

**Gender and ethnical discrimination in the rental housing market of
Stockholm: a field experiment**

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In this article we use of a field experiment to measure discrimination in the housing market of Stockholm. Four fictitious persons, two men and two women, with distinct sounding Arabic or Swedish names are randomly assigned to vacant apartments. We extend the study by Ahmed and Hammarstedt (2008). There are two new results. First, we provide evidence that there is no or little gender premium for the Arabic named female, suggesting that ethnic discrimination dominates gender effects. Second, discriminatory behavior is only found in the suburbs or satellite cities/towns of Stockholm County not in the densely populated, rich, and more homogenous city center. Moreover, we can replicate one of the findings in previous studies showing that Swedish named female have a gender premium, but not that the Arabic named male face discrimination, holding the gender effect constant.

I. Introduction

Sweden has an increasing and large immigrant population. According to Statistics Sweden approximately 18.5 % of the Swedish population had foreign background in 2009.¹ About 20 % of the immigrants originate from Middle East or Northern Africa (Ahmed and Hammarstedt 2008).

Moreover, the immigrant population has a significant higher unemployment level than the native population.² Evidence of discrimination of typical black names, foreign sounding names, or nationalities has been provided in a few other studies using credible empirical design and in different settings, both internationally and in Sweden.³ This study is closely related to two earlier studies using an internet platform. In Ahmed & Hammerstedt (2008), three fictitious persons applied for housing units via internet. The applicants were two Swede's of both gender and a Arabic/Muslim named male, but no Arabic/Muslim named female. The results showed that the Arabic/Muslim named male were discriminated compared to Swedish men, and that Swedish women experienced a premium. The reply rate was lower if the

¹ A person is defined to have foreign background if (s)he is born abroad or both of the parents are born abroad. See Statistics Sweden (2002)

² See Statistics Sweden (2008)

³ Similar methodology to detect ethnic or racial discrimination has previously been used in economics by for instance Bertrand and Mullainathan (2004) in the labour market, Yinger

housing unit was located in any of the areas surrounding the three largest cities of Sweden and the results also indicated that the discrimination effect might be lower. Ahmed *et al.* (2010) investigate if increased information given by the applicants can reduce the level of discrimination, but the discrimination effect survives is unaffected by increased information.

We argue that ethnical discrimination housing market is of economic importance for at least three reasons.⁴ First, if immigrants find it difficult to find a rental apartment, then this affect labour mobility and matching probabilities in the labor market and consequently employment and welfare is decreased for this group.⁵ Second, discrimination could result in immigrants having to allocate in less attractive neighborhoods (segregation). This might lead to less spillover of country specific skills important for labor market success. Third, neighborhood effects for children have been shown to be important to explain success later in life.⁶ Thus, segregation could also have intergenerational welfare consequences.

Ideally, in order to detect discrimination, we need to observe the very same person twice, while at the same time vary one of the characteristics (e.g. gender). The difference in treatment can be attributed to discrimination.

(1986), Ahmed and Hammarstedt (2008) and Ahmed *et al.* (2010) in the housing market and Hinnerich *et al.* (2011) in the educational system.

⁴ Ethnicity is by nature multidimensional (e.g. shared heritage including dimensions such as religion, language, nationality, etc.). We define ethnicity based only on distinct names, but are aware of this weakness.

⁵ See, Mayo and Stein (1995) and Hardman and Ioannides (1999)

To get close to the ideal experiment needed to detect discrimination, fictitious applicants, two men and two women, with distinct sounding Arabic or Swedish names have been used to randomly apply for housing units on the internet.⁷

Our main contribution is twofold. First, we provide evidence that there is no or little gender premium for the Arabic named female. Compared to the Swedish named female, the probability of receiving a reply is 6 percentage points lower, suggesting ethnical discrimination. Second, differential treatment based on ethnicity or gender is only found in the suburbs or satellite cities of Stockholm County.

The next section provides background information of the housing market in Stockholm and the empirical strategy and the data. The main results are presented in Section 3. Conclusions appear in Section 4.

II. Background, methodology and data

Recently in the larger cities of Sweden, much of the housing market has shifted over towards the internet, making it an excellent area to perform

⁶ See, Corcoran *et al.* (1992), Evans *et al.* 1992 and Angrist and Lang (2004)

⁷ With this empirical set up it is possible that the observed discrimination effect could operate through other indirect channels, e.g. religion, if names are correlated with other unobserved factors. See, Bertrand and Mullainathan (2004) and Carpusor and Loges (2006) for a discussion. However, a differential treatment is still affecting the outcome of some ethnic groups with harmful welfare consequences.

field experiments. Stockholm is a growing region and the population in the county of Stockholm is roughly 2 million. The county has 26 municipalities, where the city of Stockholm has most inhabitants with roughly 800 000 inhabitants. Out of that 300 000 lives in the densely populated city centre. Stockholm is characterized by a shortage of housing units in the primary rental market. The unbalances in the market are typically attributed to rent control, slow construction processes, and a distorsive tax system.⁸ Overall, this has contributed to an extensive second hand market of vacant housings, typically advertised via the internet.

According to the figures from Stockholm Office of Research and Statistics and Statistics Sweden from 2009, Stockholm shows significant differences in socioeconomic characterizes across the city centre and the county (suburbs, satellite cities and towns). For example, the share of people with some college education or more is 65 % in the city centre, while it is around 48 % on average in the county. Naturally, the income is significant higher in the centre. Moreover, in the city centre only 18 % have foreign background, while in the county the figures are around 25 %. Moreover the city centre has significantly higher prices for apartments.

In order to measure discrimination in the housing market we use the largest internet buy and sell site in Sweden (www.blocket.se). At this site private persons as well as companies can publish ads to rent housing units. The types housing units that concern this article are rental and tenant-

⁸ The average queue time is 20 years for a large city centre apartment and 16 years for a small one.

ownership apartments and to some extent detached houses, as well as separate rooms.

Four fictitious applicants were used, two Swedes and two Arabs/Muslims with typical names that besides ethnicity, clearly indicated two women and two men.⁹ Each of them was given a cell phone number that was registered at www.eniro.se.¹⁰ Any addresses were not registered because a person's current place of living may indicate belonging to a certain class/category. The application letters consists of a short personal description attached with a cell phone number and they are identical except for the names that also reveal the applicant's gender. They were formulated to maximize the response frequency, for example stating a relevant slightly above median income.¹¹

The housing units applied for met certain reasonable criteria's that took the applicants' profiles into consideration. Amongst others, the ad had to be published by a private person, and have a reasonable cost and size.

When measuring replies they were registered as positive, if an answer indicated that the landlord wanted to have further contacts, or an invitation to a showing of the housing unit. The research ethics in this kind

⁹ For more detailed information on the methodology (e.g. selection of housing units, application form and randomization), see appendix.

¹⁰ www.eniro.se is a leading search company at the Nordic media market where the majority of the Swedish citizens' phone numbers are registered.

¹¹ Increasing information should yield higher response rate but should not affect the estimate of a potential discrimination effect in line with Ahmed *et al.* (2010).

of field experiment must be taken seriously. We minimized the costs of the participating advertisers by turn down offers within 48 hours.

Table 1 shows descriptive statistics of relevant variables. Only 13.6 % of the applications yield a reply, in line with excess demand of rentals in Stockholm. By randomization, the proportion of applicants with respect to gender and ethnicity is even. Non-shared housing are more often for rent than shared housing and about a fourth of the ads were in the city centre and most landlords had a Swedish sounding name.

[Table 1 about here]

Since we have randomized the applicants' names and kept all other information constant, the following baseline model should yield unbiased estimates of the different relative response rates for the different groups

$$Reply_i = \alpha + \lambda Swede_male_i + \delta Arabic_male_i + \beta Arabic_female_i + u_i$$

where *Reply* is s defined in Table 1 and the explanatory variables are dummies for three of the four distinct groups.¹² The female with a Swedish sounding name serve as our comparison group. In line with Ahmed and Hammarstedt (2008), we expect $\delta < \lambda < 0$. That is that the Swedish named female face a premium and that Arabic male get fewer offers than the

¹² We use a linear probability model (OLS). However, using the probit estimator yields similar results.

Swedish male. If the Arabic named female also experience a gender premium we would expect $\beta > \delta$. Thus, standard tests of differences of the coefficients apply to answer these questions. The error term u measures all other determinants of the response, but should by randomization be uncorrelated with all other independent variables.

III. Results

In our baseline specification with no controls (column 1, Table 2), Swedish females are experiencing a premium and the probability of a positive reply is 8.7 percentage points higher than for the Swedish named male. However, we cannot reject that the coefficients differ between the Arabic and Swedish males, indicating no ethnical discrimination for men in contrast to Ahmed and Hammarstedt (2008). However, compared to the Swedish female, the Arabic female receives 6.1 percentage points less replies, indicating ethnical discrimination against Arabic named women, holding gender effects constant. However, we cannot reject that the Arabic female are treated differently than the men of both ethnical groups, even though the difference in point estimates indicates a small gender premium around 2.5 percentage points. Thus, we find evidence of a female premium, only if the female has a Swedish sounding name. Arabic named females suffer from ethnical

discrimination. Adding controls sequentially in column 2-6 we see no major changes in the key estimates, so they are robust for this inclusion.¹³

[Table 2 about here]

It is of interest to divide the sample of into the following groups: whether the contract is in the city centre or not, whether the contract is shared housing or not or weather the landlord has a Swedish sounding name or not. We could expect heterogeneous effects along these dimensions. For example, the share of immigrants is lower in the in the city centre, but on the other hand the education level is higher. This could influence discrimination. We divide the sample into two regions: city centre and the rest of the county. Moreover, shared could induce a higher discrimination estimate if “not in my back yard” effects exist, but on the other hand shared housing might face a lower demand, potentially weakening the discrimination effect. Lastly, it might be that discrimination is working mostly though the channel that one ethnic group is discriminating some other group, motivating the last division. Table 3 presents the results.

[Table 3 about here]

Interestingly, the results in column 1 show that landlords in the city

¹³ Including controls for search intensity as discussed in the appendix does not change the results in table 2.

centre do not show discriminatory behavior towards Swedish males or Arabic named individuals and thus the results from table 2 are driven by the sub-sample of suburbs and satellite cities/towns. Again there is a tendency of a small gender premium for the Arabic female, but the difference is not statistically significant. In the sub sample for shared housing (column 3) the point estimates keep the same ranking as in the baseline but are both larger in absolute terms and the differences are larger., which could indicate that not in my back yard effects dominates other demand effects. However, again the point estimates are not statistically different. In the last two columns we see that there is a stronger discrimination against males and Arabic females in the sub sample where the landlords have a Swedish name. Interestingly, in the sub sample where the landlord does not have a Swedish name, there is very little ethnic discrimination found against the Arabic named female, suggesting that gender premium could be the only effect if ethnic groups face a landlord with a more similar ethnicity as themselves.

IV. Conclusions

This study shows that Arabic named females are discriminated in the housing market of Stockholm. Moreover, we can replicate that the Swedish named female experience a premium on the market, however, we can not replicate that Arabic named males face discrimination, holding gender constant. Interestingly, there is little or no evidence of differential treatment based on gender or ethnicity in the rich, more homogenous and educated

city centre, but all discriminatory effects are found in the suburbs or satellite cities/towns. To investigate which of the characteristics of a city centre that are driving the different responses, would be a natural step for future research.

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Tables

Table 1. Summary statistics

Variable	Mean	SD	N
Reply (positive= 1, 0 otherwise)	0.136	0.343	1213
Swedish applicant (Swedish name = 1, 0 otherwise)	0.500	0.500	1213
Male applicant (male =1, 0 otherwise)	0.496	0.500	1213
Rent	5319	2045	1200
Size of housing unit (m ²)	39.19	18.82	1063
Number of rooms	1.395	0.507	1208
Shared housing (shared =1, 0 otherwise)	0.390	0.488	1211
Area (city centre=1, 0 otherwise)	0.232	0.422	1213
Landlord name (Swedish=1, 0 otherwise)	0.636	0.481	1127

Table 2. The effects of gender and ethnicity on the probability of getting a positive response.

	(1)		(2)		(3)		(4)		(5)	
	Estimate	(SE)								
Swede_male	-0.087***	(0.029)	-0.087***	(0.029)	-0.087***	(0.029)	-0.077**	(0.030)	-0.082***	(0.030)
Arabic_male	-0.085***	(0.029)	-0.085***	(0.029)	-0.086***	(0.029)	-0.087***	(0.030)	-0.086***	(0.030)
Arabic_female	-0.061**	(0.030)	-0.060**	(0.030)	-0.061**	(0.030)	-0.054*	(0.031)	-0.057*	(0.031)
Stockholm Municipality			-0.025	(0.020)	-0.021	(0.020)	-0.024	(0.021)	-0.031	(0.022)
Room mate					0.029	(0.021)	0.027	(0.022)	0.056**	(0.028)
Swede_landlord							-0.016	(0.022)	-0.014	(0.022)
Rent									0.000*	(0.000)
Observations	1,213		1,207		1,206		1,121		1,110	
R-squared	0.011		0.012		0.013		0.013		0.015	

Notes: Robust standard errors in parentheses. *, ** and *** statistically significant at the 10, 5 and 1% levels, respectively. A constant is always included.

Table 3. The effects of gender and ethnicity on the probability of getting a positive response in different sub samples.

	(1)		(2)		(3)		(4)		(5)		(6)	
	City centre		Suburbs and Satellite cities		Room mate		Own Apartment		Swedish landlord		Not Swedish landlord	
	Estimate	(SE)	Estimate	(SE)	Estimate	(SE)	Estimate	(SE)	Estimate	(SE)	Estimate	(SE)
Swede_male	-0.025	(0.044)	-0.106***	(0.035)	-0.110**	(0.051)	-0.073**	(0.034)	-0.081**	(0.037)	-0.068	(0.051)
Arabic_male	0.033	(0.053)	-0.120***	(0.033)	-0.148***	(0.047)	-0.045	(0.036)	-0.095***	(0.036)	-0.066	(0.051)
Arabic_female	0.074	(0.055)	-0.101***	(0.035)	-0.092*	(0.051)	-0.043	(0.036)	-0.082**	(0.038)	-0.010	(0.053)
Observations	270		943		472		739		717		410	
R-squared	0.015		0.019		0.023		0.006		0.013		0.008	

Notes: Robust standard errors in parentheses. *,** and *** statistically significant at the 10, 5 and 1% levels, respectively. A constant is always included.

Appendix

Application letters (our translation)¹⁴

Hi my name is Xxxx Xxxx and I am 29 years old. I am a newly graduated Master of engineering and have now been offered a firm duty in Stockholm. My finances are in good order and the salary is 31 0000 SEK a month concerning my new duty. I would rather sign a contract for a longer time but a shorter period is also of interest. Deposition is of course ok. I have no children or pets and I do not smoke. Of course, references can be sent on request. I can be reached via mail: xxxx.x.xxxx@gmail.com or on 073xxxxxxx

Yours sincerely Xxxx Xxxx

Fictitious applicants

The choice of names was essential. Two typical Swedish names and two typical Arabic sounding names that clearly indicated the gender of the applicants was needed. To name them, name frequency data from Statistics Sweden's was used (2010-02-14) at www.scb.se. Both the first and last

¹⁴ The only differences between the applicants' letters are the names.

names were written in the e-mail addresses as shown in Table A1.¹⁵

Table A1. Fictitious applicants.

Name	Gender	Ethnicity	Email address
1. Eva Johansson	Female	Swedish	eva.p.johansson@gmail.com
2. Ahmad Mohammad	Arab	Male	ahmad.o.mohammad@gmail.com
3. Fatima Abbas	Arab	Female	fatima.j.abbas@gmail.com
4. Erik Andersson	Swedish	Male	erik.p.andersson@gmail.com

Selection of housing units

The applicants' profiles were designed to maximize the reply frequency. We did not apply for the housing units if the rent per month was higher than 12 000 SEK, the unit was larger than 2.5 rooms and the period was shorter than a month. If the housing unit was located outside Stockholm County or it had been applied for earlier. If the landlords explicitly stated that only a certain gender could apply or if contact was only accepted by phone or if other languages were used than Swedish there was no application sent. Lastly, we only considered non-company advertisements

¹⁵ The middle-name letter in the mail addresses were added because of G-mail's availability of mail addresses at that particular time. Also, four cell phones with pre-paid cards were used and always switched on.

Randomization of applicants

The field experiment was carried out between 2010-03-03 and 2010-05-09. At every time of search the home page generates a list according to the criterions above. To randomly assign applicants we started with applicant number one from table A1 followed by number two and so on. We started to do our search and application once a week, but due to the low reply rate we chose to intensify our applications schemes. Thus our sample consists mainly of searches taken place once a week or every day as Table A2 shows. Clearly, the switch from once a week to every day is endogenous and possibly non-random and need special consideration in the analysis.

Table A2. Search intensity

Scheme	Application id.	Reply rate
Once a week	1-655	8,7%
Twice a week	656-766	17%
Every day	767-1310	18,7%