (42 %),
- iii) Low competition and Foreign (7 %),
- iv) High competition and Foreign (15 per cent),

The numbers in brackets are the per cent of all observations in each cell. There is a positive correlation between the two variables *domestic* and *low competition*, i.e., there is a positive correlation between the firm answering that the main market is domestic and the same firm facing low product market competition.³

For each of the three groups: women, non-western immigrants, and western immigrants we use “High competition X Foreign” as reference category. Table 8 presents the results:

³ The correlation coefficient is equal to 0.112, and is significant at level 1 per cent.

Table 8. Profit estimates. Effects of sex and immigrant composition and the level of competition on firm profit. OLS estimates. Domestic and foreign markets, high and low competition. Pooled cross section 1997 and 2003

	<i>Firm profit from ordinary operations</i>		<i>Firm profit from ordinary operations</i>	
	<i>Turnover</i>		<i>Total assets</i>	
	Est. coeff	St.error	Est. coeff	St.error
Intercept	-0.011	0.035	0.270	0.062
Year 2003	-0.008	0.004	0.002	0.008
Women	0.044	0.032	0.017	0.057
Non-western immigrants	-0.195	0.107	-0.280	0.189
Western immigrants	-0.297	0.145	-0.199	0.256
Low competition	-0.002	0.018	-0.011	0.032
Domestic	-0.003	0.014	0.017	0.025
Low competition X Domestic	0.007	0.020	-0.001	0.035
Low competition X Foreign X Women	0.062	0.048	0.156	0.085
Low competition X Domestic X Women	-0.018	0.036	0.038	0.064
High competition X Domestic X Women	-0.039	0.035	-0.064	0.062
Low competition X Foreign X Non-western immigrants	0.034	0.189	-0.031	0.332
Low competition X Domestic X Non-western immigrants	0.205	0.111	0.276	0.195
High competition X Domestic X Non-western immigrants	0.208	0.106	0.327	0.186
Low competition X Foreign X Western immigrants	0.166	0.187	-0.018	0.330
Low competition X Domestic X Western immigrants	0.252	0.154	0.126	0.272
High competition X Domestic X Western immigrants	0.189	0.159	0.026	0.280
Included control variables	Yes			
R-sq.	0.187		0.117	
Number of observations	640		640	

Note: Note: Reference category for education is compulsory education. Reference category for age is less than 30 years. Reference category for number of employees is less than 20 employees. Reference category for industry is Electricity, gas and water supply (NACE 40) and Construction (NACE 45). Reference category for firm age is less than 16 years.

For women, the positive relationship between low competition and profits reported in Table 2, appears to most prevalent for firms where the main market is foreign (significant using the second profit measure). For non-western immigrants, the results in Table 2 were not significant. The results in Table 8 reveal some interesting relationships. Regarding the relationship between non-western immigrants and profit, the important distinction appears to be between domestic and foreign, and not so much between high and low competition. This interpretation is based on the positive relationships between non-western immigrants and profits for firms operating in domestic, for both high and low competition (0.327 and 0.276

using profit measure 2). Therefore, for firms operating in domestic markets, those who employ more non-western immigrants, have higher profits.

Controlling for endogenous worker composition

So far we have assumed that both the share of women and the share of immigrants are exogenous variables in the profit equation. If the employment shares are correlated with unobserved characteristics in the profit equation, this assumption is violated, and OLS will produce biased estimates. Altonji and Blank (1999, p: 3198) argue that one shared problem in the empirical firm-level studies of discrimination is the lack of control for endogenous employment shares.

In a two stage least square (2SLS) procedure we re-estimate the models presented in Table 2. As instrument variables for the share of women at the firm we use the day-care coverage rate in the county, and the share of women in the municipality. As instruments for share of western immigrants and the share of non-western immigrants at the firm we use the share of western immigrants and the share of non-western immigrants in the municipality (both variables are used in both step 1 equations). The underlying assumption is that these variables affect the share of women, western immigrants and non-western immigrants at the firm, but they do not affect directly the profits of the firm.

Table 9 presents step 1 and step 2 estimates when the dependent variable in step 2 is profit measure number 1 (Profits from ordinary operation/Turnover). We present the step 1 where the dependent variable is the share of non-western immigrants at the firm. The step 1 results show that the share of non-western immigrants at the firm is strongly positively related to the share of non-western immigrants in the municipality. We also note that the share of non-western immigrants at the firm is negatively related to the share of western immigrants in the municipality. Regarding the instruments for the share of women at the firm, both the day-care coverage in the county and the share of women in the municipality is positively and significantly related to the share of women at the firm.⁴

⁴ Comparing the fitness of the step 1 model by running an F-test, shows that the unrestricted model (including the instrument variables) performs significantly better than the restricted model (excluding the instrument variables). F-statistics = 15.9. The same result applies for the step 1 estimation of the share of western immigrants and the share of women at the firm. The unrestricted models perform better. Estimated coefficients and F-statistics for the latter two variables are presented in Table A2 in appendix.

Table 9. Profit estimates. Effects of sex and immigrant composition on firm profit. Two stage least square (2SLS). Pooled cross section 1997 and 2003

	-Step 1 estimates-		-Step 2 estimates-	
	The share of non-western immigrants at the firm		<i>Firm profit from ordinary operations</i> Turnover	
	Est. coeff	St.error	Est. coeff	St.error
Intercept	0.090	0.031	0.837	0.174
Year 2003	0.002	0.006	-0.019	0.009
Women			-0.735	0.171
Non-western immigrants			1.270	0.319
Western immigrants			-0.671	0.271
Secondary school	-0.014	0.025	-0.123	0.054
Higher education I	-0.070	0.025	0.207	0.057
Higher education II	-0.126	0.035	0.157	0.079
30<=Age<40	0.036	0.024	0.070	0.055
40<=Age<50	0.025	0.024	-0.001	0.042
50<=Age<=67	-0.014	0.020	-0.038	0.037
Union member	0.000	0.009	-0.061	0.017
Full-time	-0.068	0.014	-0.496	0.132
Oslo	-0.011	0.009	0.047	0.015
Part of a multiform company	0.000	0.005	-0.037	0.010
Log of capital	-0.006	0.002	-0.002	0.004
20<=Employees<50	0.010	0.006	-0.014	0.011
50<=Employees<100	0.014	0.008	-0.003	0.013
100<=Employees<200	0.034	0.008	-0.015	0.018
Employees>=200	0.045	0.010	-0.045	0.024
Agriculture, hunting and forestry; Fishing; Mining and quarrying	0.016	0.038	0.190	0.061
Manufacturing	0.025	0.008	0.053	0.022
Wholesale and retail trade	0.009	0.009	0.052	0.024
Transport, storage and communication	0.006	0.011	-0.013	0.019
Real estate, renting and business activities	0.076	0.012	-0.063	0.034
Other community, social and personal service activities	0.077	0.031	-0.046	0.059
16<=Firm age<51	0.002	0.006	-0.002	0.009
51<=Firm age<81	0.004	0.006	0.020	0.012
Firm age>81	0.007	0.007	0.019	0.016
Low competition	-0.009	0.004	0.006	0.018
<i>Instrument variables:</i>				
Share of non-western immigrants in the municipality	0.895	0.186		
Share of western immigrants in the municipality	-0.190	0.154		
Low competition X Women			0.109	0.043
Low competition X Non-western immigrants			0.064	0.134
Low competition X Western immigrants			-0.001	0.279
R-sq.	0.607		0.149	
Number of observations	640		640	

Note: Reference category for education is compulsory education. Reference category for age is less than 30 years. Reference category for number of employees is less than 20 employees. Reference category for industry is Electricity, gas and water supply (NACE 40) and Construction (NACE 45). Reference category for firm age is less than 16 years.

The step 2 estimates of main interest are the interaction coefficients at the bottom. The predicted values of women, non-western-immigrants, and western immigrants are interacted with the observed values of the level of competition. Regarding the female coefficients the 2SLS procedure produces the same results as the one presented in Table 2. We still find a positive relationship between low competition, the share of women and profits, in line with the Becker hypothesis of sex discrimination. For non-western and western immigrants the interaction terms are still not significant. Therefore, still no support for discrimination against these groups.

5. Conclusions

Is high competition one way to reduce gender and ethnical wage differences? This is the main question we raise in this paper. Answering this question should be of interest for policy makers focusing on remedies to reduce gender and ethnical wage discrimination. If the answer is yes, policies to increase product market competition would also be helpful to reduce problems related to wage discrimination.

We employ a matched employer-employee level data set with repeated information on the level of product market competition, the employee composition, and profits. The years of observation are 1997 and 2003.

The point of departure for our study is Becker's theory of discrimination. In this paper we test the preference based discrimination hypothesis by analysing the relationship between the level of product market competition, the share of women and immigrants at the firm, and firm profits. The short run hypothesis of the Becker hypothesis is that among firms that operate in product markets with low competition, those who employ more women and/or immigrants should experience higher profits.

The results show that among firms with low product market competition, those who hire and employ relatively more women have higher profits, a result that is in line with Becker's theory of discrimination. On the other hand, for immigrants we find no support for preference-based wage discrimination. The short run sex-discrimination results are sustained after controlling for endogenous employee composition. Running a 2SLS procedure we still find a positive and significant relationship between low competition, the share of women and profits, in line with discrimination in the labour market towards this group. This result, suggesting the existence of sex discrimination in wages, is in line with results in Hellerstein et al (1999) and Hellerstein (2002) for the US labour market.

For non-western immigrants we are not able to find any strong evidence of discrimination. Among firms with low product market competition, those who hire and employ relatively more non-western immigrants do not have higher profits. This result is in line with Hellestein et al. (1999). They find no evidence of racial discrimination. However, when distinguishing between foreign and domestic product markets as well, an interesting result emerge. Regarding the relationship between non-western immigrants and profits, the important distinction appears to be between domestic and foreign, and not so much between high and low competition. Therefore, for firms operating in domestic markets, those who employ more non-western immigrants, have higher profits.

The dynamic part of the Becker hypothesis says that market forces will reduce or eliminate taste-based discrimination in the long runs, as the more profitable ones will grow faster. Firms with market power that follow their preferences for discrimination will grow slower, be bought up by other firms or be driven out of business. We test this hypothesis by estimating the relationship the level of competition, the employee composition and the likelihood of firm exit. The results reveal no significant relationship between the competition, the employee composition and profits. Therefore, we do not find any support for Becker's prediction on long term effects of discrimination.

Finally, if the employment shares are correlated with unobserved characteristics in the profit equation, this assumption is violated, and OLS will produce biased estimates. We test the severity of this problem by running a two stage least square (2SLS) procedure. The short term positive relationship between the share of women at the firm and profits in product markets with low competition is sustained after running the 2SLS procedure, suggesting that the positive relationship between women and profits in low competition markets is a causal relationship.

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Appendix

Table A1. Descriptive statistics

	Mean values	Standard deviations
Surplus ordinary operations/turnover	0,061	0,184
Surplus ordinary operations/net assets	0,118	0,322
Low competition	0,484	1,805
Women	0,306	0,899
Non-western immigrants	0,029	0,225
Western immigrants	0,048	0,204
Compulsory school	0,143	0,467
Secondary school	0,716	0,643
Higher education I	0,104	0,472
Higher education II	0,019	0,270
18<=Age<30	0,231	0,662
30<=Age<40	0,273	0,461
40<=Age<50	0,228	0,407
50<=Age<=67	0,252	0,595
Union member	0,334	1,127
Full-time	0,833	0,777
Oslo	0,075	0,949
Part of a multiform company	0,642	1,731
Log of capital	10,273	5,793
11<=Employees<20	0,464	1,801
20<=Employees<50	0,362	1,736
50<=Employees<100	0,104	1,104
100<=Employees<200	0,047	0,762
Employees>=200	0,022	0,534
Agriculture, hunting and forestry; Fishing; Mining and quarrying	0,000	0,071
Manufacturing	0,382	1,755
Electricity, gas, steam and hot water supply	0,097	1,067
Wholesale and retail trade	0,380	1,753
Transport, storage and communication	0,060	0,858
Real estate, renting and business activities	0,068	0,912
Other community, social and personal service activities	0,003	0,201
0<Firm age<16	0,239	1,541
16<=Firm age<51	0,400	1,769
51<=Firm age<81	0,187	1,408
Firm age>81	0,169	1,354
Number of observations	640	

Note: Numbers are weighted with the inverse of the firm’s sampling probability.

Table A2. Step 1 estimates. The share of western immigrants and the share of women at the firm. OLS estimates

	-Step 1 estimates- The share of western immigrants at the firm		-Step 1 estimates- The share of women at the firm	
	Est. coeff	St.error	Est. coeff	St.error
Intercept	0.008	0.024	0.618	0.136
Year 2003	0.004	0.004	0.016	0.018
Secondary school	-0.010	0.019	-0.199	0.075
Higher education I	0.045	0.019	0.149	0.075
Higher education II	0.111	0.027	-0.035	0.108
30<=Age<40	-0.049	0.019	0.217	0.074
40<=Age<50	-0.022	0.018	0.089	0.072
50<=Age<=67	-0.050	0.016	0.101	0.062
Union member	0.007	0.007	-0.060	0.027
Full-time	0.016	0.011	-0.748	0.043
Oslo	0.001	0.007	0.007	0.031
Part of a multiform company	0.005	0.004	-0.038	0.016
Log of capital	-0.001	0.001	-0.004	0.006
20<=Employees<50	-0.007	0.005	-0.005	0.020
50<=Employees<100	-0.003	0.006	0.006	0.023
100<=Employees<200	-0.003	0.007	0.013	0.026
Employees>=200	-0.006	0.008	-0.024	0.032
Agriculture, hunting and forestry; Fishing; Mining and quarrying	0.008	0.029	0.030	0.116
Manufacturing	0.009	0.006	0.096	0.024
Wholesale and retail trade	0.010	0.007	0.109	0.026
Transport, storage and communication	0.002	0.009	0.002	0.035
Real estate, renting and business activities	-0.015	0.010	0.076	0.038
Other community, social and personal service activities	0.035	0.024	0.111	0.094
16<=Firm age<51	0.003	0.004	-0.001	0.018
51<=Firm age<81	0.000	0.005	0.032	0.020
Firm age>81	-0.004	0.005	0.065	0.021
Low competition	0.005	0.003	0.003	0.013
<i>Instrument variables:</i>				
Share of non-western immigrants in the municipality	-0.257	0.143		
Share of western immigrants in the municipality	1.009	0.118		
Share of women in the municipality			0.431	0.168
Day-care coverage in municipality			0.003	0.001
F-statistics	40.3		41.4	
R-sq.	0.326		0.525	
Number of observations	640		640	

Note: Reference category for education is compulsory education. Reference category for age is less than 30 years. Reference category for number of employees is less than 20 employees. Reference category for industry is Electricity, gas and water supply (NACE 40) and Construction (NACE 45). Reference category for firm age is less than 16 years.