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**Does place of residence impact labour market participation?
- A quantitative study of foreign-born women in Sweden**

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Abstract

This paper examines the relationship between the employment rate of foreign-born women and their place of residence. Segregation in Sweden has been increasing along with differences in income and employment between the native and foreign-born population. Foreign-born, have as a group, lower employment rate and income than the native-born and especially foreign-born women have experienced difficulties in entering the labour market. Differences in income and employment partly characterize spatial- and socioeconomic segregation and this thesis aim is to analyse if place of residence have a negative impact on the employment of foreign-born women. The study has been done using ordinary least squares (OLS) and district level data from six of the biggest cities in Sweden. The results show that certain education levels and household compositions are more important for the employment rate of foreign-born women when living in weak districts compared to when living in strong districts. It also implies that socioeconomic weak districts have a small and negative impact on the employment rate of foreign-born women. However, since the results decreased as more characteristics were controlled for, and the significance did not hold for all regressions, a conclusion of the impact of place of residence cannot be made.

Keywords: segregation, foreign-born women, labour force participation, reputation, neighbourhood effects

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1. Introduction

In the world today, integration and equality are highly important issues to discuss due to the increased migration flows and growing gaps in society. Sweden has over the last years faced increasing segregation and differences in for example income and unemployment among social groups in the country (SCB, 2017; OECD, 2017; Lilja & Pemer, 2010).

In 2014, Sweden had the highest difference in employment rate between foreign and native-born populations among 26 countries of the EU. The employment rate was 83.1 percent for the native-born compared to 67.8 percent for the foreign-born population whereof 34.4 percent of the foreign-born, especially women, experienced difficulties entering the labour market (SCB, 2016b). In 2017, the employment rate in Sweden had increased significantly for the native-born compared to previous years. However, neither the employment nor the unemployment rate differed for the foreign-born population. In numbers, the unemployment rate for the foreign-born was 15.1 percent and for the native-born 4.3 percent. Moreover, differences do not only exist between foreign-born and native-born but also between genders. Although the unemployment rate did not differ for the foreign-born as a group, the unemployment rate decreased for foreign-born men while it increased for the women (SCB, 2018). In addition to differences in employment rate between foreign and native-born populations, there are also differences in income. Foreign-born has a median income of approximately 63 percent of the median income native-born have (SCB, 2016a).

Differences in employment and income are factors that, connected with spatial separation, characterize segregation. Segregation is increasing and spreading in the biggest cities of Sweden (Lilja & Pemer, 2010) and the threat of it has resulted in the creation of the Delegation against Segregation (Dir 2017:33). Segregation and growing differences are not only problematic from a social point of view but also from an economical perspective. From a social point of view there is a risk of increased polarization and reduced social mobility while for the economy, possible growth is hindered by groups that are held unemployed and have low activity in the society (OECD, 2017). The urgency and importance of integration and equality are underlying interests for the chosen topic of this thesis.

While some research has been carried out on discrimination of foreign-born on the labour market and the importance of place of residence, there have been few investigations focusing solely on foreign-born women (Bunel, L'Horty & Petit, 2016; Bertrand & Mullainathan, 2002; Hedberg, 2009; Yamane, 2002). The Swedish Agency for Public Management (Statskontoret) examined reasons why foreign-born women have low activity on the Swedish labour market. In the final report, structural reasons were identified as the explanation of the participation of foreign-born women on the labour market. The structural reasons can be explained by a small portion of low-qualified jobs, high requirements on skills, or discrimination. Further, social networks play an important role in increasing employment possibilities and neighbourhood may affect how useful the networks become (Statskontoret, 2018). Hence, place of residence is also of interest to consider in this thesis.

1.1 Aim and research question

The aim of this thesis is to compare foreign-born women in some of Sweden's largest cities to investigate if their employment rate differs depending on the place of residence. The purpose is not to measure causal effects of segregation on the employment rate but to analyse the relationship between place of residence and employment rate of foreign-born women. This stand is due to the difficulty of capturing the causality of segregation (Tunstall et al., 2013; Boverket, 2004). We will compare foreign-born women living in socioeconomic weak and strong districts while controlling for the level of education, household composition and immigration period in order to answer our research question:

Does living in a socioeconomic weak district negatively impact foreign-born women's employment rate?

In this thesis, socioeconomic weak and strong district are defined by how high the median incomes of the districts are. This is due to that socioeconomic weak districts often are characterized by low incomes (Göteborgs stad, 2014, 2017). Hence, the median income is used to determine if a district is socioeconomic weak or strong. Furthermore, this thesis will be delimited to only consider data from Gothenburg, Malmö, Linköping, Helsingborg, Västerås and Jönköping, which are six of the ten biggest cities in Sweden. The limitation is

due to availability of data but also because of the increased segregation in these cities (Lilja & Perner, 2010).

1.2 Structure

The structure of the thesis will be as follows. In section 2, previous research and theories will be presented. Section 3 will provide the methodology and data of the thesis and the results will be presented in section 4. Section 5 will discuss the findings and the conclusions will be presented in section 6.

2.Theory and previous research

This section will provide theories and previous research relevant to the subject of the thesis.

2.1 Neighbourhood reputation and statistical discrimination

The effect of neighbourhood reputation has its basis on the underlying mechanism of the theory of statistical discrimination where discrimination is due to lack of information. The theory assumes a profit-maximizing market where the employer wants to hire the most productive employees (Arrow, 1998). In order to make the most cost-minimizing choice among the applicants, the employer needs information about the potential and productivity of applicants. The theory assumes that all information available is used in the evaluation. However, full information about the productivity of a person is impossible to acquire before a 'try-out'. Thus, the employer uses stereotypical assumptions, beliefs and expectations about a group that the applicant is related to when deciding to hire. Consequently, assumptions, stigma and reputations about a group or neighbourhood that exists in the society can create generalizations. These becomes discriminating if an employer uses it as information against an individual that is comprised in that generalized reputation (Phelps, 1972).

Studies about neighbourhood reputation have many different results (Atkinson & Kintrea, 2001; Tunstall et al., 2013; Van Ham & Manly, 2009). Tunstall et al. (2013) made a field

experiment to explore if reputation of deprived areas has an explanatory effect on the variation of unemployment in the UK. The authors in this study could not find significant evidence for neighbourhood effects. However, other studies have shown different results. In a qualitative study by Atkinson & Kintrea (2001) the experience of poor residents from deprived and socially mixed neighbourhoods was compared. It was clearly shown by the surveys that reputations of neighbourhoods are problematic when ‘getting a job’ and for other structural opportunities. The result was strictly delimited to deprived areas as only 0.5 percent of the respondents in the non-deprived neighbourhoods answered that reputation was a problem.

2.2 Residential segregation

The definition of residential segregation is that people with different characteristics live apart from each other (Statskontoret, 2018; Göteborgs stad, 2017; Boverket, 2004). Socioeconomic segregation is due to differences in for example education and income, which can contribute to residential segregation if groups of residents settle down where other residents with similar backgrounds live (Statskontoret, 2018; ESO, 2016). Residential segregation and labour market segregation relate to each other. The residential segregation can weaken the social capital such as social networks which can affect the chances of employment on the labour market and is referred to as *negative neighbourhood effects* (Göteborgs stad, 2017). The definition of segregation in this thesis will be residential segregation due to socioeconomic differences.

2.3 Social capital and neighbourhood effects

Social capital implies interaction between people and refers to norms, social networks and other forms of socialization or attitudes that individuals and groups have (Brown, McLean & McMillan, 2018). Studies have shown that social capital have an impact on different outcomes such as school results or unemployment (Göteborgs Stad, 2017; IFAU, 2005; Tegegna, 2015). The basis of the theories of social capital is that networks and interactions influence for example attitudes, contacts and possibilities for employment, income support and other outcomes in the society (IFAU, 2005; ESO, 2016). Norms and attitudes of those surrounding may affect the individual through social expectation and pressures. Hence, if a

majority of the residents in a neighbourhood are unemployed it may be more acceptable to be and stay unemployed in that neighbourhood. Also, if there exists pessimism regarding the possibilities of finding a job, there is a probability that this also lowers the expectations of the unemployed individuals and may increase passivity regarding job searching. This may in turn affect the length and persistence of unemployment (IFAU, 2003).

The influences of social capital can be both negative and positive. This depends on the characteristics of the neighbourhood; in this study meaning the education level and employment status of a neighbourhood. Thus, if employment and the connection to the labour market is high among residents in the neighbourhood, it is associated as 'good' and may lead to positive neighbourhood effects. If employment is low and a weak connection to the labour market exists, it is defined as 'bad' and thereby lead to negative neighbourhood effects (ESO, 2011; IFAU, 2003). Negative neighbourhood effects can also arise because of inadequate resources and interventions in a neighbourhood (ESO, 2011).

2.4 Controls

Previous research has shown that human capital, such as education affects the labour market outcome (Becker, 1975; Finansdepartementet, 2007). The importance of education has also shown to be highly significant for those already in weak position, for example immigrants (Rooth & Åslund, 2006: 42). Furthermore, immigration year and household compositions are important factors affecting labour supply (Lundborg, Plug & Rasmussen, 2017; Silles, 2015; Finansdepartementet, 2007; Gronau, 1973). Thus, we will control for these variables in our thesis.

Other variables such as distance to work, spatial mismatch, language skills and work experience have also been shown to impact labour market participation (Gobillon, Selod & Zenou, 2007; Finansdepartementet, 2007; Statskontoret, 2018). However, the lack of information due to restrictive data accessibility has resulted in that we are incapable of controlling for these variables.

3. Method

In this section, a review of the method used in this thesis will be provided as well as necessary definitions we have made to enable comparison between the districts. Data and variable description will also be found in this section.

3.1 Model

The multivariate regression models are estimated using ordinary least squares (OLS). The method is used to find the best fitting linear relationship between the dependent variable and the independent variables. Since we only aim to observe this type of relationship, we found this method appropriate.

The models are presented below. Model (1) is our main model where weak district is defined as the 20th percent of districts with the lowest median incomes. These districts are compared to the rest of the districts which will be defined as strong. Model (2) is a complementary model with a more extreme definition of a socioeconomic strong district. Hence, in this model, 20 percent of the districts with the lowest median incomes are compared to 20 percent of the districts with the highest median incomes. This is in order to observe the weakest and strongest districts since the difference between the districts in model (1) is not as prominent as in model (2). The control variables will in both models be added successively in order to observe possible changes of the variable *weakdistrict*.

Models

$$(1) \text{ Employment rate}_i = \beta_0 + \beta_1 \text{ weak district} + \beta_2 \text{ level of education} + \beta_3 \text{ arrived after2000} \\ + \beta_4 \text{ household} + \varepsilon_i$$

$$(2) \text{ Employment rate}_i = \beta_0 + \beta_1 \text{ Extreme district} + \beta_2 \text{ level of education} + \beta_3 \text{ arrived} \\ \text{after2000} + \beta_4 \text{ household} + \varepsilon_i$$

The dependent variable is the average share of foreign-born women working in the district and will be referred to as employment rate. The parameter β_0 is the constant term of the model. Coefficient β_1 shows the effect on the employment rate of foreign-born women in a socioeconomic weak district compared to a socioeconomic strong district. The coefficients for level of education, household and year of immigration present the impact of the variables on the employment rate. This is for all foreign-born women, regardless of place of residence. The final variable is the error term, ε_i , which captures all the unobserved factors that have an impact on the average employment rate. Since we have not been able to control for factors such as age, language skills, work experiences, distance to work, due to restriction in data accessibility, these will be included in the error term. Interaction terms will also be included between our main independent variable and controls in order to observe if the impact of the variables differs if living in a weak or a strong district.

3.2 Data description

The data used was received from the statistical departments of each municipality which in turn was collected by Statistics Sweden.

The thesis uses data of foreign-born women from both inside and outside of EU/EFTA aged 25-64 years. The data collected is from the year of 2015 at a district level since individual level data is classified.¹ Each district is defined as one observation, making a total of 631 observations in the districts of Gothenburg, Malmö, Linköping, Helsingborg, Västerås and Jönköping. Some of the variables have missing data due to confidentiality (if the number of individuals in the observation is smaller than 5), especially among the smaller municipalities. Districts without foreign-born women and missing variables are excluded from the data, resulting in a total of 281 observations.

Since the data is from six cities of different size and population, we had to request data at different 'district levels' from each municipality. NYKO is a system the municipalities use that divides the cities into different districts. It has six area levels, where the sixth level has

¹We consider the criteria of ethical aspects as not relevant in this thesis

the smallest delimitation (SCB, n.d.b). By using NYKO as a common measurement we can gather data on different district levels, according to the population size of each city, in order to make a comparison between the cities fairer.

If a city with few inhabitants is divided into small districts of the same magnitude as a big city, it can create too many areas with few inhabitants. This would normally be preferable as smaller units may contribute to more detailed information. However, due to ethical principles of confidentiality for districts with a small number of inhabitants, this is hindered. Thus, small districts result in less information due to a smaller proportion of respondents and confidentiality restriction of data. A city with many inhabitants or large geographical size that is divided into bigger districts could in turn obstruct the analysis of the possible socioeconomic differences since larger areas would include a bigger variation of individuals. With the difference of population and geographical size in consideration, an attempt to divide the biggest cities into smaller districts than those of the smaller cities have been made. Gothenburg, Helsingborg and Malmö are divided into four-level districts whereas Västerås, Linköping and Jönköping are divided into three-level districts. A four-level district division would have been preferable for the municipality of Västerås, instead of Helsingborg, as it is one of the cities with most inhabitants. However, not all information could be given at this level and therefore we use a three-level division.

By using different districts level, we account for population and geographical differences between the cities. However, other aspects such as job possibilities, housing structure or job locations may still be a source of error as they can differ between the cities.

3.3 Definition of weak and strong districts

Before running our regressions and analysing the data, we determined to define segregation as residential segregation due to income differences between the districts. Thus, the districts will be categorized as socioeconomic weak and strong. Since the six cities of interest in this thesis are of different sizes we had to use a measurement common to all cities when dividing them into weak and strong districts. We chose the median income as a measure of each district's

socioeconomic level since the median is less affected by extreme values than the average income (SCB, n.d.a). From now on the median incomes will be referred to as only *income*.

Each city has its own benchmark of weak and strong districts due to different income levels. In the first model, a district will be defined as socioeconomic weak if its income is equal or lower than the 20th percentile of the incomes observed in the city. A socioeconomic strong district will be defined as the ‘rest’ and include those with an income larger than the 20th percentile of the incomes. In the second model we will only consider the districts with the lowest and highest incomes. Hence, socioeconomic weak districts will be defined as districts with the lowest 20 percent of the incomes and strong districts will be defined as districts with the highest 20 percent of the incomes. This is due to, as earlier mentioned, that the difference between weak and strong districts is not very prominent in the first model.

The argument for using the 20th percentile as benchmark is based on information and characteristics of the districts in Gothenburg. Göteborgs stad has in two reports compared the districts within Gothenburg and the characteristics of socioeconomic weak districts in the city (Göteborg stad, 2014, 2017). The Police department has in a report stated vulnerable districts in Sweden which are characterized of being socioeconomic weak (Polisen, 2017). The districts that falls below the 20th percentile of the lowest incomes in Gothenburg includes the districts which are mentioned, both in the reports from Göteborgs stad and the Police Department, as socioeconomic weak. Hence, we assume the 20th percentile as the benchmark for the other five cities as well. The benchmark income for each city is shown in Appendix A.

3.4 Variable description

Table 1 contains a description of the variables used in this thesis.

Table 1

Dependent Variable	
Employmentrate	Proportion of employed foreign-born women in the district
Variable of interest	
Weakdistrict	Dummy taking the value 1 if district falls within the 20 percent of the lowest incomes, 0 otherwise
Extremedistrict	Dummy taking the value 1 if district falls within the 20 percent of the lowest incomes, and 0 if it falls within the 20 percent of the highest incomes
Control Variables	
Primary	Proportion of women from residence x with primary education
Secondary	Proportion of women from residence x with secondary education
Arrivedafter2000	Proportion of women that immigrated between 2000-2015
Cohabitant	Proportion of women from residence x that have a cohabitant
Cohabitantchild	Proportion of women from residence x that have a cohabitant and children
Single	Proportion of women from residence x that are single
Singlechild	Proportion of women from residence x that are single and have children
Interaction terms	
Weakdistrict*primary	Proportion of women living in weak district with primary education
Weakdistrict*secondary	Proportion of women living in weak district with secondary education
Weakdistrict*arrivedafter2000	Proportion of women living in weak district that immigrated before the year of 2000-2015
Weakdistrict*single	Proportion of women living in weak district that are single
Weakdistrict*singlechild	Proportion of women living in weak district that are single and have children
Weakdistrict*cohabitant	Proportion of women living in weak district that have a cohabitant
Weakdistrict*cohabitantchild	Proportion of women living in weak district that have a cohabitant and children

The data description for model (1) and (2) are presented in Appendix B.

The dependent variable *employment rate* is defined as the average share of employed foreign-born women in a district. A person is considered as employed if the wage income exceeds the taxable income limit.

Weakdistrict is the variable of interest in model (1) and is a dummy variable that gives information about whether the place of residence is socioeconomic weak or socioeconomic strong. It takes the value 1 if the place of residence is a weak district and the value 0 if it is a strong district. The 20th percentile of the incomes will be categorized as weak district while remaining will be categorized as strong districts. Totally, there are 281 observations whereof 60 are weak districts and 221 are strong districts.

Extreme district is the variable of interest in model (2) and is a dummy variable that also describes if the place of residence is socioeconomic weak or strong. However, only districts with the 20 percent lowest and 20 percent highest median incomes will be considered when using this variable. There is a total of 120 observations whereof 60 are strong districts and 60 are weak districts. The variable takes the value 1 if the place of residence is a weak district and the value 0 if it is a strong district (see Appendix C for how many weak, strong and extreme strong districts each city has).

Levels of education are variables giving the proportion of foreign-born women with either primary, secondary or postsecondary education in each district. Primary education is defined as having studied for 10 years or less, secondary education is defined as having finished 2-3 more years in excess of a primary education and post-secondary is equal to having finished at least 2 more years in excess of a secondary education. Since education consists of three levels in our thesis, only two out of three are needed in the regressions since the third level can be interpreted as the 'left-out' category. If the proportion of women with primary education increases while those with secondary education are held constant, it explicitly means that the proportion of women with post-secondary education has decreased. Thus, only primary and secondary education are included.

Arrivedafter2000 is the third variable used in our models giving the proportion of foreign-born women having immigrated between the years of 2000-2015 in each district. It examines how the length of stay in Sweden may impact the employment rate. Originally both *arrivedbefore2000* and *arrivedafter2000* were included in the model as *arrivedbefore2000* measured the impact of having immigrated between 1970-1999. However, due to a high correlation between them² and a lot of missing values of the variable, we excluded *arrivedbefore2000*.

Household consists of four variables and describes if the foreign-born women have a cohabitant or not, and if having children. The variables are divided into ‘*single*’, ‘*singlechild*’, ‘*cohabitant*’ and ‘*cohabitantchild*’. *Single* gives the proportion of foreign-born women living without a cohabitant and without children while, *singlechild* gives the proportion of single women with children between 0-24 years old. *Cohabitant* gives the proportion of foreign-born women living with a cohabitant but without children while *cohabitantchild* is the proportion of women with children aged 0-24 years old and a cohabitant. The left-out categories in household composition are single with children aged over 25 years old, cohabitant with children aged over 25 years old and ‘other household with children (for example collective accommodation)’. These were excluded since it has been shown that grown up children do not affect the employment rate of women (Silles, 2015). Since it was not possible to choose the age interval of the children we chose to keep children aged 0-24 and exclude ‘children’ older than 25 years.

To observe possible difference in the impact of the variables depending on which districts foreign-born women live in, we will include interaction terms. The control variables are interpreted for all foreign-born women, regardless of place of residence whereas the interaction terms are interpreted for foreign-born women in weak districts compared to strong ones. However, the specific impact of the interaction terms is only present in the absence of unobservables which is not the case here since we cannot control for all variables that may affect the employment rate. Even so, the interaction terms can indicate possible differences between the districts. We will observe the interaction effects between *weakdistrict* and *level of*

²In order to avoid multicollinearity and violate one of OLS main assumptions (Long, 2008).

education, household variables and *arrivedafter2000*, giving a total of seven different interaction terms.

3.5 Limitations

In this thesis there are some sources for errors and limitations. The use of aggregated data differs from results when individual level data is used, which could lead to misleading results. This was observed in a study about the impact of mother's literacy on their child's dental care. The authors used both individual and aggregated data and found that the results were completely different (Haagdoost et. al., 2017). When using aggregated data there is a possibility that important information is lost (Clark & Avery, 1976) and controls for specific background characteristics is prevented. Conclusions about effects on an individual level should therefore be done very carefully. Additionally, our sample size also affects the results. Initially the sample consisted of 613 observations but when removing the observations with missing values the sample decreased to 281 observations. Since the subject is very complex, a large sample would have been needed to capture more accurate relationships. Also, due to the large amount of missing values, the data in hand has its shortcoming. Some variables lack information which may skew the results. Furthermore, we had difficulties with collecting the income variable on the same basis for all the cities which restrain a thorough comparison. Gothenburg, Malmö and Västerås have the median income based on all inhabitants of the age 25-64 years while remaining cities measure it for the age of 20-64 years. It would have been preferable to compare the two groups separately. However, a relative comparison between the cities is still possible since the districts are categorised with the '20th-percentile rule' in each city.

There are some important variables that we cannot control for which, according to our theoretical framework, may affect the employment rate. For example, distance to work is an important variable since long distances between place of residence and work location may affect the employment rate (Crankshaw, 2014). Language knowledge is also a substantial factor for this study as this variable may have a great impact on how well a foreign-born can integrate in the labour market (Finansdepartementet, 2007). Factors such as different cultures of the women or structural differences, integration policies and work opportunities in the

cities are all omitted variables that can affect the employment rate. This increases the probability of omitted variable bias which in this case would lead to an overestimation of the impact of our main variable *weakdistrict*. The lost information would have been needed for more accurate results and analysis.

We want to clarify that this method and model is not aiming to prove causality, as many important explanatory variables are missing, but rather to look at relationships. Despite our limitation we believe that our model and results can give an indication of the relationships and differences between socioeconomic weak and strong districts and the employment rate of foreign-born women.

4. Results

In this section, results from the regressions are presented. First the results of our main model will be presented and thereafter those of the complementing model.

4.1 Model (1)

Table 2

Dependent Variable: Employment rate	(1)	(2)	(3)
Weakdistrict	-0.1657*** (0.0155)	-0.0484*** (0.0163)	-0.0256** (0.0125)
Primary		-0.9548*** (0.0684)	-0.6061*** (0.0683)
Secondary		0.4337*** (0.0722)	0.0721 (0.0559)
Arrivedafter2000			-0.2916*** (0.0569)
Single			0.0309 (0.0814)
Singlechild			-0.4981*** (0.1017)
Cohabitant			0.1336 (0.1034)
Cohabitantchild			0.2877*** (0.0386)
Number of observations	281	281	281
R²	0.2947	0.5640	0.7919

*Note: Level of significance: *p<0.1, **p<0.05, ***p<0.01. Robust standard errors in parentheses*

Table 2 shows the results for the first model and is divided into 3 specifications. Control variables are added successively in the specifications to observe how the sign and coefficient of living in a weak district changes. The results of the specifications including the interaction terms for this model are shown in Appendix D due to few significant interaction effects. Specification (1) only includes the variable of interest, *weakdistrict*, and gives the effect of living in a socioeconomic weak district on the employment rate of foreign-born women. In specification (2), levels of education are added, and the control variables for household and immigration period are included in specification (3). All the specifications show that living in a socioeconomic weak district has a negative impact on the employment rate. However, the magnitude of the effect decreases as more control variables are included.

In specification (1), only the variable weak district is included and it has a negative and significant impact on the employment rate of foreign-born women. This implies a difference of 16.5 percent on the employment rate between foreign-born women in weak and strong districts. This difference is when not controlling for any other variables.

In specification (2), controls for education are included. The results show that a larger share of foreign-born women with only primary education is negative and significant on a 1 percent significance level. This is independent of place of residence and implies that having only primary education is negative for the employment rate of foreign-born women. When education is controlled for, the impact of living in a weak district decreases from 16.5 percent to 4.8 percent; a 70 percent decrease in magnitude. Thus, the negative impact of living in a weak district is to a large extent explained by the level of education that foreign-born women in weak districts have compared to foreign-born women living in strong districts.

In specification (3), the household variables are added. Being a single foreign-born woman with children is negative and significant on a 1 percent significance level which can imply that having children in the household without a cohabitant is negative on the employment rate. Women with a cohabitant and children show positive and significant results. Also, having arrived at Sweden after the year of 2000 is negative and significant on a 1 percent significance level. The result show that the employment rate of foreign-born women decreases with 2.6

percent when living in a weak district compared to if living in a strong district. Thus, the magnitude of *weakdistrict* decreases even more as the *household variables* and *arrivedafter2000* are included. The overall result implies that the negative impact of living in a weak district diminishes as more characteristics of the foreign-born women are controlled for.

The impacts of the interaction terms are presented in Appendix D and we will only present the significant results. When including the interaction terms, we can observe that *weakdistrict*primary* shows a positive and significant impact on the employment rate at a 10 percent significance level. This could indicate that being a foreign-born woman with primary education is less negative when living in a socioeconomic weak district compared to having the same level of education in a strong district. The interaction term has a different sign than the main impact of primary education which might imply that the positive impact of having primary education and living in a weak district outweighs the overall negative impact. The interaction *weakdistrict*secondary*, is also positive and significant in all specifications when included. The result implies once again that education is more important for the foreign-born women living in a weak district than for those living in a strong district. The impact of being a single foreign-born woman living in a socioeconomic weak district is negative and significant at a 10 percent significance level. A single foreign-born woman with children also has a negative impact on the employment rate if living in a socioeconomic weak district compared to a strong district.

4.2 Model (2)

The design and specifications of table 3 is the same as for table 2. The difference in this model is a more extreme definition of a socioeconomic strong district. A table with the effects of the interaction terms will be presented in Appendix E since the results varied and indicated, to some extent, unreliable results. However, it did show some significant results in line with previous model and these will be presented here.

Table 3

Dependent variable: Employmentrate	(1)	(2)	(3)
Extremedistrict	-0.2292*** (0.0182)	-0.1334*** (0.0255)	-0.0388 (0.0236)
Primary		-0.7687*** (0.1161)	-0.4553*** (0.1013)
Secondary		0.6627*** (0.1340)	0.2092* (0.1199)
Arrivedater2000			-0.2195*** (0.0667)
Single			-0.0926 (0.1319)
Singlechild			-0.9256*** (0.1445)
Cohabitant			0.4046*** (0.1155)
Cohabitantchild			0.2377*** (0.0438)
Obs.	120	120	120
R²	0.5734	0.6898	0.8728

Note: level of significance: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$. Robust standard errors in parentheses

The results of specification (1) show a difference in the employment rate of approximately 23 percent when living in a socioeconomic weak and strong district. When the education controls are included, in specification (2), the effect of *weakdistrict* decreases with 42 percent. This shows that the education levels of foreign-born women in weak districts, compared to those in strong districts, can explain a large part of the negative impact of weak districts on the employment rate. However, in this model, when the difference between a weak and strong district is more distinct, the impact of *weakdistrict* remains to a larger extent, even when controlling for education.

In specification (3), our main variable, *weakdistrict*, is still negative but has become smaller and insignificant as the household variables and immigration period are added. The control variables *primary*, *singlechild*, *cohabitant*, *cohabitantchild* and *arrivedafter2000* are all significant. This implies that these variables have an impact on the employment rate of foreign-born women and partially explain the negative impact of *weakdistrict* in specification (1). However, the result is insignificant and reliable conclusions cannot be made.

Among the interaction terms of these variables, only *extremedistrict*singlechild* is significant and it is on a 10 percent significance level. This implies that being a single foreign-born woman with children in a socioeconomic weak district has a more negative impact on the

employment rate compared to if being a single foreign-born mother living in strong districts. Moreover, *singlechild* is also negative and significant which indicates that being a single foreign-born woman with children has a negative impact on the employment rate regardless of place of residence. Since both *singlechild* and *extremedistrict*singlechild* are negative, the latter implies that it is more negative for foreign-born women living in socioeconomic weak districts.

4.3 Limitations

The results when including our interaction terms shows insignificant impact of *weakdistrict* in both our models. In model (1), the other variables do not differ in significance or in sign, but the same does not apply for model (2). Not only did *weakdistrict* turn insignificant, but it also changed sign in model (2). Furthermore, the significant interaction terms in model (1) did not show significant results in model (2). One reason to the insignificance of the variables could be the small sample size and the various variables. Many variables and a small sample might prevent a correct prediction of the variables. Also, we can see that our standard errors increase greatly for *weakdistrict* when including the interaction terms. This together with the sudden change of significance could indicate that there are some shortages in the data used in the models.

5. Discussion

This section will provide a discussion of the findings in the results and compare to previous research and theories. We will mainly focus on discussing weak district and the interaction terms since these variables are the ones to answer our research question.

5.1 Main findings

The main finding of the variable *weakdistrict* is that it is negative and significant for both our models in specification (1) through (3). The negative relationship between living in a socioeconomic weak district and employment rate is to some extent in line with previous research and there may be several explanations. According to previous research, weak districts are characterized by poor resources, low employment rates and low education levels

which can contribute to negative neighbourhood effects (Göteborg stad, 2017). These characteristics of socioeconomic weak districts affect attitudes towards for example employment and can contribute to a vicious circle in the neighbourhood (Boverket, 2004). The characteristics of socioeconomic weak districts are also something we can observe in our data when summarizing our sample (see Appendix F). The employment rate is lower in weak districts and the level of education is lower compared to the strong districts which strengthens the reasoning of neighbourhood effects as an explanation to our results.

The negative impact of weak district may also be explained by statistical discrimination. Work experience was not controlled for in this thesis, but a possible scenario could be that women with a short time living in Sweden do not have much work experience here. If that is the case, little experience combined with low education may increase the possibilities of discrimination since the employer does not have sufficient information. The theory of statistical discrimination assumes that an employer without the needed information will most likely rely on reputations and assumptions connected to the applicant (Phelps, 1972). It is not unlikely to assume that socioeconomic weak districts may have bad reputations or that the society has stereotypical assumptions of the inhabitants living there. This may therefore affect the employment rate negatively if used in evaluating an applicant. Moreover, the socioeconomic weak districts in this study match to some extent with the list of vulnerable (weak) districts from the Police department which also may affect the assumptions of employers (Polisen, 2017). However, since this study is not controlling for neither number of jobs applied nor work experience, a complete statement about what causes statistical discrimination cannot be made. The labour market has two mechanisms; the foreign-born women (labour supply) and the employer (labour demand). This study cannot tell which effect of these two is the largest and can therefore not conclude any specific thoughts about statistical discrimination.

The results show that the effect of *weakdistrict* is small and it diminishes as more characteristics are controlled for. In model (2), the diminishing impact of *weakdistrict* occurs despite controlling for all background characteristics and the impact turns insignificant. It is plausible to assume that other characteristics than those controlled for in this thesis, have an impact on the labour supply of foreign-born women and their employment rate. This can

imply that the impact of *weakdistrict* may disappear when variables such as language skills and work experience are controlled for. Thus, the probability that the effect of *weakdistrict* remains after controlling for those factors seems rather small if we assume our previous results. However, the decreasing impact could also be due to a small sample and a larger sample with further variables may be needed to capture the effect that a weak district may have.

Earlier studies have had different results regarding the effect of place of residence and we have observed that the results sometimes vary depending on if the study is quantitative or qualitative. Studies with a quantitative approach have in some cases not found a significant effect of statistical discrimination or neighbourhood effects. Meanwhile, survey studies are more subjective and show results where people experience differences and effects of living in deprived areas (Tunstall et. al., 2013; Atkinson & Kintrea, 2001). If residents from a certain district experience a negative effect of living there it may affect attitudes, trusts and norms towards employment and outcomes in the society. This is in line with the theories assuming that social capital may affect the behaviour of the inhabitants (IFAU, 2005; ESO, 2016), i.e. in the job searching process which in turn may affect the employment rate. However, more studies regarding this matter needs to be done.

5.2 Interaction terms

We can find significant results for the *education levels*, *single* and *singlechild* when interacting them with *weakdistrict*. The employment rate of foreign-born women in weak districts is lower compared to those in a strong district (Appendix F) which indicate that foreign-born women in weak districts may have difficulties in entering the labour market. From the regressions we can observe that primary education has a less negative impact on the employment rate of foreign-born women living in socioeconomic weak district compared to strong ones. These results are in line with previous research of Rooth & Åslund (2006: 42) where the positive effect of education is larger for those with already existing difficulties in entering the labour market. As mentioned above, living in socioeconomic districts is per se negative for the employment rate. It is therefore plausible to assume that primary education will be more useful in a socioeconomic weak district compared to a strong one. However, the

low employment rate observed in the weak districts may not exclusively indicate that foreign-born women experience difficulty entering the labour market. Other reasons could be for example that some women may choose not to work. This, according to Statskontoret (2018), could be explained by cultural aspects.

Living in a socioeconomic weak district and being single, either with or without children has negative and significant impact on the employment rate of foreign-born women. The finding of being single with children is contrary to that of Lundborg et al. (2017) and Silles (2015) who found that being a single mother has a positive impact on the labour market. However, those studies observed all women regardless of ethnicity and place of residence and the reasoning may differ when observing women from other countries. The cultural differences are of importance regarding employment. In some cultures, the family responsibility for women is more important than work while it in other cultures is not (Statskontoret, 2018). Spatial mismatch could also be an explanation if weak districts are disconnected from jobs suitable for the single women living there. The negative effect may arise because of mothers who want to work closer to home. The less positive result of being a single foreign-born woman in a weak district could be plausible if social capital, such as networks, plays a more important role when living in a weak district. Thus, being single would mean a loss of possible contacts that a cohabitant could have provided.

6. Conclusions and further research

The aim of this thesis was to examine the relationship between living in a weak district and the employment rate of foreign-born women. This was done using Ordinary Least Squares where we controlled for weak districts, education, period of immigration and household variables.

Our research question was:

Does living in a socioeconomic weak district negatively impact foreign-born women's employment rate?

We have observed that weak district has a negative impact on the employment rate of foreign-born women and that this impact decreases as we control for background characteristics. Also, education level and some household variables have a different impact on the employment rate of foreign-born women in weak districts compared to strong districts. Our results imply that foreign-born women are impacted by living in socioeconomic weak district and that this impact is mostly negative. However, the result of *weakdistrict* became insignificant in model (1) and changed sign in model (2) when all variables were included. We will therefore, not conclude that living in a weak district has a negative impact on foreign born women's employment rate, and further research must be done to enable conclusions.

Further research on individual data and a larger sample seems necessary in order to obtain more significant results. Additional control variables such as language skills or work experience would be needed to make a deeper and more accurate analysis of how place of residence affect foreign-born women's employment rate. It would also be interesting to study if the job level and job sector of foreign-born women are affected by place of residence. The low activity of foreign-born on the labour market and segregation are wide and complex topics which needs to be thoroughly examined.

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Appendix A

This table gives information about each city's threshold for weak and strong districts and is based only on the districts observed and not excluded districts.

City	Annual (median) income in SEK, 20 percent lowest	Annual (median) income in SEK, 20 percent highest
Göteborg	255510	360385
Malmö	137099	300100
Västerås	219120	299800
Linköping	240639	284036
Helsingborg	161356	288669
Jönköping	226890	262640

Appendix B

Data description model 1

Variable	Obs	Mean	Std.Dev	Min	Max
Employment rate	281	0.5713	0.1253	0.1792	0.8403
Weakdistrict	281	0.2135	0.4105	0	1
Primary	281	0.1892	0.0935	0.0268	0.4680
Secondary	281	0.3226	0.0699	0.1351	0.4932
Arrivedafter2000	281	0.5115	0.1160	0	0.7959
Single	281	0.1350	0.0642	0	0.3281
Singlechild	281	0.0964	0.0470	0	0.2391
Cohabitant	281	0.1280	0.0667	0.0081	0.3500
Cohabitantchild	281	0.2652	0.1426	0.0308	0.6538
Weakdistrict*Primary	281	0.0632	0.1256	0	0.4680
Weakdistrict*Secondary	281	0.0736	0.1432	0	0.4276
Weakdistrict*After	281	0.1291	0.2512	0	0.7959
Weakdistrict*Single	281	0.0266	0.0552	0	0.2549
Weakdistrict*Singlechild	281	0.0265	0.0540	0	0.2067
Weakdistrict*Cohabitant	281	0.0194	0.0424	0	0.1855
Weakdistrict* Cohabitantchild	281	0.0559	0.1235	0	0.4947

Data description model 2

Variable	Obs	Mean	Std.Dev	Min	Max
Employment rate	120	0.5556	0.1520	0.1792	0.8403
Extremedistrict	120	0.5000	0.5021	0	1
Primary	120	0.2051	0.1099	0.0268	0.4680
Secondary	120	0.3119	0.0657	0.1351	0.4932
Arrivedafter2000	120	0.5227	0.1308	0.0649	0.7959
Single	120	0.1118	0.0528	0.0208	0.2605
Singlechild	120	0.0982	0.0465	0.0195	0.2067
Cohabitant	120	0.1129	0.0615	0.0081	0.2875
Cohabitantchild	120	0.2992	0.1532	0.0347	0.6538
Extremedistrict*Primary	120	0.1479	0.1565	0	0.4680
Extremedistrict*Secondary	120	0.1724	0.1764	0	0.4276
Extremedistrict*Arrivedafter2000	120	0.3023	0.3093	0	0.7959
Extremedistrict*Single	120	0.0624	0.0701	0	0.2549
Extremedistrict*Single child	120	0.0620	0.0682	0	0.2067
Extremedistrict*Cohabitant	120	0.0454	0.0551	0	0.1855
Extremedistrict*Cohabitantchild	120	0.1309	0.1611	0	0.4947

Appendix C

	Weak district	Strong district	Extreme strong district
Gothenburg	18	68	17
Malmö	14	52	13
Linköping	4	13	7
Helsingborg	10	38	10
Västerås	7	26	7
Jönköping	7	24	6
Total no. observations	60	221	60

Appendix D

Model (1): Results including interaction terms

Dependent Variable: Employment rate	(2)	(2)	(3)	(4)	(5)
Weakdistrict	-0.1657*** (0.0155)	-0.0484*** (0.0163)	-0.0256** (0.0125)	-0.2308*** (0.0599)	-0.0494 (0.1171)
Primary		-0.9548*** (0.0684)	-0.6061*** (0.0683)	-0.6138*** (0.0776)	-0.6764*** (0.0803)
Secondary		0.4337*** (0.0722)	0.0721 (0.0559)	0.0296 (0.0583)	0.0426 (0.0604)
Single			0.0309 (0.0814)	0.0302 (0.0798)	0.0428 (0.0830)
Arrivedafter2000			-0.2916*** (0.0569)	-0.2864*** (0.0563)	-0.2868*** (0.0626)
Singlechild			-0.4981*** (0.1017)	-0.4818*** (0.1007)	-0.3263*** (0.1097)
Cohabitant			0.1336 (0.1034)	0.1374 (0.1011)	0.1031 (0.1029)
Cohabitantchild			0.2877*** (0.0386)	0.2826*** (0.0381)	0.2895*** (0.0408)
Weakdistrict*Primary				0.1183 (0.1077)	0.2918* (0.1507)
Weakdistrict*Secondary				0.4971*** (0.1594)	0.3577* (0.1830)
Weakdistrict*Arrivedafter2000					-0.0452 (0.1166)
Weakdistrict*Single					-0.3994* (0.2046)
Weakdistrict*Singlechild					-0.8364*** (0.2219)
Weakdistrict*Cohabitant					0.3744 (0.3176)
Weakdistrict*Cohabitantchild					-0.1380 (0.1120)
Number of observations	281	281	281	281	281
R²	0.2947	0.5640	0.7919	0.7993	0.8100

*Note: Level of significance: *p<0.1, **p<0.05, ***p<0.01. Robust standard errors in parentheses*

Appendix E

Model (2): Results including the interaction terms

Dependent variable: Employmentrate	(1)	(2)	(3)	(4)	(5)
Extremedistrict	-0.2292*** (0.0182)	-0.1334*** (0.0255)	-0.0388 (0.0236)	-0.2067*** (0.0679)	0.0102 (0.1290)
Primary		-0.7687*** (0.1161)	-0.4553*** (0.1013)	-0.3582** (0.1789)	-0.4898** (0.1946)
Secondary		0.6627*** (0.1340)	0.2092* (0.1199)	-0.0260 (0.1450)	0.0250 (0.1627)
Arrivedater2000			-0.2195*** (0.0667)	-0.2400*** (0.0635)	-0.1974** (0.0790)
Single			-0.0926 (0.1319)	-0.0644 (0.1258)	-0.0188 (0.1832)
Singlechild			-0.9256*** (0.1445)	-0.8910*** (0.1462)	-0.6483*** (0.2053)
Cohabitant			0.4046*** (0.1155)	0.3834*** (0.1095)	0.3490*** (0.1140)
Cohabitantchild			0.2377*** (0.0438)	0.2453*** (0.0485)	0.2926*** (0.0609)
Extremedistrict*Primary				-0.0507 (0.1950)	0.1052 (0.2356)
Extremedistrict*Secondary				0.5258** (0.2044)	0.3753 (0.2429)
Extremedistrict*arrivedafter2000					-0.1345 (0.1295)
Extremedistrict*Single					-0.3378 (0.2676)
Extremedistrict*Singlechild					-0.5144* (0.2874)
Extremedistrict*Cohabitant					0.1386 (0.3335)
Extremedistrict*Cohabitantchild					-0.1321 (0.12418)
Obs.	120	120	120	120	120
R²	0.5734	0.6898	0.8728	0.8803	0.8876

*Note: Level of significance: *p<0.1, **p<0.05, ***p<0.01. Robust standard errors in parentheses*

Appendix F

This bar chart shows the proportions of foreign-born women for each education level, household composition and immigration period, in socioeconomic weak, strong and 'extreme' strong districts.

