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Swedish labour market and the free movement of labour

Examining the impact of EU/EES immigration on labour market outcomes in Swedish municipalities

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Abstract

Ever since Sweden decided to join the EU in 1995 the debate regarding effects of the free movement of labour has been discussed. This discussion intensified when the union were faced with its largest expansion, to date, in 2004. Not only were ten new countries becoming members, and thus allowed to use the right of free movement of labour, but most of these were geographically close to Sweden and at the same time they were significantly poorer. This caused scholars, politicians and trade unions to raise a flag of warning that this would be unfavourable to the Swedish labour market. This study aims to examine how the Swedish labour market actually reacts to immigration from the EU/EES countries. By regressing the effects of percentage EU/EES immigrants in a municipality on average yearly wages and unemployment the effects of the free movement of labour will be assessed. The report concludes that the labour market is not negatively affected by EU/EES immigration, on the contrary it shows positive effect on total and female employment.

Keywords: EU, free movement of labour, immigration, labour market, Sweden

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1. Introduction

1.1 Background

In 2004 the EU expanded massively to include ten new countries, mostly from Eastern Europe, and this generated controversy in the other member states. Over the course of EU's history it has grown at a steady pace with a few new countries every time it expanded and new members had tended to be more similar to other members socially and economically (EU-upplysningen, 2014). This time the expansion was large and were to include countries that had a GDP per capita of only between 15 and 55 percent of the Swedish and had been part of the Soviet Union just over a decade ago (Lundborg, 1998).

Since this expansion was highly debated the EU agreed on letting the members choose if they wanted to impose transitional arrangement on the free movement of labour or not. The members who opted for enforcing them got up to seven years when they were allowed to for example demand work permits for citizens from the new member states (European Commission, 2011). They were not however allowed to restrict travel between themselves and the new members.

Many states chose to implement some kind of restriction on workers from new member states but Sweden was not one of them, along with the United Kingdom and Ireland (Euractive, 2004). This decision was not taken lightly, as a matter of fact the prime minister at the time Göran Persson wanted to enforce restrictions but was overruled by the parliament. The prime minister warned about "social tourism", less power to the unions and lower wages (Carlbom, 2004).

These fears are still raised in the political discourse today by the political left and the far-right populists. Fears from the left are raised by labour unions and the Social Democratic Party both state that firms and workers from EU member states, which have lower wages and social security than Sweden, generate a downward pressure on wages in certain sectors and weakens the social rights for workers (Erikson, 2011; Socialdemokraterna, n.d). The Swedish Democrats have similar arguments but also highlight their view that workers from other countries in the EU differ from native Swedes which, according to them, would result in a worse work environment for natives (Sverigedemokraterna, 2013).

There are certain trade unions which have been louder in their fear of negative effects for their members when the new EU member states were introduced than others. Two of these sceptical voices (who till this day are raising these concerns) were the trade unions for construction (Byggnads) and transports (Transportarbetareförbundet) (Christensen, 2004; Öster, 2013). These two industry sectors are both highly dominated by male workers which could indicate

that male intensive (Statistics Sweden, 2010) industries are more concerned with the free movement of labour than female dominated industries and what it could possibly mean for the male dominated sectors in the Swedish labour market.

1.2 Problem definition

Given the amount of controversy the expansion generated when it was being enforced and still does today I want to examine how immigration from the EU member states actually do affect wages and unemployment in Sweden. This gives the aim of this essay.

To:

- Study the effect on wage development in Sweden's municipalities by immigration from EU/EES countries.
- Study the effect on employment in Sweden's municipalities by immigration from EU/EES countries.
- Study the effects on male and female wages and employment development in Sweden's municipalities by immigration from EU/EES countries.

Municipalities differ from each other in many aspects and one of these is the amount of immigrants from EU/EES members residing in them. This difference should result in wage or unemployment disparities between municipalities if it is true that immigration from EU/EES countries have a downward pressure on wages and employment. This study wish to dissect this issue and see if any statistical significance of this immigration can be found either in the population as a whole or divided by gender. The division by gender is of interest to the study since males and females tend to work in different sectors and under different circumstances. Since the unions with a high degree of male members have been some of the loudest opponents to the free movement of labour it could be that these sectors are affected differently than those with a high degree of female workers.

1.3 Method

This study will empirically test the effect of EU/EES immigration based on data collected from different Swedish institutions. The data will be on the municipal level to get a good view of the different geographical and demographical regions in Sweden. Using econometrical regressions with control variables I wish to distinguish the effect of EU/EES immigration from the general differences which can be found between different municipalities. The statistical program I will be using is STATA which I deem appropriate for this study.

1.3.1 Limitations

Given restrictions in both time and resources I have not been able to include all the control variables that I wanted such as EU/EES immigrants sorted by educational level or unemployment levels in natives and immigrants separately. In most cases I have been limited to the data available on Statistics Sweden's webpage, although I have also used data from the national employment agency and Statnord.

To get as good a comparison between municipalities as possible I wanted data that was in percentage or per capita form. This to eliminate the distortion, that otherwise would appear, which was only due to differences in municipality size. However this was not always available on the specific data that was used. To get around this issue I created this data level myself by using the closest estimate of population I could find from Statistics Sweden's census database for every year of interest. I am aware this might not always correspond to the population data which Statistics Sweden used when producing the data. Nevertheless I consider these estimation errors to not be significant since the same population data and other variable data was used equally in all municipalities.

Insufficient data also made me restrict the dependent variable on income to yearly average income from labour. If data had been available I would also control if immigration had effect on monthly wages. Additionally I would want to divide wages into industry groups (such as public sector, agriculture, manufacturing, building and so on). Doing such a division would have let me control if EU/EES immigration had a negative effect on wages (and unemployment) in certain industries and positive in others. If this is the case these effects might and therefore not show in my study.

An additional limitation due to lack of data was the time frame I could use. Data on immigration from EU/EES countries by receiving municipality was only gathered by Statnord during the years 2006 to 2010. Although this time period does fit to my analysis, since the enlargement of EU took place 2004, the study will cover the period with increased availability to Sweden by citizens from the new member states. It would nevertheless have been better if data on the years 2011 to 2013 was available, this since all other variables included in the study had data for the entire time period.

One control variable, GDP per capita by municipality, was only available for the year 2012. After considerable effort to get hold of the data for the missing years I understood that this data were something Statistics Sweden wants to be compensated to produce, which my limited resources did not allow. To still be able to control for economic size I used the growth rate for

all of Sweden on the data from 2012 and created an estimate GDP per capita by municipality for the missing years. This works well in half of my regressions but leads to the variable being omitted when controlling for time fixed effects, this because the growth rate is the same for all municipalities.

1.4 Disposition

To introduce the reader to the subject the essay begins with a brief background to the enlargement of the EU and how it was viewed in Sweden at the time and how the free movement of labour still is perceived as a problem by some. This is followed by; problem definition, a short methodology description (more on methodology in chapter 4) and an examination of the limitations of the essay, all in chapter 1. Chapter 2 is dedicated to reviewing the theory concerning labour markets and immigration. It is divided into sections concerning different aspects of the labour market: the general equilibrium, immigrations short run effects, the long run effects and the unionized Swedish labour market.

Moving to chapter 3 I go through some of the international research that has been done on the issue and also the previous work on the effects of immigration on the Swedish labour market. In chapter 4 the methodology will be thoroughly reviewed and I will report on my data collection and the way my econometric analysis is structured.

All results from the econometrical analysis will be examined in chapter 5. It will first cover the regression results for the total population and later the male and female population separately. The results will be discussed in chapter 6 and concluding remarks will be found in chapter 7. A list of all sources cited in the report follows and it is divided into categories by what kind of literature the source was. All tables and test can be viewed and scrutinized in the appendix which is the final pages of the report.

2. Theory

2.1 Basic supply and demand theory

In order to understand how inflow of EU/EES immigrants to the Swedish labour market might affect the prevailing wage and employment rates understanding the underlying mechanics of the market is of importance.

Theories regarding labour supply is usually based on the individual choice; will a worker supply labour at a certain wage or not. Putting it differently they choose either to be able to spend money on consumption or enjoying leisure (and thus not earning money). These choices are individual and how a certain person values consumption and leisure makes for different work-leisure decisions. Since working drives up value of leisure, workers will demand higher wages as their working hour increases. This indicates that the labour supply curve will be upwards sloping. Adding up all individual supply curves gives the entire markets labour supply curve (Borgas, 2013, pp. 147-153).

The same line of reasoning holds for companies labour demand curve. All companies strive to maximize their profit by producing output and selling it at the current price, to do this they need labour which demand higher wages as working hours increases. Resulting in a downward sloping demand of labour for companies, demanding more workers when wages are low and less as wages increases.

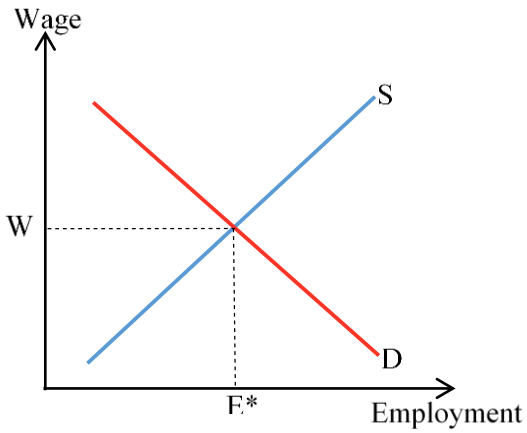

Figure 1: Simple labour supply and demand curve

As the figure 1 shows equilibrium is reached on the market where the supply (S) and demand (D) curves intersect. At wage level W* companies on the market will hire E* workers.

In this very simple model we assume perfect competition and that every worker who wish to work at the prevailing wage rate are allowed to do so (there is only voluntary unemployment).

Simply put, workers are in this case paid their marginal productivity and neither they nor the employers make unfair profit.

Reason suggests that the Swedish labour market might not be characterized by perfect competition and thus the simple theory would not be applicable. We can however assume that, since Sweden is a small open economy in a global market, companies will be price takers which will lead to a situation very close to the case of perfect competition (Lundmark, 2010).

2.2 Immigration effect on labour supply in the short run

Given the previous assumption the simple model of supply and demand is representative for the Swedish labour market. Adding migration to this model illustrates how the market, presumably, will act when faced with an influx of immigrants.

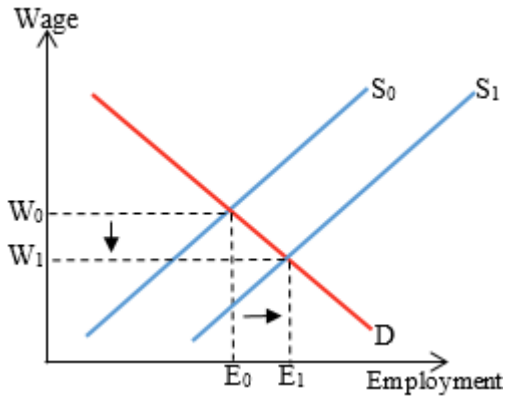

Figure 2: Perfect substitutes to natives - short run

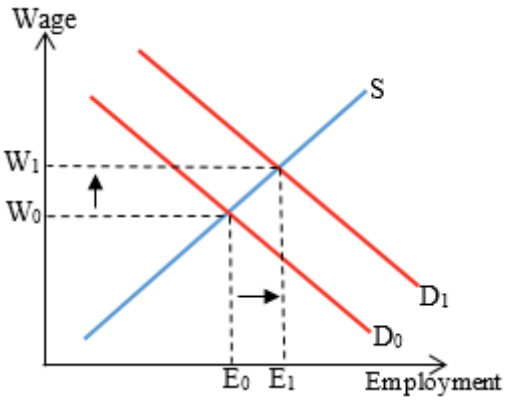

Figure 3: Complements to natives – short run

The graphs above shows two different cases where immigrants enter the labour market. Figure 2 shows the case where the immigrant group can be seen as substitutes, meaning that the immigrants and the natives are competing on the same market. It therefore follows that the supply curve shifts outward with an influx of immigrants and with that the overall employment

would rise but wages and native employment would fall, assuming that immigrants supply their labour at a wage rate lower than the country's prevailing rate (Borgas, 2013, p. 165).

If, on the other hand, immigrants are not seen as substitutes to natives but rather complements the illustration in figure 3 is most accurate. This entry of complementary labour to the market leads to a higher productivity in the native population and hence to an increased demand for native, and immigrant, labour. When demand for native workers rise both native employment and wage will rise.

As these two cases give contradictory outcomes for the native labour force, in the short run, it is not until the composition of both the immigrant and native labour force is know any predictions can be made. It is also quite likely the immigrant group is not either complete substitutes or complete complements but a mix of the two. The more the immigrant group can be seen as substitutes the bigger negative effects the native population will be faced with (Ruhs & Vargas-Silva, 2014).

2.2.1 Immigration and the long run labour market

The models above gives a theoretical view of how the labour market reacts to an immigration influx in the short run, where at least one of the factors of production is assumed to be fixed (Lundmark, 2010, p. 268). In the long run however all factors of production are adjustable. Firms can now alter their mix of inputs to maximize their profit under these new circumstances (Borgas, 2013, p. 167-168). Since immigrants, as well as natives, have a demand for goods and services the demand for these will increase which in the long run leads to increased investments (Ruhs & Vargas-Silva, 2014).

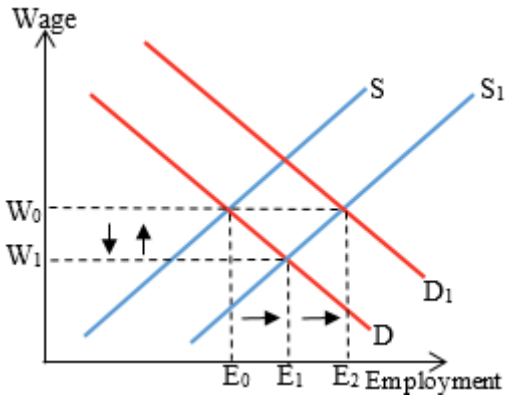

Figure 4: Perfect substitutes to natives - long run

As shown in the figure above the demand increases in the long run too even if the immigrants are perfect substitutes to the natives. This effect is due to both increased investments and demand created by the increased population and because firms have been able to fully utilize

the new cheaper labour (Ruhs & Vargas-Silva, 2014). It is however not certain how big the shifts will be in either direction, that will be given by the markets characteristics, but if the long run horizon is long enough both wages and native employment (W_0 and E_0) should return to their previous state (Borgas, 2013, p. 167-169).

2.3 Unionized labour force

In Sweden there is no minimum wage or other government regulations to protect workers from being exploited by employers, which separates the country from most other western economies. Instead everything regarding the labour market is decided between the two parties, the workers and the employers, through yearly negotiations (Kjellberg, 2000, p. 53-56). In these negotiations workers are represented by the major labour unions and the employers by central employee organizations (Fischer, 2006).

The two parties have opposing main interests; unions want to push up wages for their members, while keeping unemployment at an acceptable level, and the central employee organization want to lower wages to increase profit for the firms they represent (Westermark, 2008). In this simplified model the parties only negotiate over wages even tough in reality much more, such as benefits, pensions and working conditions, are included in the negotiations. These things are nevertheless beneficial for the union members and costly for the employer and can because of this be seen as included in the wages. Since both parties would lose if a strike or lock-out starts, income-loss for union members and profit-loss for firms, they have large incentives to agree on a wage and employment level (Ashenfelter & Johnson, 1969).

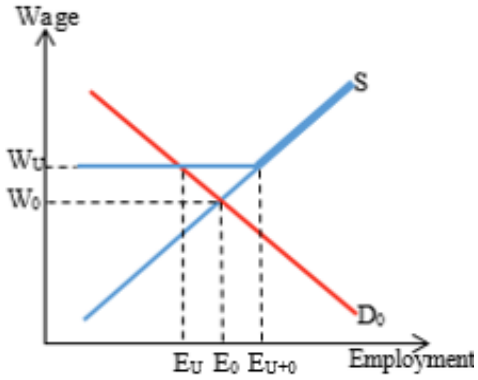

Figure 5: Labour market with inclusive trade union

Figure 5 shows how the equilibrium of the labour market changes when inclusive trade unions are introduced. Since trade unions want to improve the working situation for its members they push up wages, from W_0 to $W_.$ At this wage rate more individuals to want to provide labour but the demand has decreased which creates unemployment. E_{U+0} wishes to work at the wage set by the two parties but employers only wish to employ E_U workers (Oswald, 1985).

In Sweden the trade unions have been so strong and this model so extensively used that the government have deemed it inappropriate to intervene and set any national restrictions on things such as wages, benefits and working hours. The government have relied on all industries enforcing collective agreements prepared by the two parties on the labour market. This makes it plausible that the Swedish labour market might look more like figure 5 than the ones presented previously. However even if this is the case for the Swedish labour market the theories of labour market reactions to influx of immigrants remain viable, just adjusted to fit this unionized model.

If the immigrants are substitutes to native labour the labour supply will still shift as illustrated in figure 2. However a new question arises: will the new immigrants take jobs with collective agreement wages or will they find jobs where they can work at a lower wage? If they work according to the collective agreements general unemployment level will rise in the short run but then fall back to the level induced by the collective bargaining. If they find work on the other hand, or start firms themselves, which chooses not to follow the sectors collective agreement they underbid the native workforce creating more unemployment in the short run, again the long run effect is the same as expressed in figure 4. On the other hand if the immigrants are complements to the native labour force and demand increases in the short run wages will remain but unemployment will be reduced.

As discussed in section 1.1 of this paper many labour unions were afraid of the scenario that EU/EES immigrants would enter the Swedish labour market and disregard the collective agreements and hence underbidding the native work force or reducing the unions' power in the market. In this study it will be examined if the average income of workers (native and immigrant workers are all included in this measure) is negatively affected by EU/EES immigration. The study will also divide the population by gender and see if the trade unions on male dominant sectors have reason to be more worried than others, as they have been so far.

3. Previous research on immigration and the labour market

Empirical research on immigration and its effect on the labour market are extensive both internationally and in Sweden. This covers everything from wage outcomes to general fiscal effects. For this study the relevant research focuses on the micro level labour market outcomes, mainly wages and unemployment.

Inspiration for this study is mainly found in Swedish research, given that they have handled the specifics of the Swedish labour market, but a few international scholars have been reviewed as well. Christian Dustman and George J. Borjas have both written extensively on the micro economical aspect of immigration. Two papers, *The impact of immigration on the British labour market"* (2005) and *The effect of immigration along the distribution of Wages* (2008), written by Dustman (and co-writers) covers how immigrants to the UK affect wages and unemployment of natives. In the 2005 article he uses spatial correlation which means he looks at the relationship between immigration influx and native labour market outcomes. In the paper he also divides the immigrant and native labour force by their respective skill composition. The econometrical results of this study shows no significant results in the models which are stated to be the best fit.

In the 2008 paper he rather discusses the wage changes by immigration at different parts of the native wage distribution. The paper finds that there is a negative impact on wages in the lower part of the spectrum while it shows a positive impact for the higher and median wages. In the results the paper also look at effects on the average native wage and here the impact of immigration is significantly positive. They both give a good, detailed, review of the econometrical theory behind such analysis, which can be used in this study. Dustman's work is however more detailed than this study allows, see chapter 1.3.1 for further discussion on this.

Borjas work is far too comprehensive to cover in this limited study but some of his reports are essential to understand the field of labour immigration. In most of his work divides immigrant groups from natives and these groups are divided further by skill (both education and on the job training). However the basic concept of his theoretical framework can be applied on simpler analysis such as this. One article which uses a different approach than others such as Dustman and Åslund & Engdahl is *The labour demand curve is downward sloping: Reexaminating the impact of immigration on the labour market* (2003). Almost all of Borjas work uses the US labour market both in explaining theory and doing empirical studies. Since the American labour market differs from the European in general and from the Swedish in particular not too much should be read into his results even if the theory should be applicable on all labour markets.

The Borjas paper from 2003 uses the notion that workers with similar education but different experience cannot be seen as substitutes and that the composition of immigrant groups differ over time. Sometimes the influx of immigrants are mostly young with low levels of experience and others times they are older and thus have more experience. This study finds, unlike most others, a significantly negative effect on native wages due to immigration. These negative effects were largest for people without a full high school education and is barely present for college educated workers. This can be compared with Dustman (2008) which showed a negative effect of immigration in the lowest part of the wage distribution.

Swedish scholars who writes on this topic are not, in general, as empirical as the men discussed above. Most literature found regarding the Swedish labour market and immigration are based on a theoretical discussion, see Lundborg (1998) and Eriksson & Fölster (2014), which gives a good background for this study. Empirical research is harder to find but a good report which deals with a question close to the one dealt with in this paper is (Åslund & Engdahl, 2013). In this study the impact of EU enlargement on Swedish labour markets is investigated by comparing municipalities close to ports with ferry lines to the new EU states with municipalities further away. They assume that being a municipality with high proximity to these ferry lines should to a higher extent be exposed to immigration from the new members. The study looks at, like Dustman (2008), how different parts of the wage distribution are affected and if different industries are affected differently. The results are similar to the once previously discussed, showing a small negative impact in low wage sectors but no significance or a positive effect on high wage sectors. Even if Åslunds & Engdahl deals with the same issue, EU/ESS immigrants' effect on labour market, they limit their study differently. Regardless of this their method can be adapted and applied on this study and the results makes for an interesting comparison.

4. Methodology

Studying the effect of EU/EES immigration since 2004 on wages and unemployment in the whole Swedish labour market proved to be extremely difficult. This because there is no good control group available which shows how wages and unemployment would have developed in the country if increased immigration from EU/EES would not have taken place. Hence using data on all Swedish municipalities during the years 2006 to 2010 (or in some cases 2013, see chapter1.3.1) gives the best available variance of immigration volume both between municipalities and over time, panel data. This data will be studied to provide information on whether or not wages and unemployment varies along with the immigration volumes or not.

4.1 Data

The data that have been collected comes in all cases but two from Statistics Sweden, the exceptions are data on unemployment which is gathered from the employment agency and data on part EU/EES immigrants which is collected from Statnord.

All variables marked with an asterix (*), in the table below, have been modified by me. The variables are transformed to relative measures by dividing their value with the best suited census available. Variables with double asterix (**) will be used in logarithmic form in the regressions since it can be assumed that they are not linear. Why these specific variables are included in the regressions will be discussed in section 4.1.1.

Variable name	Variable definition
Percent EU/EES immigrants*	Percentage of the municipality's population who are citizens in any of the EU/EES countries, minus Norway and Denmark.
Average yearly income**	The average yearly income from labour in the municipality
Percent openly unemployed*	Percent of the working aged population (aged 20-69) openly unemployed. Openly unemployed is a measure from the Swedish employment agency and refers to the unemployed actively seeking employment and who are not in any labour market programs.
Percent with higher education**	Percent of the municipal population with a tertiary education (more education than upper secondary school).
Percent with lower education**	Percent of the municipal population with maximum upper secondary education.
Average age	Average age of the municipal population.
Income from capital**	Taxable yearly income from capital per capita in the municipalities.
Net value of municipal budget**	Yearly net result of the municipal budget.
Municipal tax rate	The municipal tax level.
Municipal population density**	Population density per square kilometre.
Percent foreign born citizens*	Percentage of foreign born citizens in the municipal population.
Equalizing payments, received/paid**	Data on if the municipality is receiving from or contributing money to other municipalities and to what extent. This being part of Sweden's national effort to reallocate resources between richer and poorer municipalities.
Average fertility rate	The average summarized fertility of women in the municipality. This number is an estimation by Statistics Sweden on the number of children women today are expected to give birth to over the course of their life.
Average age at birth of first child	Average age of the population when having first child.
Cost for a fulltime student in SFI**	Calculation of the cost for the municipalities per one full-time SFI, Swedish For Immigrants, pupil.
Estimated regional GDP/capita**	By using the municipal GDP per capita level for 2012 an estimation for all year have been calculated by using the GDP per capita growth rate for Sweden as a whole.
Percent foreign residents, -EU/EES*	Percent of residents in the municipality who are foreign citizens minus citizens from all EU/EES countries, except Norway and Denmark.

Table 1: Description of variables included

In most cases the denominator used in the modification was total municipal population in November of each year, acquired from Statistics Sweden. In two cases however different population statistics was used: for the variables percent EU/EES immigrants and percent openly unemployed. For the first variable the population data came from Statnord, where the immigration statistics was also gathered, and for unemployment the working aged population (20-69 years) were used and it was collected from Statistics Sweden. This might be a problem since the variables because of this modification might fail to perfectly describe reality. However given that these estimations have been calculated the same way for all municipalities the problem that they might not be completely authentic should not be significant.

4.2 Choice of variables

The dependent variables used in the following regressions will be the logarithmic value of average yearly income and percent of working age population openly unemployed, both measured by the given population specification. These were easily chosen since both the general discourse and economic theory sees these two variables as possibly changed by immigration.

In the study many control variables are included, this to measure the true effect of immigration in a municipality. They all have a specific purpose and might all be part of the explanation of the wage and/or unemployment divergence which prevails between municipalities. Including the control variables thus helps to avoid omitted variable bias, meaning that if an explanatory variable were left out this would be absorbed by the standard errors and give askew values on the other coefficients. For example a municipality with many highly educated residents can be assumed to have a higher average wage since more schooling usually leads to higher wages. If this variable were left out the results of the other variables would be faulty. Another example is the variable density which will control for differences due to a municipality being urban or more rural which also can be reasoned to affect both employment and average wages. Reasoning like this was applied for all the control variables used in the study.

4.2.1 Testing the variables

Considering that the control variables in the study have been manually chosen, because they are assumed to have a connection with the dependent variables, testing them for multicollinearity gives more robustness to the regressions. This is done using a VIF (Variance Inflation Factor) test which indicates how much the variance of each coefficient is inflated when compared to the perfect situation where the no correlation between any of the other variables exists (Verbeek, 2012, pp. 44-45). Many scholars say that using the general rule that a VIF-value higher than 10 is an indication that the variable suffers from unacceptable multicollinearity (UCLA: Statistical Consulting Group, n.d).

Y= Average yearly income	
Variable	**VIF**
Percent with higher education	41.9
Percent with lower education	37.11
Percent foreign born citizens	14.81
Percent foreign residents, -EU/EES	8.78
Municipal population density	7.78
Income from capital	4.67
Average age	4.08
Municipal taxrate	3.93
Percent openly unemployed	2.68
Equalizing payments, reicived/paid	1.95
Average age at birth of first child	1.92
Estimated regional GDP/capita	1.62
Percent EU/EES immigrants	1.57
Average fertility rate	1.41
Net value of municipal budget	1.22
Cost for a fulltime student in SFI	1.11
Year	
2007	2.03
2008	2.49
2009	2.3
2010	2.37

Table 2: VIF test result for all included variable – average yearly income

On account of the results presented in table 2 there are control variables which should be taken out of the equation to produce better regression results, they present an unreasonably high VIF values. First both the variables concerned with educational level, percent with higher education and percent with lower education, show very high VIF values. Logically part of population with higher and lower educational level are linked to each other and eliminating one of them still covers the educational level of the municipal population at the same time as it gives better regression results. Additionally one of the measurements on immigration, percent foreign born, exhibit too high a value and another variable concerned with immigration, percent foreign residents minus EU/EES, is also higher than optimal. Removing the latter, which have to a higher degree been modified, from the regression will enhance the result while leaving a good measure of immigrant population in the municipality. This test is done in the same manner on both the dependent variables, average wage as presented above and unemployment, on all three population categories, total- male- and female population, with similar results[1], all showing these variables with too high VIF values.

[1] The result of the VIF test is shown in appendix A.

Y= Average yearly income	
Variable	**VIF**
Municipal population density	7.45
Percent with higher education	4.67
Income from capital	4.42
Municipal taxrate	3.82
Average age	3.78
Percent foreign born citizens	3.44
Percent openly unemployed	2.48
Average age at birth of first child	1.91
Equalizing payments, reicived/paid	1.76
Percent EU/EES immigrants	1.57
Estimated regional GDP/capita	1.41
Average fertility rate	1.27
Net value of municipal budget	1.21
Cost for a fulltime student in SFI	1.1
Year	
2007	1.91
2008	2.24
2009	2.14
2010	2.06

Table 3: VIF test after removing multicollinear variables – average yearly income

In table 3 it is clear that removing the two variables gives satisfactory values for all included variables. As stated above this was also the case for the other test that were conducted. This leads to the conclusion that the variables in table 3 are not showing unacceptable multicollinearity and are therefore included in all following regressions. In section 5.2.1 of the study an OLS regression will still be run with all variables from table 2, this to show how the coefficients change when removing the multicollinear variables.

4.3 Econometric method

The goal of the study is to see if there is any significant effect from the variable of interest, part EU/EES immigrants of population, on either of the two dependent variables (described in the section above). To do this I follow the basic framework of Dustman, Fabbri and Preston (2005) and Åslund & Engdahl (2013) but with several modifications. Their work has focused on immigration by skill composition and certain regions respectively. In this study I choose to apply their econometrical framework on municipal variance.

The data set used in the study will for the most part be seen as a panel data set where municipalities are seen as heterogeneous entities which have individual characteristics. This means that over time municipalities' change differently and part of this difference is due not to changes in variables of the regression but to the specific characteristics of each municipality.

To distinguish between these two I will use fixed effects regressions that excludes the municipal heterogeneous effects[2]. However first a basic OLS regression will be executed which will give a base to compare the fixed effects results with. These results will show the relationship between the dependent and independent variables without taking into regard that the observations each year comes from the same municipality.

The basic regression model used looks like:

$$y_{jt} = \alpha + \beta_1 Z_{jt} + \beta_{2j} X_{jt} + \beta_{3t} \delta_t + \varepsilon_{ij} \quad (1)$$

where y_{jt} is the log average income or the percentage unemployment of the municipality *j* at time *t*; Z_{jt} the part EU/EES immigrants of the total municipality (*j*) population at a certain time (*t*); X_{jt} stand for all municipality specific control variables (see Table 1 for specification) at time *t*; δ_t is dummy variables for each year in the regression to cover time specific effects; and ε_{ij} is the time and municipal specific error term. This gives that the parameter β_2 is of most interest throughout the study since it tells us the effect that the part EU/EES immigrants has on the dependent variable.

The basic model above is what will be the base for all regressions in the study on and tests will be run to see which regression fits best and that version of the model will be of most importance. It will also be examined how the β_2 parameter changes when lagging the Z_{jt} variable (part EU/EES immigrants of total population in municipality) 1, 2 and 3 years when the dependent variable is log average yearly income. This because there is reason to assume that an influx of immigrants in year X will not affect wages that year, given the nature of wage negotiations and human expectations, but in year X+1, X+2 or X+3.

To control for the possibility that the effect of immigrants on the dependent variable might not be instantaneous I will run regressions which include the variable percent EU/EES immigrants with a one year lag. Also regressions which do not account for possible time fixed effects will be carried out. These regressions will follow the form:

$$y_{jt} = \alpha + \beta_1 Z_{jt} + \beta_2 Z_{j(t-1)} + \beta_{3j} X_{jt} + \beta_{4t} \delta_t + \varepsilon_{tj} \quad (2)$$

$$y_{jt} = \alpha + \beta_1 Z_{jt} + \beta_2 Z_{j(t-1)} + \beta_{3j} X_{jt} + \varepsilon_{tj} \quad (3)$$

Where (2) controls for time fixed effects and (3) does not.

[2] A Hausman test was preformed to confirm that a fixed effects model is more preferable than a random effects model. The output can be viewed in appendix A.

5. Results

5.1 Descriptive statistics

The study covers all 290 municipalities in Sweden and most variables have values for each year and for each municipality. To protect individual integrity Statistics Sweden do however report less than four individuals in any given variable for a municipality as a missing value. This might generate a small omission but given that they only exclude such small values, of under four observations per municipality, it should not impact the dependant variable to any great extent so therefore this can be overlooked.

Variable	Obs	Mean	Std. Dev.	Min	Max
Percent EU/EES immigrants	1450	0.001042	0.001244	0	0.013805
Average yearly income	2320	229.2165	33.14967	171.6	479.6
Percent openly unemployed	2320	0.033312	0.010469	0.0000308	0.073212

Table 4: Total population described

As table 4 shows the total percentage of EU/EES immigrants in the total population, in the municipalities, is not very large. The mean is around 0.1 percent, with an equally large standard deviation, but there are municipalities with both a larger and a smaller part of EU/EES immigrant population, described by the max- and minimum values. Since there only were data on immigrants in the years 2006-2010 the number of observations is smaller for this variable than the others. The table also shows that the average yearly wage is around 229 000 SEK with a relatively small standard deviation. Finally it shows that the percent (of working age population) is 3.3 percent with a standard deviation of 1 percent.

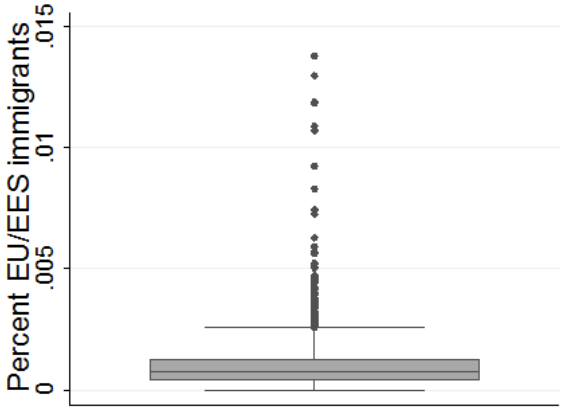

Figure 6: Boxplot of the variable of interest - total population

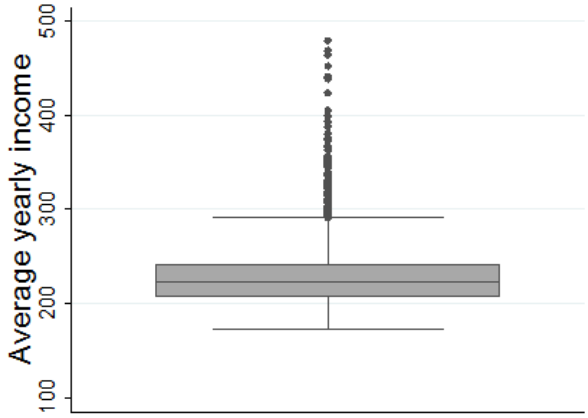

Figure 7: Boxplot of average yearly income – total population

In figure 6 the composition of percentage EU/EES immigrants in municipalities is shown. The variance is evenly distributed with, in regard to the large number of observations, few outliers. Also a municipality which in year 2006 have a large population EU/EES immigrant population, reported as an outlier in the figure, will most likely continue to be an outlier in the years to come. Leading to the fact that many outliers will be observations from the same municipality but for different years.

The wage dispersion between municipalities is also large when looking at the max- and minimum observations in table 4, yet the standard deviation is not large indicating that many individuals earn wages around the mean, this can be viewed in figure 7. The variance of the variable is evenly distributed around the mean with, as it was for percent EU/EES immigrants in figure 6, few outliers which can be assumed to a great extent be observations from the same municipality.

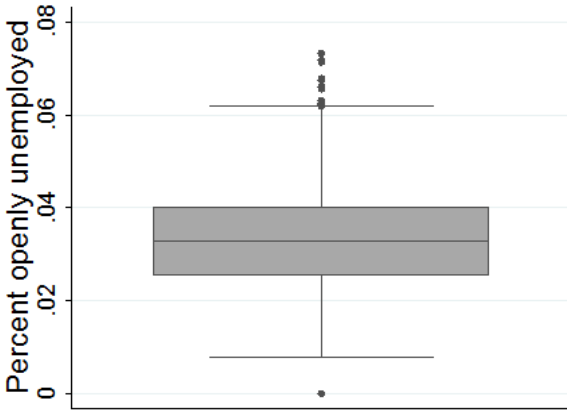

Figure 8: Boxplot of percent openly unemployed – total population

Regarding the unemployment level it averages around 3.3 percent, according to the way it is calculated in the study. This value differ from the number reported by the Swedish employment agency due to lack of data and is discussed at greater length in section 1.3.1. In figure 8 it can

be seen that this variable, as the others previously discussed, is evenly distributed around the mean. However small differences in unemployment have great implications for the population giving that this variable actually differs more between municipalities than shown by the illustration in the figure.

Variable	Obs	Mean	Std. Dev.	Min	Max
Percent EU/EES immigrants	1450	0.0010569	0.0013449	0	0.0156369
Average yearly income	2320	264.9732	43.7487	184.1	621.1
Percent openly unemployed	2320	0.0352492	0.0125437	0.0000197	0.0887255

Table 5: Male population described

Variable	Obs	Mean	Std. Dev.	Min	Max
Percent EU/EES immigrants	1450	0.0010273	0.0012149	0	0.0129926
Average yearly income	2320	194.397	24.81613	151.5	352.4
Percent openly unemployed	2320	0.0297854	0.0085563	0.0000429	0.0656019

Table 6: Female population described

Table 5 and 6 above is looking at the same statistics but divided by male and female population. It shows that the part EU/EES immigrants is similar between the two groups with the male immigrants being only a slightly bigger part of the male population than the female. This just indicates that the female population is larger than the male population on average in the municipalities, since the data on how many EU/EES immigrants there is in a municipality does not divide by gender only the census does. On the other hand there is a significant difference when looking at average yearly wages in the municipalities. The male population earn notably more on average than females do, around 50 000 SEK per year more on average. If we look at the municipality with highest average yearly income the difference is almost 300 000 SEK, which makes the male maximum average income almost twice as large as that of females. At the same time as males has a higher average yearly income they also have a higher level of unemployment, the difference being around 0.5 percent in favour for the female population. To see that the variables discussed present with similar distributions as for total population boxplots of these can be found in appendix B along with descriptive statistics of all variables included in the study.

5.2 Econometric results

5.2.1 OLS regressions

Presenting the base results for the regression following equation 1, from section 4.3, will give a good view of how the variables interact with each other and in what direction they seem to effect the dependent variable. These results will also be good to compare with later regressions, see how the coefficients change when the regressions change. All regressions in the study are

run with heteroskedasticity-robust standard errors, since there is presence of heteroskedasticity in the data[3].

VARIABLES	OLS using all variables	OLS without multicollinear variables
Percent EU/EES immigrants	-2.827	-2.784
	(1.725)	(1.767)
Percent with higher education	-0.105	1.006***
	(0.232)	(0.0794)
Percent with lower education	-1.148***	Omitted
	(0.226)	
Average age	-0.00531***	-0.00389***
	(0.00148)	(0.00146)
Cost for a fulltime student in SFI	0.00942***	0.00902***
	(0.00300)	(0.00307)
Equalizing payments, received/paid	0.00374*	0.00596***
	(0.00194)	(0.00189)
Municipal tax rate	-1.827***	-2.010***
	(0.344)	(0.348)
Income from capital	0.0120	0.0198**
	(0.00958)	(0.00955)
Municipal population density	0.0182***	0.0182***
	(0.00278)	(0.00279)
Average age at birth of first child	0.00484**	0.00427**
	(0.00204)	(0.00208)
Percent foreign born citizens	-0.171	-0.272***
	(0.127)	(0.0625)
Percent openly unemployed	-0.751***	-1.070***
	(0.267)	(0.263)
2007.Year	0.0397***	0.0313***
	(0.00706)	(0.00702)
2008.Year	0.0711***	0.0577***
	(0.00827)	(0.00803)
2009.Year	0.113***	0.104***
	(0.00738)	(0.00729)
2010.Year	0.117***	0.104***
	(0.00725)	(0.00693)
Constant	6.252***	5.437***
	(0.216)	(0.145)
R-squared	0.893	0.887

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Bold variable are in logarithmic form in regressions

Table 7: OLS regressions with income as dependent variable – total population

[3] Results of the *Modified Wald test for groupwise heteroskedasticity* test for total, male and female population can be viewed in appendix A.

In all following tables only significant variables and the variable of interest (Percentage EU/EES immigrants) and the lagged versions of that variable will be presented in the tables to save space. To view the full tables see appendix C.

In table 7 where average yearly income is the dependent variable both a regression which includes all variables and one with only variables which do not show multicollinearity are presented. Comparing these two regressions shows that the variables does not change substantially, a few grow in significance and some coefficients change slightly, when omitting the multicollinear variables. Given that the variables remain close to their previous values omitting the two variables cannot be seen as disturbing to the analysis. In neither of these regressions the coefficient of the variable of interest, percentage EU/EES immigrants, is significant. Increasing the percentage of EU/EES immigrants in a municipality will not significantly affect average yearly income.

VARIABLES	OLS using all variables	OLS without multicollinear variables
Percent EU/EES immigrants	-0.775***	-0.858***
	(0.289)	(0.297)
Percent with higher education	0.232***	0.0612***
	(0.0377)	(0.0152)
Percent with lower education	0.188***	Omitted
	(0.0381)	
Average age	0.00129***	0.000953***
	(0.000246)	(0.000245)
Estimated regional GDP/capita	-0.000478	0.00222*
	(0.00132)	(0.00127)
Equalizing payments, received/paid	0.000765**	0.000275
	(0.000325)	(0.000322)
Municipal tax rate	0.261***	0.264***
	(0.0584)	(0.0596)
Income from capital	-0.00874***	-0.0113***
	(0.00157)	(0.00154)
Municipal population density	0.000919*	0.00147***
	(0.000486)	(0.000486)
Percent foreign born citizens	0.120***	0.0776***
	(0.0206)	(0.0102)
Average yearly income	-0.0213***	-0.0306***
	(0.00755)	(0.00750)
Percent foreign residents, -EU/EES	-0.109***	Omitted
	(0.0370)	
2007.Year	-0.00573***	-0.00425***
	(0.00120)	(0.00120)
2008.Year	-0.00559***	-0.00315**
	(0.00147)	(0.00142)
2009.Year	0.00902***	0.0115***
	(0.00146)	(0.00137)
2010.Year	0.00324**	0.00554***
	(0.00150)	(0.00139)
Constant	-0.0900	0.0966**
	(0.0597)	(0.0480)
R-squared	0.633	0.609
Standard errors in parentheses		
*** p<0.01, ** p<0.05, * p<0.1		
Note: Bold variable are in logarithmic form in regressions		

Tabell 8: OLS regressions with unemployment as dependent variable – total population

Replacing the dependent variable with unemployment brings about slightly larger changes, when omitting the multicollinear variables, in the coefficients than before but they can still be seen as relatively similar and therefore omitting the variables is deemed acceptable. Again the variable of interest show a significant effect on the dependent variable. Although this time the negative coefficient does not imply a negative effect by having a large percentage EU/EES immigrant population since unemployment itself is regarded negative. That the variable of interest shows a negative effect on unemployment can therefore be assumed to influence

employment in a positive manner. In all coming regressions significantly negative coefficients, when the dependent variable is unemployment, will therefore be interpreted as positive for employment.

The same regressions has been executed for both the male and female population. This for the same reason as running them for total population, to see how the variables interact with each other and to create a base-line which can be used in comparison with later regressions. Since they change much in same manner as the coefficients in tables 7 and 8 the results are not presented here. To view them see appendix C.

5.2.2 Fixed effects regressions on total population

To control for municipal effects in the data, regressions with within-groups fixed effects will be run. This means that the regression is able to make out which observations are from the same municipality and controls for this unobserved effect. The regression does this by subtracting the mean values for all variables for each municipality from the data for that municipality (Dougherty, 2011, pp. 518-519). Since the regression can control for municipal specific effects these will not be included in the coefficients for the variables, hence producing more accurate estimates.

In table 9 below regression results, with average yearly income as dependent variable, are shown. There are 6 different regressions where the first three test for time fixed effects, the last three does not. Testing for time fixed effects is done by including dummy variables for all years used, except one to avoid multicollinearity. In STATA this is done by using the i.Year command which creates the necessary dummies automatically. In the table (1) and (4) are ordinary fixed effects regression with percentage EU/EES immigrants as the independent variable of interest, (2) and (5) show results from regressions with the variable of interest lagged a year and (3) and (6) which includes both the lagged and the non-lagged independent variable. To save space the tables below again only shows the variable(s) of interest and variables which in one, or more, of the regressions are significant, full tables can be found in appendix D. This will be the model for all coming regressions. The lag is placed on the independent variable of interest to see if it might affect the dependent variables after a year, not instantly. Meaning that if a municipality experience a large influx of EU/EES immigrants in year 1 it might not affect wages or unemployment that year but the year after. Reasons for this delay could be the central wage settings and low elasticity on the labour market.

Interpreting the coefficients it needs to be undedrstood that the effects they imply (if statistically significant) are only valid given that everything else is held constant. For example if a

coefficient shows a one percent increase in the dependent variable as the independent increases with one unit this is only true if all other control variables are held constant. Moving forward with interpreting the results in the study this will always be implied when discussing the effect of a coefficient. As can be seen in all following tables the variable estimated GDP per capita are omitted in all regressions controlling for time fixed effects. This happens due to the way that the estimation is designed, more on this in section 1.3.1.

Y= Average yearly income	**Total population**					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
	F.E	**F.E 1 year lag**	**F.E 1 year lag +**		**F.E 1 year**	**F.E 1 year**
	i.Municipal	**i.Municipal**	**no lag i.Municipal**	**F.E**	**lag**	**lag + no lag**
VARIABLES	**i.Year**	**i.Year**	**i.Year**	**i.Municipal**	**i.Municipal**	**i.Municipal**
Percent EU/EES immigrants	-0.259		-0.621	-0.408		-0.786
	(0.476)		(0.856)	(0.847)		(1.595)
1 year lag percecnt EU/EES immigrants		-0.0281	0.339		-0.275	-0.269
		(0.392)	(0.397)		(0.758)	(0.858)
Percent with higher education	0.215	0.195	0.00196	4.196***	3.556***	3.984***
	(0.297)	(0.361)	(0.426)	(0.373)	(0.378)	(0.477)
Average age	-0.00386	-0.00357	-0.00245	0.0321***	0.0310***	0.0389***
	(0.00320)	(0.00365)	(0.00397)	(0.00522)	(0.00495)	(0.00627)
Estimated regional GDP/capita	Omitted	Omitted	Omitted	0.0174	-0.0674*	-0.215***
				(0.0444)	(0.0361)	(0.0358)
Equalizing payments, received/paid	-0.00118	-0.000616	-0.00107	-0.00187	-0.00241*	-0.00380**
	(0.000775)	(0.000811)	(0.000847)	(0.00155)	(0.00126)	(0.00157)
Income from capital	-0.00218	-0.00282	-0.00133	0.0311***	0.0153***	0.0155***
	(0.00301)	(0.00276)	(0.00318)	(0.00502)	(0.00365)	(0.00448)
Municipal population density	-0.0614*	-0.0720*	-0.0844**	-0.0457	-0.127*	-0.104
	(0.0339)	(0.0382)	(0.0397)	(0.0820)	(0.0737)	(0.0862)
Percent foreign born citizens	-0.239	-0.150	-0.0307	1.248***	1.469***	1.932***
	(0.176)	(0.204)	(0.237)	(0.249)	(0.273)	(0.300)
Percent openly unemployed	-0.375***	-0.397***	-0.485***	0.00425	0.174	-0.254*
	(0.110)	(0.107)	(0.110)	(0.160)	(0.125)	(0.140)
2007.Year	0.0363***					
	(0.00209)					
2008.Year	0.0758***	0.0391***	0.0388***			
	(0.00350)	(0.00200)	(0.00214)			
2009.Year	0.106***	0.0694***	0.0706***			
	(0.00502)	(0.00513)	(0.00537)			
2010.Year	0.114***	0.0771***	0.0785***			
	(0.00683)	(0.00719)	(0.00787)			
2011.Year		0.107***				
		(0.00941)				
Constant	5.694***	5.810***	5.817***	3.040***	4.204***	4.449***
	(0.236)	(0.260)	(0.287)	(0.412)	(0.368)	(0.470)
R-squared	0.979	0.967	0.959	0.906	0.888	0.862
Standard errors in parentheses						
*** p<0.01, ** p<0.05, * p<0.1						
Note: Bold variable are in logarithmic form in regressions						

Table 9: Fixed effects regressions with income as dependent variable – total population

The table above shows that average income of the total population from labour is not significantly affected by an increased EU/EES immigrant population, not immediately nor a

year after when the variable is lagged. The coefficient for percent EU/EES immigrants does not change sign, it shows a negative effect in all regressions, but it is as stated never significant. When the variable is lagged however it does in one regression, (3), report a positive coefficient it is nevertheless still insignificant. Many of the control variables significantly affect the average wage in a municipality, both positively and negatively.

When including the time fixed effects, regressions (1), (2) and (3), it is strongly significant that having a large part of its population unemployed will negatively affect the average income from labour in a municipality. A one percentage point increase in unemployment will reduce the dependent variable by about 0.4 percent. This could be seen as contradictory to the underlying theory and will be discussed further in section 6. Population density also reports a negative effect in these regressions which would indicate that people in big cities earn less, on average, than people in sparsely populated municipalities. Intuitively this might seem strange since big companies often are located in urban areas. However there are many high earners who works in these companies in urban areas but reside in more rural regions which places their income in these municipalities, giving them a higher average earning.

One of the most influential variables in the regressions which do not control for year fixed effects is the part of the population who has higher education. If a municipality were to manage to increase this part of the population by one percent they would increase average wages with around four percentage points. Another observation from regressions (4), (5) and (6) is that the variable part foreign born citizens as part of population gives a coefficient of around 1. This could suggest that there is a significantly positive effect on average wages on municipalities that manages to attract many foreign citizens. Following the discourse from the background this could be seen as somewhat of a surprise. It could also be that foreign born citizens choose to immigrate to the municipalities which offer good economical outcomes (possibility for work and high wages).

Additionally both average age and income from capital have a significantly positive effect on average income in the regressions not controlling for year fixed effects. This is not surprising since wage increases with age (until individuals reach retirement age) and people investing in capital tend to earn a lot so that they can afford to make investments. If a municipality's average age and capital returns rises this should lead to an increase in wages which regressions (4), (5) and (6) confirms.

Y= Percentage openly unemployed	**Total population**					
VARIABLES	**(1) F.E i.Municipal i.Year**	**(2) F.E 1 year lag i.Municipal i.Year**	**(3) F.E 1 year lag + no lag i.Municipal i.Year**	**(4) F.E i.Municipal**	**(5) F.E 1 year lag i.Municipal**	**(6) F.E 1 year lag + no lag i.Municipal**
Percent EU/EES immigrants	-0.444*		-0.933*	-0.390		-0.680
	(0.256)		(0.473)	(0.313)		(0.611)
1 year lag percecnt EU/EES immigrants		-0.599*	-0.456		-0.265	-0.465
		(0.347)	(0.382)		(0.376)	(0.387)
Percent with higher education	0.0725	0.0848	0.205	0.951***	1.034***	1.291***
	(0.186)	(0.145)	(0.188)	(0.163)	(0.150)	(0.174)
Average age	0.000406	-0.00319	0.000313	0.00810***	0.00424*	0.00909***
	(0.00213)	(0.00220)	(0.00232)	(0.00226)	(0.00245)	(0.00252)
Cost for a fulltime student in SFI	0.000453	-0.000486	-0.000444	8.25e-05	-0.00103*	-0.00116*
	(0.000436)	(0.000462)	(0.000435)	(0.000512)	(0.000606)	(0.000589)
Estimated regional GDP/capita	Omitted	Omitted	Omitted	-0.182***	-0.158***	-0.199***
				(0.0120)	(0.0142)	(0.0143)
Equalizing payments, received/paid	-0.000998*	-0.000526	-0.00136**	-0.00109*	-0.000696	-0.00170**
	(0.000538)	(0.000498)	(0.000634)	(0.000615)	(0.000644)	(0.000847)
Municipal tax rate	0.515*	0.610***	0.610*	0.669*	0.805**	0.864*
	(0.301)	(0.227)	(0.320)	(0.356)	(0.336)	(0.446)
Income from capital	-0.000243	0.00234	0.00210	-0.00889***	-0.00502***	-0.00653***
	(0.00202)	(0.00196)	(0.00200)	(0.00201)	(0.00185)	(0.00194)
Average fertility rate	0.000757	0.000948	0.000158	0.00358**	0.00257	0.00313
	(0.00143)	(0.00133)	(0.00169)	(0.00161)	(0.00156)	(0.00207)
Percent foreign born citizens	0.155*	0.133	0.159	0.521***	0.513***	0.603***
	(0.0870)	(0.100)	(0.110)	(0.0802)	(0.0890)	(0.0976)
Average yearly income	-0.173***	-0.150***	-0.193***	0.000595	0.0297	-0.0419*
	(0.0487)	(0.0421)	(0.0484)	(0.0224)	(0.0219)	(0.0232)
2007.Year	-0.00149					
	(0.00204)					
2008.Year	0.00226	0.00281	0.00350			
	(0.00415)	(0.00224)	(0.00239)			
2009.Year	0.0221***	0.0234***	0.0239***			
	(0.00544)	(0.00354)	(0.00379)			
2010.Year	0.0181***	0.0199***	0.0197***			
	(0.00613)	(0.00423)	(0.00463)			
2011.Year		0.0252***				
		(0.00586)				
Constant	0.769**	0.751***	0.849***	0.339*	0.0895	0.472**
	(0.309)	(0.278)	(0.312)	(0.192)	(0.172)	(0.211)
R-squared	0.702	0.773	0.806	0.605	0.655	0.728
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note: Bold variable are in logarithmic form in regressions						

Table 10: Fixed effects regressions with unemployment as dependent variable – total population

Table 10 shows the regression results when the dependent variable is changed to unemployment. Here, in contrast to table 9, we can see that the part EU/EES immigrants of population is negatively significant to the dependent variable in regressions (1), (2) and (3), the ones which controls for time fixed effects. In regression (1) and (3) the effect is direct (the variable without lag is significant) and in regression (2) it is the lagged variable which shows effect. This can be due to the lagged variable incorporating the immediate effect. Since (3) shows that when both the immediate variable and the lag is included it is the immediate which

is significant it can be assumed that the effect actually is immediate. A large population of EU/EES immigrants in a municipality in year 1 will increase employment that same year.

Another variable which is significantly positive for employment is average yearly income. This matches the results from table 9 where higher employment indicated higher wages. Significantly negative for employment is increased municipal tax rate, where an increase in municipal tax rate by one percent will lead to a decrease in employment by around 0.6 percent.

In none of the regressions (4), (5) and (6) is the variable of interest significant and there are other variables than in the first regressions which is significant. Positive for employment is now income from capital and estimated regional GDP. The coefficients for estimated regional GDP is slightly larger than in the same regressions in table 9. They now indicate that increasing the regional GDP per capita with one percent would decrease the unemployment by around 0.18 percentage points. Another find is that higher education remarkably reports a coefficient which is negative for employment. This might seem contra intuitive but a possible explanation can be that increasing the percentage with higher education increases competition for high skill jobs in the municipality.

In the regressions which do not account for time fixed effects the coefficient for percent foreign born citizens is significantly negative for employment. Increasing this share with one percent will lead to approximately 0.55 percentage points decrease in employment rate.

All the regressions in table 10 present a lower R^2 value than the ones in table 9. This is true for not only the total population but for males and females separately too, which will be shown in the tables of section 5.2.4. This could indicate that there is some variable(s) that is of importance for unemployment, but not for income, which is not included in the model.

5.2.4 Fixed effects regressions on male and female population

The results from the regressions already presented gives a view of how EU/EES immigration affect labour market outcomes of the entire population. If male and female population were identical this would be enough to give a good picture of the effects from EU/EES immigration on the Swedish labour market. Considering that this might not always be the case dividing the two groups and running separate regressions will give an extra dimension to the study. As discussed in section 1.2, males and females tend to work in different sectors and they might be affected by the variables of the regression differently. Due to this regressions are run on these two populations separately, to see if there are any significant differences between the two groups.

Y= Average yearly income	**Male population**					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
VARIABLES	**F.E i.Municipal i.Year**	**F.E 1 year lag i.Municipal i.Year**	**F.E 1 year lag + no lag i.Municipal i.Year**	**F.E i.Municipal**	**F.E 1 year lag i.Municipal**	**F.E 1 year lag + no lag i.Municipal**
Percent EU/EES immigrants	-0.394		-0.634	-0.168		-0.788
	(0.441)		(0.922)	(0.842)		(1.753)
1 year lag percecnt EU/EES immigrants		-0.671	-0.362		-0.743	-0.493
		(0.451)	(0.483)		(0.754)	(0.836)
Percent with higher education	-0.187	-0.483	-0.473	1.872***	1.272**	1.640**
	(0.310)	(0.354)	(0.411)	(0.534)	(0.537)	(0.657)
Average age	-0.00272	-0.00427	-0.00238	0.0369***	0.0377***	0.0462***
	(0.00400)	(0.00416)	(0.00528)	(0.00641)	(0.00539)	(0.00678)
Estimated regional GDP/capita	Omitted	Omitted	Omitted	0.245***	0.138**	-0.0238
				(0.0544)	(0.0539)	(0.0534)
Equalizing payments, received/paid	-0.00214**	-0.00116	-0.00187*	-0.00290	-0.00337**	-0.00470**
	(0.000912)	(0.000994)	(0.00108)	(0.00190)	(0.00156)	(0.00208)
Income from capital	-0.000347	-0.00374	0.000419	0.0371***	0.0175***	0.0218***
	(0.00369)	(0.00387)	(0.00433)	(0.00543)	(0.00535)	(0.00545)
Municipal population density	-0.0121	-0.0269***	-0.0134	0.00993	-0.00201	0.0102
	(0.00896)	(0.00868)	(0.0113)	(0.0241)	(0.0212)	(0.0279)
Percent foreign born citizens	-0.209	-0.188	-0.0906	1.260***	1.576***	1.937***
	(0.191)	(0.225)	(0.286)	(0.287)	(0.297)	(0.334)
Percent openly unemployed	-0.513***	-0.525***	-0.581***	0.297*	0.272**	0.0782
	(0.104)	(0.117)	(0.117)	(0.155)	(0.126)	(0.152)
2007.Year	0.0373***					
	(0.00203)					
2008.Year	0.0759***	0.0397***	0.0383***			
	(0.00316)	(0.00196)	(0.00224)			
2009.Year	0.105***	0.0691***	0.0683***			
	(0.00439)	(0.00501)	(0.00533)			
2010.Year	0.111***	0.0757***	0.0746***			
	(0.00571)	(0.00630)	(0.00702)			
2011.Year		0.105***				
		(0.00738)				
Constant	5.647***	5.953***	5.784***	2.035***	3.008***	3.347***
	(0.207)	(0.240)	(0.295)	(0.251)	(0.222)	(0.298)
R-squared	0.959	0.927	0.902	0.854	0.799	0.737
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note: Bold variable are in logarithmic form in regressions						

Table 11: Fixed effects regressions with income as dependent variable – male population

The table above shows the variables significant to the dependent variable, average income from labour, for the male population. The male population follows the previous results which have shown no significance present for the variable part EU/EES immigrants in any of the regressions. As in table 9 unemployment is negatively significant for income. However for the male population the coefficient for population density is not significant, as it was for the total population. Actually in regressions (1), (2) and (3) no variable besides unemployment show significant coefficients for all regressions.

Looking at regressions (4), (5) and (6) more variables are significant, as was the case for total population. Higher education is positively significant along with average age, income from capital and foreign born citizens. These variables have coefficients which are similar to those presented in table 9 in both significance and size, except for higher education which has a smaller value. Given the general resemblance of the results in table 9 to the results for the total population it can be assumed that what affects the average yearly income for the total population is applicable to the male population as well.

Y= Average yearly income	**Female population**					
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
VARIABLES	**F.E i.Municipal i.Year**	**F.E 1 year lag i.Municipal i.Year**	**F.E 1 year lag + no lag i.Municipal i.Year**	**F.E i.Municipal**	**F.E 1 year lag i.Municipal**	**F.E 1 year lag + no lag i.Municipal**
Percent EU/EES immigrants	-0.288		-0.359	-0.328		-1.058
	(0.547)		(0.707)	(0.777)		(1.424)
1 year lag percecnt EU/EES immigrants		0.124	0.364		-1.099	-1.580**
		(0.462)	(0.477)		(0.697)	(0.775)
Percent with higher education	0.300	0.496**	0.198	4.415***	3.876***	4.050***
	(0.211)	(0.209)	(0.248)	(0.220)	(0.247)	(0.284)
Average age	-0.00313	0.000573	0.00150	0.0230***	0.0255***	0.0307***
	(0.00223)	(0.00221)	(0.00248)	(0.00458)	(0.00438)	(0.00566)
Estimated regional GDP/capita	Omitted	Omitted	Omitted	-0.0750**	-0.186***	-0.259***
				(0.0367)	(0.0284)	(0.0280)
Equalizing payments, received/paid	-0.000421	-0.000592	-0.000658	-0.000842	-0.00249*	-0.00393**
	(0.000715)	(0.000766)	(0.000814)	(0.00159)	(0.00134)	(0.00163)
Income from capital	-0.00459	-0.00426	-0.00658**	0.0209***	0.00630	0.00331
	(0.00330)	(0.00264)	(0.00317)	(0.00547)	(0.00420)	(0.00505)
Municipal population density	-0.00459	0.0324	0.0488	0.0340	0.0730*	0.174***
	(0.0113)	(0.0266)	(0.0302)	(0.0260)	(0.0378)	(0.0572)
Percent foreign born citizens	-0.452***	-0.260*	-0.277	1.165***	1.458***	1.703***
	(0.173)	(0.152)	(0.172)	(0.257)	(0.232)	(0.254)
Percent openly unemployed	-0.0744	-0.0846	-0.163	-0.110	0.0294	-0.296*
	(0.107)	(0.105)	(0.109)	(0.185)	(0.152)	(0.175)
2007.Year	0.0355***					
	(0.00207)					
2008.Year	0.0781***	0.0403***	0.0422***			
	(0.00367)	(0.00168)	(0.00194)			
2009.Year	0.113***	0.0729***	0.0767***			
	(0.00483)	(0.00339)	(0.00372)			
2010.Year	0.122***	0.0805***	0.0856***			
	(0.00647)	(0.00500)	(0.00578)			
2011.Year		0.106***				
		(0.00641)				
Constant	5.342***	5.086***	5.067***	3.342***	3.996***	3.899***
	(0.153)	(0.175)	(0.200)	(0.245)	(0.257)	(0.353)
R-squared	0.983	0.977	0.976	0.917	0.908	0.888

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: Bold variable are in logarithmic form in regressions

Table 12: Fixed effects regressions with income as dependent variable – female population

Looking at table 12 it show different result in the first three regressions than the other populations did. Here none of the variables is significant in all of the regressions with time fixed effects. This could be because the variables in the study fail to explain what it is that affects female wages. This could be grounds for further research, why female income is affected differently than the income of men and total population.

The results for the female population are mostly similar to the male results for regressions without regard for time fixed effects. There are however a few important exceptions, the lagged variable for percent EU/EES immigrants show a negatively significant result in regression (6) in contrast to no significance for the male population. This would indicate that when the part female EU/EES immigrants increase it will affect wages negatively after a year. Also the coefficient for higher education is more in the size range of total population than male. The last major difference is the fact that the coefficient for estimated GDP changes from positively significant for males to negatively significant for females. Since it is rather implausible that a municipality which increases its level of GDP per capita will cause female income to decrease the relationship should be interpreted with caution. A possible reason could be that women with high income tend to work in municipalities with high levels of GDP per capita but live in those with lower level, also that the opposite is true for those with lower wages, and therefore would the coefficient show this kind of result. Average age and percentage foreign born citizens are all similarly significant as they were for the male population, same direction but slightly different values on the coefficients.

Y= Percentage openly unemployed	Male population					
VARIABLES	(1) F.E i.Municipal i.Year	(2) F.E 1 year lag i.Municipal i.Year	(3) F.E 1 year lag + no lag i.Municipal i.Year	(4) F.E i.Municipal	(5) F.E 1 year lag i.Municipal	(6) F.E 1 year lag + no lag i.Municipal
Percent EU/EES immigrants	-0.372		-0.432	-0.349		-0.123
	(0.306)		(0.495)	(0.345)		(0.632)
1 year lag percecnt EU/EES immigrants		-0.392	-0.407		-0.225	-0.238
		(0.349)	(0.361)		(0.469)	(0.462)
Percent with higher education	0.171	0.229*	0.264	1.009***	1.288***	1.444***
	(0.166)	(0.126)	(0.181)	(0.187)	(0.162)	(0.212)
Average age	0.00243	-0.00250	0.00164	0.0153***	0.0112***	0.0173***
	(0.00248)	(0.00203)	(0.00237)	(0.00278)	(0.00280)	(0.00341)
Estimated regional GDP/capita	Omitted	Omitted	Omitted	-0.234***	-0.262***	-0.263***
				(0.0150)	(0.0173)	(0.0187)
Equalizing payments, received/paid	-0.00127*	-0.000572	-0.00144*	-0.00135	-0.00112	-0.00204
	(0.000673)	(0.000572)	(0.000830)	(0.000882)	(0.000799)	(0.00124)
Municipal tax rate	0.664**	0.600**	0.728**	0.847**	0.974**	1.097**
	(0.317)	(0.244)	(0.335)	(0.399)	(0.384)	(0.495)
Income from capital	-0.000468	0.00284	0.00286	-0.0101***	-0.00836***	-0.00764***
	(0.00252)	(0.00266)	(0.00249)	(0.00239)	(0.00241)	(0.00237)
Average fertility rate	0.00223	0.00116	0.00197	0.00769***	0.00682***	0.00722**
	(0.00178)	(0.00170)	(0.00219)	(0.00197)	(0.00219)	(0.00288)
Percent foreign born citizens	0.123	0.0109	0.0592	0.634***	0.646***	0.759***
	(0.104)	(0.103)	(0.137)	(0.106)	(0.118)	(0.133)
Average yearly income	-0.213***	-0.167***	-0.198***	0.0523*	0.0569**	0.0162
	(0.0408)	(0.0336)	(0.0394)	(0.0276)	(0.0263)	(0.0311)
2007.Year	-0.00112					
	(0.00199)					
2008.Year	0.00410	0.00411**	0.00425**			
	(0.00388)	(0.00192)	(0.00202)			
2009.Year	0.0280***	0.0296***	0.0290***			
	(0.00497)	(0.00283)	(0.00316)			
2010.Year	0.0201***	0.0226***	0.0213***			
	(0.00555)	(0.00326)	(0.00387)			
2011.Year		0.0202***				
		(0.00452)				
Constant	0.888***	0.884***	0.844***	-0.0189	0.246*	0.173
	(0.277)	(0.223)	(0.261)	(0.146)	(0.146)	(0.187)
R-squared	0.731	0.776	0.814	0.591	0.593	0.697
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note: Bold variable are in logarithmic form in regressions						

Table 13: Fixed effects regressions with unemployment as dependent variable – male population

When unemployment is the dependent variable for the male population the variable of interest is never significant. Not even in regressions (1), (2) and (3) which in table 10 showed positive significant result for employment in the total population. Similar to table 10 these results show that increasing municipal tax rate is negative for employment and that increased average yearly income is positive.

Again regressions (3), (5) and (6) give many more significant variables. They are in both significance and value similar, even if the coefficients in the regression in table 13 tend to be

slightly larger, to the ones presented for the total population. One variable which show more significance in this table is average fertility rate which has a small, but significant, negative effect on employment. Signalling that having many children can, for males, be negative for employment. Since the results are so close to each other the interpretations are also almost the same.

Y= Percentage openly unemployed	**Female population**					
VARIABLES	**F.E i.Municipal i.Year**	**F.E 1 year lag i.Municipal i.Year**	**F.E 1 year lag + no lag i.Municipal i.Year**	**F.E i.Municipal**	**F.E 1 year lag i.Municipal**	**F.E 1 year lag + no lag i.Municipal**
Percent EU/EES immigrants	-0.325		-1.076**	-0.236		-0.937*
	(0.290)		(0.442)	(0.317)		(0.528)
1 year lag percecnt EU/EES immigrants		-0.549*	-0.594*		-0.367	-0.585*
		(0.298)	(0.351)		(0.300)	(0.324)
Percent with higher education	0.0110	0.116	0.198	0.492***	0.539***	0.684***
	(0.147)	(0.118)	(0.147)	(0.117)	(0.110)	(0.123)
Average age	-0.000594	-0.00350**	-0.00138	0.00318*	-0.00159	0.00141
	(0.00171)	(0.00156)	(0.00164)	(0.00165)	(0.00166)	(0.00155)
Cost for a fulltime student in SFI	-0.000158	-0.000820*	-0.000944**	-0.000360	-0.00127***	-0.00145***
	(0.000388)	(0.000438)	(0.000379)	(0.000438)	(0.000483)	(0.000468)
Estimated regional GDP/capita	Omitted	Omitted	Omitted	-0.104***	-0.0971***	-0.103***
				(0.0115)	(0.0118)	(0.0127)
Equalizing payments, received/paid	-0.000627	-0.000357	-0.00125**	-0.000822*	-0.000416	-0.00135**
	(0.000455)	(0.000422)	(0.000522)	(0.000462)	(0.000506)	(0.000659)
Municipal tax rate	0.00419	0.00445*	0.498	0.00506	0.00591*	0.662
	(0.00314)	(0.00267)	(0.376)	(0.00327)	(0.00327)	(0.442)
Income from capital	0.000604	0.00274	0.00148	-0.00978***	-0.00635***	-0.00746***
	(0.00216)	(0.00180)	(0.00200)	(0.00189)	(0.00158)	(0.00176)
Municipal population density	0.000981	0.000734	0.0225	0.0106**	0.00597	0.0431**
	(0.00457)	(0.0132)	(0.0166)	(0.00410)	(0.0160)	(0.0174)
Average age at birth of first child	0.000507*	0.000429*	0.000571*	0.000527	0.000522**	0.000581*
	(0.000305)	(0.000251)	(0.000323)	(0.000339)	(0.000264)	(0.000337)
Percent foreign born citizens	0.192**	0.236***	0.244**	0.391***	0.404***	0.446***
	(0.0949)	(0.0853)	(0.100)	(0.0809)	(0.0699)	(0.0862)
2007.Year	-0.00527**					
	(0.00217)					
2008.Year	-0.00743*	-0.00307	-0.00189			
	(0.00449)	(0.00231)	(0.00291)			
2009.Year	0.00431	0.00879**	0.0102*			
	(0.00630)	(0.00405)	(0.00520)			
2010.Year	0.00344	0.00766	0.00837			
	(0.00727)	(0.00477)	(0.00632)			
2011.Year		0.00501				
		(0.00631)				
Constant	0.104	0.201	0.244	0.279**	0.348***	0.327**
	(0.290)	(0.246)	(0.313)	(0.122)	(0.125)	(0.157)
R-squared	0.561	0.629	0.693	0.470	0.528	0.622
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note: Bold variable are in logarithmic form in regressions						

Table 14: Fixed effects regressions with unemployment as dependent variable – female population

The regressions whose results are shown above give, like for total population, a significant result for the variable of interest. It is negatively significant in regressions (2), (3) and (6),

indicating a positive effect on employment by EU/EES immigrants both in the immediate timeframe and after a year. The value of the coefficient is smaller after a year than in the immediate both in regression (3) and (6) which would suggest that the positive effect of increased EU/EES immigration on female income are decreasing. The values of the coefficients are similar in both the regression which includes time fixed effects and the ones which do not. A variable which has not been significant previously is average age at birth of first child which for females is negatively significant, although the value of the coefficient is small, in all but one regression. Having children later in life can be seen as negative for female employment.

Both the discussed variables show significance with coefficient values which are similar in all regressions and can hence be seen as robust results. Another variable which is significant for all regressions but that has larger coefficients in regressions (4), (5) and (6) is percent foreign born citizens. It shows a negative effect on employment with an increased proportion of foreign born citizens. This result has been shown both for male- and total population previously but then only for the regressions which do not include time fixed effects.

Looking at the results in regressions (4), (5) and (6) it is negative for employment with increased population with higher education, in addition to the already discussed variables. More variables indicate a positive effect on female employment: income from capital, estimated regional GDP per capita and cost for a fulltime student in SFI.

6. Discussion

In this study it can be shown that EU/EES immigration is assumed to be insignificant in the case where we assume no variance between municipalities, or years, for average yearly income but significantly positive for employment. This result is however not very robust since there is reason to believe that there are unobserved municipal and time effects. Including municipal fixed effects to the regression we get a similar result which does not show any significant effects of EU/EES immigration on average yearly income but keeping a significant positive effect, with around the same size as in the OLS regressions, on employment for the total population. This change could indicate that EU/EES immigrants should not be seen as total substitutes to native labour but some mix of substitutes and complements which creates a situation which resembles the long run effects where both supply and demand increases keeping wages set but increasing employment.

As previously discussed, in section 1.3.1, the data made it impossible to scrutinize certain industries and different part of the wage distribution in the same way that other scholars have done. Although dividing the population by gender should tell us something about how different market sectors, the male- versus the female dominated, reacts to an influx of labour. It might be the case that immigrants are substitutes to native males but complements to native females, or vice versa, hence creating the mix discussed above. The OLS results for both males and females when the dependent variable is average yearly income show a negative significant coefficient for the variable of interest when the dependent variable is average yearly income but a positive effect on employment for males while no significant effect could be proven for females. As for the total population more accurate results are expected when including municipal- and time fixed effects.

For males no significant effect shows for the variable of interest on average wage and neither on employment. It was however, in almost all of the regressions, significantly negative to have high unemployment for average wages and vice versa. Looking at the female population they are affected slightly different from the males. There is still no significance from percent EU/EES immigrants on average wages but there is positive significance on employment. It shows that increasing the percentage EU/EES immigrants in a municipality will increase employment with around one percentage points in the immediate and around 0.5 percentage points after a year. This result is highly robust since it is similar in both significant and coefficient size both when controlling for time fixed effects and when not.

Comparing these results with the ones for the total population it is displayed that the female population can be viewed much like the population as a whole only showing a significantly positive effect from an increased presence of EU/EES immigrants in the municipality. This result needs to be interpreted with some caution since it cannot be excluded that EU/EES immigrants choose to reside in municipalities which are experiencing low unemployment, especially low female unemployment. I personally think this can be part of the explanation behind some of the positive effect but not all of it since we saw presence of EU/EES immigrants in almost all municipalities.

These results does prove females are benefiting more from the EU/EES immigrants and this might be the reason behind the male dominant trade unions negative attitude towards free movement of labour. Although there were no evidence that the EU/EES immigrants were negative for either male workers average yearly wage or level of employment. This should signal that the fears lifted in the discourse regarding the expansion of the EU and free movement of labour in the union is unfounded.

The result of this study can be compared to the previous studies discussed and it can be argued that they all show similar responses. In most of the discussed literature the wage spectrum is divided, which is not the case for this study, and it showed in most of the studies a negative effect for low income wages and a positive one for high incomes. Since this study does not divide wages by level or industry it is likely that even if no significant result could be proven for the municipal labour market as a whole it might affect certain individuals differently. There was one previous study which also looked at the average wages of the entire labour market, (Dustman, Frattini, & Preston, 2008), which showed a significant positive effect of immigration. This could not be further confirmed by this study. Comparing the results with the study most similar to this one, (Åslund & Engdahl, 2013), it can be noted that in this study wages are not affected while in the previous study they were. Notably in the Åslund & Engdahl study there was a slight negative effect on wages in the lower part of the spectrum while the effect was positive for the higher part. Since this study does not divide up the wages a result like the one found by Åslund & Engdahl cannot be neither confirmed nor denied by this study.

In conclusion this study finds that no negative labour market effects from EU/EES immigrants can be proven, not for the total population nor for the male and female population divided. Positive employment effects can be proven for the total and female part of the population indicating that the EU/EES immigrants can be seen as compliments to the native female labour force. Indicating that the immigrants from the EU/EES countries should be seen as compliments

to the Swedish labour force, to be in line with the underlying economic theory. These results prove what other scholars have been suggesting, that labour immigration is good for the receiving country and its economy.

6.1 Suggestions for further research

Since this subject was highly debated in the time around the enlargement of the union and still to this day is discussed there is social gains from examining this further. Before the decision if Sweden should implement the transitional arrangement was made there were many reports of what could possibly happen with and without the arrangements. This is reasonable since no one could measure the actual labour market outcomes. Now time has passed and data on the actual impact can be accessed and the issue can be more or less settled with good research.

This is what I have been trying to do in this study but given the restrictions faced, thoroughly discussed in section 1.3.1, it might not be as comprehensive as desired. Given decent time and finances new research could divide the labour market by sector and examine the effects of EU/EES immigration on these separately to see if they are affected differently. Also comparing the Swedish case with similar countries could be good to see if this labour market is different from others, such as the UK, Norway and Denmark. Additionally it is of interest to the discussion to examine the composition of the EU/EES immigrants coming to Sweden.

8. References

8.1 Books

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8.4 Databases

Statistics Sweden, Statistical Database

Statnord, Population Statistics

Swedish employment agency, Unemployment Statistics

Appendix A: Robustness tests

Wooldridge test for autocorrelation in panel data						
	Total		Male		Female	
	Y=Income	Y=Unemployment	Y=Income	Y=Unemployment	Y=Income	Y=Unemployment
F-value	75.194	21.633	71.203	21.922	77.253	41.975
Prob > F	0	0	0	0	0	0
H0: no first-order autocorrelation						

Table 1A: Test for autocorrelation in data set

Modified Wald test for groupwise heteroskedasticity in fixed effect regression model						
	Total		Male		Female	
	Y=Income	Y=Unemployment	Y=Income	Y=Unemployment	Y=Income	Y=Unemployment
Chi2-value	6.60E+28	5.70E+32	7.30E+28	1.00E+34	2.40E+29	3.50E+34
Prob>chi2	0	0	0	0	0	0
H0: sigma(i)^2 = sigma^2 for all i						

Table 2A: Modified Wald test for groupwise heteroskedasticity

Hausman test						
	Total		Male		Female	
	Y=Income	Y=Unemployment	Y=Income	Y=Unemployment	Y=Income	Y=Unemployment
chi2(17)	86.11	49.1	92.68	62.84	54.28	164.41
Prob>chi2	0.0000	0.0001	0.0000	0.0000	0.0000	0.000
Test: Ho: difference in coefficients not systematic						

Table 3A: Hausman test

Y= Average yearly income	Total		Male		Female
Variable	**VIF**	**Variable**	**VIF**	**Variable**	**VIF**
Percent with higher education	41.9	Percent with higher education	38.27	Percent with higher education	28.79
Percent with lower education	37.11	Percent with lower education	37.05	Percent with lower education	22.7
Percent foreign born citizens	14.81	Percent foreign born citizens	15.4	Percent foreign born citizens	12.88
Percent foreign residents, -EU/E	8.78	Municipal population density	8.84	Percent foreign residents, -EU/EES	8.42
Municipal population density	7.78	Percent foreign residents, -EU/EES	8.83	Municipal population density	6.69
Income from capital	4.67	Income from capital	4.66	Income from capital	4.55
Average age	4.08	Average age	4.53	Municipal taxrate	3.9
Municipal taxrate	3.93	Municipal taxrate	3.9	Average age	3.65
Percent openly unemployed	2.68	Percent openly unemployed	2.77	Average age at birth of first child	2.12
Equalizing payments, reicived/pai	1.95	Equalizing payments, reicived/paid	1.87	Percent openly unemployed	2.05
Average age at birth of first child	1.92	Estimated regional GDP/capita	1.78	Equalizing payments, reicived/paid	1.97
Estimated regional GDP/capita	1.62	Average fertility rate	1.54	Estimated regional GDP/capita	1.47
Percent EU/EES immigrants	1.57	Average age at birth of first child	1.5	Percent EU/EES immigrants	1.55
Average fertility rate	1.41	Percent EU/EES immigrants	1.5	Average fertility rate	1.35
Net value of municipal budget	1.22	Net value of municipal budget	1.23	Net value of municipal budget	1.2
Cost for a fulltime student in SFI	1.11	Cost for a fulltime student in SFI	1.1	Cost for a fulltime student in SFI	1.12
Year		Year		Year	
2007	2.03	2007	1.93	2007	2.01
2008	2.49	2008	2.32	2008	2.5
2009	2.3	2009	2.3	2009	2.22
2010	2.37	2010	2.18	2010	2.44

Table 4A: VIF test before omitting multicollinear variables – average yearly income

Y= Average yearly income	Total		Male		Female
Variable	**VIF**	**Variable**	**VIF**	**Variable**	**VIF**
Municipal population density	7.45	Municipal population density	8.46	Municipal population density	6.38
Percent with higher education	4.67	Percent with higher education	4.99	Income from capital	4.24
Income from capital	4.42	Income from capital	4.48	Percent with higher education	4.08
Municipal taxrate	3.82	Average age	4.41	Municipal taxrate	3.82
Average age	3.78	Municipal taxrate	3.75	Average age	3.13
Percent foreign born citizens	3.44	Percent foreign born citizens	3.76	Percent foreign born citizens	2.71
Percent openly unemployed	2.48	Percent openly unemployed	2.63	Average age at birth of first child	2.12
Average age at birth of first child	1.91	Equalizing payments, reicived/paid	1.76	Percent openly unemployed	1.92
Equalizing payments, reicived/paid	1.76	Average age at birth of first child	1.49	Equalizing payments, reicived/paid	1.73
Percent EU/EES immigrants	1.57	Percent EU/EES immigrants	1.49	Percent EU/EES immigrants	1.54
Estimated regional GDP/capita	1.41	Estimated regional GDP/capita	1.45	Estimated regional GDP/capita	1.37
Average fertility rate	1.27	Average fertility rate	1.43	Average fertility rate	1.22
Net value of municipal budget	1.21	Net value of municipal budget	1.23	Net value of municipal budget	1.19
Cost for a fulltime student in SFI	1.1	Cost for a fulltime student in SFI	1.1	Cost for a fulltime student in SFI	1.11
Year		Year		Year	
2007	1.91	2007	1.87	2007	1.9
2008	2.24	2008	2.17	2008	2.26
2009	2.14	2009	2.21	2009	2.03
2010	2.06	2010	1.98	2010	2.13

Table 5A: VIF test after omitting multicollinear variables – average yearly income

Y= Percent openly unemployed	Total		Male		Female
Variable	**VIF**	**Variable**	**VIF**	**Variable**	**VIF**
Percent with higher education	38.9	Percent with lower education	40.06	Percent with higher education	28.86
Percent with lower education	37.22	Percent with higher education	36.34	Percent with lower education	21.59
Percent foreign born citizens	13.9	Percent foreign born citizens	14.66	Percent foreign born citizens	12.39
Average yearly income	9.2	Municipal population density	9.96	Average yearly income	9.04
Percent foreign residents, -EU/EES	8.63	Percent foreign residents, -EU/EES	8.77	Percent foreign residents, -EU/EES	8.36
Municipal population density	8.41	Average yearly income	8.85	Municipal population density	6.79
Income from capital	4.4	Average age	4.38	Income from capital	4.41
Municipal taxrate	3.99	Income from capital	4.29	Municipal taxrate	3.95
Average age	3.96	Municipal taxrate	3.9	Average age	3.69
Equalizing payments, reicived/paid	1.94	Equalizing payments, reicived/paid	1.87	Average age at birth of first child	2.15
Average age at birth of first child	1.94	Average fertility rate	1.54	Equalizing payments, reicived/paid	2.02
Estimated regional GDP/capita	1.62	Average age at birth of first child	1.51	Percent EU/EES immigrants	1.55
Percent EU/EES immigrants	1.56	Percent EU/EES immigrants	1.49	Estimated regional GDP/capita	1.46
Average fertility rate	1.41	Estimated regional GDP/capita	1.8	Average fertility rate	1.35
Net value of municipal budget	1.22	Net value of municipal budget	1.23	Net value of municipal budget	1.2
Cost for a fulltime student in SFI	1.13	Cost for a fulltime student in SFI	1.12	Cost for a fulltime student in SFI	1.14
Year		Year		Year	
2007	2.07	2007	1.98	2007	2.04
2008	2.78	2008	2.56	2008	2.82
2009	3.17	2009	2.77	2009	3.24
2010	3.59	2010	3.13	2010	3.62

Table 6A: VIF test before omitting multicollinear variables – unemployment

Y= Percent openly unemployed	Total		Male		Female
Variable	**VIF**	**Variable**	**VIF**	**Variable**	**VIF**
Average yearly income	8.57	Municipal population density	9.41	Average yearly income	8.95
Municipal population density	7.95	Average yearly income	7.82	Municipal population density	6.35
Percent with higher education	6	Percent with higher education	5.62	Percent with higher education	6.14
Income from capital	4.02	Average age	4.3	Income from capital	3.98
Municipal taxrate	3.92	Income from capital	4.03	Municipal taxrate	3.87
Average age	3.72	Municipal taxrate	3.81	Average age	3.21
Percent foreign born citizens	3.19	Percent foreign born citizens	3.74	Percent foreign born citizens	2.49
Average age at birth of first child	1.93	Equalizing payments, reicived/paid	1.77	Average age at birth of first child	2.13
Equalizing payments, reicived/paid	1.8	Average age at birth of first child	1.5	Equalizing payments, reicived/paid	1.83
Percent EU/EES immigrants	1.55	Percent EU/EES immigrants	1.48	Percent EU/EES immigrants	1.55
Estimated regional GDP/capita	1.4	Estimated regional GDP/capita	1.44	Estimated regional GDP/capita	1.34
Average fertility rate	1.27	Average fertility rate	1.43	Average fertility rate	1.21
Net value of municipal budget	1.21	Net value of municipal budget	1.23	Net value of municipal budget	1.19
Cost for a fulltime student in SFI	1.12	Cost for a fulltime student in SFI	1.12	Cost for a fulltime student in SFI	1.13
Year		Year		Year	
2007	1.94	2007	1.88	2007	1.95
2008	2.45	2008	2.3	2008	2.6
2009	2.65	2009	2.35	2009	2.93
2010	2.92	2010	2.58	2010	3.22

Table 7A: VIF test after omitting multicollinear variables – unemployment

Appendix B: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Percent EU/EES immigrants	1450	0.0010423	0.0012444	0	0.0138046
Average yearly income	2320	229.2165	33.14967	171.6	479.6
Percent openly unemployed	2320	0.033312	0.0104691	0.0000308	0.0732116
Percent with higher education	2320	0.1755589	0.0595052	0.0930876	0.4701683
Percent with lower education	2320	0.5495958	0.0577535	0.2614005	0.6324335
Average age	2320	42.86642	2.541809	36.1	49.4
Income from capital	2320	35.07846	24.00661	10.05003	417.6753
Municipal tax rate	2320	21.50839	1.339554	17.12	33.25
Municipal population density	2320	135.985	469.2086	0.2	4916.5
Percent foreign born citizens	2320	0.1073391	0.0548131	0.0294722	0.3997172
Equalizing payments, received/paid	2320	459.1647	2299.534	-4259	10881
Average fertility rate	2320	1.913297	0.2242395	0.85	2.93
Average age at birth of first child	2320	29.17939	1.27435	23.195	33.75
Cost for a fulltime student in SFI	1968	46283.81	30470.99	-438	326070
Estimated regional GDP/capita	2320	277.0336	118.002	108.8372	1248.845
Percent foreign residents, -EU/EES	2320	0.0523517	0.0295672	0.0117978	0.2800716
Net value of municipal budget	2319	1078.761	2711.455	-13704	100801

Table 1B: Total population variable description statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Percent EU/EES immigrants	1450	0.0010569	0.0013449	0	0.0156369
Average yearly income	2320	264.9732	43.7487	184.1	621.1
Percent openly unemployed	2320	0.0352492	0.0125437	0.0000197	0.0887255
Percent with higher education	2320	0.1498859	0.0628938	0.0701231	0.4593911
Percent with lower education	2320	0.5882541	0.0645887	0.2658244	0.6865285
Average age	2320	41.86517	2.481544	35.9	48.2
Income from capital	2320	35.07846	24.00661	10.05003	417.6753
Municipal tax rate	2320	21.50839	1.339554	17.12	33.25
Municipal population density	2320	67.34724	231.1018	0.1	2443.1
Percent foreign born citizens	2320	0.1018396	0.0540979	0.0243446	0.3942373
Equalizing payments, received/paid	2320	459.1647	2299.534	-4259	10881
Average fertility rate	2320	1.789034	0.2292971	0.73	2.78
Average age at birth of first child	2320	30.55402	1.285337	24.82	35.28
Cost for a fulltime student in SFI	1968	46283.81	30470.99	-438	326070
Estimated regional GDP/capita	2320	277.0336	118.002	108.8372	1248.845
Percent foreign residents, -EU/EES	2320	0.052774	0.0297796	0.0102454	0.255723
Net value of municipal budget	2319	1078.761	2711.455	-13704	100801

Table 2B: Male population variable description statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Percent EU/EES immigrants	1450	0.0010273	0.0012149	0	0.0129926
Average yearly income	2320	5.26244	0.1198804	5.020586	5.864767
Percent openly unemployed	2320	0.0297854	0.0085563	0.0000429	0.0656019
Percent with higher education	2320	0.2016395	0.0567021	0.1077648	0.4808718
Percent with lower education	2320	0.510326	0.0516965	0.2556636	0.5969169
Average age	2320	43.87638	2.651714	36.3	50.8
Income from capital	2320	3.447234	0.4277112	2.307576	6.034704
Municipal tax rate	2320	21.50839	1.339554	17.12	33.25
Municipal population density	2320	2.636667	1.665478	-2.302585	7.813349
Percent foreign born citizens	2320	0.1129668	0.0565812	0.0348199	0.4588068
Equalizing payments, received/paid	1144	6.886329	1.393941	0.6931472	9.294773
Average fertility rate	2320	2.03756	0.2365223	0.97	3.28
Average age at birth of first child	2320	27.80477	1.410881	20.87	32.48
Cost for a fulltime student in SFI	1894	10.60989	0.6387945	4.060443	12.69487
Estimated regional GDP/capita	2320	5.559033	0.3416349	4.689854	7.129974
Percent foreign residents, -EU/EES	2320	0.0519545	0.0299355	0.0118077	0.3052632
Net value of municipal budget	2066	6.774526	1.057613	0	11.5209

Table 3B: Female population variable description statistics

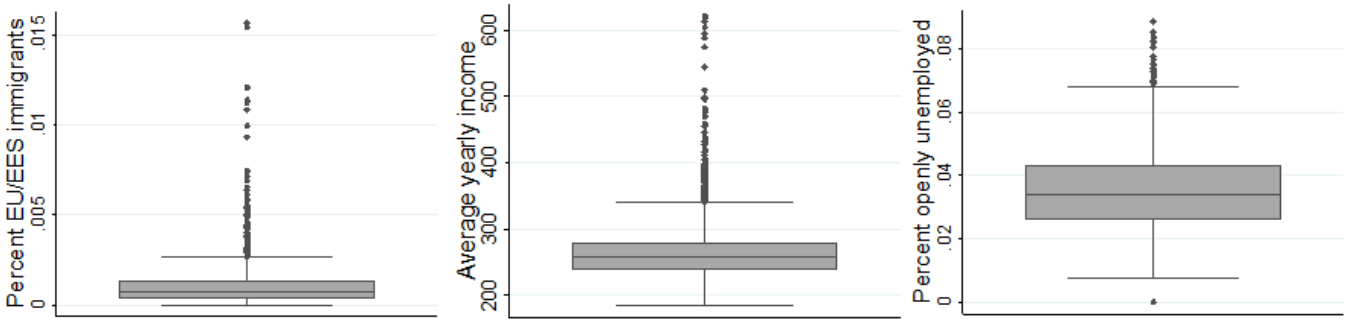

Figure 1B: Boxplots – male population

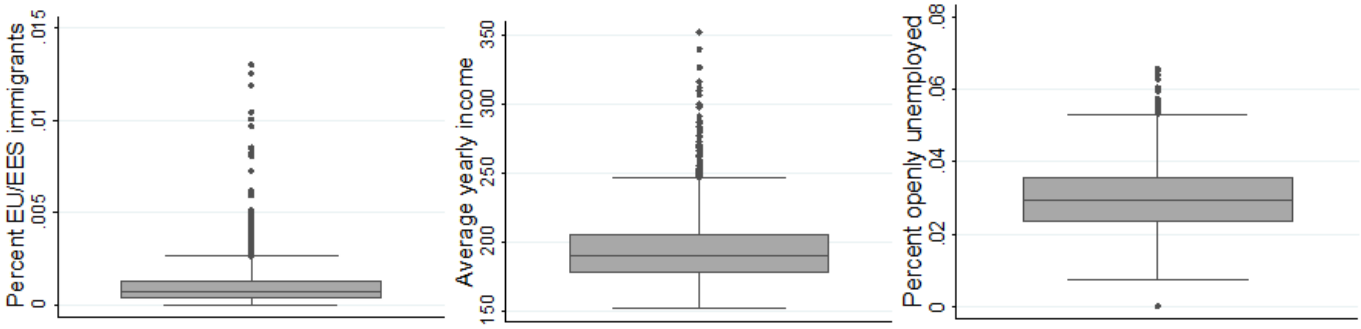

Figure 2B: Boxplots – female population

Appendix C: OLS regression results

Y: Average yearly income	Total population		Male population		Female population	
VARIABLES	OLS using all variables	OLS without multicollinear variables	OLS using all variables	OLS without multicollinear variables	OLS using all variables	OLS without multicollinear variables
Percent EU/EES immigrants	-2.827	-2.784	-4.357**	-4.124**	-3.195**	-3.247**
	(1.725)	(1.767)	(1.722)	(1.648)	(1.340)	(1.336)
Percent with higher education	-0.105	1.006***	-0.531*	1.005***	0.818***	1.081***
	(0.232)	(0.0794)	(0.307)	(0.106)	(0.184)	(0.0675)
Percent with lower education	-1.148***	Omitted	-1.567***	Omitted	-0.286	Omitted
	(0.226)		(0.311)		(0.175)	
Average age	-0.00531***	-0.00389***	-0.00315	-0.00389	-0.00529***	-0.00444***
	(0.00148)	(0.00146)	(0.00222)	(0.00247)	(0.00127)	(0.00124)
Cost for a fulltime student in SFI	0.00942***	0.00902***	0.00925***	0.00896**	0.00906***	0.00868***
	(0.00300)	(0.00307)	(0.00333)	(0.00349)	(0.00253)	(0.00251)
Estimated regional GDP/capita	0.00892	-0.000804	0.0248***	0.00377	-0.00176	-0.00476
	(0.00786)	(0.00751)	(0.00911)	(0.0108)	(0.00642)	(0.00638)
Equalizing payments, received/paid	0.00374*	0.00596***	0.00285	0.00452*	0.00730***	0.00846***
	(0.00194)	(0.00189)	(0.00223)	(0.00242)	(0.00179)	(0.00169)
Municipal tax rate	-1.827***	-2.010***	-1.416***	-1.931***	-0.0172***	-0.0166***
	(0.344)	(0.348)	(0.444)	(0.465)	(0.00368)	(0.00366)
Income from capital	0.0120	0.0198**	0.0192	0.0285**	0.00192	0.00624
	(0.00958)	(0.00955)	(0.0131)	(0.0144)	(0.00863)	(0.00873)
Net value of municipal budget	-0.00119	-0.000915	-0.00152	-0.00120	-0.000149	-0.000234
	(0.00184)	(0.00189)	(0.00216)	(0.00221)	(0.00159)	(0.00158)
Municipal population density	0.0182***	0.0182***	0.0271***	0.0270***	0.0104***	0.00962***
	(0.00278)	(0.00279)	(0.00340)	(0.00367)	(0.00254)	(0.00256)
Average fertility rate	-0.0112	0.00480	-0.0179	0.00375	-0.000553	0.00252
	(0.00989)	(0.00962)	(0.0110)	(0.0111)	(0.00716)	(0.00679)
Average age at birth of first child	0.00484**	0.00427**	0.00359*	0.00298	0.00402**	0.00385**
	(0.00204)	(0.00208)	(0.00206)	(0.00186)	(0.00160)	(0.00160)
Percent foreign born citizens	-0.171	-0.272***	-0.154	-0.459***	-0.142*	-0.0265
	(0.127)	(0.0625)	(0.144)	(0.0786)	(0.0860)	(0.0462)
Percent openly unemployed	-0.751***	-1.070***	-1.193***	-1.502***	-0.293	-0.410*
	(0.267)	(0.263)	(0.214)	(0.219)	(0.234)	(0.223)
Percent foreign residents, -EU/EES	-0.0877	Omitted	-0.398*	Omitted	0.270*	Omitted
	(0.222)		(0.210)		(0.140)	
2007.Year	0.0397***	0.0313***	0.0395***	0.0295***	0.0327***	0.0301***
	(0.00706)	(0.00702)	(0.00829)	(0.00865)	(0.00618)	(0.00600)
2008.Year	0.0711***	0.0577***	0.0676***	0.0515***	0.0676***	0.0639***
	(0.00827)	(0.00803)	(0.00936)	(0.0103)	(0.00724)	(0.00704)
2009.Year	0.113***	0.104***	0.123***	0.112***	0.0993***	0.0973***
	(0.00738)	(0.00729)	(0.00870)	(0.00922)	(0.00647)	(0.00617)
2010.Year	0.117***	0.104***	0.121***	0.106***	0.102***	0.101***
	(0.00725)	(0.00693)	(0.00803)	(0.00824)	(0.00659)	(0.00602)
Constant	6.252***	5.437***	6.521***	5.606***	5.488***	5.246***
	(0.216)	(0.145)	(0.240)	(0.186)	(0.196)	(0.131)
R-squared	0.893	0.887	0.892	0.881	0.890	0.889

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Bold variable are in logarithmic form in regressions

Table 1C: OLS regression results – average yearly income

Y: Percent openly unemployed	Total population		Male population		Female population	
VARIABLES	OLS using all variables	OLS without multicollinear variables	OLS using all variables	OLS without multicollinear variables	OLS using all variables	OLS without multicollinear variables
Percent EU/EES immigrants	-0.775***	-0.858***	-0.847***	-0.954***	-0.434	-0.452
	(0.289)	(0.297)	(0.316)	(0.309)	(0.271)	(0.275)
Percent with higher education	0.232***	0.0612***	0.232***	0.123***	0.139***	-0.00813
	(0.0377)	(0.0152)	(0.0450)	(0.0173)	(0.0300)	(0.0148)
Percent with lower education	0.188***	Omitted	0.119**	Omitted	0.162***	Omitted
	(0.0381)		(0.0475)		(0.0291)	
Average age	0.00129***	0.000953***	0.00142***	0.00133***	0.000780***	0.000362**
	(0.000246)	(0.000245)	(0.000313)	(0.000308)	(0.000190)	(0.000172)
Cost for a fulltime student in SFI	-0.000190	2.65e-05	0.000368	0.000513	-0.000646	-0.000489
	(0.000510)	(0.000524)	(0.000497)	(0.000511)	(0.000416)	(0.000431)
Estimated regional GDP/capita	-0.000478	0.00222*	-0.00135	0.00142	0.00215*	0.00346***
	(0.00132)	(0.00127)	(0.00180)	(0.00161)	(0.00126)	(0.00119)
Equalizing payments, received/paid	0.000765**	0.000275	0.000732*	0.000416	0.000568*	4.80e-05
	(0.000325)	(0.000322)	(0.000414)	(0.000411)	(0.000314)	(0.000301)
Municipal tax rate	0.261***	0.264***	0.257***	0.268***	0.00271***	0.00265***
	(0.0584)	(0.0596)	(0.0722)	(0.0705)	(0.000523)	(0.000511)
Income from capital	-0.00874***	-0.0113***	-0.0128***	-0.0145***	-0.00573***	-0.00809***
	(0.00157)	(0.00154)	(0.00225)	(0.00218)	(0.00146)	(0.00139)
Net value of municipal budget	0.000169	0.000189	0.000134	0.000176	-1.14e-05	-3.58e-06
	(0.000310)	(0.000319)	(0.000438)	(0.000444)	(0.000389)	(0.000394)
Municipal population density	0.000919*	0.00147***	0.000671	0.00124*	0.00146***	0.00185***
	(0.000486)	(0.000486)	(0.000708)	(0.000681)	(0.000420)	(0.000388)
Average fertility rate	0.00192	-0.000234	0.00205	0.000894	-0.000115	-0.00226*
	(0.00166)	(0.00163)	(0.00196)	(0.00194)	(0.00139)	(0.00135)
Average age at birth of first child	-1.96e-05	0.000126	-1.60e-05	7.01e-05	0.000145	0.000264
	(0.000345)	(0.000354)	(0.000370)	(0.000387)	(0.000325)	(0.000333)
Percent foreign born citizens	0.120***	0.0776***	0.130***	0.0816***	0.0824***	0.0540***
	(0.0206)	(0.0102)	(0.0265)	(0.0136)	(0.0186)	(0.00835)
Average yearly income	-0.0213***	-0.0306***	-0.0383***	-0.0449***	-0.00901	-0.0133*
	(0.00755)	(0.00750)	(0.00750)	(0.00675)	(0.00719)	(0.00717)
Percent foreign residents, -EU/EES	-0.109***	Omitted	-0.107***	Omitted	-0.0799*	Omitted
	(0.0370)		(0.0411)		(0.0407)	
2007.Year	-0.00573***	-0.00425***	-0.00499***	-0.00413***	-0.00505***	-0.00382***
	(0.00120)	(0.00120)	(0.00144)	(0.00146)	(0.00120)	(0.00125)
2008.Year	-0.00559***	-0.00315**	-0.00338**	-0.00201	-0.00594***	-0.00387***
	(0.00147)	(0.00142)	(0.00165)	(0.00159)	(0.00142)	(0.00144)
2009.Year	0.00902***	0.0115***	0.0162***	0.0175***	0.00395***	0.00604***
	(0.00146)	(0.00137)	(0.00169)	(0.00159)	(0.00127)	(0.00125)
2010.Year	0.00324**	0.00554***	0.00655***	0.00751***	0.00259*	0.00461***
	(0.00150)	(0.00139)	(0.00161)	(0.00145)	(0.00134)	(0.00129)
Constant	-0.0900	0.0966**	0.0577	0.169***	-0.126**	0.0286
	(0.0597)	(0.0480)	(0.0678)	(0.0478)	(0.0534)	(0.0448)
R-squared	0.633	0.609	0.656	0.646	0.513	0.482

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Bold variable are in logarithmic form in regressions

Table 2C: OLS regression results - unemployment

Appendix D: Fixed effects regression results

Y= Average yearly income	**Total population**					
VARIABLES	**F.E i.Municipal i.Year**	**F.E 1 year lag i.Municipal i.Year**	**F.E 1 year lag + no lag i.Municipal i.Year**	**F.E i.Municipal**	**F.E 1 year lag i.Municipal**	**F.E 1 year lag + no lag i.Municipal**
Percent EU/EES immigrants	-0.259		-0.621	-0.408		-0.786
	(0.476)		(0.856)	(0.847)		(1.595)
1 year lag percecnt EU/EES immigrants		-0.0281	0.339		-0.275	-0.269
		(0.392)	(0.397)		(0.758)	(0.858)
Percent with higher education	0.215	0.195	0.00196	4.196***	3.556***	3.984***
	(0.297)	(0.361)	(0.426)	(0.373)	(0.378)	(0.477)
Average age	-0.00386	-0.00357	-0.00245	0.0321***	0.0310***	0.0389***
	(0.00320)	(0.00365)	(0.00397)	(0.00522)	(0.00495)	(0.00627)
Cost for a fulltime student in SFI	0.000574	-0.000529	-0.000219	0.000753	0.00142	0.00118
	(0.000783)	(0.000924)	(0.000827)	(0.00175)	(0.00207)	(0.00209)
Estimated regional GDP/capita	Omitted	Omitted	Omitted	0.0174	-0.0674*	-0.215***
				(0.0444)	(0.0361)	(0.0358)
Equalizing payments, received/paid	-0.00118	-0.000616	-0.00107	-0.00187	-0.00241*	-0.00380**
	(0.000775)	(0.000811)	(0.000847)	(0.00155)	(0.00126)	(0.00157)
Municipal tax rate	-0.160	-0.374	-0.380	0.319	-0.810	-0.529
	(0.354)	(0.376)	(0.417)	(0.673)	(0.574)	(0.683)
Income from capital	-0.00218	-0.00282	-0.00133	0.0311***	0.0153***	0.0155***
	(0.00301)	(0.00276)	(0.00318)	(0.00502)	(0.00365)	(0.00448)
Net value of municipal budget	-4.97e-05	-0.000243	-0.000127	-0.00113	-0.000656	-0.000796
	(0.000440)	(0.000446)	(0.000477)	(0.000769)	(0.000769)	(0.000795)
Municipal population density	-0.0614*	-0.0720*	-0.0844**	-0.0457	-0.127*	-0.104
	(0.0339)	(0.0382)	(0.0397)	(0.0820)	(0.0737)	(0.0862)
Average fertility rate	-0.00359	-0.000909	-0.00266	-9.13e-05	-0.000722	-0.00141
	(0.00229)	(0.00209)	(0.00234)	(0.00457)	(0.00434)	(0.00503)
Average age at birth of first child	0.000318	8.77e-05	3.14e-06	0.000873	-0.000379	-0.000195
	(0.000504)	(0.000477)	(0.000581)	(0.00114)	(0.000866)	(0.00120)
Percent foreign born citizens	-0.239	-0.150	-0.0307	1.248***	1.469***	1.932***
	(0.176)	(0.204)	(0.237)	(0.249)	(0.273)	(0.300)
Percent openly unemployed	-0.375***	-0.397***	-0.485***	0.00425	0.174	-0.254*
	(0.110)	(0.107)	(0.110)	(0.160)	(0.125)	(0.140)
2007.Year	0.0363***					
	(0.00209)					
2008.Year	0.0758***	0.0391***	0.0388***			
	(0.00350)	(0.00200)	(0.00214)			
2009.Year	0.106***	0.0694***	0.0706***			
	(0.00502)	(0.00513)	(0.00537)			
2010.Year	0.114***	0.0771***	0.0785***			
	(0.00683)	(0.00719)	(0.00787)			
2011.Year		0.107***				
		(0.00941)				
Constant	5.694***	5.810***	5.817***	3.040***	4.204***	4.449***
	(0.236)	(0.260)	(0.287)	(0.412)	(0.368)	(0.470)
R-squared	0.979	0.967	0.959	0.906	0.888	0.862

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Bold variable are in logarithmic form in regressions

Table 1D: Fixed effects regression result for total population – average yearly income

Y= Average yearly income	Male population					
VARIABLES	F.E i.Municipal i.Year	F.E 1 year lag i.Municipal i.Year	F.E 1 year lag + no lag i.Municipal i.Year	F.E i.Municipal	F.E 1 year lag i.Municipal	F.E 1 year lag + no lag i.Municipal
Percent EU/EES immigrants	-0.394		-0.634	-0.168		-0.788
	(0.441)		(0.922)	(0.842)		(1.753)
1 year lag percecnt EU/EES immigrants		-0.671	-0.362		-0.743	-0.493
		(0.451)	(0.483)		(0.754)	(0.836)
Percent with higher education	-0.187	-0.483	-0.473	1.872***	1.272**	1.640**
	(0.310)	(0.354)	(0.411)	(0.534)	(0.537)	(0.657)
Average age	-0.00272	-0.00427	-0.00238	0.0369***	0.0377***	0.0462***
	(0.00400)	(0.00416)	(0.00528)	(0.00641)	(0.00539)	(0.00678)
Cost for a fulltime student in SFI	0.000118	-0.000199	5.33e-05	0.000522	0.00196	0.00205
	(0.000922)	(0.00108)	(0.000963)	(0.00198)	(0.00220)	(0.00216)
Estimated regional GDP/capita	Omitted	Omitted	Omitted	0.245***	0.138**	-0.0238
				(0.0544)	(0.0539)	(0.0534)
Equalizing payments, received/paid	-0.00214**	-0.00116	-0.00187*	-0.00290	-0.00337**	-0.00470**
	(0.000912)	(0.000994)	(0.00108)	(0.00190)	(0.00156)	(0.00208)
Municipal tax rate	0.118	-0.451	-0.266	0.151	-0.942	-0.631
	(0.373)	(0.445)	(0.510)	(0.850)	(0.677)	(0.867)
Income from capital	-0.000347	-0.00374	0.000419	0.0371***	0.0175***	0.0218***
	(0.00369)	(0.00387)	(0.00433)	(0.00543)	(0.00535)	(0.00545)
Net value of municipal budget	4.47e-05	-0.000383	5.54e-05	-0.000794	-0.000293	7.69e-05
	(0.000570)	(0.000570)	(0.000607)	(0.000918)	(0.000951)	(0.00102)
Municipal population density	-0.0121	-0.0269***	-0.0134	0.00993	-0.00201	0.0102
	(0.00896)	(0.00868)	(0.0113)	(0.0241)	(0.0212)	(0.0279)
Average fertility rate	-0.00405	-0.000886	-0.00189	0.000240	-0.00107	-4.46e-05
	(0.00306)	(0.00289)	(0.00375)	(0.00560)	(0.00575)	(0.00753)
Average age at birth of first child	-0.000133	-1.50e-05	-0.000247	0.000669	-0.000777	-0.000567
	(0.000536)	(0.000542)	(0.000750)	(0.000909)	(0.000930)	(0.00125)
Percent foreign born citizens	-0.209	-0.188	-0.0906	1.260***	1.576***	1.937***
	(0.191)	(0.225)	(0.286)	(0.287)	(0.297)	(0.334)
Percent openly unemployed	-0.513***	-0.525***	-0.581***	0.297*	0.272**	0.0782
	(0.104)	(0.117)	(0.117)	(0.155)	(0.126)	(0.152)
2007.Year	0.0373***					
	(0.00203)					
2008.Year	0.0759***	0.0397***	0.0383***			
	(0.00316)	(0.00196)	(0.00224)			
2009.Year	0.105***	0.0691***	0.0683***			
	(0.00439)	(0.00501)	(0.00533)			
2010.Year	0.111***	0.0757***	0.0746***			
	(0.00571)	(0.00630)	(0.00702)			
2011.Year		0.105***				
		(0.00738)				
Constant	5.647***	5.953***	5.784***	2.035***	3.008***	3.347***
	(0.207)	(0.240)	(0.295)	(0.251)	(0.222)	(0.298)
R-squared	0.959	0.927	0.902	0.854	0.799	0.737

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Bold variable are in logarithmic form in regressions

Table 2D: Fixed effects regression result for male population – average yearly income

Y= Average yearly income	Female population					
VARIABLES	F.E i.Municipal i.Year	F.E 1 year lag i.Municipal i.Year	F.E 1 year lag + no lag i.Municipal i.Year	F.E i.Municipal	F.E 1 year lag i.Municipal	F.E 1 year lag + no lag i.Municipal
Percent EU/EES immigrants	-0.288		-0.359	-0.328		-1.058
	(0.547)		(0.707)	(0.777)		(1.424)
1 year lag percecnt EU/EES immigrants		0.124	0.364		-1.099	-1.580**
		(0.462)	(0.477)		(0.697)	(0.775)
Percent with higher education	0.300	0.496**	0.198	4.415***	3.876***	4.050***
	(0.211)	(0.209)	(0.248)	(0.220)	(0.247)	(0.284)
Average age	-0.00313	0.000573	0.00150	0.0230***	0.0255***	0.0307***
	(0.00223)	(0.00221)	(0.00248)	(0.00458)	(0.00438)	(0.00566)
Cost for a fulltime student in SFI	0.00130	-0.000454	-0.000466	0.00234	0.00160	0.00165
	(0.000879)	(0.000792)	(0.000887)	(0.00201)	(0.00206)	(0.00249)
Estimated regional GDP/capita	Omitted	Omitted	Omitted	-0.0750**	-0.186***	-0.259***
				(0.0367)	(0.0284)	(0.0280)
Equalizing payments, received/paid	-0.000421	-0.000592	-0.000658	-0.000842	-0.00249*	-0.00393**
	(0.000715)	(0.000766)	(0.000814)	(0.00159)	(0.00134)	(0.00163)
Municipal tax rate	-0.00312	-0.00227	-0.188	0.00692	0.00186	0.302
	(0.00393)	(0.00388)	(0.403)	(0.00666)	(0.00612)	(0.658)
Income from capital	-0.00459	-0.00426	-0.00658**	0.0209***	0.00630	0.00331
	(0.00330)	(0.00264)	(0.00317)	(0.00547)	(0.00420)	(0.00505)
Net value of municipal budget	-4.02e-05	-0.000144	-0.000234	-0.00102	-0.000427	-0.000746
	(0.000389)	(0.000410)	(0.000422)	(0.000854)	(0.000808)	(0.000848)
Municipal population density	-0.00459	0.0324	0.0488	0.0340	0.0730*	0.174***
	(0.0113)	(0.0266)	(0.0302)	(0.0260)	(0.0378)	(0.0572)
Average fertility rate	-0.00239	-0.00138	-0.00119	0.000469	-0.000270	8.79e-06
	(0.00196)	(0.00188)	(0.00197)	(0.00416)	(0.00373)	(0.00439)
Average age at birth of first child	0.000604	0.000235	8.50e-05	0.000709	0.000260	-9.61e-05
	(0.000463)	(0.000358)	(0.000392)	(0.000981)	(0.000814)	(0.00105)
Percent foreign born citizens	-0.452***	-0.260*	-0.277	1.165***	1.458***	1.703***
	(0.173)	(0.152)	(0.172)	(0.257)	(0.232)	(0.254)
Percent openly unemployed	-0.0744	-0.0846	-0.163	-0.110	0.0294	-0.296*
	(0.107)	(0.105)	(0.109)	(0.185)	(0.152)	(0.175)
2007.Year	0.0355***					
	(0.00207)					
2008.Year	0.0781***	0.0403***	0.0422***			
	(0.00367)	(0.00168)	(0.00194)			
2009.Year	0.113***	0.0729***	0.0767***			
	(0.00483)	(0.00339)	(0.00372)			
2010.Year	0.122***	0.0805***	0.0856***			
	(0.00647)	(0.00500)	(0.00578)			
2011.Year		0.106***				
		(0.00641)				
Constant	5.342***	5.086***	5.067***	3.342***	3.996***	3.899***
	(0.153)	(0.175)	(0.200)	(0.245)	(0.257)	(0.353)
R-squared	0.983	0.977	0.976	0.917	0.908	0.888

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Bold variable are in logarithmic form in regressions

Table 3D: Fixed effects regression result for female population – average yearly income

Y= Percentage openly unemployed	**Total population**					
VARIABLES	**F.E i.Municipal i.Year**	**F.E 1 year lag i.Municipal i.Year**	**F.E 1 year lag + no lag i.Municipal i.Year**	**F.E i.Municipal**	**F.E 1 year lag i.Municipal**	**F.E 1 year lag + no lag i.Municipal**
Percent EU/EES immigrants	-0.444*		-0.933*	-0.390		-0.680
	(0.256)		(0.473)	(0.313)		(0.611)
1 year lag percecnt EU/EES immigrants		-0.599*	-0.456		-0.265	-0.465
		(0.347)	(0.382)		(0.376)	(0.387)
Percent with higher education	0.0725	0.0848	0.205	0.951***	1.034***	1.291***
	(0.186)	(0.145)	(0.188)	(0.163)	(0.150)	(0.174)
Average age	0.000406	-0.00319	0.000313	0.00810***	0.00424*	0.00909***
	(0.00213)	(0.00220)	(0.00232)	(0.00226)	(0.00245)	(0.00252)
Cost for a fulltime student in SFI	0.000453	-0.000486	-0.000444	8.25e-05	-0.00103*	-0.00116*
	(0.000436)	(0.000462)	(0.000435)	(0.000512)	(0.000606)	(0.000589)
Estimated regional GDP/capita	Omitted	Omitted	Omitted	-0.182***	-0.158***	-0.199***
				(0.0120)	(0.0142)	(0.0143)
Equalizing payments, received/paid	-0.000998*	-0.000526	-0.00136**	-0.00109*	-0.000696	-0.00170**
	(0.000538)	(0.000498)	(0.000634)	(0.000615)	(0.000644)	(0.000847)
Municipal tax rate	0.515*	0.610***	0.610*	0.669*	0.805**	0.864*
	(0.301)	(0.227)	(0.320)	(0.356)	(0.336)	(0.446)
Income from capital	-0.000243	0.00234	0.00210	-0.00889***	-0.00502***	-0.00653***
	(0.00202)	(0.00196)	(0.00200)	(0.00201)	(0.00185)	(0.00194)
Net value of municipal budget	0.000106	-3.73e-05	1.98e-05	0.000256	0.000107	5.05e-05
	(0.000346)	(0.000247)	(0.000255)	(0.000379)	(0.000339)	(0.000316)
Municipal population density	0.00755	0.0148	0.00539	0.00399	0.0311	0.0220
	(0.0208)	(0.0164)	(0.0207)	(0.0249)	(0.0204)	(0.0257)
Average fertility rate	0.000757	0.000948	0.000158	0.00358**	0.00257	0.00313
	(0.00143)	(0.00133)	(0.00169)	(0.00161)	(0.00156)	(0.00207)
Average age at birth of first child	0.000268	0.000353	0.000305	0.000363	0.000232	0.000303
	(0.000330)	(0.000235)	(0.000360)	(0.000374)	(0.000292)	(0.000420)
Percent foreign born citizens	0.155*	0.133	0.159	0.521***	0.513***	0.603***
	(0.0870)	(0.100)	(0.110)	(0.0802)	(0.0890)	(0.0976)
Average yearly income	-0.173***	-0.150***	-0.193***	0.000595	0.0297	-0.0419*
	(0.0487)	(0.0421)	(0.0484)	(0.0224)	(0.0219)	(0.0232)
2007.Year	-0.00149					
	(0.00204)					
2008.Year	0.00226	0.00281	0.00350			
	(0.00415)	(0.00224)	(0.00239)			
2009.Year	0.0221***	0.0234***	0.0239***			
	(0.00544)	(0.00354)	(0.00379)			
2010.Year	0.0181***	0.0199***	0.0197***			
	(0.00613)	(0.00423)	(0.00463)			
2011.Year		0.0252***				
		(0.00586)				
Constant	0.769**	0.751***	0.849***	0.339*	0.0895	0.472**
	(0.309)	(0.278)	(0.312)	(0.192)	(0.172)	(0.211)
R-squared	0.702	0.773	0.806	0.605	0.655	0.728
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1 Note: Bold variable are in logarithmic form in regressions						

Table 4D: Fixed effects regression result for total population – unemployment

Y= Percentage openly unemployed	Male population					
VARIABLES	F.E i.Municipal i.Year	F.E 1 year lag i.Municipal i.Year	F.E 1 year lag + no lag i.Municipal i.Year	F.E i.Municipal	F.E 1 year lag i.Municipal	F.E 1 year lag + no lag i.Municipal
Percent EU/EES immigrants	-0.372		-0.432	-0.349		-0.123
	(0.306)		(0.495)	(0.345)		(0.632)
1 year lag percecnt EU/EES immigrants		-0.392	-0.407		-0.225	-0.238
		(0.349)	(0.361)		(0.469)	(0.462)
Percent with higher education	0.171	0.229*	0.264	1.009***	1.288***	1.444***
	(0.166)	(0.126)	(0.181)	(0.187)	(0.162)	(0.212)
Average age	0.00243	-0.00250	0.00164	0.0153***	0.0112***	0.0173***
	(0.00248)	(0.00203)	(0.00237)	(0.00278)	(0.00280)	(0.00341)
Cost for a fulltime student in SFI	0.000884	-0.000112	2.31e-05	0.000747	-0.000503	-0.000748
	(0.000588)	(0.000560)	(0.000651)	(0.000740)	(0.000783)	(0.000900)
Estimated regional GDP/capita	Omitted	Omitted	Omitted	-0.234***	-0.262***	-0.263***
				(0.0150)	(0.0173)	(0.0187)
Equalizing payments, received/paid	-0.00127*	-0.000572	-0.00144*	-0.00135	-0.00112	-0.00204
	(0.000673)	(0.000572)	(0.000830)	(0.000882)	(0.000799)	(0.00124)
Municipal tax rate	0.664**	0.600**	0.728**	0.847**	0.974**	1.097**
	(0.317)	(0.244)	(0.335)	(0.399)	(0.384)	(0.495)
Income from capital	-0.000468	0.00284	0.00286	-0.0101***	-0.00836***	-0.00764***
	(0.00252)	(0.00266)	(0.00249)	(0.00239)	(0.00241)	(0.00237)
Net value of municipal budget	0.000224	-8.25e-05	6.31e-05	0.000483	0.000409	0.000249
	(0.000354)	(0.000281)	(0.000283)	(0.000412)	(0.000389)	(0.000367)
Municipal population density	0.0107	-0.00421	0.00164	0.0166	0.00786	0.00899
	(0.00835)	(0.00378)	(0.00728)	(0.0122)	(0.00648)	(0.0110)
Average fertility rate	0.00223	0.00116	0.00197	0.00769***	0.00682***	0.00722**
	(0.00178)	(0.00170)	(0.00219)	(0.00197)	(0.00219)	(0.00288)
Average age at birth of first child	2.35e-05	0.000279	-7.15e-06	0.000313	0.000185	-8.45e-06
	(0.000313)	(0.000238)	(0.000334)	(0.000346)	(0.000335)	(0.000463)
Percent foreign born citizens	0.123	0.0109	0.0592	0.634***	0.646***	0.759***
	(0.104)	(0.103)	(0.137)	(0.106)	(0.118)	(0.133)
Average yearly income	-0.213***	-0.167***	-0.198***	0.0523*	0.0569**	0.0162
	(0.0408)	(0.0336)	(0.0394)	(0.0276)	(0.0263)	(0.0311)
2007.Year	-0.00112					
	(0.00199)					
2008.Year	0.00410	0.00411**	0.00425**			
	(0.00388)	(0.00192)	(0.00202)			
2009.Year	0.0280***	0.0296***	0.0290***			
	(0.00497)	(0.00283)	(0.00316)			
2010.Year	0.0201***	0.0226***	0.0213***			
	(0.00555)	(0.00326)	(0.00387)			
2011.Year		0.0202***				
		(0.00452)				
Constant	0.888***	0.884***	0.844***	-0.0189	0.246*	0.173
	(0.277)	(0.223)	(0.261)	(0.146)	(0.146)	(0.187)
R-squared	0.731	0.776	0.814	0.591	0.593	0.697

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1
Note: Bold variable are in logarithmic form in regressions

Table 5D: Fixed effects regression result for male population – unemployment

Y= Percentage openly unemployed	Female population					
VARIABLES	F.E i.Municipal i.Year	F.E 1 year lag i.Municipal i.Year	F.E 1 year lag + no lag i.Municipal i.Year	F.E i.Municipal	F.E 1 year lag i.Municipal	F.E 1 year lag + no lag i.Municipal
Percent EU/EES immigrants	-0.325		-1.076**	-0.236		-0.937*
	(0.290)		(0.442)	(0.317)		(0.528)
1 year lag percecnt EU/EES immigrants		-0.549*	-0.594*		-0.367	-0.585*
		(0.298)	(0.351)		(0.300)	(0.324)
Percent with higher education	0.0110	0.116	0.198	0.492***	0.539***	0.684***
	(0.147)	(0.118)	(0.147)	(0.117)	(0.110)	(0.123)
Average age	-0.000594	-0.00350**	-0.00138	0.00318*	-0.00159	0.00141
	(0.00171)	(0.00156)	(0.00164)	(0.00165)	(0.00166)	(0.00155)
Cost for a fulltime student in SFI	-0.000158	-0.000820*	-0.000944**	-0.000360	-0.00127***	-0.00145***
	(0.000388)	(0.000438)	(0.000379)	(0.000438)	(0.000483)	(0.000468)
Estimated regional GDP/capita	Omitted	Omitted	Omitted	-0.104***	-0.0971***	-0.103***
				(0.0115)	(0.0118)	(0.0127)
Equalizing payments, received/paid	-0.000627	-0.000357	-0.00125**	-0.000822*	-0.000416	-0.00135**
	(0.000455)	(0.000422)	(0.000522)	(0.000462)	(0.000506)	(0.000659)
Municipal tax rate	0.00419	0.00445*	0.498	0.00506	0.00591*	0.662
	(0.00314)	(0.00267)	(0.376)	(0.00327)	(0.00327)	(0.442)
Income from capital	0.000604	0.00274	0.00148	-0.00978***	-0.00635***	-0.00746***
	(0.00216)	(0.00180)	(0.00200)	(0.00189)	(0.00158)	(0.00176)
Net value of municipal budget	6.17e-05	1.58e-05	9.11e-05	0.000245	0.000188	0.000186
	(0.000370)	(0.000268)	(0.000285)	(0.000394)	(0.000315)	(0.000331)
Municipal population density	0.000981	0.000734	0.0225	0.0106**	0.00597	0.0431**
	(0.00457)	(0.0132)	(0.0166)	(0.00410)	(0.0160)	(0.0174)
Average fertility rate	-0.000360	-7.28e-05	-0.000890	0.000910	0.00147	0.000756
	(0.00124)	(0.00121)	(0.00149)	(0.00137)	(0.00132)	(0.00155)
Average age at birth of first child	0.000507*	0.000429*	0.000571*	0.000527	0.000522**	0.000581*
	(0.000305)	(0.000251)	(0.000323)	(0.000339)	(0.000264)	(0.000337)
Percent foreign born citizens	0.192**	0.236***	0.244**	0.391***	0.404***	0.446***
	(0.0949)	(0.0853)	(0.100)	(0.0809)	(0.0699)	(0.0862)
Average yearly income	-0.0330	-0.0337	-0.0729	-0.0120	0.00368	-0.0343
	(0.0476)	(0.0442)	(0.0548)	(0.0199)	(0.0190)	(0.0217)
2007.Year	-0.00527**					
	(0.00217)					
2008.Year	-0.00743*	-0.00307	-0.00189			
	(0.00449)	(0.00231)	(0.00291)			
2009.Year	0.00431	0.00879**	0.0102*			
	(0.00630)	(0.00405)	(0.00520)			
2010.Year	0.00344	0.00766	0.00837			
	(0.00727)	(0.00477)	(0.00632)			
2011.Year		0.00501				
		(0.00631)				
Constant	0.104	0.201	0.244	0.279**	0.348***	0.327**
	(0.290)	(0.246)	(0.313)	(0.122)	(0.125)	(0.157)
R-squared	0.561	0.629	0.693	0.470	0.528	0.622

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Note: Bold variable are in logarithmic form in regressions

Table 6D: Fixed effects regression result for female population – unemployment