Labor Force Participation of Female Immigrants in the United Kingdom

ERASMUS UNIVERSITY ROTTERDAM

Erasmus School of Economics

Department of Economics

Supervisor: DR. N.V. Zubanov

Name: Djotieka Rakhan

Exam number: 328299

E-mail address: djotieka@hotmail.com

Introduction

In general, we see that the majority of the labor market consists of working men. More men participate in the labor market if we compare the participation rates of men and women. The labor market participation rate includes all persons that are in employment or are looking for a job (ILO unemployed) and excludes persons that are out of the labor market (inactive). By out of the labor market is meant people who are inactive and are not actively searching for a job. When we look at the participation rate of immigrants we also see that men are more likely to work than women. This is a well-known phenomenon. But the story becomes interesting when we compare the participation rate of immigrants with that of the natives, especially the participation rates of females. My study is based on the participation rate of female immigrants in the UK. Female immigrants in the UK are less likely to participate in the labor market when we compare them with native females. One factor that can explain the difference in participation rates is the difference in characteristics. The characteristics of female immigrants may differ from that of native females. An alternative factor that can explain this phenomenon is discrimination. The definition of discrimination is action based on prejudice. This means that a person, racial group, minority, etc., is treated unfair. The most used example of discrimination is the black and white story. When we compare 2 people with the same level of education and preferences, they have equal chances of getting a job. The only difference between them is that one is black and the other one is white. When an employer prefers the white person based on personal reasons this is seen as discriminating. In my study we are talking about discrimination against foreigners. The UK has to cope with immigration from European as well as other Non-European countries. It has a history of white as well as non-white immigration. Liverpool has the oldest black population in the country and these people started to enter the UK since the 1730s. When we look at table 1 we see that the majority of the population consists of White British (85.67%). The second largest ethnic group consists of other white people (5.27%), which is really a small portion compared to British white people. Here in this table we see that immigration of white people is lower compared to immigration of other ethnic groups (9.1%). In table 1 we can also see the labor force participation rates of males and females of every ethnic group in UK. The participation rates of females are lower than the participation rates of males except for the ethnic group Black Caribbean. Here females have a higher participation rate (1.79% higher) than males. If we look

at the participation rates of females we see that the groups with the lowest rates are Pakistani and Bangladeshi females. These low participation rates can have many causes. 3 most obvious examples are education, culture and religion.

Table 1: According to the 2001 Census, the ethnic composition of the United Kingdom

Ethnic group	Population	% of total*	LFP rate of Males	LFP rate of Females
White British	50,366,497	85.67%	68.93%	59.24%
White (other) & White Irish	3,787,401	6.47%	74.22%	63.49%
Indian	1,053,411	1.80%	75.85%	62.68%
Pakistani	977,285	1.60%	72.65%	32.95%
Mixed race	677,117	1.20%	82.22%	74.70%
Black Caribbean	565,876	1.00%	65.49%	67.28%
Black African	485,277	0.80%	78.28%	63.03%
Bangladeshi	283,036	0.50%	78.14%	29.94%
Other Asian (non-Chinese)	247,644	0.40%	75.40%	60.05%
Chinese	247,403	0.40%	61.73%	55.34%
Other	230,615	0.40%	84.21%	50.19%
Black (others)	97,585	0.20%	70.92%	64%

As I have said before there is a difference in the participation rate of female immigrants and natives. There is a difference of 7.1% if we compare the participation rates. Immigrant females are 7.1% less likely to participate in the labor market compared to native females. The purpose of my research is to study the origins of this difference. Once we know what factors determine the decision to work for female immigrants, we can try to find a solution if possible. The results then may or may not be used in policy making, depending on what factors explain this difference. The main question of my research is: *what are the determinants of immigrant female labor force participation?* To answer the main question I will look at the different independent variables that can influence the decision to participate.

For this study I will use secondary data obtained from the ESDS UK data archive. Each ESDS service provides specialist web pages, support and help desks for particular data collections[1]. The labor force data used for this study is obtained from the ESDS Government web page. This web page consists of large-scale government surveys as the Labor Force Survey and the General Household Survey. The Labor Force Survey (LFS) is a quarterly sample survey of households living at private addresses in the United Kingdom. Its purpose is to provide information on the UK labor market that can then be used to develop, manage, evaluate and report on labor market policies. It is conducted by the Office for National Statistics. Respondents are interviewed by a trained interviewer. These are face-to-face interviews or interviews done by phone. If someone else answers on behalf of the respondent this is called a proxy informant. To test the accurateness of the answers given by proxy informants a study was done. First the proxy informants were interviewed. Subsequently the people on whose behalf the proxy informants had answered were interviewed. Their answers were then compared with the information given by the proxy informants. The agreement levels between information given by proxy informants and the same information given by the subjects themselves were found for many key variables to be above 80% and several were above 90%.

In the beginning I wanted to base my study on female immigrants in the Netherlands. But it was difficult to access individual data. This kind of data is seen as confidential and private and can be bought by researchers. It was a bit easier to access individual data of females in the United Kingdom and this was free of charge. After registering with ESDS, I was able to download the labor force data. It was not easy to find the right variables immediately because this survey consisted of 700 variables and 106866 respondents.

The dependent variable is participation and is derived from economic activity reported. The dependent variable takes 2 values, participation or no participation in the labor market. The independent variables are culture, year of first arrival in UK (came year), marital status, educational level, health, age, number of people in household employed, number of children in household aged 4 years or less and number of children in household between 5 and 15 years .

---

[1] www.esds.ac.uk

Different cultures have different rules especially for women. These are not written rules (laws) but in some cultures it is so extreme that a woman has to follow this. In Some cultures people believe that a women's job is to look after the household and to take care of children. This leaves no space for them to go out and to work. In my paper I want to look whether culture really has an impact on participation rates and if this is the case, to what extend does this influence the decision for a women to work.

The marital status of a female immigrant is also important. If a female immigrant is married and her husband earns enough she will decide not to work. In some cultures husbands also don't want that their wife's go out and work, if they earn enough to run the household. So this can also have an impact on female immigrant's labor force participation.

Moving on we see that the most important factor in this analysis is education. Without a good degree that matches the perfect job, it is impossible to find work even if someone wants to work. Usually one assumes that people will work when they are educated and can find a job that matches their educational level. However, if husbands earn enough their wife's will not work even if they are highly educated. This was just an example but there can be other reasons for a women not working even if she is educated. So the problem here is willingness to find a job even if educated.

Health and increasing age can also limit activity which makes it difficult to participate in the labor force. The number of people in household employed can also have a negative effect on the decision to participate. When more people in households are employed we think that the participation rates of females will be lower.

If we look at the decision for women to have children we see that the first thing that usually comes into mind is how this will be combined if she is working. This problem is not solved after finally having a baby, perhaps it continues because someone has to take care of the child. This is usually done by the mother. Then she has to choose between working and taking care of her children. If she decides to work, someone else has to take care of the child. 2 options are available, formal and informal childcare. When she decides to arrange formal childcare, the decision to work will be compared with how high are childcare costs, etc. If childcare costs are high it doesn't pay to go out and to work. In my research I could not determine the effects of

childcare costs on the labor force participation of females because of the limited data. Some people also think that children are better off when parents look after them when they are small. Then the upbringing of their children will be even better. Usually the father works and mother will look after the children. Therefore, the number of children can be one of the factors that influence the decision to work.

By using regression analysis we will see what effect the independent variables have on the participation rate of female immigrants. All the right-hand side variables can be measured except culture. So to correct for this two control variables will be included in the regression and these are the country of origin and religion.

First we saw that female immigrants are 7.1% less likely to participate in the labor force. After controlling for differences in characteristics they are 3.5% more likely to participate. The most important characteristics that differ between immigrants and natives are religion, number of children aged 4 years or less and education. We saw that 28.5% of female immigrants are Muslims, 24.82% have children aged 4 years or less and 52% of female immigrants have another or no qualification at all. These variables were negatively significant. So there is no discriminating factor, but differences in characteristics.

In the paper of Psacharopoulos & Tzannatos (1989) the authors look at the overall participation rate of women without distinguishing between natives and immigrants. Education, religion and the number of children have the same effect on the participation rate as in my study determined. More education leads to higher participation rates. This paper discusses also the income effect. I could not determine the income effect due to lack of data on income. In the paper of Heather et al. (1985) the participation rate of all women in Britain is analyzed. The most important variable was growth in wages for females. This led to an increase in the participation rate. Fertility was also important. Drop in fertility was associated with an increase in participation rates. A study done by Dustmann et al. (2003) based on female immigrants of UK pointed out the importance of education and culture. Age also seemed to be important when entering the United Kingdom. Dustmann and Fabbri (2005) did a study based on immigrants in Britain. Here they saw that the most disadvantaged groups (in terms of wages) were female immigrants from Bangladesh and Pakistan. They had low participation rates and these low participation rates were especially

caused by differences in culture and religion. A study done by Fernández (2010) tries to determine the impact of culture on participation rates. He found that culture indeed has a negative significant effect. Duleep and Sanders (1993) did a research on the participation rates of female immigrants from Asia, Europe and Canada. This study was based on married immigrant women in the US. Asian immigrant women had the highest participation rate. Molho and Elias (1984) did a similar study based on the UK. This study was based on married female immigrants of UK. The main explanatory variables were husband's participation, wages and number of pre-school children in household.

First I will start my research with an introduction on the topic that I want to study. The introduction will shortly explain what I want to investigate and what it adds to the literature. It will also contain some information about the data, the methodology and the main results. After this I will discuss some literature that is related to my topic. The most important thing about this part is that it becomes clear what the differences are between my study and existing studies. Then I will describe the data which will be the statistical source for the research. After this the methodology follows which will show how my main question is tested. Then the results will follow that will be derived from testing the data. The research will be completed with the conclusion, and the most important part of the conclusion will be the interpretations of the results.

Related literature

Several factors influence the decision to participate in the labor market for women. That is why a lot of empirical work has been done in this field. Psacharopoulos & Tzannatos (1989) did a very broad analysis on this topic and looked at the labor force participation rate of women in 136 countries. They did not make a distinction between natives and immigrants. Their analysis was based on the participation rate of all females. The dataset included developed as well as developing countries. In their work they saw that apart from economic factors there are also non-economic factors that have an influence on the decision to participate in the labor market. By economic factors is meant variables such as education and income. Non-economic factors are religion or the number of children a person has. These are non-economic factors because they are the social and political environment that may not directly affect the level of national income and output. The main variables in the paper of Psacharopoulos & Tzannatos are: income, demographics, religion and education. Let us first look at education. As I have said earlier education is a very important factor when someone wants to participate in the labor market. It not only gives people the chance to participate, but it also limits participation if someone is less educated. An interesting finding of their study is that sometimes women's decision to participate in the labor market is made during education. This means that people don't only attend school because they want to work. There are also other factors that influence the decision of how much to invest in education. An example of such a factor is someone's family background. If a person belongs to a family that for example has only college graduates it is more likely that he/she is going to attend college and wants to be a college graduate. In the paper of Psacharopoulos & Tzannatos (1989) it is assumed that people are willing to participate in the labor market in the future and that's why they take up education. The authors found a positive effect of education on the participation rate. Someone that is educated is more likely to work compared with people without education.

The second economic variable is income. For this variable a positive relation was found. An increase in the wage for women led to more women entering the labor market. However, this is not the same for all the country's that were in the sample. For most of the countries the income variable was not significant. This was really interesting to see because usually it is assumed that

people work more as the income increases. When wages are high leisure becomes expensive and less of it is consumed (Borjas, 2010).

To explain the participation rate of women the authors also looked at other variables. The first non-economic variable is the number of children. Mixed results were found for this variable for the different countries. In middle income countries the number of children has a negative effect. In developed countries no strict evidence was found. The participation rate of women that have children and women aged above 40 years did not differ very much. Women aged above 40 years did not have higher participation rates than younger women with small children. However, these results should be interpreted carefully because in high income countries more part-time jobs are available. The participation of women in part-time jobs is higher than the participation in full-time jobs. In low income countries there are fewer part-time jobs availability compared to high income countries.

The second non-economic variable is religion. Religion was also an important variable because it had a significant and negative effect. Women in Countries with strong religious views were less likely to participate in the labor market compared to women in countries where religion was not that important. The participation rates of Muslim and Roman Catholic women were the lowest.

Another related study was that of Heather et al. (1985) on the participation rate of women. This study was based on all women of Britain, so no distinction was made between natives and immigrants. The authors used panel data and found an increase in female labor force participation from 1945 to 1977 in Britain. One explanatory variable for this phenomenon was the real wage growth for both males and females. In the mid 1970's the wages of females increased with 15% because of the Equal Pay Act. This did not cause a decline in the demand of female workers. The increase in labor force participation rate was more in the private sector. Employers began to realize the true worth of female labor. The main growth was among married women and in part-time jobs. The two main explanatory variables were wages and fertility. The number of children, especially small children (aged 4 years or less) is also an important explaining factor in my study. The decline in fertility also pointed out that working became more important than having babies. Education was not really an explanatory factor because the

increase in female labor supply had already started and after that women began to attain more and more human capital.

A study done by Dustmann et al.(2003) looked at the labor market performance of immigrants in the UK labor market. Four indicators of economic performance were investigated. The most important one was the labor force participation rate. There are many similarities between my study and that of Dustmann et al. The main data source that has been used for this study is also the Labor Force Survey (LFS). In this study the authors also found that the participation rate of female immigrants is lower than the participation rate of female natives. Country of origin is used to measure cultural differences. Females from Bangladeshi and Pakistani (Soth-East Asia) communities have the lowest participation rate among female immigrants. Whereas, in my study the country of origin is not significant. Cultural differences cannot be explained with country of origin as a control variable. The authors also looked at employment probabilities for immigrants and natives. This was measured by the variables education, age and region of settlement. Pakistanis, Black Africans and Caribbean are the most disadvantaged communities. These differences in participation rates are caused by the differences in education and age. The probability of being employed is low when someone is less educated. Also the age matters for emloyment probabilies. Immigrants that are aged when entering UK have low employment probabilities.

A similar study done on immigrants in the British labor market by Dustmann & Fabbri (2005) found that Britain's immigrant population dramatically improved their educational skills. The data that has been used in this study is labor force survey data. In their study they look at male as well as female immigrants. This study also concluded that the most disadvantaged groups (in terms of wages) were female immigrants from Bangladesh and Pakistan. For these 2 groups culture and religion seemed to have a negative significant effect on the participation rate. The most advantaged and succesfull groups were white immigrants.

A study done by Fernández (2010) tries to determine the impact of culture on economic and institutional environment. Different cultures in one country is cuased by immigration flows. The author wants to find out whether culture has an impact on economic conditions such as the labor force participation rate of female immigrants. In his study he saw that culture indeed matters.

Females with a certain culture do not know the long-term consequences of market work and think that this will negatively effect their marriage and children's welfare.

When we look at the participation rate of female immigrants that are married we also see very interesting findings. Duleep and Sanders (1993) did an analysis on the decision of married female immigrants to participate in the labor market. Married immigrant women of Asia were compared with married immigrant women from Europe and Canada. This study was based on the US and Census data of 1980 was the statistical source for this research. The main finding of this study was that the decision to participate in the labor market depends on whether the husband has skills that are required in the US labor market. We also saw that Asian women were more likely to participate (except the Japanese) than Non-Hispanic white immigrant women (women originating from Europe and Canada). Opposite results were expected for married Asian women. Asian women generally have low divorce and separation rates. They also have high number of small children at home. These factors may cause a low participation rate among married Asian women. A very interesting finding of this study was that the group with the lowest number of children (Japanese) have the lowest participation rate. On the other hand, the group with the highest number of children (Filipinos) have the highest labor force participation rate. A similar research also has been done by Molho & Elias (1984) based on the UK. Participation rates were obtained from the Family expenditure Survey (FES). In this study the main explanatory variables were husbands participation rates, an increase of wages for females and the decline of young children in households. Women that were married with unemployed husbands were more likely to work compared with married women whose husbands were employed. This can be seen both as the added- and discouraged worker effect . The added worker effect states that when the main bread winner of the household gets unemployed, in this case the husband, the wife enters the labor market. The discouraged worker states that in bad times (crisis) it is difficult to find a job and people (husbands) leave the workforce. Because of these two reasons the participation rates of married women increase.The participation rate of women with high wages was also higher. What also mattered was the decline of pre-school children in the household. The availability of childcare arrangements and financial circumstances of the household seemed to have a significant effect.

Data

For this study I used cross-section data obtained from the ESDS UK data archive. ESDS stands for 'The Economic and Social Data Service'. This is a national data archiving and dissemination service which came into operation in January 2003. The ESDS provides an integrated service offering enhanced support for the secondary use of data across the research, learning and teaching communities. The quarterly Labor Force Survey dataset for households dated from October-December 2010.

In total the dataset consisted of 106866 observations with almost 700 variables. After excluding males, the dataset consisted of 54524 females. The dependent variable is participation in the labor force or no participation of female immigrants. For this the variable Economic activity reported is used. This takes 5 values and the most important ones were in employment, ILO unemployed and inactive. There was a -10 value (No answer / Does not apply) and value 4 with females aged less than 16 years. After excluding respondents with these 2 values there were 43684 females. I want to look at the determinants of immigrant female labor force participation, which is why a distinction is made between immigrants and native. In order to make a distinction between immigrants and natives I used the variable came year (year of first arrival in UK). My study is based on the first-generation immigrants. This is the main reason to use the variable came year. The term first-generation can imply two possible meanings. A foreign born citizen or resident who has immigrated and been naturalized in UK, or a naturally born citizen or resident of UK whose parents obey the previous definition[2]. Came year gives the year of first arrival in UK and applies to all respondents. If date of arrival to take up residence is preceded by a holiday and there is no break between holiday and staying on, the date of arrival for holiday is included. If there is a break before taking up residence, the holiday arrival date is not included. This variable contains year of arrival and the value -10 (No answer / Does not apply). After excluding all observations with -10 values (excluding all native females) and only focusing on female immigrants of working age the sample consisted of 5436 female immigrants of working age. The variable people of working age takes 2 values. 1 if a female immigrant is of working age otherwise 2. Respondents that didn't give an answer or for whom this does not apply (>64 years)

---

[2] www.wikipedia.nl

are excluded. The variable came year is also used in the regression analysis as independent variable.

The independent variables are culture, year of first arrival in UK (came year), marital status, educational level, health, age, number of people in household employed, number of children in household aged 4 years or less and number of children in household aged between 5 and 15 years. All these right-hand side variables can be measured except culture. So to correct for this 2 control variables are included in the regression. These are country of origin of the female immigrant and religion. The variable country of birth-other contained country codes of all the countries. It also contained information about whether someone was born in the air or at sea. Fortunately, this was not the case for any female immigrant. In order to make it easier I grouped all the countries in 11 blocs namely Western Europe, Eastern Europe, South-East Asia, Middle East, Africa, North America, South America, Caribbean, Far East, Central America and Oceania. For this variable 313 females were excluded due to no answer or do not apply answers. Now the sample consisted of 4534 female immigrants of working age.

The second control variable for culture is religion. Here I want to see whether religion of a female immigrant affects the decision to participate in the labor force. This variable takes 9 values namely Christian, Buddhist, Hindu, Jewish, Muslim, Sikh and any other religion. After excluding -10 values (No answer/ Does not apply) and respondents who have no religion at all (value 8), there were 3928 female immigrants of working age with a religion.

The next independent variable is marital status. This takes 7 values. From the first till the 7th value: single never married, married living with husband, married separated from husband, divorced, widowed, civil partner and separated civil partner. No observations were removed for this variable because all included an answer.

 For educational level I used the variable highest qualification held. This variable applies to all respondents of working age or those in employment with or without qualifications. This variable contained 8 values. From the first till the 6th value: degree or equivalent (this is equivalent to a HBO or WO, depending on the degree), higher education (in addition to universities and university colleges, there are a number of publicly-designated and autonomous institutions within the higher education sector), GCE A level or equivalent (The Advanced Level General

Certificate of Education, commonly referred to as an A-level, is a qualification offered by education institutions in England, Northern Ireland, Wales, Cameroon, and the Cayman Islands. It is also offered in Scotland by a small number of educational institutions, typically private fee-paying schools, where students would normally take the Scottish Qualifications Certificate. Higher and Advanced Higher A-levels are studied over a two-year period and are recognized as the standard for assessing the suitability of applicants for academic courses in English, Welsh, and Northern Irish universities), the GCSE grades A-C or equivalent (General Certificate of Secondary Education), other qualifications and no qualification. The unimportant ones were again the value -10 and value 7 (Don't know). In my analyses I want to see whether education has an effect on the decision to work. So these 2 values were eliminated. After this there were 3892 female immigrants.

The next variable is whether health problem limits activity. This variable took the value yes, no and don't know. Respondents with an answer don't know were eliminated. Now the data consisted of 1088 female immigrants of working age with a religion, that have a marital status, know what their highest qualification is and also know whether health problems limit activity or not. These women are in employment, ILO unemployed or inactive. The last 4 independent variables are age, number of people in household employed, number of children in household aged 4 years or less and number of children in household between 5 and 15 years. These variables do not take values but the age, number of children and number of people in household employed is given. To create the variable employed another variable has been used and that is total number of people in household aged 16-64

The same has been done for female natives. 2 variables were not relevant because natives don't have a came year or another country of birth. There were 8876 female natives of working age with a religion, that have a marital status, know what their highest qualification is and also know whether health problems limit activity or not.

Methodology

The following regression analysis has been done to look at the effects of the variables on the decision to participate in the labor market:

Participation = α + β1*Country of birth + β2*Religion + β3*Came year + β4*Marital status + β5*Education + β6*Health + β7*Age + β8*No of people in household employed + β9*No of children in household aged 4 years or less + β10*No of children in household aged between 5 and 15 years

The dependent variable is grouped into 2 categories otherwise there was no logical order of progression. Participation takes the value 0 when economic activity reported is inactive. It takes value 1 when economic activity is in employment or ILO unemployed. This means females that are inactive are grouped into 1 category and females that are in employment or ILO unemployed (active) are grouped into 1 category.

The variable country of birth-other contained country codes of all other countries of birth. In order to make it easier I grouped these countries of birth into 11 blocs[3]. This is done after looking where a country belongs culturally. Some countries belonged to another bloc if for example one would look at the political background. My purpose is to use country of birth-other as control variable for culture. That is why I grouped the countries in 11 blocs looking at the cultural background. A dummy variable is generated for country of birth-other with Western Europe as reference group. It takes the value 1 if Western Europe otherwise 0.

There are also dummy variables generated for religion, marital status and education with Christian, single never married and degree or equivalent as reference groups. Religion takes the value 1 if Christian otherwise 0. Marital status takes the value 1 if single, never married otherwise 0 and education takes the value 1 if degree or equivalent otherwise 0.

---

[3] See Data for the 11 blocs

The variable health is grouped into 2 categories. When health problems limit activity this takes the value 1 otherwise 0.

It was important to have an income variable in my analysis. Because of the limited data, individual income or household income was not available. To control for this the variable employed was created. The purpose of this variable is to explain (even if it's a small portion) what affect the income of a husband/partner or other member of the household has on the decision to participate in the labor market for a female. 2 variables have been used to generate this variable. These are the number of people in household employed and total number of people in household aged 16-64 years. Both variables included the female respondent of our sample. So to correct for this the variable X was generated. X is 1 if economic activity is 1 otherwise 0. The employed variable is the ratio between working persons in household and total persons in household. This has been done because the number of people working has to be related to the number of persons in the household. The variable X has been subtracted from number of people in household employed and this has been divided with total number of people in household aged 16-64 (if this is not equal to 1). After this the variable employed was grouped into 2 categories. Employed is 0 if number of people in household aged 16-64 years is 1(is female of working age).

The analysis is based in comparing natives with immigrants. The dummy immigrant is 0 when this is a native female and 1 when this is an immigrant female. First, participation has been regressed on the independent variables for immigrants. These are culture, year of first arrival in UK (came year), marital status, educational level, health, age, number of people in household employed, number of children in household aged 4 years or less and number of children in household aged between 5 and 15 years. The same has been done for natives without the variables country of birth-other and came year. After this regression has been done on the whole sample (of immigrants) to control for differences in characteristics.

Results

In the table below we can see that there is a difference in the labor force participation rate of natives vs. immigrants.

Table 2 Participation rates of immigrants and natives

Participation	Natives	Immigrant
0	39.68%	46.78
1	60.32%	53.22%
Total	100%	100%

The participation rate of 60.32% of female natives is higher than the participation rate of 53.22% of female immigrants. This difference may be due to 2 factors.

1. Female immigrants are discriminated or,

2. Female immigrants have different characteristics compared to native females.

After regressing participation on immigrant females we do see that there are significant differences in labor force participation between immigrants and natives.

Table 3 Participation rate of female immigrants compared to native females

Participation	Coefficient	Std. Error	t	P>|t|	lower bound	upper bound
Immigrant	-0.071	0.016	-4.510	0.000	-0.102	-0.040
Constant	0.603	0.005	115.890	0.000	0.593	0.613

Female immigrants are 7.1% less likely to participate in the labor market than native females. This is significant at a 5% level. The difference in the participation rate can be explained by discrimination or by difference in characteristics. Female immigrants are discriminated or they have different characteristics when compared to natives. When we regress participation on the

independent variables for immigrants we see that came year, country of birth-other and marital status are not significant (table 4).

Table 4 Output of Female Immigrants

Participation	Coeffiecient	Std. Error	t	P>|t|	lower bound	upper bound
Cameyear	0	0.001	-0.07	0.943	-0.002	0.002
Cryo7						
Eastern Europe	0.003	0.054	0.060	0.949	-0.102	0.109
South-East Asia	0.022	0.055	0.390	0.693	-0.086	0.129
Middle East	-0.097	0.069	-1.400	0.160	-0.233	0.038
Africa	0.016	0.051	0.300	0.762	0.085	0.117
North America	-0.061	0.073	-0.840	0.402	-0.205	0.082
Caribbean	0.06	0.074	0.800	0.421	-0.086	0.205
South America	0.028	0.104	0.270	0.787	-0.176	0.232
Far East	0.026	0.158	0.160	0.827	-0.285	0.336
Central America	0.41	0.300	1.370	0.172	-0.179	0.998
Oceania	0.15	0.104	1.450	0.147	-0.053	0.354
Religion						
Buddhist	0.567	0.089	0.630	0.526	-0.119	0.232
Hindu	0.059	0.054	1.100	0.271	-0.046	0.164
Jewish	-0.022	0.113	-0.200	0.845	-0.243	0.199
Muslim	**-0.248**	**0.042**	**-5.970**	**0.000**	**-0.330**	**-0.166**
Sikh	-0.709	0.086	-0.820	0.411	-0.240	0.098
Any other religion	-0.097	0.080	-1.200	0.229	-0.254	0.061
hdpch4	**-0.117**	**0.024**	**-4.890**	**0.000**	**-0.166**	**-0.071**
hdc515	-0.028	0.014	-1.900	0.057	-0.056	0.001
Marsta						
Married living with husband	-0.021	0.040	-0.520	0.600	-0.100	0.058
Married separated with husband	0.045	0.060	0.760	0.448	-0.072	0.162
Divorced	0.030	0.052	0.580	0.561	-0.071	0.131
Widowed	-0.061	0.071	-0.860	0.392	-0.200	0.078
Civil partner	0.231	0.303	0.760	0.446	-0.363	0.824
Separated civil partner	-0.270	0.301	-0.900	0.369	-0.860	0.320
Hiqual8d						
Higher Education	-0.747	-1.420	-1.420	0.157	-0.178	0.029
GCE A level or equivalent	**-0.104**	**-1.940**	**-1.940**	**0.053**	**-0.209**	**0.001**
GCSE grades A-C or equivalent	**-0.107**	**-2.170**	**-2.170**	**0.030**	**-0.204**	**-0.010**
Other qualification	**-0.226**	**-5.810**	**-5.810**	**0.000**	**-0.302**	**-0.149**
No qualification	**-0.375**	**-8.740**	**-8.740**	**0.000**	**-0.459**	**-0.291**
Healim	**-0.147**	**-5.400**	**-5.400**	**0.000**	**-0.200**	**-0.093**
Age	**-0.007**	**-3.930**	**-3.930**	**0.000**	**-0.009**	**-0.003**
Employed	**0.086**	**2.740**	**2.740**	**0.006**	**0.024**	**0.147**
Constant	1.327	0.610	0.610	0.544	-2.966	5.620

Religion is significant when female immigrant is Muslim. This means compared to a Christian female immigrant, a Muslim female immigrant is 24.8% less likely to participate in the labor market. As I have said earlier culture cannot be measured. So to control for this the variables country of birth-other and religion was used. Country of birth-other is not significant but religion is. So we can conclude that culture indeed has an effect on the decision to participate for female immigrants.

The number of children aged 4 years or less also has a significant negative effect on the participation rate of female immigrants. When children in household aged 4 years or less increases with one unit, female immigrants labor force participation drops with 11.7%.

When we look at the variable education, we see that the participation rate of female immigrants with higher degree is the same as that of female immigrants with degree or equivalent. It becomes interesting when we look at females with GCE A level or equivalent, GCE grades A-C or equivalent and females with other or no qualification at all. Theses 4 groups are less likely to participate in the labor market compared to a female immigrant with degree or equivalent. The coefficient becomes more negative as we move on from a degree to no education at all. The problem is not the willingness to find a job even if educated. With less education it just becomes difficult to find a job. So here we see that education really is important if a female immigrant wants to participate in the labor market.

When health problems limit activity the participation rate of female immigrants also drop with 14.7%. Also when the age of a female immigrant increases with one unit we see that the participation rate drops with 0.7%. This effect is really small. For the variable employed we expected a negative effect of it on the participation rate. Surprisingly, we see that as more people are employed in the household the participation rate of female immigrant increases with 8.6%.

When we do the same regression analysis for native females leaving out the variables came year and country of birth-other we find different results (table 5).

Table 5 Output of Female Natives

Participation	Coeffiecient	Std. Error	t	P>|t|	lower bound	upper bound
Religion						
Buddhist	**-0.187**	**0.094**	**-1.990**	**0.047**	**-0.372**	**-0.003**
Hindu	-0.026	0.094	-0.280	0.780	-0.211	0.158
Jewish	**-0.179**	**0.067**	**-2.670**	**0.008**	**-0.310**	**-0.048**
Muslim	**-0.136**	**0.046**	**-2.960**	**0.003**	**-0.226**	**-0.046**
Sikh	0.115	0.083	1.380	0.167	-0.048	0.278
Any other religion	0.020	0.036	0.550	0.581	-0.509	0.091
hdpch4	**-0.138**	**0.013**	**-10.520**	**0.000**	**-0.163**	**-0.112**
hdc515	0.001	0.007	0.160	0.837	-0.012	0.014
Marsta						
Married living with husband	**0.035**	**0.015**	**2.350**	**0.019**	**0.006**	**0.065**
Married separated with husband	**0.093**	**0.028**	**3.360**	**0.001**	**0.039**	**0.147**
Divorced	**0.110**	**0.018**	**6.160**	**0.000**	**0.075**	**0.145**
Widowed	0.017	0.028	0.600	0.551	-0.038	0.071
Civil partner	**0.284**	**0.105**	**2.700**	**0.007**	**0.078**	**0.491**
Separated civil partner	0.010	0.249	0.040	0.967	-0.478	0.498
Hiqual8d						
Higher Education	-0.034	0.018	-1.890	0.059	-0.069	0.001
GCE A level or equivalent	**-0.109**	**0.016**	**-6.770**	**0.000**	**-0.141**	**-0.078**
GCSE grades A-C or equivalent	**-0.138**	**0.015**	**-9.240**	**0.000**	**-0.167**	**-0.108**
Other qualification	**-0.219**	**0.018**	**-11.960**	**0.000**	**-0.255**	**-0.183**
No qualification	**-0.419**	**0.017**	**-24.820**	**0.000**	**-0.452**	**-0.386**
Healim	**-0.168**	**0.009**	**-17.660**	**0.000**	**-0.186**	**-0.149**
Age	**-0.005**	**0.001**	**-10.070**	**0.000**	**-0.006**	**-0.004**
Employed	**0.202**	**0.011**	**18.460**	**0.000**	**0.181**	**0.333**
Constant	0.982	0.026	38.240	0.000	0.932	1.003

For religion we see that the participation rate of native females that are Buddhist, Jewish and Muslim is lower than the participation rate of Christians.

For the variable number of children in household aged 4 years or less the same results have been found. This variable affects the participation rate of immigrants and natives negatively, only the coefficients differ. When children in household aged 4 years or less increases with one unit, female participation rate drops with 13.8%.

For immigrants we saw that the marital status was not significant. For native females this variable is positively significant. Females that are married living with husband, married separated from husband, divorced or have a civil partner are more likely to work compared with female natives that are single and have never been married.

For education we see a significant negative effect. Females with GCE A level or equivalent, GCSE grades A-C or equivalent, other qualification or no qualification at all are less likely to work compared with females that have a degree or equivalent.

For the variables health, age and employed the same results have been found as for immigrants, but with different coefficients. When health problems increase the participation rate falls with 16.8%. When age increases with one year, participation rate decreases with 0.5% (not a huge effect). The participation rate of native females increases when more people in the household are employed. Same effect as we saw for the immigrants.

Above we saw which variables affect the decision to participate in the labor market for immigrants as well as for natives. But we want to know what the reason is for the difference between the participation rates of immigrants and natives.

When we look at table 6 (in the appendix), we see that 28.5% of female immigrants are Muslims, 24.8% have children aged 4 years or less and 52.1% of female immigrants have another or no qualification at all. We found some interesting evidence. Immigrant women are less likely to work because the majority of immigrant women consist of Muslims, have small children (pre-school children) at home and are less educated. These were very interesting results because these 3 variables cause the lower participation rate among female immigrants.

When we correct (control) for characteristics, we see that the participation rate of female immigrants changes (table 7).

Table 7 Control for Characteristics

Participation	Coeffiecient	Std. Error	t	P>|t|	lower bound	upper bound
Religion						
Buddhist	-0.051	0.063	-0.800	0.423	-0.175	0.074
Hindu	0.054	0.042	1.280	0.200	-0.029	0.136
Jewish	**-0.150**	**0.057**	**-2.610**	**0.009**	**-0.262**	**-0.037**
Muslim	**-0.212**	**0.025**	**-8.320**	**0.000**	**-0.262**	**-0.162**
Sikh	0.010	0.058	0.180	0.858	-0.104	0.125
Any other religion	-0.002	0.033	-0.070	0.945	-0.067	0.062
hdpch4	**-0.134**	**0.012**	**-11.690**	**0.000**	**-0.157**	**-0.112**
hdc515	-0.004	0.006	-0.650	0.517	-0.016	0.008
Marsta						
Married living with husband	**0.029**	**0.014**	**2.090**	**0.036**	**0.002**	**0.057**
Married separated with husband	**0.091**	**0.025**	**3.670**	**0.000**	**0.042**	**0.140**
Divorced	**0.101**	**0.017**	**6.010**	**0.000**	**0.068**	**0.134**
Widowed	0.007	0.026	0.290	0.772	-0.043	0.058
Civil partner	**0.282**	**0.099**	**2.840**	**0.005**	**0.087**	**0.476**
Separated civil partner	-0.082	0.193	-0.420	0.671	-0.459	0.296
Hiqual8d						
Higher Education	**-0.036**	**0.017**	**-2.170**	**0.03**	**-0.069**	**-0.003**
GCE A level or rquivalent	**-0.109**	**0.015**	**-7.120**	**0.000**	**-0.139**	**-0.071**
GCSE grades A-C or equivalent	**-0.136**	**0.014**	**-9.650**	**0.000**	**-0.164**	**-0.108**
Other qualification	**-0.227**	**0.016**	**-13.760**	**0.000**	**-0.259**	**-0.194**
No qualification	**-0.417**	**0.016**	**-26.650**	**0.000**	**-0.448**	**-0.386**
Healim	**-0.166**	**0.009**	**-18.530**	**0.000**	**-0.183**	**-0.148**
Age	**-0.005**	**0.000**	**-10.980**	**0.000**	**-0.006**	**-0.004**
Employed	**0.191**	**0.010**	**18.570**	**0.000**	**0.171**	**0.212**
Immigrant	**0.035**	**0.017**	**2.090**	**0.036**	**0.002**	**0.067**
Constant	0.997	0.024	41.540	0.000	0.950	1.044

In the beginning female immigrants were 7.1% less likely to participate in the labor market. Now they are 3.5% more likely to participate compared to native females. This is a regression on the whole sample. Because we see that after controlling for characteristics the immigrant participation has become positive we can conclude that there is no discrimination factor that explains the difference in participation rates between immigrant and native females. Difference in characteristics is the explaining factor. The most important characteristics that differ between female immigrants and natives are religion, the number of children aged 4 years or less and education. Female immigrants that are Jewish and Muslim are less likely to participate compared to female immigrants that are Christian. Jewish females are 15% less likely to participate and Muslim females are 21.2% less likely to participate in the labor force. Female Immigrants with children aged 4 years or less are 13.4% less likely to participate in the labor market. Females with higher education are 3.6% less likely to participate; females with no qualification at all are 41.7% less likely to participate compared with females that have a degree or equivalent. Here we see that the coefficient becomes more negative when we move from degree to no qualification at all. In this table we also see that the marital status that was not significant for female immigrants becomes significant. Female immigrants that are married living with husband, married separated from husband, divorced and have a civil partner are more likely to participate in the labor force. These are the same results as for native females.

Conclusion

The labor force participation rate of female immigrants is lower than the labor force participation rate of native females in the United Kingdom. This could be due to difference in characteristics or due to an alternative factor namely discrimination. To find out which one is the explaining factor regression analysis has been done with participation as dependent variable and culture, year of first arrival in UK (came year), marital status, educational level, health, age, number of people in household employed, number of children in household aged 4 years or less and number of children in household aged between 5 and 15 years, as independent variables. 2 control variables namely country of birth-other and religion has been used to control for culture, because this is not measurable. At first we saw that female immigrants were 7.1% less likely to participate in the labor market. After controlling for characteristics they are 3.5% more likely to participate in the labor market. The most important variables were religion, number of children in household aged 4 years or less and education. 28.5% of female immigrants are Muslims, 24.8% have children aged 4 years or less and 52.1% of female immigrants have another or no qualification at all. These 3 variables caused the lower participation rate among female immigrants. The other significant variables for immigrants were health, age and number of people in household employed. When health problem limit activity the participation rate drops. However, these results must be interpreted carefully. People that are inactive are more likely to say that they have health problems compared to people that are active (in employment or ILO unemployed). When we look at the age we see that this has a small negative effect. This is understandable because as the age increases people will tend to work less than in younger ages. The number of people in household employed had a positive effect. There can be many causes for this positive effect. The willingness to work (be active) even if someone else in the household is working is one of them. People also want to work just to be active. Then income is not the main explaining factor. For native females we saw that the marital status also was positively significant. This can also be explained by the willingness to work for females that are married and living with husband and for females that have a civil partner. For females that are divorced or married and separated from husband it is important to work because they have no other option. They cannot rely on a husband or partner that is working.

The problem of less educated female immigrants can be solved. The government can stimulate female immigrants that are less educated to upgrade their educational level and skills. On religion and the number of children it is difficult to give policy advice. If suggestions are given to subsidize for childcare costs this has to be done for everyone and the gap still remains between labor force participation rates of immigrants and natives. Maybe it will be better to not allow immigrants into the country that have such characteristics. But this again causes many problems because it is impossible to implement such strict rules for immigrants.

Further suggestions for research are to estimate the proper effect of income on the decision to participate. We could not estimate the impact of wages (income) properly. This was not possible because of the limited data. No information on income was provided because this is seen as confidential and private. It could also be interesting to know what impact childcare cost has on the labor force participation rate. Especially, for females with children aged 4 years or less. This was not possible to determine as for the lack of childcare cost data. One last important suggestion is to estimate the impact of language. There was no data available on English language. Female immigrants that don't speak proper English may also find it hard to participate in the labor force.

References

- Bell, B. (1997). The performance of immigrants in the United Kingdom: Evidence from GHS. *The Economic Journal , 107*, 333-344.

- Duleep, H., & Sanders, S. (1993). The Decision to Work by Married Immigrant Women. *Industrial and Labor Relations Review , 46*, 677-690.

- Dustmann, C., & Faber, F. (2005). Immigrants in the British Labour Market. *Institute for Fiscal Studies , 26*, 423-470.

- Dustmann, C., Fabbri, F., Preston, I., & Wadsworth, J. (2003). *Labour market performance of immigrants in the UK labour market.* London: Home office Online Reports 05/03.

- Fernández, R. (2011). Does Culture matter? . In J. Benhabib, M. Jackson, & A. Bisin, *Handbook of Social Economics* (pp. 481-510). Elsevier.

- Heather, E., Layard, J., & Owen, S. (1985). Why are more women working in Britain? . *Journal of Labor Economics , 3*, 147-176.

- Molho, I., & Elias, P. (1984). A study of regional trends in the labour force participation of married women in the UK, 1968-1977. *Applied Economics , 16*, 163-173.

- Psacharopoulos, G., & Tzannatos, Z. (1989). Female labour force participation: An international perspective. *The World Bank Research Observer , 4* (2), 187-201.

Appendix

Table 6 Descriptive Statistics for Female Immigrants

Variable	Obs	Mean	Std. Dev.	Min	Max
Participation	1088	0,532	0,499	0	1
Religion					
Buddhist	1088	0,024	0,153	0	1
Hindu	1088	0,088	0,284	0	1
Jewish	1088	0,014	0,117	0	1
Muslim	1088	0,285	0,452	0	1
Sikh	1088	0,027	0,161	0	1
Any other religion	1088	0,028	0,164	0	1
hdpch4	1088	0,248	0,575	0	4
hdc515	1088	0,635	0,975	0	5
Marsta					
Married living with husband	1088	0,572	0,495	0	1
Married separated with husband	1088	0,072	0,258	0	1
Divorced	1088	0,115	0,319	0	1
Widowed	1088	0,054	0,227	0	1
Civil partner	1088	0,002	0,043	0	1
Separated civil partner	1088	0,002	0,043	0	1
Hiqual8d					
Higher Education	1088	0,090	0,286	0	1
GCE A level or rquivalent	1088	0,083	0,276	0	1
GCSE grades A-C or equivalent	1088	0,109	0,312	0	1
Other qualification	1088	0,300	0,458	0	1
No qualification	1088	0,221	0,414	0	1
healim	1088	0,596	0,491	0	1
Age	1088	45,938	11,576	16	64
Employed	1088	0,496	0,462	0	2

Table 8 Descriptive Statistics for Native Females

Variable	Obs	Mean	Std. Dev.	Min	Max
Participation	8876	0,603	0,489	0	1
Religion					
Buddhist	8876	0,002	0,049	0	1
Hindu	8876	0,002	0,049	0	1
Jewish	8876	0,005	0,069	0	1
Muslim	8876	0,010	0,101	0	1
Sikh	8876	0,003	0,055	0	1
Any other religion	8876	0,016	0,127	0	1
hdpch4	8876	0,105	0,369	0	3
hdc515	8876	0,366	0,745	0	6
Marsta					
Married living with husband	8876	0,546	0,498	0	1
Married separated with husband	8876	0,034	0,181	0	1
Divorced	8876	0,135	0,342	0	1
Widowed	8876	0,037	0,189	0	1
Civil partner	8876	0,002	0,044	0	1
Separated civil partner	8876	0,000	0,018	0	1
Hiqual8d					
Higher Education	8876	0,122	0,327	0	1
GCE A level or rquivalent	8876	0,177	0,382	0	1
GCSE grades A-C or equivalent	8876	0,269	0,443	0	1
Other qualification	8876	0,111	0,314	0	1
No qualification	8876	0,173	0,3779	0	1
healim	8876	0,590	0,4918	0	1
Age	8876	47,175	12,945	16	64
Employed	8876	0,538	0,475	0	2

Table 9 All variables included in regression analysis

Variable Description
Participation: 0 if inactive; 1 if in employment or ILO unemployed
Religion: Religion of respondent
Cryo7: Country of birth-other
Came year: Year of first arrival in UK
Marsta: Marital status
hiqual8d: highest qualification held (educational level)
healim: whether health problems limit activity
Age: age of respondent
Employed: number of people employed in household/total number of people in household
hdpch4: number of children in household aged 4 years or less
hdc515: number of children in household between 5 and 15 years