Immigration inflow cause native outflow

The impact of immigration on segregation patterns in Swedish house prices

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Abstract

We examine if the relatively large inflow of immigration during the last two decades has affected the Swedish housing market. With the social stigma of expressing anti-immigration sentiments, natives likely vote with their feet to express their preference for homogeneous neighbourhoods. If immigration inflows cause native outflows, the wage gap between them should lower the local aggregate demand for housing. Thus, the income and origin of immigrants play a role in explaining housing segregation as economic and cultural proximity should dampen the movement of natives. To determine the relationship between immigration and housing segregation empirically, we estimate two hedonic price models. Their purpose is to assess whether Swedes value homogeneous neighbourhoods more than declared by their political position. By using a novel dataset on micro house prices assembled through data scraping, we estimate the impact of immigration on both city and region level for Stockholm, Gothenburg and Malmö. Our results are generalisable and suggest that there exist native flight in Sweden, causing decreased house prices. We find that natives are responsive to both short- and long-run trends in immigration. The results further indicate that cultural proximity matters in the decision of self-segregation and that it exhibits a tipping-point behaviour. It means that it is not until the foreign-born population exceeds a certain threshold that natives choose to self-segregate. Together, these results stress the relevance of successful integration and assimilation strategies to avoid the harmful consequences of a divided society.

Keywords: immigration, native flight, house prices, culture

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1 Introduction

Compared to historical standards, Sweden has experienced a large inflow of immigrants during the last two decades. Since 2010, the share of foreign-born in Sweden exceeds that of the United States[1] and the political discussion of its consequences has grown in intensity. In contrast to the US, Sweden has a rather short history of immigration, and the country still has a homogeneous culture with small multicultural aspects. The question of immigration has been politicised and created a division between the urban voters and the rural and suburban areas most hit by the immigration inflow (Mehic 2019). Consequently, the anti-immigration party; the Swedish Democrats (SD) has experienced substantial growth in support from nearly zero per cent in the year 2000 to almost 20 per cent in 2019. The housing market has simultaneously experienced rapid growth with prices doubling and some times even tripling in the most populous regions. However, the trend of rising house prices[2] has not been equal across neighbourhoods causing economic and social segregation.

There is an extensive literature that examines the impact of immigration on segregation patterns and house prices. The question is of relevance as segregation affect the housing market, local government finances and human capital formation. Most of the literature on urban segregation concerns the US, where self-segregation among whites is common. Previous research finds evidence for whites paying a higher price for properties located in predominantly white areas (Clark 1991, Cutler et al. 1999, Brasington et al. 2015). Card et al. (2008) find that outflows of whites exhibit a tipping-like behaviour; whites leave once the minority share in a district exceeds a certain "tipping point". Studies from other European countries also find a self-segregation pattern among natives to avoid the perceived negative effect of immigrants on local amenities (Accetturo et al. 2014, Sá 2015). With evidence from the US and other countries, we ask ourselves if native Swedes respond similarly to ethnically mixed neighbourhoods[3] .

The Tiebout hypothesis (1956) states that households sort themselves into communities that best match their preferences. Such preferences concern property characteristics, socioeconomic and neighbourhood characteristics and locational factors. The literature often uses the hedonic price model to estimate the impact of a specific variable on house prices (Rosen 1974, Thaler 1978, Mingche and Brown 1980, Clark and Herrin 2000, Keskin 2008, Brasington et al. 2015). The model is, therefore, suitable for measuring the short- and long-run impact of immigration and the effect of preferred cultural homogeneity.

Our paper examines the impact of immigration on segregation patterns in Swedish house prices. The aim is to determine if immigration cause native flight empirically and whether the economic and cultural background of immigrants matters in the decision. The purpose is to assess whether Swedes value homogeneous neighbourhoods more than declared by their political position[4]. We construct our study around four predictions: (i) an immigration inflow will increase house prices in the short run; (ii) immigration will cause native flight and decreased house prices in the long run; (iii) cultural proximity

[1] SCB (n.d.a), Radford (2019).

[2] Henceforth, we refer house prices to as tenant-owned apartment, villa and terraced house prices.

[3] The definition of a neighbourhood in our study is a municipality on region level and a city district when on city level.

[4] During the last two decades, there has been a varying degree of consensus among the established parties for a pro-immigration policy. The only party that has opposed the policy is the Swedish Democrats. Thus, we assume that a vote for SD is the single political expression for preferred cultural homogeneity.

dampens the movement of natives, and; (iv) there exist a threshold effect, meaning that natives leave once the share of immigrants exceeds a certain "tipping point".

We advance the existing literature on house prices and immigration by using a novel dataset on micro prices that we have assembled through data scraping. The dataset contains almost 180 000 observations over the sample period 2017m1 to 2020m3 for the three largest regions in Sweden: Stockholm, Gothenburg and Malmö. After specifying two different hedonic price models, we estimate the responsiveness and cultural heterogeneity on house prices. We find support for the existence of native flight in Sweden and that economic and cultural proximity matters for its magnitude. There is also support for a tipping-point behaviour. It means that a specific density of immigrants is needed to cause native flight.

The remainder of our paper is divided into seven sections. The following section gives an overview of relevant literature which we use to construct our predictions. The third section describes the hedonic price models used to examine the impact of immigration on segregation patterns in Swedish house prices. We go through the data scraping process and present the descriptive statistics in section four. The empirical results are reported in section five and are discussed in section six. Finally, section seven concludes the paper.

2 Literature review

It is necessary to review how well immigrants assimilate to the receiving country's labour market to understand the effects of immigration inflows on house prices. In prevalent research, the labour market outcome of immigrants in terms of wages and unemployment, as well as the impact on native wages, is widely discussed. In a survey published by Kerr and Kerr (2010), it appears that native workers in Sweden are better off than their immigrant counterpart when it comes to income level and employment rates. Further, in terms of skill level and unemployment, there is usually a substantial heterogeneity among immigrants based upon their country of origin. In the case of Sweden, higher unemployment rates are more apparent for immigrants originating from countries outside Europe. At the same time, there is no employment gap at all for immigrants originating from other Nordic countries (Nekby 2002, Hammarstedt 2006). Some evidence has been put forward that there is no effect of immigrant inflows on natives' wages (Card 1990, Butcher and Card 1991, Lewis 2004), while others argue that there is a negative wage effect (Borjas et al. 1997, Borjas 2003). In short, immigrants tend to differ from the native population in terms of skill-level, preferences and networks. Therefore, increased immigration should affect local economic outcomes differently than just native population growth.

The relationship between immigration inflows and house prices comes down to a supply and demand argument. For a given housing stock and local population level, an inflow of immigrants will in the short run increase the demand for housing and in turn, also house prices. In the long run, however, when both the housing supply and the level of the native population is elastic, the net impact of immigration is more unclear. There exists controversial evidence for the effect of immigration on house prices as some found positive estimates (Saiz 2003, 2007, Ottaviano and Peri 2012, Sanchis-Guarner 2017), while others have estimated negative impacts (Hatton and Tani 2005, Saiz and Wachter 2011, Accetturo et al. 2014, Sá 2015). The main argument used to explain the negative effect is a displacement of relatively wealthy natives from neighbourhoods that have experienced an

inflow of immigrants. Another approach put forward by Card (2001) is that immigrants contribute less to the local aggregate demand than natives due to the wage gap between the two groups. That is, if immigration inflows cause native outflows, house prices should fall according to the demand argument. Taken together, the direction of the effect of immigration on house prices is still ambiguous and it is highly dependent on the magnitude of the displacement effect of natives(Sanchis-Guarner 2017).

In the classical paper by Tiebout (1956), households are shown to allocate into communities that best match their preferences. Consequently, individuals will sort themselves into different communities based on their level of income and preferences for, e.g. public goods and level of housing. As natives tend to earn higher wages than non-natives, they can live in neighbourhoods offering higher levels of accommodation and better quality of public services. Most of the literature on urban segregation concerns the US, where self-segregation among whites is common. Previous research finds evidence for whites paying a higher price for properties located in predominantly white areas (Clark 1991, Cutler et al. 1999, Brasington et al. 2015). A phenomenon that sometimes is determined by "decentralised racism". Card et al. (2008) find that outflows of whites exhibit a tipping-like behaviour; whites leave once the minority share in a district exceeds a certain "tipping point". While support for ethnic segregation is well documented for the US, evidence for Europe is more limited. However, both Accetturo et al. (2014) and Sá (2015) find a self-segregation pattern among natives in urban areas in Italy and the UK, respectively, to avoid the negative effect of immigrants on native's perceived local amenities. There is evidence for a self-segregating behaviour among blacks as well, meaning that blacks prefer to live near other blacks. King and Mieszkowski (1973) find that blacks pay a higher premium to segregate into a black neighbourhood than whites do in a similar situation. Similarly, Ihlanfeldt and Scafidi (2002) find support for the black self-segregation hypothesis and that this plays a role in explaining housing segregation.

Given previous findings, we can construct four predictions for our study. The first follows from the supply and demand argument. It states that an immigration inflow will increase house prices in the short run as the housing supply and the level of natives are fixed. The second prediction is that immigration will cause native flight and decreased house prices in the long run. The reasoning follows the argument put forward by Card (2001), that immigrants contribute less to the local aggregate demand due to lower wages which cause house prices to fall. With a higher level of education among immigrants originating from the western world[5], we assume that they obtain higher starting wages than their non-western counterpart. Due to different purchasing power, we expect that the origin of immigrants matter for the magnitude of native flight.

As the literature points to self-segregation behaviour among natives in Europe (Saiz and Wachter 2011, Accetturo et al. 2014, Sá 2015) and along ethnics lines in the US (King and Mieszkowski 1973, Clark 1991, Cutler et al. 1999, Ihlanfeldt and Scafidi 2002, Brasington et al. 2015), there are reasons to believe that cultural proximity matters when to decide where to live. In a paper published by Bansak et al. (2016), it appears that Europeans are more accepting of Christian rather than Muslim asylum seekers. The reason why could be that cultural similarity lower possible frictions in a neighbourhood regarding, e.g. religion, social values and traditions. Accordingly, our third prediction states that cultural proximity dampens the movement of natives. In line with the findings of Card et al. (2008), our last prediction is that there exists a threshold effect of immigration. It

[5]SCB (2018).

means that natives leave once the share of immigrants exceeds a certain "tipping point".

Moreover, house prices are commonly not uniformly distributed across neighbourhoods within a region. Instead, the housing market is often viewed as multiple local sub-markets rather than a single regional market. Despite the division, local house prices are likely to correlate positively across neighbourhoods and with the economic centre. In the papers reviewed, there is no distinction used between a tenant-owned apartment and a villa and by that their different characteristics in the housing market are disregarded[6][7]. We choose to separate the two types of housing as we expect apartments[8] to be more accessible for immigrants as the housing type, in general, requires a smaller lump sum. Consequently, we expect that immigrants buying a villa in the city or nearby are wealthier than the average immigrant. It is still possible to capture native flight tendencies in villa prices even without immigrants purchasing villas, as suburbs tend to have a mix of housing[9].

In the literature, aggregated prices are often used for the reason of accessibility when studying the relationship between immigration and house prices. Our study advances the literature by using a novel dataset on micro prices that we have assembled through data scraping. That enables us to capture the real relationship between housing characteristics and house prices, making the model better at estimating the effect of immigrants on house prices. Also, in previous research, immigrants are treated as a homogeneous group, as researchers do not make a distinction upon their country of origin. As evidence point to asymmetric effects of immigration on house prices, we decide to partly dis-aggregate foreign-born persons to capture these expected differences.

3 The hedonic price model

The hedonic price model developed by Rosen (1974) has been extensively used in the literature to examine the impact of individual housing or neighbourhood characteristics on house prices. It is a method by which a house price is determined by property attributes, socioeconomic factors, neighbourhood characteristics and locational amenities. Each feature will add inherent value to the house, given the buyer's preferences. Accordingly, the house price acts as the dependent variable, and the individual characteristics act as independent variables.

Several assumptions are needed to form a hedonic price model for the housing market. The housing market needs to be heterogeneous over time and have consumers with different preferences. Heterogeneity creates variation in housing prices within a neighbourhood, providing consumers with a continuum of housing unit possibilities (Keskin 2008). It is also necessary to assume that there are no transaction costs and that perfect information about the composition of attributes exists (Clark and Herrin 2000). These assumptions together denote a system that is composed of sub-markets that each has a different market price for property attributes.

In our model, property characteristics include transaction price, living and storage area, the number of rooms, space efficiency and total (monthly) operating costs[10]. For villas, we also include garden area. We choose to capture other property characteristics such as the type of the property (low-quality dwelling, luxury property) using dummy variables.

[6] For example, in turnover, price volatility and size.

[7] We decide to disregard rentals as the rental market in Sweden is price-controlled.

[8] Henceforth, we refer tenant-owned apartments as apartments.

[9] For example rentals, apartments and villas.

[10] Include monthly charge for apartments.

Socioeconomic characteristics include monthly average income adjusted for labour force participation in the neighbourhood. To capture the neighbourhood characteristics, we include the income tax rate and different variables based on foreign-born persons and the election result in 2014 for SD. We also include the final (mean) grade in compulsory school as a measure of school quality and the number of reported crime against a person or property as a measure of perceived safety. The locational factors include commuting time to the city centre in each region as a measure of transportation infrastructure[11]. Other locational factors are represented with dummy variables, such as the existence of a metro or a tram, if the neighbourhood borders to the dominant city, and if there is a coast nearby.

The property, the socioeconomic and the majority of neighbourhood quality characteristics acts as control variables. We compose several measures to capture the short- and long-run effects of immigration and to establish whether there is a cultural side that causes native outflows. The short-run change in the share of foreign-born persons ranges from 2015 to 2017. The rationale behind the chosen period is to capture both the historically large inflow of immigrants during that period, and the time it takes for an immigrant to settle more permanently[12]. The long-run variable aims to examine if there exists a trend in native outflow over a more extended period.

Our analysis includes the three largest regions in Sweden: Stockholm, Gothenburg and Malmö, and we estimate the impact of immigrants on both city and region level. For the cities, the long-run measure consists of the change between 2007 and 2019. The regions lack data, so we estimate the long-run effect by the change in the share of immigrants between 2013 and 2019. Note that we depart from the standard econometric approach with impulse response functions and lagged effects when studying time horizons. For our purposes, the traditional method is unsuitable and instead, we incorporate one short-term and one long-term trend variable into a non-time dependent model.

Previous research highlights differences in labour market outcomes and the assimilation of immigrants. Hence, we choose to distinguish between two types of foreign-born persons depending on their country of origin. Immigrants from Asia, Africa or South America belongs to the AAS-A group and immigrants from another EU[13], or Nordic country belongs to the EU Nordic group. There are also statistics supporting our division with lower average income and education level among individuals in the former group compared to the latter (SCB 2018, 2019b). The residual immigration consisting of North America, Europe outside the EU and Oceania is not considered due to lack of sufficiently detailed data. We use foreign-born persons instead of foreign nationals for two reasons. First, it is widely used in related literature (Saiz and Wachter 2011, Gonzalez and Ortega 2013, Sá 2015, Sanchis-Guarner 2017). Second, as pointed out by Kerr and Kerr (2010), there is a drawback of using foreign nationals as the attainment of citizenship confounds the measure. The attainment rate in Sweden is relatively high as foreigners can apply for Swedish citizenship only when being permanently resided in the country for five years. Using foreign-born persons eludes this issue and is, therefore, preferable.

[11] We assume that the commuting time is zero minutes for city districts located in the city centre.

[12] For example, refugees entering Sweden have the right to a temporary living accommodation by the Swedish Immigration Office.

[13] The number of member states has altered with time. As such, the nationalities considered in this group changes as well. The reasoning is that if a country meets the EU requirement, it will share some similar beliefs with Sweden.

To capture the cultural aspect, we choose to integrate the share of foreign-born in 2019 with the election result in 2014 for SD. By estimating this variable, we can calculate the marginal effect describing the relationship between preferences for cultural homogeneity and the share of foreign-born persons. If there is a strong preference for cultural identity in a neighbourhood where the percentage of foreign-born is significant, we expect an outflow of natives causing lowered house prices. We use the results from 2014 instead of 2018[14] as the refugee crisis in 2015, in general, have gained anti-immigration parties (Dustmann et al. 2019, Mehic 2019). Therefore, we would argue that the 2014 election mirror natives attitude towards immigrants better than the election result of 2018 as their success may reflect political mistrust rather than Swedes strong preference for cultural homogeneity.

We end up with two different hedonic price models. The first specification captures the short- and long-run effects of immigration inflows on house prices:

$$\begin{aligned} P_{i,j,k,t} = \beta_{0,i,j,k,t} + \beta_{1,i,j,k,t}\Delta Immigrants_{j,k,t} + \beta_{2,i,j,k,t}X_{1,i,j} \\ + \beta_{3,i,j,k,t}X_{2,j} + \beta_{4,i,j,k,t}X_{3,j} + \beta_{5,i,j,k,t}X_{4,j} + \varepsilon_{i,j,k,t} \end{aligned} \tag{1}$$

where $P_{i,j,k,t}$ is the vector of the logarithm of house prices with i = (tenant-owned apartment, villa), j = (Stockholm, Stockholm region, Gothenburg, Gothenburg region, Malmö, Malmö region), k = (AAS-A group, EU Nordic group), and t = (short run, long run). $\Delta Immigrants_{j,k,t}$ is the different changes in the two shares of foreign-born persons. $X_{1,i,j}$ is the vector for property attributes, $X_{2,j}$ is the vector of variables for socioeconomic characteristics, $X_{3,j}$ is the vector of variables for neighbourhood characteristics, and $X_{4,j}$ is the vector of variables for locational factors. $\beta_{h,i,j,k,t}$ is the vector of coefficients with $h = (0, 1, 2, 3, 4, 5)$ and $\varepsilon_{i,j,k,t}$ is the error term.

The second specification captures the cultural aspect of immigration and its effect on house prices:

$$\begin{aligned} P_{i,j,k} = \beta_{0,i,j,k} + \beta_{1,i,j,k}(Immigrants_{j,k} \times SD_j) + \beta_{2,i,j,k}Immigrants_{j,k} \\ + \beta_{3,i,j,k}SD_j + \beta_{4,i,j,k}X_{1,i,j} + \beta_{5,i,j,k}X_{2,j} + \beta_{6,i,j,k}X_{3,j} + \beta_{7,i,j,k}X_{4,j} + \varepsilon_{i,j,k} \end{aligned} \tag{2}$$

where $P_{i,j,k}$ is the vector of the logarithm of house prices with the same specification of i, j, k as in regression (1). The variable ($Immigrants_k \times SD$) controls for factors concerning migration patterns, threshold effects and spurious relationships. $Immigrants_{j,k}$ is the two shares of immigrants in 2019 and SD_j is the election result for the Swedish Democrats in 2014. The vectors $X_{1,i,j}$, $X_{2,j}$, $X_{3,j}$ and $X_{4,j}$ takes the same format as above. Similarly, $\beta_{h,i,j,k}$ is the vector of coefficients with $h = (0, 1, 2, 3, 4, 5, 6, 7)$ and $\varepsilon_{i,j,k}$ is the error term.

We estimate the model with OLS, and use a log-linear functional form for all variables expressed in currency. The approach is used in related literature (Keskin 2008) as it makes the analysis of the coefficients easier and lowers the spread between prices. Following the rationale of Clark and Herrin (2000), we include the averaged square meter price in the neighbourhood to steer out possible noise from property sales nearby. We estimate the model with robust errors to obtain unbiased standard errors and to accommodate possible heteroskedasticity in the model. A Variance Inflation Factor (VIF) test is applied on each specification as well as an ocular inspection of the coefficients and the standard errors, to rule out multicollinearity. As neither the tests nor the review show any anomalies, we rule out multicollinearity in our specifications. For some of our specifications, the Jarque-Bera test indicates a non-normal distribution of the residuals. Consequently, we did an ocular

[14] At the time of writing, the most recent general election in Sweden

inspection of the error terms and concluded that the residuals at least appear normally-distributed. Regardless if our specification suffers from non-normal residuals, the OLS estimate is still consistent[15].

Knowing that house prices typically do not follow a normal distribution, the likeliness of outliers is relatively high. Thus, we construct correction dummies for all sever outliers using an Interquartile Range (IQR) test. Due to data availability on immigration from 2000 for Stockholm and Gothenburg, we estimate an extra-long-run specification of regression (1) to check the robustness of our results. The extra-long-run specification is the change in the share of foreign-born persons over the period 2000 to 2019.

4 Data

In the following section, we provide an overview of the variables used in the two models and their sources. As the transaction prices, together with individual property characteristics, are assembled through data scraping, we will go through the process in detail. We also present some descriptive statistics to provide more insight into the dataset.

4.1 Data scraping and sources

The Swedish nominal house price data, together with individual property characteristics, are obtained through data scraping from Hemnet; Sweden's largest property portal. The data published on Hemnet is uploaded daily by Swedish real estate agencies and covers more than 90 per cent of all transactions. We choose to scrape data for tenant-owned apartments, villas and terraced houses over the sample period 2017m1 to 2020m3 for the three largest regions in Sweden[16]. Despite our separation of villas and terraced houses in the data gathering, the definition of villas in our study also refers to terraced houses.

It is not possible to obtain the data needed for the analysis without data scraping. Therefore, we organise a data scraping process in five steps. The first step is to identify a suitable property portal with a comprehensive register of previously sold properties with a satisfactory level of property characteristics. For this purpose, Hemnet is the natural choice with its 90 per cent coverage of transactions and detailed property information. After deciding on a property portal, the second step is to decide on what type of property characteristics that are of interest. We use these characteristics to set up the algorithm and to design the scraping framework. Unfortunately, Hemnet has a restriction of 2 500 reported transactions per search even though there are around 200 000 transactions available for the three regions[17]. More specifically, the Hemnet search engine will only report 2 500 transactions independent of search specification and the number of sold properties in the past for that specification[18]. We solve this limitation by dividing all relevant areas into multiple subareas and by that, enables collection of 2 500 transactions per each new subarea. To obtain even more data, we scrape each subarea for each type of

[15]The OLS estimate is the best linear unbiased estimator (BLUE) of the regression coefficients as long as the errors have the mean zero, are uncorrelated and have constant variance. The normal distribution of error terms is, therefore, not needed for the OLS to be BLUE.

[16]For simplicity we use the traditional regions used from before 1997: Stockholm län, Göteborgs and Bohus län and Malmöhus län.

[17]In total there are over 700 000 transactions available when all sold properties in Sweden are considered.

[18]For example, if a specific area in Stockholm has less than 2 500 sold properties, all of the transaction will be available within one search. If the number of recorded sales goes beyond 2 500, the area needs to be broken down into smaller sub-samples to retrieve all transactions available.

housing. The extension also helps to define the algorithm further as the number of housing characteristics differs between the different types of housing. Naturally, the third step is to specify the location and search preference IDs for each neighbourhood. The challenges here are to decide when the dissection of an area into subareas is sufficient and to avoid overlapping subareas resulting in doublets of transactions. Once we manually gathered the IDs, in total 178 for 61 neighbourhoods, we did several test rounds of the algorithm before we resolved errors and other malfunctions. The fourth step is to launch the algorithm and let it work through all IDs. It took about 30 hours for the algorithm to complete the scraping. The final step is to combine all the data into one single dataset and clean it.

We extend our dataset by including socioeconomic and neighbourhood characteristics as well as locational factors which are municipality-specific for the regions and city district-specific for the dominant cities[19]. The local statistical offices of Stockholm, Gothenburg and Malmö have provided us with data on the share of foreign-born persons per city district level. Data on municipality level is available from Statistics Sweden (SCB) upon request. We obtain the election result for SD from the SCB database per both city district and municipality level. Other variables that we include are the monthly average income[20], the income tax rate, the final (mean) grade in compulsory school and the number of reported crime against a person or property. Variables like these are widely used in related literature (Brasington et al. 2015, Sanchis-Guarner 2017) as they are vital determinants of house prices. A complete table where we specify all obtained variables used in our study, together with their sources, can be found in Table 5 in the Appendix.

We end up with a dataset that contains almost 180 000 observations with micro information on house prices and housing characteristics together with the district- and municipality-specific aggregates. All nominal data is either inflated or deflated to the monetary value of 2019 (December) by using the consumer price index with a fixed interest rate (SCB n.d.c).

[19]Stockholm, Gothenburg and Malmö.

[20]Note that we choose to multiply the monthly average income with the labour force participation rate to capture a more accurate description of income in a neighbourhood.

4.2 Descriptive statistics

Table 1 presents the descriptive statistics on the region level for the scraped transaction data provided by Hemnet. It is the property characteristics of both house types that are presented and comprises information on variables such as price, number of rooms, living and storage area.

Table (1) Descriptive statistics of property characteristics on the region level

	Stockholm			Gothenburg			Malmö		
Variable	Mean	Min.	Max.	Mean	Min.	Max.	Mean	Min.	Max.
Price	3 848	240	60 628	3 235	184	21 968	2 427	163	37 848
Price per m^2	52	3	223	44	2	244	28	1	180
# of rooms	3	1	20	3	1	15	3	1	16
Living area	80	12	636	78	17	437	88	10	652
Storage area	6	0	288	7	0	267	10	0	280
Space efficiency	26	5	106	27	7	87	28	7	110
Garden area	187	0	45 406	226	0	86 507	268	0	60 000
Operating costs	3 907	0	19 600	3 980	0	12 347	3 936	0	14 229

Note: The variables Price and Price per m^2 are reported in 1000 SEK.

See Table 6 to 12 in Appendix for complete descriptive statistics.

The average transaction price is 3 848 000 SEK in Stockholm, ranging from 240 000 SEK to 60 628 000 SEK. In Gothenburg, the average transaction price is 3 235 000 SEK. Malmö is the region with the lowest average transaction price of 2 427 000 SEK. Property characteristics that are similar across the regions are that the living area is around 80 square meter with three rooms and an operating cost of 4 000 SEK. We present more detailed information about the average transaction price on the city district level in Table 6 in the Appendix. There is similar information but on municipality level for the regions in Table 8, 9 and 10 in the Appendix. Together, it raises awareness for the distribution of wealthy neighbourhoods and less affluent areas.

In Table 2, we present descriptive statistics of the election result for SD (2014) and the different shares of foreign-born persons (2019).

Table (2) Descriptive statistics of immigrant share and SD support

	City level			Region level		
City/Region	SD	AAS-A	EU Nordic	SD	AAS-A	EU Nordic
Stockholm	0.07	0.15	0.08	0.09	0.14	0.11
Göteborg	0.10	0.16	0.12	0.11	0.12	0.10
Malmö	0.14	0.17	0.17	0.16	0.11	0.13

See Table 6 to 12 in Appendix for complete descriptive statistics.

The average voter support for SD is nearly twice as high in Malmö as in Stockholm on both city and region level. We can also see that there is more support for the anti-immigration party on region level than on the city level. Moreover, the average share of immigrants born in either Asia, Africa or South America is highest in Malmö with 17 % on city level. Similarly, Malmö has the highest share of inhabitants born in another EU or Nordic country. Gothenburg has the second-highest percentage of immigrants and Stockholm accounts for the lowest proportion of foreign-born. Interestingly, it is reversed when on

region level. Then, Stockholm has the highest share of AAS-A immigrants with 14 %. Non-surprisingly, Malmö still has the highest percentage of EU and Nordic immigrants even at the regional level. With Denmark nearby, many Danes are living in the Malmö area but work in Copenhagen. Again, there is more detailed information about the distribution of foreign-born and SD supporters in Table 6 to 10 in the Appendix.

We present descriptive statistics on the property characteristics for both house types as well as the socioeconomic and other neighbourhood characteristics on both city and regional level in Table 11 and 12 in the Appendix. Despite a higher cost of living in Stockholm, the general pattern is that inhabitants on average earn a higher income and children enjoys a higher learning outcome in the capital. We can also observe that Stockholm is a more diversified city and region compared to Gothenburg and Malmö, which possible imply larger inequalities and higher segregation.

5 Empirical results

We cover two parts in empirical results — the first focusing on the time specification of the hedonic price model, that is the short- and long-run effects of immigration on segregation patterns in house prices. The second part provides a detailed analysis of the marginal effects and possible thresholds of the cultural specification. We divide both parts into two subcategories, where we present the results for the cities and the regions separately.

5.1 Time specification

The time specification aims to estimate the short- and long-run effect of immigration inflows on house prices. Note that the standard econometric approach is not applied. Instead, we incorporate one short-term and one long-term trend variable into a non-time dependent model. It is the change in the share of foreign-born persons between 2015 and 2017 that constitute the short-run measure. For the cities, the long-run measure consists of the change between 2007 and 2019. As the regions lack data, we estimate the long-run effect by the change in the share of immigrants between 2013 and 2019.

5.1.1 The cities

Table (3) Hedonic price regression for the short- and long-run effect of immigration in the cities

	Δ Short run		Δ Long run	
	AAS-A group	EU Nordic group	AAS-A group	EU Nordic group
Stockholm				
Apartment	0.010	0.420	−0.136	−0.309
	(0.037)	(0.029)***	(0.010)***	(0.019)***
Villa	−1.341	0.527	−0.540	−0.748
	(0.197)***	(0.092)***	(0.038)***	(0.068)***
Gothenburg				
Apartment	0.102	−0.224	0.007	0.027
	(0.048)**	(0.107)**	(0.066)***	(0.007)***
Villa	0.806	−3.398	0.176	−0.112
	(0.381)**	(0.427)***	(0.013)	(0.012)***
Malmö				
Apartment	−0.189	0.172	−0.027	0.033
	(0.113)*	(0.169)	(0.016)*	(0.051)
Villa	0.412	0.919	−0.193	0.261
	(0.443)	(0.347)***	(0.046)***	(0.112)**

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$

See Table 13, 14, 17 and 18 in Appendix for complete results.

The results for Stockholm both support and contradict what we predicted. The effect of EU and Nordic immigrants on house prices behave as expected; there is a short-run positive effect but a long-run negative effect. Unlike the EU and Nordic group, AAS-A immigrants lower prices for villas in the short run contradicting the expected surge in demand. The reason why could be that villas are more expensive per unit than apartments, making it hard for immigrants to compete in the market. With low purchasing power and a perceived negative effect on the quality of local amenities, the attractiveness of the neighbourhood lowers as the share of foreign-born increases. Despite the lack of support for a positive impact of immigrants in the short run, the long-run estimates provide some confirmation of native flight. Interestingly, the long-run negative effect is more substantial among EU and Nordic immigrants opposing the idea that they should cause less decline in house prices due to higher income and skill level.

The results for Gothenburg has a different pattern, were AAS-A immigrants increase house prices in the short run, while immigrants from the EU or Nordic countries lowers them. Based on previous literature, there is no intuitive explanation of why. It might be that immigrants from the EU and Nordic countries move into more price-sensitive areas and that AAS-A immigrants settle in already dense immigrant neighbourhoods. The long-run effect of immigration is ambiguous as apartment prices are positively affected, while villa prices are negatively affected. Again, the higher transaction price on villas could explain the appearance of native flight in villas but not in apartments.

In Malmö, there is a short-run negative effect in apartment prices asserted by AAS-A immigration. The significant unemployment among immigrants[21] could explain the

[21] Arbetsförmedlingen (2018).

negative estimate. It could also be that natives are responsive to immigration inflows originating from the non-western world. Non-surprisingly, immigrants from other EU or Nordic countries have a short-run positive effect on villa prices. The result is expected as a large Danish population live in Malmö, with a nearly identical economic and cultural background as native Swedes. With cultural proximity, there are fewer incentives for a native flight which could explain the long-run positive effect of EU and Nordic immigrants on villa prices. Nevertheless, there is support for native flight in the long run as a result of increased inflow of AAS-A immigrants.

By analysing Table 3 in its entirety, we can draw some general conclusions. Fifty-five per cent of the significant parameters justify a positive impact of immigration on house prices in the short run. Seventy per cent of the significant estimates support the belief of lowered house prices in the long run caused by native flight. By dissecting the long-run estimates, differences between the cities become evident. There is a 100 per cent support for native flight in Stockholm in contrast to a mere 33 per cent in Gothenburg. Our robustness regressions for Stockholm and Gothenburg[22] give additional support for native flight. With nearly twenty years of data, 75 per cent of the significant estimates confirm a native outflow over time.

5.1.2 The regions

Table (4) Hedonic price regression for the short- and long-run effect of immigration in the regions

	Δ Short run		Δ Long run	
	AAS-A group	EU Nordic group	AAS-A group	EU Nordic group
Stockholm				
Apartment	0.120	0.315	0.008	−0.070
	(0.015)***	(0.016)***	(0.005)	(0.007)***
Villa	−0.231	−0.198	−0.048	0.001
	(0.035)***	(0.037)***	(0.012)***	(0.019)
Gothenburg				
Apartment	0.175	−0.119	0.192	−0.060
	(0.047)***	(0.087)	(0.022)***	(0.004)***
Villa	−0.088	−0.274	0.009	0.085
	(0.040)**	(0.101)***	(0.020)	(0.006)***
Malmö				
Apartment	0.070	−0.766	0.094	0.021
	(0.025)***	(0.077)***	(0.012)***	(0.016)
Villa	−0.169	−0.502	−0.123	−0.244
	(0.021)***	(0.113)***	(0.013)***	(0.018)***

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$

See Table 15, 16, 19 and 20 in Appendix for complete results.

In the Stockholm region, the support for the first prediction is ambiguous as the short-run effect of immigrants have a positive impact on apartment prices but a negative impact on villa prices. The latter contradicts our expectations and confirm a keen sensitivity for

[22]See Table 25 and 26 in the Appendix.

immigration among villa owners. Moreover, the estimates confirm that immigration inflow cause native outflow in the long run.

The short-run effect of immigration in the Gothenburg region is consistent with the impact in Stockholm; apartment prices are positively affected, while villa prices are negatively affected. Interestingly, the long-run effect of immigration on apartment prices depends on the country of origin. Foreign-born persons originating from AAS-A countries increase prices, while EU and Nordic immigrants cause prices to fall. For villa prices, however, the latter group of immigrants has the opposite effect, supporting the notion of higher purchasing power and faster assimilation. So without an outflow of natives, the inflow of immigrants just add to the local aggregate demand, which causes increased villa prices.

The short- and the long-run impact of AAS-A immigration on apartment prices are positive in the Malmö region. Possibly there exists a self-segregating pattern among AAS-A immigrants causing demand for housing to increase in already immigrant dens areas. While AAS-A immigration has a positive impact on apartment prices in the short run, EU and Nordic immigrants affect them negatively. As in the other regions, we observe a tendency for native flight in Malmö villa prices. The effect is significant and consistent over time; supporting self-segregation behaviour among natives.

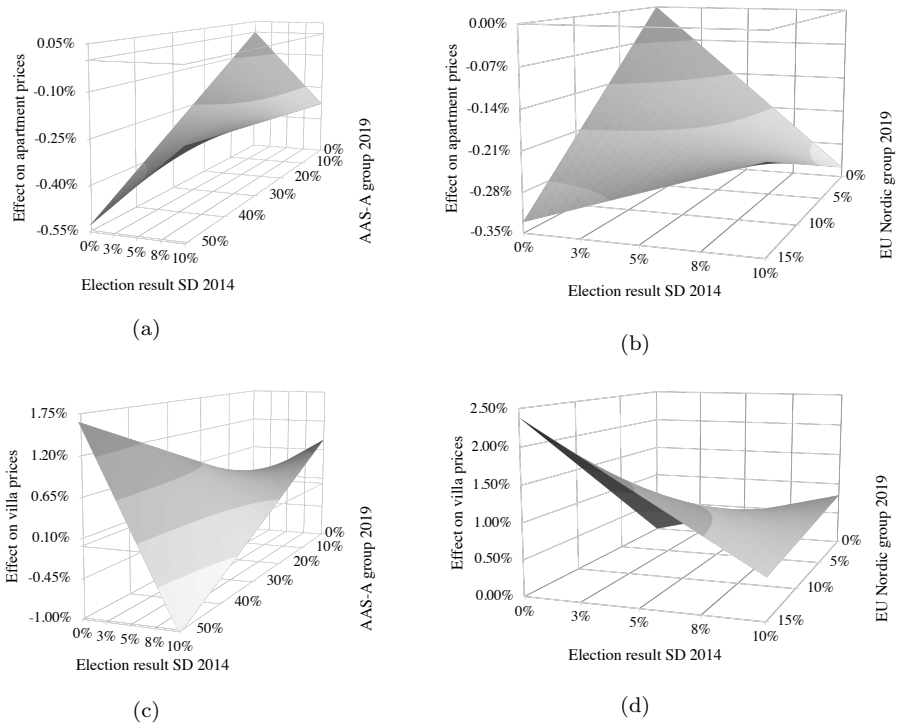
Assessing the regions together, we can highlight some general patterns. The first is the consistent short-run negative effect of both types of immigration on villa prices. In contradiction to what we predicted, natives re-evaluate villa prices in the short-run when immigrants settle in the neighbourhood. Another pattern is the consistent positive effect of AAS-A immigrants on apartment prices, while the impact of EU and Nordic immigrants is surprisingly ambiguous. The systematic difference in price coefficients for villas and apartments confirms their different characteristics in the housing market. With lower lump sum costs for the latter, immigrants likely demand apartments more and drive up the prices. We find some support for a native flight on the regional level as the long-run effect of immigration is negative for 62.5 per cent of the coefficients. Noteworthy, Stockholm gives unanimous confirmation, while the results for Gothenburg primarily oppose the existence of native flight.

5.2 Cultural specification

We choose to present the marginal effect of the cultural specification of the hedonic price model in figures. The figures capture three things. First, they enable us to see whether there is a cultural aspect of house price formation. That is to say; if natives move or re-evaluate the neighbourhood when immigrants from culturally distant origins locate in the area. Second, they control for the possibility that immigrants do not settle in wealthier areas, causing a spurious relationship between house prices and immigration. The figures also allow us to examine whether there exists a tipping-point behaviour among natives when the share of immigrants exceeds a certain threshold.

5.2.1 The cities

Figure (1) Effect of culture preference on house prices in Stockholm



See Table 21 and 22 in Appendix for complete results.

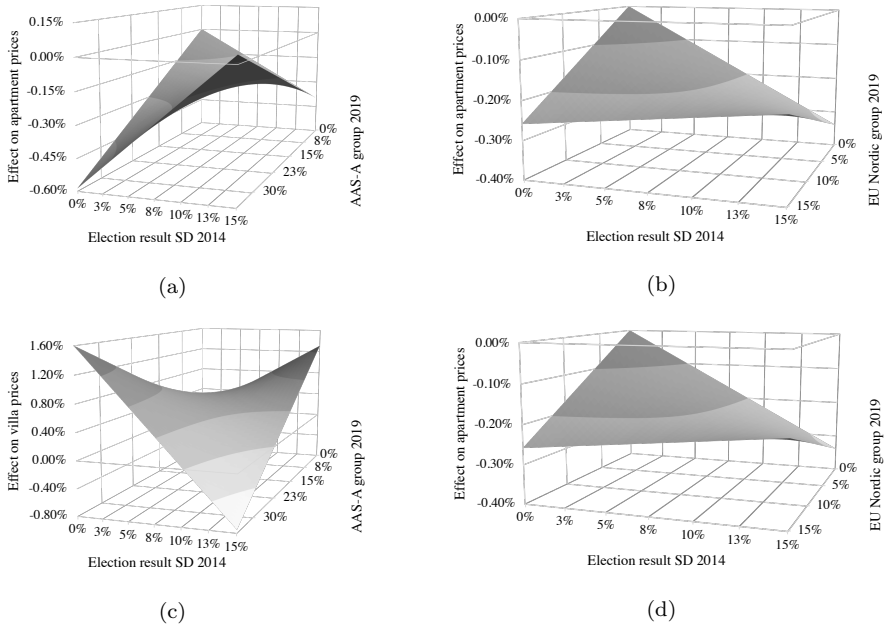
The cultural aspect of immigration is clear in Stockholm. Apartment prices drop in a neighbourhood with a relatively large share of SD voters and a moderate share of immigrants from the AAS-A countries (Figure 1a). In this fictitious neighbourhood, prices will increase with the share of SD voters when the share of AAS-A immigrants becomes more significant. The cultural aspect appears different when immigrants originate from an EU or Nordic country. Then, apartment prices are negatively affected by both immigrants and SD voters (Figure 1b). Strong support for SD in less wealthy areas[23] and preference for strictly homogeneous neighbourhoods could explain this pattern. The negative impact of immigration on prices is more apparent for the AAS-A group, indicating a preference for culturally similar immigrants.

For villas, prices increase with SD when there is a low share of AAS-A immigrants in the neighbourhood (Figure 1c). In a reverse scenario, villa prices decline when the percentage of SD voters is small in a community with a high concentration of immigrants from AAS-A countries. With high shares of both, there is a negative effect on the prices of up to 1 per cent. Again, there is a different pattern when immigrants originate from an EU or Nordic country. Suddenly, all possible combinations provide a positive effect on villa prices (Figure 1d). An increase in the share of EU and Nordic immigrants affect prices

[23] Mehic (2019).

more positively than increased support for SD. Nonetheless, a negative relationship between SD and immigration still exists which support the notion of preferred homogeneous neighbourhoods.

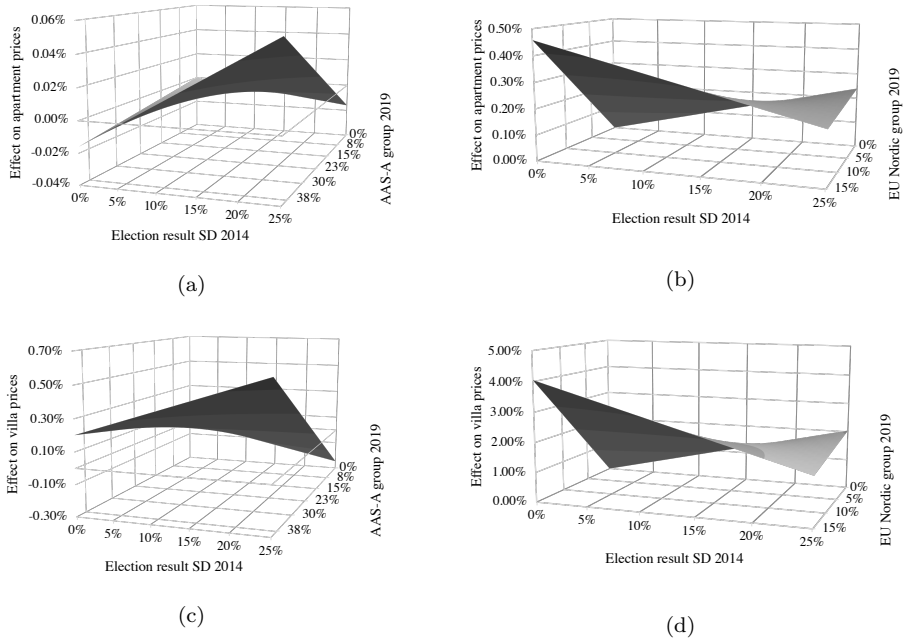
Figure (2) Effect of culture preference on house prices in Gothenburg



See Table 21 and 22 in Appendix for complete results.

The effect of cultural preference on apartment prices in Gothenburg is similar to that of Stockholm (See Figure 2a and 2b). For villa prices, however, the effect of AAS-A immigration is of smaller magnitude (Figure 2c). In reverse to Stockholm, an increase in the concentration of immigrants from the EU and Nordic countries increase villa prices less than a similar increase in the share of SD voters would (Figure 2d). The demand for housing among EU and Nordic immigrants dominates the negative effect of SD and results in higher overall prices. However, there still is a negative relationship which supports the existence of native flight.

Figure (3) Effect of culture preference on house prices in Malmö



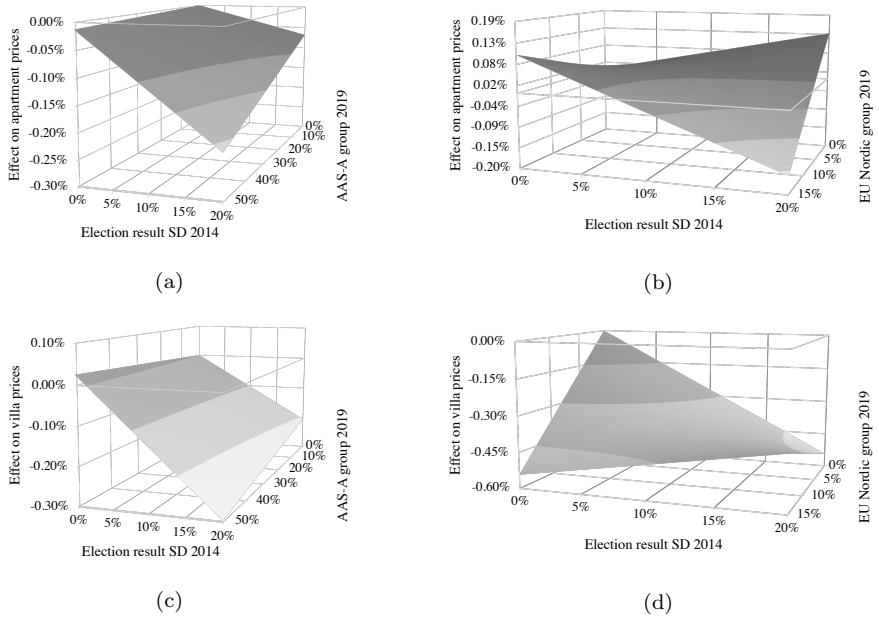
See Table 21 and 22 in Appendix for complete results.

In Figure 3a, we can observe that apartment prices initially decrease when the two shares go from relatively low values towards higher ones. Then, after a certain threshold, prices start to increase with both AAS-A immigrants and SD voters. At a glance, the result may seem counterintuitive, but there are possible explanations. With high levels of unemployment[24] it is hard to engage in native flight even if desired, and with relatively low property prices[25], immigrants can compete with natives for the same apartments. The effect is, however, close to zero and could be considered as insignificant. Following this rationale, the positive impact of EU and Nordic immigrants is awaited (Figure 3b). If we assume that natives living in apartments have a relatively weak purchasing power, and call to mind that many Danes live in Malmö, an inflow of EU and Nordic immigrants should increase the overall demand for apartments. The pattern for villa prices are similar to that of apartment prices but in higher magnitude (Figure 3c and 3d). Immigrants originating from another EU or Nordic country can increase villa prices in a neighbourhood of up to 3.2 per cent. Thus, there is support for the notion that immigrants that buy villas have higher wealth than those purchasing an apartment.

[24] Arbetsförmedlingen (2018).
[25] See Table 11 in Appendix.

5.2.2 The regions

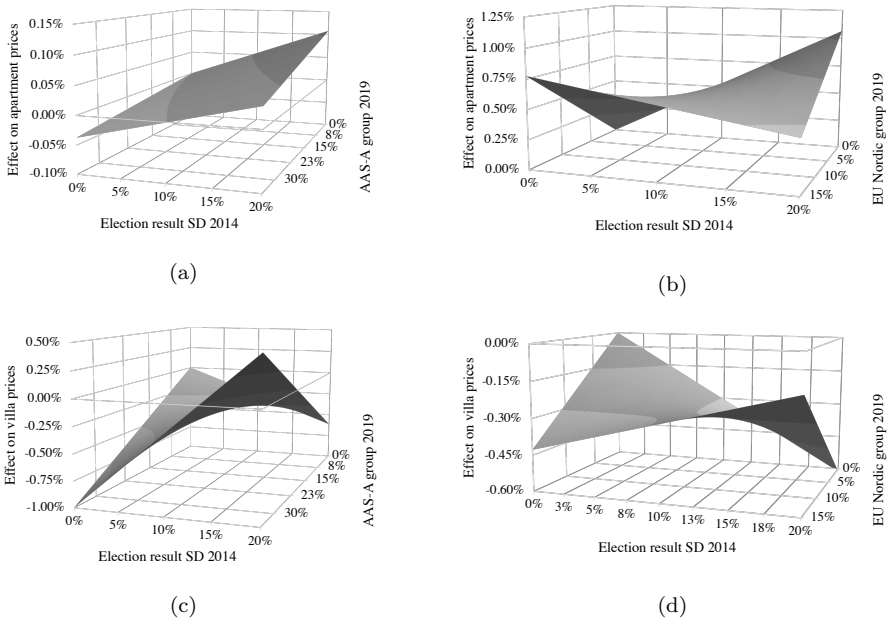
Figure (4) Effect of culture preference on house prices in the Stockholm region



See Table 23 and 24 in Appendix for complete results.

Proceeding with the regions, we observe that apartment prices in the Stockholm region are negatively affected by both AAS-A immigrants and SD voters (Figure 4a). The combination of a strong preference for cultural homogeneity and a high concentration of foreign-born persons affect house prices to the most negative. There is a different pattern noticed in Figure 4b, where a modest share of EU and Nordic immigrants together with a small percentage of SD voters cause apartment prices to increase. Nevertheless, it appears to be a threshold at where prices become negatively affected by the two. Once the share of foreign-born exceeds 5 per cent and the share of SD voters exceed 10 per cent, there is a negative effect upon prices in the neighbourhood. Villa prices are affected similarly to apartment prices when AAS-A immigrants are considered (Figure 4c). More interestingly, there is no threshold effect in Figure 4d. Villa prices are invariably negatively affected by the share of foreign-born persons originating from an EU or Nordic country and by inhabitants that prefer culturally homogeneous neighbourhoods.

Figure (5) Effect of culture preference on house prices in the Gothenburg region



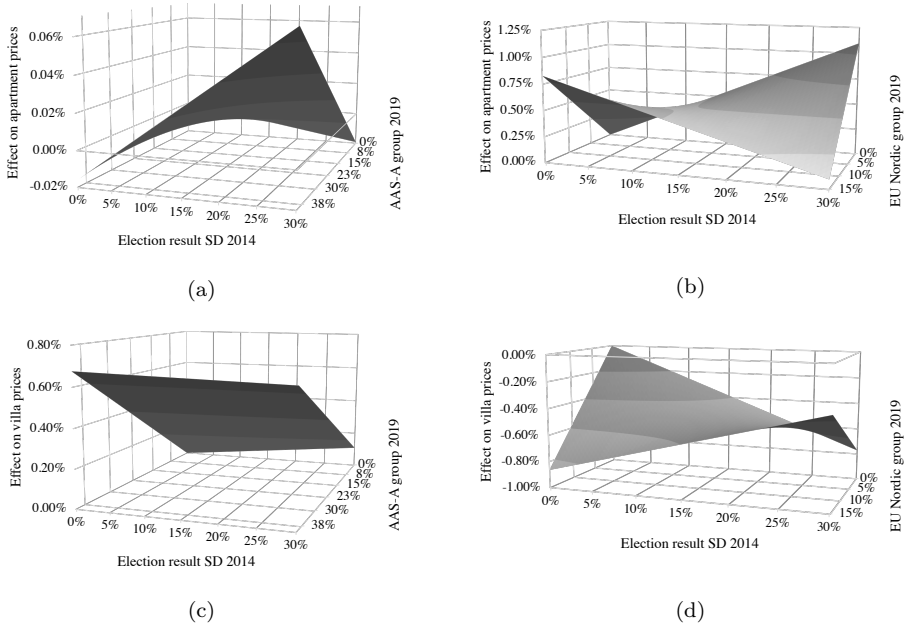
See Table 23 and 24 in Appendix for complete results.

For the Gothenburg region, apartment prices increase with the share of SD voters and are lowered with the share of AAS-A immigrants (Figure 5a). As all combinations of the two shares cause a relative decline in prices, there is support for native flight, albeit weak. We observe a tipping point in Figure 5b where apartment prices become negatively affected by either an increase in the share of immigrants originating from an EU or Nordic country or by grown support for SD. It is when the shares exceed 5 and 8 per cent, respectively.

In like manner, there is a threshold effect in villa prices (See Figure 5c and 5d). Homogeneously ethnic neighbourhoods with relatively low SD support are often wealthy[26]. Therefore, it is not controversial to imagine that the wealthiness of a community declines as the percentage of immigrants and SD supporters become greater. Nevertheless, as the share of AAS-A immigrants exceeds 15 per cent and support for SD goes beyond 10 per cent, prices start to slightly increase. The upward trend could indicate a shortage of housing in combination with a great need for housing. If studying the two shares separately, we observe an adverse effect of increased preferred cultural homogeneity. There is an even more negative impact of increased immigration. Together, the adverse effects; gives no support for native flight. The picture somewhat changes when immigrants from the EU and Nordic countries are considered. The main difference is the tipping point which is now at 10 per cent for foreign-born and 15 per cent for SD and asserts the most negative effect. We can think of this as a wider variety of combinations before villa prices increases. Even though there exists little support for native flight, we can draw two compelling observations from Figure 5c and 5d together. First, there seems to be a wealth component leading to a flight of wealthy natives. Second, the price of villas is relatively high in less affluent neighbourhoods due to distorted supply and demand.

[26]See Table 9 in Appendix.

Figure (6) Effect of culture preference on house prices in the Malmö region



See Table 23 and 24 in Appendix for complete results.

For Malmö, we observe that apartment prices increase the most when the share of AAS-A immigrants is at its highest, and so be the support for SD (Figure 6a). In contrast, when the impact of EU and Nordic immigrants are analysed, prices decline as the two shares become greater (Figure 6b). Again, we find support for a tipping point behaviour among natives. Interestingly, AAS-A immigrants act as the main driver behind increasing villa prices (Figure 6c). In contrast, EU and Nordic immigrants have a consistently negative impact on villa prices (Figure 6d). Still, a preference for cultural homogeneity has a positive effect on villa prices.

6 Discussion

Our paper examines the impact of immigration on segregation patterns in Swedish house prices. The aim is to determine if immigration cause native flight empirically and whether the economic and cultural background of immigrants matters in the decision. The purpose is to assess whether Swedes value homogeneous neighbourhoods more than declared by their political position. We construct our study around four predictions: (i) an immigration inflow will increase house prices in the short run; (ii) immigration will cause native flight and decreased house prices in the long run; (iii) cultural proximity dampens the movement of natives, and; (iv) there exist a threshold effect, meaning that natives leave once the share of immigrants exceeds a certain "tipping point".

Several findings provide support for our predictions. First of all, there exists a native flight in Sweden. Natives are also more time responsive to immigration inflows than expected. The impact of immigration on segregation is evident already in the short run, especially in villa prices. In the long run, however, the native flight is present in both house types adding an ethnic aspect to segregation. The perceived negative impact of immigrants on neighbourhoods can explain the movement of natives. Households allocate into communities that best match their preferences given their level of income. Therefore, the income gap between natives and immigrants becomes a natural watershed between wealthy and non-wealthy areas. The initial segregation is then spurred by the negative effect of immigrants on the perceived quality of local amenities, widening the wealth gap of neighbourhoods and initiating a spiral of segregation. Consequently, income segregation causes ethnic segregation which in turn hinders integration and assimilation.

Non-surprisingly, the native flight is more apparent and systematic on the region level. With a broader range of neighbourhoods of a different character, the results become more robust, and the specification captures movements between and within the city and suburban areas. Thus, the aggregated demand for housing remains unchanged in the region when households choose to self-segregate into neighbouring homogeneous communities. As the impact of immigration on segregation patterns is systematic between regions, it could be generalised from the regional level to country level[27]. Nonetheless, there is no generalised pattern on the city level. The effect of immigration is likely dependent upon the individual city characteristics. For instance, Stockholm, Gothenburg and Malmö attract different types of people as their spirit, labour market and housing market differs noticeably.

From our cultural analysis of immigration, we find support for cultural proximity to matter in the decision of self-segregation. Natives who value culturally homogeneous neighbourhoods are in general less keen to move when immigrants originate from another EU or Nordic country. Freedom of movement and residence for EU citizens is a cornerstone in the single market cooperation. Not only is the EU membership intertwined with the Swedish culture, but also it enjoys strong popularity (SCB 2019a). Sweden joined the EU in 1995 after a referendum in 1994. Their membership is, therefore, based upon an informed decision on "come what may", including immigration from other member states. In contrast, immigrants from Asia, Africa and South America lack the same anchoring with the public. With less general policy debate on the topic, combined with the social stigma of expressing an anti-immigration sentiment, natives likely vote with their feet to express their preference for cultural homogeneity. Presumably, the cultural distance

[27] Around half of the Swedish population lives in the three regions covered in the study.

between inhabitants adds to the probability of frictions which motivate the more palpable native flight. Moreover, we find support for tipping-like behaviour in the outflow of natives. The perceived negative effect of immigration likely becomes visible only after the minority share in a neighbourhood exceeds a significant percentage of the population. It is not until the foreign-born population becomes dominant enough to exercise their culture in public[28], that natives choose to self-segregate. If we call to mind that Malmö is one of the immigrant densest cities in Sweden, and accept the presumption that immigrants to a greater extent buy apartments, we can explain the low effect in prices based on the contact hypothesis first presented by Allport (1954). The theory suggests that interactions between foreign-born persons and natives should lower mistrust and the preference for homogeneous neighbourhoods (Steinmayr 2016, Finseraas et al. 2019).

Even though it is controversial to suggest native flight in Sweden, it is still necessary to highlight its existence to tackle the long-term challenges that come with it. Possible consequences are deteriorating effects on the housing market, local government finances and human capital formation. One reason is the power of socioeconomic background on children's school performance[29]. Schools in less favoured neighbourhoods struggle more often with the learning outcome of their pupils compared to schools in affluent areas. As the perceived quality of local amenities influences the mobility of natives, the apparent willingness to self-segregate will enlarge the already existing gaps and ignite a vicious cycle of income inequalities and poor life opportunities. Further, the movement of natives affect the tax base and in turn, the condition of local government finances. Hence, neighbourhoods whom natives choose to self-segregate from will have a hard time to maintain or improve their attractiveness. There are also fewer incentives to expand and invest in local housing markets where the demand for housing is low. If the trend towards segregation continues, we will see many neighbourhoods where poverty becomes cemented. Even if such areas are rare today, the embryo of them exists and that stress the relevance of successful integration strategies to foster assimilation.

7 Conclusion

Our study aimed to determine the relationship between immigration and housing segregation empirically with the purpose to assess whether Swedes value homogeneous neighbourhoods more than declared by their political position. Due to different purchasing power and cultural background of immigrants, we expect that the origin of immigrants matter for the magnitude of native flight. To examine whether that is the case, we distinguished between two groups of foreign-born persons based on their labour market outcomes and assimilation. The analysis was performed by estimating two hedonic price models. We advance the literature by using a novel dataset on micro house prices assembled through data scraping over the period 2017m1 to 2020m3. The set includes the three largest regions in Sweden: Stockholm, Gothenburg and Malmö, and we estimate the impact of immigration on both city and region level.

Hedonic price models are frequently used in the literature to estimate the impact of specific variables on house prices (Rosen 1974, Keskin 2008, Clark and Herrin 2000, Brasington et al. 2015). The model is, therefore, suitable for our purpose as we are interested in the short- and long-run effects of immigration as well as the impact of preferred cultural

[28]The native population has to change their habits to accommodate a more multicultural society.
[29]See, for example, Morgan et al. (2009), Buckingham et al. (2013), Reardon et al. (2013).

homogeneity on segregation patterns in house prices. To capture these effects we specified two different models; the first was calibrated to capture the time aspect of immigration, that is increased or decreased house prices based on the supply and demand argument for short- and long run. The second was calibrated to examine whether cultural proximity dampens the movement of natives and if the outflow of natives exhibits a tipping-like behaviour.

Our results suggest that there exist native flight in Sweden. Also, it appears that natives are more time responsive to immigration inflows than expected. On the regional level, natives re-evaluate villa prices in a neighbourhood directly when the density of foreign-born increases. The results are generalisable across the regions, making an application on country level possible. From a cultural perspective, we find support for that cultural proximity matters in the decision of self-segregation. Natives who value culturally homogeneous neighbourhoods are less keen to move when immigrants originate from a country whose culture is reminiscent of their own. Further, our results indicate a tipping-like behaviour which supports the notion that it is not until the foreign-born population exceeds a certain threshold that natives choose to self-segregate.

The findings stress the relevance of successful integration strategies and effective channels for assimilation. Thus, there is a need for political action to avoid the harmful consequences of a divided society. Although immigrants are expected to adapt to the Swedish culture, it might be necessary for Swedes to assimilate to Sweden's already multicultural population. The homogeneous culture has to widen into a holistic idea of multiculturalism and tolerance for internal variability. As such, policymakers are encouraged to promote a broader mix of housing[30]. It reduces the required wealth to live in a specific neighbourhood, enabling individuals from different socioeconomic backgrounds to interact and share public spaces. The density of immigrants should, therefore, decrease and lower the incentives for a threshold flight of natives. Drawing from the Malmö results and the contact hypothesis, there is further support for the policy suggestion as it appears that interaction between natives and immigrants lowers xenophobia.

The study has some possible limitations. Therefore, readers should consider the presented results as an indication rather than a confirmation. Future research is encouraged to include more regions, increase the number of immigrant categories and, if possible, to use a pure micro dataset. All the above suggestions should provide more detailed insight into the native fight in Sweden.

[30]Villas, terraced houses, apartments and rentals with varying housing standard.

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Appendix

Table (5) Variables and sources

Variables	Sources
Share of foreign-born city level	Available from the local statistical offices upon request
Share of foreign-born region level	Available from Statistics Sweden (SCB) upon request
Election result for SD	*Riksdagsval* SCB (n.d.d)
Average income city level	*Befolkning efter födelseland, ålder och kön. År 2000 - 2019* SCB (n.d.b)
Average income region level	*Sammanräknad förvärvsinkomst för boende i Sverige hela året* SCB (2019b)
Tax rate	*Din kommun i siffror* Ekonomifakta (2019)
Final (mean) grade	*Statistik om förskola, skola och vuxenutbildning* Skolverket (n.d.)
Crime per 100th person	*Sök statistik över anmälda brott*, Brå (n.d.) Brå (n.d.)
Commuting time	*Sök resa*, SL (n.d.), Västtrafik (n.d.), Skånetrafiken (n.d.) SL (n.d.), Västtrafik (n.d.), Skånetrafiken (n.d.)

Table (6) Statistics on the city district level for the regions

Neighbourhood	Apartment price	Villa price	AAS-A	EU Nordic	SD	Villa share
Stockholm						
Rinkeby-Kista	2 339	3 840	0.49	0.08	0.06	0.05
Spånga-Tensta	2 427	6 206	0.31	0.07	0.05	0.32
Hässelby-Vällingby	2 645	4 944	0.22	0.08	0.10	0.31
Bromma	3 400	9 846	0.08	0.07	0.07	0.12
Kungsholmen	4 690	14 400	0.07	0.08	0.06	0.01
Norrmalm	5 872	47 703	0.07	0.08	0.05	0.00
Östermalm	6 083	14 350	0.08	0.09	0.06	0.00
Södermalm	4 858	8 204	0.07	0.07	0.06	0.00
Enskede-Årsta-Vantör	2 981	6 929	0.17	0.08	0.08	0.05
Skarpnäck	3 311	6 319	0.10	0.07	0.06	0.03
Farsta	2 998	7 560	0.15	0.07	0.09	0.15
Älvsjö	3 608	8 919	0.10	0.07	0.08	0.25
Hägersten-Liljeholmen	3 688	4 750	0.10	0.07	0.06	0.07
Skärholmen	2 427	3 542	0.37	0.10	0.07	0.22
Gothenburg						
Gothenburg East-Angered	2 078	7 606	0.31	0.09	0.10	0.27
Örgryte-Härlanda	2 977	7 631	0.09	0.09	0.08	0.04
Gothenburg city centre	3 674	9 941	0.11	0.10	0.08	0.01
Majorna-Linné	3 590	6 369	0.08	0.09	0.07	0.00
Askim-Frölunda-Högsbo	2 728	6 192	0.13	0.09	0.11	0.18
Gothenburg West	2 503	5 501	0.10	0.08	0.09	0.48
Hisingen West	2 301	4 963	0.17	0.14	0.13	0.33
Lundby	3 367	4 431	0.14	0.12	0.11	0.06
Hisingen North	2 194	9 661	0.16	0.14	0.14	0.22
Malmö						
Malmö city centre	2 691	4 467	0.12	0.11	0.11	0.00
Inner city South	1 660	9 136	0.20	0.10	0.08	0.01
Inner city West	2 315	5 516	0.07	0.08	0.13	0.01
Limhamn-Bunkeflo	2 315	4 738	0.07	0.09	0.15	0.42
Hyllie	1 716	3 502	0.23	0.09	0.17	0.12
Fosie	1 068	3 252	0.29	0.11	0.16	0.10
Oxie	1 390	3 390	0.14	0.11	0.23	0.51
Rosengård	781	3 853	0.38	0.08	0.06	0.11
Husie	1 768	3 948	0.11	0.07	0.20	0.41
Kirseberg	1 156	3 948	0.17	0.09	0.17	0.11

Note: For simplicity we merged the two city districts Gothenburg East and Angered into one.

Table (7) Statistics on the city district level for the regions

	Δ Short run		Δ Long run	
Neighbourhood	AAS-A	EU Nordic	AAS-A	EU Nordic
Stockholm				
Rinkeby-Kista	0.03	−0.04	0.20	−0.12
Spånga-Tensta	0.04	−0.14	0.14	0.18
Hässelby-Vällingby	0.06	−0.20	0.53	0.51
Bromma	0.10	−0.13	0.53	0.51
Kungsholmen	0.08	−0.13	0.68	0.46
Norrmalm	0.12	−0.14	0.60	0.32
Östermalm	0.05	−0.13	0.70	0.37
Södermalm	0.15	−0.10	0.58	0.43
Enskede-Årsta-Vantör	0.02	−0.12	0.35	0.14
Skarpnäck	0.01	−0.07	0.09	0.01
Farsta	0.10	−0.03	0.39	0.04
Älvsjö	0.11	−0.05	0.47	0.28
Hägersten-Liljeholmen	0.11	−0.05	0.47	0.28
Skärholmen	0.03	−0.16	0.24	−0.09
Gothenburg				
Gothenburg East-Angered	0.05	−0.04	0.29	−0.53
Örgryte-Härlanda	0.12	0.02	0.61	0.26
Gothenburg city centre	0.16	0.05	0.68	0.26
Majorna-Linné	0.16	0.04	0.47	0.24
Askim-Frölunda-Högsbo	0.19	−0.01	0.81	0.18
Gothenburg West	0.12	0.00	0.43	0.27
Hisingen West	0.14	−0.02	0.58	0.21
Lundby	0.15	0.05	0.53	0.14
Hisingen North	0.17	−0.04	0.89	0.16
Malmö				
Malmö city centre	0.11	0.01	0.19	−0.13
Inner city South	0.08	−0.01	0.04	−0.24
Inner city West	0.16	0.03	0.87	0.01
Limhamn-Bunkeflo	0.29	−0.05	1.09	−0.08
Hyllie	0.11	0.00	0.56	−0.32
Fosie	0.14	−0.06	0.20	−0.34
Oxie	0.10	−0.04	1.18	−0.19
Rosengård	0.08	−0.04	−0.03	−0.57
Husie	0.19	−0.01	0.89	−0.29
Kirseberg	0.20	−0.02	0.32	−0.30

Note: For simplicity we merged the two city districts Gothenburg East and Angered into one.

Table (8) Statistics on the municipality level for the Stockholm region

							Δ Short run		Δ Long run	
Neighbourhood	Apartment price	Villa price	AAS-A	EU Nordic	SD	Villa share	AAS-A	EU Nordic	AAS-A	EU Nordic
Stockholm	4 087	6 711	0.15	0.08	0.07	0.08	0.08	0.05	0.28	0.39
Huddinge	2 479	5 330	0.16	0.08	0.10	0.38	0.08	0.00	0.19	0.01
Nacka	3 469	7 599	0.09	0.08	0.06	0.27	0.14	−0.02	0.21	−0.03
Södertälje	1 887	3 842	0.25	0.10	0.12	0.26	0.07	0.00	0.27	0.00
Botkyrka	2 069	4 320	0.23	0.10	0.10	0.30	0.07	−0.02	0.20	−0.07
Haninge	2 134	4 500	0.12	0.10	0.12	0.26	0.13	0.04	0.33	0.06
Solna	3 607	9 675	0.17	0.09	0.08	0.03	0.11	0.03	0.25	0.04
Järfälla	2 370	5 109	0.20	0.08	0.10	0.23	0.13	−0.01	0.40	−0.03
Sollentuna	2 923	6 363	0.16	0.07	0.07	0.29	0.13	0.01	0.38	0.03
Täby	3 047	6 972	0.09	0.07	0.06	0.29	0.14	0.01	0.40	0.04
Norrtälje	1 754	3 096	0.05	0.06	0.12	0.31	0.24	0.02	0.78	0.04
Sundbyberg	3 414	7 815	0.20	0.08	0.09	0.04	0.06	−0.01	0.19	−0.01
Sigtuna	1 967	4 539	0.21	0.09	0.13	0.30	0.15	0.01	0.44	0.06
Tyresö	2 724	5 664	0.08	0.07	0.10	0.37	0.13	−0.02	0.41	−0.02
Lidingö	4 079	11 575	0.07	0.08	0.06	0.27	0.15	0.00	0.30	0.05
Upplands Väsby	2 163	4 338	0.18	0.10	0.11	0.29	0.15	−0.01	0.43	−0.04
Österåker	2 389	4 688	0.06	0.09	0.10	0.52	0.19	0.07	0.47	0.15
Värmdö	2 961	5 363	0.05	0.07	0.10	0.46	0.31	−0.01	0.64	0.00
Vallentuna	2 328	4 930	0.07	0.07	0.10	0.42	0.18	0.05	0.40	0.12
Danderyd	3 690	11 836	0.07	0.08	0.05	0.26	0.22	0.00	0.46	0.02
Upplands-Bro	2 233	4 779	0.16	0.09	0.12	0.24	0.15	0.01	0.53	0.00
Ekerö	3 109	5 441	0.05	0.08	0.09	0.72	0.25	0.04	0.61	0.24
Nynäshamn	1 731	3 488	0.07	0.09	0.15	0.39	0.24	0.02	0.50	0.12
Salem	2 360	4 360	0.11	0.07	0.11	0.39	0.16	0.02	0.52	0.04
Vaxholm	3 079	6 475	0.04	0.05	0.07	0.22	0.20	−0.01	0.17	0.03
Nykvarn	2 215	3 717	0.04	0.07	0.18	0.58	0.25	0.00	0.73	−0.06

Note: The variables Price and Price per m^2 are reported in 1000 SEK.

Table (9) Statistics on the municipality level for the Gothenburg region

							Δ Short run		Δ Long run	
Neighbourhood	Apartment price	Villa price	AAS-A	EU Nordic	SD	Villa share	AAS-A	EU Nordic	AAS-A	EU Nordic
Gothenburg	3 082	5 344	0.16	0.12	0.10	0.12	0.14	0.01	0.77	0.35
Mölndal	2 717	5 020	0.10	0.06	0.12	0.22	0.18	0.03	0.43	0.10
Uddevalla	1 222	2 873	0.11	0.04	0.15	0.37	0.27	−0.02	0.78	−0.08
Kungälv	2 363	4 267	0.05	0.04	0.14	0.41	0.25	0.01	0.72	0.03
Partille	2 670	5 390	0.10	0.06	0.12	0.41	0.17	0.02	0.55	0.01
Härryda	2 773	4 331	0.05	0.05	0.13	0.69	0.21	0.01	0.43	0.05
Stenungsund	2 170	4 041	0.05	0.04	0.14	0.50	0.26	0.02	0.70	0.02
Tjörn	1 994	3 412	0.03	0.04	0.14	0.64	0.40	0.02	0.68	0.15
Orust	1 831	2 874	0.03	0.04	0.15	0.74	0.36	0.07	0.82	0.20
Lysekil	1 449	2 821	0.08	0.05	0.16	0.54	0.37	−0.03	0.96	0.00
Strömstad	2 004	3 245	0.09	0.14	0.14	0.39	0.34	−0.05	0.95	−0.05
Öckerö	2 696	4 885	0.03	0.03	0.11	0.70	0.60	0.10	1.06	0.24
Tanum	1 374	2 229	0.05	0.06	0.12	0.71	0.48	0.00	1.10	−0.04
Munkedal	922	1 567	0.05	0.05	0.19	0.89	0.61	−0.03	1.48	−0.02
Sotenäs	2 321	3 417	0.04	0.05	0.12	0.54	0.50	0.01	1.15	0.00

Note: The variables Price and Price per m^2 are reported in 1000 SEK.

Table (10) Statistics on the municipality level for the Malmö region

							Δ Short run		Δ Long run	
Neighbourhood	Apartment price	Villa price	AAS-A	EU Nordic	SD	Villa share	AAS-A	EU Nordic	AAS-A	EU Nordic
Malmö	1 980	4 706	0.17	0.17	0.14	0.11	0.15	0.00	0.09	0.36
Helsingborg	1 689	4 066	0.13	0.07	0.17	0.24	0.23	−0.02	0.71	−0.04
Lund	2 430	5 081	0.11	0.08	0.09	0.20	0.16	0.05	0.33	0.13
Landskrona	1 459	2 969	0.10	0.08	0.19	0.42	0.14	−0.01	0.42	−0.03
Trelleborg	1 111	2 999	0.05	0.07	0.24	0.46	0.31	0.01	0.82	0.02
Vellinge	2 863	6 011	0.02	0.05	0.17	0.68	0.54	0.02	0.82	0.03
Eslöv	1 103	2 578	0.08	0.06	0.22	0.48	0.31	0.05	0.87	0.09
Kävlinge	1 519	3 600	0.04	0.05	0.19	0.58	0.36	−0.01	1.03	−0.01
Ystad	1 487	3 150	0.04	0.05	0.17	0.40	0.45	0.02	1.13	0.00
Höganäs	1 725	3 251	0.05	0.07	0.15	0.69	0.37	0.02	0.90	0.10
Staffanstorp	1 792	3 717	0.05	0.06	0.17	0.56	0.34	−0.01	0.70	0.06
Lomma	2 726	5 292	0.04	0.05	0.13	0.46	0.33	0.04	0.68	0.09
Svedala	1 432	3 406	0.04	0.05	0.24	0.55	0.47	0.03	0.82	0.04
Sjöbo	607	1 706	0.03	0.07	0.30	0.80	0.40	0.00	0.87	0.06
Burlöv	1 426	3 742	0.15	0.10	0.19	0.46	0.17	−0.03	0.39	0.03
Höör	1 169	2 155	0.04	0.06	0.21	0.83	0.44	−0.01	0.75	0.00
Skurup	1 074	2 527	0.05	0.07	0.25	0.78	0.60	0.01	1.26	0.00
Bjuv	577	1 698	0.09	0.11	0.26	0.65	0.48	0.02	1.18	0.08
Hörby	860	1 850	0.05	0.06	0.27	0.84	0.34	0.04	0.52	0.02
Svalöv	764	1 877	0.06	0.09	0.26	0.86	0.30	0.03	0.92	0.15

Note: The variables Price and Price per m^2 are reported in 1000 SEK.

Table (11) Descriptive statistics for the cities

	Stockholm				Gothenburg				Malmö			
Variable	Mean	Std. Dev.	Min.	Max.	Mean	Std. Dev.	Min.	Max.	Mean	Std. Dev.	Min.	Max.
Apartment												
Average price	4087.26	2375.40	1205	60628	3082.26	1236.70	512	15480	1979.88	1073.12	313	13064
Price per m^2	68.94	25.44	16	223	49.80	14.59	8	139	29.76	10.84	5	88
Number of rooms	2.44	1.02	1	9	2.42	0.95	1	10	2.50	0.94	1	8
Living area (x100)	61.97	25.47	12	334	64.58	22.90	18	299	67.43	24.14	11	328
Storage area (x100)	0.26	2.75	0	144	0.18	2.25	0	92	0.15	2.08	0	57.50
Space efficiency	26.10	5.19	9	75	27.82	5.43	10	72	27.69	4.91	11	61
Garden area (x100)	0.01	1.49	0	215	0.04	2.82	0	297	0.04	3.72	0	448
Operating costs	3694.47	1410.15	0	16183	4141.31	1309.60	0	11533	4089.17	1357.19	0	14229
N		36050				23803				18412		
Villa												
Average price	6711.13	2834.01	1806	47703	5343.53	2019.02	243	21727	4705.56	1905.47	1004	23651
Price per m^2	55.70	22.33	18	168	42.04	12.85	2	109	34.68	9.72	11	93
Number of rooms	5.61	1.36	1	13	5.29	1.36	1	14	5.11	1.29	1	16
Living area (x100)	126.17	38.04	21	337	129.89	37.71	24	380	137.36	42.41	27	650
Storage area (x100)	39.89	33.86	0	181	30.67	36.74	0	244	34.14	40.24	0	234
Space efficiency	22.81	5.19	9	47	24.98	5.42	9	60	27.14	5.30	13	79
Garden area (x100)	508.74	315.80	0	6110	612.11	1364.73	0	59451	552.23	449.17	0	15276
Operating costs	3183.73	863.76	84	18926	3168.62	1226.88	49	12347	2986.01	917.04	263	11829
N		2954				2210				3330		
Common												
Average income	27242.77	5651.83	13167	34873	23003.64	2895.46	13431	27056	21310.78	5233.23	9719	30830
Tax rate	0.30	0	0.30	0.30	0.33	0	0.33	0.33	0.32	0	0.32	0.32
Final (mean) grade	254	18.57	217.40	284.50	233.23	15.82	202.20	252.10	227.34	19.43	166.90	255.50
Crime per 100th person	1.86	0.66	1.07	3.35	1.26	0.62	0.52	2.38	1.66	0.68	0.87	2.72
Commuting time	9.06	9.50	0	29	9.87	8.45	0	23	6.84	12.24	0	35
Metro or tram	0.97	0.16	0	1	0.73	0.44	0	1	0	0	0	0
Commuter rail	0.41	0.49	0	1	0.20	0.40	0	1	0.81	0.39	0	1
Inner city	0.44	0.50	0	1	0.28	0.45	0	1	0.65	0.48	0	1
City	0	0	0	0	0	0	0	0	0	0	0	0
Border region	1	0	1	1	1	0	1	1	1	0	1	1
Coast	0.65	0.48	0	1	0.68	0.47	0	1	0.50	0.50	0	1

Note: The variables Price and Price per m^2 are reported in 1000 SEK.

Table (12) Descriptive statistics for the regions

	Stockholm				Gothenburg				Malmö			
Variable	Mean	Std. Dev.	Min.	Max.	Mean	Std. Dev.	Min.	Max.	Mean	Std. Dev.	Min.	Max.
Apartment												
Average price	3368.45	1993.70	240	60628	2899.31	1228.22	184	15480	1925.64	1066.76	163	14421
Price per m^2	54.31	25.06	3	223	46.12	15.84	3	139	28.32	11.99	1	111
Number of rooms	2.57	1.07	1	9	2.48	0.97	1	10	2.58	1.00	1	8
Living area (x100)	66.09	25.51	12	334	65.99	22.86	17	299	69.95	24.98	10	328
Storage area (x100)	0.26	2.80	0	144	0.21	2.48	0	92	0.24	3.03	0	110
Space efficiency	26.70	5.29	9	106	27.78	5.37	10	75	28.04	5.07	10	61
Garden area (x100)	0.06	5.20	0	898	0.03	2.48	0	297	0.04	4.56	0	652
Operating costs	4072.41	1511.12	0	19600	4253.09	1366.89	0	11533	4328.95	1474.53	0	14229
N		74640				30733				35029		
Villa												
Average price	5734.88	2831.43	349	47703	4508.48	1987.82	243	21968	3780.78	2093.24	209	37848
Price per m^2	43.77	17.43	6	202	36.62	13.92	2	244	27.99	11.82	2	180
Number of rooms	5.43	1.44	1	20	5.20	1.40	1	15	5.12	1.43	1	16
Living area (x100)	133.38	41.25	20	636	125.69	38.78	22	437	135.74	44.38	27	652
Storage area (x100)	27.36	35.96	0	288	32.07	37.99	0	267	35.32	42.69	0	280
Space efficiency	24.93	5.27	5	69	24.58	5.61	7	87	26.85	5.70	7	110
Garden area (x100)	925.76	1493.29	0	45406	1081.58	2840.26	0	86507	992.37	2166.54	0	60000
Operating costs	3257.21	1094.82	17	18926	2941.84	1034.69	43	12347	2876.46	918.39	39	11829
N		18945				12980				8102		
Common												
Average income	27102.84	5647.39	13167	43652	23626.72	3153.27	13431	30061	21138.39	4537.13	9719	34580
Tax rate	0.31	0.01	0.29	0.32	0.33	0.00	0.32	0.35	0.32	0.01	0.30	0.33
Final (mean) grade	246.96	18.25	217.40	284.50	231.86	14.71	187.80	252.10	234.45	17.86	166.90	265.50
Crime per 100th person	1.32	0.71	0.36	3.35	1.13	0.60	0.28	2.38	1.28	0.65	0.49	2.72
Commuting time	19.30	16.15	0	79	17.08	25.26	0	164	17.86	17.88	0	86
Metro or tram	0.58	0.49	0	1	0.57	0.50	0	1	0	0	0	0
Commuter rail	0.66	0.48	0	1	0.15	0.36	0	1	0.85	0.35	0	1
Inner city	0.21	0.41	0	1	0.22	0.41	0	1	0.34	0.48	0	1
City	0	0	0	0	0	0	0	0	0.30	0.46	0	1
Border region	0.77	0.42	0	1	0.92	0.27	0	1	0.56	0.50	0	1
Coast	0.72	0.45	0	1	0.64	0.48	0	1	0.54	0.50	0	1

Note: The variables Price and Price per m^2 are reported in 1000 SEK.

In the Malmö region, there are two cities comparable to Malmö: Helsingborg and Lund. To capture their city characteristic, we include the dummy variable City.

Table (13) Hedonic price regression AAS-A short run for the cities

	Stockholm		Gothenburg		Malmö	
	Apartment	Villa	Apartment	Villa	Apartment	Villa
AAS-A group short	0.010	−1.341	0.102	0.806	−0.189	0.412
	(0.037)	(0.197)***	(0.048)**	(0.381)**	(0.113)*	(0.443)
Number of rooms	0.131	0.037	0.114	0.106	0.215	0.135
	(0.005)***	(0.012)***	(0.006)***	(0.009)***	(0.012)***	(0.012)***
Living area (x100)	0.523	0.255	0.588	−0.046	0.639	−0.136
	(0.020)***	(0.049)***	(0.026)***	(0.033)	(0.049)***	(0.040)***
Storage area (x100)	0.426	0.069	0.498	0.043	0.195	0.019
	(0.032)***	(0.011)***	(0.060)***	(0.008)***	(0.059)***	(0.009)**
Space efficiency	0.009	0.004	0.007	0.021	0.017	0.024
	(0.000)***	(0.003)	(0.001)***	(0.002)***	(0.001)***	(0.002)***
Operating costs	−0.030	−0.030	−0.094	−0.016	−0.149	0.010
	(0.003)***	(0.012)**	(0.007)***	(0.011)	(0.007)***	(0.014)
Average price per m^2	0.601	0.331	0.981	0.187	0.723	0.335
	(0.008)***	(0.027)***	(0.010)***	(0.021)***	(0.008)***	(0.029)***
Average income	−0.049	0.466	−0.238	0.053	−0.344	−0.014
	(0.009)***	(0.049)***	(0.016)***	(0.052)	(0.023)***	(0.069)
Average grades (x100)	−0.042	−0.280	0.033	0.034	0.138	−0.075
	(0.012)***	(0.053)***	(0.012)***	(0.053)	(0.037)***	(0.132)
Crime per 100th person	0.001	0.016	0.003	−0.260	−0.037	0.095
	(0.002)	(0.016)	(0.004)	(0.096)***	(0.002)***	(0.017)***
Coast	0.023	−0.027	−0.005	0.068	0.132	−0.038
	(0.003)***	(0.007)***	(0.003)*	(0.020)***	(0.008)***	(0.038)
Commuting time (x100)	−0.119	−0.214	0.342	−0.946	0.163	−0.115
	(0.018)***	(0.052)***	(0.029)***	(0.284)***	(0.017)***	(0.052)**
Inner city	0.021	0.064	−0.005	0.240	0.006	0.113
	(0.005)***	(0.035)*	(0.004)	(0.102)**	(0.011)	(0.050)**
Observations	36050	2954	23803	3330	18412	2210
R^2	0.924	0.870	0.862	0.889	0.908	0.862

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$.

The correction dummies are excluded as they do not contribute to the understanding of the results.

Table (14) Hedonic price regression AAS-A long run for the cities

	Stockholm		Gothenburg		Malmö	
	Apartment	Villa	Apartment	Villa	Apartment	Villa
AAS-A group long	−0.136	−0.540	0.007	0.176	−0.027	−0.193
	(0.010)***	(0.038)***	(0.013)	(0.066)***	(0.016)*	(0.046)***
Number of rooms	0.133	0.036	0.114	0.106	0.215	0.133
	(0.005)***	(0.012)***	(0.006)***	(0.009)***	(0.012)***	(0.012)***
Living area (x100)	0.523	0.252	0.587	−0.047	0.639	−0.134
	(0.020)***	(0.047)***	(0.026)***	(0.033)	(0.049)***	(0.040)***
Storage area (x100)	0.429	0.070	0.497	0.043	0.195	0.021
	(0.032)***	(0.010)***	(0.060)***	(0.008)***	(0.059)***	(0.009)**
Space efficiency	0.009	0.004	0.007	0.021	0.017	0.024
	(0.000)***	(0.003)	(0.001)***	(0.002)***	(0.001)***	(0.002)***
Operating costs	−0.033	−0.032	−0.093	−0.016	−0.149	0.011
	(0.003)***	(0.012)***	(0.007)***	(0.011)	(0.007)***	(0.014)
Average price per m^2	0.558	0.225	0.979	0.185	0.721	0.262
	(0.008)***	(0.025)***	(0.010)***	(0.021)***	(0.008)***	(0.031)***
Average income	0.003	0.535	−0.228	0.077	−0.278	0.339
	(0.008)	(0.036)***	(0.016)***	(0.035)**	(0.030)***	(0.102)***
Average grades (x100)	−0.045	−0.048	0.030	−0.019	0.071	−0.169
	(0.007)***	(0.030)	(0.012)**	(0.063)	(0.016)***	(0.061)***
Crime per 100th person	−0.004	0.163	0.005	−0.292	−0.044	0.049
	(0.001)***	(0.015)***	(0.005)	(0.089)***	(0.005)***	(0.020)**
Coast	0.047	0.006	−0.003	0.106	0.120	0.047
	(0.003)***	(0.007)	(0.004)	(0.030)***	(0.006)***	(0.023)**
Commuting time (x100)	−0.185	0.120	0.345	−1.071	0.151	−0.168
	(0.018)***	(0.059)**	(0.042)***	(0.272)***	(0.015)***	(0.041)***
Inner city	0.044	0.196	−0.004	0.269	0.020	0.024
	(0.005)***	(0.031)***	(0.004)	(0.095)***	(0.005)***	(0.022)
Observations	36050	2954	23803	3330	18412	2210
R^2	0.924	0.877	0.862	0.889	0.908	0.864

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$.

The correction dummies are excluded as they do not contribute to the understanding of the results.

Table (15) Hedonic price regression AAS-A short run for the regions

	Stockholm		Gothenburg		Malmö	
	Apartment	Villa	Apartment	Villa	Apartment	Villa
AAS-A group short	0.120	−0.231	0.175	−0.088	0.070	−0.169
	(0.015)***	(0.035)***	(0.047)***	(0.040)**	(0.025)***	(0.021)***
Number of rooms	0.111	0.064	0.123	0.113	0.180	0.108
	(0.004)***	(0.005)***	(0.006)***	(0.008)***	(0.007)***	(0.007)***
Living area (x100)	0.649	0.154	0.575	0.042	0.744	0.032
	(0.015)***	(0.020)***	(0.024)***	(0.029)	(0.026)***	(0.026)
Storage area (x100)	0.335	0.054	0.499	0.003	0.176	0.012
	(0.023)***	(0.004)***	(0.046)***	(0.006)	(0.041)***	(0.004)***
Space efficiency	0.007	0.013	0.007	0.022	0.015	0.022
	(0.000)***	(0.001)***	(0.001)***	(0.002)***	(0.001)***	(0.001)***
Operating costs	−0.038	−0.023	−0.120	−0.005	−0.143	0.047
	(0.003)***	(0.006)***	(0.007)***	(0.008)	(0.008)***	(0.008)***
Average price per m^2	0.534	0.509	0.796	0.253	0.629	0.365
	(0.006)***	(0.016)***	(0.008)***	(0.014)***	(0.007)***	(0.015)***
Average income	−0.018	0.146	−0.082	0.082	−0.118	0.109
	(0.006)***	(0.015)***	(0.021)***	(0.025)***	(0.013)***	(0.018)***
Tax rate	0.061	−1.117	1.307	0.194	0.309	−0.659
	(0.089)	(0.172)***	(0.513)**	(0.745)	(0.293)	(0.353)*
Average grades (x100)	−0.009	−0.049	−0.054	0.029	−0.072	−0.093
	(0.006)	(0.013)***	(0.027)**	(0.034)	(0.014)***	(0.026)***
Crime per 100th person	0.004	−0.019	−0.009	0.095	−0.032	0.072
	(0.001)***	(0.007)***	(0.009)	(0.017)***	(0.002)***	(0.007)***
Coast	0.015	−0.015	0.002	0.000	0.090	0.017
	(0.002)***	(0.003)***	(0.003)	(0.006)	(0.004)***	(0.006)***
Commuting time (x100)	−0.024	−0.263	−0.078	−0.021	0.043	−0.043
	(0.009)***	(0.019)***	(0.016)***	(0.017)	(0.020)**	(0.019)**
Metro or tram	0.004	−0.008	−0.016	0.093	0.000	0.000
	(0.002)**	(0.004)*	(0.006)**	(0.009)***	(.)	(.)
Commuter rail	−0.008	−0.029	0.005	−0.085	0.024	−0.018
	(0.001)***	(0.004)***	(0.008)	(0.079)	(0.006)***	(0.006)***
Inner city	0.043	−0.048	0.007	−0.070	0.027	0.028
	(0.003)***	(0.034)	(0.004)*	(0.076)	(0.004)***	(0.017)
City	0.000	0.000	0.000	0.000	−0.046	0.035
	(.)	(.)	(.)	(.)	(0.005)***	(0.007)***
Border region	−0.006	0.016	−0.163	0.074	−0.023	0.067
	(0.002)**	(0.005)***	(0.011)***	(0.012)***	(0.006)***	(0.007)***
Observations	74640	18945	30733	8102	35029	12980
R^2	0.913	0.858	0.882	0.884	0.892	0.872

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$.

The correction dummies are excluded as they do not contribute to the understanding of the results.

Table (16) Hedonic price regression AAS-A long run for the regions

	Stockholm		Gothenburg		Malmö	
	Apartment	Villa	Apartment	Villa	Apartment	Villa
AAS-A group long	0.008	−0.048	0.192	0.009	0.094	−0.123
	(0.005)	(0.012)***	(0.022)***	(0.020)	(0.012)***	(0.013)***
Number of rooms	0.111	0.064	0.122	0.113	0.181	0.109
	(0.004)***	(0.005)***	(0.006)***	(0.008)***	(0.007)***	(0.007)***
Living area (x100)	0.649	0.154	0.573	0.042	0.745	0.030
	(0.015)***	(0.020)***	(0.024)***	(0.029)	(0.026)***	(0.026)
Storage area (x100)	0.339	0.055	0.496	0.002	0.176	0.012
	(0.023)***	(0.004)***	(0.046)***	(0.006)	(0.041)***	(0.004)***
Space efficiency	0.007	0.013	0.007	0.022	0.015	0.022
	(0.000)***	(0.001)***	(0.001)***	(0.002)***	(0.001)***	(0.001)***
Operating costs	−0.038	−0.025	−0.118	−0.005	−0.144	0.049
	(0.003)***	(0.006)***	(0.007)***	(0.008)	(0.008)***	(0.008)***
Average price per m^2	0.533	0.488	0.819	0.258	0.632	0.335
	(0.007)***	(0.016)***	(0.008)***	(0.015)***	(0.007)***	(0.015)***
Average income	−0.001	0.140	−0.113	0.058	−0.179	0.167
	(0.006)	(0.015)***	(0.021)***	(0.025)**	(0.015)***	(0.021)***
Tax rate	0.095	−1.320	0.383	−0.433	1.042	−1.890
	(0.089)	(0.172)***	(0.521)	(0.746)	(0.303)***	(0.384)***
Average grades (x100)	−0.018	−0.063	−0.083	0.040	−0.047	−0.115
	(0.006)***	(0.013)***	(0.027)***	(0.034)	(0.013)***	(0.026)***
Crime per 100th person	0.006	−0.011	−0.015	0.099	−0.026	0.084
	(0.001)***	(0.007)	(0.008)*	(0.018)***	(0.002)***	(0.007)***
Coast	0.016	−0.016	−0.003	0.002	0.096	0.014
	(0.002)***	(0.003)***	(0.003)	(0.006)	(0.004)***	(0.006)**
Commuting time (x100)	0.002	−0.293	−0.120	−0.046	−0.024	−0.014
	(0.009)	(0.018)***	(0.016)***	(0.017)***	(0.021)	(0.020)
Metro or tram	0.002	−0.007	0.001	0.097	0.000	0.000
	(0.002)	(0.004)	(0.007)	(0.009)***	(.)	(.)
Commuter rail	−0.005	−0.031	0.006	−0.089	0.003	0.001
	(0.002)***	(0.004)***	(0.007)	(0.079)	(0.007)	(0.007)
Inner city	0.048	−0.040	0.009	−0.084	0.029	0.025
	(0.003)***	(0.033)	(0.004)**	(0.076)	(0.004)***	(0.017)
City	0.000	0.000	0.000	0.000	−0.050	0.045
	(.)	(.)	(.)	(.)	(0.005)***	(0.007)***
Border region	−0.004	0.023	−0.175	0.063	−0.006	0.041
	(0.002)*	(0.005)***	(0.011)***	(0.012)***	(0.006)	(0.007)***
Observations	74640	18945	30733	8102	35029	12980
R^2	0.914	0.858	0.883	0.884	0.892	0.872

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$.

The correction dummies are excluded as they do not contribute to the understanding of the results.

Table (17) Hedonic price regression EU Nordic short run for the cities

	Stockholm		Gothenburg		Malmö	
	Apartment	Villa	Apartment	Villa	Apartment	Villa
EU Nordic group short	0.420	0.527	−0.224	−3.398	0.172	0.919
	(0.029)***	(0.092)***	(0.107)**	(0.427)***	(0.169)	(0.347)***
Number of rooms	0.132	0.040	0.115	0.102	0.215	0.134
	(0.005)***	(0.011)***	(0.006)***	(0.009)***	(0.012)***	(0.012)***
Living area (x100)	0.519	0.241	0.586	−0.037	0.640	−0.135
	(0.020)***	(0.046)***	(0.026)***	(0.033)	(0.050)***	(0.040)***
Storage area (x100)	0.431	0.069	0.495	0.043	0.195	0.020
	(0.032)***	(0.011)***	(0.059)***	(0.008)***	(0.059)***	(0.009)**
Space efficiency	0.009	0.005	0.007	0.021	0.017	0.024
	(0.000)***	(0.003)*	(0.001)***	(0.002)***	(0.001)***	(0.002)***
Operating costs	−0.030	−0.032	−0.094	−0.023	−0.149	0.011
	(0.003)***	(0.012)***	(0.007)***	(0.010)**	(0.007)***	(0.014)
Average price per m^2	0.543	0.286	0.985	0.186	0.720	0.291
	(0.009)***	(0.028)***	(0.010)***	(0.020)***	(0.008)***	(0.032)***
Average income	−0.050	0.121	−0.195	0.542	−0.337	−0.104
	(0.007)***	(0.028)***	(0.021)***	(0.052)***	(0.027)***	(0.040)***
Average grades (x100)	0.065	0.163	0.008	−0.131	0.095	0.040
	(0.010)***	(0.038)***	(0.016)	(0.041)***	(0.020)***	(0.039)
Crime per 100th person	0.009	0.048	0.009	−0.117	−0.034	0.114
	(0.001)***	(0.014)***	(0.004)**	(0.019)***	(0.003)***	(0.016)***
Coast	0.044	−0.009	−0.000	0.147	0.124	0.037
	(0.003)***	(0.008)	(0.003)	(0.016)***	(0.006)***	(0.026)
Commuting time (x100)	−0.087	−0.231	0.310	−1.831	0.169	−0.034
	(0.018)***	(0.053)***	(0.035)***	(0.203)***	(0.026)***	(0.040)
Inner city	0.021	0.062	−0.006	0.039	0.019	0.037
	(0.004)***	(0.031)**	(0.004)	(0.031)	(0.007)***	(0.024)
Observations	36050	2954	23803	3330	18412	2210
R^2	0.924	0.869	0.862	0.891	0.908	0.863

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$.

The correction dummies are excluded as they do not contribute to the understanding of the results.

Table (18) Hedonic price regression EU Nordic long run for the cities

	Stockholm		Gothenburg		Malmö	
	Apartment	Villa	Apartment	Villa	Apartment	Villa
EU Nordic group long	−0.116	−0.388	0.109	−0.486	0.033	0.261
	(0.009)***	(0.031)***	(0.023)***	(0.055)***	(0.051)	(0.112)**
Number of rooms	0.132	0.040	0.114	0.103	0.215	0.135
	(0.005)***	(0.011)***	(0.006)***	(0.009)***	(0.012)***	(0.011)***
Living area (x100)	0.523	0.233	0.588	−0.039	0.640	−0.133
	(0.020)***	(0.046)***	(0.026)***	(0.033)	(0.050)***	(0.040)***
Storage area (x100)	0.432	0.063	0.498	0.045	0.197	0.019
	(0.032)***	(0.011)***	(0.060)***	(0.008)***	(0.060)***	(0.009)**
Space efficiency	0.009	0.005	0.007	0.021	0.017	0.024
	(0.000)***	(0.003)*	(0.001)***	(0.002)***	(0.001)***	(0.002)***
Operating costs	−0.030	−0.027	−0.095	−0.025	−0.150	0.008
	(0.003)***	(0.012)**	(0.007)***	(0.010)**	(0.007)***	(0.014)
Average price per m^2	0.541	0.200	0.992	0.183	0.718	0.397
	(0.009)***	(0.026)***	(0.010)***	(0.020)***	(0.008)***	(0.030)***
Average income	0.032	0.445	−0.358	0.673	−0.322	−0.164
	(0.009)***	(0.033)***	(0.029)***	(0.060)***	(0.019)***	(0.049)***
Average grades (x100)	−0.040	0.126	0.026	0.340	0.076	0.077
	(0.007)***	(0.031)***	(0.012)**	(0.038)***	(0.016)***	(0.042)*
Crime per 100th person	0.000	0.020	0.003	0.064	−0.035	0.107
	(0.001)	(0.014)	(0.004)	(0.023)***	(0.003)***	(0.016)***
Coast	0.049	0.019	−0.004	−0.025	0.118	−0.060
	(0.003)***	(0.008)**	(0.003)	(0.010)***	(0.008)***	(0.031)*
Commuting time (x100)	−0.128	0.014	0.379	0.093	0.144	−0.039
	(0.018)***	(0.057)	(0.029)***	(0.095)	(0.015)***	(0.040)
Inner city	0.036	0.103	−0.008	−0.046	0.020	0.046
	(0.004)***	(0.033)***	(0.004)**	(0.034)	(0.008)***	(0.021)**
Observations	36050	2954	23803	3330	18412	2210
R^2	0.924	0.875	0.862	0.892	0.908	0.863

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$.

The correction dummies are excluded as they do not contribute to the understanding of the results.

Table (19) Hedonic price regression EU Nordic short run for the regions

	Stockholm		Gothenburg		Malmö	
	Apartment	Villa	Apartment	Villa	Apartment	Villa
EU Nordic group short	0.315	−0.198	−0.119	−0.274	−0.766	−0.502
	(0.016)***	(0.037)***	(0.087)	(0.101)***	(0.077)***	(0.113)***
Number of rooms	0.111	0.063	0.122	0.113	0.180	0.107
	(0.004)***	(0.005)***	(0.006)***	(0.008)***	(0.007)***	(0.007)***
Living area (x100)	0.649	0.154	0.577	0.042	0.745	0.035
	(0.015)***	(0.020)***	(0.024)***	(0.029)	(0.026)***	(0.026)
Storage area (x100)	0.342	0.054	0.498	0.002	0.179	0.012
	(0.024)***	(0.004)***	(0.046)***	(0.006)	(0.041)***	(0.004)***
Space efficiency	0.007	0.013	0.007	0.022	0.015	0.021
	(0.000)***	(0.001)***	(0.001)***	(0.002)***	(0.001)***	(0.001)***
Operating costs	−0.037	−0.024	−0.120	−0.005	−0.142	0.046
	(0.003)***	(0.006)***	(0.007)***	(0.008)	(0.008)***	(0.008)***
Average price per m^2	0.498	0.509	0.797	0.276	0.654	0.401
	(0.007)***	(0.016)***	(0.010)***	(0.016)***	(0.007)***	(0.017)***
Average income	0.008	0.130	−0.042	0.086	−0.051	0.033
	(0.006)	(0.014)***	(0.023)*	(0.026)***	(0.014)***	(0.016)**
Tax rate	−0.080	−1.092	1.586	−0.380	0.491	−0.673
	(0.089)	(0.177)***	(0.534)***	(0.702)	(0.268)*	(0.354)*
Average grades (x100)	0.024	−0.079	−0.048	0.013	−0.065	−0.065
	(0.006)***	(0.013)***	(0.028)*	(0.036)	(0.013)***	(0.026)**
Crime per 100th person	0.018	−0.024	0.004	0.090	−0.043	0.072
	(0.001)***	(0.007)***	(0.008)	(0.017)***	(0.002)***	(0.008)***
Coast	0.020	−0.018	0.002	0.006	0.062	0.000
	(0.001)***	(0.003)***	(0.004)	(0.007)	(0.004)***	(0.007)
Commuting time (x100)	−0.007	−0.283	−0.046	−0.044	0.045	−0.082
	(0.009)	(0.018)***	(0.014)***	(0.014)***	(0.018)**	(0.018)***
Metro or tram	0.017	−0.016	−0.023	0.092	0.000	0.000
	(0.002)***	(0.005)***	(0.006)***	(0.009)***	(.)	(.)
Commuter rail	−0.019	−0.012	−0.006	−0.073	0.043	−0.029
	(0.002)***	(0.004)***	(0.007)	(0.079)	(0.006)***	(0.006)***
Inner city	0.054	−0.035	0.010	−0.070	0.042	0.059
	(0.003)***	(0.033)	(0.004)**	(0.076)	(0.004)***	(0.017)***
City	0.000	0.000	0.000	0.000	−0.066	0.025
	(.)	(.)	(.)	(.)	(0.005)***	(0.008)***
Border region	0.000	0.025	−0.162	0.062	−0.060	0.040
	(0.002)	(0.005)***	(0.012)***	(0.012)***	(0.007)***	(0.008)***
Observations	74640	18945	30733	8102	35029	12980
R^2	0.914	0.858	0.882	0.884	0.892	0.871

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$.

The correction dummies are excluded as they do not contribute to the understanding of the results.

Table (20) Hedonic price regression EU Nordic long run for the regions

	Stockholm		Gothenburg		Malmö	
	Apartment	Villa	Apartment	Villa	Apartment	Villa
EU Nordic group long	−0.070	0.001	−0.060	0.085	0.021	−0.244
	(0.007)***	(0.019)	(0.004)***	(0.006)***	(0.016)	(0.018)***
Number of rooms	0.111	0.064	0.122	0.113	0.180	0.108
	(0.004)***	(0.005)***	(0.006)***	(0.007)***	(0.007)***	(0.007)***
Living area (x100)	0.648	0.155	0.574	0.043	0.743	0.031
	(0.015)***	(0.020)***	(0.024)***	(0.029)	(0.026)***	(0.026)
Storage area (x100)	0.342	0.054	0.501	−0.002	0.178	0.011
	(0.023)***	(0.004)***	(0.046)***	(0.006)	(0.041)***	(0.004)***
Space efficiency	0.007	0.013	0.007	0.022	0.015	0.022
	(0.000)***	(0.001)***	(0.001)***	(0.002)***	(0.001)***	(0.001)***
Operating costs	−0.038	−0.024	−0.118	−0.005	−0.142	0.046
	(0.003)***	(0.006)***	(0.007)***	(0.008)	(0.008)***	(0.008)***
Average price per m^2	0.528	0.503	0.825	0.218	0.626	0.374
	(0.006)***	(0.016)***	(0.008)***	(0.015)***	(0.007)***	(0.015)***
Average income	0.011	0.119	−0.155	0.151	−0.107	0.051
	(0.006)*	(0.014)***	(0.022)***	(0.026)***	(0.012)***	(0.016)***
Tax rate	−0.174	−1.263	5.940	−3.605	0.050	−1.041
	(0.093)*	(0.191)***	(0.587)***	(0.777)***	(0.270)	(0.356)***
Average grades (x100)	−0.013	−0.062	0.129	−0.131	−0.065	−0.025
	(0.006)**	(0.013)***	(0.029)***	(0.039)***	(0.013)***	(0.025)
Crime per 100th person	0.008	−0.016	−0.017	0.105	−0.032	0.069
	(0.001)***	(0.007)**	(0.008)**	(0.017)***	(0.002)***	(0.007)***
Coast	0.016	−0.016	0.019	−0.010	0.087	0.001
	(0.001)***	(0.003)***	(0.004)***	(0.006)	(0.004)***	(0.006)
Commuting time (x100)	−0.012	−0.301	−0.081	−0.008	0.070	−0.087
	(0.009)	(0.018)***	(0.014)***	(0.015)	(0.018)***	(0.018)***
Metro or tram	0.005	−0.007	−0.065	0.111	0.000	0.000
	(0.002)**	(0.004)*	(0.007)***	(0.009)***	(.)	(.)
Commuter rail	−0.014	−0.024	−0.005	−0.095	0.029	−0.031
	(0.002)***	(0.004)***	(0.007)	(0.077)	(0.006)***	(0.006)***
Inner city	0.046	−0.038	−0.005	−0.042	0.024	0.053
	(0.003)***	(0.033)	(0.004)	(0.075)	(0.004)***	(0.017)***
City	0.000	0.000	0.000	0.000	−0.050	0.037
	(.)	(.)	(.)	(.)	(0.005)***	(0.007)***
Border region	−0.010	0.026	−0.115	0.040	−0.017	0.027
	(0.002)***	(0.005)***	(0.011)***	(0.012)***	(0.007)**	(0.007)***
Observations	74640	18945	30733	8102	35029	12980
R^2	0.914	0.857	0.883	0.886	0.892	0.872

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$.

The correction dummies are excluded as they do not contribute to the understanding of the results.

Table (21) Hedonic price regression AAS-A culture for the cities

	Stockholm		Gothenburg		Malmö	
	Apartment	Villa	Apartment	Villa	Apartment	Villa
AAS-A × SD	12.155	−69.807	19.531	−69.808	0.865	6.344
	(2.072)***	(18.283)***	(4.913)***	(14.025)***	(1.100)	(4.021)
SD election result 2014	−3.275	8.475	−2.656	8.740	−0.064	−0.988
	(0.365)***	(3.391)**	(0.766)***	(2.272)***	(0.302)	(1.424)
AAS-A group	−1.051	3.261	−1.676	4.581	−0.040	0.505
	(0.134)***	(1.027)***	(0.379)***	(1.423)***	(0.576)	(2.081)
Number of rooms	0.134	0.039	0.115	0.103	0.215	0.132
	(0.005)***	(0.011)***	(0.006)***	(0.009)***	(0.012)***	(0.012)***
Living area (x100)	0.526	0.240	0.586	−0.039	0.639	−0.129
	(0.020)***	(0.045)***	(0.026)***	(0.033)	(0.050)***	(0.040)***
Storage area (x100)	0.433	0.071	0.494	0.044	0.196	0.021
	(0.032)***	(0.010)***	(0.059)***	(0.008)***	(0.059)***	(0.009)**
Space efficiency	0.009	0.005	0.007	0.021	0.017	0.024
	(0.000)***	(0.003)*	(0.001)***	(0.002)***	(0.001)***	(0.002)***
Operating costs	−0.035	−0.033	−0.095	−0.026	−0.148	0.010
	(0.003)***	(0.012)***	(0.007)***	(0.010)**	(0.008)***	(0.014)
Average price per m^2	0.522	0.205	1.004	0.179	0.719	0.307
	(0.009)***	(0.025)***	(0.011)***	(0.020)***	(0.008)***	(0.031)***
Average income	−0.121	−0.410	−0.126	−0.761	−0.314	0.306
	(0.013)***	(0.157)***	(0.056)**	(0.264)***	(0.107)***	(0.306)
Average grades (x100)	−0.012	0.366	0.017	0.265	0.097	0.142
	(0.009)	(0.083)***	(0.013)	(0.037)***	(0.048)**	(0.146)
Crime per 100th person	−0.011	0.209	0.021	−0.090	−0.036	0.076
	(0.002)***	(0.025)***	(0.007)***	(0.061)	(0.003)***	(0.019)***
Coast	0.016	0.046	−0.006	0.003	0.121	−0.013
	(0.003)***	(0.033)	(0.004)	(0.021)	(0.011)***	(0.027)
Commuting time (x100)	−0.171	0.441	0.455	0.224	0.139	−0.194
	(0.021)***	(0.084)***	(0.087)***	(0.202)	(0.020)***	(0.085)**
Inner city	0.030	0.149	−0.012	0.116	0.029	0.107
	(0.004)***	(0.029)***	(0.004)***	(0.074)	(0.021)	(0.081)
Observations	36050	2954	23803	3330	18412	2210
R^2	0.924	0.879	0.862	0.892	0.908	0.866

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$.

The correction dummies are excluded as they do not contribute to the understanding of the results.

Table (22) Hedonic price regression EU Nordic culture for the cities

	Stockholm		Gothenburg		Malmö	
	Apartment	Villa	Apartment	Villa	Apartment	Villa
EU Nordic × SD	30.809	−175.471	18.007	−15.244	−13.217	−119.876
	(12.976)**	(51.307)***	(4.129)***	(29.018)	(10.597)	(18.429)***
SD election result 2014	−3.296	8.049	−2.258	4.622	0.957	8.165
	(1.016)***	(3.974)**	(0.614)***	(2.394)*	(0.670)	(1.341)***
EU Nordic group	−2.205	15.893	−1.718	−0.510	3.054	27.020
	(0.760)***	(3.385)***	(0.464)***	(3.719)	(2.399)	(4.884)***
Number of rooms	0.133	0.040	0.115	0.103	0.215	0.132
	(0.005)***	(0.011)***	(0.006)***	(0.009)***	(0.012)***	(0.012)***
Living area (x100)	0.523	0.231	0.586	−0.039	0.639	−0.129
	(0.020)***	(0.045)***	(0.026)***	(0.033)	(0.050)***	(0.040)***
Storage area (x100)	0.428	0.070	0.494	0.044	0.196	0.021
	(0.032)***	(0.010)***	(0.059)***	(0.008)***	(0.059)***	(0.009)**
Space efficiency	0.009	0.005	0.007	0.021	0.017	0.024
	(0.000)***	(0.003)**	(0.001)***	(0.002)***	(0.001)***	(0.002)***
Operating costs	−0.032	−0.032	−0.095	−0.026	−0.148	0.010
	(0.003)***	(0.012)***	(0.007)***	(0.010)**	(0.008)***	(0.014)
Average price per m^2	0.573	0.187	1.004	0.179	0.719	0.307
	(0.008)***	(0.025)***	(0.011)***	(0.020)***	(0.008)***	(0.031)***
Average income	−0.027	0.532	−0.255	0.219	−0.274	0.469
	(0.014)*	(0.054)***	(0.018)***	(0.037)***	(0.067)***	(0.214)**
Average grades (x100)	−0.041	−0.035	0.036	0.150	0.085	−0.027
	(0.015)***	(0.045)	(0.013)***	(0.054)***	(0.017)***	(0.046)
Crime per 100th person	−0.001	0.204	0.017	−0.103	−0.064	−0.164
	(0.001)	(0.016)***	(0.007)**	(0.067)	(0.024)***	(0.073)**
Coast	0.013	−0.116	−0.006	0.046	0.117	−0.026
	(0.005)***	(0.018)***	(0.004)	(0.042)	(0.012)***	(0.072)
Commuting time (x100)	−0.048	0.805	0.490	−0.756	0.097	−0.529
	(0.023)**	(0.106)***	(0.088)***	(0.478)	(0.041)**	(0.088)***
Inner city	0.034	0.145	−0.012	0.116	0.010	−0.093
	(0.005)***	(0.031)***	(0.004)***	(0.074)	(0.018)	(0.050)*
Observations	36050	2954	23803	3330	18412	2210
R^2	0.924	0.880	0.862	0.892	0.908	0.866

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$.

The correction dummies are excluded as they do not contribute to the understanding of the results.

Table (23) Hedonic price regression AAS-A culture for the regions

	Stockholm		Gothenburg		Malmö	
	Apartment	Villa	Apartment	Villa	Apartment	Villa
AAS-A × SD	−1.302	−1.141	−6.454	29.584	−0.497	−1.114
	(0.389)***	(0.745)	(3.040)**	(2.751)***	(0.480)	(0.810)
SD election result 2014	−0.342	−1.031	2.574	−3.065	0.540	0.365
	(0.079)***	(0.149)***	(0.275)***	(0.339)***	(0.100)***	(0.134)***
AAS-A group	−0.025	0.051	−0.088	−2.848	−0.107	1.691
	(0.036)	(0.082)	(0.485)	(0.455)***	(0.134)	(0.198)***
Number of rooms	0.112	0.063	0.122	0.111	0.179	0.108
	(0.004)***	(0.005)***	(0.006)***	(0.008)***	(0.007)***	(0.007)***
Living area (x100)	0.647	0.155	0.571	0.047	0.743	0.035
	(0.015)***	(0.020)***	(0.024)***	(0.029)	(0.026)***	(0.026)
Storage area (x100)	0.341	0.054	0.499	−0.002	0.170	0.011
	(0.023)***	(0.004)***	(0.046)***	(0.006)	(0.041)***	(0.004)**
Space efficiency	0.007	0.013	0.007	0.022	0.015	0.021
	(0.000)***	(0.001)***	(0.001)***	(0.002)***	(0.001)***	(0.001)***
Operating costs	−0.040	−0.025	−0.120	−0.004	−0.141	0.045
	(0.003)***	(0.006)***	(0.007)***	(0.008)	(0.008)***	(0.008)***
Average price per m^2	0.511	0.483	0.847	0.277	0.654	0.320
	(0.007)***	(0.016)***	(0.010)***	(0.018)***	(0.008)***	(0.021)***
Average income	−0.055	0.080	−0.240	0.367	−0.202	0.277
	(0.009)***	(0.018)***	(0.055)***	(0.081)***	(0.019)***	(0.023)***
Tax rate	0.485	0.041	−2.852	1.122	−0.451	1.157
	(0.105)***	(0.230)	(1.270)**	(1.240)	(0.289)	(0.366)***
Average grades (x100)	−0.002	−0.053	−0.177	−0.245	−0.051	0.197
	(0.006)	(0.013)***	(0.057)***	(0.061)***	(0.020)**	(0.033)***
Crime per 100th person	0.002	0.010	0.002	0.079	−0.025	0.024
	(0.001)*	(0.007)	(0.017)	(0.020)***	(0.002)***	(0.008)***
Coast	0.020	−0.018	0.009	−0.018	0.090	0.011
	(0.002)***	(0.003)***	(0.007)	(0.007)**	(0.004)***	(0.006)*
Commuting time (x100)	−0.030	−0.241	−0.079	0.030	0.001	−0.029
	(0.010)***	(0.020)***	(0.019)***	(0.025)	(0.021)	(0.019)
Metro or tram	0.002	−0.017	0.041	0.138	0.000	0.000
	(0.002)	(0.004)***	(0.014)***	(0.017)***	(.)	(.)
Commuter rail	−0.002	−0.020	0.021	−0.033	0.001	0.004
	(0.002)	(0.004)***	(0.028)	(0.079)	(0.008)	(0.007)
Inner city	0.046	−0.027	0.004	−0.026	0.040	0.078
	(0.003)***	(0.031)	(0.004)	(0.075)	(0.006)***	(0.018)***
City	0.000	0.000	0.000	0.000	−0.039	−0.008
	(.)	(.)	(.)	(.)	(0.006)***	(0.009)
Border region	−0.012	0.016	−0.154	0.070	−0.025	0.030
	(0.002)***	(0.005)***	(0.012)***	(0.012)***	(0.007)***	(0.007)***
Observations	74640	18945	30733	8102	35029	12980
R^2	0.914	0.858	0.883	0.886	0.892	0.874

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$. The correction dummies are excluded as they give no intuition behind results.

Table (24) Hedonic price regression EU Nordic culture for the regions

	Stockholm		Gothenburg		Malmö	
	Apartment	Villa	Apartment	Villa	Apartment	Villa
EU Nordic × SD	−12.889	23.763	−46.848	34.366	−40.859	28.902
	(2.918)***	(7.520)***	(4.310)***	(7.220)***	(2.823)***	(3.260)***
SD election result 2014	0.665	−2.715	5.330	−3.894	3.657	−2.572
	(0.224)***	(0.583)***	(0.396)***	(0.628)***	(0.216)***	(0.232)***
EU Nordic group	0.666	−3.615	5.179	−3.479	5.529	−5.755
	(0.254)***	(0.779)***	(0.555)***	(0.950)***	(0.541)***	(0.794)***
Number of rooms	0.111	0.063	0.120	0.112	0.178	0.107
	(0.004)***	(0.005)***	(0.006)***	(0.007)***	(0.007)***	(0.007)***
Living area (x100)	0.647	0.159	0.569	0.044	0.746	0.038
	(0.015)***	(0.020)***	(0.024)***	(0.029)	(0.026)***	(0.026)
Storage area (x100)	0.340	0.054	0.500	−0.002	0.160	0.011
	(0.023)***	(0.004)***	(0.046)***	(0.006)	(0.041)***	(0.004)***
Space efficiency	0.007	0.013	0.007	0.022	0.015	0.021
	(0.000)***	(0.001)***	(0.001)***	(0.002)***	(0.001)***	(0.001)***
Operating costs	−0.038	−0.025	−0.111	−0.007	−0.138	0.041
	(0.003)***	(0.006)***	(0.007)***	(0.008)	(0.008)***	(0.008)***
Average price per m^2	0.527	0.486	0.860	0.144	0.662	0.295
	(0.006)***	(0.016)***	(0.010)***	(0.018)***	(0.008)***	(0.021)***
Average income	−0.029	0.064	−0.184	0.242	−0.209	0.038
	(0.007)***	(0.016)***	(0.028)***	(0.035)***	(0.017)***	(0.026)
Tax rate	0.683	−0.140	1.292	2.224	2.450	−0.004
	(0.110)***	(0.229)	(0.600)**	(1.020)**	(0.309)***	(0.373)
Average grades (x100)	−0.001	−0.044	0.136	−0.050	−0.004	−0.113
	(0.007)	(0.013)***	(0.034)***	(0.054)	(0.013)	(0.026)***
Crime per 100th person	0.006	0.003	0.036	0.134	−0.048	0.088
	(0.001)***	(0.008)	(0.010)***	(0.021)***	(0.005)***	(0.010)***
Coast	0.022	−0.012	−0.020	−0.003	0.114	0.029
	(0.002)***	(0.003)***	(0.004)***	(0.006)	(0.004)***	(0.006)***
Commuting time (x100)	−0.034	−0.250	0.038	−0.087	0.060	−0.164
	(0.011)***	(0.020)***	(0.014)***	(0.017)***	(0.018)***	(0.018)***
Metro or tram	0.003	−0.012	−0.022	0.096	0.000	0.000
	(0.002)	(0.004)***	(0.010)**	(0.015)***	(.)	(.)
Commuter rail	−0.002	−0.014	−0.084	−0.123	0.018	−0.052
	(0.002)	(0.004)***	(0.010)***	(0.078)	(0.007)**	(0.006)***
Inner city	0.041	−0.013	0.006	−0.079	0.007	0.049
	(0.003)***	(0.031)	(0.004)	(0.076)	(0.006)	(0.017)***
City	0.000	0.000	0.000	0.000	−0.053	0.050
	(.)	(.)	(.)	(.)	(0.005)***	(0.008)***
Border region	−0.023	0.017	−0.069	0.030	−0.001	0.069
	(0.003)***	(0.006)***	(0.011)***	(0.012)**	(0.006)	(0.007)***
Observations	74640	18945	30733	8102	35029	12980
R^2	0.914	0.859	0.884	0.886	0.894	0.873

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$. The correction dummies are excluded as they give no intuition behind results.

Table (25) Hedonic price regression AAS-A extra long run for the cities

	Stockholm		Gothenburg	
	Apartment	Villa	Apartment	Villa
AAS-A group extra long	−0.043	−0.305	−0.022	0.147
	(0.004)***	(0.020)***	(0.007)***	(0.015)***
Number of rooms	0.133	0.038	0.114	0.103
	(0.005)***	(0.011)***	(0.006)***	(0.009)***
Living area (x100)	0.520	0.247	0.586	−0.040
	(0.020)***	(0.045)***	(0.026)***	(0.033)
Storage area (x100)	0.430	0.071	0.496	0.044
	(0.032)***	(0.010)***	(0.060)***	(0.008)***
Space efficiency	0.009	0.005	0.007	0.021
	(0.000)***	(0.003)*	(0.001)***	(0.002)***
Operating costs	−0.031	−0.034	−0.093	−0.026
	(0.003)***	(0.012)***	(0.007)***	(0.010)**
Average price per m^2	0.560	0.158	0.987	0.176
	(0.009)***	(0.025)***	(0.010)***	(0.020)***
Average income	−0.008	0.541	−0.199	−0.074
	(0.008)	(0.034)***	(0.018)***	(0.032)**
Average grades (x100)	−0.020	0.282	0.041	0.090
	(0.007)***	(0.035)***	(0.012)***	(0.028)***
Crime per 100th person	0.001	0.323	0.026	−0.312
	(0.001)	(0.022)***	(0.007)***	(0.033)***
Coast	0.033	−0.014	−0.019	0.138
	(0.003)***	(0.007)*	(0.005)***	(0.013)***
Commuting time (x100)	−0.053	1.306	0.461	−1.062
	(0.019)***	(0.122)***	(0.043)***	(0.104)***
Inner city	0.038	0.285	−0.006	0.222
	(0.005)***	(0.036)***	(0.004)	(0.037)***
Observations	36050	2954	23803	3330
R^2	0.924	0.879	0.862	0.892

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$.

The correction dummies are excluded as they do not contribute to the understanding of the results.

Table (26) Hedonic price regression EU Nordic extra long run for the cities

	Stockholm		Gothenburg	
	Apartment	Villa	Apartment	Villa
EU Nordic group extra long	−0.189	−0.575	0.083	−0.402
	(0.015)***	(0.066)***	(0.019)***	(0.051)***
Number of rooms	0.133	0.040	0.114	0.103
	(0.005)***	(0.011)***	(0.006)***	(0.009)***
Living area (x100)	0.520	0.244	0.589	−0.038
	(0.020)***	(0.045)***	(0.026)***	(0.033)
Storage area (x100)	0.428	0.075	0.499	0.045
	(0.032)***	(0.011)***	(0.060)***	(0.008)***
Space efficiency	0.009	0.005	0.007	0.021
	(0.000)***	(0.003)*	(0.001)***	(0.002)***
Operating costs	−0.030	−0.038	−0.095	−0.024
	(0.003)***	(0.012)***	(0.007)***	(0.010)**
Average price per m^2	0.569	0.260	0.987	0.186
	(0.008)***	(0.027)***	(0.010)***	(0.020)***
Average income	−0.051	0.139	−0.323	0.557
	(0.007)***	(0.028)***	(0.025)***	(0.054)***
Average grades (x100)	0.069	0.347	0.007	0.462
	(0.011)***	(0.048)***	(0.013)	(0.053)***
Crime per 100th person	0.006	0.136	−0.004	0.146
	(0.001)***	(0.017)***	(0.004)	(0.034)***
Coast	0.045	0.031	−0.001	−0.043
	(0.003)***	(0.010)***	(0.003)	(0.012)***
Commuting time (x100)	−0.083	0.025	0.203	0.934
	(0.018)***	(0.066)	(0.044)***	(0.185)***
Inner city	0.015	0.070	−0.007	−0.117
	(0.004)***	(0.030)**	(0.004)*	(0.042)***
Observations	36050	2954	23803	3330
R^2	0.924	0.871	0.862	0.891

Standard errors in parentheses. * $p < 0.10$, ** $p < .05$, *** $p < .01$.

The correction dummies are excluded as they do not contribute to the understanding of the results.