Migration and Housing Markets – Evidence from Sweden

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Abstract

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International migration flows to Sweden have been significant in scale over the past few decades, but the nature of the flows has changed in recent years. Strong migration flows have occurred from a number of different regions, with arrivals ranging from refugees from other continents, to labour migrants from neighbouring countries. The aim of this PhD thesis is to examine the impact of these migration flows, as well as internal migration, on the housing market. The thesis examines the impact of different forms of migration on the different segments of the housing market that exist in Sweden, looking at the impacts on house prices and rents, as well as the impacts on the housing market in other contexts, using a number of unique methods and avenues that have not been previously explored in this context.

The PhD thesis first introduces a conceptual framework, together with a comprehensive literature review of trends pertaining to the relationship between migration and housing in an international and national context. This is followed by a presentation of the context of the relationship between migration and housing in Sweden, which includes introducing the three primary housing markets - the owner-occupier market, the rental market, and the private housing cooperative market - as well as the roles played by refugee resettlement policy, and migration policy more generally. The remainder of the thesis comprises the main analytical sections, where both quantitative and qualitative topics are covered, all pertaining to the impact of migration on housing markets in Sweden, looking at house prices, rents and beyond.

In terms of the empirical approach, an innovative approach is taken, with the inclusion of internal migration as an explanatory variable in the analysis. Further innovations include an analysis into how the impacts of migration on house prices and rents differ depending on the urbanisation characteristics of receiving regions, as well as a study of the impacts of foreign-born migrants by their region of origin. Beyond this, the thesis includes an analysis of how conceptually different markets function in relation to one another, as well as a study of housing availability, and a comparative analysis of other Nordic markets and submarkets. A qualitative analysis with key stakeholders, presented in the final

substantive chapter, enables a broader range of perspectives to be explored with regard to migration and housing, as well as providing the foundations for a discussion on future policy.

The analysis shows that, broadly speaking, both foreign-born and internal migrants have significant impacts on the housing market, through an increase in house prices and a reduction in housing availability. Further, the urban characteristics of a municipality, as well as the origin of migrants, are found to strongly influence the degree of impact of migration flows. Foreign-born labour migrants are generally found to impact major cities the most, while internal migrants are found to impact small urban areas , and refugees impact rural areas. The findings suggest that it is important to move away from an exclusive focus on foreign-based migration. The qualitative dimension of analysis also highlights several other divergences, and a clear disconnect between policymakers and other stakeholders, such as real estate developers.

“A room is still a room, even when there’s nothing there but gloom
But a room is not a house, and a house is not a home.” Luther Vandross

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1. Introduction

Sweden has long been an attractive destination country for migrants. As early as the middle ages, the country attracted craftsmen and merchants from various European countries (Swedish Statistical Agency (SCB), 2019). The country has been a net recipient of migrants for most of recorded history, aside from a considerable period of emigration between 1851 and 1929, when about 1.5 million people emigrated from Sweden, primarily to North America (SCB, 2019). However, since then, the country has attracted a wide range of people, with a total of over 4 million migrants arriving between 1930 and 2018 (SCB, 2019). Indeed, Sweden received an average of 3,000 immigrants per year in the 19th century and 8,000 per year in the early 20th century (SCB, 2016). However, the Second World War resulted in a shift, with an average of 30,000 immigrants per year in the years following the war, owing to labour and refugee-associated flows becoming considerable (SCB, 2016).

From the 1950s and 60s onwards, Sweden also became host to a significant number of humanitarian (or refugee) migrants. This started with the crisis in Hungary in 1956, and later included Poland (primarily 1968 and 1981), Czechoslovakia (1968), Chile (1973-1990) and former Yugoslavia (1991-2001). Since then, migration has continued to grow, with over 1.8 million migrants arriving to Sweden since 2001. Of these, 21% have been refugees, 31% have been family reunification migrants (primarily associated with refugee migration), and 37% have been labour or EU migrants (SCB, 2019).

Indeed, since the start of the 21st century, there have been many developments associated with migration policy and trends. In particular, the 2004 EU enlargement process saw an increase in labour migration from the EU to Sweden. In addition, spikes in refugee intake have occurred following the outbreak of the Iraq and Afghanistan wars, unrest in Somalia, as well as the more recent 'refugee crisis,' primarily associated with the Syrian conflict (Migrationsverket, 2016). This has led to consistently high refugee inflows, as well as growing family reunification migration, primarily linked to previous refugee migration. The overall proportion of foreign-born migrants in the country has risen from 4% in 1960 to 19% in 2018 (SCB, 2019). Further, as of 2018, around 25% of Swedish residents have a foreign background, defined as being foreign-born, or having two foreign-born parents (SCB, 2019).

Meanwhile, Sweden has also experienced internal population growth. Between 2004 and 2015, the overall population grew by almost 1 million, with the population of Sweden in 2004 being 8.97 million, reaching 9.75 million in 2015. In Stockholm, the population increased by 408,229 (25.6%) during that period, reaching a population of 2 million inhabitants. However, net internal migration to Stockholm only accounted for 48,992 (12.0%) of that growth, while natural increase accounted for 181,651 (44.5%). This means net international migration to Stockholm consisted of 177,586 people in that period (43.5%), a contribution over 3 times larger than net internal migration (SCB, 2017). Meanwhile, in one of Sweden's fastest growing smaller urban areas, Örebro, net internal migration over the same period amounted to 9,447 people, while net international migration was only responsible for 7,773 people (SCB, 2017). This underlines the importance of considering demographic trends and regional differences when analysing the impact of migration, as well as studying a range of different locations across the country in order to attain a full understanding of trends, which can vary markedly.

While there have been a number of developments relating to migration, the housing market has also seen stark transformation in recent years. Since 2004, owner-occupied house prices on the national level have more than doubled, with prices in areas such as Stockholm almost trebling (SCB, 2018). In terms of alternative housing markets, there are two such primary markets in Sweden – the private housing cooperative market and the rental market (discussed and analysed in detail in Sections 3.1 and 3.2 of Chapter 3, and Chapter 5). SCB (2018) note that 92% of detached, semi-detached and terraced housing (sometimes collectively referred to as "villas") is owner-occupied, 4% is part of private housing cooperatives and 4% is rented. Meanwhile, in terms of apartments, 59% are on the rental market while 41% are part of private housing cooperatives, with less than 1% being owner-occupied. Since 2004, the number of people living in private housing cooperatives in Sweden has increased by around 25% (SCB, 2018). In Stockholm, trends have shifted from the dwellings on the housing market as a whole being made up of 26% private housing cooperatives in 1990, to 55% in 2018 (SCB, 2018). Private housing cooperatives have also almost trebled in median price over approximately the same period on the national level (Valueguard, 2018), indicating a price rise of approximately 33% more than that seen in the general owner-occupier market (SCB, 2018). Equally, the rental market has also seen a number of stark developments. Rents continue to increase as the system of rent regulation is increasingly deregulated, with rental queues also increasing manifold over the same period (SCB, 2018; USK, 2018).

Beyond this, there is a lack of housing to satisfy the increase in demand generated by both population growth and increased migration (Boverket, 2017). A rigid planning system can constitute a clear impediment to the housing market, as migration also impacts household formation rates, transforming the demographics of housing demand (Sterlieb and Hughes, 1986; Gatskova and Kozlov, 2019). The government has attempted to meet this changing demography and increase in demand through many initiatives, including the Planning and Building Act, introduced in 2011, which aims to simplify building regulations in order to encourage housing development. Changes introduced include mandating local governments to produce a local plan detailing land use designations for all land within the municipality, as well as limiting the waiting time for a decision regarding an application for planning permission to a maximum of 10 weeks. Nevertheless, the lack of housing remains a worrying trend, and it is clear that a potential link between migration and housing could be established in this, and other, regards.

A large literature has analysed the impacts of migration on the labour market (including, among others, Friedberg and Hunt, 1995; Borjas, 2006; Hammarstedt and Palme, 2006; Gerdes and Wadensjö, 2010; Kerr and Kerr, 2011; Dustmann and Frattini, 2014). Meanwhile, a significantly smaller amount of studies have examined the impacts that migration trends have on the housing market (including, among others, Saiz, 2007; Gonzalez and Ortega, 2012; Accetturo et al., 2014; Sá, 2015; Cochrane and Poot, 2019), while an even more limited number have done so in Scandinavia (including, among others, Andersson and Dahlberg, 2018; van Vuuren et al., 2019). This is despite the highly topical nature of both migration and housing in society and politics. The latter means that the understanding of the nature of the relationship between these two fields, which has been the source of much disagreement and debate in the relatively few studies that have occurred, is crucial. This is one of the many gaps that this PhD thesis will aim to fill.

In this PhD thesis, I investigate the impact of different types of migration on the housing market in Sweden, with wider applicability abroad. Through this research, I intend to try to understand the relationship between migration, the demand shocks it creates, and the housing market. As part of this, I will examine the relationship between migration and the price and rent levels on the housing market, making several important contributions. Both international and internal migration are included and considered in the analysis, allowing the established literature to be extended. I expand on the literature further by taking an explicitly regional approach, and consider whether the impacts of migration on house prices differ across different types of locations (major cities, small cities, and rural areas) and different types of migrants (labour migrants, family reunification migrants, and refugees), allowing for the self-selection of migrants with different skill levels into different locations. To further expand on the literature, relationships between migration and other aspects of the housing market beyond house prices are also explored, making use of both quantitative and qualitative methods.

Sweden is the ideal place to test these hypotheses, as it is a country with a high level of humanitarian migration, typical of the Nordic countries in Europe, none of which have at the time of writing yet been considered by the literature in this context (though some studies have occurred of a more local context, or from a more qualitative perspective, including, among others, Bråmå and Andersson, 2010; Andersson and Turner, 2014; Andersson and Dahlberg, 2018; van Vuuren et al., 2019). At the same time, Sweden has also been subjected to a diverse range of migration flows, while also having segments of the housing market that differ substantially from one another, as well as diverse demographics, ensuring wider applicability worldwide. Comparisons to and analysis of the other Nordic countries will also be provided, exemplifying some such applicability, while also allowing for further insights.

The housing market in Sweden is complex, and I intend to explore how migration affects all aspects of it as fully as possible. This entails studying owner-occupied housing, as well as private housing cooperatives, and the rental market, in a number of different ways. Combining this with a regional dimension will allow the analysis to help shape policy and aid future decision-making in terms of housing and integration policy while also expanding the literature more generally, since no similar analysis of this scale has been conducted previously in this manner for these markets, in Sweden or elsewhere.

The importance of the analysis conducted in this PhD cannot be overstated. As summarized above, migration to and within Sweden continues to increase, and the multi-faceted nature of migration flows is likely to continue. Meanwhile, the housing market remains in crisis, with a lack of housing available for many migrants and natives alike, leading to intense pressures being placed on it, both in terms of pricing and otherwise. In many ways, these two societal trends are some of the most important trends affecting Sweden and much of the rest of the western world today. Understanding the influence which migration has on an already pressured housing market is likely to be crucial to understand for a number of people in key positions in their respective organizations, as the analysis into many of the relationships between migration and housing has been limited.

Therefore, the ideal reader of this PhD thesis is a person interested in the broader relationships between migration and the housing market. This could include policymakers and politicians as well as housing developers, people involved in charitable or government organizations, people working at policy institutes or research centres, or generally people working with or researching migration and housing. The aim of the thesis is not to set policy or change people's opinions, but rather to inform or influence these, by allowing relevant parties access to the facts regarding the relationships between migration and housing and other factors. These relevant parties can then use these facts to inform their own policy or opinions, which are likely to also be influenced by their backgrounds and other broader views. Indeed, because of the controversial nature of the topic being studied, it is often difficult to make objective policy recommendations. Nevertheless, where relevant, some policy discussion of such a nature is still included.

This PhD thesis is organised as follows. I begin by introducing some background in Chapter 2, which includes a general conceptual framework, as well as a full literature review. Following this, the Swedish context is fully presented in Chapter 3, with descriptive statistics, an introduction to the different market types, as well as migration policy and a conceptual framework more specifically adapted to Sweden. Next, the analytical chapters (Chapters 4-8) begin. The first (Chapter 4) constitutes an analysis of the impact of migration on house prices in the owner-occupier market. This is followed by a look at the impact of migration on house prices and rents in alternative markets (Chapter 5), which is then followed by an analysis of the relationships between all of these markets and the role migration plays in the shaping of these relationships (Chapter 6). The analysis continues by looking at the topic studied from a different perspective, namely looking at the impact of migration on housing availability and housing construction (Chapter 7), which is followed by qualitative study of the impact of migration on housing (Chapter 8), complementing the prior quantitative chapters. Chapter 9 concludes.

2. Background

2.1 Conceptual Framework

To be able to analyse trends such as those discussed above adequately on a deeper level, it is important to first also consider wider domestic and international trends, by conducting a brief literature review. However, in order to adequately explain the previous literature around the topic, some of the major empirical and theoretical concepts in the field must first be introduced. This section will provide a general conceptual framework, while the specificities of the Swedish context will be presented in Section 3.6 of Chapter 3.

2.1.1 The Relationship between Migration and Housing

To begin with, it is useful to introduce the context of the migration and housing relationship through a simple supply and demand model of a local housing market.

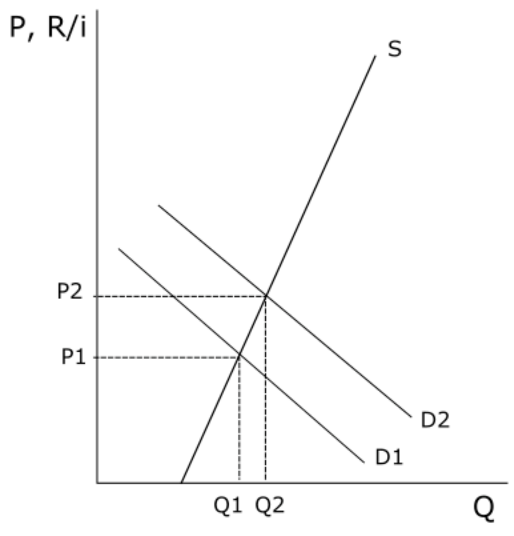

Figure 2.1: The short-term impacts of migration on house prices or rents. Adapted from Cochrane and Poot, 2019.

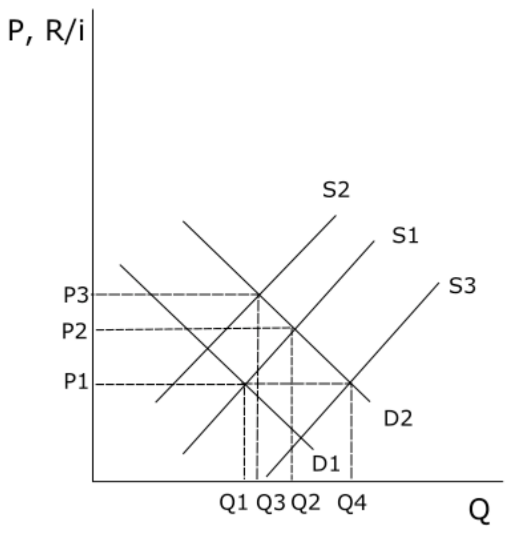

Figure 2.2: The medium or long-term impacts of migration on house prices or rents. Adapted from Cochrane and Poot, 2019.

Figures 2.1 and 2.2 show a simple supply and demand framework of the housing market. An increase in migration should result in a shift in demand for housing from D1 to D2 and, in the short-run at least, an upward pressure on house prices or rents.[1] In the short-run, this manifests through a shift in the equilibrium from P1Q1, to P2Q2, at a higher price level, as supply is inelastic (aside from exceptional cases where e.g. housing developers are sitting on a large amount of stock and waiting for prices to rise to release the stock, or where vacant units or temporary accommodation is used). In the long-run there is scope for an increase in new housing stock, as suppliers react to the increase in demand, resulting in equilibrium effects that return house prices or rents closer to their original level. This could manifest at P1Q4, following an outward shift in supply to S3. Equally, though, in the medium or long-run, there is also scope for suppliers to hold off on releasing supply onto the market as they anticipate prices or rents will rise further, thus shifting supply inward from S1 to S2.[2] This would instead return equilibrium to P3Q3, at a substantially higher price level.

In addition, in the medium-run we might see some displacement of the local native population, who for various social and cultural reasons might be reluctant to live in an increasingly diverse neighbourhood, or who might be adversely affected by downward pressure on local wages or an increase in the cost of living. The reverse is also possible, with local native workers being attracted into a region if local wages rise due to skill complementarities, or if native workers have a preference for living in diverse neighbourhoods for reasons of cultural enrichment. The displacement or otherwise of native workers is generally treated as endogenous in the literature, and the net effect is taken to be a function of wages, house prices, and cultural preferences (Saiz and Wachter, 2011; Sá, 2015).

To model this relationship, most research (e.g. Saiz, 2007) uses an empirical model of house prices as a function of annual migrant inflows relative to the existing population, with additional variables to control for other short- and medium-term determinants of house prices:

[1] Although in the Swedish case, on the regulated rental market this relationship would manifest differently – see Chapter 3.
[2] Demand could also, similarly to supply, shift inward, if people hold off on their property search in anticipation of prices falling. Nevertheless, this is not displayed here for simplicity purposes.

$$\Delta \ln(hp)_{k,t} = \beta * \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \mu \Delta Z_{k,t} + \varphi_t + \varepsilon_{k,t} \tag{2.1}$$

where
$\Delta ln(hp)_{k,t}$ is the natural log of house prices in location k between t-1 and t
$\Delta fb_{k,t}$ is the change in the foreign-born population in location k between t-1 and t
$p_{k,t-1}$ is the total population in location k and time t-1
$X_{k,t}$ is a set of socio-economic characteristics of location k and time t
W_k is a set of initial characteristics of location k,
$\Delta Z_{k,t}$ is a set of variables capturing changes in socio-economic characteristics of location k between t-1 and t
φ_t is a time-period dummy
$\varepsilon_{k,t}$ is the error term

Dividing the change in the migrant population variable by the previous year's population at each location allows for an intuitive interpretation of the results as an elasticity, with β capturing the impact on house prices of a 1% increase in the foreign-born population relative to the existing population. The specification above suffers from an identification problem, with simultaneity in the relationship between migration and house prices, as house prices also affect the location choice of new migrants (see also Section 3.3 of Chapter 3). This is because migration into municipalities is not random, but rather, migrants choose a location based on house prices, amenities, wages, and other municipality-specific characteristics.

Indeed, there is a literature that studies the effects of house prices or housing markets on migration, the reverse of the relationship that is the focus of this thesis (Antolin and Boyer, 1997; Cameron and Muellbauer, 1998; Hämäläinen and Böckerman, 2004; Modestino and Dennett, 2013; Boverket, 2016; Foote, 2016; De Graaff, 2019). One US-based study finds significant effects in both directions, with variables being prone to bi-directional causation (Potepan, 1994). Indeed, a number of other studies have examined this feature. These include Plantinga et al. (2013), who find that "higher housing costs reduce the likelihood that a metropolitan area is selected [by migrants]," (Plantinga et al., 2013; p. 305) and Duffy et al (2005), who highlight that a steep rise in house prices in Ireland is likely to discourage international migrants. In general, few studies have been able to determine the exact direction of the causality between migration and house prices, and thus, issues of endogeneity are inherent to the analysis (addressed further below, and in Chapters 3 and 4).

The standard solution in the literature is to use a shift-share instrument for the migration change variable, which exploits the network-based feature of migration flows, with migrants more likely to locate in places where there are previous migrants from the same country of origin (Saiz, 2007; Lymperopoulou, 2013). The standard shift-share instrument, also known as the network, ethnic enclave, Bartik, or supply-push instrument, takes the form:

$$\frac{\sum_c s_{ckt_0} \Delta fba_{ct}}{P_{kt-1}}, \tag{2.2}$$

where
s_{ckt_0} is the share of migrants from country *c* living in location *k* in the base year t_0 (this is the "share")
Δfba_{ct} is the number of new migrants from country *c* arriving in the host country between *t-1* and *t* (this is the "shift")
P_{kt-1} is the total population living in location *k* at the start of this period.

Intuitively, the shift-share instrument captures the expected number of new migrants arriving in each municipality, based on the historic share of migrants of specific origins living in that municipality, and total number of new arrivals from the origin country to the host country as a whole. Given that past migration settlement patterns tend to be fairly persistent over time, this instrument is likely to be highly correlated with current migration inflows into each municipality, but not directly affected by local economic conditions. This is because it is based on immigration shares of the past and exogenous (to the host country) push factors in the country of origin, such as economic downturns, political upheaval, or environmental disasters. The shift-share instrument is likely to be particularly appropriate for the Swedish context, given the strong network effects observed among migrant communities in the country (Åslund, 2005).[1] However, the

[1] A number of studies utilize the refugee allocation or distribution policy as an instrument (McKenzie, 2012; Altindag and Kaushal, 2017; Parsons and Vézina, 2018). This is not possible in Sweden, since the refugee allocation policy in Sweden is not spatially random, and the scope of the PhD goes beyond refugee migration to also include other forms of migration. This is discussed further in Section 3.3 of Chapter 3 and Chapter 4.

model as a whole is likely to have to be adapted in other ways to fully reflect the Swedish context, as well as to reflect recent literature (Jaeger et al., 2018) (see Chapters 3 and 4).

Though not the focus of this thesis, it is important to note that endogeneity need not only manifest in the relationship between migration and housing. It can manifest as a result of the relationships between a number of other variables included in the analysis. Indeed, Roback's (1982) spatial equilibrium analysis indicates that "regional wage differences can be explained largely by local amenities" (p.20), and when extending this to the housing market, finds that housing values typically reflect area amenities or labour demand. Roback (1982) as well as some further studies also show that the full valuation of amenities is not captured in the house-price gradient, because some may be reflected in wages (Jeanty et al., 2010, p. 4). This highlights the wide range of interrelations between variables that are likely to manifest in these relationships, with housing values and wages likely to be impacted by migrant (and labour) demand, and vice versa.

An important consideration following from this (which also follows from Roback (1982)) is the relationship between wages/income and employment, and the endogeneity that can be introduced through that relationship. However, research has found that in general equilibrium contexts, there are relatively small scale effects resulting from this endogeneity, and generally constant returns to scale (Blundell and Powell, 2003; Ottaviano and Peri, 2005). Indeed, Longhi et al. (2005, 2008) produce two meta-analyses of the labour market impacts of immigration, both of which find that the effects of migration shocks are very small on average (with a 1 percent increase in the proportion of immigrants in the labour force lowering wages by only 0.119%, and with coefficients often being statistically insignificant). This means that the extent to which simultaneity creates bias in the migration and housing estimation as a result of this relationship is likely to be very small, though not entirely insignificant. Nevertheless, this does not mean that statistical issues could not arise as a result of these, or other variables interacting with one another. This is important to keep in mind throughout the analysis.

2.1.2 Drivers of the Housing Market

To build further on the above, it is useful to discuss the theoretical specifications of housing markets. House prices and housing generally are a unique asset class to study. The distinguishing characteristics of housing can be summarized in its longevity, spatial fixity, illiquidity, heterogeneity, positive externalities of home ownership, as well as the external impacts and influences which housing can have on the local environment, and the external impacts and influences which can affect it (Meen and Andrew, 2004; Clapp et al., 2008). As a result of these characteristics, the relationship between migration and the housing market is a complex one. Housing availability and cost are key drivers of location decisions in high-income countries, as housing constitutes a large component of the overall cost of living in any particular location. The availability and cost of housing is part of a multi-dimensional utility maximisation problem, which also includes wages, unemployment rates, opportunities for career progression, and local amenities (Milne, 1993; Ryan-Collins et al., 2017; Oladiran et al., 2019). These factors can broadly speaking be said to be the drivers of the housing market (though expectations also matter enormously).

To ensure the accuracy and relevance of the study is as high as possible, it is important to consider how a selected number of these drivers, henceforth referred to as control variables, relate to the primary dependent, and independent, variables. This is in line with commercial real estate models such as DiPasquale and Wheaton's (1992) four-quadrant model for the asset and space markets. That model underlines the importance of considering interaction across different markets as well as relations between different parts of the real estate market, and is hence also likely to be relevant to residential real estate. In this conceptual framework, focus will be placed on demand-side variables, with an emphasis on migration-related factors, income and its elasticity, labour market variables, as well as other factors pertaining primarily to amenities, and a few supply-side variables.

The variable most commonly associated with a change in house prices is income. A higher average income in the local area is likely to lead to an increase in housing expenditure, subject to the income elasticity of housing demand, which can vary across income groups and types of housing (Studenmund, 2006). As incomes rise, households switch from renting to home ownership, or move to a larger property. A related issue is the elasticity of housing supply. Generally, an inflow of individuals to a market with inelastic housing supply will result in a stronger response in the pricing mechanism than an inflow of individuals to a market with a more elastic housing supply. Moreover, constraints faced by existing residents in their ability to move could also further contribute to higher house prices in a city. Both of these are linked to demographic composition and local labour market conditions.

Labour market variables are crucial drivers of the housing market, and this includes the overall employment rate, not only in the local area, but also in surrounding areas, and the rate of economic inactivity. Similarly, the education level of the local population indicates future economic trends and economic prospects, and is therefore likely to be positively associated with house prices. Another factor is the demographic make-up of the population, with higher spending on housing typically associated with working-age residents. However, the relationship is likely to be complex in countries with generous welfare states, where elderly households are likely to be wealthier (Brochmann and Hagelund, 2012; SCB, 2016; OECD, 2017). In Sweden, many decades of socialist policies have resulted in a more flat salary structure, and thus generally low inequality as evidenced by a relatively low Gini coefficient (Brochmann and Hagelund, 2012; SCB, 2016; OECD, 2017). Nevertheless, inequalities are still present to a degree and rising (SCB, 2016). Thus, a higher education or employment level of the general population in a given municipality is still likely to have a positive relationship with the housing market and increase demand for more expensive forms of housing.

Further demographic factors, such as a very high average age, indicating many retirees, need not necessarily have a negative relationship with the housing market, depending on the wealth of the retirees (Clapham et al., 1990). This is particularly relevant in Sweden, a country with high average incomes and a wealthy pensioner population, benefiting from both a generous social scheme and thus relatively higher incomes, and a larger marginal propensity to consume (Brochmann and Hagelund, 2012; SCB, 2016; OECD, 2017). Indeed, a very low average age, indicating many young people or children, need also not necessarily have a negative relationship with the housing market, as this could indicate a higher marginal propensity to spend on housing for parents. Linked to this is the role of household formation and dissolution, which further influences the relationships between demographic factors, migration and the housing market (Malmberg, 2010). The rate at which households are formed and dissolved is likely to influence the housing market, as this will impact the total demand for housing. As such, the relationship between the broader demography and the housing market could be a very complex one and is worthy of inclusion in analysis.

Similarly, most previous studies have overlooked the potential influence of supply-side factors on the relationship between migration and housing, or treat it as endogenous to the model. This is significant given the long-standing structural constraints in housing development observed in many European countries, coupled with a chronic undersupply of housing in many urban areas (Andersson and Turner, 2014). Interestingly, new supply of housing need not necessarily mean that house prices in a given area will fall. Although from a purely numerical perspective, more housing per capita should result in a net fall in house prices and thus improved housing affordability, many developers will often wish to build in areas where house price appreciation has been strongest, in order to capitalize on strong housing demand (Ryan-Collins et al., 2017). Thus, new housing may simply be indicative of a strong housing market, and indeed, may not result in any easing of house price appreciation. Housing speculation in such scenarios could even lead to stronger house price appreciation, if it is believed that a particular housing market is likely to improve in strength. Further, owing to the differing nature of the private housing cooperative, rental, and owner-occupier markets, it is likely that the impacts of control variables differ somewhat between the markets. For instance, new stock for the former two markets consists primarily of apartments, and this also constitutes the majority of new stock currently being built (Booli Pro, 2018). Similar discrepancies may be found in relation to most variables.

The role of planning policy and restrictions plays a strong role in this context, and could serve to bias many of the expected relationships. Indeed, planning legislation can have a particularly strong impact on housing supply, inherently limiting developer flexibility and the ability to build in different areas. Other factors, particularly regional variations in temperature, sunshine, precipitation, humidity and climate extremes, have been found to affect house prices, and are likely to be important control variables in the current context. The average temperature throughout the year in Helsingborg, the urban area which generally experiences the highest temperatures in Sweden, is about fifteen degrees Celsius higher than that in Kiruna, the urban area which experiences the lowest temperatures (SMHI, 2017). Hence, consideration of this is clearly essential in the Swedish context.

2.1.3 Migration

It is clear that a relationship between foreign-born migration and the housing market is likely, owing to the influx of population which international migration causes, which results in a sharp demand-side shock (Saiz, 2007). Indeed, some studies even find that migration-related reasons could account for as much as 80% of urban house price changes (Garriga et al., 2017). In order to conceptualise this, it is important to define some of the complexities of the relationship, and map out the ways in which the motivations of migrants translate into different migration outcomes, and thus potentially different housing market impacts.

The motives for international migration are likely to vary considerably. The primary values and goals of migration have been said to consist of ''wealth, status, comfort, stimulation, autonomy, affiliation, and morality'' (De Jong and Fawcett, 1981; p.14). Indeed, when speaking of arrivals to developed countries, labour migrants are most likely to migrate in search for work, that is perhaps more readily available, better paid, or more stimulating than it is in their home country. Refugees, as well as their families (i.e. family reunification migrants) are more likely to migrate in order to escape suffering, threat or injustice of different kinds. Thus, they are less likely to be migrating primarily for employment or wealth reasons, although this could very well serve as a secondary motivation for migration (De Jong and Fawcett, 1981; Kofman, 2007; Migrationsverket, 2016). In general terms, although the specific motivations of a migrant from Norway, Germany or Poland are likely to vary considerably, one could say that most immigrants from most European countries, as well as other affluent Western countries, are likely to be classed as labour migrants.

In terms of refugee migrants, motivations are, at their core, more similar regardless of origin, but are likely to vary considerably to labour migrants. However, the argument can be made that there is a class of migrants who migrate as refugees, but also have significant labour market motivations for their migration decisions (Kofman, 2007), meaning some similarities in motivations. Nevertheless, the analysis of refugees as a whole, regardless of origin, is also clearly relevant, owing to, in relative terms, generally differing motivations to most labour migrants among a vast number of refugees (looking to escape conflict, injustice or other negative circumstances), as well as the generally lower incomes found across this group. Intentions to return are also likely to differ widely between the refugee and labour migrant groups, assuming that conditions in the migrants' countries of origin do not change.

The motivations of most forms of migration are likely to have strong links with migration-related outcomes, including the impact on the housing market (Kofman, 2007; Costello, 2009). Indeed, this is one angle that will be investigated. The dimensions that are likely to induce this variance in the impact on the housing market are many. These include the choice of destination, both in terms of the region, as well as the location within a city or municipality. They also include the kind of housing which migrants live in, including the quality, style, and type of housing, as well as the migrant's marginal propensity to spend on housing, and the length of stay in housing. The more specific implications of this will be discussed further in Section 3.3 of Chapter 3, as this requires touching on the specificities of the Swedish context.

2.1.4 Omitted Variables

One of the further limitations of this and other studies is that there are a number of variables that are difficult or impossible to measure, which can create some estimation issues. These include factors such as imbalances in power between migrants and existing residents, that can be created by asymmetric information and search costs encountered by migrants in finding a property (Gabriel et al., 2003; Greenaway-McGrevy and Phillips, 2016; Falkenbach and Oikarinen, 2019). In general, migrants should increase turnover and thus reduce natural vacancy rates and make markets more efficient by enabling better matching of people to jobs. Indeed, these factors as well as potential discrimination and informational inefficiencies can complicate the relationship (Rosen and Smith, 1983). Indeed, this can instead lead to ''landlords setting rents to profit from… differential information'' (Read, 1993; p.173) and a wide range of diverging search behaviours (Brown and Holmes, 1971). An example is foreign buyers in the Hong Kong context paying a 6.2% higher price than locals when making housing purchases (Hu et al., 2019). As a result, the role of expectations, choice, and knowledge discrepancies between migrants and existing residents, and between different migrant groups, can create further complications in the analysis.

There are a number of additional issues, some of which have been alluded to above, which can arise with empirical modelling of the relationship between migration and housing as a whole. The likelihood of omitted variable bias is one such issue, which often stems from difficulties in measuring the control variables discussed above (Studenmund, 2006; Hodgson and Poot, 2010). The relevant control variables include the relative perceived popularity of a city (for instance, due to urban "buzz"), foreign direct investment levels at a local level, as well as complex indicators such as labour market prospects. Further factors could include the stage of the business cycle (particularly on a local level) as well as household formation rates (Greenaway-McGrevy and Phillips, 2016; Smith and Thoenissen, 2018; Hamnett and Reades, 2019). These are difficult to measure accurately, and may vary considerably in the short and long-run. Thus, these variables are omitted from the analysis, which in turn means other coefficients may be biased, overestimated or inconsistent. Unfortunately, this is an issue that is difficult to overcome, but a number of solutions are considered (these are discussed in Section 3.3 of Chapter 3, as well as in Chapter 4 onwards).

2.2 Literature Review

2.2.1 International Migration

Keeping the above in mind, this literature review will focus on the impacts of international migration on the housing market, analysis of which has been scarce. Indeed, for instance in England, ''despite the fact that approximately a third of household growth in England over the next 15-20 years is likely to come from immigration… there have been few attempts to model the impacts on English house prices'' (Meen, 2011; p.9). A similar lack of literature can be seen in Sweden, as well as around the world more generally. Nevertheless, a number of studies have been undertaken, many of which have found vastly dissimilar impacts of migration on house price. The key primarily quantitatively based studies pertaining to international migration and housing price are summarized in Table 2.1.

Table 2.1: Key Studies Pertaining to International Migration and House Prices

Study name	Country	Time period	Effect of international migration on housing price (impact of migrant inflow equal to 1% of original population unless otherwise stated or size of impact not specified)	Controls for income, education and internal migration?
Potepan (1994)	US (52 metropolitan areas)	1975-1980	Positive, although issues regarding causality	Income only
Ley and Tutchener (2001)	Canada (Vancouver and Toronto only)	1971-1996	Positive	Income only
Carter (2005)	Canada (Vancouver, Toronto, Montreal)	1990-2010	Neutral or negative	Income only
Duffy et al. (2005)	Ireland	1996-2002	Measure reverse effect, and find reverse causality	Income only
Ottaviano and Peri (2005)	USA (86-116 MSAs)	1970-2000	Positive – increase of 1.1-1.6% in house price	Income and education
Saiz (2007)	USA (306 selected metropolitan areas)	1983-1997	Positive – 1% increase in housing price	Income and education
Coleman and Landon-Lane (2007)	New Zealand	1991-2006 and 1962-1982	Positive – 8-12% increase in house price over one year	Income only
Stillman and Mare (2008)	New Zealand	1986-2006 (5-year census data)	Positive – 0.2-0.5% increase in house price – but neutral or negative once split into components. Returning New Zealanders can have positive impact	Income only
Degen and Fischer (2009)	Switzerland (85 districts)	2001-2006	Positive – 2.7% increase in single family home price	Income and education
Akbari and Aydede (2012)	Canada (235 CD's)	1996-2006 (5-year census data)	Neutral or slightly positive impact – but only 0.1% effect	Income only
Meen (2011)	UK	1990-2010	Neutral or slightly positive impact	Income only
Nygaard (2011)	UK	1975-2008	Generally positive although scope slightly different	Income only

Saiz and Wachter (2011)	US (122 MSAs)	1990-2010 (census data)	Negative – values grow overall, but fall where migrants settle	Income and education
Gonzalez and Ortega (2012)	Spain (50 provinces)	2000-2010	Positive – immigration responsible for increase of up to 3.4% in housing price	None
Zabel (2012)	US (277 MSAs)	1990-2006	Slightly different scope – N/A	Income only
Kalantaryan (2013)	Italy (103 provinces)	1991-2007	Neutral or slightly positive impact – but less than 0.1% effect.	Income only
McDonald (2013)	New Zealand	1990-2013	Positive – 8% increase in house price over 3 years	None
Accetturo et al. (2014)	Italy (20 cities)	2003-2010	Positive on city-level, negative on local level	Income only
Aitken (2014)	UK (170 Las)	1996-2010	Negative – 0.25 to 1.6% decrease in house price	N/A
Sá (2015)	UK (170 Las)	2003-2010	Negative – 1.7% decrease in house price	Income and education
Braakmann (2016)	UK (all Las)	2001-2011 (census data)	Negative or neutral impact	None
Eliasson (2016)	Iceland	2004-2007	Positive – 4-6% increase in house price	Income only
Antoniuicci and Marella (2017)	Italy (112 provincial capitals)	2006-2016	Positive impact – but no coefficients given.	Income only
Barbu, Vuta, Strachinaru, and Cioaca (2017)	Worldwide (21 countries)	2007-2014	Positive – but with large variance. On average only 0.045% effect.	Differs depending on countries tested
Lastrapes and Lebelsmuehlbacher (2017)	UK (347 local geographic districts)	2004-2015	Negative – small but non-trivial impacts for limited periods of time.	Income only
Mussa et al. (2017)	USA (275 MSAs)	2002-2012	Positive – 0.8% increase in house price	Income only
Pavlov and Somerville (2017)	Canada (Vancouver)	2006-2011	Positive – but no coefficients given.	None
Sanchis-Guarner (2017)	Spain (50 provinces)	2001-2012	Positive – 3.1% increase in house price	Income and education
Wang et al. (2017)	China (287 cities)	2005-2010	Positive – 0.7% increase in house price	N/A – internal migration only study
Adams and Blickle (2018)	Switzerland (2323 municipalities)	1992-2013	Positive – 1.15% increase from EU and OECD, 0.37% from rest of world	Income and education
Andersson and Dahlberg (2018)	Sweden (neighbourhood level)	1990-2014	Study on neighbourhood scale only, find no/limited impacts.	N/A
D'Albis, Boubtane and Coulibaly (2018)	France (22 administrative regions)	1990-2013	No significant impacts	Income only

Daams, Proetti and Veneri (2018)	Netherlands	2000-2017	Negative – 1.5% decrease in house prices in vicinity of asylum seekers' reception centres	N/A
Forte, Antoinuicci and De Paola (2018)	Italy (neighbourhood level)	2006-2016	Mixed – prices can both rise and fall, but under specific circumstances only on neighbourhood level	Income only
Larkin et al. (2018)	Worldwide (14 countries)	Various	Various – but on average, a positive impact. More welcoming countries experienced higher degree of impact.	Differs depending on countries tested
Lin et al. (2018)	China (32 major cities)	2007-2016	Impacts ranging between 0.31 and 1.34%	Income only
Zhu, Brown and Pryce (2018)	UK (170 local authorities)	2003-2010	Negative – 0.8% decrease.	None
Hyslop et al. (2019)	New Zealand	1986-2013	Positive – 0.3-0.5% increase	Income and education
Cochrane and Poot (2019)	Worldwide (8 countries)	Various	Various – but on average, a positive impact of 0.5-1%.	Differs depending on countries tested
Van Vuuren et al. (2019)	Sweden (neighbourhood level in Gothenburg)	2014-2017	Negative – 4% decrease in house prices in vicinity of asylum seekers' reception centres	N/A – different form of study

2.2.1.1 Positive Effects

Early studies were conducted by e.g. Norman and Meikle (1985) and Poot et al (1988), using applied multi-sectoral general equilibrium models and assuming a homogenous housing stock. Much of the literature since then has focused on the impact of migration on house prices in large metropolitan areas, which tend to receive the bulk of international migrants. Another early study, making use of alternative methods, based on Canadian data for eight metropolitan areas over the period 1971-1996, found that "conventional and regional and national factors seem to have declining significance in accounting for [housing] price movements, while indications of globalisation, including immigration, exert stronger effects" (Ley and Tutchener, 2001; p.17). The result raises the issue of endogeneity due to self-selection of international and domestic skilled migrants into booming and expensive locations (with concurrent displacement of humanitarian and low-skilled domestic migrants into affordable locations), and much of the literature focuses on resolving this methodological constraint.

Saiz (2007) is a seminal paper, looking at major cities in the US from 1984 to 1997, and 1970 to 2000. Saiz introduces the instrumental variable ''shift-share'' approach (used by most papers since), in an attempt to overcome endogeneity. This approach consists of relying on previous settlement patterns of migrants as an instrument to determine future settlement trends. Indeed, he relies on ''the fact that immigrants tend to move to areas where other immigrants of the same nationality settled before'' (Altonji and Card, 1991; p.18), also known as the "ethnic enclaves" or "network" effect, to generate instruments. In order for this to work, Saiz assumes immigrant inflows in 1983 are not driven by omitted variables, and exogeneity of annual changes in the national immigrant inflows to the economic conditions of the immigrant cities. To build his instrument, he multiplies the percentage of migrants in a given city (as a percentage of total migration) in 1983 and 1970, by the number of total migrants in the studied periods (1984-1997 and 1970-2000 respectively). He finds using this approach, and OLS, that ''immigration inflows equal to 1% of a city's population lead to a 1% increase in house prices.'' He also finds that his results are similar when studying 1984-1997 and using the change in the raw number of immigrants, as when studying 1970-2000 and using the change in the total number of foreign-born persons. Thus, despite the differing approach, Saiz's results are consistent with Ley and Tutchener (2001).

A number of subsequent papers, using the Saiz (2007) approach, find similar effects for other time periods and locations. For instance, Degen and Fischer (2009), studying Switzerland in the 2000s, find strong impacts of migration on house prices, noting that "an immigration inflow equal to 1% of an area's population is coincident with an increase in prices for single-family homes of about 2.7%" (Degen and Fischer, 2009; p. 16). The larger coefficient size found in this study may be due to the omission of local income as an explanatory variable, with the effect of income instead being picked up by the other explanatory variables.

A later Spanish study which also uses Saiz's approach, conducted between 2000 and 2010, finds that immigration ''was responsible for an annual increase in housing prices of about 2 percent, and for a 1.2-1.5 percent increase in housing units,'' and as much as 25% of the total increase in housing price could be attributed to migration trends, even when considering time lags of up to eight years (Gonzalez and Ortega, 2012; p.14). This study does, however, lack a few key control variables utilized by Saiz, which could here, too, be responsible for the slightly larger coefficient size. In addition, it also utilizes a number of different instrumental variables, which could further be contributing to divergent trends. It is also possible that results differ as a result of the unique migration flows that Spain has received from different continents throughout the first decade of the 21st century. Still, the results are positive and suggest that migration does have a lasting effect on house prices, consistent with the other studies discussed thus far.

A further number of studies find results that are broadly consistent with those mentioned above (Table 2.1). This underlines that these positive impacts of migration on house prices can be found in a number of different settings. Indeed, Barbu et al. (2017), Larkin et al. (2018), and Cochrane and Poot (2019) conduct studies worldwide, collating results found in 21, 14, and 8 countries, respectively. They find generally modest, but positive impacts, on average, which broadly confirm the above. These positive impacts are as expected, due to local differences in constraints to housing availability, affecting the extent to which the housing market can adapt to a sudden increase in demand. In addition, the sorting of migrants into locations adds a degree of complexity to the analysis, with age, skill levels, income, and network effects all playing a role.

2.2.1.2 Insignificant or Limited Effects

Far from all studies support the notion that migration has a significant impact on house price. Indeed, one comprehensive literature review of many New Zealand studies suggests that ''visa-controlled immigration into New Zealand, and specifically into Auckland, in the recent past has had a relatively small impact on house prices compared to other demand factors'' (Cochrane and Poot, 2016; p.3). The review draws on a number of other studies, and thus can be seen as an accurate representation of the overall experience in New Zealand. This could suggest immigration has varying impacts on the housing market in different countries, as indeed, migration trends to New Zealand differ substantially from those experienced in, for instance, the US or Spain. One study quoted, Stillman and Mare (2008; p.27), uses the shift-share approach, and finds that other factors are more likely to be stronger contributors toward house price appreciation. This includes the growing prominence of return migration of native New Zealanders, with the study finding ''no evidence that inflow of foreign-born immigrations to an area are positively related to house prices." A later study by Hyslop et al (2019) confirms this. Such studies do serve to undermine the conclusions reached by many of the studies mentioned in Section 2.2.1.1.

Still, many of these studies of the New Zealand experience, including the latter one by Stillman and Mare (2008; p.5), find that ''population increase due to arrival of new immigrants is almost always estimated to be relatively small.'' This is also contrary to many of the studies analysed previously, where immigration generally contributed significantly to population growth, and thus could explain some of the discrepancies found between New Zealand and other countries. Nevertheless, a different study in a different region, which also takes an instrumental variable approach, finds a 1 percent increase in immigration only explains 0.10-0.12 percent of the difference in prices among Canadian regions (Akbari and Aydede, 2011), further fuelling scepticism about the precise nature of the impact of migration on house price and its strength. However, this study only utilized census data from 1996, 2001, and 2006, and thus is less able to capture effects accurately. Still, an Italian study finds that a 1 percent increase in immigration only corresponds with a 0.05-0.09% shift in house prices, (Kalantaryan, 2013), while a more recent French study finds no significant effects at all (D'Albis et al., 2018). The relatively wide extent of divergent findings underlines that trends are slightly unclear.

In a comprehensive study, Meen (2011) concludes that it is unlikely that migrants generally have contributed more than 3% to house prices between 2004 and 2009 in England, suggesting the impacts of migrants on the housing market are overstated. However, he does not make use of instrumental variables or OLS, and thus his conclusions may differ as a result of this. Nevertheless, a different UK study, which does make use of the shift-share instrumental variable approach, finds ''no effect of immigration on property prices below and up to the median… [and] some limited evidence for a potential price increase at the 75th percentile'' (Braakmann, 2016; p.11). Braakmann's findings thus generally support those of Meen. This, and the other findings, could suggest that the relationship between migration and housing can vary heavily depending on the nature of migration flows that a country receives.

Beyond this, thus far, the only comprehensive Swedish study conducted broadly on the same topic, generally also finds mixed evidence regarding the relationship between immigration and house prices. Andersson and Dahlberg (2018; p.10) study the impacts of refugees from 1990-2014 on the neighborhood level, and find that refugee immigration to small neighborhoods "has no average effect on changes in housing prices in that neighborhood." Nevertheless, this study is conducted on a small scale using micro-level data only, with very small areas being studied, which may explain why it does not generally correspond with other findings of more macro-scale studies. Still, it is clear that though there may be some impacts of immigration on property price, there is no definite consensus regarding whether impacts exist, both in Sweden and beyond.

2.2.1.3 Negative Effects

Some studies find that migration has an overall negative effect on house prices. Indeed, several papers note the relevance of the displacement of native residents to other locations (Walker et al., 1992; Carter, 2005; Hou and Bourne, 2006; Stillwell, 2010; Adams and Blickle, 2018). This reduces pressure on the local housing market, and can result in zero or negative estimates for the impact of migration on house prices (Saiz and Wachter, 2011; Sá, 2015). These studies find such results particularly when focusing on the adjustment processes that follow a migration led demand shock. Sá (2015; p.23) underlines that one must not underestimate ''the possibility that the native born population may move away from those cities that have a relatively large influx of immigrants.'' This finding is interesting as it is contrary to a seminal study of the labour market by Card and DiNardo (2000), which found that neighbourhoods experiencing high migration tend to attract natives. Sá (2015), using both OLS and the instrumental variable approach in a broader model that also incorporates displacement due to fall in native wages (due to labour-market competition between native and migrant workers), instead finds that immigration has a negative effect on house prices, with a population increase of the immigrant population equal to 1 percent of the local population reducing house price by 1.7 percent in UK Local Authority districts. She also finds that this effect is stronger in areas where immigrants have lower education levels. The author adds the caveat that this may lead to a subsequent increase in house price in other areas, though this is not investigated in her study.

A follow-up study by Lastrapes and Lebelsmuehlbacher (2017) broadly confirms these results in the UK, but finds that the extent may be slightly smaller than that found by Sá, particularly in terms of the impact of asylum seekers. A different study in the UK by Zhu et al. (2018) is also generally in line with these findings, finding a negative impact of 0.8%. These results in the UK differ partially owing to the inclusion of slightly different variables such as the total available housing stock for each municipality, as well as focus on extending the analysis to incorporate native flight phenomena, which occur at close to a one-for-one rate. Further, clustering of migrants as well as geographical differences in the sizes of local authorities compared to most municipalities or cities in other countries are contributory factors. In addition, the UK has seen slightly different trends to other countries with regard to the relationship between housing and migration, in that the origin of migrants has to a large degree been influenced by historical relationships between Britain and its colonies; a relationship of a magnitude that most other countries lack.

Beyond the UK, Accetturo et al. (2014) in Italy finds that although migration does increase house prices at the city level, it can lead to the (voluntary) displacement of existing residents, meaning prices do not necessarily rise in the places migrants move to. This could suggest that the UK experience is not an outlier, but indicative of wider trends experienced under similar circumstances. Similar trends are also evaluated by Saiz and Wachter (2011) in North America. They confirm ''the association between growing immigrant density and relative housing value depreciation to be stronger in neighbourhoods where the population was predominantly white initially'' (Saiz and Wachter, 2011; p.12). Hence, they also show that the standard model of migration and housing can be adjusted to incorporate a native preference for segregation. This means that while average house prices rise in a city as a result of a migratory inflow, house prices in the neighbourhoods where migrants settle can decline, as native residents move to other areas. Using census data for the US at a disaggregated level (the census tract, equivalent to 4,000 residents), they show that an increase in the share of immigrants leads to a fall in house prices at the neighbourhood level. This suggests slower house price appreciation in neighbourhoods with a higher proportion of migration in the long-run, and highlights the complexity of the migration and housing relationship. Similarly, using data for the Netherlands, Daams et al. (2018) find that the presence of asylum seeker reception centres can negatively impact local house prices by discouraging native buyers and encouraging out-migration of existing residents. Meanwhile, a similar recent study on the neighbourhood level in Sweden also finds that refugee migration can impact house prices negatively, although only within 5 minutes of locations where refugee housing is built (van Vuuren et al., 2019).

Interestingly, however, much like Card and DiNardo (2000) in the labour market context, Sanchis-Guarner (2017) and Mocetti and Porello (2010; p.428) find a degree of complementarity between immigration and native location decisions, where there is a ''displacement effect of immigration on less skilled natives… [but] in contrast, immigration is positively associated to highly-educated native flows.'' This suggests the relationship is more complex than what is posited by Accetturo et al. (2014) and Saiz and Wachter (2011). Indeed, the above suggests the presence of important compositional issues, with countries and cities that receive higher numbers of skilled labour migrants being more likely to observe positive effects on house prices. This is primarily due to complementarities in the labour market driving up native wages, and the out-migration of low-skilled and older native residents. Indeed, a number of studies have highlighted the importance of considering interregional migration in this regard, as well as differentiating migration flows based on differences in human capital (Clark and Huang, 2004; Niedomysl, 2011; Fratesi and Percoco, 2013; Huber and Nowotny, 2013; Faggian et al., 2017; Tanis, 2018). However, this issue remains relatively under-researched in the literature, in part due to a lack of data or suitable case studies with sufficient variability in migration motives (Ottaviano and Peri, 2013). As a result, studying the impacts of different forms of migration on different segments of the housing market provides important insights, and serves to inform both housing and integration policy. This thesis aims to fill this gap, using data for Sweden which is rich in both its detail, and in the variety of countries of origin and migration motives.

2.2.1.4 Housing Availability

Beyond this, in terms of the impacts of migration on housing more generally, past literature is relatively thin. The issue of how to deal with housing affordability is a key one in policy debates on productivity, urban demographics, local economic development, and inter-generational equity (Stillwell et al., 2016; Austin et al., 2018; Rodríguez-Pose and Storper, 2019). However, this debate is predominantly focused around house prices, and regardless of how precisely one chooses to define housing availability, it is rarely mentioned.

The limited literature which does explore the impacts of migration on housing availability or construction does not do so in a quantitative manner, but does find an impact of the former on the latter. Theoretically speaking, population increases should have a negative impact on housing availability, assuming a relatively constant housing composition nationwide (Blanchard, 2017). Meanwhile, the addition of new stock, as well as planning legislation seeking to simplify building, should result in a higher rate of house production (Ryan-Collins et al., 2017), increasing housing availability. Indeed, Costello (2009) finds using qualitative methods that there is clear evidence of impacts of migration on housing availability, in a wide number of ways, in Australia. Further, Mulder (2006; p.11) highlights the importance of considering how ''housing influences the number of people and households via the attraction or deterrence of migrants, keeping in place or pushing away the resident population, and intricate links with leaving the parental home, separation and having children… [as well as] population influencing housing via housing demand.” Indeed, the complex, two-sided relationship between migration and housing availability is also impacted by factors such as commuting, which distorts the true impact and relationship between the two factors (Cameron and Muellbauer, 1998).

Nygaard (2011; p.3) highlights the importance of this analysis, as ''differences in access to homeownership for international migrants may result in lower levels of housing wealth as select international migrant groups may struggle to attain homeownership or commence the housing investment at a later stage in life.'' Further research could help to complement the existing literature on the impact of migration on housing prices mentioned earlier, and thus allow more complete and informed policy decisions to be made as a result. This will also be undertaken in this thesis.

2.2.2 Internal Migration

Beyond the above, there is also a small quantitative literature on the impact of internal migration on the housing market. It is striking, given the focus on the demand side of the housing market, that most studies focus exclusively on international migration, and either exclude internal migration entirely, or treat it as a strictly endogenous variable, and one that is due entirely to the effects of international migration. Although internal migration and natural population growth do to some extent arise in response to international migration, it is clear that the same pressure on house prices that is exerted by an increase in the population due to international migration is also likely to arise in the context of internal migration (with the caveat that internal migrants may differ from international migrants in fundamental ways). Indeed, there are several interesting studies of the impact of internal migration on the labour market, as well as on the broader economy and society (see, for instance, Borjas, 2006; or Robinson, 2010). This does suggest a similar analysis for the housing market could prove fruitful within the context of a wider study of the impact of international migration, and this thesis also aims to fill this gap.

Of the little analysis that does exist regarding the relationship between internal migration and house prices, that which has occurred usually seeks to evaluate the reverse, i.e. the role of house price or housing stock as an influence on internal migration and local demand (Antolin and Bover, 1997; Cameron and Muellbauer, 1998; Molloy et al., 2011; Boverket, 2016; Peng and Tsai, 2019; Johansson and Molander, 2019). Although some studies have occurred into the inverse relationship, notably by Kashnitsky and Gunko (2016) in Moscow, and Depetris-Chauvin and Santos (2018) in Colombia, these have generally not looked at the relationship between voluntary internal migration and house prices. Rather, these have studied a different kind of institutional relationship with a focus on forced migration. In many ways, refugee migration is reminiscent of forced internal migration, meaning their findings, which indicate a positive relationship, may indicate that such results are likely for refugee migration also. Nevertheless, Wang et al. (2017) is the only study thus far that has looked strictly at the quantitative impacts of voluntary internal migration on house prices, finding that an increase in inter-regional migrants of 1% will lead to a rise in housing prices of around 0.7%. However, this study does not consider international migration as a control variable, meaning it is does not consider the complete spectrum of migration impacts on housing. It is also conducted in the Chinese context, where internal migration differs in nature (owing to the country's size) to most other countries.

Indeed, Meen (2012; p.19) argues that the fact that ''conventional approaches ignore… population flows of domestic residents to other parts of the country'' is one of the primary flaws in current literature. Indeed, this effectively amounts to the omitting of important variables in the housing price equation, and thus could overestimate the impacts that international migration has on housing price. This does suggest analysis for the housing market could prove fruitful, and lends credence to analysis along the lines I seek to pursue, looking to verify or reject this relationship in the Swedish context, at different regional levels.

A related significant trend to consider, and one that will be examined in this thesis (described further in Section 4.2 of Chapter 4), is the impact of origin and income of migrants on the housing market. It is noteworthy that in the North American context ''Asian immigrants achieve extraordinarily high levels of homeownership soon after arrival, whereas Hispanic immigrants demonstrate sustained advancement into homeownership from initially very low levels'' (Myers and Woo Lee, 1998; p.2). Looking more closely at the different experiences of different migrant groups is thus a relevant line to take in light of this analysis. Indeed, the importance of country of origin or income/wealth in immigrants' labour market outcomes (Grand and Szulkin, 2002; Hammarstedt and Palme, 2006; Rooth and Ekberg, 2006; Saiz and Wachter, 2011; Ottaviano and Peri, 2013; Tyrcha, 2015) means it is likely to be relevant to conduct such analysis in terms of the housing market.

2.2.3 Rental Market

In comparison to the general housing market, the rental market has been understudied, despite various authors indicating its importance in terms of housing and labour market solutions for migrants in the years immediately following arrival (Miraftab, 2000; Gordon et al., 2007). Indeed, in the UK context it has been found that ''only 4-5% of UK migrants own their own home upon arrival, skyrocketing to 54-60% after 12 years'' (Nygaard, 2011; p.16), while Andersson et al. (2010) confirm similar results in the Nordic countries. One reason for the relatively understudied nature of this market could be that ''the effects of any one migration cohort on the ownership market [are] dispersed over several years, thereby weakening any directly discernible impact on price-renting'' (Burnley, 2005; p.12). Still, the same study does find that ''immigration is almost certainly impacting the rental housing market.'' This underlines that this line of study is likely to be a very relevant one to undertake further, particularly as impacts could be different to those seen in the general housing market.

A table similar to Table 2.1 follows. Table 2.2 summarizes studies that look directly at the impact of migration on rental prices.

Table 2.2: Key Studies Pertaining to International Migration and Rents

Study name	Country	Time period	Effect of international migration on rents (impact of migrant inflow equal to 1% of original population unless otherwise stated or size of impact not specified)	Controls for income, education and internal migration?
Muller et al. (1985)	USA (Los Angeles)	1967-1983	Positive, although insufficient depth reported	Income only
Saiz (2003)	USA (Miami, Florida)	1974-1983	8-11% stronger increase than in other cities over 2 years (elasticity of about 1%)	Income and education
Greulich et al. (2004)	USA (91 selected metropolitan areas)	1970-2000	No significant change in the average rent to income, although alternative method employed	Income only
Ottaviano and Peri (2005)	US (86-116 MSA's)	1970-2000	Positive, approximately 1% per annum increase	Income and education
Saiz (2007)	USA (306 selected metropolitan areas)	1983-1997	0.6% increase in rents	Income and education
Aitken (2014)	UK	1995-2015	Only a modest increase of 0.14-0.18%	N/A
Latif (2015)	Canada	1983-2010	0.14-0.17% increase in rents	None
Sharpe (2015)	USA (325 CBSA's)	1999-2011	Neutral or no impact	Income only
Tumen (2016)	Turkey (5 NUTS2 regions)	2012-2016	5.5% increase in house rents overall	Income only
Kürschner (2017)	Germany (72 metropolitan units in western Germany)	1989-1992	3.3-4.8% increase in rents	None
Mussa et al. (2017)	USA (275 MSAs)	2002-2012	Positive, approximately 0.8% per annum increase, 1.6% in surrounding MSAs	Income only
Sanchis-Guarner (2017)	Spain (50 provinces)	2001-2012	Positive, approximately 0.8% increase	Income and education

Perhaps the seminal study on the impact of immigration on the rental market is Saiz (2003). He finds that following an exogenous migration shock to Miami's renter population in the 1970s and 1980, rents rose by ''8% to 11% more in Miami than in comparison groups between 1979 and 1981.'' Saiz finds that the shock to unskilled migration had a greater impact on rents in poor areas and persisted in the years following the migration shock. His study extended to the fairly unique migration boost provided to Miami by the Mariel Boatlift from Cuba, and thus it is possible that impacts were different from more gradual migration impacts. However, the trends found by Saiz (2003) also hold in Saiz's (2007) own follow-up, where he finds that immigration inflows equal to 1% of a city's size lead to a 0.6% increase in rents, confirming this on the national scale. A number of further studies confirm this (see Table 2.2). Mussa et al. (2017), though, use US data to find impacts of 0.8% in the immediate area, rising to 1.6% in surrounding MSA,s indicating the presence of spillover effects expected where there is spatial sorting. A recent study by Tumen (2016) in Turkey confirms the above findings, and although a different methodology is employed, finds a 5.5% increase in house rents overall resulting from the natural experiment of Syrian refugees coming to Turkey. Results here could be significantly stronger owing to the substantially varying nature of the migration flow, as well as the slightly less developed nature of the receiving country. Further, the unprecedented and wide-scale sudden inflow of migrants from a neighbouring country is likely to differ in nature and impacts to more long-term and long-range migration. The same reasoning could be applied to an even more recent study, though of a relatively more dated time period in the fall of the Berlin Wall. This study also finds that an increase in migration corresponding to 1% of western Berlin's population resulted in rents rising between 3.3-4.8% (Kürschner, 2017). This would suggest that impacts on the rental market and housing market could differ, as there was more evidence of mixed or negative impacts for the housing market.

Nevertheless, in this context, too, impacts are not uniformly positive across all studies. ''An inflow of immigrants equal to 1 percent of the initial population is associated with a 0.14-0.18 percent increase in average housing rent'' (Aitken, 2014; p.13) in England and Wales, indicating that a moderate effect remains a possibility in this regard. Differences found in this study could, as stated in Section 2.2.1, also broadly be a result of the generally unique nature of the UK migration and housing context. However, similar findings are made by Latif (2015) in Canada, where an increase in migration of 1% is found to correspond to a 0.14-0.17% increase in rents, although a lack of key control variables could serve to explain this. Nevertheless, this corresponds well with the findings of Sharpe

(2015), who after introducing a range of new control variables, is unable to ascertain any causal major effects of migration on the US rental market. This is important to keep in mind when conducting analysis, and underlines that diverging impacts could be found in this context, too, depending on control variables, techniques taken, and countries chosen to study (see also Section 2.2.1).

In line with some of the origin-related analysis touched upon in relation to the housing market in Section 2.2.1, Nygaard (2011; p.5) also finds that ''household formation rates, headship rates and tenure choice'' matter immensely and differ among different racial groups, with migrant backgrounds seemingly determining which market migrants have a larger impact on. He finds white migrant households have a larger impact on the housing market, while black or Asian households have a significantly higher impact on the rental market. Given appropriate data, this would be an interesting line to pursue further, and compare to similar analysis conducted for housing prices, with origin-based analysis potentially proving insightful in terms of the rental market more generally.

Links to discrimination could also be established in this regard. From a discrimination standpoint, it has been noted across Europe that ''certain racial groups face broader discrimination than others,'' with e.g. Polish and East Asian migrants appearing to be relatively underrepresented in rental accommodation when compared with other non-EU migrant groups, although still overrepresented when compared to natives (Lange, 2000; p.7). Indeed, Murdie (2002) finds similar trends when he compares Polish and Somali migrants in the Canadian context, with the former performing substantially better in terms of the housing ladder. This can serve to fuel theories of spatial assimilation in the housing context. Explanations of such differences could range from socioeconomic differences, often highly correlated with origin, to racial bias within society. Indeed, factors such as ''discrimination by landlords in housing search'' (Teixeira, 2008; p.2) can be a significant impeding factor. Teixeira conducts research for ''black'' Africans in Toronto's rental market and finds this to be a recurring theme in his qualitative data collection. Other research identifies ''immigrants' gender, skin colour and cultural and religious practices… as primary barriers'' (Miraftab, 2000; p.17). Interestingly, however, Alba and Logan (1992) highlight that being a member of a majority migrant group can be beneficial and counteract negative bias of being a non-white migrant, although only in certain scenarios. This underlines that it is clear that analysis further along these dimensions would be worthwhile.

2.3 Gaps in the Literature

Building on the above, I believe I will be able to make a significant contribution to the literature through this PhD thesis, by filling a number of gaps that I have identified in the literature. These gaps have been mentioned above, but to clarify, they are:

1. An analysis of the impact of migration on house prices or rents in Sweden has never been done to any comprehensive degree. In fact, very little analysis has been conducted in Scandinavia, and even in the European context, analysis outside of the UK has been relatively slim.
2. In general, the analysis that has occurred has been focused entirely on the owner-occupier market. Rental markets have not been explored much, and the unique rental system that exists in Sweden (discussed further in Section 3.1 of Chapter 3) has not been explored at all in the migration context. Further, the private housing cooperative market, present in some Nordic countries (discussed further in Section 3.2 of Chapter 3), has not been explored to any degree in the migration context either. Other ways of looking at the housing market, such as housing availability or construction rather than solely prices, have also been broadly overlooked.
3. Internal migration has generally been overlooked as an influencing factor in terms of its impact on house price, with most research generally not including this as an explanatory variable. An important unresolved question is whether internal migration has an effect that is similar to that of international migration, and the extent to which the two effects interact.
4. Analysis of the impact of migration on house prices or rents on the regional level, differentiating by municipality characteristics, has never been done comprehensively. The regional classifications studied will be urban municipalities, which can also be broken down into major cities and smaller urban areas, as well as rural municipalities. A tentative consensus is beginning to emerge on the need

for more focused place-based policies, and the question of whether migration affects different places differently is therefore a key one in this debate.

5. Analysis of the impact of migrants differentiated by different origins on house prices or rents has never been done comprehensively. By grouping migrants of different origins, the relationship between different forms of migration and the housing market can be delved into further, while maintaining relevance in other contexts than the Swedish one. The importance of country of origin or income in immigrants' labour market outcomes (Hammarstedt and Palme, 2006; Rooth and Ekberg, 2006; Grand and Szulkin, 2002; Tyrcha, 2015) means it is likely to be relevant to conduct such analysis in terms of the housing market, too.
6. Through complementing the above analysis with qualitative interviews with key stakeholders, a broader range of perspectives will be explored with regard to migration and housing, allowing for potentially more far-reaching conclusions to be drawn.

3. The Swedish and Nordic Context

As mentioned in Chapter 1, the Swedish housing market is made up of three different types of housing: owner-occupied housing, private housing cooperatives, and rental housing. The distribution of these three types of housing is shown below.

Figure 3.1: Housing Ownership Forms in Sweden

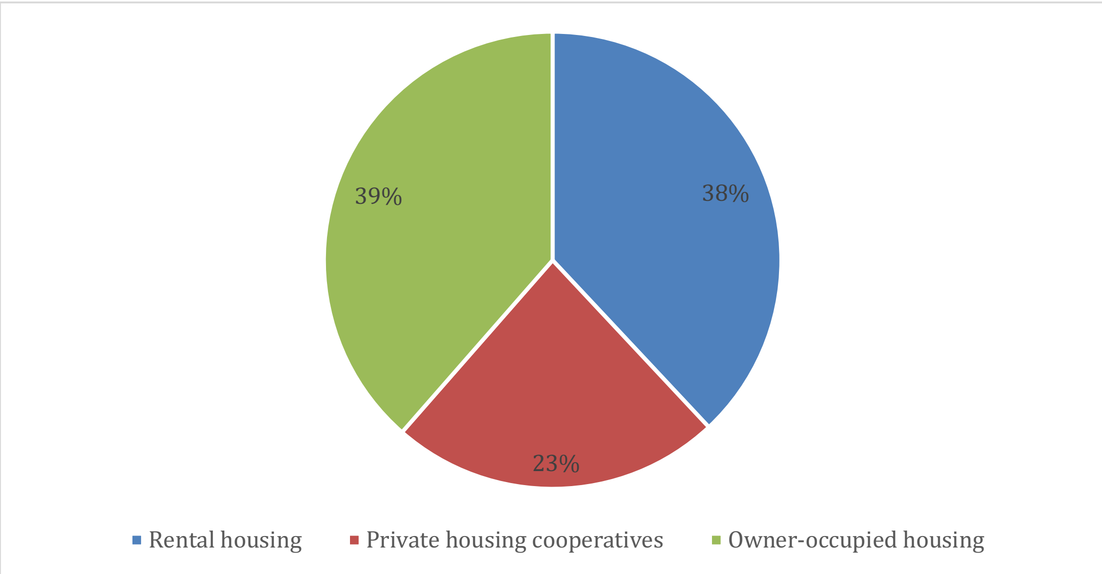

Figure 3.1: Housing ownership forms in Sweden. Source of data: SCB, 2019.

Figure 3.1 highlights that owner-occupied housing remains the most common form of housing, at 39%, but rental housing is close behind it at 38% (about half of which is publicly owned, with the same rent-setting rules applying to both publicly and privately owned rental housing) (SCB, 2019). Private housing cooperatives, the fastest growing asset class, now constitutes 23% of housing. The fact that all three of these housing forms account for a considerable share of the market underlines the importance of analysing all of these in the Swedish context.

The owner-occupied market does not require any introduction, as it functions in the way that most free housing markets do worldwide. This entails a purchase price being paid for an asset, after which ownership of that asset is transferred from the seller to the purchaser. However, an introduction to each of the other asset classes is provided below.

3.1 The Swedish Rental Market

When considering the rental market, drawing on examples from Sweden is particularly interesting. This is owing to the differences in the country's rental system compared to most other systems in the world. Although both public and private actors construct rental housing, the Swedish rental system is rent controlled, with the ability of the landlord to set rent being limited.

The current system has its groundings in the Rent Regulation Act of 1942, which effected rent control during wartime, with some amendments having taken place since then, and the latest major update having occurred in the Rental Act of 1968. ''In general terms, the intention is to limit the effects of the landlord's superior market power'' (Bengtsson, 1994; p.2). In essence, the aim of the law is: ''First, regardless of the market situation, the landlord should be prevented from raising the rent of a flat in order to get rid of an undesired sitting tenant. Second, in times of housing shortage, the landlord should be prevented from raising the rent to market level the sitting tenant cannot afford. Third, the landlord should be prevented from raising the rent without the sitting tenant having a real chance to look after his interests, individually or with the assistance of a tenants association.'' Nevertheless, though the law favours the tenant, it should, in theory, still ''reflect market rents on a market in long-run equilibrium, regardless of whether the market at any given time is actually in equilibrium or not'' (Bengtsson, 1994; p.3).

Although the current outcome was not necessarily the intent upon creation, Figure 3.2 demonstrates the state of the rental system in practice, until the deregulatory reform of 2011 (discussed below).

Figure 3.2: The Swedish Use-Value System

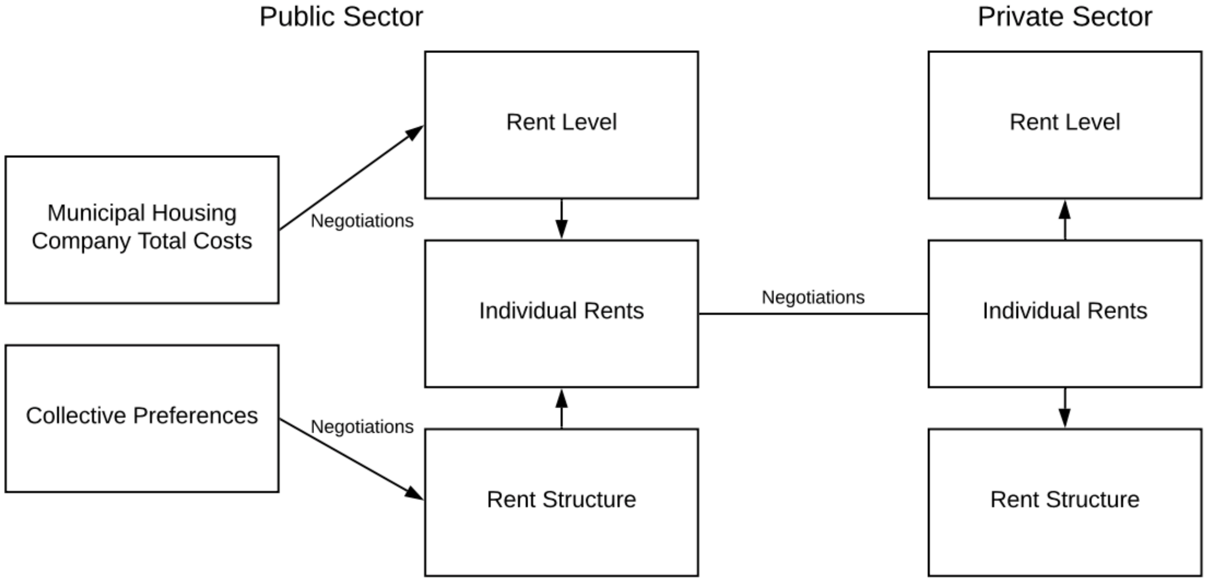

Figure 3.2: The Swedish use-value system. Adapted from: Bengtsson 1994.

The original intention of the system was for the public sector and private sector to both have the ability to have input in the negotiation process, and the setting of rents in both the public and private sector (Bengtsson, 1994). However, the private sector has instead effectively become a price-taker in the equation, with ''tenant associations [having] the formal right to collective negotiations, even against the landlord's will'' (Bengtsson, 1994; p.4), effectively removing bargaining from the process. Instead, in the rent-setting process, ''claimed rents are compared with the local rent level of dwellings judged to have the same use-value in terms of size, standard, service, location and more'' (Lind, 2001; p.11), and the ''the reasonableness of a rent in the private sector is directly related to the rent set by the public sector'' (Lind, 2001; p.11), as displayed in Figure 3.2. However, as a result, newer apartments tend to have markedly higher rental levels, owing to an absence of regular rent reviews in older apartments, and lack of accounting for various factors in the rent-setting process, including e.g. the role of refurbishment. Indeed, urban renewal and re-urbanization in the 1980s has resulted in ''the gap between the actual rent and the market rent increasing dramatically in the old stock in attractive areas'' (Lind, 2001; p.3). The role of this use-value (or utility value) continues to permeate the rent-setting system.

Though much of the above still holds, 2011 saw a wide-reaching reform, enabling a higher degree of negotiation and competitiveness in the rent-setting process, while still maintaining elements of rent regulation. Since the 1st of January 2011, the municipal housing companies' role has been vastly diminished, and they are no longer primarily involved in rental negotiations, as was shown in Figure 3.2. Instead, rents can be negotiated with any relevant party (SABO, 2011). This means that there is scope for the private sector to not just be a price-taker, but be more actively involved and even leading in the negotiations. Though rents must still be tested against the use-value of comparable properties, enabling the private sector to negotiate has resulted in giving a wider free market feel to the process. Partly as a result of this, as well as a form of "free market creep" resulting from other minor reforms enacted throughout much of the 21st century to date, rents rose by 19% between 2008-2018, a markedly higher increase than previous decades – which can be compared to 9% CPI inflation over the same time period (SCB 2018). Hence, migration having an impact on rents is highly feasible. In 2019, a government proposal which would enable rents to be set completely freely among newly produced housing was introduced and is currently undergoing investigation. This could substantially transform the housing market in the long-term.

After the regulatory break, it is clear that migration could impact the rental market through mechanisms which could be compared to those seen on the free market, with demand causing rents to shift upwards in areas with limited supply. Although there remains an effective cap on rents, as the use-value mechanism remains in place, the expanded role of negotiations means that rents can now be set higher in the private sector (The Swedish Union of Tenants, 2016). Even before the regulatory break, however, it is still feasible for there to have been a relationship between migration and the rental market (Jonsson, 2012). This is owing to negotiations still playing a role (see Figure 3.2). Though rent controls limited these impacts, the role of the growing rental queue, leading to an excess demand for housing in certain areas with an undersupply, created extreme pressures on rents which as a result did rise more in certain areas than in others, even under the use-value system.

Further complexities arise owing to the rental queue system that exists on the Swedish market, where rental properties are not advertised on the free market. Instead, a queuing mechanism exists, with properties being allocated to people in the queue as they become available. Indeed, between 2005-2015, statistics from the Stockholm rental queue show that the average time spent in the queue before receiving a rental apartment has almost doubled from 4.7 years to 8.2 years, while the number of people in the queue also increased markedly, by almost 300% (Bostadsförmedlingen, 2016). As of the 31st of December 2018, over 600,000 people are in the rental queue (Bostadsförmedlingen, 2019). It is noteworthy that subletting property remains illegal unless sufficient reasons are provided to the landlord, meaning the threshold is set relatively high, spurring black market activity for rental housing (Boverket, 2011). In terms of non-sublet rental properties, virtually all of these are allocated through the rental queue (Bostadsförmedlingen, 2019).

Figure 3.3: The Impact of a Rental Ceiling on the Rental Market

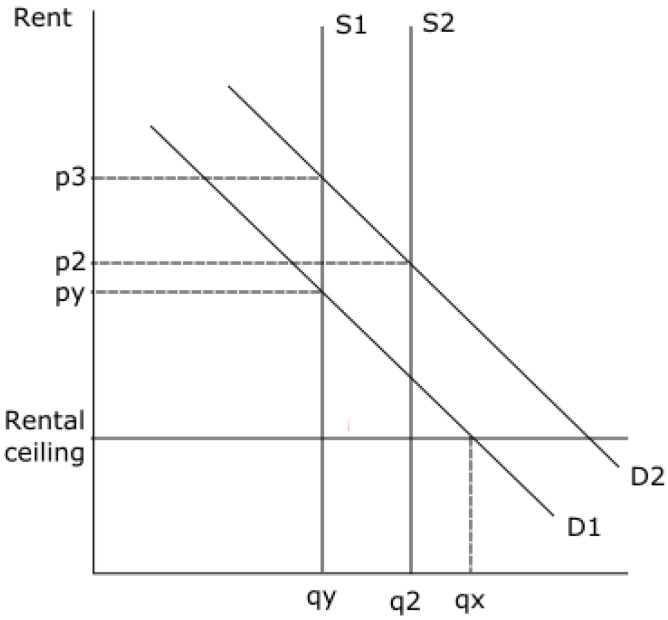

Figure 3.3: The impact of a rental ceiling on the rental market.

Figure 3.3 clearly indicates that owing to the rental ceiling, and the fixed, completely inelastic level of supply, in the short-run, there will be a shortage of housing equal to the difference between qy and qx, rather than equilibrium at a higher price, py (as price must remain at the rental ceiling). Indeed, this can also hold in the medium and long-run, depending on the extent of shifts of the supply curve, which have proven to be insufficient to curb the housing shortage in recent years (SCB, 2016; Bostadsförmedlingen, 2016). This is also displayed in the diagram, where any outward shifts in supply, from e.g. S1 to S2, may not be able to curb outward shifts in demand, from e.g. D1 to D2, resulting from migration or other reasons (even without shifts in demand, the shift in supply displayed in the diagram would be insufficient to curb excess demand). The equilibria at q2p2, or qyp3, cannot be achieved, owing to the rental ceiling. Instead, a housing shortage persists. The increasing length of the housing queue, as well as continually rising demand, demonstrates this.

The composition of the rental market can have negative impacts on marginalized migrants who cannot afford access to the second-hand market that arises (Socialstyrelsen, 2010), but who have been unable to queue as well. This, in turn, can serve to reinforce trends of segregation and create social tension (Öst et al., 2014), as some groups appear to be favoured by the government in being allowed to effectively 'skip' the rental queue, which could be the only way to effectively ''break through the housing career ladder'' (Magnusson Turner and Hedman, 2014; p.3). Indeed, in some municipalities, an informal separate housing queue for migrants has been introduced, with municipalities being required to provide housing to migrants. Municipalities can do this by reallocating rental housing from the rental queue, or purchasing properties on the free housing market and using them for migrant housing (Bostadsförmedlingen, 2016). Such decisions can serve to frustrate relationships between natives and migrants, and potentially risk increased social exclusion of some previous migrant groups as well as some natives (Costello, 2009). Equally, though, they could assist in reducing segregation in the long-run. Indeed, past research has found that although migrants normally move up the housing ladder more slowly than natives, given funds and accessibility, they will behave similarly to natives and prefer owner-occupied housing (Lindberg et al., 1992; Karsten, 2005; Andersson et al., 2010; Magnusson Turner and Hedman, 2014). This means starting higher on the housing career ladder could be beneficial for social equity.

3.2 Private Housing Cooperatives

The other form of housing which is relatively unique to the Swedish housing market consists of private housing cooperatives. Private housing cooperatives stem from the Swedish government's socialist ''People's Home'' policies, which were popularized as early as the 1930s (Jörnmark, 2005). In a private housing cooperative, housing, most commonly in the form of apartments in an apartment complex, is owned collectively by different people. All tenants make a payment to the housing association every month which covers interest and amortisation expenses as well as operating expenses and maintenance, and any major changes to the property must be approved by the housing association. Despite this, a full purchase price is still paid upon acquiring the asset, meaning the private housing cooperative market contains elements of the owner-occupier market. The difference however is that one does not purchase the property – one simply purchases the transferable right to live in the property, usually by purchasing a share in the housing association corresponding to one's property (Bengtsson, 1994). The members buying the share receive unlimited occupancy rights, and are able to sublet or sell their share in the housing cooperative (commonly represented by their apartment) on the free market, though in rare cases it is possible for an individual to not be accepted as a member of the cooperative (Bengtsson, 1994).

Private housing cooperatives have always been relatively popular, but rose in prominence in the 1990s, when the first liberal-conservative government in Swedish history instituted an effective right to buy policy for rental housing. This was done through ''the conversion of public rental housing into market-based (cooperative) housing… inviting public housing residents to buy their dwellings'' (Andersson and Turner, 2014; p.6), where the majority of people in a given housing association were in favour of this. Currently, the private housing cooperative market is steadily growing and is set to overtake the rental market in the coming decades (SCB, 2018). This can, in part, be attributed to the aforementioned growing prominence of rental housing being converted into private housing cooperatives by landlords and property owners (SCB, 2016). However, a preference among housing developers to build private housing cooperatives rather than rental housing, as this has proven to be more profitable, has also contributed (SCB, 2018). Owing to the long history of such trends, as well as the other above-mentioned factors, Brownstone and Englund (1991; p.2) highlight private housing cooperatives ''as a third mode of tenure, [which] should be treated separately'' to the rental and housing markets, owing to stark differences in tenure choice generally based on income level, demographic factors, and a range of other factors.

Findings by SCB (2019) demonstrate the trends discussed above quite clearly on the national level. They find an increasing popularity of private housing cooperatives, while the rental market has roughly maintained its level of popularity. This is shown in Figure 3.4.

Figure 3.4: Change in Popularity of Housing on Alternative Markets

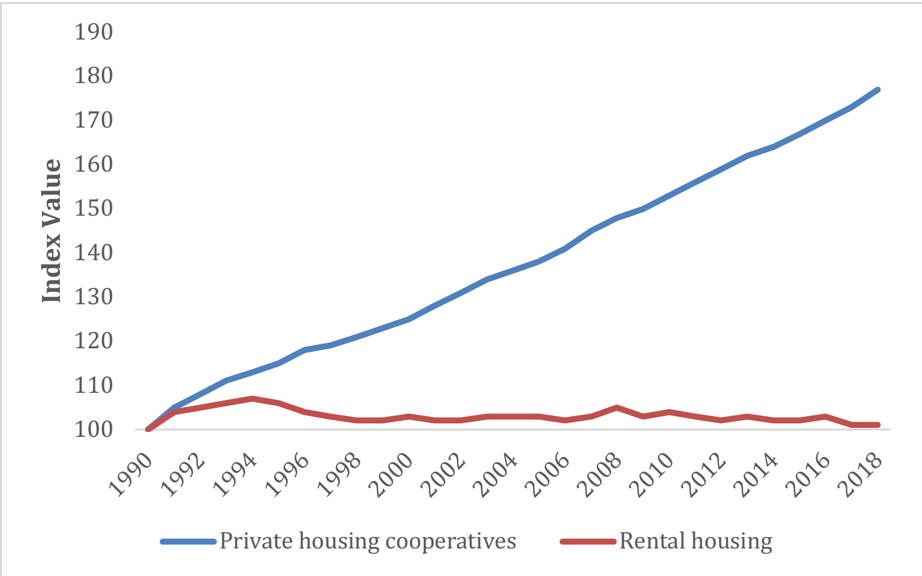

Figure 3.4: Change in popularity of housing on alternative markets. Source of Data: SCB, 2019.

The graph displays the growth in private housing cooperatives since 1990 has been significant, while rental apartments have remained at approximately the same level of popularity. This is largely owing to conversions of existing rental stock to private housing cooperatives being approximately equal to the amount of new rental stock being built. Since 2012, private housing cooperatives have risen in popularity for additional reasons, as in 2012 new legislation (Law 2012:978 (Parliament, 2012)) made renting out properties on the second-hand market more accessible, too, increasing the flexibility in contracts and allowing free negotiation of second-hand rents. This has served to further increase the amount of people using this market (Valueguard, 2017), and underlines that the rise of alternative markets, and the private housing cooperative market in particular, is likely to continue. This highlights the relevance of studying the impacts of migration on these alternative asset classes, particularly as no analysis has occurred of these markets in relation to migration previously, despite the relevance of potential conclusions to both Swedish and international housing solutions.

An expected outcome of housing market discrimination is that of migrants being forced into private housing cooperatives, and alternative accommodation more generally, to a higher degree than native-born citizens (see also Section 3.3). In the Swedish context, Malmberg et al. (2013) and Bevelander (2011) find that migrant status is a clear determinant of position on the housing market, with migrants disproportionately being either in the rental market or private housing cooperative market, often second-hand renting (the role of refugee placement policy, highlighted in Section 3.3, is also likely to be relevant here). However, it is also found in a different study that ''demographic and socioeconomic factors cannot… fully account for the differences found between Swedes and immigrant groups such as Africans and Eastern Europeans'' (Bråmå and Andersson, 2010; p.21). Indeed, background is one of the more relevant variables in determining housing outcomes, while further factors including source of income, immigrants' knowledge of the housing system, language abilities, household type and size, duration of stay, education, institutional knowledge, and experience with dominant institutions are also found to be potential secondary barriers (Murdie et al., 1995; Murdie and Borgegård, 1998; Hulchanski, 1998; Ahmed and Hammarstedt, 2007; Andersson and Turner, 2014; Magnusson Turner and Hedman, 2014). Others find evidence of both tenure and area-based discrimination, resulting in increasing segregation and enclaves forming (Musterd and Van Kempen, 2009; Askåker, 2011). If this results in the impact of migration on private housing cooperative prices or the rental market being greater or smaller relative to owner-occupied housing, then there could be a differential impact of immigration on different demographics. This highlights the importance of examining these trends.

In relation to the recent refugee crisis, a number of initiatives, including the institution of further alternative forms of housing such as modular housing, government-sponsored subleasing of private homes, formalized refugee camps in e.g. container or mobile housing, and renting out of holiday homes, were introduced (Migration Board, 2017; SvD, 2017a; SvD, 2017b; SKL, 2016). Thus far, Sweden has not had to rely on this kind of accommodation particularly much, but this may become necessary should a refugee crisis re-emerge, diversifying the housing market further. At this time, however, this is beyond the scope of this thesis, of which the owner-occupied, private housing cooperative and rental markets form the basis.

3.3 Migration Policy

In order to allow for an effective analysis of the asset classes mentioned above, along with owner-occupied housing, some further context must be given to key migration policy, as well as econometric issues.

3.3.1 Refugee Placement Policy

In Section 2.1.1 of Chapter 2, the issue of estimation issues and endogeneity were highlighted. Further sources of endogeneity are also present in the Swedish context. This includes, for instance, the fact that many refugees (and some other migrants) are not able to (at least initially) choose their own housing location, and are not placed randomly. Refugee allocation for the year 2015, as a proportion of the total population, is displayed in Figure 3.5.

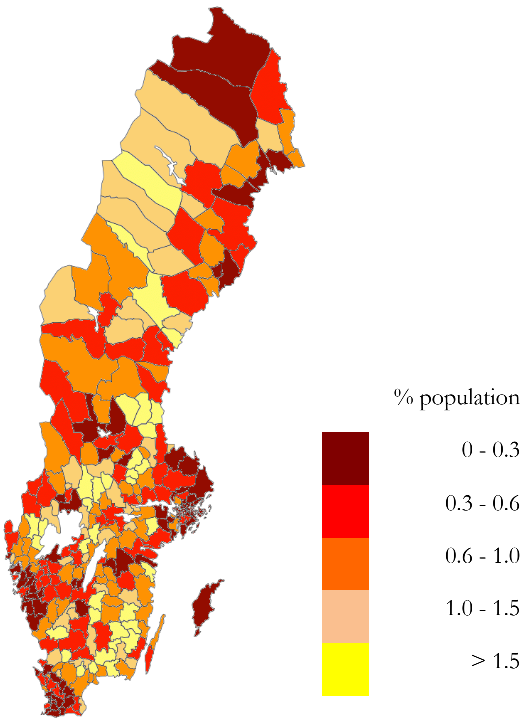

Figure 3.5: Refugee allocation in 2015. Source of data: Migrationsverket, 2016.

Figure 3.5 shows that the major city areas, and larger urban areas generally, accept fewer refugees than other areas, as a percentage of their population. Indeed, many rural areas, as well as some smaller urban areas, have taken much larger proportions. Despite the absolute numbers of refugees being lower than in major cities, this could indicate stronger impacts of refugees on the local community and labour market, as well as the housing market, in such areas. Moreover, although the distribution of refugees to municipalities is not random (since many are assigned to low-density areas), there is no bias in the types of refugees assigned to each location (e.g. in terms of their origin or education level).

With regards to housing, the official government policy is for refugees who cannot afford their own housing (approximately 60-80% of the annual inflow, depending on the year) to be placed where educational and labour market opportunities are present (Parliament, 2010; Parliament, 2016). In practice, they are instead often placed where housing is most readily available, which would introduce endogeneity, (Edin et al., 2003; Åslund, 2005; Wennström and Öner, 2015; Östh et al., 2018), or seemingly randomly, taking the form of a natural experiment (Edin et al., 2003; Damm, 2009; Åslund et al., 2011; Dahlberg et al., 2012; Damm, 2014). Indeed, Wennström and Öner (2015) show, using location quotients, that this typically results in refugees being placed in areas where unemployment is highest, labour market opportunities are limited, and where the change in the demographic and social composition of the population is high. This has led to an increase in segregation, with municipalities where the Migration Board does not have much housing, or where housing is too expensive for refugees to afford, having taken close to no refugees at all. Meanwhile, other municipalities, often in already marginalised or peripheral areas (such as some previously marginalized major city suburbs, or rural, isolated regions) have taken in a larger share of refugees (see Figure 3.5). Indeed, the Swedish government's refugee placement policy changed substantially towards the end of the refugee crisis, in a de-facto relaxation of rules, allowing refugees to be able to choose their residential location within Sweden rather than being assigned to one by the government, if they have the means and/or ability to locate their own housing (Parliament, 2010; Parliament, 2016). Though this has increased the percentage of refugees living in owner-occupied housing somewhat on arrival, as most refugees are unable to afford their own housing, between 60-80% continue to rely on housing provided by the government (Migrationsverket, 2016).

If the placement of refugees and migrants could be assumed to be quasi-random or a natural experiment, then the issue of endogeneity would be more limited. However, the evidence presented through legislation, policy, and literature above underlines that placement policy is a potential source of endogeneity. In particular, it is likely that the reverse impact of house prices on migration is negative (since refugees are dispersed to low house-price areas), so that impacts of migration are likely to be biased downwards, or, in other words, are an under-estimate of the true effect. Indeed, Gehrsitz and Ungerer (2016), find that in Germany, where a similar dispersal policy is used, the impact of refugees on the local economy is typically underestimated. Further, though refugee placement policy likely would constitute a strong instrument if the above assumptions are satisfied, it would only apply to refugee migration, while this thesis considers a wider range of migration types. Indeed, a further source of endogeneity, namely other migrants self-selecting into regions with the best labour market opportunities, is a common concern in the literature, and this and other potential sources of endogeneity are instead addressed in this study through using Instrumental Variables (IV) as discussed in Section 2.1 of Chapter 2, as well as Section 4.3 of Chapter 4.

3.3.2 Other Migration Trends

This thesis does not solely focus on refugee migration to Sweden, but instead looks at migration trends in Sweden more broadly. As a result (and as discussed in section 2.1.3 of Chapter 2), it is important to also touch on the entire range of migration flows coming into Sweden, as well as how the motivations and differing natures of different migrant groups are likely to influence migrants' ultimate impact on the housing market.

Generally speaking, labour, lifestyle or cultural migrants from richer countries (or within a country) are more likely to live in a higher quality of housing, and perhaps impact certain segments of the housing market to a larger degree than e.g. refugees, who are often instead placed into rental housing by the government (Brochmann and Hagelund, 2012). Refugees (and later, their families) who elect not to be placed into such housing may make use of network effects and choose to live with their families, creating crowding effects, and thus potentially lowering their relative impact per capita on housing markets (as refugees take less housing units per refugee). This difference in impact is also clearly affected by richer migrants' higher propensity to spend and consume housing. Labour migrants from poorer countries are most likely to lie somewhere in the middle – perhaps impacting the housing market more in less affluent areas, although still in major cities. Indeed, labour migrants generally may have a disproportionate impact on major cities when compared to refugees, who, in the Swedish case, will often be allocated to strategic municipalities by the government (through policy discussed in Section 3.3.1), where there is available housing, though not necessarily in urban environments (Wennström and Öner, 2015). Length of stay in housing, however, may be longer for refugees, owing to their intent to permanently settle in Sweden, which may not be shared by labour migrants – although equally, refugees' desire to move away from allocated housing, to other settings, may impact this (Migrationsverket, 2016). In general, these trends mean that a larger impact of labour migrants on the housing market would be expected overall in Sweden. This is particularly true for labour migrants from affluent countries, and especially in major cities and smaller urban areas, while refugees are less likely to have as strong an impact in those areas. However, the relatively larger scale of inflows of refugee migrants, and labour migrants from less affluent countries, as compared to labour migrants from more affluent countries, may impact these trends and result in some unexpected findings.

Indeed, beyond the above, the alternative markets being discussed in this thesis are likely to be disproportionately popular among the relatively less wealthy migrants, owing to the relative prices of housing on these markets when compared to owner-occupied markets. Barring inner city cooperative housing in major cities, private housing cooperatives are generally likely to constitute proportionally cheaper housing than owner-occupied housing. Although on a per square meter basis, private housing cooperatives are approximately 35% more expensive than owner-occupied housing, if inner city housing in key regions are removed and controlling for size, the prices reach parity or fall below owner-occupied housing (Mäklarstatistik, 2017). Naturally, owner-occupied housing is also generally larger and therefore more expensive than apartments in private housing cooperatives on the absolute level, which requires less starting capital. Further, the rental market clearly provides even more affordable alternatives, owing to the lack of required starting capital. Hence, these asset classes are generally likely to attract a different, generally less affluent class of migrant than owner-occupied housing, on average. This could serve to transform the impact on the housing market of these migrants, as the effects may be more subdued, or more pronounced in certain areas.

In this context, it is useful to also briefly note the spatial distribution of migration flows in Table 3.1.

Table 3.1: Net International and Internal Migration Figures in Key Categories (2016)

	Net international migration	Net internal migration
Large Urban Areas	19,584	-6,328
Small Urban Areas	30,854	4,372
Rural Areas	46,597	255
Stockholm	8,119	-3,185
Gothenburg	6,708	-1,888
Malmö	4,757	-1,255
Uppsala	3,030	200
Västerås	1,982	-157
Örebro	1,281	558

Source: SCB (2016)

In 2016, 377,981 native Swedes moved within the country beyond their municipality, while 292,778 foreign-born migrants made similar moves (SCB, 2017). This is despite the fact that the number of native Swedes in Sweden is approximately eight times larger than that of foreign-born migrants. Although this disregards moves within any given municipality, where Swedes make up 198,172 of migrations, and foreign-born migrants 85,565, it is clear that on both of these levels, foreign-born migrants are making proportionally more moves than native Swedes (SCB, 2017).

It is interesting to observe that foreign-born migrants, including both labour migrants and re-locating refugees, are more likely than native Swedes to move to the major cities. All three major cities in Sweden (Stockholm, Gothenburg, and Malmö) had a net inflow of foreign-born migrants and net outflow of Swedish-born migrants in 2016. In contrast, in many of the medium-sized and smaller cities or municipalities in Sweden the situation is reversed, with higher levels of internal migration relative to foreign-born migration. For instance, proportionally, and as noted in Chapter 1, a larger share of Örebro’s population gain was made up of native Swedes than foreign-born migrants when compared to the three major cities, as well as many other urban areas, in Sweden. This is likely to be partly the result of a spatial effect, with high-income households "lifestyle migrating" to smaller urban areas near the larger cities. Controlling for the effects of internal migration, some of which is exogenously driven by push-factors in the regions of origin, is therefore important in helping to identify the impact of foreign-born migration on local housing markets.

Lastly, beyond motivations, and as alluded to above (and in Section 2.1.3 of Chapter 2), it is important to also acknowledge directly that the human capital differences among migrant groups could indirectly serve to influence their motivations to migrate, and thus also their ultimate impact on the housing market. Eichholtz and Lindenthal (2014) find that in the context of domestic demand in England, human capital is a key driver of housing demand. To some degree, it could therefore also be theorized that human capital is an underlying factor influencing the scale of impact of migration on house prices, although it is unlikely to be the sole determinant of migration decisions. In order to investigate this further, Table 3.2 presents the basic characteristics found for the primary foreign migrant groups in the 2011 Swedish census (Eurostat, 2011). The migrant groups are grouped by continent, in order to enable more statistics to be viewed for each group.

Table 3.2: Migrant Group Characteristics in Sweden (2011)

Country of origin	Total population	% living in areas with population 200,000+	% with upper secondary education	% in employment	% working in skilled occupations[1]	% aged 15-64	% male
Sweden	8,055,559	21.06%	60.74%	48.36%	74.52%	61.99%	50.05%
EU	483,012	33.08%	65.29%	43.25%	69.85%	67.06%	47.08%
Europe	155,500	30.50%	68.16%	48.20%	61.51%	78.36%	45.77%
Africa	123,291	47.30%	50.11%	34.95%	64.70%	85.52%	53.12%
S. & C. Am	76,355	49.65%	72.09%	55.62%	68.70%	87.42%	48.92%
N. Am	20,943	38.29%	67.47%	41.57%	87.90%	72.09%	52.27%
Asia	474,193	42.29%	56.40%	41.22%	65.58%	86.90%	49.64%
Oceania	4,716	42.56%	70.02%	52.10%	79.38%	86.85%	64.82%

Source: Eurostat (2011)

Table 3.2 highlights the human capital differences between migrants coming from different continents. Of native Swedes, only approximately 21% live in urban areas with a population larger than 200,000. However, for all migrant groups, this percentage is larger, with the largest percentages being recorded for African and Caribbean, South or Central American migrants, at approximately 47% and 50% respectively. EU, European, and North American migrants all record percentages in the 30-40% range, suggesting that migrants from less affluent areas such as the aforementioned two regions as well as Asia, with a percentage of 42%, are more likely to find themselves in larger cities. It is also possible there is some correlation to education – as with the exception of Caribbean, South, or Central American migrants, who are the highest educated group, the two least educated groups, Africa (50%) and Asia (56%), also move most to larger conurbations. This could be a result of a more varied labour market in these larger areas, with less dependence on skills traditionally gained through education. However, it could also be a result of the demographics and preferences of migrants from the sending regions, as well as network effects.

[1] Skilled occupations are defined as managers, professionals, technicians and associate professors, clerical support workers, and service and sales workers. Excludes occupations classed as not applicable or not stated in the survey data.

In terms of employment rates, African migrants have the lowest employment rate (35%), while Caribbean, South, or Central American migrants have the highest (56%). The other groups are clustered between these, mostly in the 40-50% range. This could serve as some indication of lack of integration of African migrants, although issues with regard to a generally younger age structure of this migrant group could also explain some of the disparities in results found here. In order to counteract this issue, to some degree, it is useful also to look at the % of migrants working in skilled occupations. The highest-performing migrant groups with regard to this metric are North America and Oceania. This is not entirely unsurprising given the likely reasons for migration for migrants from countries within these regions often being primarily related to high-skilled employment. However, of migrants which are employed, European (non-EU) migrants work in the least skilled occupations, while African migrants and Asian migrants, though below the Swedish and EU average, perform considerably better. This underlines that in terms of working migrants from Asia and Africa, the disparities are not as large when compared to other migrant groups, or even to native Swedes. However, issues with regard to low employment rates, high dependency rates, education deficiency and urban clustering, particularly among the migrants from these groups that are not employed, could be contributing to integration difficulties.

The differences highlighted in the tables above underline that the differing nature of migration flows from different regions are likely to result in differing impacts on the housing market. This is owing to where migrants choose to live, and their ability to impact housing markets which is likely to vary depending on the demographics of migrant groups. The stark differences in migration trends as well as migrant groups further underlines this, as well as the necessity of studying the relation between migration and housing as societal trends.

3.4 Context and Descriptive Statistics

Building on the above introductions to the housing markets and migration policy, it is useful to consider current trends within the migration and housing fields in Sweden in some more depth. Figure 3.6 shows the primary migration flows that Sweden has experienced since 1980, by motive for migration.

Figure 3.6: Number of migrants by migration motives

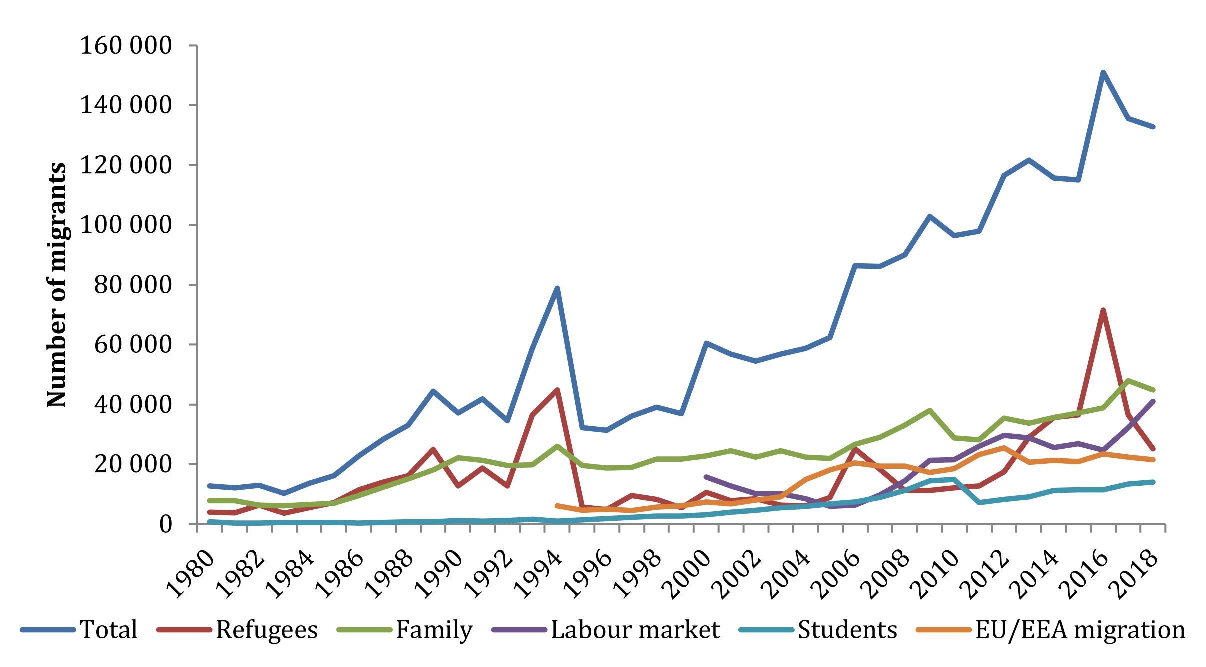

Figure 3.6: Number of migrants by migration motives. Source of data: Migrationsverket, 2016. *EU migrants are an estimate from 2014-2018 as EU migrants resident in Sweden must no longer register with authorities as of 2014.

Figure 3.6 shows that there has been a relatively steady increase in migration over time, although the sources of migration have transformed and evolved considerably throughout. It is possible to identify the influxes of migrants stemming from e.g. the Yugoslavian wars (1991-1995), the Syrian Refugee Crisis (2016), as well as transforming flows from within the European Union, and other European countries since the 1990s. Indeed, the diverging and changing trends that have taken place in relation to migration are clearly visible. As such, analysing how the impacts of different migrants with different backgrounds have changed over time, and how this varies depending on settlement location, is warranted. Sweden is a particularly good country to conduct such analysis for, owing to the mixed nature of migration flows with differing origins over time, as detailed above. Analysing these different types of migration flows should allow wider conclusions to be drawn on the impacts of different forms of migration, which will increase applicability of analysis in a global context. Potential outcomes could include the identification or development of some common patterns or trends experienced or exhibited by some particular types of migrants, or areas that exhibit certain characteristics having a particular response to specific migration flows.

The distribution of migrants and refugees across Sweden has been uneven, with migrants settling in both the fast-growing urban areas, and in peripheral and sparsely populated areas in Northern Sweden (see Figure 3.7). There are stark differences in the migration rate into different areas between 2000-2015, ranging from a 2% increase in foreign-born in Haparanda municipality, a relatively remote city on the Northern coast of Sweden close to the Finnish border, to a 57% increase in Stockholm municipality, and a 305% increase in Bjurholm municipality, a sparsely populated inland area in the northern parts of Sweden. This underlines the diversity of the migration experience in the Swedish context. Indeed, the role of local government also plays some part in the degree of migrants being admitted. Though according to official policy, migrants should be distributed in line with the government's allocation strategy, some municipalities may resist admitting certain forms of migrants during certain time periods, e.g. by going through lengthy legal processes or the like (SCB, 2019). Such endogenous policies could serve to confound the results to some degree, meaning the impacts of migration may be more limited, which must be kept in mind throughout the analysis.

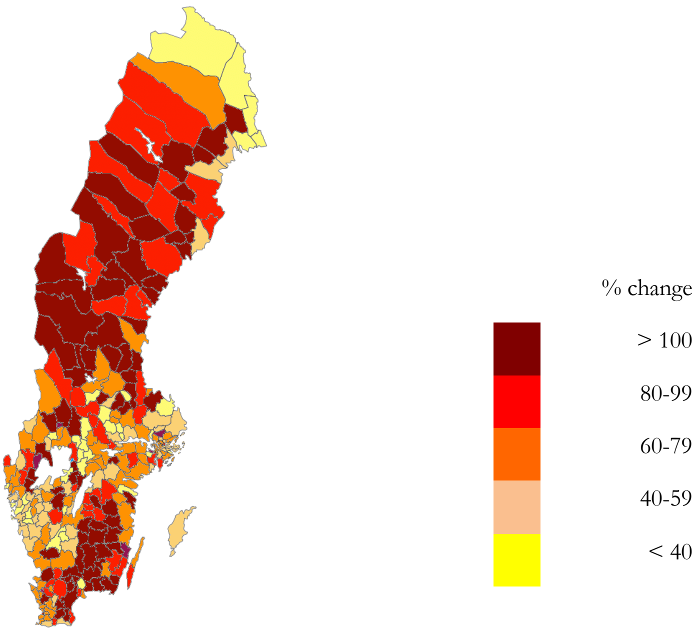

Figure 3.7: Map showing change in foreign-born in Sweden between 2000 and 2015. Source of Data: SCB, 2016.

The patterns, shown in Figure 3.7, are partly explained by government policy. As discussed in Section 3.3, significant number of refugee arrivals (between 60-80% depending on the year) do not live in their own homes, and are instead allocated housing by the government. This housing is typically in areas with greater housing availability, which are usually peripheral areas with low or declining populations. However, it is interesting to note the changing trends in refugee housing allocation and preferences. An increasing number of foreign-born (and especially refugees) are now moving into their own, privately purchased homes on arrival or soon thereafter, particularly in the urban municipalities where municipality-provided housing is otherwise lacking (Migrationsverket, 2018; also discussed in Section 3.3). This can be seen clearly in Figure 3.8, which shows the changeover 2000-2015 in the percentage of refugees who live in their own (purchased) owner-occupied home following immigration.

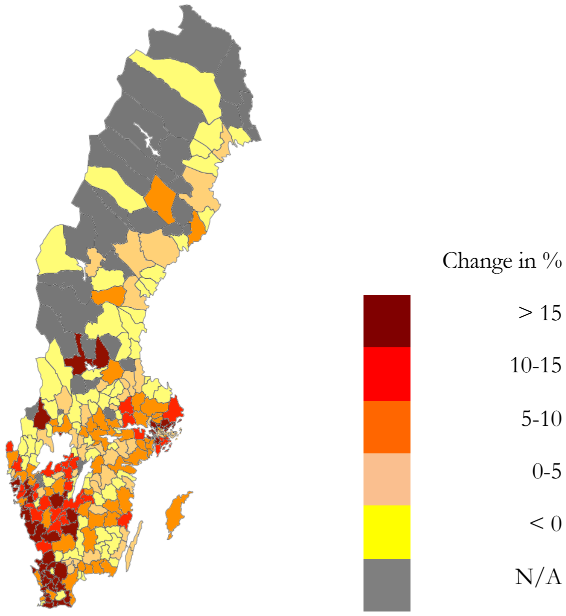

Figure 3.8: Map showing change of refugee access to owner-occupied housing between 2000 and 2015. Source of data: SCB, 2016.

These statistics underline that it is possible that refugees, and by extension, migrants in general (as seen earlier in Figure 3.6, refugees make up a large proportion of migrants, especially in recent years), are likely to be having a stronger impact on the housing market than previously. It also suggests that refugees may not be staying in the north of Sweden, even if they are allocated to those regions initially through government policy. However, data from Migrationsverket (2016) indicates that in 2016, more refugees chose to leave Stockholm county than move to it, with network effects playing the most important role in determining refugee settlement locations for refugees following their initial placement by the government. Similar trends are seen in other major cities, and while there is some evidence of refugees moving from areas with no labour market prospects to those with improved prospects, there limited evidence of the expected north-south migration of refugees, or any overreliance on major cities (SCB, 2017). This sends positive signals in terms of integration and suggests these trends are not as clear-cut as it may seem, and more analysis of e.g. network effects is needed. What is clear, however, is that the relation between migrants and housing is becoming more topical than ever, and that the study of this relation, looking at origin of migrants and beyond, is highly relevant.

Indeed, going beyond refugee migration, Figure 3.9 allows a closer look at housing trends among migrants in general.

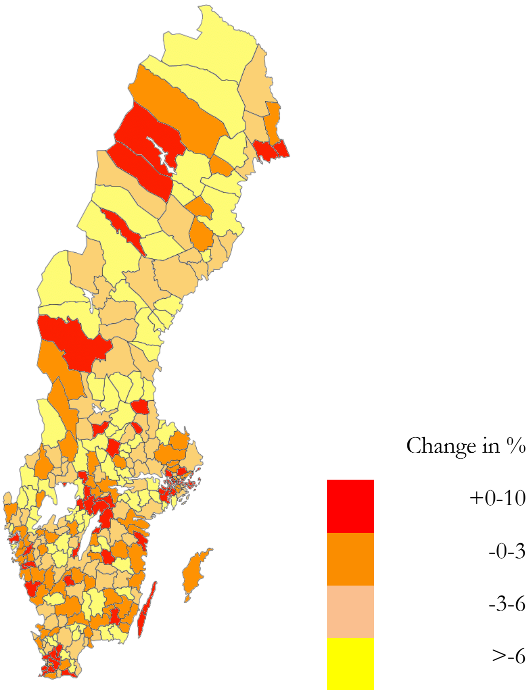

Figure 3.9: Map showing change of migrant (non-refugee) access to owner-occupied housing between 2000 and 2015. Source of data: SCB, 2016.

Figure 3.9 shows that migrant access to traditional owner-occupied homes has generally decreased in most areas over time. This further underlines the relevance of studying alternative markets in the context of this thesis, as they are becoming increasingly important and relevant as a housing solution for migrants, and thus migrants are also likely having a greater impact on alternative markets than previously.

In addition, as mentioned in Chapter 1 and earlier in Chapter 3, Sweden has also seen an interesting evolution in terms of house prices over time. Indeed, the under-supply of housing in many major cities has been chronic for a number of decades, a situation which eventually led to changes in planning and building regulations in 2011. The intention was to simplify the development process, in order to curb house price appreciation

(Andersson and Turner, 2014). Meanwhile, historic housing programmes such as the Million Programme, a large-scale home construction programme carried out in 1960-1970, which built approximately one million homes in the suburbs of major cities and urban areas, also continue to influence the housing market (Hall and Vidén, 2005; Baeten et al., 2016). Today, this is reflected in Million Programme areas generally experiencing lower house prices than other areas within major cities and urban areas (SCB, 2016), with an increased level of socio-economic residential segregation (Andersson and Kährik, 2015; Östh et al., 2018). Indeed, house prices are strikingly different in different parts of the country, and have evolved differently over the period 2000-2015. The change in median home value is summarized in Figure 3.10.

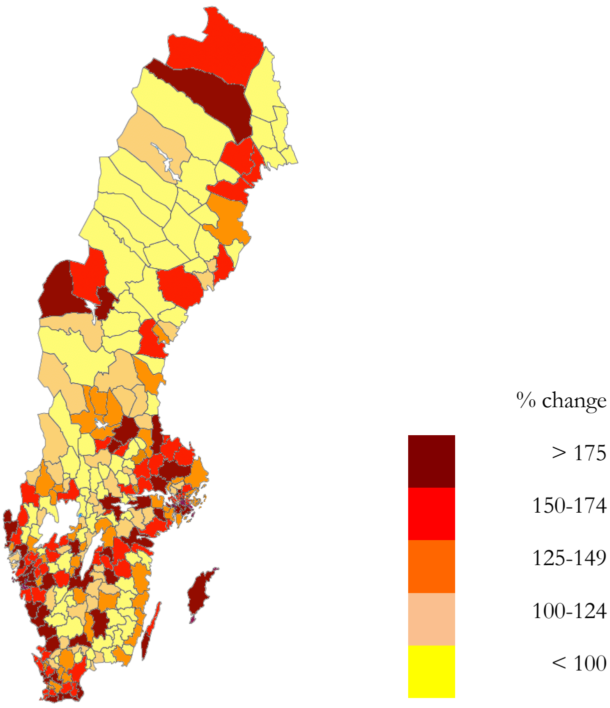

Figure 3.10: Map of Swedish house price change between 2000 and 2015. Source: SCB, 2016.

As shown in Figure 3.10, it is clear that the change in house prices has diverged significantly in different areas of the country between 2000 and 2015 – ranging from a fall of 4,000 kr in Sorsele municipality (-1%), one of the few municipalities to see a fall in prices, to a rise of 6.2m kr in Danderyd municipality (157%). Interestingly, the highest recorded percentage rise in house prices (277% or 1.3mkr) occurred in Åre, a rural area in Northern Sweden, with a successful outdoor recreation industry, and a significant migrant population.

A number of changes have also occurred on the alternative markets over the past decades, the relevance of which was highlighted by e.g. Figure 3.9, as well as Section 3.1 and 3.2. These changes have not necessarily been the same for refugees as for other migrants. The changes are displayed in further detail in figures 3.11, 3.12, 3.13 and 3.14.

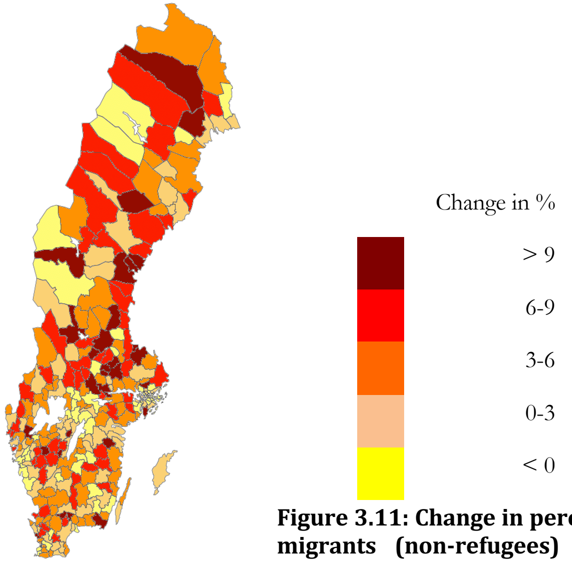

Figure 3.11: Change in percentage of migrants (non-refugees) living in rental housing between 2000 and 2015. Source of data: SCB, 2016

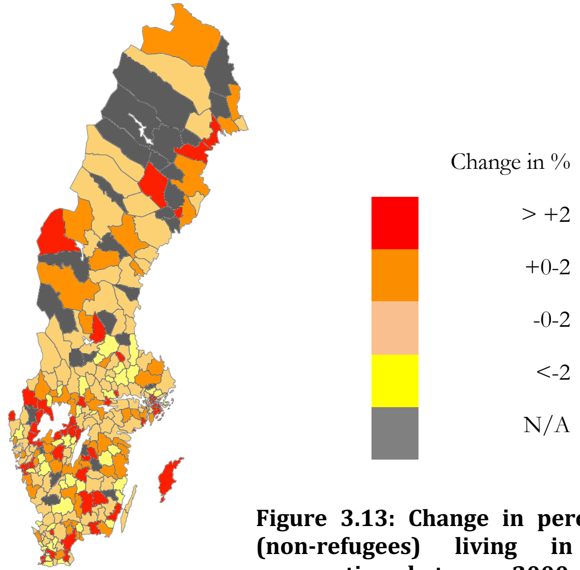

Figure 3.13: Change in percentage of migrants (non-refugees) living in private housing cooperatives between 2000 and 2015. Source of data: SCB, 2016

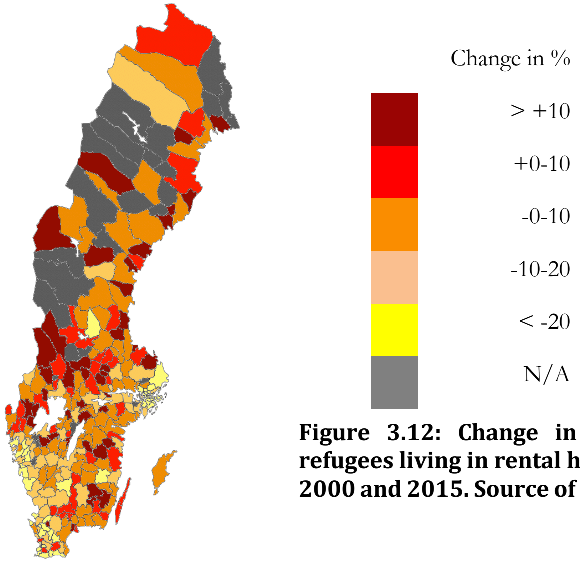

Figure 3.12: Change in percentage of refugees living in rental housing between 2000 and 2015. Source of data: SCB, 2016.

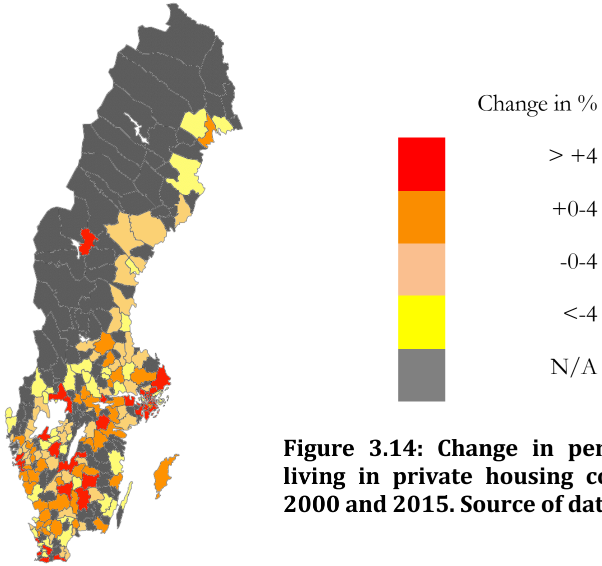

Figure 3.14: Change in percentage of refugees living in private housing cooperatives between 2000 and 2015. Source of data: SCB, 2016.

Figure 3.11 shows that in general, the amount of migrants living in rental housing has increased overall, with decreases only being observed in a select few municipalities, mainly in the major cities. This fall may result from a lack of available rental housing, and the issues that the long rental queues create in terms of availability, which in turn could result in popularity of other forms of housing.

Figure 3.12 meanwhile, highlights that the trends for refugees are quite different to migrants more generally. In Figure 3.11, it was found that for migrants generally, usage of rental housing has increased. However, for refugees, mixed trends are noted, with a fall in the major cities much like for all migrants, but also more falls on the national level. This could again be attributed to a lack of availability in some instances, though is also likely to signal a change in policy, where refugees are allocated housing in private housing cooperatives over rental housing, due to increased availability of such housing (Parliament, 2010). Indeed, it is also likely to result from the other changes in laws made in 2010, where refugees, given ability to pay, were provided with the option to choose their housing location and form of housing where possible (also discussed in Section 3.3).

Figure 3.13 shows that approximately half of all municipalities have seen an increase in migrants living in private housing cooperatives, while the other half of municipalities have seen a decrease. This is interesting, owing to the general increases in rental housing for the same group seen in Figure 3.11. This underlines the falling relevance of the owner-occupier market in the Swedish context for migrants, while alternative markets thrive (as was also highlighted in Sections 3.1 and 3.2). In terms of migrants on the private housing cooperative market, I note eight municipalities in Stockholm have seen an increase of over 10% for the studied period. This points towards the existence of regional differences in housing policy selection; with private housing cooperatives seemingly becoming particularly more popular in major cities, while rental housing has seen stronger increases in importance in other regions. It is clear that further study, attempting to determine whether impacts of migration differ on these alternative markets across different regions, is highly relevant.

Figure 3.14 shows that the change in refugees living in private housing cooperatives has, much like Figure 3.13, increased in approximately half of municipalities and fallen in the other half. Again though, rises in major cities are noted, a trend similar to that of migrants in Figure 3.13. This underlines that housing markets are under heavy pressure in major cities. The impact of some refugees choosing or feeling forced to share housing with others in a form of crowding effect likely also plays into these trends and must be kept in mind. Since the rental market in effect functions as a social net in the Swedish context (Bengtsson, 1994), this could serve as an indication that the social net is increasingly likely to be compromised, or at the very least compressed, in the future. Crowding measures to combat growing issues of homelessness and couchsurfing may have to become a reality. Beyond this, the large cost of housing refugees in private housing cooperatives in major cities (as many are unlikely to be able to afford access to e.g. the Stockholm private housing cooperative market on their own, while rental supply continues to dwindle) underlines that costs of migration policy are rising. This could create issues in terms of accessibility of housing solutions in the future, as well as impact integration more generally.

It is clear that there are significant and important linkages between migration and a range of different housing markets in the Swedish context, with interesting regional variations. These links will be investigated further, both quantitatively and qualitatively, in this PhD thesis, with the aim to identify broadly applicable trends, and contribute substantially to the literature.

3.5 Comparisons to Nordic Countries

From the previous sections, it is clear that a relationship between migration and housing in the Swedish context is highly plausible. Complementing this, both Bratu (2018) and Brekke et al. (2017) stress the impact of policy on migration flows. The latter paper finds that for the period 1985-2010, asylum flows to Sweden were reduced by 19% owing to policy changes instituted in Sweden, but increased by 84% owing to (relatively more strict) policy changes in other destination countries. This highlights that not only are policies in the target country relevant, but policies in alternative countries matter, too.

As a result, where possible, the Swedish experience of migration and housing will be compared with that which has been experienced in other, comparable contexts. In order to do this, this thesis takes the examples of Norway, Finland, and Denmark, countries that much like Sweden have not been analysed to any significant degree in this context previously. These countries all border Sweden, and are historically and institutionally the most similar countries to Sweden in the world (Brochmann and Hagelund, 2012), alongside Iceland, which will not be analysed owing to its small population size.

Despite the significant proportion of shared history and institutional background, the countries do diverge in the make-ups of their housing markets. Norway's housing market is, similarly to Sweden, segmented into three primary asset types. The primary asset type is owner-occupied housing, which functions in much the same ways as it does in Sweden. However, the rental market is regulated to a significantly lower degree than that in Sweden, and functions essentially as a free market, more akin to other European countries than to Sweden. Beyond this, most apartments are owner-occupied, and the proportion of people partaking in private housing cooperatives, although they do exist, is very small (Lujanen, 2004).

The Finnish housing market differs from both the Swedish and Norwegian housing markets, and is the least similar to Sweden in the Nordic context. Most housing, regardless of whether it is detached, terraced, or an apartment, is owner-occupied. However, there are other asset types that are relatively popular, including socially rented or state subsidised housing, known as ARAVA housing (Ruonavaara, 1996). There is also an almost identical asset to private housing cooperatives, owing in part to the country's shared histories (Berglund, 2017). Indeed, the rental market was previously also similar to the Swedish rental market, with a rental queuing system and rent controls in place; however, this system was scrapped in the 1990s in favour of a freer rental market (Forsberg and Åsell, 2000).

In terms of its housing market, Denmark is also not entirely similar to its Nordic neighbours. The owner-occupier market does, predictably, function as in most countries worldwide. The Danish market does also have a form of private housing cooperatives, similarly to Sweden. Much like in Sweden, these can have wildly ranging monthly payments, depending on the quality of housing and financial status of the housing cooperative. However, unlike in Sweden, they are not traded openly on the free market, with prices instead being based on the property value and economy of the private housing cooperative organization (Erlandsen et al., 2006). A key difference is that Denmark, in comparison to Sweden, has a much larger proportion of apartments that are also available as owner-occupier apartments, creating a dual market in terms of the apartment sector (Erlandsen et al., 2006). In terms of its rental market, Denmark also differs slightly to the other Nordic countries. Although rental levels are still by and large heavily regulated, there is more room for mobility in the rental queue, with student status as well as income playing a role (Munch and Svarer, 2001). Hence, although the rental market is not free, there is more room for negotiation than in the Swedish case.

Beyond differences on the housing market, the countries also diverge in their approaches to migration policy. This is shown in Figure 3.15 below.

Figure 3.15: Asylum Applications Per Capita (2015)

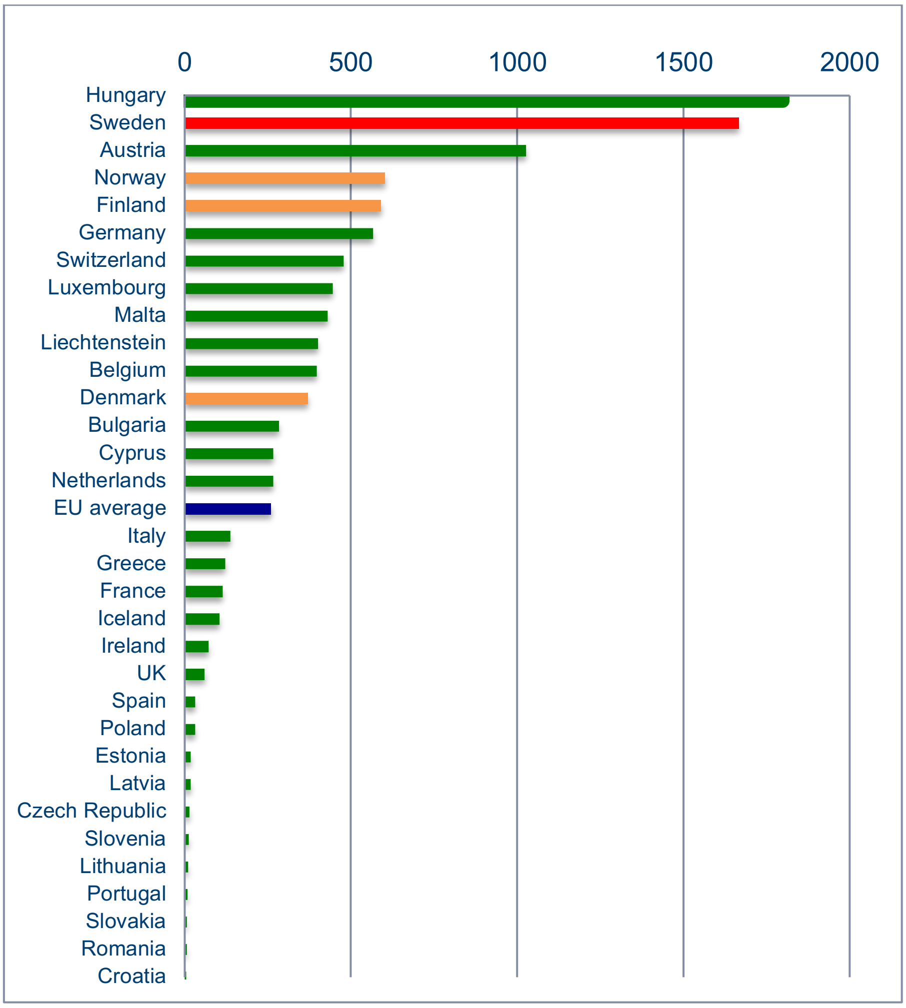

Figure 3.15: Asylum applications per 100,000 local population, 2015. Source of Data: Eurostat, 2017.

Figure 3.15 highlights Sweden's relative popularity with asylum seekers during the recent refugee crisis. Sweden received almost three times as many asylum applications per capita as Norway and Finland, and almost four times as many as Denmark. 2015 was an atypical year, but beyond this, when looking at asylum acceptances, Sweden has, in recent years, accepted an average of 70% of its asylum applicants, while Norway and Denmark have accepted closer to 60%, and Finland has accepted a markedly lower percentage (Eurostat, 2017). As such, it is clear that Sweden has taken more refugees than the other Nordic countries, although it is also clear from Figure 3.15 that all three countries outperform the EU average by some margin.

Beyond this, Norway has, on average since 1990, taken in approximately 6,000 refugees per annum, Denmark 5,000 per annum, and Finland 2,000 per annum, while Sweden has taken in approximately 18,000 refugees per annum (SSB, 2017; SCB, 2017; DST, 2017; Tilatokeskus, 2017). When adjusting for population, this means Sweden has consistently taken in approximately twice as many refugees as Norway and Denmark, and around five times as many as Finland. In terms of non-refugee migration, Sweden too has consistently received more than double the amount of migrants that Norway and Denmark have received, and triple that of Finland, when adjusted for population (SSB, 2017; SCB, 2017; DST, 2017; Tilatokeskus, 2017). Finland has historically been the least popular of the four primary Nordic countries for most migrant groups, regardless of origin, with the exception of Russia and the Baltic states (World Bank, 2017). Nevertheless, even Denmark and Norway, which are more similar to Sweden than Finland in these regards, have clearly taken markedly lower numbers of refugees and migrants per capita.

As a result of these divergences with regard to migration and housing trends, analysis of these Nordic countries should prove fruitful and insightful regarding how institutional and policy differences between otherwise similar countries affect the relationship between migration and housing in practice. This should help to inform analysis on migration and housing markets, clarifying whether certain trends seen in the Swedish case are occurring as a result of factors unique to Sweden, or whether it is common denominators, seen in many/all of the Nordic countries, causing certain impacts of migration on the housing market to manifest.

3.6 Conceptual Framework for the Swedish Context

In Chapter 2, a general conceptual framework was introduced, and a full review of the literature was conducted, allowing for the identification of clear gaps in the literature. In Chapter 3 thus far, an introduction to the Swedish and Nordic context has been provided. Before moving forward with the analysis, it is important to also highlight the key concepts and trends which are likely to come to play in this thesis more specific to the Swedish context, owing to their role in affecting the relationship between housing and migration.

These concepts, and their relationships, are broadly summarised in Figure 3.16 below (other concepts, such as demographic processes, also naturally impact both housing and migration, but the below summarizes the interrelations between migration and housing more specifically). Consideration of these concepts allows for the contribution of the PhD thesis to be further enhanced.

Figure 3.16: Summary of Conceptual Framework and Interrelations

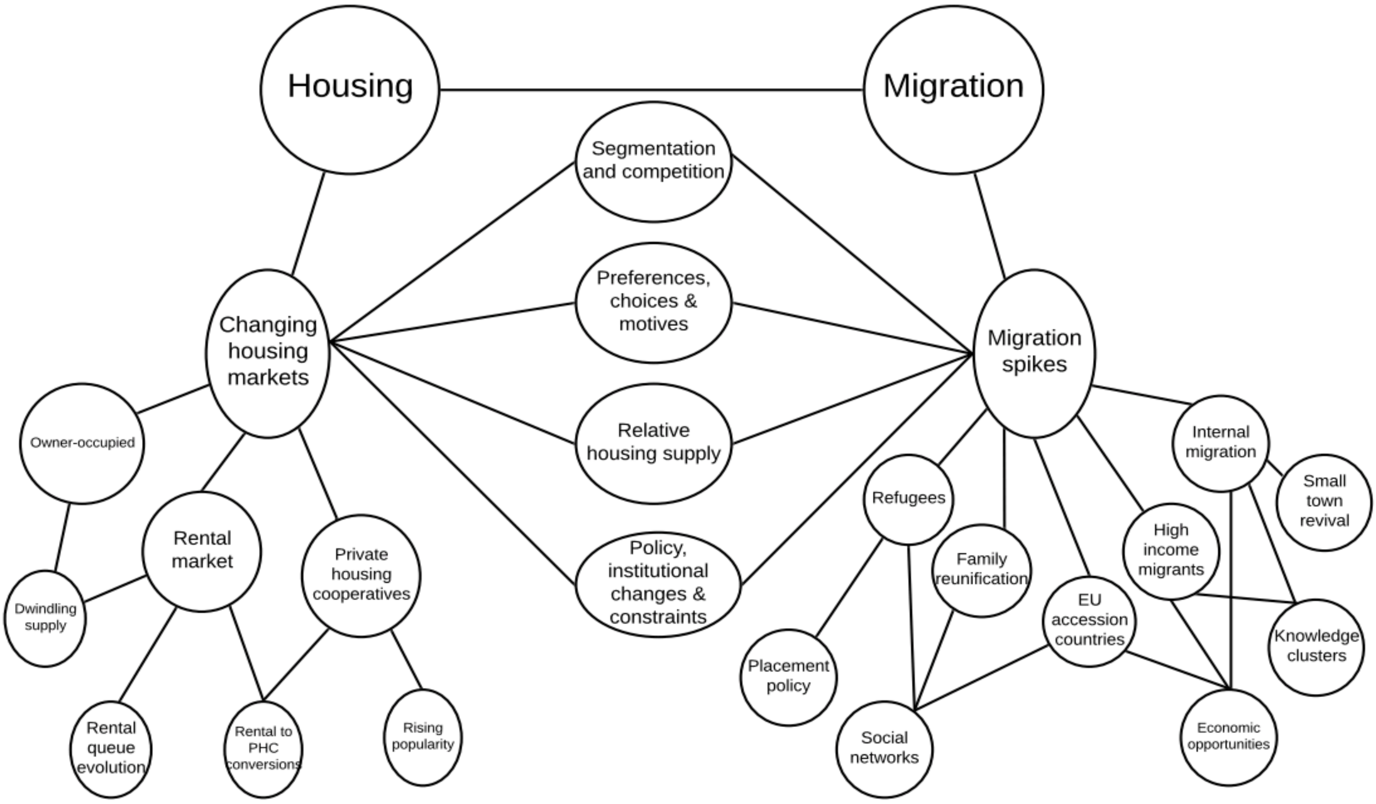

Figure 3.16: Summary of conceptual framework and interrelations.

Given the human decision-making factor inherent to any discussions of migration, it is quite natural that many of the conceptual trends centre primarily on, and influence, migration. Migration spikes (or any migration in general, but spikes are likely to produce the clearest impacts) in the form of refugees, family reunification migrants, EU migrants, high-income labour migrants from various countries as well as internal migrants have influenced and been influenced by housing policy. These spikes are generally themselves influenced by a number of concepts.

One such concept is that of economic opportunities. This can be said to particularly affect internal, high-income, labour and EU migrants, although naturally, refugees and family reunification migrants are also likely to be affected, though in a different way. This is because of the increased autonomy that the three aforementioned groups have in choosing their settlement location, compared to refugees and family reunification migrants. The latter groups are more tied to certain locations, both owing to refugee placement policy instituted by the government, but also social networks and more limited labour market opportunities and incomes dictating and influencing feasible location decisions. Indeed, in Sweden, many refugees attempt to move within the first year of residence in Sweden, but not necessarily to a major city, with between 25% and 50% (depending on the year) choosing to instead find their own housing through social networks, often migrating to where other migrants of similar origins have migrated previously, based on network effects. After 5 years, 70% of refugees live in apartment blocks with a low share of high-income residents (SCB, 2017). Further, regardless of location, it is feasible that many refugees have an indirect impact on housing markets, owing to their occupation of housing stock but lack of direct purchasing power.

In addition, the role of competition between migrant groups can also play a role here, particularly in terms of competing for labour market and housing market opportunities, resulting in the crowding out of certain groups into other locations. In most cases, refugees and family reunification migrants are the groups that one would expect to be crowded out, owing to their generally more limited purchasing power. However, government policy such as separate rental queues (discussed in Section 3.1 and 3.3), resulting primarily from pressure placed on existing institutional structures by migrant groups, as well as refugee placement policy and other initiatives can serve to shift this balance to a certain degree. Even still, as mentioned earlier, government policy often results in refugees being placed in unfavourable areas with regard to labour market opportunities (Wennström and Öner, 2015), meaning this balancing process does not appear to have been particularly widespread. Further, refugees choosing to move following placement as a result of social networks can naturally also cause this trend to be transformed or diminished to some degree, coupled with refugees often electing or being forced to live at higher densities (areas with more households per sqkm) than other competing migrant groups (Migrationsverket, 2018). This can serve to reinforce trends with regard to housing market segmentation and segregation, emphasised earlier. However, competition is naturally not only centred around migration lines, with e.g. more general competition between foreign-born migrants and young adults for the same kind of housing also occurring. Inter-internal migrant competition can also manifest, as a result of both the stimulus to the local economy that increased migration can provide, as well as the housing constraint created by refugees moving into any area. This can also result in migrants indirectly replacing the often ageing native population and causing (or, in some cases, forcing) native groups to purchase housing at higher prices, either in the same area or elsewhere. Hence, trends picked up can appear somewhat ambiguous when using only one criterion to analyse them.

Nevertheless, incidence of inter-migrant competition does have clear links to housing market segmentation. Many lower-income migrants are generally more likely to rely on rental housing than richer migrants, who tend toward owner-occupied housing, with private housing cooperative housing appealing to both groups (SCB, 2017). Nevertheless, the lowest income migrants are unlikely to be able to afford anything other than rental housing, meaning rental queue policies as well as housing reform have an abnormally large impact on these groups. This includes both separate rental queues that can benefit these groups, but also e.g. the increasing incidence of rental to private housing cooperative conversions, both where residents of completed rental housing units initiate this process, as well as in terms of decision-making in the development stage by housing developers (Andersson and Turner, 2014). This, in turn, results in rental housing becoming more concentrated to more deprived areas, and increasingly eroded in others, which can serve to reinforce economic and housing disparities. Indeed, the very nature of the differences between housing markets could also serve to influence trends. This includes other pressures being placed on the rental market, such as its progressive liberalisation. In addition, the rising popularity of private housing cooperatives among most migrant groups, as well as generally dwindling housing supply during much of the

00s and 10s (only beginning to pick up in 2016-2018) (SCB, 2018), can also serve to further sever the different parts of the housing market. This could lead to the impact of migrant groups on housing becoming more concentrated among individual housing types and divergent between groups.

Meanwhile, among higher-income labour and internal migrant groups, any such trends are still likely to be relevant, but relatively less so, owing to heightened purchasing power, as well as other concepts having a proportionally larger impact, that are less likely to impact lower income migrant groups as much. Indeed, economic opportunities and the roles of e.g. knowledge clusters in the form of technological or educational centres may play a larger role in governing migration (and housing) decisions, serving as pull factors (while the inverse serve as push factors) and can instead result in wider gentrification or other trends. For instance, a form of revival of small town or smaller urban areas has resulted partly from the establishment of clusters in e.g. Uppsala, Lund, and Örebro, as well as a number of other smaller urban areas (SCB, 2017). This has also spurred housing developers into increasing the (relative) housing supply in certain areas affected by such flows, which are often relatively upmarket, resulting in somewhat disjointed housing supply patterns. This, in turn, could lead to diminished relative impacts of higher-income and internal migration over time, although naturally, a lack of supply could also result in similar effects on the impacts of other migrant groups, too.

Further, the role of policy changes naturally also affects these dynamics. Policy incentivizing the building of housing, such as the Planning and Building Law Legislation 2011, naturally plays a role in this regard, resulting in the changing of the degree of impacts of migration on the housing market. However, a lack of control over certain migration flows (internal and EU labour migration), as well as a lack of policy changes in order to control migration flows (other labour migration, refugee migration) until very recently, is likely to result in increased impacts of migration on the housing market. Indeed, in the 2000s, significant portions of policy have been liberalised, effectively making it easier for e.g. refugees from Syria to attain permanent residence permits, while policy for EU migrants was also liberalised in the 2010s, no longer requiring registration upon moving (Migrationsverket, 2017). Further, labour migration reforms were also conducted, making it easier for employer-driver labour migration efforts to be undertaken (Migrationsverket, 2017). Hence, clearly the role of policy is not to be underestimated, and throughout much of recent history, up until recent tightening of migration policy following the refugee crisis, Sweden's migration policy has been fairly liberal. This has effectively enabled migrants to have larger and more transformative impacts on the housing market than would have occurred otherwise.

Nevertheless, the role of migrant preferences, touched upon in the theoretical framework section, must not be discounted in the degree of impact that migrants ultimately have on the housing market. Migrant choices will of course affect the degree of relative impact on the housing market, and their motives for making these choices are therefore also crucial to consider conceptually. As mentioned earlier, the role of social networks and economic opportunities, among other factors, can play a role for certain migrant groups. However, ultimately, it is difficult to fully map out the preferences of every group of migrants, as individual preferences play a major role, too, with many studies finding migration motives are often primarily non-economic and instead e.g. life course related (Thomas, 2018; Niedomysl, 2011). Although the broader trends identified above allow for some generalisation of trends, some degree of impacts will always be explained by individual preferences which are more difficult to account for, owing to their inherent dynamism. This is clearly a vital notion that must be considered in the context of the other, broader concepts identified earlier.

4. The Impact of Migration on House Prices in the Owner-Occupier Market

4.1 Introduction

This chapter focuses on the impact of migration on house prices in the owner-occupier market, perhaps the most fundamental relationship studied in this thesis.[1] This relationship will be studied by analysing the impacts of both international and internal migration, as well as a number of control variables, on house prices, through regression analysis (methodology fully outlined in section 4.2). This will allow me to determine the nature and scale of the relationship between the different forms of migration and the housing market.

In general, and in keeping with the majority of previous literature, I would expect to find positive impacts of international migration on the housing market, with an increase in the foreign-born equal to 1% of a municipality's population corresponding to roughly a 1% change in house price, or more (see Section 2.2 of Chapter 2). Nevertheless, a number of papers have found diverging effects - finding no effect, negative effects, or substantially larger positive effects - so it is clear that the results could diverge. Conceptually speaking, there are relatively few reasons as to why the Swedish findings on the overall level for owner-occupied housing would diverge substantially from those found internationally. However, the relatively wide range of migration flows which make up foreign-born migration coming to Sweden, as well as the unique structure of the housing market, could mean that the country will diverge from previous findings to a limited degree. In terms of the impacts of internal migration, the previous literature is more limited. However, on the overall level, impacts as strong as or stronger than foreign-born migration are generally expected, given the relative purchasing power of internal migrants.

[1] This chapter resembles Tyrcha and Abreu (2019), though contains a number of key additions.

Beyond this, the impacts of international migration on municipalities with different characteristics will also be explored, as well as the differential impacts of migration based on migrant origins, including internal migration. Conceptually speaking, I would expect to find that foreign-born migrants impact major cities most strongly, given that this is where labour migrants are likely to be drawn, while rural areas may also be impacted by the large numbers of refugees (see Chapter 3). In terms of internal migrants, as noted in Table 3.1 of Chapter 3, as well as in that chapter more generally, Swedish major cities have experienced negative net internal migration in a number of recent years, with spatial spillover to surrounding areas. Hence, the impacts of internal migration are instead likely to be stronger in smaller urban areas, which this group has been drawn to instead.

This chapter makes a number of key contributions to the literature. First, it analyses the relationship between migration and the owner-occupied housing market, the most previously studied form of housing market, in the Swedish context. This market (or any other market in Scandinavia) has not been studied using quantitative regression analysis on the scale studied in this chapter previously. Second, the impacts of both international and internal migration are considered. Only one study has done so previously, and that was conducted in the Chinese context (Wang et al., 2017), which given the size of the country is unlikely to be transferrable to most other countries. Third, analysis is conducted with geographical segmentation, by differentiating municipalities by their characteristics into major cities, smaller urban areas, and rural areas. This will allow me to identify the impacts of migration in specific geographical contexts. Finally, international migration will be broken down into labour migration, family reunification migration, and refugee migration, and analysed both overall and in the different geographical contexts. In this way, I will be able to pinpoint more specifically the different impacts that different forms of migrants have, with a number of broad policy implications.

4.2 Data and Methodology

4.2.1 Data Overview

The analysis is conducted at the municipality level, for which annual data on house prices, migration, and all other explanatory variables are available for the period 2000-2015. For a number of control variables intending to capture initial conditions, and to construct the shift-share instrument, data from 1984 is used, the earliest year for which the data is available. The analysis includes 284 municipalities, with six municipalities omitted due to significant changes in their boundaries during the study period. [1] The data has been obtained primarily from the Swedish Statistical Bureau (SCB) and the Migration Board (Migrationsverket).

In terms of house prices, the variable used to represent this is the log change in house prices, which is based on the house price for 1-2 family homes in each municipality and year. This means that the homes included in the house price statistics are predominantly terraced, semi-detached and detached houses, which together make up approximately 40% of total housing stock in Sweden (SCB, 2017). Some of these homes may be out of reach for certain migrants owing to their pricing, depending not only on their category but also on the municipality and neighbourhood which they are located in. However, approximately 55% of those with Swedish background live in the type of housing covered by this data, while the corresponding percentage for those with a foreign background is 40% (SCB, 2019). This indicates that these assets, although slightly more popular among those with Swedish background, are likely to be highly relevant to many forms of migrants. What should be noted, however, is that the homes covered by the data may be skewed towards slightly larger and thus also slightly older households, meaning any effects captured may be more relevant to those kinds of households than slightly younger, smaller ones. This data has been used for numerous widely cited Swedish studies in the

[1] The excluded municipalities are Bollebygd, Gnesta, Knivsta, Lekeberg, Nykvarn, and Trosa. These are mostly peripheral municipalities, and thus their omission is unlikely to have major implications on the results. All municipalities are weighted equally in the analysis. I ran robustness tests where I experimented with weighting by population, but found this had little impact on the regression results.

past, both as a dependent and control variable (Malmberg, 2010; Westlund et al., 2014; Berggren et al., 2017).

The data on house prices is collected by SCB, and builds on data taken from the Land Surveying Authority. Any market-based property purchase/sale has to be reported to the Land Surveying Authority, who then compile the data using their own register complemented with information from the property registry. Approximately 95% of all sales are registered in the data within two months of a completed sale, with final annual data being backdated to the time of sale where appropriate. Wide ranges of controls are also put into place in order to verify accuracy of the data, with e.g. any abnormally high prices or multi-property transactions being individually controlled. Statistics are published approximately five months after year-end in order to allow for these thorough checks to be undertaken (SCB, 2017).

The international migration variable, measured as the change in the number of foreign-born residents divided by the total population in the municipality, is taken from SCB (2016). The data records the number of foreign-born residents living in each municipality on 31 December of every year. In some of the models the migration variable is disaggregated by country of origin/migration motive, and data for this is taken from the Migrationsverket database. Given the significant changes from year to year in flows from different countries within the same regional groups (e.g., Asian, Latin American, or Eastern European countries), the analysis makes use of grouped data based on the following categories: refugees, family reunification migrants, and labour migrants (includes labour, EU and student migrants)[1]. Data on internal migration is also taken from SCB (2016), and captures the gross number of new Swedish-born residents originating in other municipalities. It covers Swedish-born individuals only, in order to avoid double counting of foreign-born migrants.

[1] I also ran the models using more disaggregated country of origin groups, and individual countries of origin, but the results are qualitatively similar, if less significant, than those presented in the thesis.

Control variables are mostly taken from the SCB (2016) database, and are constructed as follows: (a) income is the median annual household income in each municipality; (b) employment is the employment rate of the working age population; (c) area is the size in hectares of each municipality (d) reported crime rate is the number of crimes committed per 1,000 residents in 1984; (e) bachelor's degree is the percentage of the population aged 25-64 with a bachelor's degree in 1984; and (f) new housing stock is the annual number of new housing units of any type completed in the municipality, per 1,000 residents. The two weather variables are taken from the Swedish Meteorological and Hydrological Institute (SMHI, 2017), and refer to the average temperature and humidity levels measured in January over 1961-1990 at the weather station in closest proximity to each municipality's largest settlement.

Table 4.1: Outline of Variables

Variable	Unit	Time period
Mean house prices	Kr/sqm	2000-2015
Net foreign-born migration	Annual total	2000-2015
Net internal migration (Swedish born)	Annual total	2000-2015
Mean annual income	Kr (thousands)	2000-2015
Employment rate	% of population	2000-2015
Mean temperature	Fahrenheit (annual average)	1961-1990
Mean humidity	Mm rain (monthly average)	1961-1990
Area	Hectares	1984
Reported crime rate	Number per 1,000 residents	1984
Bachelor's degree (%)	% of population	1984
Population aged 20-64 (%)	% of population	1984
New housing stock (2015)	Units per 1,000 residents	2000-2015
Building and planning legislation	Time dummy for 2011	2011

4.2.2 Basic and Instrumental Variable Models

Building on the above sections, an empirical strategy and a methodological approach is designed for the analysis. The initial methodology used in the below calculations is inspired and adapted from Saiz (2007) as well as some of the other literature (see also Sections 2.1 and 2.2 of Chapter 2).

The initial econometric specification is the following:

$$\Delta \ln(hp)_{k,t} = \alpha + \theta \frac{\Delta f b_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \sum_{t=2}^{16} \delta_t Y_t + \sum_{c=2}^{21} \gamma_c M_c + \varepsilon_{k,t} \tag{4.1}$$

where
$\Delta ln(hp)_{k,t}$ is the change in natural log of house prices in location k between t-1 and t
$\Delta f b_{k,t}$ is the change in the foreign-born population in location k between t-1 and t
$p_{k,t-1}$ is the total population in location k at time t-1
$X_{k,t}$ is a set of socio-economic characteristics of location k and time t, which here includes real income per household, the employment rate
W_k is a set of initial characteristics of location k, which here includes the reported crime in 1984 per 1,000 residents, a temperature average from 1961-1990, average humidity from 1961-1990, the % of population with a bachelor's degree in 1984 per 10,000 inhabitants, and area
Y is years from 2000 to 2015 t=2,...,16
M is regions (counties), c=2,...,21
and ε is the error term.

An OLS estimate of Equation 4.1 will be carried out first. However, following Saiz (2007) and the empirical framework (Sections 2.1 and 2.2 of Chapter 2), most authors have also used an instrumental variables (IV) approach, in order to overcome the problem of endogeneity, discussed in Section 2.1.1 of Chapter 2. In many cases, their results have differed slightly from those obtained using OLS, and thus, this is an appropriate approach here, too. Although other IV approaches have been used in the literature by e.g. Gonzalez and Ortega (2012) and Kürschner (2016), none seem as appropriate to the Swedish scenario as the shift-share approach.

As mentioned earlier, this instrument relies on using past immigrant settlement patterns as instruments for current immigration trends. The 'shift share' instrument used by Saiz (2007) is composed of the proportion of all US immigrants settling in each city in a year prior to the period of study, and the growth in total US immigration over time. Given that past immigration trends are likely to continue and influence future migration trends and settlement patterns, this instrument is highly correlated with current immigration flows into each city, but will not directly affect house prices, except via its indirect effect on immigration. Hence, it functions as a strong instrument, owing to its strong correlation with the independent instrumented variable, but lack of correlation with the dependent variable. Åslund (2005) suggests the instrument is likely to be relevant to the Swedish context, as previous foreign location decisions do affect migrant settlement decisions in Sweden to a high degree.

The instrument that will be used is thus a version of the 'shift share' instrument, adapted to the Swedish context:

$$\Delta fb_{kt} = \sum \Delta fb_{Sweden,t} * \frac{fb_{k,1984}}{fb_{Sweden,1984}} \tag{4.2}$$

where $\Delta fb_{Sweden,t}$ is the change in the foreign-born in Sweden between t-1 and t, $fb_{k,1984}$ is the number of foreign-born in a given municipality in 1984, and $fb_{Sweden,1984}$ is the total number of foreign-born in Sweden in 1984.

The shift-share instrument approach outlined above relies on a couple of important assumptions. First, there must be no further dynamic adjustment effects resulting from past migration flows beyond the short-run period covered in the analysis. This assumption would be violated if, for instance, the adjustment of the housing market to migration demand shock persists beyond the initial period. This issue was highlighted by Jaeger et al. (2018), who critique the traditional shift-share approach, and propose the inclusion of lagged migration flows and corresponding lagged shift-share instruments into the model (discussed in more detail in Section 4.2.6). However, this also requires that there is enough variation in mix of migrants by country of origin arriving in each period considered in the model. As noted in the descriptive analysis in Chapter 3, this condition is amply satisfied in the case of Sweden.

Second, the shift-share instruments relies on the "ethnic enclave" assumption, that is, that new migrants choose to locate in areas with significant concentrations of migrants from the same country of origin. As a corollary, there must also be significant variation in the preferred locations of migrants from different countries of origin, rather than high concentrations for all countries of origin in the same places (such as in the largest cities). This requirement is again satisfied in the case of Sweden, with the share of migrants located in Stockholm ranging from 56% for migrants from Chile, 44% for migrants from Poland, and 40% for those from Australia, to 20% for migrants from Eritrea, 19% for those from Norway, and 12% for those from Somalia (SCB, 2017). Although the instrument is not relevant to all refugee migration flows, some refugees are able to choose their own housing location, while others are placed randomly or according to unknown government criteria. Further, Figure 3.6 showed that refugees only constitute between 5 and 30% of all international migration flows in any given year in the studied period (SCB, 2018). This means the instrument is likely to be relevant to international migration more broadly.

I also follow Saiz (2007) in estimating the model using a Fixed Effects (FE) estimator, with both location- and time-period specific effects, in order to control for any remaining variation in the housing market across locations. In addition, and to allow for comparability to previous studies, I estimate the model in Equation (4.1) using an Autoregressive Moving Average (ARMA 2,2) model to address the possible presence of autocorrelation and moving averages in the error term.

4.2.3 Adjusted Model

In a second step, I adjust the model in Equation 4.1 by adding and removing a few variables of interest, to reflect the specificities of the Swedish context, and control for internal migration. Specifically, having considered the conceptual framework for the

Swedish context (Section 3.5 of Chapter 3), cross-municipal internal migration and a couple of supply-side variables (housing stock availability, and planning and building restrictions) are included. An age variable is also included to control for demographic factors[1]. Although some of these variables slightly increase the risk of endogeneity manifesting, on balance, the risk of excluding them and missing out on or misunderstanding key effects is deemed to be higher.

As a result, the adjusted model takes the following form:

$$\Delta\ln(hp)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \sum_{t=2}^{16} \delta_t Y_t + \varepsilon_{k,t} \tag{4.3}$$

where
$\Delta ln(hp)_{k,t}$ is the natural log of house prices in location *k* between *t*-1 and *t*
$\Delta fb_{k,t}$ is the change in the foreign-born population in location *k* between *t*-1 and *t*
$\Delta im_{k,t}$ is the change in internal migration in location *k* between *t*-1 and *t*,
$p_{k,t-1}$ is the total population in location *k* and time *t*-1
$X_{k,t}$ is a set of socio-economic characteristics of location *k* and time *t,* which here includes real income per household and the employment rate
W_k is a set of initial characteristics of location *k*, which here includes the reported crime in 1984 per 1,000 residents, a temperature average from 1961-1990, the % of population with a bachelor's degree in 1984 per 10,000 inhabitants, and the percentage of the population aged 20-64 in 1984
$S_{k,t}$ is a set of supply-side characteristics of location *k* and time *t*, which here includes new housing stock that becomes available in every year per 1,000 residents (a supply-side variable), and a dummy variable accounting for the differing impacts of new Planning and Building Legislation that took effect in 2011
Y is years from 2000 to 2015 *t*=2,...,16
and ε is the error term.

The adjusted model differs from the basic model further, as there are a number of variables included in the basic model that are found not to be relevant to the Swedish

[1] A number of different variations of control variables were tested to account for demographics, and ultimately, the % of the population aged 20-64 appeared most appropriate, in line with much of the previous literature.

context (see Section 4.3). These variables are the humidity, crime, and area variables, as well as region fixed effects. Time lags are also adjusted to mirror most of the other literature since Saiz (2007). The model devised is analysed in similar ways to the initial model, and is also applied to the regional and origin-based analysis.

Further, the primary criticism of the shift-share IV approach has been the necessity for independent variation in the two periods with regard to the origin of migrants. Jaeger et al. (2018) highlight that in the US, such variation is unlikely. However, as highlighted earlier, Sweden has seen large shifts in the origin of migrants, with considerable variation from year-to-year, and less stable inflows when compared to the US.[1] As a result, adjusting the instrument, akin to Jaeger et al. (2018), to include a "weighted average of the national inflow rates from each country of origin," constitutes a logical course of action here too. Hence, the adjusted instrument, and shift-share instruments in general, are a better fit for Sweden than many other countries.

The final instrument takes the following form:

$$\Delta fb_{k,t} = \sum \Delta fb_{Sweden,t,o} * \frac{fb_{k,1984}}{fb_{Sweden,1984}} \tag{4.4}$$

with notation as previously and where o=2,…,23 indicates the country of origin.

The internal migration variable suffers from a similar endogeneity bias problem as the international migration variable[2], potentially accentuated by the proximity of the destinations to the origins, leading to quicker reactions of migration flows to changes in the economic characteristics of the destination regions. The logic is that past native migration decisions are likely to also influence current native migration through similar network effects (Gurak and Caces, 1992; Haug, 2008; Manchin and Orazbayev, 2018).

[1] Further, the variance in first choice destination between groups of migrants is also significant, with a spread as large as 40% between the lowest percentage and highest percentage of migrants, within certain migrant groups, choosing to go to Stockholm as their first destination.

[2] Wu-Hausman and Durbin-Wu-Hausman f and chi-sq tests were performed, returning coefficients below 0.05, with the null hypothesis of regressors consequently being exogenous being rejected, necessitating the instrumentation of these variables. Cragg-Donald (coefficient of 27.955) and Kleibergen-Paap (coefficient of 34..640, p-value below 0.05) statistics were run to prove that the instruments used work well. Full results as well as all first stage and reduced form regressions available on request.

However, just as with international migration, internal migration flows are also at least partly driven by localised supply shocks in the regions of origin, allowing the model to be identified.[1] Indeed, a number of exogenous factors, such as establishing/relocating companies, changes to local income tax rates, changing cultural or social amenities or conditions could serve to influence the likelihood of internal (and international) migrations occurring. This exogenous push effect, in conjunction with network effects, help to ensure identification for the internal migration variable. This approach has been applied in this manner in previous literature (Wang et al., 2017). In addition, previous research has found that just-identified models are usually unbiased, even if instruments used are weak (Angrist and Pischke, 2009). In order for this instrument to work, and to avoid a zero-sum game (as net internal migration in Sweden as a whole would be zero), the net internal migration to all municipalities is not looked at, but instead only the increases in population stemming from internal migration (i.e. the inflows). The instrument takes the following form:

$$\Delta im\ inflow_{k,t} = \sum \Delta\, im\ inflow_{Sweden,t} * \frac{im\ inflow_{k,1984}}{im\ inflow_{Sweden,1984}} \tag{4.5}$$

where notation is as previously, and $im\ inflow$ refers to only incoming migration, to avoid a zero-sum game.

By using the instrumental variable approach in equation 4.5 as well as that in equation 4.4, the model accounts for endogeneity in the migration variables. The same range of techniques will be applied as for the basic model. Nevertheless, it is important to caveat that the uses of these instruments cannot account for all instances of e.g. omitted variable bias of an unknown nature, spillover effects and the like. Hence, coefficients could still be biased, even when taking a robust instrumental variable approach. In order to reduce the

[1] There is only a weak correlation between the destination choices of international and internal migrants, with the correlation coefficient between the two migration variables equal to 0.24. VIF scores were also below 5, indicating limited multicollinearity. A number of other variables, such as natural population growth and interaction effects, were also considered for inclusion, but owing to insignificant impacts were ultimately not included in the adjusted model.

likelihood of this, and as a robustness check, an additional control regression will also be run where the municipalities are grouped into local travel areas, which reduces the sample size from 284 to 70. Although explicit tests for heteroscedasticity and autocorrelation will be run for the municipal regressions, taking this approach also allows to check for spatial autocorrelation. This could otherwise constitute a problem in larger metropolitan areas, where people regularly sleep in one municipality and work in another, and where high income households may leave the large city migrate to surrounding municipalities for lifestyle purposes. This could potentially have an impact on coefficients obtained when running analysis solely on the municipal level.

4.2.4 Regional Analysis

In the next step, I disentangle the effects of migration on housing further by considering differential impacts across different types of municipalities. In order to estimate these differential effects, I estimate the model separately for all urban municipalities (86 municipalities), major cities (44 municipalities), small urban municipalities (42 municipalities), and rural areas (198 municipalities.

This allows for fuller consideration and understanding of region effects, as well as analysis of regional trends, where impacts of a change in foreign-born and internal migration could differ across municipalities with different characteristics. Figure 4.1 visualizes the above.

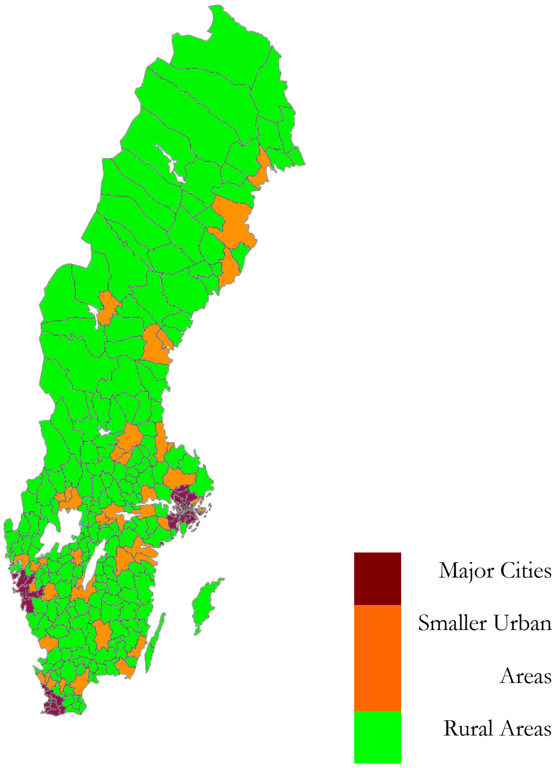

Figure 4.1: Analysis by municipal characteristics.

In this context, it is worth noting that a demand shock, such as that triggered by an influx of migrants (regardless of origin), should trigger an appropriate supply response, bringing prices back to equilibrium. Hence, in the very long run, it is unlikely that impacts of migration are likely to stay the same. The role of supply constraints as well as the relative strength of demand is primarily what should determine when prices rise back to equilibrium, and thus the intersection between these two measures is crucial in determining this. Supply constraints should be weakest in rural areas and strongest in major cities, and thus, one would expect a quicker return to equilibrium in rural areas than in urbanised ones. However, the aforementioned strength of demand as well as the role of planning constraints, the willingness and ability of housing developers to develop in certain areas and a range of other factors could serve to complicate this relationship. Thus, it is difficult to definitively state where migration coefficients are likely to change the quickest.

Further, analysis in this thesis was also conducted on the regional level, contrasting different geographic regions and accounting for regional differences, with the regions of

Götaland, Svealand, and Norrland forming the basis of analysis. However, owing to a relative lack of interesting results and space constraints, this analysis has been removed, instead making room for other forms of analysis, more likely to be relevant both conceptually and in an international context. Nevertheless, a brief outline of this analysis, as well as its results, is shown in Appendix 4.1.

4.2.5 Migration Motives Analysis

Beyond the above, analysis will also be conducted, both overall and on the regional scales, for the impact of foreign-born with different reasons for migration. The importance of migrant flow composition and the differential effects of different types of migrants has been highlighted in the literature, but as of yet there has been relatively little empirical evidence in the context of the housing market, with Saiz and Wachter (2011) and Adams and Blickle (2018) being notable exceptions. Any differential impacts found between different migrants could also serve to inform important policy decisions, in terms of both housing and integration policy.

As a result, refugee migrants, family reunification migrants, and labour migrants will be run as three separate groups in this analysis. Labour migrants are those who are granted employment-related visas, and are likely to be both highly-skilled and wealthier than other groups of migrants. Refugee migrants to Sweden tend to be younger and less skilled than labour migrants, with family reunification migrants falling somewhere in between (as a mix of family members of both labour and refugee migrants, though mostly the latter). Analysing these groups is likely to be relevant to most countries worldwide, and thus ensures that this study is applicable in multiple contexts. The IV approach specified in Section 4.2.3 will also be adjusted to reflect these classifications.

By looking at the impacts of migration segmented by their reason for migration, and comparing these with one another and with Swedish-born migration, it is possible to identify how different groups interact with the rental market. This could highlight impacts both in terms of e.g. housing and integration policy, while also allowing for a wider emphasis on the many different dimensions of migration that can potentially impact a housing market in different ways. Rather than treating migrants as homogenous, understanding the heterogeneity in impacts, and moving away from a focus on explicitly homogenous foreign-born migration, could thus allow for interesting conclusions.

4.2.6. Medium and long-run effects

One of the weaknesses of the shift-share approach is that it conflates the short and long-term responses to the migration shock (Jaeger et al., 2018), and that the resulting estimates are unlikely to correctly identify causal short-run effects, particularly if the distribution of migration flows across regions is relatively stable over time. If that is the case, the error term includes indirect effects due to ongoing responses of the housing market to demand shocks resulting from previous waves of migrants. A possible solution is to include several lags of the migration change variable, with the corresponding shift-share instruments. Given the complexity of applying this approach to the modelling of yearly migration shocks, I follow Jaeger et al. (2018) in using longer time periods, in the form of five-year averages. The model then becomes:

$$\Delta ln(hp)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta fb_{k,t-1}}{p_{k,t-2}} + \theta_3 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \theta_4 \frac{\Delta im_{k,t-1}}{p_{k,t-2}} + +\gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \sum_{t=2}^{16} \delta_t Y_t + \varepsilon_{k,t} \quad (4.6)$$

with the following shift-share instruments:

$$\Delta fb_{k,t} = \sum \Delta fb_{Sweden,t,o} * \frac{fb_{k,1984}}{fb_{Sweden,1984}} \quad (4.7)$$

$$\Delta fb_{k,t-1} = \sum \Delta fb_{Sweden,t-1,o} * \frac{fb_{k,1984}}{fb_{Sweden,1984}} \quad (4.8)$$

$$\Delta im\ inflow_{k,t} = \sum \Delta\, im\ inflow_{Sweden,t} * \frac{im\ inflow_{k,1984}}{im\ inflow_{Sweden,1984}} \quad (4.9)$$

$$\Delta im\ inflow_{k,t-1} = \sum \Delta\, im\ inflow_{Sweden,t-1} * \frac{im\ inflow_{k,1984}}{im\ inflow_{Sweden,1984}} \quad (4.10)$$

Results for this model are displayed in Appendix 4.2.

4.2.7 Comparisons to other Nordic countries

As a robustness check, as outlined in Section 3.5 of Chapter 3, comparisons to other Nordic countries are also provided. The methodology and results are available in Appendix 4.3.

4.3 Results

4.3.1 Initial Results

I begin by running the model specified in Section 4.2.2, using the same basic econometric model as that proposed by Saiz (2007), in order to allow for full comparability of the results. A summary of the variables included in the analysis is shown in Table 4.2.

Table 4.2: Descriptive Statistics

Variable	Mean	Std. Dev.	Min	Max
House Price (2015) ('000 kr)	1,810	1,484	307	10,182
Migrant Population (2015)	5,878	17,067	244	218,324
Population (2015)	34,454	70,693	2,453	923,516
Income (2015) ('000 kr p.a.)	237	25	189	323
Employment (2015)	16,548	36,139	1,108	491051
Reported Crimes (1984)	8,246	3,863	2,110	48822
Temperature (avg. 1961-1990 in F)	24	6.5	1	33
Humidity (avg. 1961-1990) (mm)	52	10.6	28	89
Area (hectares)	143,816	3,676	871	1,937,112
Bachelor's Degree (%, 1984)	3.6%	1.95%	1.59%	17.07%
Population aged 20-64 (1984)	0.628	0.061	0.511	0.697

The first set of results in Table 4.3 shows the estimation results for the model in Equation 4.1, for all 284 municipalities, over the period 2000-2015.

Table 4.3: OLS and IV Model Showing the Relationship Between Foreign-Born Migration and Owner-Occupied House Prices

Dependent Variable: ΔLog Owner-Occupied Price	*OLS*	*IV*	*Fixed Effects*	*ARMA (2,2)*
ΔForeign-born$_{t-1}$/Population$_{t-2}$	0.713***	1.244***	0.693***	0.624***
	(0.259)	(0.435)	(0.250)	(0.178)
Log income$_{t-1}$	0.079***	0.089***	0.131	0.106***
	(0.030)	(0.033)	(0.078)	(0.040)
Employment$_{t-1}$	0.032***	0.034**	0.035***	0.030***
	(0.011)	(0.013)	(0.015)	(0.011)
Log January temperature	0.011*	0.010*		0.001**
	(0.006)	(0.006)		(0.001)
Log July humidity	-0.006	-0.005		-0.006
	(0.009)	(0.008)		(0.008)
Log area	0.003	-0.001		0.002
	(0.002)	(0.001)		(0.002)
Reported crime rate (1984)	0.008	0.009		0.009
	(0.006)	(0.006)		(0.005)
Bachelor's degree (%, 1984)	0.247***	0.220***		0.230**
	(0.085)	(0.072)		(0.107)
Year fixed effects	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes
F-test statistic (for instrument)		31.043		
Observations	4544	4544	4544	4544
R-Squared	0.092	0.092	0.074	

Notes: Analysis of 284 Swedish municipalities between 2000 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Table 4.3 shows that the migration variable is positively associated with the change in house prices, and that the effect is highly significant. This indicates that there is a positive association between migration and house prices, after controlling for other variables likely to affect the housing market. Further, house prices are positively associated with employment, income, and the education level of the municipality, with amenities such as the weather and the local crime rate playing only a small or insignificant role. A foreign-born increase equal to 1% of the municipality's population is shown to correspond to a 0.71% increase in house prices. However, the IV results in the second column of Table 4.3

show that controlling for possible endogeneity results in a higher estimate of 1.24%, suggesting that the OLS results are under-estimates. The effect sizes estimated using OLS are thus a lower bound of the real (unbiased) coefficients, which is also a conceptually sound finding, as higher house prices should theoretically discourage migration (Meen, 2012). Although still a problem, this means the problem of endogeneity can be considered relatively less impactful than if the opposite had been found. These results are broadly confirmed further using the FE and ARMA regressions, which correct for local specificities and auto-regressive processes, with coefficients falling only slightly[1]. This indicates the likelihood of omitted variable bias impacting the results adversely is relatively limited, although the insignificance of the income variable in the FE model is noteworthy. This is likely a result of the fixed effects picking up non-cognitive skills such as ability, ambition, preferences or otherwise, which are not being picked up by the regressions.

The IV estimates are higher than the OLS estimates because the latter are affected by negative simultaneity bias, since higher house prices deter migrants, all other things being equal. The OLS estimates capture not just the positive effect of migration on house prices, but also the negative effect of house prices on migration. Generally, it is clear that the results are broadly consistent with those of Saiz (2007)[1,2], and in the meta-analysis presented by e.g. Cochrane and Poot (2019), which also underlines the applicability of this study worldwide. The insignificance of a number of control variables, including the crime rate, humidity, and municipality area, confirms the necessity of adjusting the model to the Swedish context. Therefore, I next move on to the estimation results based on the adjusted model (Equation 4.3). The IV results are shown in Table 4.4.[3,4]

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[1] Further OLS and IV results including additional municipality-level analysis are shown in Appendix 4.4.

[2] When running foreign-born migration and internal migration separately, in both OLS and IV regressions, the coefficients found are also very similar in size and significance to those presented here.

[3] OLS, Fixed Effects and ARMA results are presented in Appendix 4.5.

[4] Appendix 4.6 shows the first stage of the estimation. In the first stage, foreign-born immigration levels are regressed on a single instrument, and internal immigration levels on a second instrument. The control variables in Table 4.4 are also included. Both instruments appear to work well, with a robustness check producing a Cragg-Donald Wald F statistic of 14.341 (and a further check producing a Kleibergen-Paap F statistic of 25.224). These results are consistently above 10 and the Stock-Yogo critical values for all regressions. This means that inflows of international and internal migrations in 2005-2015 can be predicted using migrant inflows in 1984. Owing to space constraints, first stage results will only be shown for key regressions.

Table 4.4: IV Models Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices

Dependent Variable: ΔLog Owner-Occupied Price	*(1)*	*(2)*
ΔForeign-born$_t$/Population$_{t-1}$	0.834***	1.175***
	(0.243)	(0.306)
ΔInternal migration$_t$/Population$_{t-1}$		0.910***
		(0.194)
Log income$_{t-1}$	0.095**	0.115**
	(0.037)	(0.047)
Employment$_{t-1}$	0.039***	0.042***
	(0.011)	(0.012)
Log January temperature	0.009***	0.008**
	(0.002)	(0.003)
Bachelor's degree (%, 1984)	0.178***	0.131**
	(0.076)	(0.063)
Working age (%, 1984)	0.367***	0.421***
	(0.139)	(0.163)
New stock$_{t-1}$	-0.017**	-0.018**
	(0.008)	(0.008)
Legislation	-0.029***	-0.044***
	(0.004)	(0.008)
F-test statistic (for foreign-born instrument)	31.043	31.043
F-test statistic (for internal migrant instrument)		28.367
Year fixed effects	Yes	Yes
Observations	4544	4544
R-Squared	0.121	0.128

Notes: Analysis of 284 Swedish municipalities between 2000 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Table 4.4 confirms that foreign-born migration is positively associated with the change in house prices, with a coefficient of 1.175, and similar coefficients being found using FE and ARMA confirm robustness. This means a foreign-born increase equal to 1% of the municipality's population is reflected by an approximately equal increase, 1.18%, in house prices. This is, similarly to the previous results, also broadly consistent with the results found by Saiz (2007), as well as other earlier and later papers. Nevertheless, the coefficients remain a little larger than those found in meta-analyses.

It is worth noting that in addition to capturing the price elasticity of housing demand, the coefficient of the migration variable also captures general equilibrium effects. These include the displacement of existing native residents (which is likely to bias the coefficient downwards, as some of the effect on house prices is mitigated by out-migration), and the purchasing power of native workers via the effects of migration on local wages (which could reduce or increase the coefficient depending on whether migrant and native workers are complements or substitutes in the labour market). This can be seen when comparing the regressions with and without internal migration, shown in Table 4.4, where the coefficient for the change in foreign-born residents is net of the displacement effect of native-born residents moving to other municipalities. Given that the coefficient of the internal migration variable is positive, the increase in size of the coefficient of the foreign-based migration variable from 0.8% to 1.2% is consistent with Swedish-born residents moving out as foreign-born migrants move in. This also suggests more general migrant self-selection and sorting, tending to push up prices. As shown earlier in Table 3.1, this is mainly due to movements out of the larger cities, and involves both an upskilling of the population in the larger cities (with higher-skilled foreign- and Swedish-born migrants moving in, and lower-skilled Swedish-born workers moving out), and a change in the demographics of cities. This constitutes younger foreign-born migrants moving in, and older Swedish-born migrants moving out.

The fact that impacts of other variables are generally increased, but remain significant, when including internal migration as a variable, further legitimizes the inclusion of this variable in this and future analysis. In addition, a key finding and contribution is that the effect of internal migration on house prices, shown in the second column of Table 4.4, is also positive, highly significant, and of a magnitude that is not too dissimilar to the coefficient for foreign-born migration, at 0.9% (vs. 1.2% for foreign-born migration). Nevertheless, this impact is a little weaker than expected, given the relative purchasing power that internal migrants have when compared to many foreign-born migrants. The differences between these two migration flows are likely to stem from the impacts of the two migration flows differing geographically, which will be explored further below.

The results for the remaining control variables in this model are as expected. Higher average incomes and employment rates in the municipality are associated with faster growing house prices. Meanwhile, areas that have historically had a high proportion of working age residents, and those with a high proportion of skilled residents, have also seen higher house price growth. Finally, variables that increase the availability of housing are associated with a lower increase in house prices.

In terms of the IV contra the OLS results, consistent with the previous tables and analysis, here too, effects of migration are being underestimated, rather than overestimated. Further, this bias is not occurring to a particularly high degree – while it is clearly noticeable, the coefficients do not generally change by particularly large amounts. The only exception is the migration coefficients, where changes in value of around 25% are found. This indicates relatively higher underestimation of these parameters, though not abnormally high when compared to previous research. As such, while endogeneity is clearly an issue in the analysis, the problems it poses are significantly smaller than if the reverse had been true and the coefficients had been overestimated (since the other models provide a conservative lower-bound estimate of the effects).[1] Nevertheless, it remains possible that coefficients are being overestimated to a degree, e.g. owing to the impact of omitted variable bias of a nature that is not accounted for in the IV.

To ensure the accuracy of the IV approach, and as a robustness test, I run OLS and IV models using five-year averages for the dependent and independent change variables, including both current and lagged migration effects (see Section 4.2.6). I also follow Jaeger et al. (2018) in including both short-term and long-term migration variables, as well as changes rather than levels for some control variables. This ensures that variables are exogenous and that the IV approach functions as expected and is not being distorted by spatial impacts imposed by policy changes. The results are shown in Appendix 4.2 (as mentioned in Section 4.2.6) and generally confirm accuracy of the OLS and IV results shown in Table 4.4 and Appendix 4.5. This shows that there are significant, persistent effects on house prices resulting from both foreign-born and internal migration. In addition, there are a few other findings resulting from this specification that are particularly interesting. First, the effect of migration on house prices in the medium term

[1] I also test the VIF between variables here, and find that this is low between all variables – below 2 for all the migration-related variables, and only one variable, employment, is above 5 (but below 10). When using the Breusch-Pagan test for heteroscedasticity and the Breusch-Godfrey test for autocorrelation, I am also able to reject the null hypotheses.

is essentially identical for both foreign-born and internal migration (1.5%), while the lagged effect is also very similar for both groups (1.6% for foreign-born vs. 1.5% for Swedish-born migration). Second, the results show that the effect of migration on house prices is persistent over time, and are higher in the medium-term than in the short-term. This suggests that there are persistent supply constraints that prevent adjustment in the housing market. Further, the results for the other control variables in the model are as expected and in keeping with the results of the other specifications, indicating that the empirical model is robust.

A further test, serving as a form of sensitivity analysis, is run using local travel areas (defined as the broader commuting areas surrounding a conurbation) rather than municipalities (although only an OLS regression is run, owing to a lack of data not allowing for IV testing) to run the regression. This thereby reduces the sample size from 290 to 70, in order to overcome any potential issues which may arise owing to the relatively arbitrary classification system for municipalities and their boundaries in Sweden. The results are shown in Appendix 4.7, and this, too, produces similar results to Appendix 4.5 and Table 4.4, further confirming the accuracy of the model. This appears to indicate that the incidence of spatial autocorrelation is limited.

Moving on, in Table 4.5 I break down the adjusted model and apply it to different municipality types, in order to analyse whether impacts differ between municipalities with different characteristics.[1,2]

[1] OLS results are displayed in Appendix 4.8 owing to space constraints.

[2] FE and ARMA results are displayed in Appendix 4.9 owing to space constraints.

[3] Further confirmed through the Breusch-Godfrey test for autocorrelation.

Table 4.5: IV Models Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices Split by Municipality Characteristics

Dependent Variable: ΔLog Owner-Occupied Price	*All Urban*	*Major Cities*	*Smaller Urban*	*Rural Areas*
ΔForeign-born$_t$/Population$_{t-1}$	1.451***	1.525***	-0.876	0.947***
	(0.504)	(0.534)	(0.893)	(0.334)
ΔInternal migration$_t$/Population$_{t-1}$	0.792***	-0.126	1.705***	0.787**
	(0.268)	(0.179)	(0.556)	(0.254)
Log income$_{t-1}$	0.209***	0.243***	-0.099	0.053
	(0.074)	(0.089)	(0.136)	(0.077)
Employment$_{t-1}$	0.037*	0.045*	0.056**	0.133**
	(0.021)	(0.025)	(0.024)	(0.058)
Log January temperature	0.135	-0.229	-0.020	0.098***
	(0.457)	(0.194)	(0.045)	(0.035)
Bachelor's degree (%, 1984)	0.044	0.056	0.211	0.463
	(0.089)	(0.095)	(0.270)	(0.311)
Working age (%, 1984)	-0.142	-0.147	0.176	0.405*
	(0.120)	(0.127)	(0.247)	(0.214)
New Stock$_{t-1}$	-0.007	-0.007	-0.017	-0.122*
	(0.005)	(0.006)	(0.013)	(0.063)
Legislation	-0.087***	-0.052***	-0.068***	-0.033**
	(0.010)	(0.015)	(0.015)	(0.012)
F-test statistic (for f-born instrument)	31.837	33.471	27.412	29.540
F-test statistic (for i. mig. instrument)	29.358	26.517	31.596	27.692
Year fixed effects	Yes	Yes	Yes	Yes
Observations	1376	704	672	3168
R-Squared	0.340	0.473	0.277	0.098

Notes: Analysis of 284 Swedish municipalities between 2000 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Table 4.5 shows positive effects of migration on house prices in both urban and rural municipalities, and that the effects are greater for foreign-born migration than for internal migration in both types of location (1.5% for foreign-born vs. 0.8% for Swedish-born migrants in all urban areas, and 0.9% for foreign-born vs. 0.8% for Swedish-born in rural areas). A second key finding is that there is relatively little difference in the effect between foreign-born and internal migrants in rural areas (only 0.1 percentage points higher for foreign-born migrants), but a substantial difference (0.7 percentage points higher for foreign-born migrants) in urban areas. This suggests that either foreign-born migration into urban areas is more selective in terms of skills or income, or, supply-side constraints for the types of properties sought by foreign-born migrants (relative to those sought by Swedish-born migrants) are greater in urban areas than in rural areas.

Disentangling the urban effect further, in the case of foreign-born migration, it is entirely driven by major cities (1.5%), with no statistically significant effect observed in smaller urban areas. The urban effect for internal migration, on the other hand, is entirely due to smaller urban areas (1.7%), with no effect observed in major cities. This is a key finding and contribution, which suggests that the skill- and income-based selection of migrants into large cities is much greater for foreign-born migrants, with skilled or wealthy Swedish-born migrants self-selecting into smaller urban areas. This would be consistent with the existence of constraints to labour market participation by foreign-born migrants (due to language and network constraints), and with demographic differences between foreign-born and Swedish-born migrants, which results in foreign-born migrants having a preference for living in larger cities (e.g., due to age or family circumstances). It is also consistent with an increasingly aging native population, as well as blossoming knowledge clusters, and potentially also the role of city amenities, as has been found previously in the USA (Rickman and Rickman, 2011). These trends are also likely a result of internal migration between municipalities within major cities, in the form of suburbanization or re-urbanization.

In general, the other studied variables are less significant than was seen overall, which suggests heightened significance of the migration variables. This does not hold for the rural scale however, where temperature, age and the housing stock become more significant variables. This emphasizes the importance of these variables, and indicates that migration is relatively less impactful and polarized in this context. Indeed, on the rural scale, both foreign-born migration and internal migration produce impacts of approximately equal size, supporting this theory.

Finally, I conduct separate analysis of the impact of foreign-born segmented by migration motives on the housing market, with the results shown in Table 4.6.[1,2]

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[1] OLS results are displayed in Appendix 4.10.

[2] Partial first stage regressions are displayed in Appendix 4.11. Full results available on request owing to spatial constraints.

Table 4.6: IV Models Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices Split by Municipality Characteristics and Migration Motives

Dependent Variable: ΔLog Owner-Occupied Price	*All Areas*	*All Urban*	*Major Cities*	*Small Urban*	*Rural Areas*
ΔLabour migration$_t$/Population$_{t-1}$	1.445***	2.547***	2.201***	5.374*	1.251***
	(0.341)	(0.795)	(0.751)	(3.012)	(0.408)
ΔFam. reun. migration$_t$/Population$_{t-1}$	1.247***	1.118**	1.344***	1.677	-0.631
	(0.329)	(0.419)	(0.343)	(2.000)	(1.771)
ΔRefugee migration$_t$/Population$_{t-1}$	1.407**	1.838	0.860	1.231***	2.527***
	(0.427)	(1.358)	(0.525)	(0.470)	(0.605)
ΔInternal migration$_t$/Population$_{t-1}$	1.071***	1.674***	0.117	1.622***	1.535***
	(0.255)	(0.410)	(0.346)	(0.481)	(0.270)
Log income$_{t-1}$	0.269**	0.143***	0.226***	-0.154	0.141
	(0.134)	(0.040)	(0.042)	(0.271)	(0.126)
Employment$_{t-1}$	0.133**	0.032***	0.052**	0.045*	0.132**
	(0.057)	(0.011)	(0.024)	(0.028)	(0.054)
Log January temperature	0.065***	-0.110	-0.063	-0.098	0.111***
	(0.025)	(0.145)	(0.092)	(0.125)	(0.039)
Bachelor's degree (%, 1984)	0.188**	0.100	0.056	0.387	0.319
	(0.082)	(0.072)	(0.095)	(0.275)	(0.304)
Working age (%, 1984)	0.244*	0.142	-0.101	0.320	0.486**
	(0.134)	(0.128)	(0.125)	(0.407)	(0.227)
New stock$_{t-1}$	-0.035	-0.010	-0.014	0.033	-0.102
	(0.019)	(0.009)	(0.009)	(0.021)	(0.069)
Legislation	-0.042***	-0.039***	-0.029**	-0.032***	-0.041**
	(0.006)	(0.005)	(0.006)	(0.008)	(0.007)
F-test statistic (for lab. migrant instrument)	23.444	24.475	22.519	19.464	21.594
F-test statistic (for fam. reun. instrument)	19.551	17.616	21.130	15.090	18.743
F-test statistic (for refugee instrument)	21.332	20.542	17.643	23.470	22.401
F-test statistic (for int. migrant instrument)	28.367	29.358	26.517	31.596	27.692
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	4544	1376	704	672	3168
R-Squared	0.139	0.363	0.493	0.306	0.098

Notes: Analysis of 284 Swedish municipalities between 2000 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Firstly, in all areas, all four migration-related coefficients are between 1 and 1.5, and all significant at the 1% or 5% level. These are labour migration, producing a coefficient of 1.445, family reunification migration, producing a coefficient of 1.247, refugee migration, producing a coefficient of 1.407, and internal migration, producing a coefficient of 1.071. Aside from the slightly lower significance level at which refugee migration is significant, indicating that the impacts of refugees are less certain, impacts are fairly uniform on the overall level. This is a fairly surprising key finding and an important contribution, as one would expect that internal migrants and richer migrants have a larger impact on house prices than refugees, generally, owing to differences in their broader willingness and ability to pay.

Moving on, the results for the higher-skill groups, which are foreign-born labour migrants and Swedish-born internal migrants, are interesting to look at. The effects on house prices for both of these groups are higher in urban areas, consistent with skill-based selection into large cities, and that this effect is particularly large for foreign-born skilled migrants (2.5% vs. 1.7% for Swedish-born internal migrants). The effects of migration on house prices in rural areas, in contrast, are similar for both groups (1.3% vs. 1.5% for Swedish-born migrants).

Analysing the urban effect in more detail, the effect of foreign-born labour migrants on house prices is almost entirely due to the effect in major cities (with a large but barely statistically significant effect in smaller urban areas), whereas for Swedish-born migrants the effect is entirely found in smaller urban areas. This is a key contribution, suggesting that highly-skilled foreign-born migrants are self-selecting into large cities, where they drive up house prices through a combination of demand in the face of supply constraints and income effects, with Swedish-born internal migrants (many of whom are also highly skilled) having a similar effect in smaller urban areas. This is consistent with previous findings in the literature that have highlighted the key role played by labour market opportunities in driving the migratory movements of the highly skilled (Niedomysl, 2008). The observed patterns are therefore a result of the stronger labour market opportunities that present themselves to each of these groups in these particular municipalities, due to the respective market knowledge and network effects available to each group. Highly-skilled Swedish-born internal migrants, in particular, have an advantage when moving into smaller urban areas.

The effects of refugees on house prices in different areas is also an interesting finding and contribution, with the greatest effects observed in rural (2.5%) and smaller urban areas (1.2%). This suggests the presence of significant supply constraints in these types of municipalities, with the arrival of large numbers of refugees exerting an upward pressure on house prices in the private sector. This occurs even if most refugees are housed in municipality-owned properties, for instance, because these might otherwise have been sold or rented out (Wennström and Öner, 2015). It is also possible that the arrival of large numbers of refugees has resulted in small demand-driven growth effects in the local economy, and that house prices have therefore risen as a result of the additional spending power in the local area for instance. This is likely partly due to an increase in government spending on integration programmes and refugee-support services. Most noteworthy is that the coefficients for refugees were even stronger than those for the labour migrants. The differential impacts in such instances is likely to be partly a result of the role of preferences in terms of location, with labour migrant groups having a strong preference for certain municipalities, and thus being more willing to bid for housing in certain areas, and less willing in others.

The results also suggest that, in terms of rural areas, the income of migrants is uncorrelated with the magnitude of impact on house prices. Nevertheless, an increased refugee presence can also result in stimulus to the local economy, as well as reinforcing housing constraint issues, forcing native groups to purchase more expensive housing. This in turn sends mixed messages regarding the true impact of refugees on the housing market. The larger impact could be interpreted as being positive with regard to integration, but can also clearly be interpreted as negative in other regards, as refugees may be crowding out other users from the local housing market. The policy implications are numerous, in terms of strategic reallocation of refugees to reduce the impact on the housing market, away from these rural areas and into areas where they are having a smaller impact, i.e. smaller urban areas or major cities. Alternatively, reallocation of refugees into areas where they do have a higher impact on the housing market is also an option, if this is to be believed to contribute positively to stronger integration (since it shows that refugees are able to access housing markets in such areas), potentially at the cost of higher house prices.

A couple of other impacts are worth highlighting. Internal migrants have a relatively uniform level of impact across the country (aside from in major cities as discussed in association with Table 4.5), likely owing to inherent heterogeneity in this group. Meanwhile, generally speaking, labour migrants produce relatively strong impacts in most instances, with the exception of a slightly weaker coefficient for rural areas, and a strong, but unreliable coefficient in smaller urban areas. The latter coefficient indicates some labour migrants likely have very strong impacts on house prices in smaller urban areas, but owing to heterogeneity in migrant groups, as well as municipalities, the impact is weakly significant and must be treated with caution.

The reasons for these differential effects are likely to be many. One primary explanation is the roles of human capital and income, and thus ability and willingness to pay of certain migrant groups, particularly labour or EU migrants, coupled with inter-migrant competition. Nevertheless, it is unlikely to be completely an income story, owing to the discrepancies of certain, wealthier or more educated migrant groups having weaker impacts in some scenarios than the generally less wealthy and less educated refugee group. The generally weaker impact of the family reunification migrant group is hypothesised to be a result of this group being partly families associated with labour migrants, and thus being likely to have a relatively high purchasing power, and partly families associated with refugees, thus being less likely to have as high purchasing power. This could result in this coefficient being split relatively evenly between different heterogeneous groups that have a different magnitude of impact, resulting in a relatively small, but significant, impact in most cases. Network effects and higher urban densities are then also likely to result in less of a per capita impact of these forms of migrants.

Finally, in order to ensure accuracy of these results, checks are conducted based on the income of countries of origin. Data for all countries of origin is not available, and as a result, the chosen areas are Norway, Germany, Great Britain (all relatively wealthy and geographically close countries of origin), Poland, the former Yugoslavian states (geographically close, but poorer), Asia (all countries), and all refugees (regardless of country of origin).[1] The results are shown in Appendix 4.12. The results show that overall, migrants have similar impacts regardless of country of origin income. However, in urbanised areas, high-income migrants have relatively stronger impacts, while in rural areas, low-income migrants have strongest impacts. Generally, then, these results,

[1] Norway is deemed to represent predominantly labour migration, with a bias in location decisions owing to geographical and historical proximity of the country to Sweden (Graversen, 2000). Great Britain is deemed to represent predominantly affluent labour migration, but with less bias in location decisions than Norway (Sriskandarajah et al., 2006). Germany is also deemed to represent predominantly labour migration from an affluent country, as well as some retiree or lifestyle migration (Müller, 2002). Poland is deemed to represent predominantly labour migration from a less affluent EU country (Lubinska, 2013). The former Yugoslavian states are also deemed to represent predominantly such labour migration, though with the majority having a lower income than Poland, the majority coming from outside the EU, and a small portion also being classed as refugees (Ruist, 2015). Asia constitutes mixed migration flows, with labour migrants, refugee migrants, and family reunification of refugees, and is interesting to include owing to this very mixed nature, while the refugee group consists of migrants moving to Sweden to seek asylum (Bevelander, 2011).

broadly reflect the results found when classifying by migration motives. However, classifying by migration motives is more likely to hold broader relevance worldwide (as the migrant flows are generally likely to be more applicable to a wider range of countries when classified thusly, than migration from e.g. Norway which is not particularly relevant in much of the world).

4.4 Conclusions

In this chapter, I have examined the impact of foreign-born and internal migration on house prices in Sweden, using data at the municipality level over the period 2000-2015. This extends the literature by analysing the effect in the context of a country with a wide range of migration groups, including a high proportion of humanitarian migrants. The analysis also explicitly accounts for internal migration, and disaggregates the overall effect of foreign-born migration into the effect of labour migration, family reunification migration, and humanitarian migration. In addition, I am able to test whether the effect is stronger in urban municipalities, further disaggregated into large and small urban municipalities, or in rural areas.

The results in general present a number of interesting findings. Overall, international migration to Sweden has a positive impact on house prices, behaving similarly to internal migration. Generally stronger impacts in major cities are seen, and weaker impacts in rural areas. Interestingly, the impacts of international migration on smaller urban areas, and of internal migration on major cities, are insignificant. Evidence suggesting a significant displacement effect of Swedish-born residents is also found, which relieves some of the upward pressure on house prices caused by the influx of foreign-born migrants. Further, over the medium term (5 to 10 years), the effects of foreign-born and Swedish-born migration on house prices are found to be relatively similar in magnitude.

In terms of migration motives, foreign-born migration regardless of origin and internal migration has relatively similar impacts on municipalities of all characteristics. Further, the effect of foreign-born labour migrants (typically highly-skilled and relatively wealthy) in urban areas is found to be entirely due to the effect observed in large cities. The opposite is true for (also relatively skilled and wealthy) Swedish-born migrants, who have the greatest effect in smaller urban areas. The results are consistent with the skill-based selection of migrants into locations, with highly-skilled foreign-born labour migrants moving into larger cities, and Swedish-born migrants moving out of large cities and into smaller urban areas, putting pressure on house prices in those locations.

In contrast, an influx of refugees (who tend to be younger, less wealthy, and less educated than both labour migrants and Swedish-born internal migrants) is found to have a positive effect on house prices in small urban and rural areas only, with the effect being particularly large in rural areas (2.5%). This is likely to be due to the Swedish government's refugee placement policy, which has increased housing pressures in small urban and rural areas, driving up house prices in what are often peripheral and economically deprived communities. Further reasons for differential effects across the different migration groups are also likely to include differences in income, human capital, preferences, but also fundamental core differences in motivations for moving to Sweden.

In terms of the comparisons to the Nordic countries (Appendix 4.3), there is evidence of a somewhat uniform experience. Denmark and Norway have generally presented relatively similar trends to Sweden, with strong similarities found particularly in the impacts of migration on rural areas between Sweden and Norway, while some similarities are also found in impacts of migration on major cities and smaller urban areas between all three of these countries. These similarities could stem from a similar migrant experience and similar policy and institutional background, though could equally also be a result of similar data collection and presentation techniques. Finland, meanwhile, has been the least similar to Sweden of the three Nordic countries, and also has not been particularly similar to any of its Nordic counterparts. The country has seen generally limited impacts of all forms of migration on different segments of the housing market, likely a result of its differing institutional context.

In summary, I can thus conclude that in Sweden, there are stark locational differences in the impacts of different forms of migration on the housing market, influenced by the nature of the municipality in terms of its demographic and other characteristics. I also note that there do appear to be differences in the impacts of migration on different types of municipalities based on origin, but that generally, the impacts of migration on house prices remain positive.

5. The Impact of Migration on House Prices and Rents on the Alternative Markets

5.1 Introduction

This chapter focuses on the impact of migration on house prices and rents on the alternative markets, i.e. the private housing cooperative market and rental market (introduced more fully in Sections 3.1 and 3.2 of Chapter 3).[1] The chapter utilizes similar methods to Chapter 4, looking at two unique subsets of the housing market. These, together, make up over half of the Swedish housing market, but have not been previously studied to any significant degree.

As mentioned previously in Chapter 3, 99% of Swedish apartments are either part of private housing cooperatives, or on the rental market. 7% of detached, semi-detached and terraced housing also consists of alternative segment housing. 61% of housing in Sweden as a whole is made up of alternative segment housing. However, there are stark regional variations in the distribution if housing. Figure 5.1 showcases this in Stockholm municipality.

Figure 5.1: Housing Ownership Forms in Stockholm Municipality

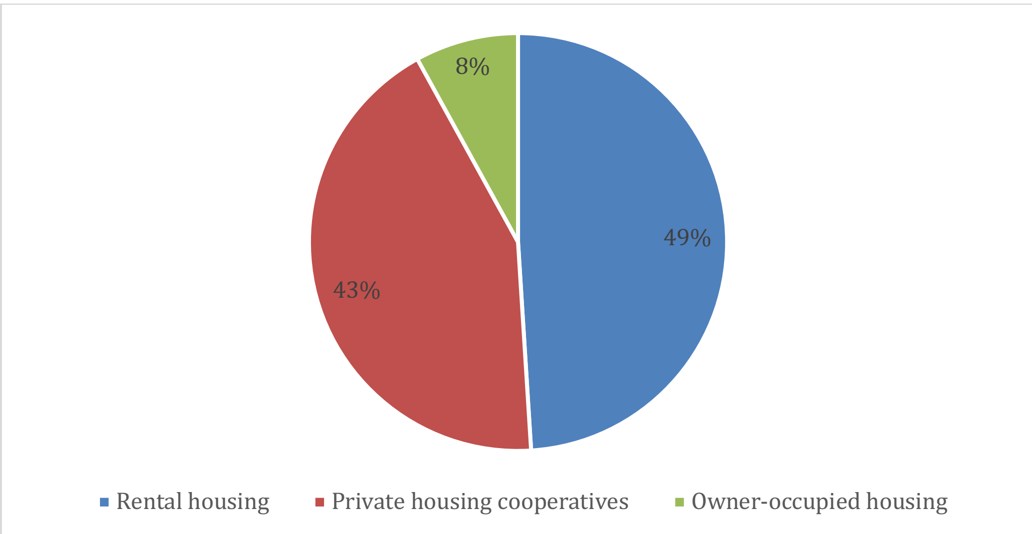

Figure 5.1: Housing ownership forms in Stockholm municipality. Source of data: SCB, 2019.

[1] Parts of this chapter closely resemble Tyrcha (2019a, 2019b, 2020a).

Figure 5.1 highlights that the amount of owner-occupied housing in Stockholm municipality is just 8%, compared to 39% nationally. Meanwhile, rental housing and private housing cooperatives constitute a combined 92% of housing in the municipality. This is largely a result of the apartment-dominated nature of the city. Hence, it is clear that to get a fuller view of the housing market in Sweden, and account more fully for all forms of housing, study of the private housing cooperative market and rental housing market is, as highlighted in Chapter 3, essential.

Generally, the private housing cooperative market has been heavily understudied. This is despite the fact that it is, as specified earlier (Section 3.2 of Chapter 3), different from the owner-occupier market in a number of fundamental ways. The market consists mostly of apartments, and requires dwellers to both purchase their housing and make a monthly payment to the housing cooperative association every month. Similar forms of housing exist in other Nordic countries, as well as the condominium housing form in the US. The segment is also gaining increasingly prominence as it is successively being introduced and increasing in popularity across various other new markets as diverse as the UK, South Africa, Australia and the Philippines (Brochmann and Hagelund, 2012; Jarvis, 2015; Kleibert and Kippers, 2016; Treffers and Lippert, 2019).

As highlighted in section 3.2 of Chapter 3, the growth in the private housing cooperative market in Sweden has been striking. In 1990, 17% of the housing market was made up of private housing cooperatives, but by 2018, this had grown to 24% (SCB, 2019). Indeed, the majority of housing built over the past decade has been private housing cooperatives, while the number of owner-occupied units being added to the market is increasingly diminishing, currently standing at below 10% of annual new stock (Valueguard, 2017). This highlights the relevance of studying the impacts of migration on the private housing cooperative asset class, particularly as no analysis has occurred of this market in relation to migration previously, despite the relevance of potential conclusions to Swedish and international housing solutions. The study of the private housing cooperative market is also particularly interesting owing to the market's unique attributes mentioned above, as well as the growing size of the segment, and its role as a form of intermediary market between the owner-occupied market and rental market.

Conceptually speaking, it is likely that results for the private housing cooperative market will not be entirely the same as for the owner-occupier market. This is owing to the higher per sqm pricing of private housing cooperative markets, owing both to the relative size of these units, as well as their more central locations (Valueguard, 2017). This also means that on average, purchasing a private housing cooperative will cost more than purchasing an owner-occupied home – both in absolute terms, per inhabitant, and in terms of its monthly cost thereafter (owing to the monthly payment that is required – see also chapter 3) (Valueguard, 2017). As a result, certain foreign-born migrants are less likely to be able to afford access to the private housing cooperative market than internal migrants. Though richer foreign-born migrants are likely to be able to afford this, for many such groups preferences may be for larger owner-occupied housing for lifestyle purposes (Graversen, 2000; Müller, 2002; Sriskandarajah et al., 2006; SCB, 2019). Internal migrants, meanwhile, are more accustomed to this market type, and less likely to diverge in terms of their preferences for different types of housing. This would indicate that impacts for internal migrants are more likely to be more similar to the owner-occupier market, than for foreign-born migrants.

Owing to the pricing dimension outlined above, impacts could be expected to be particularly strong for internal migrants, as well as for foreign-born labour migrants. These impacts are likely to be mostly concentrated to major cities and smaller urban areas, since private housing cooperatives are more prominent, and more in demand, in such areas (Valueguard, 2017). However, owing to the understudied yet unique nature of this market, diverging results are very possible. These could prove very interesting, as different results would suggest a differential impact of migration on different housing segments and people, which could also have broader relevance worldwide in different contexts. This could apply both to other private housing cooperative markets, but also alternative markets more broadly. Indeed, since the private housing cooperative market constitutes the only form of market in Sweden in which apartments can be privately owned, applicability to apartment markets worldwide is likely.

As highlighted in section 3.1 of Chapter 3, the rental market in Sweden is uniquely functioning, and is a crucial component of the overall housing market. Though rental housing has not grown as much as private housing cooperatives, it remains the largest market type, accounting for 39% of the overall housing market, with about half of this being publicly owned (SCB, 2019). Rental markets are also disproportionately relied on by people with lower incomes (both foreign-born and internal), as barriers to entry onto the market are generally more limited. However, in the Swedish context, the queueing mechanism means that the rental market does have more barriers to entry than would otherwise be expected of a rental market – which could serve to distort the impacts seen. As a result, study of the rental market is interesting, since the market constitutes a unique take on a rental market, meaning that its unique attributes could have distortionary impacts when compared to other rental markets.

In terms of the rental market, some previous analysis has occurred in other countries, with results being fairly similar to those seen in the owner-occupier market, as touched upon in the literature review (Section 2.2 of Chapter 2). However, conceptually speaking, owing to Sweden's uniquely functioning, largely rent-regulated market, it is likely that effects will diverge in terms of the impacts of migration on the rent, with impacts being smaller. Even still, logically, and following on from Chapter 4, it would seem likely that a positive relationship would manifest. This is owing to both the results found in the previous literature, as well as the fact that conceptually, an influx of people should impact the rental market by increasing queue levels and rents, even if this occurs through an indirect mechanism. The fact that the rental market has become increasingly deregulated during the studied period, particularly from 2011 onwards (as specified in section 3.1 of Chapter 3), should further serve to highlight this. As a result of these reforms, as well as the market context more generally, impacts are expected to be weaker than for the other studied markets, but stronger than in a completely regulated market. The fact that there has been some deregulation means that applicability of this study beyond Sweden is also stronger than it would have been previously, while applicability to other semi-regulated markets remains very strong.

The fact that certain forms of migrants have been allowed to skip the rental queue in certain scenarios (see Chapter 3) also underlines that impacts of foreign-born migration, and refugees in particular, could be expected to be particularly strong. Nevertheless, relatively stronger knowledge of the intricacies of the rental market among internal migrants means that internal migrants could also have strong impacts. Impacts are expected to be strongest in major cities, where the rental market is more popular and concentrated, and where the lack of housing has been a more prominent issue (SCB, 2019).

Including explicit analysis on the rental queue, in addition to the rental market, is interesting as price/rental levels may deprecate slowly during crises, because of the resulting fall in liquidity and quantity of sales (as sellers attempt to attain higher prices or rents than the deprecating market rate) (Belke et al., 2010). This means that prices or rents may remain somewhat artificially inflated. However, the rental queue is a clear measure of demand, and thus comparing the results for the rental market and the rental queue allows us to counteract such risks in the analysis more broadly.

The chapter will begin by studying private housing cooperatives nationwide, followed by rents and the rental queue nationwide. Further analysis focuses on the impact of migration on housing generally in a more specific submarket context. Focus is placed on the Stockholm market, and the impacts which international and internal migration have had on it, as well as how impacts differ depending on location within the city. Rather than conducting analysis on the municipal level, as previously, the analysis will go beyond this, looking instead more closely at the neighbourhood level. Study of the Swedish capital should hopefully enable a number of different dimensions to be studied and interesting trends to be discovered, as well as comparisons with other regions to be made.

Stockholm is an interesting area to study in depth for a number of reasons. It is not only Sweden's largest city, but also the most significant driver of the economy, contributing to more than 50% of Swedish GDP growth over the past few years (Newsec 2018). The region has Sweden's highest population, median income, tertiary education levels, and rate at which new enterprises are formed, and the second lowest unemployment rate (SCB, 2018). Indeed, in terms of transaction volume on the real estate market, close to 50% of transactions do take place in Stockholm or its surrounding areas, both when it comes to major commercial transactions, and more small-scale residential moves (Newsec, 2018). The economic dominance of Stockholm can be compared to many other global cities (Newsec, 2018), meaning applicability of this analysis should also stretch beyond Swedish borders.

As a result of its dominant status with regard to its role in the economy, the capital has also experienced fairly unique migration trends. Large numbers of migrants have found their way to the capital – between 2000 and 2018, almost 2 million of international and internal migrants have done so (SCB, 2019). However, owing to the unique composition of the city in the Swedish context, with relatively large disparities between neighbourhoods, impacts may be more diverse than those found in Sweden as a whole, or in major cities as a whole. For instance, people of working age living in the poorest area in Stockholm, Rinkeby-Kista, have an average annual income of 238,400kr. Those in the richest, Östermalm, have an average annual income of 468,000kr, approximately two times as much (USK, 2016). Further, the amount of people with foreign background in Rinkeby-Kista is 81%, while in Östermalm it is 20% (USK, 2016). Looking into the impacts of migration on housing in these neighbourhoods, as well as others, is likely to reveal interesting trends to study in depth.

Stockholm is also particularly relevant for study in this section given that many of the neighbourhoods in Stockholm consist primarily of alternative housing, i.e. private housing cooperatives or rental housing, rather than owner-occupied housing. Indeed, as highlighted in Figure 5.1, in Stockholm municipality, 49% of housing is made up of rental housing, while 43% is private cooperative housing, with the remainder consisting of owner-occupied housing and apartments. These are the highest percentages for any major urban municipality in Sweden. Hence, in terms of study of the alternative markets, looking more closely at the relationship between migration and housing in the Stockholm region is likely to be highly relevant, while also providing one of the best avenues for study of this relationship.

This chapter makes a number of important contributions to the literature. First, it studies two previously unstudied segments of the Swedish housing market, the private housing cooperative market, and the rental market. These two together constitute the majority of housing on Swedish housing markets, while some similar types of alternative housing are gaining popularity on a global scale. Second, the chapter analyses the impacts of migration on house prices and rents on these markets on the local scale, in the Stockholm context, where this type of housing makes up over 90% of the housing market. A market so dominated by alternative forms of housing to owner-occupied housing could display very interesting trends. In general, Stockholm also exhibits many of the trends that major cities globally in developed countries have been shown to exhibit (The Economist, 2020), meaning applicability of this analysis beyond Swedish borders is strong. Finally, the chapter takes a similar methodological approach to chapter 4. This means that innovations such as accounting for the impacts of internal migration, as well as conducting analysis on a regional scale, with migrants segmented by origin, will also be conducted here. Given the conceptual differences between the market types, diverging results could very well manifest in this regard.

5.2 Data and Methodology

5.2.1 Data Overview

Data for most control and migration-related variables is available from 2000-2015, and is available on the municipal level, courtesy of SCB (2016) and the Migration Board (2016). A number of control variables will also be used as initial proxy variables, for which the earliest data is available from 1984 (SCB, 2016). The control variables used include income, employment, temperature, age, and certain dummy variables (following Chapter 4), to allow for comparability between the studies. However, issues with assessing alternative markets stem from the relatively limited data that is available for these markets. In Chapter 4, analysis was conducted for 284 municipalities from 2000-2015. Analysis in this chapter will be slightly more limited, as detailed below.

Analysis will begin with private housing cooperatives. For these, Valueguard (2017) have kindly provided data, detailing the changing prices from 2005-2015, for all 290 municipalities. The price variable constitutes the log of the change in the median value of the private housing cooperative price in each municipality. Valueguard are the market leader in terms of the collection and provision of real estate transaction data in Sweden, and thus the data can be considered reliable. Nevertheless, an insufficient number of transactions in a number of municipalities has led to the development of an exclusion rule:

a municipality must have had an average of at least 50 transactions per annum, and a minimum of 30 transactions in any given year, in order to be included in the analysis. To be included, municipalities also have to be included in Mäklarstatistik's (2017) historical logs of changing private housing cooperative prices. This is another reputable statistical company providing data on private housing cooperatives (ultimately, all municipalities that met the first criterion also met this second criterion). As a result of these criteria, 101 municipalities have sufficient data availability to be included in the analysis. The same municipalities will also be analysed in terms of the impacts of migration on owner-occupied housing, in order to more accurately determine the extent of any differences in impacts. Techniques used to analyse these municipalities will include OLS and IV (outlined in Section 5.2.2 onwards), as well as fixed effects and ARMA, to improve reliability and accuracy of results.

In terms of the rental market, data is available from SCB for 2000-2015. This data constitutes the mean rent per square meter in January each given year, at the municipal level. The data comes from Sweden's largest, publicly operated statistical agency. However, this data is only available for a select number of municipalities. Complete data is available for 55 municipalities, and thus, 55 municipalities will be used in the rental analysis. The data available is for the official rents, which owing to the system of relative rent regulation does not vary as much as in a free market. However, it will still indicate trends with regard to the potential impact of migrants on the rental market, particularly owing to newer apartment rents being mostly deregulated, as well as recent rental increases noted on the rental market. A study of the second-hand market would be desirable to complement this, but such data is unfortunately unavailable. As with the private housing cooperatives, analysis will be conducted for the owner-occupier market, too, for the same period and municipalities, in order to determine whether trends differ substantially. Again, techniques used will include OLS and IV, as well as ARMA and FE.

Finally, analysis of both private housing cooperatives and rents will also be conducted for the Stockholm market, at the neighbourhood level. Data for 28 neighbourhoods pertaining to migration, as well as some control variables, has been obtained from USK (2017) for 2005-2015, which will enable analysis on the neighbourhood level. Beyond this, data has again been obtained from Valueguard (2017) pertaining to the private housing cooperative prices, on the neighbourhood level, while some data from Booli Pro (2018) will also be used, particularly pertaining to the specific characteristics of the studied housing markets. Further, some of the data attained from the sources mentioned in previous chapters will prove useful, including data originating from SCB on incomes, employment, education and new housing stock (2017), and SMHI (2017) on temperatures. Beyond this, neighbourhood level data on rental queues and rents in Stockholm, attained from Bostadsförmedlingen (2016), will also be utilised in this chapter. Since all of the data originates from government or public sector sources, or reputable data-collecting companies used widely in industry, the data is likely to be appropriate for use in analysis.

5.2.2 Methodology

5.2.2.1 Private Housing Cooperative Analysis

The first level of analysis is the private housing cooperatives. This is done using data from Valueguard (2017), ranging from 2005 to 2015, for a selected number of municipalities, as detailed earlier. The model has been kept largely the same as in Section 4.2.3 of Chapter 4, in order to enable comparability across asset classes, and looks as such:

$$\Delta \ln(phc)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \sum_{t=2}^{11} \delta_t Y_t + \varepsilon_{k,t} \tag{5.1}$$

where

$ln\ (phc)$ is the natural logarithm of private housing cooperative price
$\Delta fb_{k,t}$ is the change in the foreign-born population in location k between t-1 and t
$\Delta im_{k,t}$ is the change in internal migration in location k between t-1 and t,
$p_{k,t-1}$ is the total population in location k and time t-1
$X_{k,t}$ is a set of socio-economic characteristics of location k and time t, which here includes real income per household and the employment rate
W_k is a set of initial characteristics of location k, which here includes the reported crime in 1984 per 1,000 residents, a temperature average from 1961-1990, the % of population with a bachelor's degree in 1984 per 10,000 inhabitants, and the percentage of the population aged 20-64 in 1984
$S_{k,t}$ is a set of supply-side characteristics of location k and time t, which here includes new housing stock that becomes available in every year per 1,000 residents (a supply-side variable), and a dummy variable accounting for the differing impacts of new Planning and Building Legislation that took effect in 2011

Y is years from 2005 to 2015 t=2,...,11
and ε is the error term.

In one iteration of this regression, a monthly payment variable will be added, highly relevant to private housing cooperatives owing to the degree to which this can vary across different properties and regions. This should allow for the analysis to be more complete with regard to control variable inclusion. This should also enable more precise analysis of the impacts of migration on private housing cooperative prices.

Throughout Sections 5.3.1 and 5.3.2, the same instrumental variable approach will be taken as in Chapter 4, i.e.:

$$\Delta fb_{k,t} = \sum \Delta fb_{Sweden,t,o} * \frac{fb_{k,1984}}{fb_{Sweden,1984}} \tag{5.2}$$

$$\Delta im\ inflow_{k,t} = \sum \Delta im\ inflow_{Sweden,t} * \frac{im\ inflow_{k,1984}}{im\ inflow_{Sweden,1984}} \tag{5.3}$$

5.2.2.2 Rental Analysis

The second level of analysis is the rental market and rents. This is done using data from SCB, ranging from 2000 to 2015, for a selected number of municipalities, as detailed earlier. Here, too the model has been kept largely the same, and thus looks as follows:

$$\Delta \ln(r)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \sum_{t=2}^{16} \delta_t Y_t + \varepsilon_{k,t} \tag{5.4}$$

where
$ln\ (r)$ is the natural logarithm of the official rental level per sqm
$\Delta fb_{k,t}$ is the change in the foreign-born population in location k between t-1 and t
$\Delta im_{k,t}$ is the change in internal migration in location k between t-1 and t,
$p_{k,t-1}$ is the total population in location k and time t-1
$X_{k,t}$ is a set of socio-economic characteristics of location k and time t, which here includes real income per household and the employment rate
W_k is a set of initial characteristics of location k, which here includes the reported crime in 1984 per 1,000 residents, a temperature average from 1961-1990, the % of population

with a bachelor's degree in 1984 per 10,000 inhabitants, and the percentage of the population aged 20-64 in 1984
$S_{k,t}$ is a set of supply-side characteristics of location k and time t, which here includes new housing stock that becomes available in every year per 1,000 residents (a supply-side variable), and a dummy variable accounting for the differing impacts of new Planning and Building Legislation that took effect in 2011
Y is years from 2000 to 2015 t=2,...,16
and ε is the error term.

Instrumental variable analysis will also be conducted, using the same approach as that detailed earlier.

Complete data is available from 2000 to 2015. As a robustness test, and to ensure that any migration effects being picked up are truly measuring the impact of the migration variable, the regression will first be run for 2000-2015, but then also run for 2000-2010 and 2011-2015, separately. This is because the deregulatory reform, detailed in Section 3.1 of Chapter 3, should mean that migration is likely to have a stronger impact on rents after 2011, while impacts before 2011 should be smaller. A structural chow test will be used to test whether a structural break does indeed manifest in 2011.

Further, to complement this analysis, data from Bostadsförmedlingen (2016) has also been attained with regard to the length of rental queues on the municipality level. Unfortunately, this data is only available for 19 Stockholm municipalities, from 2005-2015, but analysis will still be conducted on this overall for reference, in order to compare and complement findings found for rent analysis. The model will take the following form:

$$\Delta \ln(q)_{k,t} = \alpha + \theta_1 \frac{\Delta f b_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta i m_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \sum_{t=2}^{11} \delta_t Y_t + \varepsilon_{k,t} \qquad (5.5)$$

where
$ln\ (q)$ is the natural logarithm of the rental queue length (years)
$\Delta f b_{k,t}$ is the change in the foreign-born population in location k between t-1 and t
$\Delta i m_{k,t}$ is the change in internal migration in location k between t-1 and t,
$p_{k,t-1}$ is the total population in location k and time t-1
$X_{k,t}$ is a set of socio-economic characteristics of location k and time t, which here includes real income per household and the employment rate

W_k is a set of initial characteristics of location k, which here includes the reported crime in 1984 per 1,000 residents, a temperature average from 1961-1990, the % of population with a bachelor's degree in 1984 per 10,000 inhabitants, and the percentage of the population aged 20-64 in 1984
$S_{k,t}$ is a set of supply-side characteristics of location k and time t, which here includes new housing stock that becomes available in every year per 1,000 residents (a supply-side variable), and a dummy variable accounting for the differing impacts of new Planning and Building Legislation that took effect in 2011
Y is years from 2000 to 2015 t=2,...,16
and ε is the error term.

5.2.2.3 Regional Analysis

Analysis based on municipality characteristics will be conducted for the rental and private housing cooperative markets, in order to determine whether alternative markets found in varying municipality types are affected by migration in differing ways to the owner-occupied market, and to each other.

Private Housing Cooperatives

- Overall (101 municipalities)
- Major Cities (36 municipalities)
- Urban Areas (30 municipalities)
- Rural Areas (35 municipalities)

Rental Market

- Overall (55 municipalities)
- Major Cities (24 municipalities)
- Urban Areas (25 municipalities)

This should enable examination of how the impact of migration differs across different market types and regions. Rural areas are excluded from the rental market analysis owing to a lack of data on rental units in such areas (owing to the generally low availability of rental properties in such areas). Given the different receiving characteristics of major cities and urban areas, in terms of the nature of the housing markets (with major cities being more dominated by apartments, the majority of which are rental, while urban areas generally house a larger portion of non-rental housing), it is feasible that impacts of migration on housing may differ spatially, owing to the different degree of supply and demand for each segment in each respective type of municipality.

5.2.2.4 Migration Motives Analysis

Beyond this, analysis is also conducted differentiating the foreign-born by their reason for migration, for the private housing cooperative and rental markets. In order to allow for comparability between studies, this analysis will be conducted using the same categories as those in Chapter 4 (see Section 4.2.5 of Chapter 4 for full explanation):

- Labour migration (labour migrants, EU migrants, students)
- Family reunification migration
- Refugee migration

This will enable determination of whether the impact of migrants from a certain background on the alternative housing markets differs to the impacts of migrants from a different background (as well as identifying differences between market types). As highlighted in Section 5.1, particularly strong impacts of labour migrants are expected for the private housing cooperative market, while refugees are expected to have stronger impacts in rural areas.

5.2.2.5 Comparisons to Nordic Countries

In this section, too, comparisons to Nordic countries will be provided, both as a robustness check, and to enable fuller comparisons and more relevant conclusions to be drawn. The methodology and results are available in Appendix 5.1.

5.2.2.6 Stockholm Analysis

Finally, the analysis conducted for Stockholm will differ slightly, with some key alterations to the previously used quantitative model, due to the smaller spatial scale. A spatial lag model will be employed, in order to capture the effects that a change in house prices in any one neighbourhood has on other neighbourhoods. The spatial lag model is based on an inverse distance spatial weights matrix, with distances calculated as straight lines between the centroids of the neighbourhoods.

Three regressions are run, with the dependent variable varying between private housing cooperative prices, rents, and the length of the rental queue in each of the models. Hence, the models used are the following:

$$\Delta \ln(phc)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta sm_{k,t}}{p_{k,t-1}} + \theta_3 \frac{\Delta rsm_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \rho WY + \sum_{t=2}^{11} \delta_t Y_t + \varepsilon_{k,t} \quad (5.6)$$

$$\Delta \ln(r)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta sm_{k,t}}{p_{k,t-1}} + \theta_3 \frac{\Delta rsm_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \rho WY + \sum_{t=2}^{11} \delta_t Y_t + \varepsilon_{k,t} \quad (5.7)$$

$$\Delta \ln(q)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta sm_{k,t}}{p_{k,t-1}} + \theta_3 \frac{\Delta rsm_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \rho WY + \sum_{t=2}^{11} \delta_t Y_t + \varepsilon_{k,t} \quad (5.8)$$

where sm refers to migrants originating from Stockholm municipality, while rsm refers to migrants originating from Sweden excluding Stockholm municipality. More precisely, Stockholm migration is defined as inflows of migration from one to another of the 28 neighbourhoods in Stockholm municipality. Rest of Sweden migration is defined as migration from outside Stockholm municipality into one of the 28 neighbourhoods, and foreign-born migration is the same but from outside Sweden.

Further
$X_{k,t}$ is a set of socio-economic characteristics of location *k* and time *t,* which here includes real income per household and the employment rate
W_k is a set of initial characteristics of location *k*, which here includes the reported crime in 1984 per 1,000 residents, a temperature average from 1961-1990, the % of population with a bachelor's degree in 1984 per 10,000 inhabitants, the percentage of the population aged 20-64 in 1984, a dummy indicating whether a region belongs to a Million Programme area (see Section 3.4 of Chapter 3), and a political variable referring to the % of people who voted for the Moderate party (right-wing conservative) in the general election in 2018
$S_{k,t}$ is a set of supply-side characteristics of location *k* and time *t*, which here includes new housing stock that becomes available in every year per 1,000 residents (a supply-side variable), and a dummy variable accounting for the differing impacts of new Planning and Building Legislation that took effect in 2011. In equation 5.6, $S_{k,t}$ now also includes new non-rental stock per 1,000 residents, the average number of bids for any property for sale,

and the average time taken to complete a sale of a property. In equations 5.7 and 5.8, $S_{k,t}$ does not include those variables, but instead now also includes new rental stock per 1,000 residents and the number of completed lets per 1,000 residents.
and ρWY is the spatial lag variable
Y is years from 2005 to 2015 t=2,…,11
and ε is the error term.

These three models (equations 5.6-5.8) will be used in order to establish how different forms of migration impact different aspects of the housing market, in the Stockholm context. Owing to the different scale that analysis is being conducted on, availability of data and relevance of various variables is slightly different to previous analysis, and thus direct comparability to previous sections will be difficult to ensure. Nevertheless, some comparisons can still be made, particularly between the selected models.

However, the models do differ quite substantially from those used previously in Chapter 5. Primarily, the migration-related variables are different. The foreign-born variable remains the same in nature as in previous sections, but the internal migration variable is split into two variables, namely Stockholm migration, and Rest of Sweden migration. This has been done in order to distinguish between different motivations for migration, as well as to distinguish between the likely income/wealth of migrants. Migrants coming from within Stockholm are less likely to be moving primarily for employment purposes, and more likely to be moving for quality of life reasons or life course events. They are also likely to have a higher level of income than migrants from the rest of Sweden, since Stockholm constitutes the wealthiest county, per capita, in Sweden (SCB, 2018). Equally, they are also able to have major impacts on house prices within Stockholm, even though they are originating from the municipality, owing to the turnover and demand created through moves. Hence, separating migrants migrating within Stockholm from those migrating from a different part of the country to Stockholm should illuminate what role motivations to migrate, and income, plays in the Stockholm context.

Following Saiz (2007), a shift-share instrumental variable approach is often taken in order to account for endogeneity in migration location decisions. However, given the local scale being studied, it is unlikely that endogeneity can be dealt with using this traditional approach, which relies on migrant’s previous settlement decisions. One option could then be to make use of a different instrumental variable approach, akin to e.g. Baltagi and Liu (2011). However, this approach lacks some of the advantages of one of the more well-established alternatives, which is to make use of a spatial lag variable. This will be included in the model, incorporating spatial variations into the model expressly, and analysing the impacts of this accordingly. Indeed, spatial relationships between neighbourhoods could feasibly mean that an effect on house prices in any given neighbourhood also results in an impact on house prices on the citywide level, and thus must also be controlled for (which the IV approach would not enable). In general, being able to consider intra-municipal migration would be highly desirable in all research throughout this section and thesis in general, but cannot be done owing to data availability issues. Including it here is highly valuable as it will allow study of some of the impacts that this form of migration may or may not have. Further, as the issue of endogeneity has generally not been a major concern in the previous analysis thus far (causing mostly underestimations of effects), there is deemed to be more value in conducting the spatial lag analysis in this context.

A spatial lag (SLX) model is used, rather than a spatial error or spatial Durbin model or similar. This is done following previous literature, which advocates taking the SLX model as a "point of departure in case a well-founded theory indicating which model is most appropriate is lacking" (Vega and Elhorst, 2015; p.4). Since analysis of this scale has not been done in this context previously, it is clear that such a theory is lacking, meaning the SLX model appears most appropriate.[1]

Beyond this primary difference, a number of differences in terms of the control variables have also been introduced. A number of new variables have been included. Indeed, variables considering the total number of bids and the time taken to sell properties have been introduced in order to enhance consideration of the demand-side on a more microeconomic scale, given that the scale of analysis has also narrowed. However, a number of new supply-side variables have also been introduced to consider this scale, as well, including variables for new non-rental stock and new rental stock, as well as a

[1] To further test whether this is the best model to run, Lagrange Multiplier statistics were produced for the different models. The RLMlag specification was found to be the best fit, indicating that a spatial lag model is most appropriate in this context (results available on request).

variable considering the number of completed lets, where applicable. Further, a variable concerning whether an area is a Million Programme area has been added, owing to the key role this could have in shaping the housing market as well as the type of migrants that an area attracts (see Section 3.4 of Chapter 3). Finally, a variable has also been added considering whether voting patterns can be associated with house prices and rents. This will enable a fuller picture to be painted of the different relationships that could serve to influence house prices.

Further, a number of variables have also been removed when comparing analysis to that conducted in the earlier parts of this chapter. This includes the temperature variable, which has been removed owing to its lack of relevance when comparing districts that are all located within roughly two hour's commute of one another. In addition, a number of variables have been removed owing to a lack of data on the scale required, including the variables for education and age structure. Indeed, the introduction of new variables mentioned above has served to counteract some of these losses, perhaps enabling the effects of these variables to be picked up through other control variables.

5.3 Results

A summary of the primary variables included in the various stages of analysis is shown in Table 5.1 (values may vary for specific regressions owing to amount of municipalities included varying).

Table 5.1: Descriptive Statistics

Variable	*Mean*	*Std. Dev.*	*Min*	*Max*
Cooperative Housing Price ('000 kr) (2015)	904	770	128.45	3871.06
Cooperative Housing Monthly Payment (2015) (kr/sqm p.a.)	660	767	83	1099
Official Rent (2015) (kr/sqm p.a.)	863	1156	630	1235
Net foreign-born migration (municipality level, 2015)	283	551	-265	6,210
Net internal migration (municipality level, 2015)	-13	217	-2,003	684
Population (2015)	34,454	70,693	2453	923,516
Income (2015) ('000 kr p.a.)	237	25	189	323
Employment rate (2015)	0.671	0.032	0.584	0.761
Temperature (Fahrenheit) (1961-1990 avg)	24	6.5	1	33
Bachelor's Degree (%, 1984)	3.6%	1.95%	1.59%	17.07%
Population aged 20-64 (%, 1984)	0.127	0.013	0.088	0.188
New Stock Added (2015)	85	284	0	5186

5.3.1 Private Housing Cooperatives

Moving on, I run an IV model for private housing cooperatives. The initial results are displayed in Table 5.2.[1,2,3]

[1] OLS results are displayed in Appendix 5.2 owing to space constraints.
[2] FE and ARMA are displayed in Appendix 5.3 owing to space constraints.
[3] First stage regressions available in Appendix 5.4.

Table 5.2: IV Models Showing the Relationship Between Foreign-Born and Internal Migration and Private Housing Cooperative (PHC) Prices

Dependent Variable: ΔLog PHC Price or ΔLog Owner-Occupied Price	*(1) ΔLog PHC Price*	*(2) ΔLog PHC Price*	*ΔLog Owner-Occupied Price*
ΔForeign-born$_t$/Population$_{t-1}$	0.564***	0.589***	1.141***
	(0.190)	(0.192)	(0.304)
ΔInternal migration$_t$/Population$_{t-1}$	0.697***	0.686***	0.877***
	(0.264)	(0.261)	(0.185)
Log Monthly Payment		0.035*	
		(0.017)	
Log income$_{t-1}$	0.317**	0.307**	0.304**
	(0.148)	(0.147)	(0.158)
Employment$_{t-1}$	0.22	0.019	0.147***
	(0.100)	(0.101)	(0.051)
Log January avg temperature (1961-1990)	-0.010**	-0.010**	0.007*
	(0.004)	(0.004)	(0.004)
Bachelor's degree (%, 1984)	-0.138**	-0.136**	0.185**
	(0.063)	(0.062)	(0.069)
Working age (%, 1984)	-0.021	-0.001	0.456***
	(0.308)	(0.272)	(0.159)
New Stock$_{t-1}$	-0.014	-0.013	-0.014**
	(0.011)	(0.011)	(0.007)
Legislation	-0.026***	-0.025***	-0.041***
	(0.007)	(0.007)	(0.008)
F-test statistic (for f-born instrument)	23.570	23.570	29.606
F-test statistic (for int. migrant instrument)	26.719	26.719	27.734
Year fixed effects	Yes	Yes	Yes
Observations	1010	1010	1010
R-Squared	0.262	0.263	0.127

Notes: Analysis of 101 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Table 5.2 above shows that the impacts of migration on private housing cooperatives are different to those seen for owner-occupied housing. The foreign-born coefficient for private housing cooperatives is 0.564, as compared to 1.141 for owner-occupied housing, while for internal migration it is 0.697, as compared to 0.877, all significant at the 1% level. This indicates that the effects are of a lower magnitude, but foreign-born and internal migration have largely similar effect sizes. The difference in coefficient size for foreign-born migration when compared to owner-occupied housing is particularly large, and a key finding and contribution. As hypothesized earlier, this is likely owing to many foreign-born migrants not being as able to afford most private housing cooperatives, which tend to have a higher per sqm price than owner-occupied housing. Meanwhile, among richer foreign-born migrants from western European countries, preferences may lean toward owner-occupied housing owing to a considerable lifestyle and retiree migration (Graversen, 2000; Müller, 2002; Sriskandarajah et al., 2006; SCB, 2019). Such trends are less applicable to internal migrants, who instead have a more uniform demand for different types of housing in Sweden, which explains why the coefficients are more similar for this group.

The effects of control variables are generally similar, although it is noteworthy that the degree variable has a negative impact rather than a positive one. This could be owing to the fact that most cooperatives are located in areas where populations are generally similarly educated (i.e. cities), meaning less room for divergences in this variable. Further, the monthly payment variable is only significant at the 10% level in the second regression, and the coefficients of other variables are not influenced much when it is included. This means that including this variable is clearly unlikely to result in major variation in future regressions, and omitting it, in order to enable increased comparability with the owner-occupied regressions, is preferable. On the whole, then, it seems that evidence of a differential impact of migration on different groups, owing to any potential differences in the impacts of migration on private housing cooperatives as compared to owner-occupied housing, is thus far relatively weak.

In terms of the instrumental variable analysis, the coefficients are slightly larger, as expected (and as found in Chapter 4), but the results are generally robust. As a result, while problems of endogeneity likely do exist, they are fairly limited, and amount mostly to a slight underestimation of the impacts of migration, both foreign-born and domestic. They also show some relatively small over or underestimations of control variables. [1] In Table 5.3, I take the analysis a step further and attempt to determine whether the impact of migration on private housing cooperatives varies depending on municipality characteristics.[2,3]

[1] Similarly to Chapter 4, testing for multicollinearity reveals that most variables are lower than 2, and all are lower than 10. Testing for heteroscedasticity and autocorrelation also does not reveal any issues.
[2] OLS results are displayed in Appendix 5.5 owing to space constraints.
[3] FE and ARMA are displayed in Appendix 5.6 owing to space constraints.

Table 5.3: IV Models Showing the Relationship Between Foreign-Born and Internal Migration and Private Housing Cooperative (PHC) Prices Split by Municipality Characteristics

	Major Cities		***Smaller Urban Areas***		***Rural Areas***	
Dependent Variable: ΔLog PHC Price or ΔLog Owner-Occupied Price	*Δ Log PHC Price*	*Δ Log Owner-Occupied Price*	*Δ Log PHC Price*	*Δ Log Owner-Occupied Price*	*Δ Log PHC Price*	*Δ Log Owner-Occupied Price*
ΔForeign-born$_t$/Population$_{t-1}$	0.823***	1.119***	1.124*	-0.986	0.285	0.814***
	(0.295)	(0.484)	(0.650)	(0.817)	(1.230)	(0.275)
ΔInternal migration$_t$/Population$_{t-1}$	0.894***	-0.085	0.624***	1.416***	0.394	0.655***
	(0.315)	(0.142)	(0.278)	(0.485)	(1.031)	(0.223)
Log income$_{t-1}$	0.427**	0.525***	0.035	-0.156	0.885**	0.261
	(0.216)	(0.149)	(0.097)	(0.259)	(0.384)	(0.194)
Employment$_{t-1}$	-0.048	0.063*	0.093**	0.098**	0.062**	0.354*
	(0.036)	(0.037)	(0.041)	(0.055)	(0.030)	(0.174)
Log January avg temperature (1961-1990)	-0.026**	-0.038	-0.015*	-0.015	-0.011**	0.078***
	(0.009)	(0.084)	(0.007)	(0.047)	(0.005)	(0.026)
Bachelor's degree (%, 1984)	0.172*	0.019	-0.236	0.185	0.025	0.471*
	(0.085)	(0.067)	(0.257)	(0.221)	(0.036)	(0.262)
Working age (%, 1984)	-0.058	-0.144	0.091	0.137	0.430	0.415**
	(0.116)	(0.114)	(0.430)	(0.271)	(0.683)	(0.220)
New Stock$_{t-1}$	-0.008	-0.005	-0.004	-0.023	-0.012*	-0.105*
	(0.016)	(0.006)	(0.006)	(0.018)	(0.006)	(0.054)
Legislation	-0.007	-0.028**	-0.027*	-0.047***	-0.015	-0.022**
	(0.012)	(0.011)	(0.014)	(0.011)	(0.023)	(0.009)
F-test statistic (for foreign-born instrument)	24.378	30.689	22.376	27.445	19.377	26.344
F-test statistic (for int. migrant instrument)	24.559	27.666	28.100	28.551	20.441	27.093
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	360	360	300	300	350	350
R-Squared	0.543	0.523	0.303	0.431	0.138	0.210

Notes: Analysis of 101 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Table 5.3 reveals a number of interesting trends. Similarly to the owner-occupied market, there is evidence of positive effects of migration on private housing cooperative prices, though only in major cities and smaller urban areas. The effects are slightly greater for internal migrants in major cities (0.9% for Swedish-born migrants vs. 0.8% for foreign-born migrants), and foreign-born migrants in smaller urban areas (0.6% for Swedish-born migrants vs. 1.1% for foreign-born migrants, although the latter is only significant at the 10% level). In rural areas, neither migration flow is significant.

An important finding and contribution is that there is evidence of differential impacts of migration in terms of their impact on private housing cooperatives when compared to owner-occupied housing. In terms of foreign-born migration in major cities, the coefficient is weaker for private housing cooperatives than for owner-occupied housing overall, at 0.823 compared to 1.119, indicating that the price impact of migration is larger for owner-occupied housing than cooperatives. In terms of internal migration, the coefficient in major cities is similar in size to foreign-born migration, but for owner-occupied housing this was not significant at all. This indicates that internal migration is more impactful with regard to private housing cooperatives in major cities, than for owner-occupied housing. In terms of rural areas, evidence of differential impacts is also found, where the owner-occupier market and thus more affluent users generally are being impacted by migration, while private housing cooperatives are not. Indeed, the possibility of different kinds of migrants being attracted to rural areas (such as e.g. holiday-makers or retirees from near-lying European countries as well as natives, looking for owner-occupied housing in particular), spurring competition, likely partially explain this, which should then also be noted more in terms of policy. However, the results could also be explained by an increased importance of income, employment, temperature, and other control factors as explanatory variables, while low sample sizes of private housing cooperatives in rural areas could also be contributing.

Further evidence of differential impacts is seen in smaller urban areas, where findings suggest a strong, yet unreliable impact of foreign-born migration, owing to the lower significance level. This does suggest a differential impact of migration exists in this regard, as foreign-born migration is not significant at all for owner-occupied housing. Potential explanations include difficulty in breaking into the owner-occupied housing market in smaller urban areas owing to competition, coupled with the trend of small town revival in general (equally, there could also be some bias introduced into the coefficients owing to low sample sizes). This trend would, in turn, result in more difficult access to the private housing cooperative market for relatively less affluent migrants and natives – a key finding and contribution. Such effects are not felt by those able to access the relatively higher-priced owner-occupied market. Internal migration, in turn, behaves somewhat similarly for both private housing cooperatives and owner-occupied housing. However, the coefficient for private housing cooperatives is substantially weaker (at 0.624 compared to 1.416), indicating that impacts of internal migration, though significant, are smaller than for owner-occupied housing.

With regard to the OLS contra IV analysis in general, the coefficients are, for the most part, relatively similar or larger than those found for the OLS. This means that the coefficients are, as previously, being underestimated rather than overestimated, as they are lower bound. This constitutes a problem as the impact of migration on house prices cannot be accurately predicted, with the coefficients falling short of the true impact. However, generally, the underestimations are quite low as the coefficients are mostly relatively similar (particularly for the migration-related variables), and the problems posed are significantly smaller than if overestimation was occurring (although as previously, this does not discount the possibility of some omitted variable bias causing overestimation).

Table 5.4 allows for some further examination of these, and other, trends.[1,2]

[1] OLS results are displayed in Appendix 5.7 owing to space constraints.

[2] Partial first stage regressions are displayed in Appendix 5.8. Full results available on request owing to spatial constraints.

Table 5.4: IV Models Showing the Relationship Between Foreign-Born and Internal Migration and Private Housing Cooperative (PHC) Prices Split by Municipality Characteristics and Migration Motives

Dependent Variable: ΔLog PHC Price	*Overall*	*Major Cities*	*Smaller Urban*	*Rural*
ΔLabour migration$_t$/Population$_{t-1}$	2.243	3.014*	2.641**	1.396
	(1.344)	(1.508)	(1.284)	(8.316)
ΔFamily reunification migration$_t$/Population$_{t-1}$	0.741***	1.304***	1.683	3.172
	(0.296)	(0.329)	(6.178)	(7.905)
ΔRefugee migration$_t$/Population$_{t-1}$	1.427*	0.369	3.352**	1.584
	(0.776)	(1.034)	(1.689)	(1.27)
ΔInternal migration$_t$/Population$_{t-1}$	0.617***	0.681**	1.447***	1.031
	(0.243)	(0.305)	(0.499)	(0.907)
Log income$_{t-1}$	0.438*	0.663***	-0.430	0.917**
	(0.229)	(0.239)	(0.394)	(0.398)
Employment$_{t-1}$	0.136	-0.064	0.050**	0.188**
	(0.750)	(0.220)	(0.021)	(0.079)
Log January temperature	-0.014***	-0.025***	-0.005	-0.019**
	(0.004)	(0.010)	(0.006)	(0.009)
Bachelor's degree (%, 1984)	0.078	0.039	0.071	0.067
	(0.098)	(0.089)	(0.294)	(0.731)
Working age (%, 1984)	0.040	-0.058	-0.226	-0.049
	(0.136)	(0.144)	(0.339)	(0.584)
New stock$_{t-1}$	-0.005	-0.005	-0.004	-0.006**
	(0.005)	(0.011)	(0.005)	(0.002)
Legislation	-0.013***	-0.007	-0.038**	-0.031
	(0.004)	(0.016)	(0.018)	(0.059)
F-test statistic (for labour migrant instrument)	19.612	25.441	27.932	18.305
F-test statistic (for fam. reun. instrument)	26.330	33.555	21.902	19.304
F-test statistic (for refugee instrument)	23.446	26.708	28.552	21.515
F-test statistic (for internal mig. instrument)	26.719	24.559	28.100	20.441
Year fixed effects	Yes	Yes	Yes	Yes
Observations	1010	360	300	350
R-Squared	0.352	0.537	0.450	0.277

Notes: Analysis of 101 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Table 5.4 shows that overall, the strongest impacts are produced by refugee migrants, with a coefficient of 1.427, significant at the 10% level. Internal migrants produce a substantially weaker coefficient of 0.617, and family reunification migrants a coefficient of 0.741, both significant at the 1% level. This suggests that refugees, somewhat similarly to owner-occupied housing in Chapter 4 (Table 4.6), have stronger (although weakly significant) impacts on the private housing cooperative market than one would expect, while internal migrants have relatively weaker impacts, with the two having similar effect sizes. This indicates that income is not the only determinant of the degree of impact here, either. Family reunification migrants continue to produce somewhat strong impacts on private housing cooperatives, likely a result of some families choosing to move to this type of housing in the long-run. This is likely to be owing to the role of economic opportunities and social networks influencing decision-making. Labour migrants are insignificant in the analysis, indicating a clear departure from Chapter 4, likely a result of heterogeneity in the group. On the whole, then, these results underline that differential impacts in terms of the impacts of migration on different forms of housing in Sweden do exist, which further highlights the importance of studying this asset class, while also constituting a key contribution in itself.

When focusing on the results of the higher-skill groups, a number of interesting findings and contributions can be highlighted. Generally speaking, heightened significance of these groups in urban areas is noted, much like in Table 4.6, as was conceptually expected. Labour migrants produce stronger impacts in both major cities (3.0% for labour migrants vs 0.7% for Swedish-born migrants) and in smaller urban areas (2.6% for labour migrants vs 1.4% for Swedish-born migrants). However, internal migrants are consistently significant at a higher significance level than labour migrants, likely a result of less heterogeneity within the group. These findings are relatively surprising given the lack of significance of internal migration in major cities, and labour migration in smaller urban areas, in Table 4.6 for the owner-occupied housing analysis. The broad explanation for the differences found is likely owing to the structure and location of the relevant segments of the labour and housing markets in Sweden, as well as the motivations and preferences of migration across various groups. The evidence suggests that the generally more accessible private housing cooperative market appeals to a broader range of higher-skill migrants than owner-occupied housing.

The effects of refugees are interesting to note, with these being noted only in smaller urban areas (3.4%, significant at the 5% level). The strength of this refugee coefficient is, similarly to owner-occupied housing, likely a result of the placement of a relatively large amount of refugees in many smaller urban areas. This has resulted in a housing constraint issue in natives having to buy their own housing at higher prices, as well as the potential for stimulus of the local economy pushing up prices. For owner-occupied housing, these impacts were larger in rural areas, where proportionally larger amounts of refugees have been placed. However, owing to the general lack of private housing cooperatives in many rural areas, it is possible that the impact has instead been concentrated to a larger degree to the smaller urban area market. The lack of impact of the refugee variable in major cities, meanwhile, is likely a result of refugees often living in higher densities in such areas. In terms of policy implications, this means that greater emphasis should be placed on ensuring affordability of the owner-occupier market, rather than the private housing cooperative market, in relation to refugee impacts. Regardless, the general strength of this variable across a number of dimensions further highlights that impacts of migration are not entirely determined by income, or preferences, but rather a combination of these and other factors, an important contribution of this research.

The IV contra the OLS analysis generally reveals that most coefficients are being underestimated rather than overestimated. This indicates that the coefficients are lower bound, meaning that the model is inadequate at estimating the full extent of the impacts of migration on house prices and endogeneity inhibits some of this effect from being visible in the results. This generally corresponds with earlier analysis and since the scale of underestimation is generally quite modest, is not a significant worry for the analysis.

Hence, thus far I can state that the private housing cooperative market behaves quite differently from the owner-occupier market. A number of differential effects have been identified, in relation to the impacts of migration. These include a lack of impacts in rural areas, as well as stronger impacts of internal migration on major cities and foreign-born migrants on smaller urban areas. Further, although higher-income migration continues to produce strong coefficients, it is sometimes not as strongly significant as coefficients found for some generally lower income groups. The primary reasons for these divergences are theorized to be the location of private housing cooperatives being more concentrated to urban areas, as well as the nature of the housing being different, i.e. mostly consisting of apartments. This means that these results are likely to be generalizable to apartment markets in other countries, ceteris paribus. Further analysis of alternative markets will showcase which of these trends hold on a wider scale, and which can be isolated to specific markets.

5.3.2 Rents

Moving on, I conduct similar analysis to that seen above, but look instead at the impact of migration and the other variables on rents. In this analysis, the regulated nature of the Swedish rental market must be kept in mind, meaning generally weaker coefficients than those seen in previous analysis with different dependent variables are expected. The first results are shown in Table 5.5.[1,2,3]

[1] OLS results are displayed in Appendix 5.9 owing to space constraints.
[2] FE and ARMA results are displayed in Appendix 5.10 owing to space constraints.
[3] Partial first stage regressions are displayed in Appendix 5.11. Full results available on request owing to spatial constraints.

Table 5.5: IV Models Showing the Relationship Between Foreign-Born and Internal Migration and the Rental Market

Dependent Variable: ΔLog Rent or ΔLog Owner-Occupied Price or ΔLog Queue Time	*ΔLog Rent*	*ΔLog Owner-Occupied Price*	*ΔLog Queue Time*
ΔForeign-born$_t$/Population$_{t-1}$	0.276**	0.897***	0.773***
	(0.114)	(0.273)	(0.231)
ΔInternal migration$_t$/Population$_{t-1}$	0.099	0.705***	0.485*
	(0.109)	(0.215)	(0.291)
Log income$_{t-1}$	0.145	0.847***	2.441***
	(0.105)	(0.302)	(0.832)
Employment$_{t-1}$	-0.056	0.042*	-0.173
	(0.032)	(0.022)	(0.232)
Log January temperature	-0.001	-0.001	-0.097**
	(0.002)	(0.005)	(0.047)
Bachelor's degree (%, 1984)	0.061	0.014	-0.917**
	(0.050)	(0.262)	(0.315)
Working age (%, 1984)	-0.117	0.041	0.165**
	(0.103)	(0.489)	(0.069)
New stock$_{t-1}$	0.017	0.035	0.019
	(0.021)	(0.079)	(0.058)
Legislation	-0.005	-0.057***	-0.014
	(0.007)	(0.009)	(0.025)
F-test statistic (for foreign-born instrument)	19.967	28.707	23.947
F-test statistic (for int. migrant instrument)	16.351	25.441	20.698
Year fixed effects	Yes	Yes	Yes
Observations	880	880	190
R-Squared	0.188	0.384	0.335

Notes: Analysis of 55 Swedish municipalities between 2000 and 2015 in the first two columns, and 19 Swedish municipalities between 2005 and 2015 in the last column. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Table 5.5 shows a relatively weak, but significant impact of foreign-born migration on rents, significant at the 5% level, producing a coefficient of 0.276. The fact that there is a significant, positive impact is a noteworthy contribution, given that the regulated rent structure means the dependent variable is not able to vary completely freely (see Chapter 3). Despite this, migration is able to impact rental levels, even if on a diminished scale when compared to other markets. This is particularly relevant when considering that none of the control variables are significant, despite a number of these being significant for owner-occupied housing. This highlights the relatively large impact which migration is having on rents in Sweden, compared to other factors. Nevertheless, when comparing the size of the coefficient to the impact of foreign-born migration on owner-occupied housing for the same municipalities in the same period, the coefficient is approximately four times smaller in size. Hence, the effect is smaller to some degree, though the differing dependent variables make this conclusion an uncertain one. The fact that Swedish-born internal migration is not significant at all, despite being significant for owner-occupied prices, is also noteworthy. It is difficult to explain precisely why this is, and it is likely that further analysis is required to illuminate any trends (one reason could be that internal migration flows are more dispersed). Nevertheless, this is part of the wider trend seen throughout this thesis, where generally, foreign-born migration has proven to be a slightly stronger determinant than internal migration on a number of occasions, while internal migration is only a stronger determinant in certain key areas. . These results indicate wide heterogeneity in the degree of impacts that different forms of migrants have on the rental market in Sweden. This is likely to stem from relative interest in the rental market (as compared to other markets) being larger for foreign-born migrants, owing to their need for flexibility, as well as relative willingness and ability to spend being lower among this group.

Table 5.5 also shows that there are positive effects associated with both foreign-born and internal migration, and the size of the rental queue. Foreign-born migration produces a coefficient of 0.773, significant at the 1% level, while internal migration produces a coefficient of 0.485, although this coefficient is only significant at the 10% level. The different nature and time scale of the analysis means coefficients are not particularly comparable to rents. Nevertheless, the above result supports the findings for the rents. It does also indicate that internal migration influences rental queues, as opposed to rents, meaning that this variable does still have some impact on the rental market. Further, a significantly stronger effect for income is noted, and also a significant effect for the age variable, although interestingly, a negative effect for temperature and the percentage of people with a bachelor's degree. It is worth stressing, however, that the sample size is significantly smaller, and the results should be analysed in this light.

Adjusting policy to reflect the fact that foreign-born migration pushes up rental values and queue lengths more so than internal migration is likely to be advisable in certain areas. Access to the rental market is vital, as it is often the first port of call for many more vulnerable groups or individuals in society, who lack access to the considerable funds required to access the private housing cooperate or owner-occupied housing market. Hence, targeted initiatives to avoid such vulnerable groups struggling to gain access to the rental market should be considered in response. This includes initiatives to alleviate pressure on the rental market, by e.g. encouraging more building, or instituting a targeted queue jumping scheme.

Here, as for the private housing cooperatives, the impacts of endogeneity are fairly limited for both the rental market and for owner-occupied housing. The only significant variables for the rental market are affected by endogeneity to some degree. However, as in much of this thesis thus far, the impacts are being underestimated, rather than overestimated.[1] In terms of the FE and ARMA analysis in Appendix 5.10, broadly consistent results for the migration coefficients are noted, as well as for the control variables for the most part. This indicates the strength and robustness of the results, and indicating instances of omitted variable bias, endogeneity, autocorrelation and other statistical issues appear to be relatively limited in their extent. To verify whether the effect being picked up is truly that of migration, and not some other effect that is driving up rents, I conduct separate regressions for the data from 2000-2010, and for data from 2011-2015. The results are shown in Table 5.6 below:[2]

[1] Similarly to Chapter 4 and Section 5.3.1, testing for multicollinearity reveals that most variables are lower than 2, and all are lower than 5. Testing for heteroscedasticity and autocorrelation also allows for the rejection of null hypotheses.

[2] OLS results are displayed in Appendix 5.12 owing to space constraints.

Table 5.6: IV Models Showing the Relationship Between Foreign-Born and Internal Migration and the Rental Market Split by Time Period

Dependent Variable: ΔLog Rent	*2000-2015*	*2000-2010*	*2011-2015*
ΔForeign-born$_t$/Population$_{t-1}$	0.276**	0.184*	0.289***
	(0.114)	(0.102)	(0.095)
ΔInternal migration$_t$/Population$_{t-1}$	0.099	0.049	0.020
	(0.109)	(0.169)	(0.078)
Log income$_{t-1}$	0.145	0.120	0.168**
	(0.105)	(0.195)	(0.069)
Employment$_{t-1}$	-0.056	0.039	0.060
	(0.032)	(0.045)	(0.090)
Log January temperature	-0.001	0.002	0.000
	(0.002)	(0.004)	(0.001)
Bachelor's degree (%, 1984)	0.031	0.040	0.017
	(0.050)	(0.050)	(0.028)
Working age (%, 1984)	-0.037	-0.044	-0.035
	(0.045)	(0.056)	(0.034)
New stock$_{t-1}$	0.017	0.010	0.028*
	(0.021)	(0.020)	(0.014)
Legislation	-0.005		
	(0.007)		
F-test statistic (for f-born instrument)	19.967	18.671	21.346
F-test statistic (for i. mig. instrument)	16.351	15.475	18.490
Year fixed effects	Yes	Yes	Yes
Observations	880	605	275
R-Squared	0.188	0.187	0.228

Notes: Analysis of 55 Swedish municipalities between the stated time periods. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

The results in Table 5.6 indicate that the migration variable's impacts are indeed stronger between 2011-2015, while impacts seen between 2000-2010 are decidedly weaker (though not non-existent). Indeed, between 2011-2015, the foreign-born variable produces a coefficient of 0.289, significant at the 1% level, while the impact between 2000 and 2010 is 0.184, significant only at the 10% level. In addition, additional control variables, namely income and new stock, also become significant in the former regression. The differences in these results suggest that a structural break is likely. The chow test confirms this – producing an f-value of 9.413, which is larger than the critical value of 1.5987. The p-value is also 0.000, further confirming the strength of my results. This seems to indicate that my regressions are indeed capturing the impacts of foreign-born migration.

However, it remains possible that results do suffer from other statistical issues, such as omitted variable bias. Indeed, this could bias the results, particularly after deregulation, since it is feasible that all variables, not just migration, may have a larger impact on house prices after 2011. Hence, it is important to acknowledge this risk and highlight that it could serve to bias some of the results, creating elevated impacts of variables, which limits the certainty with which conclusions can be drawn.

Moving on, then, analysis continues by looking at the impacts of migration on rental areas segmented by municipality characteristics. The results are shown in Table 5.7 below[1,2]:

[1] OLS results are displayed in Appendix 5.13 owing to space constraints.
[2] FE and ARMA results are displayed in Appendix 5.14 owing to space constraints.

Table 5.7: IV Models Showing the Relationship Between Foreign-Born and Internal Migration and the Rental Market Split by Municipality Characteristics

	Major Cities		***Smaller Urban Areas***	
Dependent Variable: ΔLog Rent or ΔLog Owner-Occupied Price	*ΔLog Rent*	*ΔLog Owner-Occupied Price*	*ΔLog Rent*	*ΔLog Owner-Occupied Price*
ΔForeign-born$_t$/Population$_{t-1}$	0.234*	1.456***	0.361	0.334
	(0.121)	(0.588)	(0.333)	(0.983)
ΔInternal migration$_t$/Population$_{t-1}$	0.121	0.599	0.114	0.714**
	(0.136)	(0.436)	(0.233)	(0.349)
Log income$_{t-1}$	0.036	1.088***	-0.079	0.540
	(0.099)	(0.357)	(0.145)	(0.459)
Employment$_{t-1}$	0.023	0.040*	0.082	0.076*
	(0.034)	(0.023)	(0.077)	(0.043)
Log January temperature	0.002	-0.011	0.002	-0.001
	(0.002)	(0.010)	(0.002)	(0.005)
Percentage with bachelor's degree (1984)	0.026	0.001	-0.099	-0.143
	(0.027)	(0.120)	(0.074)	(0.333)
Percentage working age (1984)	-0.005	-0.161	0.116	0.174
	(0.021)	(0.169)	(0.097)	(0.425)
New Stock$_{t-1}$	0.015	-0.108	0.027	0.055
	(0.017)	(0.084)	(0.029)	(0.136)
Legislation	-0.016	-0.044***	-0.017	-0.065***
	(0.029)	(0.014)	(0.034)	(0.016)
F-test statistic (for f-born instrument)	21.466	29.888	16.466	24.343
F-test statistic (for int. mig. instrument)	18.377	26.389	14.898	23.366
Year fixed effects	Yes	Yes	Yes	Yes
Observations	384	384	400	400
R-Squared	0.192	0.526	0.282	0.373

Notes: Analysis of 55 Swedish municipalities between 2000 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Table 5.7 shows relatively few significant variables. Only foreign-born migration is significant in major cities, with a coefficient of 0.234 significant at the 10% level. This is consistent with Table 5.5 displayed earlier, and confirms that the theory regarding the generally stronger impact of foreign-born migration on the rental market, as well as generally, holds true, at least in major cities. Again, however, the impact is significantly stronger for owner-occupied prices. In smaller urban areas, neither migration variable is significant, which could be explained by small sample sizes. Less pressure in absolute terms being placed on the rental market, which is less constrained owing to a larger amount of space and resources in smaller urban areas, is also likely to be contributing. Rental housing is also less demanded by subsets of migrant groups, owing to relative preferences toward private housing cooperatives and owner-occupied housing, which is relatively more readily available (and cheaper) than in major cities. Indeed, the role of migrant preferences when looking for housing and the intersection between this and the other relevant concepts, such as economic opportunities and the role of small town revival serving as pull factors, are also likely to be playing into the less significant impacts. This underlines that any policy adjustments targeted at the rental market should likely be focused to major cities, and particularly those which have received the largest relative influxes of foreign-born migrants.

Finally, I look at the impacts of migration flows segmented by migrant background on the rental market in Table 5.8.[1,2]

[1] OLS results are displayed in Appendix 5.15 owing to space constraints.

[2] Partial first stage regressions are displayed in Appendix 5.16. Full results available on request owing to spatial constraints.

Table 5.8: IV Models Showing the Relationship Between Foreign-Born and Internal Migration and the Rental Market Split by Municipality Characteristics and Migration Motives

Dependent Variable: ΔLog Rent or ΔLog Queue Time	*Rents Overall*	*Rents Major*	*Rents Sm Urb*	*Q Time Overall*
ΔLabour migration$_t$/Population$_{t-1}$	0.286	1.144	0.733	0.288
	(0.736)	(1.905)	(1.905)	(1.524)
ΔFam. reuni. migration$_t$/Population$_{t-1}$	0.219	0.195	0.411	1.267
	(0.671)	(0.355)	(1.739)	(1.561)
ΔRefugee migration$_t$/Population$_{t-1}$	0.287*	0.374**	0.236	0.928**
	(0.155)	(0.167)	(0.415)	(0.365)
ΔInternal migration$_t$/Population$_{t-1}$	0.099	0.167	0.194	0.513*
	(0.101)	(0.133)	(0.166)	(0.294)
Log income$_{t-1}$	-0.078	-0.117	-0.167	2.717***
	(0.057)	(0.077)	(0.086)	(0.876)
Employment$_{t-1}$	-0.051	-0.015	-0.151	-0.211
	(0.097)	(0.078)	(0.161)	(0.318)
Log January temperature	0.001	0.002	0.002	-0.155**
	(0.001)	(0.003)	(0.002)	(0.073)
Bachelor's degree (%, 1984)	0.009	0.025	-0.087	-1.103**
	(0.017)	(0.028)	(0.075)	(0.392)
Working age (%, 1984)	-0.028	-0.015	0.137	0.231**
	(0.035)	(0.039)	(0.099)	(0.090)
New stock$_{t-1}$	0.012	0.017	0.027	0.054
	(0.017)	(0.016)	(0.031)	(0.067)
Legislation	-0.002	-0.004	-0.003	-0.017
	(0.003)	(0.003)	(0.004)	(0.033)
F-test statistic (for lab. mig. instrument)	21.618	23.375	19.341	24.780
F-test statistic (for fam. reun. instrument)	17.120	20.467	15.365	22.472
F-test statistic (for refugee instrument)	20.363	24.340	16.799	21.005
F-test statistic (for int. mig. instrument)	16.351	18.377	14.898	20.698
Year fixed effects	Yes	Yes	Yes	Yes
Observations	880	384	400	190
R-Squared	0.150	0.146	0.244	0.336

Notes: Analysis of 55 Swedish municipalities between 2000 and 2015 in the first three columns, and 19 Swedish municipalities between 2005 and 2015 in the last column. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

In Table 5.8, generally weak or no impacts of migration flows on rents are noted. The only significant impacts are produced by refugee migration, with 0.287, significant at the 10% level overall, and 0.374, significant at the 5% level in major cities. The lack of significance for other variables suggests broad heterogeneity in migrant impacts, likely owing to the system of rent regulation that is in place. Refugee migrants are thus capable of creating a substantial shock to the rental market, as was conceptually expected.

This is also generally confirmed by the results for the rental queue. For the rental queue, only refugee migration and internal migration produce significant impacts, with the former producing a stronger impact of 0.928, significant at the 5% level. The latter produces a smaller coefficient of 0.513, only significant at the 10% level. Both family reunification and labour migrants do not significantly impact rental queues, which is unsurprising given that the latter group is likely to favour other forms of housing where possible owing to their relative income and preferences (as well as heterogeneity in the group). The former is less likely to have a direct impact owing to often having the ability to live with family and not needing to join the queue. Nevertheless, this does highlight that although both internal migration and foreign-born migration impact rental queues, it is foreign-born migration which has a stronger impact, as is also suggested by the results for the rents. This is highly noteworthy, and one of the key contributions of this analysis.

The above findings are likely to be a result of a lack of competition stemming from other groups for this type of housing, with other migrants instead favouring other forms of housing where possible. It is also likely that the Swedish government's refugee placement policy is contributing to the impacts produced by refugees. As the policy mandates that all Swedish municipalities provide housing to a certain amount of refugees (Wennström and Öner, 2015), this housing stock is likely to be taken from the rental market to a significant degree, where possible. Hence, although refugees are not directly causing pressure on the rental market, indirect impacts result in refugees being the most impactful group on this market - since municipalities must reserve rental housing for refugees, causing pressure on the rental market. This likely should be noted in terms of adjustments made to policy in future. A natural conclusion is to focus initiatives which alleviate pressure on the rental market to areas which have received an influx of refugees, particularly in major cities, where other migrants or natives are pushed out or struggle to gain access to the rental market. However, further initiatives could include looking into changing the allocation pattern of refugees and encouraging municipalities, where the rental market has not been as affected by migration, to take in a larger share of refugees in future. This is a controversial initiative, though, and would have to be weighed against the wider societal impacts which such policy has, e.g. through cost-benefit analysis. Further, the role of conversion of rental housing into private housing cooperatives, enhancing segmentation and contributing to dwindling supply of rental housing could also plausibly be impacting the relationship given these differential results, and should also be managed in terms of its policy impacts.

In terms of the IV analysis, it is generally in line with the previous findings and analysis, and indicates one slight underestimation and one slight overestimation of the results as a result of endogeneity. This means results are not particularly distorted as a result of this.

Hence, with regard to the rental analysis, too, some differential impacts of analysis are noted, particularly when compared to other markets. Impacts on the rental market are generally weaker than those found for the other markets as a whole. Indeed, foreign-born migrants, and refugees in particular, especially in major cities, produce the most significant impacts on this type of properties. However, generally, coefficients are weaker than for other markets. In terms of internal migration, little evidence is found of impacts whatsoever beyond the rental queue, which diverges quite significantly from previous scales of analysis on other markets.

5.3.3 Stockholm

Building on the above, in order to explore differential impacts in the Swedish context more fully, I run a spatial lag regression measuring the impacts of migration and other variables on the submarkets mentioned above, in Stockholm. The results are shown in Table 5.9.

Table 5.9: OLS Models Showing the Relationship Between Foreign-Born and Internal Migration and the Private Housing Cooperative and Rental Market in Stockholm

Dependent Variable: ΔLog PHC Price or ΔLog Rent or ΔLog Queue Time	*ΔLog PHC Price*	*ΔLog Rent*	*ΔLog Queue Time*
ΔForeign-born$_t$/Population$_{t-1}$	1.446***	0.895**	2.051***
	(0.578)	(0.374)	(0.785)
ΔStockholm migration$_t$/Population$_{t-1}$	2.042***	1.561***	1.537**
	(0.506)	(0.379)	(0.690)
ΔRest of Sweden migration$_t$/Population$_{t-1}$	1.389***	1.540***	3.105***
	(0.525)	(0.492)	(1.578)
Log income$_{t-1}$	1.499***	0.576	0.736
	(0.365)	(1.255)	(2.788)
Employment$_{t-1}$	0.506**	0.506**	0.648***
	(0.241)	(0.235)	(0.159)
Politics	0.678***	0.258***	0.019
	(0.085)	(0.047)	(0.087)
New non-rental stock$_{t-1}$	-0.018**		
	(0.007)		
New rental stock$_{t-1}$		-0.028	0.158
		(0.098)	(0.211)
Number of completed lets		0.116***	-0.139**
		(0.027)	(0.061)
Average number of bids	0.006**		
	(0.002)		
Average time until sale	0.003		
	(0.003)		
Legislation	0.174***	0.092***	0.192***
	(0.014)	(0.007)	(0.017)
Million Programme	0.055	-0.013	-0.230
	(0.038)	(0.009)	(0.506)
Spatial Lag	0.958***	0.708**	0.891***
	(0.041)	(0.337)	(0.102)
Year fixed effects	Yes	Yes	Yes
Observations	308	308	308
R-Squared	0.724	0.675	0.544

Notes: Analysis of 28 Stockholm neighbourhoods between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Table 5.9 above shows a number of interesting results in terms of the impacts of migration, and other variables, on the housing market in the Stockholm region. The table shows larger coefficients compared to previous analysis (although this could also be a result of different data sources and spatial scales, as well as the addition of the spatial lag, which must be kept in mind).[1] I begin by looking at private housing cooperative prices. Migration from Stockholm produces a coefficient of 2.042, foreign-born migration produces a coefficient of 1.446, and migration from the rest of Sweden produces a coefficient of 1.389, all significant at the 1% level. This indicates that migrants moving within Stockholm have the strongest impact on Stockholm prices, with an effect about 50% larger than that produced by foreign-born migrants and that produced by migrants coming from the remaining parts of Sweden. This is an interesting, though not entirely unsurprising finding, given that migrants from within Stockholm are most likely to have the highest wealth and thus income available to spend on housing, and thus can compete best on this market. Indeed, migrants within Stockholm are also likely to have different motivations to move, as alluded to earlier. They may e.g. have a desire to move to a certain neighbourhood for primarily quality of life purposes, rather than primarily for employment purposes as may be the case for both foreign-born migrants and migrants from the rest of Sweden.

Hence, the key finding and contribution is that a certain form of internal migrants can have a substantially stronger impact on the housing market than foreign-born migrants, while also contributing strongly to gentrification trends. If focus is instead placed on the wealth of the migrants rather than their origin, working under the assumption that Stockholm migrants have the highest wealth, foreign-born migrants have medium wealth, and migrants from the rest of Sweden have the lowest relative wealth of these three groups (SCB, 2018), more similarities are found when compared to earlier sections. Although direct comparisons cannot be made owing to data discrepancies in analysis, these findings do support the role of wealth, rather than origin, playing a key role in determining the degree of impact that a migrant has on the housing market.

The fact that foreign-born migrants produce a stronger impact than migrants coming from the rest of Sweden is also a noteworthy finding and contribution. This is likely a result of the heterogeneity in the foreign-born migrant group, with many having relatively large disposable incomes, coming from affluent western European countries such as Norway or Germany. Others, such as migrants from Eastern Europe, and refugees, are less

[1] Given the nature of these regressions, testing for multicollinearity between variables is appropriate. In all regressions, VIFs of below 5 are found for all variables.

affluent but still require housing, and may have to settle for housing in more affordable locations. Meanwhile, the rest of Sweden group is likely to consist of relatively less affluent migrants when compared to the Stockholm migration group, with many migrants instead moving from relatively more affordable parts of Sweden (with lower incomes), seeking employment or education. Hence, the fact that this group's impacts are substantially lower than the impacts produced by migrants already previously living in Stockholm is not entirely surprising.

In terms of the rental market, Table 5.9 also shows a number of interesting results, which do diverge slightly from the findings for private housing cooperatives. Here, too, Stockholm migration produces a strong impact of 1.561, significant at the 1% level. Migration from the rest of Sweden produce a coefficient of 1.540, significant at the 1% level, and foreign-born migration a coefficient of 0.895, significant at the 5% level. The same arguments for why Stockholm migration is strongest apply as above, although the differences in coefficient size between Stockholm migration and the other coefficients are relatively smaller. This is likely to be a result of the generally diminished impacts of migration on the rental market, as was found in Section 5.3.2 earlier, in turn likely a result of the regulated nature of the Swedish rental market. As a result of this, there is also less variation between high rents and low rents than between high house prices and low house prices. Thus, more affluent migrants have less relative impact on the rental market.

Beyond this, however, for the rental market, migration from the rest of Sweden produces larger coefficients than foreign-born migration, at higher significance levels. This differs from the findings for private housing cooperative prices, where foreign-born migrants were found to produce stronger impacts. This differs from Section 5.3.2, where internal migrants generally had limited impacts on rents. However, this is not entirely surprising, given that foreign-born migrants choosing the rental market in Stockholm are relatively likely to be less wealthy than those choosing the private housing cooperative market, both owing to preferences and purchasing power. Relative purchasing power among these foreign-born migrants, many of whom come from relatively less affluent countries than Sweden, is then also likely to be lower than that found for Swedes moving to Stockholm more generally. Hence, purchasing power as well as motivations can explain these coefficients also – an important finding and contribution to note.

It is also interesting to note the generally larger coefficients for the rental market, when compared to those found for the rental market in Sweden as a whole, earlier, in Section 5.3.2. The results in this section indicate that despite rent regulation, there are fairly clear impacts of migration on the rental housing market. This was not found to be the case in Sweden as a whole, where impacts were generally weak or non-existent. This is likely to be a result of the Stockholm market being expressly less regulated than some other rental housing markets, owing to e.g. the larger amount of new-build housing. Additional contributing factors include indirect price pressures effectively forcing the Stockholm rental market to be more flexible and more new housing being built in Stockholm, which is inherently less rent-regulated.

Further, the Stockholm rental market's flexibility, in turn, is also likely be partly responsible for the results found for the rental queue regressions in Table 5.9. The results show that migrants from the rest of Sweden produce a coefficient of 3.105, foreign-born migrants produce a coefficient of 2.051, and migrants from within Stockholm a coefficient of 1.537. These coefficients are significant at the 1% level, except for migrants from within Stockholm, which is only significant at the 5% level. These findings indicate yet another departure from previous results, and thus also an important contribution. This time, migrants from the rest of Sweden produce the strongest impacts, while foreign-born migrants produce substantially weaker, but still the second strongest impacts, and Stockholm migrants produce the weakest impacts. Nevertheless, these findings are also in line with the conceptual framework. As stated earlier, income and preferences of Stockholm migrants mean that rental housing is not the preferred housing solution for some, thus reducing competition stemming from this group. Beyond this, many Stockholm migrants are likely to already be in the housing queue, which for many of the studied districts is likely to be a partially shared queue. Hence, reduced impacts on the housing queue as a result of moves made by this group is not entirely surprising.

The fact that migrants from the rest of Sweden produce the strongest impacts is not particularly surprising, either. These migrants are likely to be well aware of the housing shortage in the Stockholm market, owing to media reporting as well as general knowledge of Swedish markets. Thus, they may recognize the importance of joining the rental queue as early as possible. Meanwhile, foreign-born migrants may not even be aware that Stockholm (and Sweden) does not have a free rental market, and hence are less likely to appreciate the importance of this at an early stage. This, coupled with wealthier foreign-born migrants not needing or wanting to queue for rental housing, means that a diminished impact for foreign-born migrants, similar to that for Stockholm migrants, is not entirely surprising, either.

Beyond the above, interesting results are also found for the control variables in the regressions, and should be touched on briefly. It is worth noting also that the spatial lag variable is strongly significant throughout the regressions. It is slightly stronger in the private housing cooperative regression, producing a coefficient of 0.958, significant at the 1% level, while in the rental context the coefficient produced is 0.708, significant at the 5% level, and in the rental queue 0.891, significant at the 1% level. This indicates that the influences of nearby neighbourhoods on one another, with prices moving in similar directions, are stronger in the private housing cooperative context. Clearly, though, these influences remain strong in the rental context also. Hence, it is clear that while different forms of migration are impacting localized house prices, even when controlling for spatial lags, the spatial influences themselves also result in house prices rising together.

Most other variables also behave as one would expect. However, one variable which behaves differently in Stockholm to most of the previously studied contexts is the legislation dummy variable. This variable has in previous sections produced mostly negative impacts, as it accounts for the new Planning and Building Law legislation in 2011, which made it easier for developers to build. This dummy variable has a positive impact in Stockholm. This is not because supply of housing has not increased in Stockholm since 2011 – the number of housing unit completions has, on average, been over 50% higher in the years 2011-2018, when compared to 2000-2010 (Booli Pro, 2018). However, due to decades of chronic undersupply in the Stockholm region, and increasing demand pressures with a strong economy and population growth, the 2011 legislation has done little to alleviate house price pressures in Stockholm. House prices have instead continued to rise at increasing rates. This is an interesting observation, and quite telling of the general state of the housing market in Stockholm. In many ways, then, one could say that Stockholm is reflective of housing markets in developed cities globally – where it tends to be “difficult to build the accommodation that populations require,” with “unwise economic incentives for households to funnel more money into the housing market,” and with markets marked by a “failure to design a regulatory infrastructure to constrain housing bubbles” (The Economist, 2020). This also further highlights the contribution of this analysis.

Thus, overall, migration within Stockholm is found to be most impactful in terms of the impacts on cooperative prices and rents, but weakest in terms of impacts on the rental queue. Foreign-born migrants are second strongest for the cooperative market, but weakest for the rental market. Migrants from the rest of Sweden are the opposite, i.e. weakest for cooperative prices, but second strongest for the rental market. The latter group is also strongest in terms of its impacts on rental queues. These results can be explained by migrant groups’ relative income, as well as motivations and preferences influencing migration decisions.

5.4 Conclusions

In this chapter, I examine the impacts of foreign-born and internal migration on house prices on the alternative housing markets, namely private housing cooperatives and the rental market, in Sweden. This extends the literature by analysing the effects of migration on subsets of the housing market that make up a substantial portion of the housing market as a whole in a number of countries, in the context of a wide range of migration groups. Analysis is also disaggregated on the regional level, with major cities, smaller urban areas and rural areas being studied. Neighbourhood level analysis is also conducted in Stockholm, highlighting the impacts that a diverse range of migrant groups have on an extensive range of housing markets.

By looking at these results as a whole, a number of interesting trends are noted. On the overall levels in Sweden, foreign-born migration exhibits stronger trends than internal migration in terms of impact on the rental market, where internal migration is not significant. However, in terms of the private housing cooperatives, both forms of migration exhibit effects of generally similar strength, similarly to the findings for owner-occupied housing in Chapter 4. This highlights that overall, both internal and foreign-born migration are impacting different housing markets. However, there is evidence of foreign-born migration having a greater impact than internal migration in specific cases. Explanations for this are likely to stem partly from the different motivations and preferences of migrants.

In terms of the regional impacts, for private housing cooperatives, both smaller urban areas and major cities are impacted by both forms of migration. Strikingly, this is quite dissimilar from owner-occupied housing, where foreign-born migrants were found to have no impact on smaller urban areas, and internal migrants were found to have no impact on major cities. In terms of the rental market, impacts are only seen in major cities. These findings highlight that different market segments are impacted by migration in different ways. Generally, they also show foreign-born migration and internal migration are likely to be having an impact on major cities, smaller urban areas, and rural areas, in some form - but are not impacting all market segments equally or in similar ways. This also lends support to differences in the motivations and preferences of migrants playing role, although is also likely to be coupled with institutional and market differences, which must be noted between the different market types.

In terms of the background analysis, relatively strong impacts of the refugee migration variable in a number of scenarios are noted, which was not entirely expected. However, the variable is not significant in rural areas or major cities for private housing cooperatives, likely owing to the conceptually identified trend of refugees often living at higher densities per capita in the latter areas. Further, in terms of the private housing cooperative analysis, coefficients for family reunification, internal migration and labour migrants are also more consistently significant in a number of cases. However, in terms of the rental market, refugee migrants consistently appear to be affecting the housing market proportionally more than other groups. This is likely owing to this being the market most readily accessible to this group, as well as the government's refugee placement policy, pushing up prices for other groups wishing to access the market. This could have severe societal impacts, as many vulnerable and less wealthy groups rely on the rental market, unable to access other forms of housing markets.

When looking at the results of the analysis for the Nordic countries (Appendix 5.1), some similarities have been identified between the Finnish and Danish experiences in terms of the impact of migration and asset classes, and that of Sweden. The countries, and Sweden and Denmark in particular, are similar in some terms with regard to the relationship between migration and housing, across the asset classes analysed here. Nevertheless, there do also remain a number of differences in their experiences, likely owing to institutional differences between markets. Even still, these findings do underline that where institutional context is similar, the Swedish findings are broadly transferrable.

Finally, when looking at the results of the Stockholm analysis, (internal) migrants from Stockholm produce the strongest impacts in terms of cooperative prices and rents. Foreign-born migrants also produce relatively strong impacts on cooperative prices, while (internal) migrants from the rest of Sweden produce relatively strong impacts on rents and the rental queue. Hence, in terms of the Stockholm market, income of migrants, rather than origin, plays a strong role. This corresponds well with the background analysis for private housing cooperatives and rents. Perhaps, if it was possible to separate internal migration into subsets of income or wealth across other dimensions of analysis, similar results would be found, with an increased internal migration coefficient larger than foreign-born coefficients. As it stands, it is possible that the impacts of internal migrants are being underestimated in other regressions. Further research, where more data is readily available, should likely be conducted along these lines, including data for intra-municipal internal migration, rather than just inter-municipal migration. This is also important to keep in mind when considering any policy impacts of the findings.

In summary, it is relatively clear that both foreign-born and internal migration have an impact on the alternative housing markets, and that these impacts differ in many ways from those found for the owner-occupied market. Differences in impact are seen to be dependent on both the source region worldwide or within Sweden, and the income of the given region in particular. The destination region within Sweden also plays a role, and the market type and segment. The explanations for the differences are likely to be many, but some evidence does suggest that inter-migrant competition and differences in migrant preferences and motivations, as well as the role of economic opportunities and small town revival in particular, do play a role in this context. Policy also remains a relevant consideration.

6. Relationships Between Markets and the Influence of Migration

6.1 Introduction

Thus far, I have studied the owner-occupier, private housing cooperative, and rental markets mostly in isolation. Although comparisons have been provided to the owner-occupier market for the alternative markets, study of markets has not truly meant the study of these markets together, but rather side-by-side. However, in any housing market, it is clear that the market as a whole constitutes all of its segments, however many there may be. Each segment does not operate in a vacuum. Instead, the relationships between the owner-occupier market, private housing cooperatives, and rental market are likely to be important in the decision-making process for all relevant stakeholders and participants, not least when it comes to pricing and housing availability. This is evidenced in established models for commercial real estate such as DiPasquale and Wheaton (1992), and their extensions.

There is no formal established theory that describes the functioning of the housing market in relation to the functioning of its different parts. In short, an increase in the population, resulting from an increase in net migration, should, on balance, result in an increase in house prices. However, this relationship may not necessary hold in practice, owing to the many complexities involved in analysis. One such complexity is likely to be the fact that there are three markets for housing – owner-occupied housing, private housing cooperatives, and rental housing – which, though they all exist on a single housing market to a degree, also constitute submarkets of their own. Clearly, a full analysis of the housing market requires consideration of all three of these markets. Despite being part of a greater whole, each of the markets functions first as an independent entity. The basic relationships are displayed below:

$$\Delta\ln(om)_{k,t} = \beta * \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \mu\Delta Z_{k,t} + \varphi_t + \varepsilon_{k,t} \quad (6.1)$$

$$\Delta\ln(phc)_{k,t} = \beta * \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \mu\Delta Z_{k,t} + \varphi_t + \varepsilon_{k,t} \quad (6.2)$$

$$\Delta\ln(r)_{k,t} = \beta * \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \mu \Delta Z_{k,t} + \varphi_t + \varepsilon_{k,t} \qquad (6.3)$$

where
$\Delta ln(om)_{k,t}$ is the natural log of house prices in location k between t-1 and t
$\Delta ln(r)_{k,t}$ is the natural log of rents in location k between t-1 and t
$\Delta ln(phc)_{k,t}$ is the natural log of private housing cooperative prices in location k between t-1 and t
$\Delta fb_{k,t}$ is the change in the foreign-born population in location k between t-1 and t
$\Delta im_{k,t}$ is the change in internal migration in location k between t-1 and t,
$p_{k,t-1}$ is the total population in location k and time t-1
$X_{k,t}$ is a set of socio-economic characteristics of location k and time t, which here includes real income per household and the employment rate
W_k is a set of initial characteristics of location k,
$\Delta Z_{k,t}$ is a set of variables capturing changes in socio-economic characteristics of location k between t-1 and t
φ_t is a time-period dummy
$\varepsilon_{k,t}$ is the error term

Thus, essentially, there are three supply equations, which are identified by demand shocks and cross-market substitution, with supply being rather inelastic in the short-run. The extent to which a demand shock induced by immigration, which initially leads to a positive impact on housing cost in all three segments, would lead to a reallocation of people across housing segments, depends on the elasticity of substitution between the three varieties of housing. Thus, to consider only the markets in isolation would be insufficient, as clearly, all the markets also operate as part of one greater, whole, housing market:

$$HM = OOM + PM + RM \qquad (6.4)$$

where
HM = housing market
OOM = owner-occupied housing market
PM = private housing cooperative market
RM = rental housing market.

Conceptually speaking, it is likely that the housing market as a whole is greater than the sum of its parts (see e.g. Muth, 1983). In other words, it is likely that when taking into account the varying influences that different segments of the housing market, as well as interrelations between migration and those segments, have on one another, stronger impacts of migration on each individual sub-segment are likely. This should hold despite segments of the housing market not necessarily reacting in the same ways to migration initially. However, this does not mean that the interaction effects between migration and a specific housing market, or indeed, the relations between housing sub-segments as a whole are always positive. This should instead depend on the relative positioning of each segment of the housing market in relation to the other segments. For instance, the relationship between owner-occupied housing and rental housing (and the influences of migration on these markets) is likely to be very different to the relationship between owner-occupied housing and private housing cooperative housing, as the former two are in many ways substitutes, while the latter two are more similar in nature (the extent of segmentation is an empirical manner).

Hence, having considered the two primary alternative markets in isolation (Chapter 5), and compared them to earlier results for the owner-occupier market (Chapter 4), I will progress onto simultaneous equation analysis. I will look at the housing market as a whole, and thus also at the intersections between the different housing markets being studied. This analysis will allow study of the owner-occupier market, private housing cooperative market, and rental market, not only in isolation with comparisons provided to one another as previously, but also more directly in conjunction with one another.

The trends studied will allow determination of not only how the different markets themselves impact one another, but also if the relationship between migration and any segment of the housing market, can impact a different segment of the housing market. This will allow study of the impacts of migration on housing in a more multi-dimensional, multi-faceted manner. This should then also provide more insights into the fuller extent of impacts of migration on housing in Sweden, accounting and controlling more fully for the different dimensions of the housing market.

The main contribution in this chapter is to consider the relations between migration and the housing market more fully. Most previous research is centred on the relationship between migration and a specific sub-segment of the housing market (see chapter 2). This chapter instead considers the impacts of migration across the full spectrum of the housing market, at the same time, taking into account the interrelations and interactions between the different markets. This allows for a fuller analysis of the relationship between migration and housing more generally. This should also be applicable beyond Swedish borders, as although the specific housing markets present in different countries will differ in character, the dynamics and multi-segmented nature of the housing market is a factor in virtually all countries worldwide.

6.2 Data and Methodology

This chapter follows directly on from Chapters 4 and 5, as the markets studied were introduced in that chapter. Hence, data sources, availability and aspects of the methodology have already been discussed in those chapters. Direct comparisons will also be made with results found in Chapters 4 and 5, in order to allow for the elevation of analysis and identification of relevant trends for the entire housing market, constituting all of its segments, to be studied further.

In order to successfully build on the previous chapters, when looking at the intersections between the different segments on the housing market, I must look at the relationships between each of the markets. These relationships will be studied by way of Stata's Simultaneous Equation Builder, allowing for full consideration of the influence of the different variables on each dependent variable. This will also allow consideration of the influence of the dependent variables on one another, and also the influence of relations between variables on each other and dependent variables. The dependent variable relationships considered will be the following:

Relationship 1 OM: $\Delta \ln(om)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \xi MR_k + \sum_{t=2}^{16} \delta_t Y_t + \varepsilon_{k,t}$ (6.5)

Relationship 1 RM: $\Delta \ln(r)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \xi MO_k + \sum_{t=2}^{16} \delta_t Y_t + \varepsilon_{k,t}$ (6.6)

Relationship 2 OM: $\Delta\ln(om)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \xi MP_k + \sum_{t=2}^{16} \delta_t Y_t + \varepsilon_{k,t}$ (6.7)

Relationship 2 PHC: $\Delta\ln(phc)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \xi MO_k + \sum_{t=2}^{16} \delta_t Y_t + \varepsilon_{k,t}$ (6.8)

Relationship 3 PHC: $\Delta\ln(phc)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \xi MR_k + \sum_{t=2}^{16} \delta_t Y_t + \varepsilon_{k,t}$ (6.9)

Relationship 3 RM: $\Delta\ln(r)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \xi MP_k + \sum_{t=2}^{16} \delta_t Y_t + \varepsilon_{k,t}$ (6.10)

where
$\Delta ln(om)_{k,t}$ is the natural log of house prices in location k between t-1 and t
$\Delta ln(r)_{k,t}$ is the natural log of rents in location k between t-1 and t
$\Delta ln(phc)_{k,t}$ is the natural log of private housing cooperative prices in location k between t-1 and t
$\Delta fb_{k,t}$ is the change in the foreign-born population in location k between t-1 and t
$\Delta im_{k,t}$ is the change in internal migration in location k between t-1 and t,
$p_{k,t-1}$ is the total population in location k and time t-1
$X_{k,t}$ is a set of socio-economic characteristics of location k and time t, which here includes real income per household and the employment rate
W_k is a set of initial characteristics of location k, which here includes the reported crime in 1984 per 1,000 residents, a temperature average from 1961-1990, the % of population with a bachelor's degree in 1984 per 10,000 inhabitants, and the percentage of the population aged 20-64 in 1984
$S_{k,t}$ is a set of supply-side characteristics of location k and time t split into owner-occupied, private housing cooperatives and rental housing, which here includes new housing stock that becomes available in every year per 1,000 residents (a supply-side variable), and a dummy variable accounting for the differing impacts of new Planning and Building Legislation that took effect in 2011
MR is the interaction effect between $\frac{\Delta fb_{k,t}}{p_{k,t-1}}$ and $\Delta\ln(r)_{k,t}$
MO is the interaction effect between $\frac{\Delta fb_{k,t}}{p_{k,t-1}}$ and $\Delta\ln(om)_{k,t}$
MP is the interaction effect between $\frac{\Delta fb_{k,t}}{p_{k,t-1}}$ and $\Delta\ln(phc)_{k,t}$

Y is years from 2000 to 2015 t=2,…,16
and ε is the error term.

It would be ideal to run more than one interaction effect per equation, and particularly to also investigate the interaction effect between internal migration and housing market segments. However, owing to the statistical issues which inclusion of more than one interaction effect can create, only one interaction effect, which is deemed to be of primary interest, will be included in each equation here. Naturally, identification issues could arise with just one interaction effect as well, which is important to keep in mind throughout the analysis. It would also be interesting to include house prices as a variable on their own, but due to the statistical issues of multicollinearity and endogeneity that are likely to arise as a result, I have elected not do this here. Variations of these regressions which do include such a variable could be explored in further research.

This line of analysis should allow study of the relations between each segment of the housing market, and the other two segments of the housing market. This will show how these relate with, depend on, and interact with one another in a wider context. After these relationships have been studied, all three markets will be intersected with one another. This will be done in order to establish whether the three markets are strongly interrelated or not, and if so, how these markets do impact and affect one another, in relation to each other and in light of migration. The equations used will thus be:

$$\Delta\ln(om)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \xi_1 MR_k + \xi_2 MP_k + \sum_{t=2}^{16} \delta_t Y_t + \varepsilon_{k,t} \tag{6.11}$$

$$\Delta\ln(phc)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \xi_1 MR_k + \xi_2 MO_k + \sum_{t=2}^{16} \delta_t Y_t + \varepsilon_{k,t} \tag{6.12}$$

$$\Delta\ln(r)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \xi_1 MO_k + \xi_2 MP_k + \sum_{t=2}^{16} \delta_t Y_t + \varepsilon_{k,t} \tag{6.13}$$

where the notation is the same as before. However, a noteworthy change to this analysis is not only the three equations being studied in conjunction with one another, but also the addition of an additional interaction effect to each equation. This means interaction effects between the foreign-born variable and both other segments of the housing market can be fully accounted for in each equation. Including two interaction effects in each equation does bring with it some statistical problems, though, where the interactions could result in misleading coefficients being reported owing to the influences they have on one another and other variables. This is important to consider and keep in mind in the analysis. Nevertheless, including these interaction effects is incredibly valuable as it will allow for fuller comparisons between markets. Hence, the trade-off of potential statistical problems in this situation appears to be worthwhile.

6.3 Results

As highlighted above, I begin by looking at owner-occupied housing and the rental market, with results shown in Table 6.1.

Table 6.1: Simultaneous Equation Model of Owner-Occupied Housing and Rental Housing

Dependent Variable: Δ Log of Rent	
ΔForeign-born$_t$/Population$_{t-1}$	0.714***
	(0.123)
ΔInternal migration$_t$/Population$_{t-1}$	0.237
	(0.185)
Log income$_{t-1}$	0.103
	(0.086)
Employment$_{t-1}$	-0.042
	(0.054)
Log January temperature	-0.001
	(0.001)
Bachelor's degree (%, 1984)	0.024
	(0.037)
Working age (%, 1984)	-0.024
	(0.043)
New stock$_{t-1}$	-0.015
	(0.015)
Legislation	-0.002
	(0.002)
(ΔForeign-born$_{t-1}$/Population$_{t-2}$)* Δ Log of House Price	-11.648***
	(1.459)
Year fixed effects	Yes
Observations	510

Dependent Variable: **Δ Log of Owner-Occupied Price**	
ΔForeign-born$_t$/Population$_{t-1}$	3.275***
	(0.639)
ΔInternal migration$_t$/Population$_{t-1}$	1.488***
	(0.493)
Log income$_{t-1}$	0.369***
	(0.129)
Employment$_{t-1}$	0.125***
	(0.026)
Log January temperature	-0.012**
	(0.005)
Bachelor's degree (%, 1984)	0.065***
	(0.016)
Working age (%, 1984)	-0.097
	(0.210)
New stock$_{t-1}$	-0.015**
	(0.007)
Legislation	-0.034***
	(0.010)
(ΔForeign-born$_{t-1}$/Population$_{t-2}$)* Δ Log of Rent	-294.372***
	(27.158)
Year fixed effects	Yes
Observations	510
Variance (Δ Log of Rent)	0.001
Variance (Δ Log of House Price)	0.002
Covariance (Δ Log of Rent, Δ Log of House Price)	0.003***

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Table 6.1 indicates a number of findings that diverge slightly or even significantly from those seen in earlier chapters, and thus also a number of key findings and contributions. In terms of the rental market, when running this simultaneous equation model, there is a heavily inflated impact of foreign-born migrants on rental levels. Indeed, the coefficient observed, 0.714 significant at the 1% level, is around three times as strong as those seen when running the rental market in isolation in Tables 5.5 onwards. This indicates that when considering the wider context of the housing market and the influences of the different segments of the housing market on one another, foreign-born migrants have a stronger impact on the rental market than previously observed. The continued limited significance and impact of other variables on the rental market, which includes internal migration, is also noted. This indicates the strong differential impacts of different forms of migration on the rental market in Sweden. This also lends further support to conceptually identified trends, not only in the differential impacts of migration, but also potentially in the role of motivations of migrants, as well as the identified impact of migration on a rising rental queue while supply of rental housing dwindles.

It is interesting to also note the impact of the interaction effect between foreign-born migration and owner-occupied prices in particular. This interaction effect is negative and highly significant, at -11.648. This indicates that as foreign-born migration increases, the impact of rising owner-occupied prices on the rental market becomes more limited, or the opposite, i.e. as the owner-occupied price increases, the impact of foreign-born migration on the rental market becomes more limited. This is an important finding and contribution, which essentially indicates that these two variables are, to some degree (and as conceptually expected), substitutes in their impacts on the rental market. This underlines that the impact of foreign-born migration can be less important in terms of its absolute impact on the rental market. However, clearly, the variable is still likely to have a strong influence on the housing market as a whole. This relationship is likely formed in this way owing to the rent-controlled nature of the rental market, where beyond a certain point, heightened impacts of variables become difficult to sustain. This is owing to the inherent limitations on supply placed on the market, as a result of its very nature. Thus, owing to the strong differences in the nature of these two markets, the negative interaction effect takes form.

Indeed, this is further confirmed by the findings for owner-occupied prices, where a strengthened impact of foreign-born migration on owner-occupied prices is noted. The coefficient, of 3.275, is also strengthened around three times as much as in previous tables in earlier chapters (Table 4.4 of Chapter 4 onwards) looking purely at the owner-occupier market in isolation. Interestingly, internal migration is also strengthened, at 1.488, but this increase is less marked than for foreign-born migration (indeed, previously the impact was almost as strong as for foreign-born migration). A slightly diminished impact of control variables in general is also noted. This indicates that foreign-born migration, in a wider housing market context where the wider influences of the different segments of the housing market on one another are considered, is having a greater influence on house prices than internal migration. This further underlines that some of the previously identified conceptual trends (such as the role of economic opportunities, inter-migrant competition, and push/pull factors influencing location decisions) find evidence here. The differences could however also be a result of internal migrants' greater market knowledge of the competing markets, meaning they are less impacted by changes, or relations, between markets, and thus produce less strengthened coefficients.

Regardless, here, too, a negative interaction effect between foreign-born migrants and house prices is noted, an order of magnitude stronger than what was seen for the rental market (although relative variable sizes also influence this), at -294.372. It is clear that this interaction also indicates that a heightened level of foreign-born migration reduces the impact of rental levels on owner-occupied prices, or that heightened rental levels reduce the impact of foreign-born migration on owner-occupied prices. This, much like the earlier finding, means that once either of the variables becomes too strong, the other variable will start to matter less. This is likely to be owing to either the number of foreign-born migrants resulting in an increased supply on the market, or the high level of rents resulting in migrants being priced out of markets; further explanations for this relationship will also be posited below. Nevertheless, this is clearly an interesting finding as it shows that the markets, in the presence of migration, do not necessarily always have to move together. This is despite a positive covariance between the two markets, which indicates that generally, the two markets are likely to move, in terms of price, in a similar direction.

Moving on, I look at a similar relationship as that studied above, but instead compare the owner-occupied housing market to private housing cooperatives. This is shown in Table 6.2.

Table 6.2: Simultaneous Equation Model of Owner-Occupied Housing and Private Housing Cooperatives

Dependent Variable: **Δ Log of Private Housing Cooperatives**	
ΔForeign-born$_t$/Population$_{t-1}$	0.947**
	(0.433)
ΔInternal migration$_t$/Population$_{t-1}$	0.756**
	(0.335)
Log income$_{t-1}$	0.203***
	(0.078)
Employment$_{t-1}$	0.105**
	(0.045)
Log January temperature	-0.007**
	(0.003)
Bachelor's degree (%, 1984)	-0.112
	(0.111)
Working age (%, 1984)	-0.059
	(0.149)
New stock$_{t-1}$	0.056
	(0.067)
Legislation	-0.035***
	(0.007)
(ΔForeign-born$_{t-1}$/Population$_{t-2}$)* Δ Log of House Price	34.341***
	(6.257)
Year fixed effects	Yes
Observations	510

Dependent Variable: **Δ Log of Owner-Occupied Price**	
ΔForeign-born$_t$/Population$_{t-1}$	1.589***
	(0.614)
ΔInternal migration$_t$/Population$_{t-1}$	1.388***
	(0.543)
Log income$_{t-1}$	0.427***
	(0.173)
Employment$_{t-1}$	0.155***
	(0.047)
Log January temperature	-0.007*
	(0.004)
Bachelor's degree (%, 1984)	0.092**
	(0.035)
Working age (%, 1984)	0.028

	(0.176)
New $stock_{t-1}$	-0.045
	(0.078)
Legislation	-0.029***
	(0.008)
(ΔForeign-$born_{t-1}$/$Population_{t-2}$)* Δ Log of PHC Price	60.437***
	(10.261)
Year fixed effects	Yes
Observations	510
Variance (Δ Log of PHC Price)	0.001
Variance (Δ Log of House Price)	0.002
Covariance (Δ Log of PHC Price, Δ Log of House Price)	-0.001***

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Table 6.2 above shows, similarly to the previous table, different trends to when the markets were being considered in isolation. In terms of the private housing cooperatives (comparisons in Tables 5.2 onwards), a slightly heightened impact of the foreign-born variable on prices is noted, with a coefficient of 0.947, significant at the 5% level. The impact of internal migration is similar to when private housing cooperatives were considered in isolation, at 0.756. The impacts of control variables are also slightly diminished. This indicates that here, too, the impact of foreign-born migration is relatively stronger when considering the markets in relation to one another, rather than looking at them purely in isolation (though the differences are smaller than those found in Table 6.1). It also shows that the impacts of internal migration are, in the context of these two markets, somewhat weaker.

A strong positive interaction between foreign-born migrants and owner-occupied house prices is also noted, with a 34.341 coefficient, significant at the 1% level. This is an important finding and contribution, as it contrasts with the strong negative interaction that was found between the rental market and house prices. However, the differences between these interaction effects can likely be explained by the nature of the markets. Because the rental market is predominantly rent controlled, at a certain level, a heightened level of any variable is unlikely to have an effect, as rental levels cannot feasibly rise beyond a certain level. This is not the case with private housing cooperatives or the housing market, where instead, a degree of complementarity is possible between the two markets. Here, a higher level of foreign-born can instead result in house prices having a heightened impact on private housing cooperatives, or the inverse, where higher house prices result in a heightened impact of foreign-born migrants. As such, heightened levels of both of these factors contribute to a stronger acceleration in prices on the private housing cooperative market.

In terms of owner-occupied prices, a heightened impact of the foreign-born is once again seen, with a coefficient of 1.589, much like when this market was intersected with the rental market. However, the impact is generally slightly weaker than when intersected with the rental market. This is likely owing to the increased complementarity or even substitutability between the private housing cooperative and owner-occupied housing markets. Otherwise, relatively similar findings to when paired with the rental market are seen, including for internal migration, which presents a coefficient of 1.388. However, again, a positive interaction effect between the change in private housing cooperative prices and foreign-born migration is found, at 60.437, indicating that a heightened level of one of these results in a stronger impact of the other. This is likely for similar reasons to those discussed above, stemming from the nature of the different subsets of the housing market.

Nevertheless, a highly interesting finding is the negative covariance between the private housing cooperative market and the owner-occupier housing market. This indicates that prices on one market do not necessarily move in the same direction as the other market – in fact, the negative significant coefficient indicates the very opposite. This is likely to be owing to different types of people with different preferences, income levels, and demographics more generally moving into the private housing cooperative and owner-occupier housing markets in different geographic locations. It does mean that substitutability between the two markets is unlikely to be as high as perceived. This also legitimizes looking at the three markets separately, because clearly, diverging trends are very possible and observed here.

Next, I look at the relations between the private housing cooperative and rental market, shown in Table 6.3.

Table 6.3: Simultaneous Equation Model of Private Housing Cooperatives and Rental Market

Dependent Variable: Δ Log of Private Housing Cooperatives	
ΔForeign-born$_t$/Population$_{t-1}$	2.281***
	(0.552)
ΔInternal migration$_t$/Population$_{t-1}$	1.590***
	(0.536)
Log income$_{t-1}$	0.382***
	(0.148)
Employment$_{t-1}$	0.102**
	(0.046)
Log January temperature	-0.010***
	(0.004)
Bachelor's degree (%, 1984)	-0.125
	(0.119)
Working age (%, 1984)	-0.129
	(0.160)
New stock$_{t-1}$	0.017
	(0.056)
Legislation	-0.025***
	(0.007)
(ΔForeign-born$_{t-1}$/Population$_{t-2}$)* Δ Log of Rent	315.045***
	(26.373)
Year fixed effects	Yes
Observations	510

Dependent Variable: Δ Log of Rent	
ΔForeign-born$_t$/Population$_{t-1}$	0.644***
	(0.137)
ΔInternal migration$_t$/Population$_{t-1}$	0.207
	(0.155)
Log income$_{t-1}$	0.059
	(0.082)
Employment$_{t-1}$	-0.042
	(0.064)
Log January temperature	-0.001
	(0.001)
Bachelor's degree (%, 1984)	-0.008
	(0.031)
Working age (%, 1984)	-0.029

	(0.041)
New $stock_{t-1}$	0.017
	(0.056)
Legislation	-0.003
	(0.002)
(ΔForeign-$born_{t-1}$/$Population_{t-2}$)* Δ Log of PHC Price	20.106***
	(1.686)
Year fixed effects	Yes
Observations	510
Variance (Δ Log of PHC Price)	0.001
Variance (Δ Log of Rent)	0.001
Covariance (Δ Log of PHC Price, Δ Log of Rent)	-0.002***

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Table 6.3 reveals a number of different results, with some being more expected than others. In terms of the private housing cooperative market, much like in the previous table, a strengthened foreign-born coefficient of 2.281 is found. A stronger coefficient is also noted for internal migration, at 1.590, though to a lesser extent. This highlights that when considering the relations between the private housing cooperative market and the rental market, foreign-born migrants are having a stronger impact on prices. It also shows that the impact of internal migration on the private housing cooperative market is more considerable in this context (this could partly be a result of the aforementioned impact of internal migrants' stronger market knowledge). This generally indicates a stronger relationship between these two markets. Indeed, these findings constitute a key contribution and do also lend credence to the identified conceptual trend of rental to private housing cooperative conversions, resulting in these stronger impacts of migration and closer relationship between the markets.

The control variables behave relatively similarly to the previous table, although the interaction effects are different this time around. Indeed, the interaction effect between the change in the foreign-born and the log of rent is strongly positive and highly significant, at 315.045. This differs substantially to the relationship between the rental market and the owner-occupier market, shown in Table 6.1, where this relationship was instead negative. This indicates that the relationship between the rental market and the owner-occupier market is an outlier of sorts, as the interaction effects in that relationship function differently to the ways in which these function in all other relationships between the different segments on the housing market.

This is most likely a result of the nature of the rental market, which differs substantially to the nature of the owner-occupier housing market owing to its rent-controlled nature. Clearly, it also differs in nature to the private housing cooperative market. However, it is slightly closer in nature to this than the completely freely operating owner-occupier market. This is owing to the presence of a monthly payment and a lack of complete autonomy present in the private housing cooperative market, as mentioned in Chapters 2 and 5, as well as the role of aforementioned conversions. Further, owing to the generally smaller sizes of private housing cooperatives compared to owner-occupied housing in many regions, the degree of substitutability and thus also similarity between markets is higher for private housing cooperatives and the rental market than for the relation between the owner-occupier market and the rental market. This is accentuated by the fact that the former two both consist primarily of apartments, attracting broadly similar target groups, while the owner-occupier market consists predominantly of larger housing. Hence, the fact that these two markets have stronger positive relations between one another is logical. Thus, the fact that a higher level of foreign-born migration is resulting in increased impacts of rents, or a higher level of rents is resulting in increased impacts of foreign-born migrants on private housing cooperatives, is not entirely unexpected.

In terms of the rental market in Table 6.3, an increased foreign-born variable impact of 0.644 is seen, significant at the 1% level. Although this is weaker than when considering the rental market and owner-occupier market in Table 6.1, it is only slightly weaker, and still largely strengthened when compared to considering the rental market on its own in Table 5.5. Hence, it is clear that the impact of foreign-born migrants on rents does become more pronounced when looking at housing markets as a whole, rather than solely the rental market in isolation. The other control variables, including internal migration, continue to be insignificant, as they have been in previous regressions.

With regard to the interaction effect, similar trends to above are noted. A positive impact of the interaction effect between foreign-born migration and private housing cooperatives on the rental market is observed, with a coefficient of 20.106. This trend is in line with the positive impact that this interaction effect had on the owner-occupied housing market in Table 6.1. This underlines the interesting nature of the private housing cooperative market as a form of transition or bridge market between the rental market and owner-occupied housing market, with both other markets strengthening the impact of foreign-born migration when considered together with the private housing cooperative market. The private housing cooperative market is thus theorized to be the primary alternative market of choice for most people accessing the rental or owner-occupier market (discussed further below).

Finally, it is also worth noting that there is a negative covariance between the two markets. This indicates that despite perceived similarities in some regards, the many differences in terms of their general characteristics, as well as the differences in terms of the variables which affect them and the magnitude of these effects, do make these two market segments move in different directions. Indeed, positive increases in rental prices are being met with negative movement in private housing cooperative prices, as well as the opposite. This highlights that private housing cooperatives are the anomaly market, which does not necessarily move in line with the rest of the housing market, despite being similarly affected by foreign-born migration to the other two housing market segments. This means there are likely to be other relevant variables at play which are affecting this segment of the market in a different way to the other market segments, which perhaps have not been adequately considered or account for here. These include factors such as migrant preferences or motivations, but also factors unrelated to migration.

To conclude this chapter, I look at all three of these markets, i.e. the private housing cooperatives, rental market, and owner-occupier housing market, in conjunction with one another, in one large simultaneous equation model. This is because although interrelations between two segments of the market are interesting, it is also likely to be illuminating to look at the interrelations between all three markets. This should allow me to see how the impacts of different variables, and relations between the markets, are shaped in this regard. This will also display how results differ from when looking at markets in isolation, and from when looking solely at two segments of the market. Indeed, since the housing market is made up of these three markets as a whole, analysis along these lines is highly relevant. This is shown in Table 6.4.

Table 6.4: Simultaneous Equation Model of Private Housing Cooperatives, Rental Market and Owner-Occupied Housing

Dependent Variable: Δ Log of Private Housing Cooperative Price	
ΔForeign-born$_t$/Population$_{t-1}$	2.133***
	(0.848)
ΔInternal migration$_t$/Population$_{t-1}$	1.195***
	(0.544)
Log income$_{t-1}$	0.316**
	(0.142)
Employment$_{t-1}$	0.166**
	(0.071)
Log January temperature	-0.004
	(0.004)
Bachelor's degree (%, 1984)	-0.109**
	(0.051)
Working age (%, 1984)	0.072
	(0.195)
New stock$_{t-1}$	-0.015
	(0.017)
Legislation	-0.022***
	(0.009)
(ΔForeign-born$_{t-1}$/Population$_{t-2}$)* Δ Log of Rent	333.031***
	(25.670)
(ΔForeign-born$_{t-1}$/Population$_{t-2}$)* Δ Log of House Price	59.727***
	(6.171)
Year fixed effects	Yes
Observations	510
Dependent Variable: Δ Log of Rent	
ΔForeign-born$_t$/Population$_{t-1}$	0.205**
	(0.091)
ΔInternal migration$_t$/Population$_{t-1}$	0.209
	(0.158)
Log income$_{t-1}$	0.110
	(0.100)
Employment$_{t-1}$	-0.042
	(0.075)
Log January temperature	-0.001
	(0.001)
Bachelor's degree (%, 1984)	0.024
	(0.037)

Working age (%, 1984)	-0.022
	(0.050)
New $stock_{t-1}$	0.015
	(0.015)
Legislation	-0.001
	(0.002)
(ΔForeign-$born_{t-1}$/$Population_{t-2}$)* Δ Log of PHC Price	24.786***
	(1.828)
(ΔForeign-$born_{t-1}$/$Population_{t-2}$)* Δ Log of House Price	-16.885***
	(1.459)
Year fixed effects	Yes
Observations	510

Dependent Variable: **Δ Log of House Price**	
ΔForeign-$born_{t}$/$Population_{t-1}$	1.783**
	(0.784)
ΔInternal $migration_{t}$/$Population_{t-1}$	0.836***
	(0.351)
Log $income_{t-1}$	0.406***
	(0.197)
$Employment_{t-1}$	0.104***
	(0.021)
Log January temperature	-0.009*
	(0.005)
Bachelor’s degree (%, 1984)	0.065***
	(0.016)
Working age (%, 1984)	-0.097
	(0.210)
New $stock_{t-1}$	-0.015**
	(0.008)
Legislation	-0.034***
	(0.010)
(ΔForeign-$born_{t-1}$/$Population_{t-2}$)* Δ Log of PHC Price	78.791***
	(8.636)
(ΔForeign-$born_{t-1}$/$\Delta$$Population_{t-2}$)* Δ Log of Rent	-290.631***
	(27.158)
Year fixed effects	Yes
Observations	510

Variance (Δ Log of PHC Price)	0.002
Variance (Δ Log of Rent)	0.001
Variance (Δ Log of House Price)	0.002

Covariance (Δ Log of PHC Price, Δ Log of Rent)	-0.000***
Covariance (Δ Log of PHC Price, Δ Log of House Price)	-0.002***
Covariance (Δ Log of Rent, Δ Log of House Price)	0.001***

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Table 6.4 reveals a number of interesting findings, with regard to all three of the markets individually, as well as the relations between them. Starting with the private housing cooperative market, a foreign-born coefficient of 2.133 is noted. This is approximately halfway between those found in the previous simultaneous equation models, and substantially amplified when compared to previous regressions observing the market in isolation (Table 5.2 onwards). Aside from this, relatively similar values observed for control variables are noted, as well as for internal migration at 1.195. This is similar or even slightly weaker compared to the previous simultaneous equation models, though remains slightly stronger than when observing the market in isolation.

However, a stronger interaction with the rental market than in the previous simultaneous equation trial, at 333.031, is noted, and a substantially stronger interaction, almost doubled, with owner-occupied house prices, at 59.727. Hence, there is a definite trend of more positive interaction effects being experienced when running all three markets, with seemingly strengthened, or more polarizing, interaction effects being observed. This is a key finding and contribution, indicating the relative strength of both migration and other housing market-related variables is stronger when considering all three housing markets in conjunction with one another. This does underline the strength of relations between these different housing market segments, while individual markets and variables on their own exhibit slightly weaker impacts. However, the dangers of running multiple interaction effects within a regression must also be caveated against, and kept in mind when drawing any broader conclusions with regard to these findings.

In terms of the rental market, foreign-born impacts that are fairly similar to when the rental market was run on its own (Table 5.5 onwards) are noted, at 0.205, significant at the 5% level only. This is thus also a diminished impact when compared to previous simultaneous equation regressions. This is relatively striking as it indicates that the other markets, taken in conjunction with one another and the rental market, actually see foreign-born migrants having a diminished impact on the rental market. This indicates that other wider factors are more likely to be responsible for price changes on that market, including but not limited to the other two housing markets. This is likely to have important policy implications.

In terms of the interaction effect, a positive interaction effect of the rental market with private housing cooperative price is noted, at 24.786, and a negative one with owner-occupied house prices, at -16.885, trends that are relatively similar to those found earlier. Although less pronounced than for the private housing cooperative market, some variations in coefficient size are noted again. These consist of a slightly stronger positive coefficient for the interaction between foreign-born migration and private housing cooperatives, and a stronger negative coefficient for the interaction between foreign-born migration and owner-occupied housing. This indicates a slightly more polarized impact of interaction effects, and thus of the other markets and migration, when including all three markets, which was also observed when studying the private housing cooperative market results.

Finally, the owner-occupied housing market also reveals some interesting results. Here, the foreign-born impact is more similar to when ran on its own, too, with a coefficient of 1.783, which is weaker than all the results found when running simultaneous equation models, and only significant at the 5% level. This statement holds also for internal migration in this context, at a coefficient of 0.836, though this is significant at the 1% level. Although the coefficients are still generally slightly stronger than when this market was studied in isolation, the variation is not too large. This is a noteworthy finding and indicates a slightly subdued impact of foreign-born and internal migration when considering the other housing markets, too. Control variables, too, exhibit relatively similar results to when the market is ran on its own.

The interaction effects indicate a positive relationship between foreign-born migrants and private housing cooperative price in terms of the impacts of this on owner-occupied housing, with a coefficient of 78.791. The interaction effect also indicates a negative relationship between foreign-born migrants and the rental market in their impacts on the owner-occupied market, with a coefficient of -290.631. This is relatively in line with previous results, and again, the only time the interaction effect is negative is between owner-occupied housing and the rental market, indicating that this relationship is an outlier of sorts. The coefficients for these interaction effects are relatively similar to those observed in the previous simultaneous equation trials. Indeed, the interaction effect between foreign-born migration and the rental market is slightly weaker, while the interaction effect between foreign-born migration and the private housing cooperative market is substantially stronger. Thus, generally more support for an amplified relationship in terms of the strength of interaction effects is noted, although the impacts of foreign-born and internal coefficients on their own are not necessarily stronger. This, and the above trends, underline that when not considering all three markets in conjunction with one another, I may be missing out on identifying and accounting for some key trends, and instead see strengthened variable impacts as a result.

Finally, the covariance between the markets follows the same trends as under previous simultaneous equation trials. Thus, I note a negative relationship between private housing cooperatives and both other markets – i.e. the rental market and owner-occupier housing market – and a positive relationship between the rental market and the owner-occupier housing market. Hence, it is relatively clear in terms of this analysis that the private housing cooperative market does not necessarily follow the same general trends as those exhibited by the other markets, and that it is an outlier, or 'bridge' market of sorts. This market thus serves as the primary alternative choice to the other markets, and thus quite naturally has a negative relationship with the markets, as the market is then the primary substitute to the other two markets. These results are also further confirmed by the relatively differing impacts found for interaction effects, and foreign-born coefficients. Although these tend to drive the markets in a similar, positive direction, with the exception of one interaction effect, they do this to quite substantially different degrees.

6.4 Conclusions

In this chapter, I examine how the relationships between different housing markets shape the relationship that migration flows have with housing. This extends the literature by analysing the impacts of migration on housing markets in the full sense, accounting (and controlling) for the influences that the subsets of the housing market have on one another, as well as the relationship between migration into one subset of the housing market and migration into the other subsets. In this way, I am able to more fully understand the intricacies of the relationship between migration and the housing market.

To summarize the simultaneous equation results, broadly, the coefficients for foreign-born migration do change when the markets are considered in conjunction with and relation to one another, rather than in isolation. Generally, when considered with just one other market, the individual foreign-born coefficients were strengthened substantially. However, when considering all three markets, the coefficients were strengthened less, or, in the case of the rental market, even weakened slightly. This indicates that when considering just two markets, a number of crucial relations and influences between markets are missing, which are thus resulting in the overestimation of the foreign-born coefficient. However, when considering three markets, since more relevant variables can be accounted for, the relative impacts of the foreign-born variables are weaker. Equally, though, statistical problems are likely to be stronger when considering the three markets, and thus, it could be that results are becoming more biased when running all three markets.

Beyond this, the interaction effects are found to always be positive between different markets and foreign-born migration, with one exception. This means that, with the exception of the relation between the owner-occupied housing market and rental market, the impacts of foreign-born migration become stronger when considering a strengthened impact of additional segments of the housing market in their impacts on one another, and/or the impacts of those additional segments become stronger when considering a strengthened impact of foreign-born migration. Hence, it can generally be stated that each individual sector of the housing market is influenced by foreign-born migration and other segments of the housing market, when considering all these relations. This holds for most relations, except that between the owner-occupied housing market and rental market, which can be considered an outlier relation in this regard. This is likely a result of the rent-controlled and regulated nature of one of these markets, and the free nature of the other market. This creates quite a heavy contrast between the markets, as well as the substantial differences in housing stock across the two markets. Owing to its natural position in between the two markets, the private housing cooperative market sees more positive relations between the influences of variables on one another when considered alongside either of these markets. However, the two more distant markets are less closely related, and thus see house prices and rental levels being affected by variables in slightly different ways.

Further, in terms of the impacts of internal migration, these coefficients do not change as much as coefficients found for foreign-born migration. Generally speaking, the internal migration coefficients were strengthened when considering two housing market segments in conjunction with one another, as well as when considering all three market segments together. However, the differences in size of coefficients when conducting these tests, as opposed to considering markets in isolation, were generally smaller than for foreign-born migration. This indicates that relationships between the markets are less relevant to the impact of internal migration than for foreign-born migration. This is not entirely surprising given the generally heightened market knowledge that one would expect of internal migrants, meaning they react relatively less drastically to changes in other markets, and thus coefficients are less strengthened. This is despite the fact that generally, internal migrants are less constrained in their housing choices than foreign-born migrants.

Finally, in terms of the covariance between market prices, it is always negative, except for in the relation between the owner-occupier market and the rental market. This is an interesting finding, and on its face, diverges slightly from the findings for interaction effects. A positive relationship between the owner-occupier market and the rental market is not entirely unexpected, however. This simply means that despite the individual variables influencing the two markets, and particularly the interaction effects, moving in different directions, the markets as a whole still by and large move together. Since the owner-occupier market and rental market are the two largest market segments in Sweden, this is not entirely unexpected.

The fact that the relation between private housing cooperatives and the other two markets is always negative is also relatively expected. This can be explained by the private housing cooperative market acting as a transition market, lying somewhere between the rental and owner-occupier market on an ideological basis and in nature, and being the primary alternative choice of most people accessing the rental or owner-occupier markets. It is natural, then, that as people who could have accessed the private housing cooperative market instead find housing on one of the other markets, a negative relationship is formed. Further, other factors further accentuate these relationships. As a result of most private housing cooperatives being apartments, and many being located in a range of inner cities, it can indeed be the case that these apartments present different trends to the owner-occupied or rental markets. The latter markets are instead more diverse in their nature and less likely to be affected by the same predominantly inner city urban trends which private housing cooperatives are affected by. This can then also result in migration impacting these markets in different ways, as well as different conceptual trends manifesting, helping to enhance but also complicate relationships between the markets. This includes the role of migrant motivations and preferences among the diverse range of target groups attracted to this form of housing, but also the strong links between the rental and private housing cooperative market owing to the impact of rental to private housing cooperative conversions. The wider influence of evolving trends such as the growth in the rental queue as well as dwindling supply of rental housing, segmentation and competition between markets, and more, also serve as influences on this market.

Finally, the very nature of suburbanization and urbanization being, in many ways, directly contrarian forces, serves as just one example underlining the many intricacies in these relationships. A wide range of other institutional and socio-economic trends affecting different parts of markets, cities and the country in different ways serve as further explanation for why prices do not necessarily move together across the three different housing markets, particularly in the presence of varying degrees of migration. In any case, it is clear that the housing markets do not necessarily move together or operate in the same way, and are governed by different relations, having diverse and complex relations with one another, where house price appreciation on one market need not result in house price appreciation on another. What is abundantly clear, however, is the influence that the different housing markets do have on one another, particularly when accounting for the influence of migration.

7. The Impact of Migration on Housing Availability in Sweden

7.1 Introduction

The previous chapters have predominantly discussed the impact of migration on house prices and rents, and have clarified the varying degrees of impacts of migration in different contexts, as well as complementarity between the markets. Building on this, housing is a fundamental need and necessity for most humans, and hence the availability of housing is important not only from an economic, but also from a social perspective. Therefore, the fact that the European Commission has recently urged Sweden to ''tackle persistent growth in house prices and the continuous rise in household debt'' (European Commission, 2017; p.3) should be considered quite noteworthy. Indeed, housing availability in many parts of Sweden is dwindling, with many urban areas and cities experiencing strong house price growth. A unique, inflexible rental market (see Section 3.2 of Chapter 3 and Chapter 5) also creates difficulties for many citizens and immigrants alike (SCB, 2017). The relationship between the latter, migration, and the degree of housing availability and new construction, is the relation that I will investigate in this chapter. This should help to more fully answer the previously outlined research questions, as well as aid in understanding the relationship between migration and housing markets.[1]

Indeed, as detailed previously, Sweden has also experienced a strong growth in migration over the past few years. This large influx of people, constituting a continually high intake of labour migrants, EU migrants, students, family reunification migrants primarily associated with refugees, and other migrants, means it is relatively clear that there should be a strong relation between migration and housing availability, owing to the population growth which this causes. However, population growth is also determined by the degree of internal migration, and even beyond this, there are also a number of other factors that may be affecting housing availability. The production of new housing stock is one way in which housing availability issues can be resolved. It is unclear if a lack of housing

[1] This chapter closely resembles Tyrcha (2020b).

availability stimulates production of new stock, or if other factors weigh more heavily. It is these relationships that will be examined more closely in this chapter.

The main contributions in this chapter are to consider the relationships between migration and housing from a different perspective, looking instead at the impact of migration on the degree of housing availability, and production of new housing stock. This allows for a more full analysis of the housing market, while doing so in a quantitative manner extends the existing literature. Conceptually speaking, I would expect to find that both foreign-born migration and internal migration impact housing availability, as well as production of new stock, to some degree. In keeping with previous chapters, I would expect internal migrants to impact smaller urban areas most strongly, while foreign-born migrants, and refugees in particular, impact major cities and rural areas. However, these results may not differ in reality, owing to the different methodology employed in this chapter (see Sections 7.2 and 7.3).

7.2 Background

The availability of housing is an important criterion in the determination of the overall state and health of a housing market. A housing market with low amounts of available housing may be symptomatic of a number of different conditions. A lack of housing could be indicative of a lack of demand. Equally, this could also indicate an abundance of demand, depending on the context (discussed below). This also depends on the precise definition of housing availability, and whether this is needs-based, price-related, resulting from a mismatch on the housing market, or physical.

In Sweden, the situation is a little more nuanced, owing to the wide range of market types across the country. Many of the cityscapes and generally more urban environments may be characterized by a lack of housing owing to a high demand and insufficient house-building. Equally, more rural environments may be characterized by a lack of housing owing to insufficient supply, or an abundance of housing owing to emigration trends (SCB, 2017). Figure 7.1 displays how some of these trends have been taking form.

<u>Figure 7.1: New-build Housing and Available Apartments in Sweden</u>

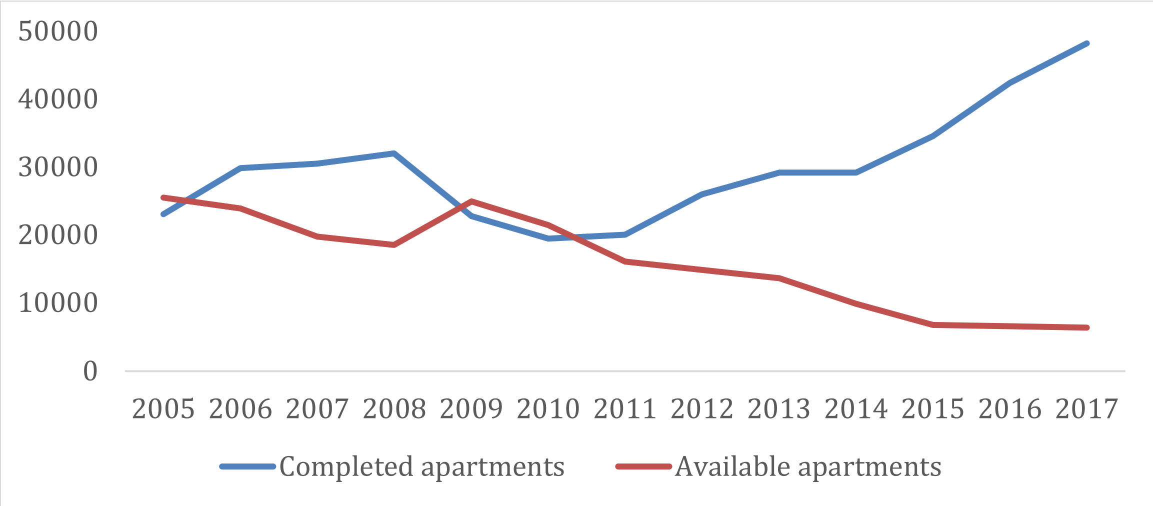

Figure 7.1: New-build housing and available apartments in Sweden. Source of data: SCB, 2018;, Boverket, 2018.

Figure 7.1 shows the number of new completed apartments, as well as available (empty) apartments in Sweden every year. A somewhat counterintuitive trend starts in 2011, where as the number of completed housing units has increased, the number of available (empty) apartments has decreased. This indicates that despite house-building increasing, housing availability has fallen. This is most likely owing to exogenous factors, such as high demand caused by e.g. migration. Boverket (2018) finds that 88,000 new housing units need to be produced per year until 2035 in order to meet housing demand. This means the above levels of house building are clearly insufficient, despite rising substantially since 2010. Further, recent reports indicate that housing availability is likely to drop, rather than rise, in the coming years (SCB 2019). Hence, it is clear that availability of housing remains a crucial issue in Sweden today, and a link to the production of new housing stock is clearly possible and worthy of investigation.

The lack of housing poses further problems, owing to future migration potentially increasing the need for accessible housing, as well as all housing, further (Boverket, 2017). Indeed, the government has undertaken to boost construction and simplify regulations, in order to combat the issue from a different angle. A number of legislative efforts, including the 2011 Planning and Building Law, have been introduced in order to simplify building and planning regulations and encourage house building.

Nevertheless, housing construction is constrained not only by planning, but also by both time taken and resource availability. In the short-run, it is likely to be highly price-inelastic, but in the long-run, it could be price-elastic (Malpezzi and Maclennan, 2001). However, although the level of demand and the degree of house-building may be important factors, it is clear that a number of other factors, including the migration-related ones mentioned above, also play a role in the determination of the degree of housing availability on the market. Indeed, Gonzalez and Ortega (2013; p.57) find that more than 50 percent of the increase in the housing stock in Spain could result from migration shocks.

In this context, it is useful to summarize the municipalities' views on the housing market, as they are in some ways partially responsible for maintaining a healthy housing market. The degree of housing availability in Sweden in 2015 is summarized in Figure 7.2, which displays the answers to a survey that was posed in 2015, where all 290 Swedish municipalities were asked to answer two simple questions pertaining to the housing market in their municipality.

<u>Figure 7.2: Perceptions of housing Availability in Sweden</u>

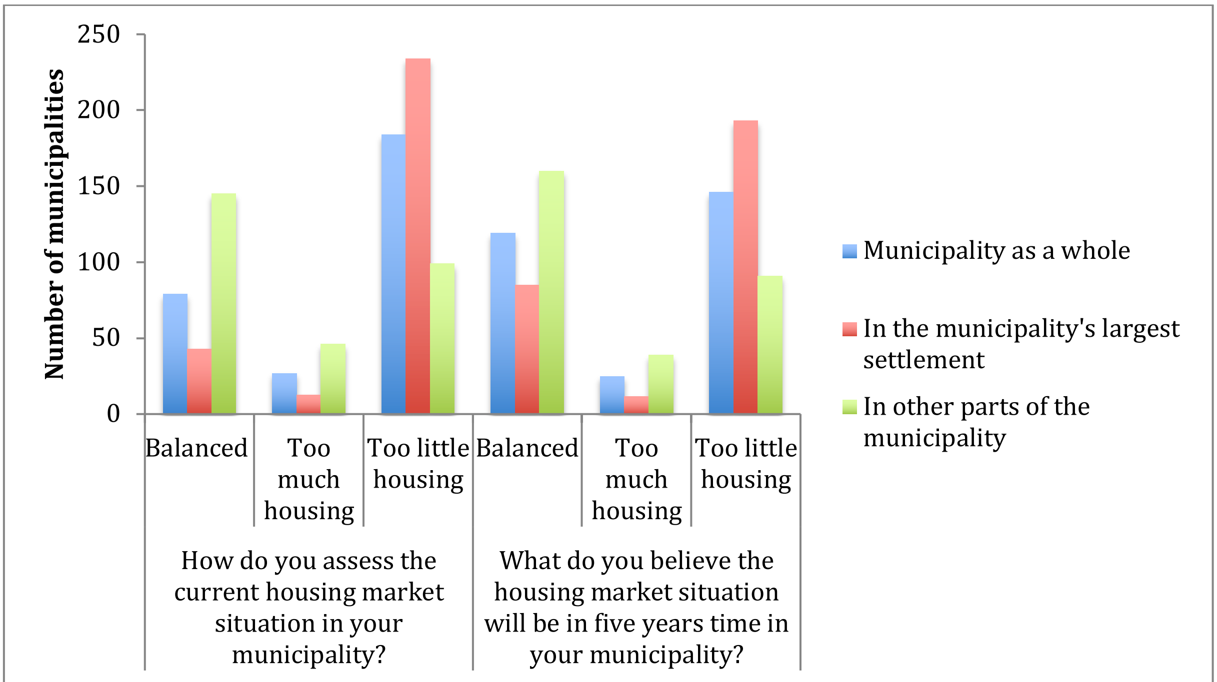

Figure 7.2: Housing availability in Sweden in 2015. Source of data: Boverket, 2018.

Figure 7.2 shows that most Swedish municipalities state that there is an imbalance on the housing market, resulting from there being too little housing available. This is most prominent in the larger settlements in every given municipality. A majority of municipalities also state that there is an imbalance in the municipality as a whole. When looking to the future, most municipalities are optimistic, and predict that the housing situation is likely to become more balanced in the future. However, even given this optimism, more than half of all municipalities still believe that their largest settlement will continue to suffer from a lack of housing availability. Nearly half of municipalities deem this to be the case in their territory as a whole. Indeed, an additional question posed in the survey was whether municipalities believe more housing will need to be built, at an increased rate, over the next 5 years. 266 of 290 municipalities indicated that this is likely to be the case (Boverket, 2018). Even still, despite knowing of the necessity of this projected house building, and strong future demand prospects, many municipalities believe they are unlikely to succeed in alleviating the current imbalance on the housing market.

It is clear from the above that housing availability and construction is a highly topical issue in the Swedish context, which has become increasingly relevant over time. Applicability in a global context is also likely to be strong, since a lack of housing and insufficient construction has come to permeate society in many OECD countries (World Bank, 2017). It would be particularly interesting to see not only whether and to what extent migration is affecting the availability and construction of housing, but also to what extent different forms of migration, in different areas, are impacting these dimensions. If a strong relationship between a lack of housing and a certain migrant group can be identified, a number of conclusions can then be drawn. Indeed, such findings can potentially be used to influence policy regarding housing allocation for refugees (as explained earlier in Chapter 3), as well as housing development policy in certain areas, and more.

7.3 Data and Methodology

7.3.1 Data Overview and Explanation of Housing Availability Analysis

The primary data sources are the Swedish Statistical Bureau, SCB (2018), Migrationsverket (the Migration Agency) (2018), and Boverket (the National Board of

Housing, Building and Planning) (2018). These are all government sources, widely cited in the literature as well as in industry. Survey data attained from Boverket (2018), where all 290 municipalities are surveyed concerning the availability of housing (both rental and private housing cooperative), is available from 2005 to 2015. The survey has a 100% response rate from all 290 municipalities over the studied period. In addition, data for migration-related variables, as well as all relevant control variables, is available from SCB (2018) and Migrationsverket (2018) (see Chapters 4 and 5 for full explanation). Owing to the logistic nature of the dependent variable data (further elaborated below), probit regressions will be conducted (for 284 municipalities, owing to boundary changes in some municipalities during the study period)[1], in order to analyse whether migration has had an impact on housing availability.

Three probit analyses of housing availability are conducted using data from Boverket (2018). In the data set, between 2005 and 2015, all Swedish municipalities answered the same questions. These are summarized in Table 7.1 below.

Table 7.1: Boverket Survey Questions

Questions	Answers	
1. How do you assess the current situation for new arrivals on the housing market?	There is enough housing	There is not enough housing
2. How do you assess the availability of housing for young adults?	There is enough housing	There is not enough housing
3. Do you have a system in place allowing certain groups to bypass the rental housing queue?	We do not have such a system	We do have such a system

[1] The excluded municipalities are Bollebygd, Gnesta, Knivsta, Lekeberg, Nykvarn, Trosa. These are mostly peripheral major city or peripheral urban municipalities, and their omission is unlikely to have major implications on the results.

The dependent variables in the model are based on the questions in Table 7.1. All three dependent variables are thus logistic in nature. There is considerable variation in these dependent variables over time and space, making them appropriate for this study.

The reasons that these three dependent variables have been chosen are many. The first variable will highlight whether migration has an impact on housing availability overall, while helping to contextualise how impacts might vary between foreign-born and internal migration in different contexts. Through the second question on young adults, this analysis is taken further, showing whether migration has differential impacts on certain groups. The young adults group is particularly interesting, since although rarely formally defined, young adults have been identified in the literature and media as a group that generally struggle to gain access to an increasingly competitive housing market, both in Sweden and worldwide (The Swedish Union of Tenants, 2017). Finally, including the queue jump variable enables fuller analysis of the housing market and its institutions, and links to the analysis in previous chapters.

Although not expressly stated in the questions, there is a danger that municipalities, given the political climate, may interpret the questions asked to be limited to solely the impacts of refugees. There is also a possibility of bias in the sample, introduced by municipalities falsely stating they have insufficient housing when they do in fact have housing available for new arrivals or young adults. Such bias could manifest where municipalities strategically answer the survey, in order to attract/deter migrants or investment. However, the survey is not used to inform any policy and its official uses are limited to providing an overview of the housing market, in the form of descriptive statistics, only.[1] Beyond this, each respective Country Administration Board reviews and verifies municipality responses, meaning checks are in place in order to ensure truthful answers. Hence, it is unlikely that municipalities would intentionally be able to give misleading answers to the survey. Further, respondents to the survey come from each municipality's respective housing department. However, respondents may vary from year to year, and may interpret the survey differently (with e.g. shifting baselines of "sufficient" housing),

[1] To verify this, a regression analysis of municipality allocation numbers for 2015 and the answers to the survey in 2014, controlling for municipality population and unemployment rates, showed this variable was insignificant (available on request). The relevant variables also have a correlation coefficient of just 0.23.

both within and across municipalities. This is another potential source of bias that must be acknowledged.

Another risk lies in equating municipality perception of housing availability, to general availability of housing. Municipality perceptions may create a warped or biased perspective, based solely on a physical or needs-based view of housing availability. This is not an issue impeding analysis per se, but is important to acknowledge, so that the form of housing availability studied is clear. This should also prevent misguided conclusions, referring to the effects of migration on a differently defined form of housing availability.

To conduct analysis, the following econometric specifications will be used for each of the three models. Control variables largely mirror earlier chapters, in order to ensure comparability and consistency:

$$\eta(ha)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \sum_{t=2}^{11} \delta_t Y_t + \varepsilon_{k,t} \tag{7.1}$$

$$\eta(yha)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \sum_{t=2}^{11} \delta_t Y_t + \varepsilon_{k,t} \tag{7.2}$$

$$\eta(qj)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \beta_1 \ln\left(In_{k,t-1}\right) + \beta_2 Em_{k,t-1} + \beta_3 \ln(T_k) + \beta_4 \ln(B_k) + \beta_5 A_k + \beta_6 L_k + \sum_{t=2}^{11} \delta_t Y_t + \varepsilon_{k,t} \tag{7.3}$$

where

η(ha), η(yha) and η(qj) are the municipality answers to the question on overall housing availability, young adults housing availability, and the rental queue jump respectively
$\Delta fb_{k,t}$ is the change in the foreign-born population in location k between t-1 and t
$\Delta im_{k,t}$ is the change in internal migration in location k between t-1 and t,
$p_{k,t-1}$ is the total population in location k and time t-1
$X_{k,t}$ is a set of socio-economic characteristics of location k and time t, which here includes real income per household and the employment rate
W_k is a set of initial characteristics of location k, which here includes the reported crime in 1984 per 1,000 residents, a temperature average from 1961-1990, and the percentage of the population aged 20-64 in 1984
$S_{k,t}$ is a set of supply-side characteristics of location k and time t, which here includes a dummy variable accounting for the differing impacts of new Planning and Building Legislation that took effect in 2011

Y is years from 2005 to 2015 t=2,...,11
and ε is the error term.

The above models will be run using a probit regression, reporting marginal effects. Negative coefficients are expected for migration-related variables, and most variables in general, as higher values should contribute to less housing.

An instrumental variable approach will also be used, similar to that seen in Saiz (2007), and earlier chapters of this thesis. This approach enables the overcoming of issues of endogeneity and omitted variable bias to a degree.

The instruments used in this chapter will thus be:

$$\Delta fb_{kt} = \sum \Delta\, fb_{Sweden,t,o} * \frac{fb_{k,1984}}{fb_{Sweden,1984}} \tag{7.4}$$

$$\Delta im\ inflow_{k,t} = \sum \Delta\, im\ inflow_{Sweden,t} * \frac{im\ inflow_{k,1984}}{im\ inflow_{Sweden,1984}} \tag{7.5}$$

This will then be run using a standard IV regression, with variables as described earlier.

Analysis will begin on the national level, for all 284 municipalities. In order to ascertain whether the impacts of migration on housing availability differ depending on location within the country, the levels of analysis will then be extended to major cities (44 municipalities), smaller urban areas (42 municipalities), and rural areas (198 municipalities). Following this, analysis will also be conducted separately based on migrant origin. Foreign-born migrants will be divided into two groups: refugees, and other migrants (primarily consisting of labour, EU, family reunification and student migrants). The analysis will then show whether refugees have differential impacts on housing availability.

It is also feasible that house prices could have an impact on housing availability. However, owing to the issues of endogeneity that this is likely to elicit, this has not been included in the main model. Nevertheless, in Appendix 7.1, this variable is included in the regressions, in order to demonstrate the relatively limited impact that this variable has on the sizes of the other coefficients.

7.3.2 Analysis of Impacts on Construction

The above analysis could be criticized, in that impacts on municipality perceptions of housing availability may be irrelevant if they do not impact the housing market more directly. As a result, analysis of whether different municipality perceptions have a real impact on construction of new stock will be conducted. This is particularly relevant since municipal planning departments generally play a significant role in this decision-making process. This analysis will be carried out on both the overall and regional levels as specified above, using the equations below:

$$\eta(ns)_{k,t} = \alpha + ha_{k,t-1} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \sum_{t=2}^{11} \delta_t Y_t + \varepsilon_{k,t} \tag{7.6}$$

$$\eta(ns)_{k,t} = \alpha + yha_{k,t-1} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \sum_{t=2}^{11} \delta_t Y_t + \varepsilon_{k,t} \tag{7.7}$$

$$\eta(ns)_{k,t} = \alpha + ra_{k,t-1} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \sum_{t=2}^{11} \delta_t Y_t + \varepsilon_{k,t} \tag{7.8}$$

where the variables are the same as in equations 7.1 onwards, with the addition of a refugee perception variable in ra, which is a question phrased similarly to those described above, but concerning the availability of housing for refugees, rather than e.g. youth.

These models are simple, with the migration variables removed, instead including the perception variables. However, unfortunately, owing to a lack of historical data availability for the perceptions variables, IV testing cannot be conducted for these regressions. Testing for multicollinearity, heteroscedasticity, and autocorrelation will still be conducted.

The logistic perception-related variables are lagged one year, giving time for these variables to affect the production of new stock (see e.g. Poot, 2000). It would be unreasonable to expect strong immediate impacts given the general length of the planning and construction process. A number of other time lags were tested for this and other variables, with findings proving to be robust to these, and the chosen time lag approach proving to be the most effective approach (see Appendix 7.2).

7.4 Results

I begin by running probit regressions for housing availability. Table 7.2 displays the first results.[1,2]

Table 7.2: Probit Models Showing the Relationship Between Foreign-Born and Internal Migration and Housing Availability and Queue Jumping

Dependent Variable: η HA or η Young Adults HA or η Queue Jump	*η Overall HA*	*η Young Adults HA*	*η Queue Jump*
ΔForeign-born$_t$/Population$_{t-1}$	-8.385**	-7.800	-4.896**
	(2.694)	(5.531)	(1.764)
ΔInternal migration$_t$/Population$_{t-1}$	-19.500***	-4.455*	-3.860*
	(5.293)	(2.588)	(2.273)
Log income$_{t-1}$	-18.014***	-5.491**	14.805***
	(3.958)	(2.261)	(3.974)
Employment$_{t-1}$	1.783	0.205	-0.116
	(1.591)	(0.531)	(0.488)
Log January temperature	-0.226***	0.099*	0.010
	(0.048)	(0.053)	(0.050)
Bachelor's degree (%, 1984)	-10.281***	-2.728*	-2.652**
	(1.550)	(1.540)	(1.320)
Working age (%, 1984)	-21.950***	-0.808	-6.710**
	(2.870)	(3.829)	(2.750)
Legislation	-2.764***	-0.897**	-1.774***
	(0.189)	(0.387)	(0.126)
F-test statistic (for f-b. instrument)	27.762	19.501	17.390
F-test statistic (for i.m. instrument)	29.646	22.462	16.729
Year fixed effects	Yes	Yes	Yes
Observations	3124	3124	3124
Pseudo R^2	N/A	N/A	N/A

Notes: Analysis of 284 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient. HA = Housing Availability.

The results in Table 7.2 show that migration variables have a significant impact on overall housing availability. The impacts are strong for both foreign-born migration and internal migration, with an inelastic relationship between these and housing availability. Foreign-born migrants produce an impact of -8.385 on the overall level, significant at the 5% level,

[1] OLS probit results are displayed in Appendix 7.3 owing to space constraints.

[2] First stage regressions are displayed in Appendix 7.4.

while internal migrants produce impacts of -19.500 overall, significant at the 1% level. When comparing the coefficients, this indicates that Swedish-born migration contributes almost twice as much to the lack of housing as foreign-born migration. This also suggests that income and economic opportunities influence the housing market. This is a key finding and contribution, as the reverse was theorized, given that municipalities are often primarily more responsible for finding housing for foreign-born migrants. This is also somewhat surprising given the results for house prices in previous chapters, where foreign-born migration often produced stronger impacts than internal migration. These results indicate, then, that municipalities are perceptive in terms of the state of the housing market, and influenced by a number of different factors.

In terms of the young adults regression, coefficients are generally smaller and less significant than those found for overall housing availability (only internal migration is significant, with a coefficient of -4.455 at the 10% level). This is a somewhat surprising finding, given the general popular discourse, and thus also a key contribution. This indicates that while migration is relevant, lack of access to the housing market for young adults could also depend more on other factors, including some of the control variables as well as other unstudied variables. It also highlights that the perceived conceptually identified trend of inter-migrant and inter-group competition for housing is not manifesting to the same degree as was conceptually theorized, at least in this regard.

With regard to impacts of migration on the presence of a queue jumping mechanism, both foreign-born and internal migration are significant, at coefficients of -4.896, significant at the 5% level, and -3.860, significant at the 10% level, respectively. These coefficients pertain to a dependent variable different in nature to coefficients for housing availability, and thus comparing sizes of coefficients to those found for housing availability is not suitable. Nevertheless, coefficients found for the two forms of migration can be compared. Hence, municipalities are more likely to institute queue jump mechanisms as a result of foreign migration, than internal migration. This could be in order to help some of the more stigmatised foreign migrant groups, such as refugees, onto the housing market. Even despite this, it is relatively surprising, given the results in Section 5.3.2 of Chapter 5, that internal migrants have as strong of an impact as that found here, since in that section, their impacts were comparatively more limited. Nevertheless, actual impacts on the size of the rental queue cannot necessarily be equated to municipal implementation of queue jumping mechanisms. This difference is interesting to note, and will be explored further below in terms of conceptual implications.

Further, in terms of the control variables, the coefficients also generally behave as one would expect, with negative impacts of income, temperature, percentage with bachelor's degree, and percentage working age. The coefficient for legislation is negative, which may come as a surprise, but as found in Section 5.3.2 of Chapter 5, the legislation in question has not been particularly effective at stimulating housing availability in all scenarios. The weather variable is negative, but becomes positive in the young adult housing availability regressions. This is an anomaly, although could be a result of differing housing preferences among young housing adults and the general population, resulting in some control variables affecting this group differently.

In terms of the instrumental variable analysis more generally, it is interesting to note that most coefficients are underestimated when using just the probit approach. Indeed, both the domestic and foreign-born migration coefficients rise significantly when using the shift-share approach to adjust for endogeneity. This highlights that endogeneity is a clear issue in the analysis. However, the fact that coefficients are consistently underestimated, rather than overestimated, is a positive indication given the circumstances, as the opposite would undermine the analysis more significantly. Hence, although endogeneity is a clear and significant issue, these findings alleviate some of the issues that this endogeneity could have caused, though they do not alleviate all worries of potential omitted variable bias and the like. [1]

Table 7.3 delves deeper into this analysis, by studying municipalities with certain characteristics in further depth. [2]

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[1] Similarly to earlier Chapters, testing for multicollinearity reveals that most variables are lower than 2, and all are lower than 10. Testing for heteroscedasticity and autocorrelation also allows for the rejection of null hypotheses.

[2] OLS probit results are displayed in Appendix 7.5 owing to space constraints.

Table 7.3: Probit Models Showing the Relationship Between Foreign-Born and Internal Migration and Housing Availability and Queue Jumping Split by Municipality Characteristics

	Major Cities			**Smaller Urban Areas**			**Rural Areas**		
Dependent Variable: η HA or η Young Adults HA or η Queue Jump	*η* Overall HA	*η* Y. Adults HA	*η* Queue Jump	*η* Overall HA	*η* Y. Adults HA	*η* Queue Jump	*η* Overall HA	*η* Y. Adults HA	*η* Queue Jump
ΔForeign-born$_t$/Population$_{t-1}$	-6.296	-22.525	-17.636**	-7.356	-19.246**	1.563	-12.930**	-14.352	-8.205**
	(17.356)	(45.351)	(7.453)	(6.954)	(9.936)	(12.530)	(5.602)	(15.205)	(4.245)
ΔInternal migration$_t$/Population$_{t-1}$	-3.205	-5.205	-6.343	-25.025**	-12.245***	-15.245*	-15.683**	6.246	-7.106***
	(6.202)	(6.968)	(10.325)	(11.520)	(3.859)	(8.542)	(6.824)	(7.452)	(2.746)
Log income$_{t-1}$	9.512	-4.552	-9.461	-32.918***	-37.620***	-23.182***	-16.104***	-3.518	-2.817
	(15.351)	(14.197)	(14.506)	(11.852)	(8.598)	(6.732)	(3.831)	(3.651)	(2.516)
Employment$_{t-1}$	0.582	0.412	-0.291	1.636	1.336	0.850	4.383	2.782	-1.505
	(3.406)	(0.619)	(0.659)	(3.054)	(1.327)	(1.370)	(2.792)	(5.409)	(3.795)
Log January temperature	0.332	-0.360	-0.044	-0.369**	0.248**	0.172	-0.139***	0.178***	-0.256***
	(0.354)	(0.276)	(0.276)	(0.154)	(0.117)	(0.120)	(0.047)	(0.057)	(0.071)
Bachelor's degree (%, 1984)	2.355	-1.617	2.091	-0.513	-18.791***	-2.778	-26.605**	-5.517	-12.145**
	(2.355)	(2.074)	(2.055)	(5.752)	(5.728)	(7.195)	(4.876)	(7.004)	(4.982)
Working age (%, 1984)	-8.078	-8.627	14.337**	-29.962**	-5.264	-6.332	-26.738***	12.715***	-6.156
	(11.273)	(6.030)	(5.986)	(8.570)	(7.481)	(7.584)	(4.582)	(4.156)	(4.661)
New Stock$_{t-1}$	-8.345	-6.807	-19.554**	4.120	17.601**	-27.290***	-16.721	-15.356	-16.161
	(7.001)	(7.618)	(7.841)	(7.561)	(8.918)	(7.472)	(14.512)	(14.203)	(14.005)
Legislation	-1.334***	-1.007***	-1.256***	-2.915***	-1.274***	-1.409***	-2.246***	-1.562***	-1.734***
	(0.394)	(0.338)	(0.303)	(0.615)	(0.266)	(0.270)	(0.176)	(0.316)	(0.266)
F-test statistic (for f-b instrument)	27.374	20.377	16.935	22.308	23.441	18.936	33.491	17.606	15.784
F-test statistic (for i.m. instrument)	27.572	18.340	15.958	23.834	13.498	19.582	31.508	23.963	16.092
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	473	473	473	473	473	473	2178	2178	2178
Pseudo R^2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

Notes: Analysis of 284 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient. HA = Housing Availability.

Table 7.3 shows how the impacts of migration differ depending on municipality characteristics of the receiving regions. No significant effects in major cities are noted for either form of housing availability. This would suggest market adjustments in major cities are elastic. However, this is more likely a result of the housing crisis having hit major cities before the studied period, as well as the strength of other, exogenous elements, as is also suggested by the very low pseudo R^2 when compared to the other dimensions and overall. Nevertheless, foreign-born migrants have a strongly significant impact on the queue jumping dependent variable, with a coefficient of -17.636 significant at the 5% level. This highlights that despite the above limitations, some impacts of migration are captured.

In smaller urban areas, on the overall level, only internal migration is significant, with a large coefficient of -25.025, significant at the 5% level. This is likely to be a result of less foreign-born migrants moving to smaller urban areas, owing to difficulties in labour market access (see Chapters 4 and 5). The strength of internal migration is likely a result of the ongoing trend of net outmigration from major cities to smaller urban areas among internal migrants (SCB, 2018), resulting from the push/pull factors presented by such areas. This is emphasized by the strength of the internal migrant variable across all smaller urban area regressions, with coefficients of -12.245 for young adult housing and -15.245 for queue jumping, as well as its lack of significance for major cities. These results highlight the different impacts of foreign-born and internal migration across urban areas, which can be directly linked to the role of small town revival and establishment of knowledge clusters in certain smaller urban areas, and constitutes a key finding and contribution. Nevertheless, this does not necessarily rule out foreign-born migrant impacts – since the foreign-born variable is significant at the 5% level, with a coefficient of -19.246, in the young adults housing availability context. This does highlight that although the differential impact indicates substantially stronger impacts of internal migration overall in this context, this does not mean housing availability in smaller urban areas is not affected by foreign-born migration at all.

Meanwhile, in rural areas, on the overall housing availability level and for queue jumping, both foreign-born and internal migration are significant, with relatively similar coefficients. These are -12.930 and -15.683 overall, and -8.205 and -7.106 for queue jumping, significant at the 1% and 5% levels, for foreign-born migrants and internal migrants respectively. This underlines the impacts that both kinds of migration have had on rural areas in terms of housing availability, and indicates inelasticity. However, it is important to note that other variables are also strong and significant, so it is not solely migration that has contributed to the lack of housing availability in terms of areas with these rural characteristics. Somewhat unsurprisingly, young adults housing availability is not affected by either form of migration in rural areas, likely largely owing to the fact that young adults housing is generally not a big issue in rural areas. This is a result of many young adults being more elastic and choosing to move away from rural areas, many of which are suffering a population decline as a result (SCB, 2018).

Moving on, Table 7.4 shows whether migrants with differing origins have a stronger or weaker impact in any regard.[1,2]

[1] OLS probit results are displayed in Appendix 7.6 owing to space constraints.
[2] Partial first stage regressions are displayed in Appendix 7.7. Full results available on request owing to spatial constraints.

Table 7.4: Probit Models Showing the Relationship Between Foreign-Born and Internal Migration and Housing Availability and Queue Jumping Split by Municipality Characteristics and Migration Motives

	Overall			Major Cities			Smaller Urban Areas			Rural Areas		
Dependent Variable: η HA or η Young Adults HA or η Queue Jump	*η* Overall HA	*η* Y. Adults HA	*η* Queue Jump	*η* Overall HA	*η* Y. Adults HA	*η* Queue Jump	*η* Overall HA	*η* Y. Adults HA	*η* Queue Jump	*η* Overall HA	*η* Y. Adults HA	*η* Queue Jump
ΔRefugee migration$_t$/P$_{t-1}$	-24.582**	-6.205	-4.152**	-56.205	-22.424	-37.352	-24.152	-15.606	-15.925	-16.250***	-17.310*	-4.198
	(11.549)	(8.245)	(1.875)	(46.633)	(17.360)	(24.009)	(34.525)	(11.520)	(11.245)	(5.984)	(9.155)	(10.152)
ΔOther fb. mig./P$_{t-1}$	-12.065***	-14.961**	-2.254***	-15.251	-16.092	-27.345	-6.167	-8.152	17.183	-15.661***	-21.520	-3.947
	(3.716)	(6.135)	(0.791)	(11.677)	(12.054)	(18.498)	(7.888)	(9.005)	(14.205)	(6.794)	(24.556)	(5.604)
ΔInternal migration$_t$/P$_{t-1}$	-15.766***	-4.466**	-5.174**	-4.680	-4.784	-9.442	-27.905**	-17.960**	-22.520**	-16.131***	-6.171	-7.893**
	(6.164)	(1.994)	(2.561)	(13.073)	(8.616)	(15.251)	(12.847)	(7.173)	(10.506)	(4.766)	(5.885)	(3.837)
Log income$_{t-1}$	-19.054***	-5.491**	-11.657***	15.606	-13.286	-7.802	-29.945**	-34.048***	-10.507	-19.617***	-1.126**	-8.058
	(4.316)	(2.252)	(3.097)	(14.509)	(16.010)	(18.090)	(12.663)	(11.517)	(9.055)	(4.156)	(0.414)	(6.633)
Employment$_{t-1}$	1.341	0.209	-0.076	0.606	0.191	-0.295	-0.894	-0.516	-1.609	-3.317	0.572	-0.736
	(0.893)	(0.497)	(0.458)	(0.789)	(0.650)	(0.712)	(2.309)	(1.636)	(1.577)	(2.555)	(3.162)	(3.149)
Log January temperature	-0.214***	0.098	0.091	0.416	-0.249	-0.027	-0.557***	0.177	-0.136	-0.112**	0.225***	-0.190***
	(0.039)	(0.094)	(0.067)	(0.333)	(0.292)	(0.291)	(0.194)	(0.208)	(0.144)	(0.051)	(0.041)	(0.045)
B. degree (%, 1984)	-14.782***	-2.753	-4.852	2.171	-1.919	1.971	2.917	-13.557	-15.551**	-20.872***	-5.865	-10.785***
	(2.363)	(2.257)	(14.417)	(2.369)	(2.011)	(2.034)	(7.808)	(8.409)	(6.995)	(4.451)	(3.952)	(4.013)
Working age (%, 1984)	-19.409***	-0.859	-1.069***	-6.906	-1.597*	1.413	-29.793***	-15.600	-14.005*	-26.686***	6.904*	4.187
	(2.095)	(5.810)	(0.326)	(5.925)	(0.895)	(9.357)	(9.786)	(10.244)	(8.517)	(4.417)	(3.928)	(3.217)
New Stock$_{t-1}$	-1.813	0.798	5.501*	-8.168	-1.326	-10.390**	4.268	13.824*	-2.581	-16.994	-11.653	13.823
	(3.747)	(3.174)	(3.223)	(6.269)	(5.196)	(5.514)	(8.415)	(7.386)	(7.731)	(13.261)	(11.934)	(11.877)
Legislation	-2.265***	-0.915***	-1.186***	-1.035***	-1.254***	-1.281***	-3.176***	-0.901***	-1.137***	-2.369***	-0.826***	-1.234***
	(0.155)	(0.123)	(0.125)	(0.379)	(0.306)	(0.308)	(0.567)	(0.330)	(0.333)	(0.167)	(0.157)	(0.160)
F-test statistic (for r. inst.)	25.637	18.370	18.305	26.541	22.498	17.905	20.361	19.458	20.758	34.590	16.607	17.572
F-test statistic (for ofb. inst)	27.947	23.633	14.987	29.577	19.430	16.400	22.755	24.344	12.222	25.767	17.902	14.476
F-test statistic (for i.m. inst)	29.646	22.462	16.729	27.572	18.340	15.958	23.834	13.498	19.582	31.508	23.963	16.092
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3124	3124	3124	473	473	473	473	473	473	2178	2178	2178
Pseudo R^2	0.229	0.041	0.050	0.083	0.073	0.092	0.238	0.181	0.104	0.209	0.043	0.061

Notes: Analysis of 284 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient. HA = Housing Availability.

Table 7.4 displays how the impacts of refugees on housing availability differ to that of internal migrants and other migrants. It is interesting to note the strength of the refugee variable, which displays the strongest coefficient overall at -24.582, and for rural areas at -16.250, significant at the 5% and 1% levels respectively. Both internal and other foreign-born migration do also produce significant impacts overall and in rural areas, but these are slightly weaker than the impacts produced by refugees. Overall, coefficients produced are -12.065 and -15.766, while in rural areas, the coefficients produced are -15.661 and -16.131, for other-foreign born migrants and internal migrants, respectively. These are all significant at the 1% level. This indicates that each of these migrant groups is impacting housing availability in some way, consistent with Table 7.3, though refugees may have the strongest impacts. The strength of refugee migration in particular could have serious implications in terms of both refugee allocation policy, as well as the stimulus of house-building (discussed further below), making it a key finding and contribution.

In terms of young adults housing availability more specifically, refugees generally do not have strongly significant impacts. Instead, internal migrants and other foreign-born migrants produce stronger coefficients, with the strongest overall produced by the latter, at -14.961, significant at the 5% level. Internal migration produces a coefficient of -4.466, significant at the 5% level. The relative strength of the other foreign-born variable is likely to be a result of many foreigners being less affluent than the average internal migrant, and being able to outcompete young adults instead. Meanwhile, many internal migrants may not be in direct competition with young adults for housing, which explains the weaker coefficient.

Finally, refugees do have an impact on the presence of a queue jump system, producing a coefficient of -4.152, while other migrants produce a coefficient of -2.254, and internal migrants -5.174, all significant at the 5% or 1% level. Here, then, both internal migrants and refugees have similar impacts on a municipality's need to institute a queue-jumping mechanism. This is likely to be a result of municipalities reacting directly to refugee migration, and thus feeling the need to institute queue jumping measures to allow refugees onto the housing market. Meanwhile, municipalities could also be reacting more indirectly to internal migration. They may feel that refugees, migrants, or other groups' ability to compete on the free market is diminished with increased internal migration, resulting in the necessity of a queue jumping mechanism. Further, the stimulus that increased migration in general provides to an area's popularity could also be contributing to these trends. However, the data cannot be used to state with certainty for whom municipalities are instituting the queue jumping mechanism and thus these conclusions are tentative. Even still, the strength of both refugee migration and internal migration in this regard is noteworthy in policy terms.

As such, in terms of housing availability, on the overall level, and in rural areas, refugees have the largest impacts. However, this does not mean that refugees are impacting housing availability disproportionately on every level. In major cities and smaller urban areas refugee migration has less of an impact, if at all, with internal migration having more impact on the latter category, consistent with Table 7.3. With regard to young adults housing availability and queue jumping, it is difficult to definitively state which group is strongest, as significance levels are generally quite low and impacts vary across the different dimensions.

Moving on, then, I look at whether these perceptions, which are significantly impacted by migration, have any real impact on new housing stock construction. This will allow establishment of a more concrete link between migration and real impacts it has on the housing market beyond price. The initial results are shown in Table 7.5.

Table 7.5: OLS Models Showing the Relationship Between Perceived Housing Availability and the Production of New Housing Stock

Dependent Variable: η New Stock	*HA Model*	*YHA Model*	*RHA Model*
Perceptions of HA_{t-1}	9.736***		
	(3.697)		
Perceptions of youth HA_{t-1}		12.773***	
		(4.272)	
Perceptions of refugee HA_{t-1}			16.282***
			(4.699)
Log $income_{t-1}$	6.192**	6.114**	5.610*
	(3.033)	(3.002)	(2.999)
$Employment_{t-1}$	6.311***	6.391***	6.502***
	(1.816)	(1.846)	(1.816)
Log January temperature	11.541***	10.667***	10.790***
	(3.351)	(3.311)	(3.307)
Bachelor's degree (%, 1984)	9.314***	9.297***	9.110***
	(1.244)	(1.229)	(1.227)
Working age (%, 1984)	11.156***	11.353***	11.641***
	(1.844)	(1.813)	(1.814)
Legislation	-1.583***	-1.907***	-2.190***
	(0.449)	(0.437)	(0.453)
Year fixed effects	Yes	Yes	Yes
Observations	3124	3124	3124
R-Squared	0.846	0.846	0.846

Notes: Analysis of 284 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient. HA = Housing Availability, YHA = Young Adult Housing Availability, RHA = Refugee Housing Availability.

Table 7.5 shows that the municipal perceptions of housing availability of all kinds do have impacts on the degree of new stock being produced. Coefficients of 9.736 for overall housing availability, 12.773 for young adult housing availability, and 16.282 for refugee housing availability are noted, all significant at the 1% level. While all the variables produce strong significant impacts, the strongest impact is produced by the refugee variable. Perhaps what is most relevant, however, is that Table 7.5 confirms that perceptions impact production of new stock, while the previous tables confirmed that these same perceptions are also impacted by migration. By proxy, it is fairly clear that different forms of migration do have an indirect impact on the production of new stock of housing, confirming the importance of the findings and contributions of this chapter. Indeed, this means that the differential impacts found both in Table 7.5, as well as in earlier tables, are likely to be highly relevant to the makeup of the housing market in Sweden.[1] This does also broadly lend credence to the conceptual trend of inter-migrant competition and inter-demographic competition for housing.

Nevertheless, it is also important to underline the significance of the other control variables in this analysis. All variables are significant across all of the dimensions, with most being significant at the 1% level. Hence, it is entirely feasible that factors such as income, employment, temperature, education, demographics and planning law are equally or more impactful than the perceptions variables in terms of the production of new stock, which must also be kept in mind in future analysis.

Table 7.6 allows further exploration of these relationships.

[1] I also test the VIF between variables here, and find that this is low between all variables – below 2 for all the perception-related variables, and only one variable, employment, is above 5 (but below 10). When running the Breusch-Pagan test for heteroscedasticity and the Breusch-Godfrey test for autocorrelation, I am also able to reject the null hypotheses.

Table 7.6: OLS Models Showing the Relationship Between Perceived Housing Availability and the Production of New Housing Stock Split by Municipality Characteristics

	Major Cities			*Smaller Urban Areas*			*Rural Areas*		
Dependent Variable: η New Stock	*HA Model*	*YHA Model*	*RHA Model*	*HA Model*	*YHA Model*	*RHA Model*	*HA Model*	*YHA Model*	*RHA Model*
Perceptions of HA $_{t-1}$	29.058***			1.973			7.123***		
	(9.561)			(15.214)			(1.800)		
Perceptions of youth HA $_{t-1}$		60.498***			23.017*			-0.937	
		(22.440)			(13.836)			(1.631)	
Perceptions of refugee HA $_{t-1}$			74.522***			21.482*			5.614***
			(24.031)			(11.185)			(1.781)
Log income$_{t-1}$	37.367**	35.027*	36.658**	24.933**	26.050**	23.606**	2.175*	2.733**	2.710**
	(18.192)	(18.081)	(18.022)	(9.778)	(9.685)	(9.702)	(1.141)	(1.135)	(1.136)
Employment$_{t-1}$	14.069	12.563	15.268	6.694***	6.971***	7.213***	6.736***	6.682***	6.734***
	(23.392)	(23.244)	(23.178)	(2.397)	(2.390)	(2.417)	(0.694)	(0.697)	(0.697)
Log Jan. temperature	16.975***	17.209***	15.526***	4.267***	4.148***	4.175***	1.253***	1.295***	1.286***
	(4.734)	(4.710)	(4.694)	(1.477)	(1.445)	(1.447)	(0.118)	(0.119)	(0.118)
B. degree (%, 1984)	11.105***	11.801***	10.335***	10.626	11.661*	11.103	1.918***	1.989***	1.994***
	(3.709)	(3.684)	(3.684)	(6.976)	(6.973)	(6.962)	(0.113)	(0.112)	(0.112)
W. age (%, 1984)	19.037***	19.282***	18.925***	2.679***	2.725***	2.605***	3.523***	4.012***	4.012***
	(6.096)	(6.044)	(6.025)	(0.902)	(0.893)	(0.895)	(0.984)	(0.983)	(0.982)
Legislation	-4.309*	-5.232**	-6.609***	-3.861**	-3.531**	-3.937***	-0.806***	-0.888***	-0.865***
	(2.256)	(2.251)	(2.318)	(1.487)	(1.401)	(1.504)	(0.174)	(0.169)	(0.176)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	473	473	473	473	473	473	2156	2156	2156
R-Squared	0.872	0.874	0.874	0.665	0.667	0.666	0.324	0.316	0.322

Notes: Analysis of 284 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient. HA = Housing Availability, YHA = Young Adult Housing Availability, RHA = Refugee Housing Availability.

Table 7.6 provides further insight into the relationship between municipal perceptions of housing availability, and the production of new stock. In major cities, coefficients of 29.058, 60.498 and 74.522 are produced by perceptions of overall housing availability, young adult housing availability and refugee housing availability respectively, all significant at the 1% level. The coefficients are substantially increased, indicating stronger impacts of these perceptions on the production of new stock in major cities than overall. Much like in Table 7.5, perceptions of refugee housing availability weigh more heavily than perceptions of young adult housing availability. This is a key finding and contribution which further underlines a potential source of conflict between these two groups, and conceptually identified inter-migrant competition. Equally, though, it is also clear that both groups are impactful to a large degree on their own, and need not necessarily be pitted against one another. Further, spurring of construction activity need not be seen as something inherently leading to competition between migrant groups, but should rather be seen as a strong stimulant, beneficial to all migrant groups in the long-run. Overall, it is a key noteworthy finding that strong impacts are produced for major cities, when in earlier tables in this chapter, migration did not impact housing availability in these areas much (although, as theorized earlier, this could be a result of housing availability already being low in these areas before the studied period commenced). These findings, then, do show that migration is likely to indirectly impact the production of new stock in major cities, too.

In terms of smaller urban areas, there is some evidence of perceptions of housing availability impacting new stock housing production, but this is substantially weaker than the impacts identified in major cities. However, in rural areas, the perceptions of overall housing availability variable and the refugee housing availability variable are significant, producing coefficients of 7.123 and 5.614 respectively, both significant at the 1% level. This is in line with earlier findings indicating a strong impact of refugee migration on housing availability in rural areas. This finding is relatively unsurprising, as refugee migration constitutes the largest migration flow coming into rural areas. This means that those rural areas that do experience most refugee migration are generally speaking also the rural areas which are not experiencing as much depopulation. Hence, they do also require housing stock to be increased more so than other, comparable rural areas, to accommodate new refugees, displaced natives and incoming migrants as a result of potential stimulus created by other new migrants.

Overall, the results highlight that perceptions of housing availability are impacted by migration, and that these same perceptions affect the production of new housing stock. A key finding and contribution is that there are differential impacts of different perceptions of housing availability for e.g. youth and refugees, indicating that certain groups are more relevant to the municipal decision-making in terms of the production of new stock in certain scenarios. As a whole, then, the link between migration, municipality perceptions, and the housing market (beyond just house prices) is relatively strong. It is likely that policy can be manipulated in light of these results (e.g. by encouraging building in areas with strong inflows of specific groups which municipalities might otherwise not react as strongly to), in order to encourage construction of new housing stock in desirable areas in the long-run. Based on my results, there is little to suggest that municipal decision-makers have been taking into account the relative impact of migration on housing availability and construction thus far, meaning there is considerable room for improvement in this regard.

7.5 Conclusions

In this chapter, I evaluate the impact of migration on housing availability in Sweden. This has been done using survey data on housing availability on the municipality level in Sweden, dating from 2005 to 2015. This extends the literature by conducting quantitative analysis for an often overlooked aspect of the housing market. The chapter has also studied how these differences vary in different regions, and whether migrants of different origins have particularly strong impacts on housing availability. The links between housing availability and production of new housing stock have also been studied.

The results indicate that both internal and foreign-born migration have strong impacts on overall housing availability, with the former being slightly more impactful. In terms of the availability of housing to young adults, foreign-born migration has stronger impacts than internal migration. Municipalities also are more influenced by foreign-born migration when it comes to instituting queue jumping mechanisms that give access to housing to more marginalized groups. This has lent some support to the identified conceptual trend of inter-migrant competition having an impact on housing markets.

When looking at specific types of municipalities, the strongest impacts are seen in smaller urban areas, with internal migrants producing these. This finding lends significant support to the trend of primarily internal migration resulting in small town revival, as well as the rise of knowledge clusters in such areas. In terms of the origin-based analysis, refugees have the strongest impacts in a number of contexts. Meanwhile, the impacts of other migrants from relatively wealthier areas are more subdued or insignificant when compared to both refugees and internal migrants in most instances. This indicates that income is far from the only determinant in this relationship. As a whole, this highlights that the relationships between migration and housing availability are linked, but not identical to the relationships between migration and house prices, with both similarities and differences being identified in the findings.

Further study reveals that there is also strong evidence of municipal perceptions of housing availability affecting the production of new stock of housing. Particularly strong impacts are found for perceptions of youth and refugee housing availability in a number of scenarios. It is relatively clear that there are strong links between different forms of migration and the production of new housing stock, and that the study of decision-maker perceptions can be highly relevant and impactful in certain scenarios. Hence, it is clear that there are strong links between different forms of migration and the production of new stock on the housing market. This further highlights the multifaceted relationship between migration and different aspects of the housing market.

8. Migration and Housing Markets from a Qualitative Perspective

8.1 Introduction

This chapter will consist of qualitative analysis, concerning the relationship between both international and internal migration and housing markets in Sweden. Topics covered will include house prices on the owner-occupier and alternative markets, as well as housing availability, and the relationships between these concepts. The analysis will also cover both regional and origin-based dimensions of the relationship, and thus mirror much of the earlier analysis, while also taking on a new perspective.

I elect to take a qualitative approach in this chapter, covering similar ground to previous chapters, but expanding on the policy-making and institutional context, as there is value in complementing the quantitative analysis undertaken with some qualitative insights, particularly owing to the mostly quantitative nature of this thesis thus far. By conducting interviews with key stakeholders, some of the quantitative findings will hopefully be verified, and I will likely also identify some other, unique trends. This, in turn, should allow broader and more relevant conclusions, drawing on different source material, making the thesis more multi-dimensional. This is an aspect that cannot be covered easily with existing quantitative data and methods.

Further, it is highly beneficial to the thesis to conduct a qualitative study in this manner, as it allows for discussions with key decision-makers regarding the true relevance and impact of the results, as well as investigating if conceptual findings identified earlier have also been identified in practice. Indeed, although previous chapters have revealed some impactful results, in order to maximize the impact of results they must be considered and implemented in practice. This means that understanding of the frameworks, institutions and decision-making processes in place in the context of migration and housing is crucial. Hence, the qualitative approach will not only allow for further enhancement, verification and broadening of the spectrum of the results, but also enable for the results to have more of an impact and relevance to actual policy decisions and thus the housing market as a whole. This approach will enable for this chapter, and the thesis as a whole, to constitute a stronger contribution to the literature more generally.

8.2 Data and Methodology

This chapter will consist of interviews conducted in Sweden, aiming to complement earlier quantitative findings.

As stated above, the purpose of the qualitative analysis is to complement the quantitative analysis, while also allowing for expansion upon many findings made through the quantitative analysis in the thesis. In order to ensure this, a wide range of stakeholders have been interviewed, including different identified municipal authorities, as well as other stakeholders such as housing developers and policy makers. In preparing this qualitative research, steps suggested by Turner (2010) and Merriam and Tisdell (2015) have been followed, to ensure a fair, diverse, and unbiased study.

Interviews have been conducted with 28 individuals primarily associated with housing or real estate development, consultancy, or investment, as well as 24 individuals primarily associated with policy-making and government. Individuals have been selected using criterion-based sampling, based on their perceived merit in relation to the objectives of the study. Attempts have also been made for the selected sample of participants to be both inclusive and diverse. Inclusivity and diversity in this regard refers to the areas of operation and political views of the participants and/or their business(es), as well as background, gender, age, and ethnicity of participants. Anonymity has been offered to participants where this has been requested. Interviews have been recorded and transcribed, where the participant has agreed to this.

Interviews have been conducted in person in Stockholm, Gothenburg, Uppsala, Örebro and Karlskrona between November 2018-March 2019 in a formal semi-structured manner. The interviews were broadly based on a set number of questions that all interviewees were asked, ensuring comparability between interviewee responses and thus a more effective analysis. However, some follow-up questions were also asked based on interviewee responses or other matters arising out of the discussion, and thus differed between interviews. Some bias may be introduced into the interviews, given that these were mostly conducted in major city or urban municipalities, which tend to skew right-wing (SCB, 2017), meaning some left-wing perspectives could be underrepresented. Although efforts have been made to avoid this, it is important to keep in mind in the analysis.

The initial interview request form sent out to interviewees is displayed in Figure 8.1.

Figure 8.1: Interview Request Form

Demographic change and the housing market

The aim of the study is to gain a better understanding of the housing market. I am interested in the impacts of changing population structures, internal migration, and international migration on house prices. I am also particularly interested in potential solutions geared towards making the housing market more accessible and cater more directly towards the needs of individual groups.

Interviews

I would like to meet you for a short interview, lasting no longer than 45 min, which will follow the structure outlined below. The results of the findings will only be used in academic research in connection with my PhD studies at the University of Cambridge. Anonymity will be offered where desired. Interviews will be conducted in Swedish, unless you wish to conduct the interview in English.

Contact details

If you would like to take part, please contact myself, Adam Tyrcha, by e-mail (aat37@cam.ac.uk) or by phone on +46764050547. I will be in Sweden from November 5th-November 30th, and February 4th-March 1st, and would be pleased to arrange a meeting at a time and place of your convenience. Please also contact me if you know of anyone else who would be interested in participating.

Indicative questions

1. What impacts of demographic change on the housing market have you noted in your field over the past 15-20 years?
2. Over the past two decades, a clear trend has been the rise in popularity of smaller urban areas among internal migrants. Why do you think this could be?

3. It has been argued that continued and increased allocation of refugees to rural areas could revitalize housing and labour markets in struggling areas. What are your thoughts on this?
4. Do you believe it has become harder for young or otherwise marginalized peoples to access the housing market in the past two decades? Why or why not?
5. Rental queues continue to grow. Do you believe that there should be multiple rental queues, depending on who you are (e.g. youth, migrant, new family)?

Questions for housing developers/real estate professionals

6. How does demographic change affect your medium/long-term planning?
7. Over the past few decades, private housing cooperatives have been developer's favourite form of housing to build. Do you think building owner-occupied housing and/or rental housing will rise in popularity?
8. Do you think the Planning and Building Legislation 2011 has been effective in stimulating housing development? Where and to what extent?

Questions for politicians/others

9. How does your policy or proposed policy address demographic change and the impacts this may have on house prices (in any/all regions)?
10. What do you believe to be future implications of current demographic trends, and how should these be addressed?
11. Chronic undersupply of housing is often blamed for house price escalation. Do you think supply or demand-side solutions are the answer?

The questions in Figure 8.1 have been selected because they should allow for a broad range of topics to be covered, with conclusions found in every chapter of this thesis thus far being broadly represented, in some form, through at least one of the questions. Following McNamara (2009), the questions are quite broad, in order to allow for the participant to interpret and respond to the question as they wish, and ensuring the questions are not biased. Questions have been phrased in a standardized open-ended manner (Gall et al., 2003), in order to ensure consistent responses. Many of the questions have also been designed to not be particularly specific, in order to allow for other topics of discussion to arise in a natural way, allowing insights that would not have been gained otherwise. However, owing to the nature of the topic of study, some questions must be specific, as views on particular policy initiatives or developments within the field are important to cover. This is particularly important in order to ensure that a wide range of different perspectives are covered on a lot of the key issues and concepts that have been touched upon in this thesis, allowing for the quantitative analysis to be complemented in a more effective way.

In order to limit bias and ensure that analysis is as objective as possible, a form of grounded theory will be used when analysing interview responses. This means that results will not be presented for each of the questions asked, but rather, will be grouped into sections and analysed, based on the broader concepts and categories that are identified. In order to achieve this, after completing and transcribing interviews, I will sort interviewee responses based on broader identified themes, codes or categories (following Creswell, 2007), making use of NVivo software to help group responses. However, owing to the sensitivity of the topic, a number of interviewees requested not to be recorded, meaning that some manual incorporation of interview answers will also be conducted, broadly following and adapting the approaches of e.g. Bassey (1999), Opdenakker (2006) and King et al. (2017). Following this process, I will convert all of the analysed responses into free-flowing text and analysis.

The housing developers that were interviewed span a wide range of small, medium-sized and large companies, and are listed in alphabetical order by company:

Table 8.1: List of Housing Developers Interviewed

Name	Company	Position
1. Anonymous	ALM Equity	Anonymous
2. Anonymous	Besqab	Anonymous
3. Anonymous	Bonava	Anonymous
4. Hans-Åke Palmgren	Boverket	Housing Analyst
5. Håkan Siggelin	Familjebostäder	Head of Project Development
6. Anonymous	Genova	Anonymous
7. Kent Persson	Heimstaden	Social Policy Director
8. Linn Matic	HSB	Social Policy Director
9. Anonymous	Ikano Bostad (IKEA)	Anonymous
10. Susanne Persson	JM	Head of Housing – National Level
11. Anonymous	Magnolia Bostad	Anonymous
12. Henrik Bauer	NCC	Head of Investment
13. Ulrika Lindmark	Newsec	Head of Valuation & Analysis
14. Peter Svensson	PEAB	CEO Peab Housing
15. Roland Askebrand	Riksbyggen	Head of Business Development
16. Anonymous	Rikshem	Anonymous
17. Carl Lundh	SBB	Project Development Manager
18. Anonymous	Serneke	Anonymous
19. Anonymous	Skanska	Anonymous
20. Fredrik Johansson	SHH Bostad	Head of Projects & Production
21. Erik Lemaitre	SSM	Head of Business Development
22. Mikael Svenske	Stena Fastigheter	Project Leader
23. Birgitta Gradin	Stockholmshem	Head of Lettings
24. Anonymous	Titania	Anonymous
25. Per-Olov Gatu	Tornet	Project Developer
26. Lennart Weiss	Veidekke	Commercial Director
27. Anonymous	Anonymous	Anonymous
28. Anonymous	Anonymous	Anonymous

The politicians or policymakers that were interviewed span both local and parliamentary politicians, and are listed in alphabetical order by political association:

Table 8.2: List of Politicians Interviewed

Name	Political Association	Position
1. Ola Johansson	Centerpartiet (C)	MP, Housing Policy Spokesman
2. Larry Söder	Kristdemokraterna (KD)	MP, Housing Policy Spokesman
3. Björn Ljung	Liberalerna (L)	Local politician, Stockholm
4. Lina Nordquist	Liberalerna (L)	MP
5. André Nilsson	Liberalerna (L)	Local politician, Stockholm
6. Maria Gardfjell	Miljöpartiet (MP)	MP
7. Rasmus Ling	Miljöpartiet (MP)	MP
8. Kristina Alvendal	Moderaterna (M)	Local politician, Stockholm
9. David Josefsson	Moderaterna (M)	MP
10. Torsten Svenonius	Moderaterna (M)	Local politician, Solna
11. Henrik Thunes	Moderaterna (M)	Local politician, Sollentuna
12. Johan Löfstrand	Socialdemokraterna (S)	MP, Housing Policy Spokesman
13. Karin Gustafsson	Socialdemokraterna (S)	Local politician, Stockholm
14. Mats Nordberg	Sverigedemokraterna (SD)	MP
15. Roger Hedlund	Sverigedemokraterna (SD)	MP, Housing Policy Spokesman
16. Henrik Vinge	Sverigedemokraterna (SD)	MP, Integration Spokesman
17. Nooshi Dadgostar	Vänsterpartiet (V)	MP, Vice Party Leader
18. Maria Hannäs	Vänsterpartiet (V)	Local politician, Stockholm
19. Momoudou M. Jallow	Vänsterpartiet (V)	MP, Housing Policy Spokesman
20. Clara Lindblom	Vänsterpartiet (V)	Local politician, Stockholm
21. Lukas Jonsson	Unspecified	Local politician, Gothenburg
22. Marika Nordström	Unspecified	Bostadsförmedlingen
23. Martin Storm	Unspecified	Local politician, Gothenburg
24. Joel Edding	Unspecified	Local politician, Stockholm

For reference, the Swedish political parties can be placed on the political spectrum as follows, according to the state broadcaster SVT (2019):

Figure 8.2: Swedish Political Spectrum

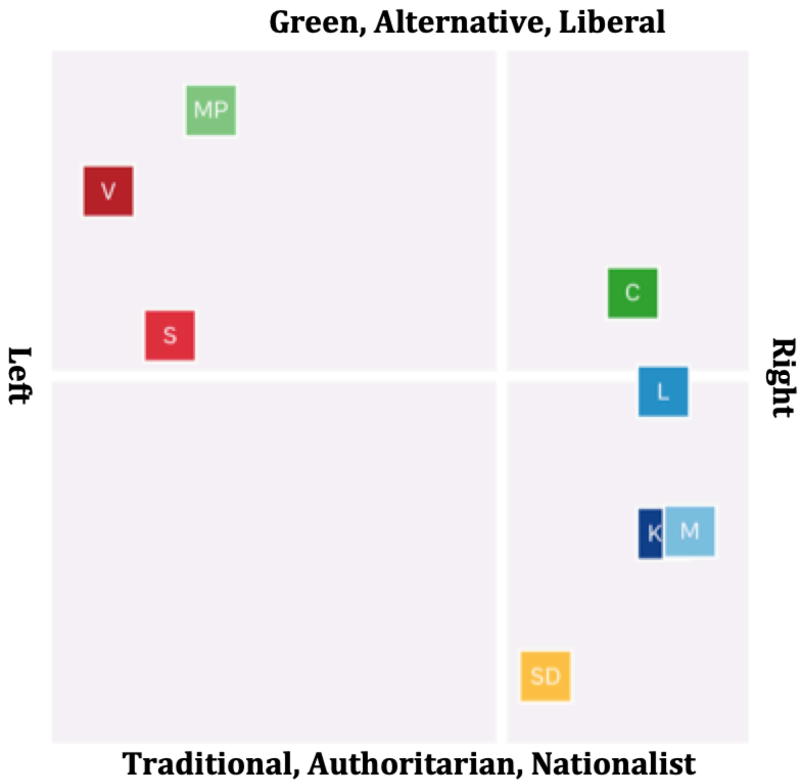

Figure 8.2: Swedish political spectrum. Source: SVT, 2019.

8.3 Results

Using NVivo, the results can be categorized into a number of relevant wider areas, which many responders touched on, albeit from different perspectives. In this section I will begin by analysing the results of the questionnaire, taking a broad perspective on the answers provided. I will provide citations and insights based on interviewee responses where appropriate. Following this, I will make some broader conclusions and analysis based on the responses, and the thesis as a whole.

8.3.1 General impacts and their effects on development

8.3.1.1 Views on migration & demographic impacts

In the quantitative research, demographic impacts have been found to have a number of effects on house prices. However, when questioned, a number of respondents noted that they do not consider or track demographic change or migration whatsoever, as they do not feel it is relevant enough to dedicate resources to. Table 8.3 summarizes some of the initial responses regarding the importance of demographic change:

Table 8.3: The Importance of Demographic Change

Yes, it is important	To some extent	No, not important
	Housing Developers	
Heimstaden	ALM Equity	Familjebostäder
HSB	Besqab	NCC
Ikano Bostad	Bonava	SHH Bostad
JM	Genova	Stockholmshem
Magnolia Bostad	PEAB	Titania
Riksbyggen	Rikshem	Tornet
Skanska	SBB	
Stena Fastigheter	Serneke	
	SSM	
	Veidekke	
	Politicians	
Kristina Alvendal (M)	Joel Edding	
Nooshi Dadgostar (V)	Maria Gardfjell (MP)	
Karin Gustafsson (S)	Maria Hannäs (MP)	
Roger Hedlund (SD)	Ola Johansson (C)	
David Josefsson (M)	Lukas Jonsson	
Momoudou Malcolm Jallow (V)	Lina Nordquist (L)	
Clara Lindblom (V)	Larry Söder (KD)	
Rasmus Ling (MP)	Henrik Thunes (M)	
Johan Löfstrand (S)		
André Nilsson (L)		
Martin Storm		
Torsten Svenonius (M)		
Henrik Vinge (SD)		

While politicians generally stated that demographic change is relevant to their decision-making to some degree, this was not the case for all housing developers. Birgitta Gradin at Stockholmshem, a state-backed developer of rental housing, noted that they "do not follow demographic changes on the housing market." Håkan Siggelin of Familjebostäder, also state-backed, concurred. This sentiment was echoed by a considerable number of private housing developers, too, including Per-Olov Gatu at Tornet (small private developer of rental housing), and Henrik Bauer at NCC (one of the largest constructors and developers). Erik Lemaitre at SSM (medium-sized developer of housing), noted that while demographic change can matter, current house prices, demand, and competitor activity matters substantially more. The wide range of responders, across different market segments, indicating that they do not observe or give much weight to demographic trends is interesting. This suggests that the size of a company, or the nature of its operations, does not necessarily correlate with the likelihood to track demographic trends and recognize their potential impact on the housing market and thus also profitability of investment. Indeed, Hans-Åke Palmgren at Boverket, a government-backed research organization, noted a tendency among many housing developers and municipalities to "lack an analysis of what is needed and for whom." Hence, Palmgren argued many do not know how to effectively make a plan, and how to negotiate with one another, which he linked in part to a lack of demographic analysis (which is long-term).

In terms of the politicians, Larry Söder of Kristdemokaterna highlighted that "although we have forecasts, they are often wrong." He added that as a result, many politicians also often do not use the forecasts and statistics available to them, or at least underutilize these. A number of politicians, including Lina Nordquist of Liberalerna, Ola Johansson of Centerpartiet, Torsten Svenonious of Moderaterna and Karin Gustafsson and Johan Löfstrand of Socialdemokraterna, agreed with him. This indicates that politicians do to some degree function in similar ways to housing developers, and do not track demographic change to a particularly large degree.

Nevertheless, wide numbers of politicians and housing developers did have a lot of thoughts on demographic trends. Many stated that they do dedicate a large number of resources to tracking these, as well as forecasts, and their potential impact on the housing markets that they wish to invest and develop in. A summary of the responses regarding which demographic trend is likely to impact operations most is provided in Table 8.4:

Table 8.4: Specific Demographic Trends

Immigration	Internal migration	Aging population
	Housing Developers	
Familjebostäder	ALM Equity	Riksbyggen
Genova	Besqab	SBB
HSB	Bonava	Serneke
SHH Bostad	Heimstaden	SSM
Stena Fastigheter	Ikano Bostad	Stockholmshem
Titania	JM	Tornet
	Magnolia Bostad	Veidekke
	PEAB	
	Skanska	
	Politicians	
Roger Hedlund (SD)	Joel Edding	Kristina Alvendal (M)
David Josefsson (M)	Karin Gustafsson (S)	Nooshi Dadgostar (V)
Johan Löfstrand (S)	Ola Johansson (C)	Maria Gardfjell (MP)
Mats Nordberg (SD)	Lukas Jonsson	Momoudou Malcolm Jallow (V)
Larry Söder (KD)	Björn Ljung (L)	Clara Lindblom (V)
Henrik Vinge (SD)	André Nilsson (L)	Rasmus Ling (MP)
	Lina Nordquist (L)	
	Martin Storm	
	Torsten Svenonius (M)	
	Henrik Thunes (M)	

Migration was the most commonly mentioned trend, with the role of forecasts and knowing your target group highlighted as important by respondents from major players Skanska, JM and Heimstaden, among many others. In terms of the migration trends, some developers did distinguish between internal and foreign-born migration, although many developers did not. Interestingly, however, based on the general responses received, it is apparent that internal migration trends are more relevant to housing developers than foreign-born migration, which is perceived as more distant and less relevant. This holds despite the fact that foreign-born migrants are substantially more numerous than internal migrants in most areas that many of the interviewed housing developers are active within.

Indeed, one anonymous responder working for Ikano Bostad, IKEA's housing development branch, stated "internal migration is most important, we dedicate considerable resources to tracking that, in terms of the impact it could have on our projects." When asked about foreign-born migration, the same responder said "We think that’s more difficult to track, and our perception is that the impact is more muted than internal migration. Foreign-born migration also seems to us to be more complex and more difficult to forecast, where as with internal migration, we can predict future trends more accurately and adjust our housing supply accordingly. There are substantially less internal migration shocks, essentially.” This was a relatively representative answer, with many housing developers emphasizing the need to examine growth patterns in any given potential development area. Some respondents did also note the importance of foreign-born migration and refugee settlement patterns, but they were in the minority. This is an interesting trend to note, given the contrasting trends found in the quantitative research where foreign-born migration was often just as strong or stronger than internal migration in its impact on house prices, as well as the fact that foreign-born migration in many ways drives population growth in many of Sweden’s municipalities today. These responses also serve to highlight the inherent role of inter-migrant competition and its influence on the housing market, as has been highlighted in previous chapters.

8.3.1.2 Contrasting views on the relationship between migration & demographics

A generally contrasting answer was given by an anonymous respondent working at Besqab, a medium-sized developer. He noted that the housing market is “very local, and that the target group of most projects is people located within 4-5km of the project.” Hence, he did not consider either internal or international migration as particularly important to housing development. Although he displayed a good grasp of the trends occurring with regard to these phenomena, and knowledge of his project target groups, his company do not dedicate many resources to tracking these in association with specific projects. This is interesting to note given the quantitative results in Table 5.9, which by and large support the view that local migration is most impactful on house prices. Indeed, going further, the role of age structure was stressed by this respondent, highlighting that different forms of housing need to be built for different target groups, and that “it is about six times more common for someone in the age span of 18-30 to move, than someone aged 50+.” This leads Besqab to focus on areas that are privy to members of the former age group. The role of birth rates was also discussed here, as catering to new families has also proven to be a successful segment for the company. Thus, despite the relatively limited impacts of age structure in the quantitative analysis, it was clearly highlighted that this is an important metric which housing developers do track, often times more so than migration, and especially on the local level (as also evidenced by Table 8.4).

In further contrast, Mikael Svenske at Stena Fastigheter, part of the Stena Corporation, gave answers that differed a little to previous respondents. He noted that "an increase in the number of people of foreign descent with generally low income has increased the need for housing with low/lower rents/prices. At the same time, the cost of building has consistently increased, so the supply that exists in the form of newly produced housing coming onto the market does not match the needs of this target group." Svenske was thus one of few respondents who mentioned the impacts of foreign-born migration specifically. He also noted that in recent years, a lot of housing has been built in the wrong segments, and in the wrong areas. This is largely a result of the larger profit margins when building housing that can be sold at higher prices. He went on to argue for the reform of housing development and building to accommodate these changing demographics, which was a sentiment echoed by some other housing developers. This is underlined by the concept of rental housing erosion, conversion and prioritization of private housing cooperatives leading to segmentation, as was identified in results in previous chapters. Indeed, the responder from Skanska importantly noted that the crux of the issue is that "while there is a need, the question is if there is demand for the specific housing being built." Hence, while both developers noted the strong link between migration and housing, migration does not automatically lead to the right signals being sent to developers in terms of the housing that they then choose to build.

Roland Askebrand at Riksbyggen, a large company that is currently primarily focusing on the northern regions of Sweden, provided an interesting perspective, quite different to many other housing developers. At Riksbyggen, a number of criteria including "a generation quote [nb: the relation between the number of inhabitants and their age] as well as a measure for population growth define many investment decisions." Although Askebrand also highlighted a number of other relevant factors that extend beyond the scope of this study (e.g. politics, local economy and more), he was clear in stating that demographic change is a very important consideration for the company when making investment decisions. This extended also to migration trends, and the company is very interested in the differences between internal and foreign-born migration and does consider these differentials when making investment decisions. However, he stressed, this is not always done on an in-depth level, depending on the "needs of the project."

A few respondents responded generally similarly to Askebrand. An example is Kent Persson at Heimstaden, who noted that for each municipality that they consider building in, they conduct an in-depth analysis of growth prospects, the economy, labour market, demography, and the municipality's political situation and capacity to cooperate. Fredrik Johansson from SHH Bostad, a smaller player, confirmed much of the above, but also added that the management's "gut feeling" continues to play a role that is far from inconsequential in the decision-making process. Johansson highlighted the importance of migration for planning decisions and that migrants can be seen as an opportunity, but also emphasized that at the end of the day, many decisions are made based on perceptions, rather than statistical analysis. He suggested that this was the case at all the companies he has worked at previously (which include major players like Skanska and JM). Although such methods may not appear to be the most scientific or align particularly well with the quantitative analysis, if they function for a firm and bring them success, it is difficult to argue against them.

In terms of politicians, generally speaking, many highlighted that they cannot individually affect much of what the housing developers do, or the decisions that are made. A worrying trend was a number of local politicians directing responsibility (and blame) onto parliamentary politicians, and vice versa for parliamentary politicians onto local politicians.

Nevertheless, Björn Ljung, local politician for Stockholm from Liberalerna, highlighted that demographic change can have a massive impact on decision-making. The extent of demand, size of apartments, location of building and the like are all directly impacted by this. Ljung argued that this is taken into account to a very large degree by many local politicians when influencing policy. He particularly highlighted the very positive impact that many refugees have had on the labour market historically. This sentiment was echoed by Maria Gardfjell from Miljöpartiet, who highlighted a detailed mapping which was undertaken in Uppsala municipality, which influenced policy decisions taken to a large degree. Thus, factors including different forms of migration and the age structure have been shown to be very important, particularly in dialogues with residents that were said to influence decision-making for housing policy greatly, too.

In terms of approaches to dealing with demographic change in the present and the future, as well as its impacts on the housing market, there were a number of opinions expressed by politicians. One clear trend was, as stated by Karin Gustafsson of Socialdemokraterna, "migration will continue, regardless of politics. You cannot stop global migration, you cannot close off Sweden from the world. Foreign-born migration will continue to rise, and we need appropriate integration initiatives to deal with that." A number of politicians expressed similar views and saw the need to focus more on integration as a result, although few provided any particularly innovative ideas.

A relatively unusual response was that made by Clara Lindblom of Vänsterpartiet. Despite the quantitative analysis finding limited impacts of age structure generally, she stressed this as being more important than migration in relation to the housing market. Indeed, she stated that "the aging population will continue. Even with migration, we will continue getting older. We need to plan for this, particularly in many of the more rural areas. Perhaps some repopulation initiatives or policy, like they have in Norway, should be discussed." Nevertheless, there does not appear to be much widespread support for such repopulation initiatives in Sweden at this time. This issue likely also ties into the contention regarding support for revitalizing less thriving areas through refugee allocation policy, meaning that perhaps there is some support for reforms like this among policymakers (see Section 8.3.2.2).

In contrast, many Sverigedemokraterna politicians particularly highlighted the rise of immigration affecting Sweden's ethnic makeup, as well as the impact this has had on rental queues. Roger Hedlund highlighted the impact on students, who must "adjust what and where they choose to study based on the housing market." He linked this directly to rising immigration. Henrik Vinge argued for the need to "reignite the collective nature, unity and sense of community in Sweden, in order for the welfare system to work," with migration presenting a key threat to Sweden's social benefits schemes. In this regard, Sverigedemokraterna provide a very unique perspective. Although results in Chapter 7 showed little support for the fact that migration is impacting student access to housing, it cannot be ruled out that this does occur in some cases.

Looking forward, David Josefsson from Moderaterna highlighted that it is important that politicians are less reactive and more proactive when responding to demographic change in future, in order to limit adverse impacts on housing. He highlighted the need to "build as much as possible, while still fitting into the urban landscape," and that politicians need to think more about how to incentivize the right kind of building. This must be done in order to "be proactive in responding to migration trends as well as the aging population." Kristina Alvendal of Moderaterna strongly agreed, and further emphasized the need to listen to industry and the necessity of more long-term sustainable housing market reform. Johan Löfstrand of Socialdemokraterna also agreed with this assertion. Hence, it can be said that there is broad consensus for migration-inspired housing reform in parliament, but not precisely on the ways in which this should be enacted in practice.

8.3.2 The rise of smaller urban areas

8.3.2.1 The relationship between demographics and smaller urban areas

Looking at more specific housing market trends, many responders were quite surprised about the degree to which smaller urban areas have been attracting internal migrants (while the three largest cities have experienced negative net internal migration rates for a number of years, see Chapter 2), as well as the subsequent rise in house prices. This is because although this is clearly visible in the data, it has not been discussed particularly much in either academia or the general media. As a result, many responders also doubted the validity of the assertion, in order to justify their continued investment and focus on major city housing markets. "We cannot see any negative outflows of migrants from Stockholm, we have no vacancies and a very large demand with long queue times for virtually all of our available apartments," noted one rental housing developer. Upon explaining that the assertion does not mean that migration as a whole into the cities has fallen, but internal migration has, with foreign-born migration more than making up the difference, many developers remarked, as in Section 8.3.1, that they do not see the value in separating internal and foreign-born migration for their purposes. Even when quizzed on the impact of the different demographics that these two groups (and their sub-groups) may have, many developers contended that any such differences are not impactful enough to justify the effort and time taken to research the demographics of migrants in such depth. Hence, despite previous chapters identifying a number of such differential impacts, these were again seen to bear little relevance in practice to numerous housing developers.

Expanding on the above, an anonymous responder working for Magnolia Bostad, one of Stockholm's largest housing developers, stated that "although net migration has been strong out of the city, we still see strong demand for newly produced, high quality, environmentally friendly housing. To us it doesn't really matter that people are leaving, if new people are still coming in and want our housing. The net inflows being positive or negative is less relevant to us than the amount of people demanding our housing, which we see has increased over the past few years." This statement provides some justification for ignoring the impacts of foreign-born migration specifically. Nevertheless, it does not necessarily account for the lack of knowledge regarding what and how specific demographic trends affect house prices, which most respondents lacked answers or opinions of. Equally, however, respondents did not generally think that such knowledge impacted their ability to develop and sell products to customers.

Mikael Svenske at Stena Fastigheter appeared to be more familiar with the above-mentioned trends pertaining to the growth of smaller urban areas, and highlighted that an "improved infrastructure, allowing Stockholm to be reached within an hour's commute, expanding labour markets, combined with the difficulty of getting a first-hand contract for rental housing in the city and high barriers to entry on the cooperative and villa market is likely to be part of the explanation" for the increased migration to smaller urban areas. Thus, he effectively highlighted that high prices, and the supply-demand mismatch are most responsible for this trend, and that is a relevant trend that his company attempts to follow. His justification is also mostly in line with the previously identified trend of knowledge clusters and other factors acting as a pull factor for migrants. As in 8.3.1, he was one of the few responders who highlighted the impacts of foreign-born migration specifically. This contrasted with the general lack of knowledge and interest in foreign-born migration impacts that was otherwise noted from many developers and politicians.

David Josefsson, politician for Moderaterna, highlighted that he has noted a net outmigration of high-income peoples generally. “Once people have established themselves and their incomes, they move out. This can be problematic for less affluent areas, that are reliant on such people staying and benefiting the local economy to thrive.” Interestingly, Johan Löfstrand of Socialdemokraterna made a similar observation, despite his party being the polar opposite of Moderaterna. He also noted that less resource-rich peoples moving into Stockholm necessitated changes to housing policy, although did not specify what changes these are. Both these respondents, then, acknowledge the role of social networks and economic opportunities in guiding migrant decisions, and thus also their impacts on housing markets, as was noted in previous chapters. The acknowledgement of the trend and requirement to adapt strategy to it can be seen as an important first step and a response to the impacts that demographics can have on housing markets.

Further, Torsten Svenonius of Moderaterna highlighted that high-income migrants moving out can be beneficial to the areas to which these high-income migrants choose to move. His municipality works hard to attract such people and the employment opportunities that they seek out. In order to do so, he highlighted the need to create an attractive mix of housing. Maria Gardfjell, MP for Miljöpartiet from Uppsala, highlighted the many benefits that such migration has brought to Uppsala. She highlighted that Uppsala has an explicit strategy to increase the population, and benefit from such migration, while also making sure to build the right kind of housing to attract these migrants. Hence, it is clear that different respondents, depending on their perspectives and spectrum of interest, view the trend differently, but that some do find it widely relevant to the housing market generally.

Many of the larger housing developers, including Skanska, JM, SBB and HSB noted that they had allocated increased resources to growing their presence in smaller urban areas as time has gone on. They added that this has proven a successful concept, largely as a result of the rising migration trends (as was also identified quantitatively in Chapter 7). Nevertheless, Linn Matic at HSB, a company who build in a large range of areas where no other housing developer builds, highlighted that this is only sustainable during a boom. She added that the turning housing market and falling house prices had led to this proving problematic as of late. However, she also noted that building in a wider range of areas allows the company to build to a more specific profile of housing, and adaptability in the company means that investing into smaller urban areas has worked well for them. Indeed, Peter Svensson from PEAB added that adapting not only to the size of a city, but also the size of its labour market, is crucial to his company's strategy. However, he did also note the difficulty of planning long-term owing to the inherent short-termism of the political cycle and the construction time of housing. Indeed, generally, most housing developers argued for their adaptation strategy (or lack thereof) being ideal, without providing much objective justification for this. Thus, it will be interesting to see which strategies prove to be most effective in future.

8.3.2.2 Rural areas – and refugees

A number of responders remarked that while smaller urban areas may be on the rise, there remains little reason to believe that rural areas will face a similar resurgence. When quizzed about the potential impact of large numbers of refugees being allocated to rural areas, one responder who wished to remain anonymous stated "obviously bringing refugees to rural areas will increase the number of people there, so in that sense, a revitalization may occur, in terms of the actual number of people living in the area. But how sustainable is such a shock to the system, how can the current population adapt to a doubling of the population of their village or small town overnight?" Indeed, another anonymous housing developer stated that he believes there needs to be a labour market demand first, before the housing market responds, particularly in a rural context. However, since the government appears to think differently, the responder's company has attempted to broaden their areas of operation in response to this trend, in line with trends of refugees impacting rural areas, which were found in Chapter 7. Nevertheless, the difficulties associated with running housing development projects remotely, as well as the generally lower price levels for housing, has meant that thus far these efforts have been relatively limited in their extent. This indicates that there is a policy and developer mismatch in terms of communication or lack of information in this regard.

The anonymous responder from Skanska noted that their concept "BoKlok," with cheaply produced module housing, had proven somewhat relevant to providing housing for refugees. Nevertheless, he noted that demand was mostly municipality-driven, owing to refugees' inability to finance their own housing. Karin Gustafsson of Socialdemokraterna highlighted that rather than rural areas, Stockholm municipality has been one major user of this kind of housing, and that this was paramount to getting through the refugee crisis for the municipality. She added that increased capacity means that Stockholm could and should take more refugees in future, in proportion to its population. Kristina Alvendal of Moderaterna, meanwhile, was very positive to module housing in rural and urban areas. However, she highlighted that the lack of diversification in housing forms and restrictive building rules (such as e.g. every apartment in Sweden having to be handicap accessible) created issues with regard to producing cheap and flexible module housing on short notice. Indeed, most right-leaning politicians highlighted the need for planning reform and reform to the appeals process, going beyond the "ineffective" Planning and Building Legislation 2011 (this legislation was also found to be generally ineffective in the quantitative analysis), as has also been noted in some literature (Edman, 2014; Arvidsson and Bills, 2015). Reducing building regulations in a controlled manner could thus be seen as desirable in order to enable more innovative and diversified housing solutions in future by many (though may not stop the issue of NIMBYism impeding certain housing projects). This could help to create a more sustainable housing market in the long-term, more inclusive to refugees and migrants in rural and urban areas alike.

Further, the respondent from Rikshem noted that revitalization of rural areas was primarily a political question. Much like Clara Lindblom of Vänsterpartiet (see Section 8.3.1.2), she pointed to Norwegian policy, incentivizing life in rural areas, as a more sustainable way in which to ensure revitalization of rural areas, rather than migration or the like. Indeed, Johan Löfstrand of the ruling Socialdemokraterna also highlighted that some such policies, although perhaps not as explicit as the ones in Norway, should be looked into in order to incentivize and encourage life in rural areas. Looking into such policy could prove to be an interesting avenue to go down, although the political ramifications, desirability and cost worthiness of keeping rural areas populated must also be considered, as well as any indirect impacts on migrant preferences and decision-making ability. Naturally, this would then also transform the nature of analysis of the relationship between migration and house prices in rural areas, if, in a sense, an even larger proportion of migration becomes less directly voluntary.

Looking more specifically at refugees, Fredrik Johansson of SHH Bostad was in the minority of respondents that noted migrants as an opportunity and appeared to believe in the ability of refugees to revitalize a housing market. This could be a result of SHH Bostad having a different target group for their product than most other interviewed housing developers. However, Kent Persson at Heimstaden expressed a similar sentiment, underlining that the share of refugees in a given municipality is very interesting and seen as an opportunity for Heimstaden. This is despite his company being substantially larger than SHH Bostad (although Heimstaden's focus on rental housing likely also plays into this stance). Hence, both respondents noted that the impacts of refugees in housing markets in rural areas are highly relevant for their purposes, and something that they seek to exploit where possible.

In a more commonly expressed view, Linn Matic at HSB highlighted that while refugees do constitute an attractive group for them to some degree, the lack of purchasing power is a significant barrier to building more specifically toward this group (as was also noted by the respondent from Skanska above). Matic noted the inability of HSB to reduce their prices further, owing to strong building regulations in Sweden, as well as municipality rules. She also noted that refugees living in rental housing can effectively force groups with higher purchasing power into owner-occupied housing, and questioned the sustainability of this in a housing and labour market context. This contention, which found some support in the quantitative analysis in earlier chapters, is one of the downsides of a refugee or repopulation policy in rural areas. This highlights the need to consider wider ramifications of any such explicit policy initiatives.

Hans-Åke Palmgren at Boverket highlighted that among many smaller municipalities, refugees were seen as more of an opportunity than among most housing developers. Palmgren noted that many municipalities hoped that refugees could help them interrupt trends of population, labour and housing market decline. However, there has been strong variation nationwide and only a few municipalities have been able to realize this. Others have continued to decline in most regards, with refugees instead only serving to increase disparities and polarization among the population. Indeed, David Josefsson of Moderaterna highlighted that while there are success stories of refugees establishing themselves in the countryside, it is important that they are provided the opportunity to succeed. Indeed, the issue of refugees not staying in a set location, but instead choosing to move away once available, was raised by virtually all politicians. Similarly to previous chapters, this underlines the role that social networks as well as economic opportunities have in influencing location decisions. Hence, the importance of balancing the provision of incentives to refugees to stay, while also enabling refugees to move away should they wish to, was clearly emphasized.

8.3.3 Access to the housing market

8.3.3.1 Marginalized groups and the housing market

Linked to refugees and settlement patterns is the issue of access to the housing market. Most developers agree that the housing market has become less permeable for those with less means available to access it, evidence of which was also found in Chapter 7. "Because private housing cooperatives and, to a lesser extent, owner-occupied housing is becoming more popular or remains so popular, and because so few want to build rental housing, it has definitely become harder for young people and those without a lot of spare income or the ability to loan to get their own place. That will create a lot of problems for the ways in which our society is structured further down the line," stated a project leader at Skanska.

"In Sweden it has always been common to move out once you're done with high school. But we're seeing that become less and less possible for many. Something's got to give," stated a responder from Ikano Bostad. Mikael Svenske at Stena Fastigheter highlighted that "the amount of available rental housing is decreasing, not only because few people are building this, but also because renovation of the existing stock is grounds for increasing rents. So even the rental housing that is available, is becoming less affordable. Meanwhile, the new amortization requirements and the requirement to have 15% cash up front of the purchase price for a property has meant that housing generally has become less accessible for young people." Susanne Persson at JM expressed similar concerns, adding that "all the amortization requirements do is prevent first-time buyers from accessing the market." Many other responders, including a number of right-leaning politicians, echoed this sentiment and advocated for removing or suspending the requirements for young people. They added that the rising house prices have also not done young people any favours in this regard, instead serving to spur inter-migrant competition, evidence of which was also found in the quantitative analysis. Johan Löfstrand of Socialdemokraterna, who introduced the latest amortization policy, defended the policy, but did concede that the "timing is problematic, given the state of the housing market and the youth's inability to access it." Hence, from across the political and economic spectrum, it is clear that many do note the issues that persist on the housing market in terms of youth access to housing, without necessarily linking this to migration. Nevertheless, the implicit assumption among many of these politicians and housing developers is that ownership of housing is a desirable trait in a society. Speaking from a historical and institutional perspective, this is a logical conclusion to reach in Sweden, but this need not necessarily be true from a social sustainability perspective. Thus, any explicit initiatives such as the removal of amortization requirements for young people or similar would have to be evaluated in this regard.

A number of politicians offered solutions to increase young people's access to housing. Håkan Siggelin quite aptly summed up the situation as being a result of an "enormous housing shortage" among the relevant segments, leading to "highly limited access to housing." This was a sentiment generally echoed by all responders (as well as, to a degree, the quantitative analysis in Chapter 7). A recurring sentiment, brought up by Familjebostäder, HSB, and JM, as well as Ola Johansson of Centerpartiet, was the proposition to introduce some kind of subsidies for young people wishing to purchase housing. Referred to as the "Norwegian model," this would involve the ability to borrow money that is essentially tax and interest-free, enabling young people to get onto the housing ladder. Most right-wing politicians highlighted this, coupled with the simplification of building regulations, as desirable in order to enable increased youth access to housing (although this does also assume increased home ownership as inherently desirable). Other ideas included increased use of short-term rental contracts (3 months maximum) to help young people find housing (though this could also be used to screen to avoid bad tenants and thus not benefit young people), and also a general lottery for housing rental contracts to allocate housing among peoples, rather than a rental queue. Among the left-wing politicians, such as Maria Gardfjell and Karin Gustafsson, building and incentivizing more housing targeted at the youth or students, enabling a more affordable mix, were the more preferred solutions, also enabling the tackling of the rising black rental market. Further, incentivizing and alleviating elderly mobility were noted as clear goals to work towards, by politicians from across the spectrum. This is because according to these politicians, as the elderly increasingly continue to occupy an unsustainable amount of space, young families are unable to move out into owner-occupied housing. This means that they stay in apartments, and thus those at the bottom of the housing ladder are unable to get onto it.

8.3.3.2 The potential for reform

When discussing how to tackle the impacts of migration on the housing market as well as access to the housing market in the context of the rental market system generally, there were strong divergences in responses. Indeed, most rental housing developers, whether public or private, appeared to be in favour of keeping the current rental queue system, without instituting queue jumping mechanisms (as discussed in Chapter 7). Birgitta Gradin at Stockholmshem, stated that “We have a difficult housing situation in Stockholm but our company does not currently handle and does not wish to contend with any prioritization of particular groups.” Equally, however, Håkan Siggelin, responding for Familjebostäder which much like Stockholmshem is state-backed, stated that over half of their housing is allocated to prioritized groups. This indicates wide divergences in approach, as well as substantial relevance of these prioritized groups in the decision-making process conceptually speaking, but only among certain companies.

Table 8.5 summarizes the responders’ views on queue jumping more generally.

Table 8.5: Attitudes to Queue Jumping

Necessary	Neutral/Mixed	Not advisable
	Housing Developers	
Familjebostäder	ALM Equity	ALM Equity
Heimstaden	Besqab	Rikshem
HSB	Bonava	SBB
Riksbyggen	Ikano Bostad	Serneke
SHH Bostad	JM	SSM
Stena	Magnolia Bostad	Stockholmshem
	PEAB	
	Skanska	
	Veidekke	
	Politicians	
Nooshi Dadgostar (V)	Joel Edding	Karin Gustafsson (S)
Maria Gardfjell (MP)	Lukas Jonsson	Roger Hedlund (SD)
Maria Hannäs (V)	André Nilsson (L)	David Josefsson (M)
Momoudou Malcolm Jallow (V)	Lina Nordquist (L)	Johan Löfstrand (S)
Björn Ljung (L)	Larry Söder (KD)	Mats Nordberg (SD)
Clara Lindblom (V)	Martin Storm	Torsten Svenonius (M)
Rasmus Ling (MP)		Henrik Thunes (M)
		Henrik Vinge (SD)

As can be seen in Table 8.5, attitudes to queue jumping were relatively mixed among both housing developers and politicians. Mats Nordberg, MP for Sverigedemokraterna for Dalarna, highlighted that the primary impact of demographic change has been the growth of housing queues. He highlighted that "the length of these queues is now so long, and the ability to jump the queue for certain prioritized groups so easy, that in effect, the queues are infinitely long for less prioritized groups." He argued that the least prioritized group primarily consists of youth with a non-foreign background. He added that the rental queue system must be reformed so any queue jumping mechanisms prioritize people with a background in the municipality or in the country. Although the earlier quantitative findings did find some evidence of inter-migrant or inter-demographic competition being relevant to the decision-making process in municipalities, only Sverigedemokraterna politicians were open to such explicit competition between different groups in their policy.

Interestingly, Marika Nordström, working at Bostadsförmedlingen, The Stockholm Housing Agency, disagreed with Nordberg's statements and stated that no such queue jumping by refugees or similar is possible. She underlined that the only current form of queue jumping that does exist is for students and youth, where a special kind of housing is reserved for these groups. She did, however, concede (in line with the results in Chapters 5, 6, and 7) that impacts of demographic change on the rental queue are plausible, as is inter-migrant competition. Nevertheless, this clashed with the point that Nordberg, and many politicians and housing developers made, as they seemed unaware of this form of housing. However, Karin Gustafsson of Socialdemokraterna did highlight this form of housing, and underlined the need for more such housing in the future, so that youth aged under 25 have a chance to access the housing market.

David Josefsson of Moderaterna did not wish to see any queue jumping owing to the problems that this can create for society and fairness. Björn Ljung of Liberalerna and Maria Gardfjell of Miljöpartiet both wished to see this to an increasing extent for migrants or refugees. The latter argued that this is much preferable than the alternative, which is increased migration leading to "refugee camps, which a majority of Swedes are against." Neither Ljung nor Gardfjell wished to see queue jumping mechanisms for the young, however, saying they need to "manage on their own." Meanwhile, the Social Democrat politicians instead wished to see local government being given more responsibility and autonomy in providing housing for marginalized groups. This could be an interesting proposal, but one less popular among many of those working in local government, particularly in the right-wing parties.

Kristina Alvendal of Moderaterna expressed an interesting opinion, where rather than queue jumping, certain groups of people, or certain people living in less desirable areas, including migrants, would be given "extra rental queue time," thereby "enabling mobility on the housing market" through accelerated access. People would then be more inclined to move into the housing that is available in less desirable areas in exchange for extra queue time, rather than staying in the queue and waiting for a better home. This would thereby improve their housing situation in the short-term, while also enabling and even incentivizing moves to more desirable areas in the long-term. This could also help to tackle some of the issues identified in relation to the rental queue in the quantitative analysis in Chapters 5 and 7 earlier. This was an interesting idea that was not expressed by many other responders, who instead focused more specifically on the current system that is in place, and arguments for or against it. Hence, further evaluation of such initiatives are advisable, balanced against the segregation that such measures could also serve to reinforce.

Meanwhile, however, in a more conventional initiative, a private rental housing developer who wished to remain anonymous highlighted that they do allow certain groups, and various forms of migrants in particular, to skip or gain “priority” in their internal rental queue already. He added that they are “looking into ways in which to further effectivise rental queues in order to attract tenants to housing.” Hence, it is clear that if the creation of multiple rental queues can allow for increased profits or revenue streams, certain housing developers are likely to prioritize this. They may choose to do this regardless of any social implications or impacts in terms of fuelling inter-migrant competition that this may have. Equally, though, a number of private housing developers noted that they do not have any queue jumping measures in place, for either rental or private housing cooperative housing. They instead noted they did not believe this to be desirable from a societal perspective, as it effectively constituted social housing which they saw many downsides with.

Indeed, social housing was another much-discussed issue. Table 8.6 summarizes the responders’ views:

Table 8.6: Attitudes to Social Housing

Necessary	Neutral	Not advisable
Housing Developers		
Heimstaden	Familjebostäder	ALM Equity
HSB	Magnolia Bostad	Besqab
Ikano Bostad	PEAB	Rikshem
JM	SBB	SSM
Riksbyggen	Serneke	
Skanska	SHH Bostad	
Stena Fastigheter	Stockholmshem	
	Veidekke	
Politicians		
Lukas Jonsson	Nooshi Dadgostar (V)	Maria Gardfjell (MP)
Martin Storm	Maria Hannäs (V)	Karin Gustafsson (S)
	Momoudou Malcolm Jallow (V)	Roger Hedlund (SD)
	Ola Johansson (C)	David Josefsson (M)
	Clara Lindblom (V)	Rasmus Ling (MP)
		Björn Ljung (L)
		Johan Löfstrand (S)
		André Nilsson (L)
		Mats Nordberg (SD)
		Larry Söder (KD)
		Torsten Svenonius (M)
		Henrik Thunes (M)
		Henrik Vinge (SD)

Table 8.6 highlights that most housing developers and politicians view social housing either neutrally, or as not advisable. However, Martin Storm, at the Gothenburg City Planning Office, highlighted that social or affordable housing of some sort, akin to the system operating in the UK, is likely to be required in the future, if migrants are to be able to access the housing market at all. He advocated for a certain percentage of housing being allocated to such purposes in development projects. However, he expressed a desire for such a policy to be more expressly defined. Equally, David Josefsson, Moderaterna politician, did not wish for social housing to be implemented, owing to the inherent segregation that he saw in such measures, which was echoed by the developer from Rikshem. The politicians from Sverigedemokraterna saw similar issues with social housing, as well as left-leaning politicians such as Karin Gustafsson of Socialdemokraterna. Indeed, it is possible that introduction of an entirely new social

housing system could serve to fuel some of the issues of inter-migrant or inter-demographic competition. However, issues of segregation can likely also be minimized if applying spatial planning regulations as in e.g. the Netherlands.

A number of other politicians, including Björn Ljung and Maria Gardfjell, agreed. They argued social housing is likely to create a "lock-in effect" and is not sustainable long-term, while also further pitting migrant groups against one another. Both Ljung and Gardfjell preferred queue-jumping mechanisms as a form of social housing, instead. Ljung also argued for what he termed the "Dutch model," where a mix of owner-occupied and rental housing is built in the same area, rather than an express affordable or social housing segment being introduced. Meanwhile, Kristina Alvendal of Moderaterna expressed the opinion that Sweden "essentially already has a form of social housing through the regulated rental market." Because the rental market is an "all inclusive" model where every home is offered in a similar condition, and rents are regulated, she believed it is "delusional" to discuss social housing as if the system is not already in place in some form. Nevertheless, she did not wish to extend it any further.

It was difficult to get developers to speak more explicitly on the potential impact of changing or reforming the rental queue system, through social housing or otherwise, perhaps because of how contentious this issue is in public discourse. Although some stated that "of course we need to reform, or the young and migrants will never be able to rent," others highlighted that "if we introduce market rents now, rents will quickly become unsustainable, and how can I tell people currently renting at a rent below market that their rent will triple overnight?" One respondent working at Serneke, a medium-sized housing developer, highlighted that "perhaps the transition would have to be gradual, with both market rents and the current rental system operating simultaneously for some time." However, he did highlight that the practicalities of operating such a system, and initiating such a transition, would be difficult. Nevertheless, the Swedish government formed in 2019 does appear to be going down such a route, which many housing developers do support. Still, the respondent from Serneke continued: "They did it in Finland and it worked out okay, but that was a different time, before the internet. Technology is both a bane and a blessing, but in this case, a lot of systems and resources would need to be put in place to ensure a smooth transition, I don't know if it's worth it or even doable to be honest." Indeed, the Finnish initiative appears to have worked relatively well for the Finnish market, but many considerations would need to be accounted for should any such initiative be trialled today (Sweden and Finland also differ heavily in terms of their institutional background generally, as discussed in earlier chapters). Nevertheless, most responders did not offer any other alternative solutions for migrants to access the housing market than through the existing rental system.

8.3.4 Building in the future

Looking beyond access and to the future of the housing market, in order to determine what housing market segments are most relevant to study in relation to the impacts of migration in future, is also highly relevant. This also prompted many mixed responses. Table 8.7 summarizes housing developers' beliefs regarding what kind of housing will be built most in the future (this question did not appear as relevant to politicians and thus not all politicians were asked, see Figure 8.1).

Table 8.7: Housing of the Future

Private Housing Cooperatives	Rental Apartments	Other
	Housing Developers	
ALM Equity	Familjebostäder	JM
Besqab	Heimstaden	
Magnolia Bostad	Ikano Bostad	
PEAB	Rikshem	
Serneke	SBB	
Skanska	SHH Bostad	
SSM	Stena Fastigheter	
Veidekke	Stockholmshem	

Many developers interviewed do primarily build private housing cooperatives, and believed they would continue doing so in the future. This was seen to be a result of both the established role of private housing cooperatives as an asset, as well as the relative profitability of these compared to other housing types. Indeed, one responder working at Magnolia Bostad, highlighted that "private housing cooperatives have been on the rise since the 90s, I don't think this will change anytime soon. They've become so accepted in our culture now, it's the way forward," as has also been noted in previous chapters. Nevertheless, some rental housing developers underlined that they were less sure about this. The responder from Rikshem highlighted that "We need more rental housing in Sweden, so we think rental and private housing cooperatives have to continue to co-exist in the future. The balance needs to tip back a little in favour of rental housing, too many others have been particularly focused on private housing cooperatives in recent years. We need to bring back the balance of decades past." Furthermore, Mikael Svenske of Stena Fastigheter highlighted that "just over the past year we have seen an upswing for rental housing versus private housing cooperatives. If this is just an effect of the weaker market on the cooperative side or not is hard to say. In absolute terms, we will probably see the private housing cooperative remain the most popular, but it is unlikely to be as dominant as over the past ten years."

Kent Persson at Heimstaden went a step further, nothing that the amount of rental housing "has to increase," in order to enable the growth of cities and economies. This would then also "accommodate groups that often stimulate growth such as the youth and migrants, who may not necessarily want to or be able to purchase housing." Lina Nordquist of Liberalerna also highlighted the need to transform rental housing to private housing cooperatives where necessary. She saw a particular need for this in areas that predominantly consist of rental housing, primarily the Million Programme areas. Roger Hedlund and Henrik Vinge of Sverigedemokraterna echoed these points, but went even further. Both advocated for the tearing down and rebuilding of "problem areas in the Million Programme," similar to the initiatives being undertaken in Denmark, and replacing this with private housing cooperatives. Although the latter solution could be considered extreme, these statements generally highlight the openness of some developers and politicians to other asset forms, given the right predispositions and market conditions.

Meanwhile, very few responders seemed to believe that there was much room for the building of new owner-occupied housing. An anonymous responder commented "Villas? No, I think villas are a thing of the past. We have enough in the country already and nowadays everyone wants to live in the central parts of cities. Maybe there is some room for an increased amount of owner-occupied apartments [nb: currently make up less than

1% of total housing stock], but I don't think there is much money in building new villas. It's passé." A responder from Besqab echoed this sentiment, adding "the private housing cooperative has become so established that it is the only way forward. Municipalities do not like it when we build owner-occupied housing, as it is hard to justify to their constituents why they would choose to allocate land for owner-occupied housing, when land prices are ever-increasing and private housing cooperatives in apartment buildings are so much more efficient in providing housing to a larger amount of people. So for us it will be private housing cooperatives with some rental housing thrown in, going into the future." This further underlines the need to study alternative housing markets, but also contrasts with the above statements, with actors showing less interest in changing the business model and building alternative asset classes, as opposed to those already established among businesses. It also contrasts with Swedish demographics, with relatively high birth rates (SCB, 2019), meaning that completely writing off owner-occupied housing may be a little pre-emptive, as millennials with children may prefer these over apartments.

Offering a different perspective, Susanne Persson at JM works at one of the few housing developers in the country that does currently build owner-occupied apartments. She noted that the projects they have completed have sold well, and that the company intends to invest more into this going into the future, to complement their private housing cooperative stock. However, she believed that there will be an adjustment period required for any switch between property types, and thus, in the immediate future, private housing cooperatives will remain the most popular housing asset class. Hans-Åke Palmgren concurred, but noted that the recent changes in financing restrictions have been implemented fairly quickly, and the essence of the question lies in whether the mortgage and financial frameworks can be adapted to new forms of housing. Palmgren appeared fairly sceptical of this being the case. Hence, overall, relatively minimal support was expressed for the future of owner-occupied apartments, with little to suggest that this segment will be large enough to warrant study in relation to migration in the near future.

8.4 Comparison to Quantitative Results & Conclusions

In this chapter, I examine the relationship between migration and housing, taking a qualitative perspective. This extends the literature by providing a qualitative perspective on an issue that I have also studied quantitatively, enabling me to account for a wider range of perspectives in relation to migration and housing markets, as well as analyse the institutional dimension in more detail. Looking broadly at the responses above provided by housing developers, politicians, as well as other relevant persons, and comparing and contrasting this to the earlier quantitative analysis, a number of wider trends and contributions can be highlighted, and some conclusions can be drawn.

The quantitative results found that migration, both internal and foreign-born, is very much relevant to house prices and the housing market more generally. However, close to half of the respondents in the qualitative section did not consider migration of any kind to be particularly relevant to their decision-making process. Thus, generally only limited, scattered attention was drawn to many of the conceptual trends that were highlighted earlier in this thesis. This suggests that, where possible, more studies should be conducted on more of a micro-level to complement my studies (employing e.g. a survey of local populations). Equally, given the results of my studies, housing developers and politicians should not write off the importance of broader trends on the macro-level, either.

The quantitative results have also shown a broad variance in the impacts of migration on house prices in different types of municipalities. These impacts were not something that most housing developers seemed aware of, or particularly interested in. Indeed, many noted the relative locality of the housing market means that wider demographic trends, beyond population structure and population growth in an area, are not really relevant to them. Although this trend was also identified in the quantitative analysis, it did not discount the relevance of other forms of migration. Indeed, politicians also generally seemed quite uninformed regarding the extent of these trends. This contrasts with the quantitative results, in which I generally find that it is migration trends, not e.g. age structure of the population, that are the most relevant factors to consider in terms of house prices. This also suggests the necessity of more studies, perhaps specifically focused at the impacts of migration on the profitability of housing development, rather than just house prices.

Further, even among housing developers that did say migration matters, the impression I received overall is that while they do dedicate resources to forecasting various demographic factors, ultimately, a lot of other factors weigh relatively more heavily in their analyses. The most important factor appeared to be the perceived profitability of a housing project. Other relevant factors include competitor's actions, the state of the labour market, as well as developer confidence. I was not able to consider some of these factors in my analysis, which could highlight why some relatively important factors in my quantitative analysis appeared to be relatively less important to housing developers.

Despite this, where developers and politicians did say that migration matters, they often particularly highlighted internal migration. This is in stark contrast to previous academic studies, where internal migration is often disregarded in favour of international migration. However, this does correspond well with my quantitative analysis, where both of these forms of migration, as well as their subsets, are found to be relevant in different contexts. Since much housing development occurs in smaller urban areas and major city suburbs, internal migration to these so-called growth areas was highlighted as particularly interesting to track in the quantitative analysis. With regard to this, some developers did say that they do respond to such growth areas emerging. However, an approximately equal amount said that these are not relevant to them and that they instead dedicate energy and resources to focusing and expanding upon their core business areas, largely regardless of any demographic developments. The former are thus clearly more aligned with the results of the quantitative analysis, which found that internal migration has caused substantial increases in house prices in smaller urban areas, while the latter appear to favour responding to other trends, if any. In terms of the relative lack of knowledge that was identified among politicians, it is more difficult to justify this from an economic or business perspective. This is instead indicative of a wider trend where although politicians are informed about housing or migration policy individually, they are not informed about the situations in which policy areas can intersect to as large of an extent.

In terms of refugee allocation policy, a number of developers did see opportunities in refugee migration, noting that the creation of various forms of simple, cheap, or modular housing did constitute potential business areas for them. Meanwhile, politicians of different parties also saw these as a form of flexible solution to housing crises. However, very minute amounts of such housing were actually produced in response to the refugee crisis (largely owing to regulations prohibiting quick production of modular buildings). Hence, most did not view this as a particularly sustainable business strategy, beyond building for municipalities that have requested such housing specifically. This was primarily said to be owing to the unsustainable, inflexible or inactive labour markets in many of the areas that took proportionally large amounts of refugees. Hence, despite my quantitative research finding that refugees have impacted these areas in terms of house prices, few developers or politicians see long-term potential in this.

Most developers and politicians agreed that youth these days struggle to access the housing market more so than previously. This was primarily said to be a result of financial restrictions and a lack of supply of suitable housing, rather than the impacts of migration. Various incentives were suggested in order to combat this, including special loans or subventions, favourable financing conditions and incentivizing the building of cheaper housing. In the quantitative analysis, some evidence was found of inter-migrant competition having an impact on access to the housing market and the makeup of the housing market as a whole. However, most politicians were uncomfortable with weighing the needs and interests of different groups against one another in terms of policy. Further, many housing developers and right-leaning politicians did not see queue-jumping mechanisms as a particularly sustainable manner in which to combat the lack of access to housing for youth and other vulnerable groups. This is despite the possibility of impacts of migration on the rental queues, which my quantitative results revealed. Although some did argue for social housing and saw the value in queue jumping for their business or for some marginalized groups in society, most advocated solving problems in other manners. Indeed, other suggestions floated by some aiming to alleviate youth access to the housing market included liberalization of the rental market, and increasing flexibility and movement on the housing market. The responders' thoughts on youth access to the housing market generally do conform to the results of the quantitative analysis, and many of the proposed solutions offered should be analysed further. Nevertheless, any such analysis must also consider the potential desirability of all outcomes achieved, not only in terms of home ownership, but also socio-economic perspectives.

In terms of predicting the housing of the future, most housing developers argued for their business model, perhaps unsurprisingly. General consensus however, suggests that rental housing will come to be slightly more important in the future. Hence, tracking the impact of migration on rents, too, as was done in my quantitative research, is likely to become increasingly relevant. Continuing to track the impacts of migration on private housing cooperatives, which is currently developers favourite form of housing to build, also found support in developer's continued confidence in this asset class. More explicitly weighing profitability and desirability of different housing asset classes could constitute further avenues of future research.

Although many did not, some housing developers did make statements that provided evidence of e.g. the role of push/pull factors in influencing location decisions, in the form of economic opportunities, knowledge clusters, and social networks, in line with the quantitative research. Indeed, evidence of the role of rental housing and its erosion in favour of private housing cooperatives was also found, as well as the importance of policy changes in influencing the impacts of different forms of migrants on the housing market. Hence, statements made by many housing developers and politicians did serve to support conceptual findings identified in the quantitative analysis to some degree, although this was far from applicable across the board.

In short, however, it is clear that the results of my quantitative and qualitative analysis, although similar in parts, do diverge significantly on many points. Many responders do not see the value in tracking the impacts of migration on house prices, despite my quantitative results showing that there are clear impacts to be tracked. Improved knowledge of such trends would serve to improve the sustainability of some housing developers' business, as well as politicians' long-term policies. Nevertheless, my analysis has not covered many of the factors that responders do highlight as relevant, owing to both data availability and scope of research. Hence, it is not unreasonable to think that many of the factors highlighted as more relevant than migration are likely to also be highly relevant factors to consider. Further research could look to analyse more specifically the impacts of these and other factors, in conjunction with migration and demographic trends more broadly.

9. Conclusions

This PhD thesis makes a significant contribution to knowledge in the study of the impacts of migration on the housing market. The relevance of the on-going housing and migration debate, as well as a number of previously unanswered questions and gaps, are highlighted and answered. Innovations are made in the consideration of the impacts of internal migration on housing, as well as through implementing a regional perspective. Further innovations are made by placing emphasis on migrant background and connecting this to migrant impacts on a range of different aspects of the housing market, as well as by conducting mixed methods analysis. Although the Swedish and Nordic context is used, a significant amount of wider conclusions are drawn and contributions are made, with applications to other countries and contexts being possible.

This thesis finds that a wide range of migration flows impact house prices. In particular, both foreign-born and internal migration are found to impact a broad range of housing markets, and on a very general level can be said to have relatively comparable effects. However, a number of differences are identified in the degree of these impacts across different housing markets. Chapters 4 and 6 find that on the owner-occupier market, foreign-born migration is slightly more impactful. Meanwhile, Chapters 5 and 6 show that in terms of private housing cooperatives, internal migration is generally more impactful. Chapters 5 and 6 also find that when it comes to the rental market, foreign-born migration is most impactful in terms of both rents and the rental queue. Hence, clear divergences are identified across different markets, but on the general level, a key contribution is the finding that both forms of migration have clear impacts across different types of housing markets. This holds also when considering the impacts on housing availability in Chapter 7, where internal migration is found to be most significant overall, and in terms of impacts on the institution of a queue jumping mechanism. However, foreign-born migration is found to be most significant in impacting housing availability for youth specifically. Clear links are also established between these impacts and housing construction. Chapter 8 ties together the above findings. The chapter shows that where migration is relevant to housing developers and politicians, generally speaking both forms of migration are found to be relevant, and few choose to distinguish between the relative relevance of the migration flows.

Regional differences are also identified in terms of the impacts of migration on housing throughout the thesis. In terms of the owner-occupier market, it is found that foreign-born migration does not impact smaller urban areas, and internal migration does not impact major cities. This is a key contribution, in line with broader conceptual trends that have been identified throughout the studied period, including small town revival and the increasing importance of economic opportunities and social networks serving as push/pull factors for migrants. However, in terms of the alternative markets, impacts on the private housing cooperative market are more uniform between internal and foreign-born migration. Both major cities and smaller urban areas are impacted by both forms of migration, in contrast to the earlier results. This is likely a result of the location of many private housing cooperative properties being more central in cities. Nevertheless, differential impacts reappear in terms of the rental market, with foreign-born migration into major cities being the only impactful migrant flow. In terms of housing availability, internal migrants have a stronger impact on smaller urban areas in particular. This highlights that relative income continues to be a strong determinant of housing market impact in certain contexts. In the qualitative analysis, however, most respondents do not identify these regional trends (perhaps owing to areas of operation being more local for many). Nevertheless, a clear contribution is made with clear evidence of regional differences between the impacts of foreign-born and internal migration, as well as differences between segments of the housing market, being identified.

When distinguishing between different forms of migration, a further number of contributions are made. On the owner-occupier market, background is found to play a significant role, with higher income migrants having the strongest impacts in urbanised areas. This is most likely owing to the strength of the labour market and migrant preferences. Meanwhile, a key finding is that refugee migrants have the strongest impacts in rural areas, likely owing to refugee settlement policy and displacement effects forcing up prices. Refugee migrants, however, are generally not significant in major cities, likely owing to the higher densities per household at which refugees often live in such areas. In terms of the alternative markets, background continues to play a significant role, with refugees and family reunification migrants being particularly impactful. Indeed, this is likely also partly owing to the conceptually identified trend of increased rental market conversions forcing low-income migrants into rental housing in certain areas. Migration in search of the strongest economic opportunities and network effects likely also plays a role, thus intensifying refugee impacts on housing in such areas. However, higher income migrants are also highly impactful in certain scenarios. Nevertheless, strong impacts identified of refugees on overall housing availability, as well as strong links between this and housing construction, do also highlight that while income is a strong determinant, it is far from the only one.

Investigating this further, a closer look at the Stockholm market reveals that migration within Stockholm is most impactful in terms of the impacts on house prices and rents, but least impactful for the rental queue. This is somewhat expected, owing to the role of income as well as established networks, underlining the importance of migrant incomes and backgrounds when looking at the impact on the housing market. This also highlights another key contribution, which is that when able to capture the impacts of intra-municipal internal migration (rather than just inter-municipal internal migration), impacts can be substantially strengthened. This also means that in the other contexts of analysis, some internal migration impacts are likely being underestimated. Beyond this, foreign-born migrants do, in some cases, have stronger impacts than migrants from the rest of Sweden. This is likely owing to the role of relative purchasing power as well as migration motivations, with the latter group having stronger impacts on the rental queue, rather than house prices. All in all, then, the importance of local moves is highlighted through this analysis, as well as the implications that a wide range of migrant flows can impact house prices, regardless of migrant origin.

When considering the markets and their interrelations more explicitly, generally strengthened impacts of foreign-born and internal migration are found. This underlines the importance of considering the entire housing market, as otherwise, impacts of migration may be underestimated. Interaction effects are generally positive. This is another key contribution, which means that the impacts of foreign-born migration become stronger when considering a strengthened impact of additional segments of the housing market in their impacts on one another, and/or the impacts of those additional segments become stronger when considering a strengthened impact of foreign-born migration. However, it is also discovered that the private housing cooperative market differs quite substantially from the owner-occupier and rental market – and acts as a form of intermediary or bridge market between the two. Further, differences in covariance do still highlight that each of the markets plays its own role, with impacts of migration being far from uniform across markets, as is also underlined by the conceptual background.

Looking more explicitly at the qualitative study of the impacts of migration on the housing market also proved illuminating. Although many of the above-mentioned trends are highlighted, consideration for how these trends affect both housing developers and politicians' plans and agendas is enabled through this analysis, with a number of unique viewpoints being highlighted and contributions being made as a result. Generally, housing developers do not consider foreign-born migration to be a particularly impactful factor to include in their models or plans. If anything, they find internal migration and the age structure of a population to be more relevant. Politicians, meanwhile, do find foreign-born migration to be somewhat more relevant, but still do not adapt their policies or decision-making particularly to trends pertaining to migration and the housing market. Some housing developers and politicians are, however, influenced by trends identified in the quantitative analysis such as e.g. rise of house prices in smaller urban areas owing to internal migration. However, equally, many are intent on sticking to and defending their current business plans or policies. Hence, although housing developers and politicians' thoughts do generally confirm the relevance of much of the quantitative analysis, they do not necessarily come to the same conclusions as I in their decision-making processes. This is likely to be partly a result of the lack of consideration for a number of factors inherent to their decision-making, that are difficult to track quantitatively. Generally speaking, the qualitative results, although in some ways contrasting with the quantitative results, do provide a lot of interesting insight into the development process as a whole. They also highlight the importance of considering a range of perspectives in the housing context, while providing justification for my analysis.

In sum, one of many key contributions of this thesis has been to find evidence confirming a number of conceptual trends, as has been highlighted throughout. These include the role of economic opportunities and social networks in migration location decisions, as well as the role of migrant motivations more generally and subsequent influence on the degree of impact of migration on housing, which find significant evidence in the analysis.

Acknowledging and managing such flows and influences in policy is therefore advisable. Further, impacts of policy and broader economic trends, such as e.g. the role of refugee settlement policy and impact of native displacement, as well as the rise of smaller urban areas as economic powerhouses and the role of inter-migrant and inter-demographic competition, clearly influence the relationship between migration and housing in a number of contexts. The impacts of these trends should also be more expressly acknowledged and manipulated in future policy, in order to achieve outcomes dictated by political goals. The transforming nature of different segments of the housing market, such as an evolving rental queue and growing private housing cooperative market are also relevant in this regard. To conclusively state that these, and other identified concepts, have had clear impacts on the relationship between migration and housing is often not possible. However, on balance and given the analysis in this thesis, evidence of these trends influencing the relationship is strong.

Beyond this, international comparisons to other Nordic markets are also introduced, in order to cement whether these conceptual trends identified in Sweden hold also in an international context. The results generally do indicate that this is the case. In the Danish and Norwegian context, many of the trends and findings are similar to those found for Sweden, and in Finland, a little more divergent. However, these differences can likely be explained by the different institutional contexts and conceptual trends that each of the markets has experienced, with Denmark being most similar to Sweden in this regard, and Finland, least so. Further research would be required into this in order to establish whether this holds in its entirety. However, generally, this does confirm that the conceptual trends and other contributions made in this thesis are supported. This also highlights that trends identified in Sweden are likely to bear international relevance and transferability, particularly in areas with a similar institutional and conceptual context to Sweden.

Perhaps my most important contribution is the finding that a wide range of migration flows impact house prices. While media and political emphasis is often placed on refugee flows – which do strongly impact the housing market in a number of contexts – clear evidence has also been found of other forms of foreign-born and internal migration having equally as strong or stronger impacts in a wide range of contexts. Broad policy implications are relatively clear in the identification of a number of key conceptual trends above, while particularly strong impacts of certain migration flows in key scenarios likely necessitate policy action. However, exact policy implementations will depend on the stated goals of any government, as well as the context and area studied. Nevertheless, it is clear that management of migration flows is integral to management of house prices and the housing market as a whole, and that the relationship between the two is very strong.

In terms of more specific policy implications, the thesis makes it clear that many forms of different migration are in many cases pushing up home prices and rents. The housing market is also being impacted in other ways, with a reduced housing availability and longer rental queues. A clear policy recommendation is to build more housing, if there is a desire to limit the extent of house price and rent inflation. This housing should ideally be built in the areas which migration is impacting most, though this will naturally also depend on planning policy. If housing developers argue that the feasibility of building housing in certain areas is not possible owing to profitability issues, then perhaps some form of expanded subsidies for building housing in such areas should be considered. It would be ideal if mixed housing tenures were established in different areas, in order to limit the incidence of segregation and inter-migrant competition. Targeted policy may also have to be introduced in order for this to occur, as otherwise, housing developers are likely to be tempted to build solely in areas where profitability is predicted to be highest.

In terms of more far-reaching policy initiatives, is clear that the rental market in Sweden is being put under increasing amounts of pressure. Rental queues are increasing, to the point where queue-jumping is being instituted to allow for migrants to access housing. A gradual deregulation of the rental market is thus something that perhaps should be looked into, in order to improve fairness on the market for migrants unable to queue, and also for those in the queue who see themselves being “skipped.” Gradual deregulation is also likely to incentivize private developers to build more rental housing. If this is not desirable, then looking into establishing more mainstream forms of social housing may be the only alternative, as the current system is unlikely to be sustainable in the long-run.

The results also suggest that it is important, both conceptually and in terms of policy design, to move away from an exclusive broader focus on foreign-based migration. Instead, they highlight the importance of also considering both endogenous and exogenous internal migration processes when predicting and planning for housing and labour market disruptions. There is currently relatively little research into predicting or planning for these trends, and the interactions between foreign-based and internal migration, affecting governments or property developers. A fruitful area for further research would be a more detailed analysis of the nature of the displacement effects resulting from foreign-based migration inflows. Research could look into the hypothesis of whether these result in a process of upskilling of large urban areas through selective international and internal migration, while low-skilled, older, and less wealthy native residents are displaced to suburban or semi-rural locations. For policy analysis, calculations of changes in welfare would also be required, looking beyond solely housing costs.

Further research could also look to investigate the relationships analysed in this thesis more, in the context of different countries and housing markets. Studying countries or areas with a different institutional or migration history, and thus different migration trends, could reveal interesting results with regard to the impacts of varying forms of migration. This could also reveal wider conceptual implications. Looking more closely at the impact of intra-municipal migration, where possible, could also prove interesting. Further, looking at housing markets where social housing plays a stronger role could also be insightful, as well as looking to the impacts of other trends in relation to migration and housing markets. This could include taking an increased focus on housing affordability, the rise of buy-to-let investment, the relationship between migration and the kinked price curve, as well as the impacts of native return migration. Indeed, research more generally accounting for variables which have been omitted in this thesis, and thus could be biasing coefficients, is desirable where possible. From the perspective of public policy, embedding the housing market into a spatial general equilibrium model of the economy would also be interesting, allowing for fuller analysis of welfare implications of immigration shocks. An analysis of results divided by ruling majority would complement this well, as well as analysis more explicitly accounting for the spatial dimensions of migration between near-lying municipalities. In addition, further study along migrant origin and regional lines could also be highly relevant with regard to the labour market more generally, looking beyond the context of just the housing market (an example is Ahlfeldt et al., 2020, looking at spatial equilibrium models with migration and housing markets). Qualitative analysis complementing research along these lines could also prove interesting.

Bibliography

Accetturo, A., Manaresi, F., Mocetti, S., and Olivieri, E. (2014). Don't Stand So Close To Me: The Urban Impact of Immigration. *Regional Science and Urban Economics, 45(1),* 45-56.

Adams, Z., and Blickle, K. (2018). Information and the displacement of incumbent households. Available at SSRN: https://ssrn.com/abstract=3131519

Aitken, A. (2014). The effects of Immigration on House Prices and Rents: Evidence from England and Wales. *Working Paper.*

Ahlfdelt, G.M., Balal, F., Roth, D., & Seidel, T. (2020). The stationary spatial equilibrium with migration costs. Available at: https://www.helsinkigse.fi/wp-content/uploads/2020/01/The_spatial_equilibrium_with_migration_cost_compressed.pdf

Ahmed, A., and Hammarstedt, M. (2007). Discrimination in the rental housing market: A field experiment on the Internet. *Journal of Urban Economics, 64(2),* 362-372.

Akbari, A., and Aydede, Y. (2012). Effects of immigration on house prices in Canada. *Applied Economics, 44(13),* 1645-1658.

Alba, R.D., and Logan, J.R. (1992). Assimilation and Stratification in the Homeownership Patterns of Racial and Ethnic Groups. *International migration review, 26(4),* 1314-1341.

Altindag, O., and Kaushal, N. (2017). Do refugees impact voting behavior in the host country? Evidence from Syrian refugee inflows in Turkey. *Institute of Labor Economics, DP No. 10849.*

Altonji, JG, and Card, D. (1991). The effects of immigration on the labor market outcomes of less-skilled natives. Extract from: Immigration, Trade and the Labor Market, eds Abowd, J, and Freeman, R. *National Bureau of Economic Research,* 201-234.

Andersson, H. and Dahlberg, M. (2018). Refugee Immigration and the Housing Market. *Working Paper*

Andersson, R., Bråmå, Å, and Holmqvist, E. (2010). Counteracting segregation: Swedish policies and experiences. *Housing Studies, 25(2),* 237-256.

Andersson, R., and Kährik, A. (2017). Widening gaps: segregation dynamics during two decades of economic and institutional change in Stockholm. In T. Tammaru, S.

Marcinczak, M. van Ham, S. Musterd (Eds.), *Socio-Economic Segregation in European Capital Cities. East meets West* (pp. 110-131). London and New York: Routledge.

Andersson, R., and Turner, L.M. (2014). Segregation, gentrification, and residualisation: from public housing to market-driven housing allocation in inner city Stockholm. *International Journal of Housing Policy, 14(1),* 3-29.

Angrist, J., and Pischke, J.S. (2009). A Note on Bias in Just Identified IV with Weak Instruments. *London School of Economics, 28.*

Antolin, P., and Bover, O. (1997). Regional Migration in Spain: The Effect of Personal Characteristics and of Unemployment, Wage and House Price Differentiations Using Pooled Cross-Sections. *Oxford Bulletin of Economics and Statistics, 59(2),* 215-235.

Antoniuicci, V., and Marella, G. (2017). Immigrants and the City: The Relevance of Immigration on Housing Price Gradient. *Buildings, 7(4),* 91.

Askåker, C. (2011). Etnisk bostadssegregation i Stockholms län – ett resultat av diskrimnering, invandrares boendepreferenser eller olika ekonomiska förutsättningar? Trans: Ethnic housing segregation in Stockholm county – a result of discrimination, immigrants' housing preferences or different economic predispositions? *Social and Behavioural Science.*

Åslund, O. (2005). Now and forever? Initial and subsequent location choices of immigrants. *Regional Science and Urban Economics, 35,* 141-165.

Åslund, O., Edin, P.-A., Fredriksson, P., Grönqvist, H. (2011). Peers, Neighborhoods, and Immigrant Student Achievement: Evidence from a Placement Policy. *American Economic Journal: Applied Economics, 3*(2), 67-95.

Austin, B., Glaeser, E., and Summers, L. H. (2018). Saving the heartland: place-based policies in 21st century America. In *Brookings Papers on Economic Activity Conference Drafts*.

Baeten, G., Westin, S., Pull, E., and Molina, I. (2016). Pressure and violence: Housing renovation and displacement in Sweden. *Environment and Planning A, 49(3),* 631-651.

Baltagi, B.H., and Liu, L. (2011). Instrumental variable estimation of a spatial autoregressive panel model with random effects. *Economics Letters, 111(2),* 135-137.

Barbu, T.C., Vuta, M., Strachinaru, A.I, and Cioaca, S-I. (2017). An Assessment of the Immigration Impact on the International Housing Price. *Amfiteatru Economic, 19,* 682-695.

Bassey, M. (1999). *Case Study Research in Educational Settings.* London: Open University Press

Belke, A., Orth, W., and Setzer, R. (2010). Liquidity and the dynamic pattern of asset price adjustment: A global view. *Journal of Banking and Finance, 34(8),* 1933-1945.

Bengtsson, B. (1994). Swedish rental policy – a complex superstructure with cracking foundations. *Scandinavian Housing and Planning Research, 11(3),* 182-189.

Berggren, B., Fili, A., Wilhelmsson, M.H. (2017). Does the increase in house prices influence the creation of busniess startups? The case of Sweden. *Region, 4(1),* 1-16.

Berglund, M. (2017). Fastighetsmarknaden i Finland och Sverige: En diskussion om bostadsrätter. Trans: Property market in Finland and Sweden: A discussion about private housing cooperatives. *Working Paper.*

Bevelander, P. (2011). The employment integration of resettled refugees, asylum claimants, and family reunion migrants in Sweden. *Refugee Survey Quarterly, 30(1),* 22-43.

Blanchard, O. (2017). Macroeconomics. London: Pearson.

Blundell, R., and Powell, J.L. (2003). Endogeneity in Nonparametric and Semiparametric Regression Models. In: Advances in Economics and Econometrics: Theory and Applications. Cambridge University Press: Cambridge, UK.

Booli Pro. (2018). Selected statistics. https://booli.se/pro

Borjas, GJ. (2006). Native internal migration and the labor market impact of immigration. *Journal of Human Resources, XLI,* 221-258.

Bostadsförmedlingen. (2016). Selected statistics. https://bostad.stockholm.se/

Bostadsförmedlingen. (2019). Selected statistics. https://bostad.stockholm.se/

Boverket. (2011). Analys av bostadsbyggandet i Norden. Trans: Analysis of residential construction in the Nordics. *2011:19.* Available at: http://www.boverket.se/globalassets/publikationer/dokument/2012/analys-av-bostadsbyggandet-i-norden-huvudrapport.pdf

Boverket. (2016). Housing, internal migration and economic growth in Sweden. *2016:13.* Available at:

http://www.boverket.se/globalassets/publikationer/dokument/2016/housing-internal-migration-and-economic-growth-in-sweden.pdf

Boverket. (2017). Beräkning av behovet av nya bostäder till 2025. Trans: Calculation of required housing up until 2025. Available at: https://www.boverket.se/sv/om-boverket/publicerat-av-boverket/publikationer/2017/berakning-av-behovet-av-nya-bostader-till-2025/.

Boverket. (2017). Open Data. Available at: http://www.boverket.se/sv/om-boverket/publicerat-av-boverket/oppna-data/bostadsmarknadsenkaten/

Boverket. (2018). Open Data. Available at: http://www.boverket.se/sv/om-boverket/publicerat-av-boverket/oppna-data/bostadsmarknadsenkaten/

Braakmann, N. (2016). Immigration and the Property Market: Evidence from England and Wales. *Real Estate Economics,* 10(1).

Bråmå, Å., and Andersson, R. (2010). Who leaves rental housing? Examining possible explanations for ethnic housing segmentation in Uppsala, Sweden. *Journal of Housing and the Built Environment, 25(3),* 331-352.

Bratu, C. (2018). Spillover effects of stricter immigration policies. *Working Paper.*

Brekke, JP., Røed, M., and Schøne, P. (2017). Reduction or deflection? The effect of asylum policy on interconnected asylum flows. *Migration Studies, 6(1),* 1-32.

Brochmann, G., and Hagelund, A. (2012). *Immigration policy and the Scandinavian welfare state 1945-2010*. Palgrave Macmillan.

Brown, LA., and Holmes, J. (1971). Search Behavior in an Intra-Urban Migration Context: A Spatial Perspective. *Environment and Planning, 3(3)*.

Brownstone, D. and Englund, P. (1991). The demand for housing in Sweden: equilibrium choice of tenure and type of dwelling. *Journal of Urban Economics, 29(3),* 267-281.

Burnley, IH. (2005). Immigration and Housing in an Emerging Global City, Sydney, Australia. *Urban Policy and Research, 23(3),* 329-345.

Cameron, G., and Muellbauer, J. (1998). The Housing Market and Regional Commuting and Migration Choices. *Scottish Journal of Political Economy, 45(4),* 420-446.

Card, D., and DiNardo, JE. (2000). Do Immigrant Inflows Lead to Native Outflows? *American Economic Review, 90(2),* 360-367.

Carter, T. (2005). The Influence of Immigration on Global City Housing Markets: The Canadian Perspective. *Urban Policy and Research, 23(3),* 265-286.

CED. (2017). Facts about Cycling in Denmark. Available at: http://www.cycling-embassy.dk/facts-about-cycling-in-denmark/statistics/

Clapham, D., Kemp, P., and Smith, S. (1990). *Housing and Social Policy.* Basingstoke: Macmillan

Clapp, JM., Nanda, A., and Ross, SL. (2008). Which school attributes matter? The influence of school district performance and demographic composition on property values. *Journal of Urban Economics, 63(2),* 451-466.

Clark, W., and Huang, Y. (2004). Linking Migration and Mobility: Individual and Contextual Effects in Housing Markets in the UK. *Regional Studies,* 38(6), 617-628

Cochrane, W., and Poot, J. (2016). Past research on the impact of international migration on house prices: Implications for Auckland (Report). *Wellington, New Zealand: Ministry of Business Innovation and Employment (MBIE),* 1-34.

Cochrane, W., and Poot, J. (2019). The Effects of Immigration on Local Housing Markets. *Working Paper in Economics 7/19, University of Waikato.*

Coleman, A., and Landon-Lane, J. (2007). Housing Markets and Migration in New Zealand, 1962-2006. *Reserve Bank of New Zealand Discussion Paper Series, 12.*

Costello, L. (2009). Urban-Rural Migration: housing availability and affordability. *Australian Geographer, 40(2),* 219-233.

Creswell, J. W. (2007). *Qualitative inquiry and research design: Choosing among five approaches (2nd ed.).* Thousand Oaks, CA: Sage.

D'Albis, H., Boubtane, E., and Coulibaly, D. (2018). International Migration and Regional Housing Markets: Evidence from France. *International Regional Science Review.*

Daams, M., Proietti, P., and Veneri, P. (2018). The effect of asylum seekers reception centres on house prices. Evidence from the Netherlands. *Working Paper.*

Dahlberg, M., Edmark, K., and Lundqvist, H. (2012). Ethnic Diversity and Preferences for Redistribution. *Journal of Political Economy, 120(1),* 41-76.

Damm, A.P. (2009). Ethnic Enclaves and Immigrant Labor Market Outcomes: Quasi-Experimental Evidence. *Journal of Labor Economics. 27*(2), 281-314.

Damm, A.P. (2014). Neighborhood quality and labor market outcomes: Evidence from quasi-random neighbourhood assignment of immigrants. *Journal of Urban Economics, 79,* 139-166.

De Graaf, T. (2019). Housing market and migration revisited: a multilevel gravity model for Dutch municipalities. *Working Paper.*

De Jong, GF., and Fawcett, JT. (1981). Motivations for migration: an assessment and a value-expectancy research model. In: Migration decision making: multidisciplinary approaches to microlevel studies in developed and developing countries. New York, Pergamon.

Degen, K. and Fischer, AM. (2009). Immigration and Swiss House Prices. *CEPR Discussion Paper No. DP7583.*

Depetris-Chauvin, E., and Santos, R.J. (2018). Unexpected guests: The impact of internal displacement inflows on rental prices in Colombian host cities. *Journal of Development Economics, 134,* 289-309.

DiPasquale, D., and Wheaton, W. (1992). The Markets for Real Estate Assets and Space: A Conceptual Framework. *Real Estate Economics, 20(2),* 181-198.

DNTS. (2017). Danish National Travel Survey. Available at: http://www.fietsberaad.nl/library/repository/bestanden/Engelsk-cykelstrategi-Til-web-1.pdf

DST. (2017). Selected statistics. https://www.dst.dk/da/Statistik

DST. (2018). Selected statistics. https://www.dst.dk/da/Statistik

Duffy, D., Fitzgerald, J., and Kearney, I. Rising House Prices in an Open Labour Market. (2005). *The Economic and Social Review, 36(3),* 251-272.

Dustmann, C., and Frattini, T. (2014). The Fiscal Effects of Immigration to the UK. *The Economic Journal, Feature Issue,* F593-F643.

Edin, P-A, Fredriksson, P., and Åslund, O. (2003). Ethnic Enclaves and the Economic Success of Immigrants – Evidence from a Natural Experiment. *The Quarterly Journal of Economics, 118(1),* 329-357.

Eichholtz, P., and Lindenthal, T. (2014). Demographics, human capital, and the demand for housing. *Journal of Housing Economics, 26,* 19-32.

Eliasson, L. (2016). Icelandic boom and bust: immigration and the housing market. *Housing Studies, 32(1),* 35-59.

Erlandsen, E., Lundsgaard, J., and Hüfner, F. (2006). The Danish Housing Market. Available at: http://www.oecd-ilibrary.org/economics/the-danish-housing-marke_046875878368

European Commission. (2017). House Prices and Indebtedness in Sweden. Available at: https://ec.europa.eu/info/sites/info/files/file_import/eb021_en_2.pdf

Eurostat. (2011). 2011 Census Hub. Available at: http://ec.europa.eu/eurostat/web/population-and-housing-census/census-data/2011-census

Eurostat. (2017). Migration and migrant population statistics. Available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Migration_and_migrant_population_statistics

Faggian, A., Rajbhanndari, I., and Dotzel, K.R. (2017). The interregional migration of human capital and its regional consequences: a review. *Regional Studies,* 51(1), 128-143.

Falkenbach, H., and Oikarinen, E. (2019). Search costs and anchoring in the housing market – the influence of buyer distance and public information. *Working Paper*.

Foote, A. (2016). The effects of negative house price changes on migration: Evidence across U.S. housing downturns. *Regional Science and Urban Economics, 60,* 292-299.

Forsberg, M., and Åsell, M. (2000). Avreglering i Finland. Trans: Deregulation in Finland. Available at: http://www.iut.nu/members/Europe/West/AvregleringFinland_KTH_2003.pdf

Forte, F., Antoniucci, V., and De Paola, P. (2018). Immigration and the Housing Market: The Case of Castel Volturno, in the Campania Region, Italy. *Sustainability, 10(2),* 343.

Fratesi, U., and Percoco, M. (2013). Selective Migration, Regional Growth and Convergence: Evidence from Italy. *Regional Studies,* 48(10), 1650-1668.

Friedberg, R. M., and Hunt, J. (1995). The impact of immigrants on host country wages, employment and growth. *The Journal of Economic Perspectives*, 23-44.

Gabriel, S., Nothaft, F.. and Deng, Y. (2003). Duration of Residence in the Rental Housing Market. *The Journal of Real Estate Finance and Economics, 26(2),* 267-285.

Gall, M. D., Gall, J. P., and Borg, W. R. (2003). *Educational research: An introduction (7th ed.).* Boston, MA: A and B Publications.

Garriga, C., Hedlund, A., Tang, Y., and Wang, P. (2017). Rural-Urban Migration, Structural Transformation, and Housing Markets in China. *NBER Working Paper No. 23819.*

Gatskova, K., and Kozlov, V. (2019). Doubling Up or Moving Out? The Effect of International Labor Migration on Household Size. *International Migration,* TBA.

Gehrsitz, M., and Ungerer, M. (2016) Jobs, Crime and Votes – A Short-Run Evaluation of the Refugee Crisis in Germany. *Working Paper.*

Gerdes, C., and Wadensjö, E. (2010). Post-Enlargement migration and labor market impact in Sweden. In *EU Labor Markets After Post-Enlargement Migration* (pp. 163-179). Springer Berlin Heidelberg.

Glesbygdsverket. (2008). Landsbygdsdefinitioner i Sverige och Andra Länder. Trans: Rural Definitions in Sweden and Other Countries. Available at: https://www.tillvaxtanalys.se/download/18.4258ed2314e1fb3261236197/1435231055716/landsbygdsdefinitioner-i-sverige-och-andra-lander-08.pdf

Gonzalez, L., and Ortega, F. (2012). Immigration and Housing Booms: Evidence from Spain. *Journal of Regional Science, 53(1),* 37-59.

Gordon, L., Travers, T., and Whitehead, C. (2007). *The impact of recent immigration on the London economy.* City of London, London.

Grand, C., and Szulkin, R. (2002). Permanent Disadvantage or Gradual Integration: Explaining the Immigrant-Native Earnings Gap in Sweden. *Review of Labour Economics and Industrial Relations, 16(1),* 37-64.

Graversen, E.K. (2000). Migration between the Nordic countries – a Knowledge Flow perspective. In: *Innovative People Mobility of Skilled Personal in National Innovation.* OECD Report.

Greenaway-McGrevy, R. and Phillips P.C.B. (2016). Hot property in New Zealand: Empirical evidence of housing bubbles in the metropolitan centres. *New Zealand Economic Papers,* 50(1): 88-113.

Greulich, E., Quigley, JM., Raphael, S., Tracy, J., and Jasso, G. (2004). The Anatomy of Rent Burdens: Immigration, Growth, and Rental Housing. *Brookings-Wharton Papers on Urban Affairs,* 149-205.

Gurak, D.T, and Caces, F. (1992). Migration networks and the shaping of migration systems. *International migration systems: A global approach,* 150-176.

Hall, T., and Vidén, S. (2005). The Million Homes Programme: a review of the great Swedish planning project. *Planning Perspectives, 20(3),* 301-328.

Hämäläinen, K., and Böckerman, P. (2004). Regional Labor Market Dynamics, Housing, and Migration. *Journal of Regional Science, 44(3),* 543-568.

Hammarstedt, M., and Palme, M. (2006). Intergenerational Mobility, Human Capital Transmission and the Earnings of Second-Generation Immigrants in Sweden. *IZA Discussion Paper No. 1943.*

Hamnett, C., and Reades, J. (2019). Mind the gap: implications of overseas investment for regional house price divergence in Britain. *Housing Studies, 34(3),* 388-406.

Hasler, B., Jensen, JD., Madsen, B., Andersen, M., Huusom, H., and Jacobsen, LB. (2002). Scenarios for Rural Areas' Development – an Integrated Modelling Approach. Copenhagen: Institute of Local Government Studies.

Haug, S. (2008). Migration Networks and Migration Decision-Making. *Journal of Ethnic and Migration Studies, 34(4),* 585-605.

Hodgson, R. and Poot, J. (2010). *New Zealand Research on the Economic Impacts of Immigration 2005–2010: Synthesis and Research Agenda*. Wellington: Department of Labour.

Hou, F., and Bourne, L.S. (2006). The Migration-Immigration Link in Canada's Gateway Cities: A Comparative Study of Toronto, Montreal and Vancouver. *Environment and Planning A, 38(8),* 1505-1525.

Hu, M., Fan, Y., and Wan, X. (2019). A Tale of Two Cities: The Impact of Cross-Border Migration on Hong Kong's Housing Market. *Working Paper.*

Huber, P., and Nowotny, K. (2013). Moving Across Borders – Who is Willing to Migrate or to Commute? *Regional Studies,* 47(9), 1462-1481.

Hulchanski, D. (1998). Homelessness in Canada: 1998 report to the United Nations. Toronto: Rupert Community Residential Services.

Hyslop, D., Le, T., Maré, D.C., and Stillman, S. (2019). *Housing Markets and Migration – Evidence from New Zealand*. Motu Working Paper. Wellington: Motu Economic and Public Policy Research.

Jaeger, D.A, Ruist, J., and Stuhler, J. (2018). Shift-Share Instruments and the Impact of Immigration. *NBER Working Paper No. 24285.*

Jarvis, H. (2015). Towards a deeper understanding of the social architecture of co-housing: evidence from the UK, USA and Australia. *Urban Research & Practice, 8,* 93-105.

Jeanty, P.W., Partridge, M., and Irwin, E. Estimation of a spatial simultaneous equation model of population migration and housing price dynamics. *Regional Science and Urban Economics, 40,* 343-352.

Johansson, D., and Molander; J. (2019). Effect of house prices on regional migration: A cross-Sectional analysis on Swedish municipalities. *Working Paper.*

Jonsson, H. (2012). Housing, Labour Market Conditions and Regional Migration. Available at: http://www.diva-portal.org/smash/get/diva2:545307/FULLTEXT01.pdf

Jörnmark, J. (2005). Bostadsrätterna, allmännyttan och lagarna. Trans: Private housing cooperatives, public housing and the laws. *Ratio Working Papers no. 75.*

Kalantaryan, S. (2013). Housing market responses to immigration; evidence from Italy. *Robert Schuman Centre for Advanced Studies Research Paper No. 2013/83.*

Karsten, L. (2005). Housing as a Way of Life: Towards an Understanding of Middle-Class Families' Preference for an Urban Residential Location. *Housing Studies, 22(1),* 83-98.

Kashnitsky, I., and Gunko, M. (2016). Spatial variation of in-migration to Moscow: Testing the effect of housing market. *Cities, 59,* 30-39.

Kerr, S. P., and Kerr, W. R. (2011). *Economic impacts of immigration: A survey*(No. w16736). National Bureau of Economic Research.

King, N., Horrocks, C., and Brooks, J. (2017). *Interviews in Qualitative Research.* London: Sage Publications

Kleibert, J.M., & Kippers, L. (2016). Living the good life? The rise of urban mixed-use enclaves in Metro Manila. *Urban Geography, 37(3),* 373-395.

Kofman, E. (2007) Family-related migration: a critical review of European studies. *Journal of Ethnic and Migration Studies, 30(2),* 243-262.

Kürschner, K. (2017). Immigration and Rental Prices of Residential Housing: Evidence from the Fall of the Berlin Wall. *Working Paper.*

Lange, A. (2000). Diskriminering, integration och etniska relationer. Trans: Discrimination, integration and ethnic relations. Norrköping: Integrationsverket

Larkin, M., Askarov, Z., Docouliagos, H., Dubelaar, C., Klona, M., Newton, J., Stanley, T., and Vocino, A. (2018). Do House Prices Sink or Ride the Wave of Immigration? *IZA Discussion Paper No. 11497.*

Lastrapes, WD., and Lebesmuehlbacher, T. (2017). The European Refugee Crisis and House Prices: Evidence from the United Kingdom. *Working Paper*

Latif, E. (2015). Immigration and Housing Rents in Canada: A Panel Data Analysis. *Economic Issues, 20(1).*

Ley, D., and Tutchener, J. (2001). Immigration, Globalisation and House Prices in Canada's Gateway Cities. *Housing Studies, 16(2),* 199-223.

Lin, Y., Ma, Z, Zhao, K, Hu, W., and Wei, J. (2018). The Impact of Population Migration on Urban Housing Prices: Evidence from China's Major Cities. *Sustainability, 10(9),* 3169.

Lind, H. (2001). Rent regulation: a conceptual and comparative analysis. *European Journal of Housing Policy, 1,* 41-57.

Lindberg, E., Hartig, T., Garvill, J, and Garling, T. (1992). Residential-location preferences across the life span. *Journal of Environment Psychology, 12(2),* 187-198.

Longhi, S., Nijkamp, P., & Poot, J. (2005). A Meta-Analytic Assessment of the Effect of Immigration on Wages. *Journal of Economic Surveys, 19(3),* 451-477.

Longhi, S., Nijkamp, P., & Poot, J. (2008). Meta-Analysis of Empirical Evidence on the Labour Market Impacts of Immigration. *Population Studies Centre Discussion Papers* dp-67, University of Waikato, Population Studies Centre.

Lubinska, D. (2013). Polish Migrants in Sweden: An Overview. *Folia Scandinavica* vol. 15.

Lujanen, M. (2004). Housing and housing policy in the Nordic countries. London: Stationary Office Books.

Lymperopoulou, K. (2013). The area determinants of the location choices of new immigrants in England. *Environment and Planning A, 45(3),* 575-592.

Magnusson Turner, L., and Hedman, L. (2014). Linking Integration and Housing Career: A Longitudinal Analysis of Immigrant Groups in Sweden. *Housing Studies, 29(2),* 270-290.

Mäklarstatistik. (2017). Selected statistics. https://www.maklarstatistik.se/

Malmberg. B. (2010). Low Fertility and the Housing Market: Evidence from Swedish Regional Data. *Eur J Population, 26,* 229-244.

Malmberg, B., Andersson, E., and Östh, J. (2013). Segregation and Urban Unrest in Sweden. *Urban Geography, 34(7),* 1031-1046.

Malpezzi, S. and Maclennan, D. (2001). The long-run price elasticity of supply of new residential construction in the United States and the United Kingdom. *Journal of Housing Economics*, 10(3): 278-306.

Manchin, M., and Orazbayev, S. (2018). Social networks and the intention to migrate. *World Development, 109,* 360-374.

McDonald, C. (2013). Migration and the housing market. *Reserve Bank of New Zealand Analytical Notes, 2013:10.*

McKenzie, D. (2012). Learning about migration through experiments. CReAM Discussion Paper Series No. 1207. Centre for Research and Analysis of Migration (CReAM), Department of Economics, University College London.

McNamara, C. (2009). *General guidelines for conducting interviews.* Retrieved August 26th, 2018, from http://managementhelp.org/evaluatn/intrview.htm

Meen, G. (2011). A long-run model of housing affordability. *Housing Studies, 26(7-8),* 1081-1103.

Meen, G. (2012). The Adjustment of Housing Markets to Migration Change: Lessons from Modern History. *Scottish Journal of Political Economy, 59(5),* 500-522.

Meen, G., and Andrew, M. (2004) On the use of policy to reduce housing market segmentation. *Regional Science and Urban Economics, 34(6),* 727-751.

Merriam, S., and Tisdell, E. (2015) *Qualitative Research: A Guide to Design and Implementation.* San Francisco: Jossey-Bass

Migration Board / Migrationsverket. (2016). Selected statistics. https://www.migrationsverket.se/Om-Migrationsverket/Statistik.html

Migri. (2017). Selected statistics. Available at: http://www.migri.fi/

Milne, W. (1993). Macroeconomic Influences on Migration. *Regional Studies, 27(4),* 365-373.

Miraftab, F. (2000). Sheltering refugees: the housing experience of refugees in metropolitan Vancouver, Canada. *Canadian Journal of Urban Research, 42.*

Mocetti, S., and Porello, C. (2010). How does immigration affect native internal mobility? New evidence from Italy. *Regional Science and Urban Economics, 40,* 427-439.

Modestino, A.S., and Dennett, J. (2013). Are American homeowners locked into their houses? The impact of housing market conditions on state-to-state migration. *Regional Science and Urban Economics, 43,* 322-337.

Molloy, R., Smith, C., and Wozniak, A. (2011). Internal Migration in the United States. *The Journal of Economic Perspectives, 25(3),* 173-196. ‘

Mulder, C.H. (2006). Population and housing: a two-sided relationship. *Demographic Research, 15,* 401-412.

Müller, D. (2002). German Second Home Development in Sweden. *Tourism and Migration,* 169-185.

Muller, T., Espenshade, TJ., Manson, D., de la Puente, M., Goldberger, M., Sanchez, J. (1985). *The fourth wave: California's newest immigrants.* Washington D.C, Urban Institute Press.

Munch, J., and Svarer, M. (2001). Rent Control and Tenancy Duration. *Aarhus Economics Working Paper No. 01-7.*

Murdie, R.A., Chambon, A., Hulchanski, J.D., and Teixera, C. (1995). Housing issues facing immigrants and refugees in Greater Toronto: Initial findings form the Jamaican, Polish and Somali communities. In: E.M. Komut (1996): *The Housing Question of the 'Others,'* Ankara: Chamber of Architects of Turkey, 179-190.

Murdie, R.A., and Borgegård, LE. (1998). Immigration, spatial segregation and housing segregation of immigrants in Metropolitan Stockholm, 1960-95. *Urban Studies 35(1),* 1869-1888.

Murdie, R.A. (2002). The housing careers of Polish and Somali newcomers in Toronto's rental market. *Housing Studies, 17(3), 423-443.*

Mussa, A., Nwaogu, U.G., and Pozo, S. (2017). Immigration and housing: A spatial econometric analysis. *Journal of Housing Economics, 35,* 13-25.

Musterd, S., and Van Kempen, R. (2009). Segregation and housing of minority ethnic groups in Western European cities. *Tijdschrift voor economische en sociale geografie, 100(4).*

Muth, R.F. (1983). *The Spatial Structure of the Housing Market.* In: Lake, R.W. (2017). Readings in Urban Analysis: Perspectives on Urban Form and Structure. New York: Routledge

Myers, D., and Woo Lee, S. (1998). Immigrant Trajectories into Homeownership: A Temporal Analysis of Residential Assimilation. *International Migration Review, 32(3),* 593-625.

Newsec. (2018). Selected reports. https://www.newsec.se/

Niedomysl, T. (2008). Residential Preferences for Interregional Migration in Sweden: Demographic, Socioeconomic and Geographical Determinants. *Environment and Planning A, 40(5),* 1109-1131.

Niedomysl, T. (2011). How migration motives change over migration distance: Evidence on variation across socio-economic and demographic groups. *Regional Studies, 45(6),* 843-855.

Norman, N.R., and Meikle, K. (1985). *The economic effects of immigration on Australia*. The Committee.

Nygaard, C. (2011). International Migration, Housing Demand and Access to Homeownership in the UK. *Urban Studies, 48(11),* 2211-2229.

OECD. (2017). Economic Survey of Sweden 2017. http://www.oecd.org/sweden/economic-survey-sweden.htm

Oladiran, O.O., Nanda, A., Jewel, S. (2019). What is the Impact of Migration Liberalisation on Housing Outcomes? Evidence from EU A10 Immigration to the UK. *Working Paper.*

Opdenakker, R. (2006). Advantages and Disadvantages of Four Interview Techniques in Qualitative Research. *Forum: Qualitative Social Research, 7(4)*, 175-188.

Öst, C.E, Söderberg, B., Wilhelmsson, M. (2014). Household allocation and spatial distribution in a market under ("soft") rent control. *Journal of Policy Modeling, 36(2),* 353-372.

Östh, J., Shuttleworth, I., and Niedomysl, T. (2018). Spatial and temporal patterns of economic segregation in Sweden's metropolitan areas: A mobility approach. *Environment and Planning A, 50(4),* 809-825.

Ottaviano, GIP., and Peri, G. (2005). Rethinking the Gains from Immigration: Theory and Evidence from the U.S. *National Bureau of Economic Research Working Paper Series.*

Ottaviano, GIP., and Peri, G. (2013). New Frontiers of Immigration Research: Cities and Firms. *Journal of Regional Science, 53(1),* 1-7.

Parliament. (1942), (1968) and (1974). Law 1974:1080. Available at: https://riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-19741080-om-avveckling-av_sfs-1974-1080. Laws 1942 and 1968 archival only.

Parliament. (2010). Law 2010:197. Available at: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-2010197-om-etableringsinsatser-for-vissa_sfs-2010-197 and other related laws and motions.

Parliament. (2012). Law 2012:978. Available at: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-2012978-om-uthyrning-av-egen-bostad_sfs-2012-978

Parliament. (2016). Law 2016:38. Available at: https://www.riksdagen.se/sv/dokument-lagar/dokument/svensk-forfattningssamling/lag-201638-om-mottagande-av-vissa-nyanlanda_sfs-2016-38

Parsons, C., and Vézina, P.L. (2018). Migrant networks and trade: the Vietnamese Boat People as a natural experiment. *The Economic Journal, 128(61),* 210-234.

Pavlov, A., and Somerville, T. (2017). Immigration, Capital Flows, and Housing Prices. *Working Paper*

Peng, C-W., and Tsai, I-C. (2019). The long- and short-run influences of housing prices on migration. *Cities, 93,* 253-262.

Plantinga, A., Détang-Dessendre, C., Hunt, G., and Piguet, V. (2013). Housing prices and inter-urban migration. *Regional Science and Urban Economics, 43,* 293-306.

Poot, J., Nana, G., and Philpott, B.P. (1988). I*nternational Migration and the New Zealand Economy: Long-run Perspective.* Institute of Policy Studies.

Poot, J. (2000). *Economic Principles for the Building Sector: a New Zealand Text*. Revised Edition. Wellington: School of Architecture, Victoria University of Wellington.

Potepan, M. (1994). Intermetropolitan Migration and Housing Prices: Simultaneously Determined? *Journal of Housing Economics, 3(2),* 77-91.

Read, C. (1993). Tenants' search and vacancies in rental housing markets. *Regional Science and Urban Economics, 23(2),* 171-183.

Rickman, D, and Rickman, S. (2011). Population Growth in High-Amenity Nonmetropolitan Areas: What's the Prognosis? *Journal of Regional Science, 51(5),* 863-879.

Roback, J. (1982). Wages, Rents, and the Quality of Life. *Journal of Political Economy, 90(6),* 1257-1278.

Robinson, D. (2010). The neighbourhood effects of new immigration. *Environment and Planning A, 42(10),* 2451-2466.

Rodríguez-Pose, A. and Storper, M. (2019). Housing, urban growth and inequalities: the limits to deregulation and upzoning in reducing economic and spatial inequality. CEPR Discussion Paper No. DP13713. Available at SSRN: https://ssrn.com/abstract=3383971

Rooth, DO., and Ekberg, J. (2006). Occupational Mobility for Immigrants in Sweden. *International Migration, 44(2),* 57-77.

Rosen, KT., and Smith, LB. (1983). The Price-Adjustment Process for Rental Housing and the Natural Vacancy Rate. *The American Economic Review, 73(4),* 779-786.

Ruist, J. (2015). The fiscal cost of refugee immigration: the example of Sweden. *Population and Development Review, 41(4).*

Ruonavaara, H. (1996). The home ideology and housing discourse in Finland. *Housing Studies, 11(1),* 89-104.

Ryan-Collins, J., Lloyd, T., and Macfarlane, L. (2017). *Rethinking the Economics of Land and Housing.* Zed Books.

Sá, F. (2015). Immigration and House Prices in the UK. *The Economic Journal, 125(587),* 1393-1424.

SABO. (2011). 2011 – Nya Förutsättningar, Villkor och Uppgifter. Trans: New Regulations, Rules and Tasks. Available at: https://www.allmannyttan.se/historia/historiska-epoker/2011-allmannyttans-nya-forutsattningar-villkor-och-uppgifter/

Saiz, A. (2003). Room in the Kitchen for the Melting Pot: Immigration and Rental Prices. *The Review of Economics and Statistics, 85(3),* 502-521.

Saiz, A. (2007). Immigration and housing rents in American cities. *Journal of Urban Economics, 61(2),* 345-371.

Saiz, A., and Wachter, S. (2011). Immigration and the Neighbourhood. *American Economic Journal: Economic Policy, 3(2),* 169-188.

Sanchis-Guarner, R. (2017) Decomposing the Impact of Immigration on House Prices. *Working Paper.*

SCB. (2015). Bostadsbeståndet. Trans: Housing Stock. Available at: http://www.scb.se/sv_/Hitta-statistik/Statistik-efter-amne/Boende-byggande-och-bebyggelse/Bostadsbyggande-och-ombyggnad/Bostadsbestand/87469/87476/Behallare-for-Press/402441/

SCB. (2016). Selected statistics. http://www.scb.se/hitta-statistik/

SCB. (2017). Selected statistics. http://www.scb.se/hitta-statistik/

SCB. (2018). Selected statistics. http://www.scb.se/hitta-statistik/

SCB. (2019). Selected statistics. http://www.scb.se/hitta-statistik/

Sharpe, J. (2015). Three essays on the economic impact of immigration. *UKnowledge, Working Paper.*

SKL. (2016). Selected statistics. https://skl.se/ekonomijuridikstatistik/statistik.262.html

SMHI. (2017). Års och månadsstatistik. Trans: Year and monthly statistics. Available at: https://www.smhi.se/klimatdata/meteorologi/2.1240

Smith, C. and Thoenissen, C. (2018). *Migration and Business Cycle Dynamics*. Discussion Paper No. 2018/07. Wellington: Reserve Bank of New Zealand.

Socialstyrelsen. (2010). Social rapport 2010. Available at: https://www.socialstyrelsen.se/Lists/Artikelkatalog/Attachments/17957/2010-3-11.pdf

Sriskandarajah, D., Dhananjayan, D., and Drew, C. (2006) Brits abroad. *Mapping the scale and nature of British emigration.* London: IPPR.

SSB. (2017). Selected statistics. https://www.ssb.no/en/statbank

Sterlieb, G., and Hughes, JW. (1986). Demographics and housing in America. *Population Bulletin,* 41(1), 1-35.

Stillman, S., and Mare, DC. (2008). Housing Markets and Migration: Evidence from New Zealand. *IZA: Institute of Labor Economics.*

Stillwell, J. (2010). Ethnic Population Concentration and Net Migration in London. *Environment and Planning A, 42(6),* 1439-1456.

Stillwell, J., Bell, M., Ueffing, P., Daras, K., Charles-Edwards, E., Kupiszewski, M., and Kupiszewska, D. (2016). Internal migration around the world: comparing distance travelled and its frictional effect. *Environment and Planning A, 48(8),* 1657-1675.

Studenmund, A.H. (2006). *Using Econometrics: A Practical Guide.* Pearson.

SvD. (2017a). Nytt bostadsförslag ska rusta för flyktingvåg. Trans: New housing solution will prepare for refugee wave. Available at: https://www.svd.se/nytt-bostadsforslag-ska-rusta-for-flyktingvag/om/flyktingarna-och-bostadsbristen

SvD. (2017b). Hus på hjul löser bostadskrisen. Trans: House on wheels to solve housing crisis. Available at: https://www.svd.se/bert-karlsson-hus-pa-hjul-loser-bostadskrisen/om/flyktingarna-och-bostadsbristen

SVT (2019). Valkompassen. Trans: Election Compass. Available at: https://valkompassen.svt.se/

Tanis, K. (2018). Regional distribution and location choices of immigrants in Germany. *Regional Studies, DOI:* 10.1080/00343404.2018.1490015

Teixeira, C. (2008). Barriers and outcomes in the housing searches of new immigrants and refugees: a case study of "Black" Africans in Toronto's rental market. *Journal of Housing and the Built Environment, 23(4),* 253-276.

The Economist. (2020). Housing is at the root of many of the rich world's problems. Available at: https://www.economist.com/special-report/2020/01/16/housing-is-at-the-root-of-many-of-the-rich-worlds-problems

The Swedish Union of Tenants. (2016). Hyresmarknaden: Analys av Dagens System och Framtida Lösningar. Trans: The Rental Market: Analysis of Today's System and Future Solutions. Available at: https://www.hyresgastforeningen.se/contentassets/1adfd05c0d854e039112ada9504611bc/hyresmarknaden---anlays-av-dagens-system-och-framtida-losningar.pdf

The Swedish Union of Tenants. (2017). Unga Vuxnas Boende. Trans: Young Adult Housing. Available at: https://www.hyresgastforeningen.se/globalassets/globalt-innehall/rapporter/unga-vuxna-2017/unga-vuxnas-boende-2017.pdf

Thomas, M. (2018). Migrating within Britain: Examining the importance of non-economic motives. *Working Paper*

Tilastokeskus. (2017). Selected statistics. http://www.stat.fi/

Treffers, S.R., & Lippert, R.K. (2019). Condominium self-governance? Issues, external interests, and the limits of statutory reform. *Housing Studies.*

Tumen, S. (2016). The economic impact of Syrian Refugees on host countries: Quasi-Experimental evidence from Turkey. *American Economic Review, 106(5),* 456-60.

Turner, D.W III. (2010). Qualitative Interview Design: A Practical Guide for Novice Investigators. *The Qualitative Report, 15(3),* 754-760.

Tyrcha, A. (2015). Migration and Urban Labour Markets – Evidence from Sweden. *Working Paper.*

Tyrcha, A. (2019a). Why does the queue keep growing? The relationship between migration and rental housing queues in Sweden. *Economics Bulletin, 39(2),* 1251-1258.

Tyrcha, A. (2019b). Migration and an overlooked housing market – the relationship between migration and private housing cooperatives. *Working Paper.*

Tyrcha, A. (2020a). The Impact of Migration on a Regulated Rental Market. *Region, TBD.*

Tyrcha, A. (2020b). Migration and Perceptions of Housing Availability in Sweden. *Papers in Regional Science, DOI:* https://doi.org/10.1111/pirs.12508

Tyrcha, A., and Abreu, M. (2019). Migration Diversity and Housing Prices – Evidence from Sweden. *Working Paper*. Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3394234

USK, Statistics Stockholm. (2018). Selected statistics. http://statistik.stockholm.se/

Valueguard. (2018). Selected statistics. Attained through private liaison. http://www.valueguard.se/

Van Vuuren, A., Kjellander, J., and Nilsson, V. (2019). Refugees and apartment prices: A case study to investigate the attitudes of home buyers. *Regional Science and Urban Economics, 77,* 20-37.

Vega, S.H., and Elhorst, J.P. (2015). The SLX Model. *Journal of Regional Science, 55(3),* 339-363.

Walker, R., Ellis, M., & Barff, R. (1992). Linked Migration Systems: Immigration and Interenal Labor Flows in the United States. *Economic Geography, 68(3),* 234-248.

Wang, X., Hui, E., Sun, J. (2017). Population migration, urbanization and housing prices: Evidence from the cities in China. *Habitat International, 66,* 49-56.

Wennström, J., and Öner, Ö. (2015). Den geografiska spridningen av kommunplacerade flyktingar i Sverige. Trans: The geographic placement of municipality-placed migrants in Sweden.

Westlund, H., Larsson, J.P., Olsson, A.R. (2014). Start-ups and Local Entrepreneurial Social Capital in the Municipalities of Sweden. *Regional Studies, 48(6),* 974-994.

World Bank. (2017). Selected statistics. https://data.worldbank.org/country

Ymparisto. (2017). Klassificering av stads- och landsbygdsområden. Trans: Classification of city and rural areas. Available at: http://www.ymparisto.fi/sv-FI/Livsmiljon_och_planlaggning/Samhallsstrukturen/Information_om_samhallsstrukturen/Klassificering_av_stads_och_landsbygdsomraden

Zabel, J. (2012). Migration, housing market, and labor market responses to employment shocks. *Journal of Urban Economics, 72(2-3),* 267-284.

Zhu, J., Brown, S. and Pryce, G. (2018). Immigration and house prices under various regional economic structures in England and Wales. *Urban Studies (Sage), in press.*

Appendices

Appendix 4.1: Geographical Location Analysis

Analysis of regional trends, along the lines of geographical location, was initially conducted as follows:

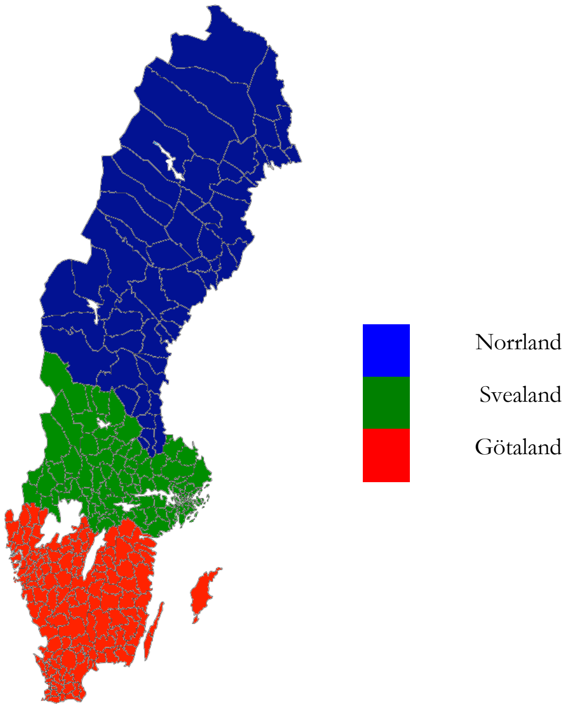

Figure A1.1: Analysis by Geographical Location.

The initial level of analysis yielded the following results (conducted in a similar manner to the rest of the analysis, as specified in the methodology section in Chapter 4).

Table A1.1: OLS and IV Models Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices Split by Region

	Götaland		***Svealand***		***Norrland***		***All Except Stockholm***	
Dependent Variable: ΔLog Owner-Occupied Price	*OLS*	*IV*	*OLS*	*IV*	*OLS*	*IV*	*OLS*	*IV*
$\Delta Fb_t/P_{t-1}$	0.387**	0.441**	1.428***	1.781***	1.931*	1.854*	0.742***	0.786***
	(0.185)	(0.202)	(0.349)	(0.517)	(1.125)	(1.127)	(0.211)	(0.230)
$\Delta Im_t/P_{t-1}$	0.614***	0.789***	0.104	0.095	0.415	0.518	0.673***	0.819***
	(0.185)	(0.224)	(0.091)	(0.106)	(0.617)	(0.579)	(0.275)	(0.306)
Log income$_{t-1}$	0.185	0.205	0.522***	0.526***	0.086	0.256	0.267*	0.355*
	(0.177)	(0.179)	(0.187)	(0.185)	(0.449)	(0.572)	(0.150)	(0.188)
Employment$_{t-1}$	0.075	0.065	0.136***	0.139**	0.186	0.321	0.093*	0.091
	(0.058)	(0.052)	(0.051)	(0.054)	(0.267)	(0.352)	(0.051)	(0.045)
Log Jan. temp. (1961-1990)	0.015	0.018	0.005	0.008	0.007	0.008	0.008***	0.009***
	(0.013)	(0.015)	(0.013)	(0.003)	(0.006)	(0.004)	(0.003)	(0.004)
Bachelor's degree (%, 1984)	0.217	0.389	0.184**	0.184**	0.257	0.267	0.122	0.224
	(0.129)	(0.270)	(0.084)	(0.084)	(0.521)	(0.781)	(0.121)	(0.162)
Working age (%, 1984)	0.114	0.110	0.148	0.194	0.567*	0.665	0.298**	0.396**
	(0.165)	(0.180)	(0.146)	(0.165)	(0.368)	(0.424)	(0.134)	(0.171)
New Stock$_{t-1}$	-0.013	-0.033**	-0.015*	-0.023*	-0.056	-0.057	-0.028**	-0.042***
	(0.013)	(0.017)	(0.010)	(0.012)	(0.060)	(0.072)	(0.012)	(0.017)
Legislation	-0.022	-0.029	-0.078***	-0.052***	-0.067***	-0.076***	-0.057***	-0.075***
	(0.042)	(0.041)	(0.013)	(0.016)	(0.023)	(0.024)	(0.008)	(0.010)
F-test statistic (for f-b. inst.)		32.047		29.877		30.455		30.972
F-test statistic (for i.m. inst.)		27.758		27.937		29.708		30.044
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	2240	2240	1440	1440	864	864	4144	4144
R-Squared	0.178	0.179	0.161	0.162	0.081	0.081	0.118	0.119

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

The results here reveal relatively interesting trends. The regression for all regions, but excluding Stockholm, produces relatively similar results to when Stockholm is included, suggesting the largest city in the country is not creating bias in the results. Beyond this, in terms of regional differences, Svealand and Norrland are more strongly impacted by international migration, with coefficients of 1.781 and 1.854, significant at the 1% and 10% levels, likely owing to the more remote nature of many territories within these regions. In Svealand, this could also be attributed to the influence of Stockholm, which owing to its major city status is particularly attractive to international migrants (see Table 3.1 in Chapter 3). Götaland, the most densely populated region in Sweden, sees smaller impacts of the foreign-born variable with a coefficient of 0.441, significant at the 5% level, where internal migration is instead a stronger determinant with a coefficient of 0.789, significant at the 1% level, but generally also weaker than overall. This is likely to be a result of the large nature of this region, with no clear dominance of rural or urban characteristics, and thus less clear impacts for both international and internal migration. Meanwhile, Svealand and Norrland do not see particularly strong impacts of internal migration, likely owing to the emigration trends of natives in large parts of these regions that have been experienced in recent years, as well as region heterogeneity. As such, these results conform to what I would expect to see and previous results.

Appendix 4.2: OLS and IV Models Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices Using 5-Year Data Intervals

Dependent Variable: ΔLog Owner-Occupied Price	*OLS*	*IV*
ΔForeign-born$_{t}$/Population$_{t-1}$	1.361***	1.480***
	(0.395)	(0.354)
ΔForeign-born$_{t-1}$/Population$_{t-2}$	1.470***	1.605***
	(0.415)	(0.408)
ΔInternal migration$_{t}$/Population$_{t-1}$	1.259***	1.473***
	(0.306)	(0.370)
ΔInternal migration$_{t-1}$/Population$_{t-2}$	1.350***	1.525***
	(0.324)	(0.341)
ΔLog income$_{t-1}$	0.267*	0.325**
	(0.145)	(0.169)
ΔEmployment$_{t-1}$	0.119***	0.155***
	(0.043)	(0.055)
Log January temperature	0.007***	0.009***
	(0.002)	(0.003)
Bachelor's degree (%, 1984)	0.135*	0.163**
	(0.075)	(0.077)
Working age (%, 1984)	0.335***	0.411***
	(0.129)	(0.158)
New stock$_{t-1}$	-0.019**	-0.018**
	(0.009)	(0.009)
Legislation	-0.057***	-0.063***
	(0.008)	(0.010)
F-test statistic (for foreign-born instrument #1)		32.587
F-test statistic (for foreign-born instrument #2)		29.331
F-test statistic (for internal instrument #1)		26.850
F-test statistic (for internal instrument #2)		29.473
Year fixed effects	Yes	Yes
Observations	1136	1136
R-Squared	0.094	0.095

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 4.3: Nordic Results for the Owner-Occupied Market

Building on the models used in Chapter 4, I design models applicable to the Nordic contexts, making use of the variables present in previous iterations, while also making some variations based on what is likely to be relevant in each specific country, as well as available data.

The econometric specifications are thus:

Norway

$$\Delta\ln(hp)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \sum_{t=2}^{13} \delta_t Y_t + \sum_{t=2}^{19} \gamma_k M_k + \varepsilon_{k,t} \tag{A.1}$$

Finland

$$\Delta\ln(hp)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \sum_{t=2}^{16} \delta_t Y_t + \varepsilon_{k,t} \tag{A.2}$$

Denmark

$$\Delta\ln(hp)_{k,t} = \alpha + \theta_1 \frac{\Delta fb_{k,t}}{p_{k,t-1}} + \theta_2 \frac{\Delta im_{k,t}}{p_{k,t-1}} + \gamma X_{k,t} + \theta W_k + \vartheta S_{k,t} + \sum_{t=2}^{8} \delta_t Y_t + \sum_{t=2}^{5} \gamma_k M_k + \varepsilon_{k,t} \tag{A.3}$$

where,
$\Delta ln(hp)_{k,t}$ is the natural log of house prices in location *k* between *t*-1 and *t*
$\Delta fb_{k,t}$ is the change in the foreign-born population in location *k* between *t*-1 and *t*
$p_{k,t-1}$ is the total population in location *k* and time *t*-1
$\Delta im_{k,t}$ is the rate of net internal migration into location *i* between *t*-1 and *t*,
$X_{k,t}$ is a set of socio-economic characteristics of location *k* and time *t,* which here includes real income per household, the employment rate, area, the number of oil refineries (Norway only), and the proportion of trips taken by bicycle (Denmark only)
W_k is a set of initial characteristics of location *k*, which here includes the reported crime in 1984 per 1,000 residents in 1986 (for Norway) or 1990 (for Finland) or annually (for Denmark), the % of population with a bachelor's degree in 1986 (for Norway) or 1990 (for Finland) or annually (for Denmark), and % of population aged between 20-64 in 1986 (for Norway) or 1990 (for Finland) or annually (for Denmark),

$S_{k,t}$ is a set of supply-side characteristics of location k and time t, which here includes new housing stock that becomes available in every year per 1,000 residents (a supply-side variable),
Y is years from 2003 to 2015, t=2,…,13, for Norway, 2000 to 2015, t=2,…,16, for Finland, and 2009 to 2016, t=2,…,8 for Denmark, M is counties, k=2,…,19 for Norway and k=2,…,5 for Denmark,
and ε is the error term.

The models are not identical to one another, nor are they identical to the Swedish models in Chapter 4. The regressions are ran from 2000 to 2015 for Finland, 2003 to 2015 for Norway, and 2009 to 2016 for Denmark. This is done owing to data availability for certain variables. 2009 to 2016 is used for Denmark owing to a municipal restructuring in 2008 meaning data for many variables from earlier years is incomparable, as not all data been backdated using the new classification (with 2016 being included in order to widen the data set so that the number of years is as large as possible). Regional dummies are included for Denmark and Norway, but not for Finland. This variable has been omitted owing to Finland abolishing counties in 2010. This is not particularly anomalous, since for Sweden, in the adjusted model, region fixed effects are not included either.

A few other adjustments are made to variables included. Temperature and humidity-related variables, which were included for Sweden, are not included for any of the Nordic regressions, owing to a lack of such data. To replace these variables with other potential explanatory variables, I opt to include area and crime variables. These were included in some of the early regressions for Sweden and have been found by previous research in other countries to have some impact on the housing market. Thus, they serve as potentially strong control variables, even though this is not the case in Sweden. Further, for Norway, an oil-related variable is included, while for Denmark, a cycling-related variable is included (CED, 2017; DNTS, 2017). This is because of the prevalence of the oil industry in Norway, as well as the prevalence of cycling as a mode of transport and industry in Denmark. Both of these factors are nowhere near as prevalent in the other Nordic countries, and thus these variables are included to account indirectly for some institutional and conceptual differences.[1]

[1] Tests were run with identical models for each country, with results being similar to the models including the country-specific variables. Since the results were similar, I have chosen to include the regressions run with the country-specific variables, some of which display interesting coefficients, in the thesis.

In all three of the studied countries, available data is slightly more limited than that which was available for Sweden, as detailed in part above. Norwegian data is taken from SSB, the official Statistical Central Bureau for Norway (SSB, 2017). Analysis is conducted for 160 municipalities, despite there being 430 municipalities in total, owing to insufficient or unavailable data, predominantly owing to low population numbers in many omitted municipalities. Finnish data is taken primarily from the Finnish statistical database, Tilastokeskus (2017), as well as the Finnish migration authority, Migri (2017). Despite there being 311 municipalities in total, analysis is conducted for 127 municipalities, owing to boundary changes during the studied period, as well as insufficient data for house price variables for smaller municipalities. Danish data is taken primarily from DST, the Danish Statistical Database (2018). The data is available for 95 municipalities, with 3 island municipalities – Samsø, Læsø, and Fanø - excluded owing to a lack of data for all relevant variables. As stated earlier, analysis is only conducted from 2009 to 2016 for Denmark owing to data availability. This creates the risk of some post-recession bias, as well as other comparability issues, which must be considered when conducting analysis. An IV approach, similar to that described in Section 4.2.3 of Chapter 4, will be taken for each of the countries, using data from 1990.

With regard to comparability, it should be noted that because data comes from different sources, collected in different ways, coefficients are not entirely comparable across all countries. This is despite these, on the surface, appearing to measure the same variable. This could be a result of disparities in terms of units used, or other disparities stemming from data collection techniques and practices. Nevertheless, significance levels should be comparable across the samples, and thus, the analysis will mostly be centred on this.

Much like in the Swedish context, here, too, I make use of regional classifications. Table A4.1 outlines the scale of these regional classifications for each of the Nordic countries.

Table A4.1: Regional Analysis Summary

	Norway	Finland	Denmark
Overall	160 municipalities	127 municipalities	95 municipalities
Major Cities	40 municipalities	29 municipalities	29 municipalities
Urban	45 municipalities	40 municipalities	29 municipalities
Rural	75 municipalities	58 municipalities	37 municipalities
Explanation	These classifications are based on official SSB designations (2017), as well as Glesbygdsverket (2008).	These classifications are based on Finland's environmental administration (Ymparisto, 2017).	These classifications are based on analysis done by Hasler et al. (2002). Classifications will differ slightly to the other countries, as Denmark's largest city, Copenhagen, is more than 5 times larger than the second largest city, and will thus be treated as the only major city.

Classification is not centralised and each country defines a major city, urban area, and rural area differently, with a rural area in one country perhaps being classed as an urban area in another, etc. This means that some of the results found on the municipality characteristic level may be inconsistent between Finland, Norway, Denmark, and Sweden, and must be kept in mind throughout the analysis.

In order to clarify the regional analysis further, the following page of maps visualizes the above.

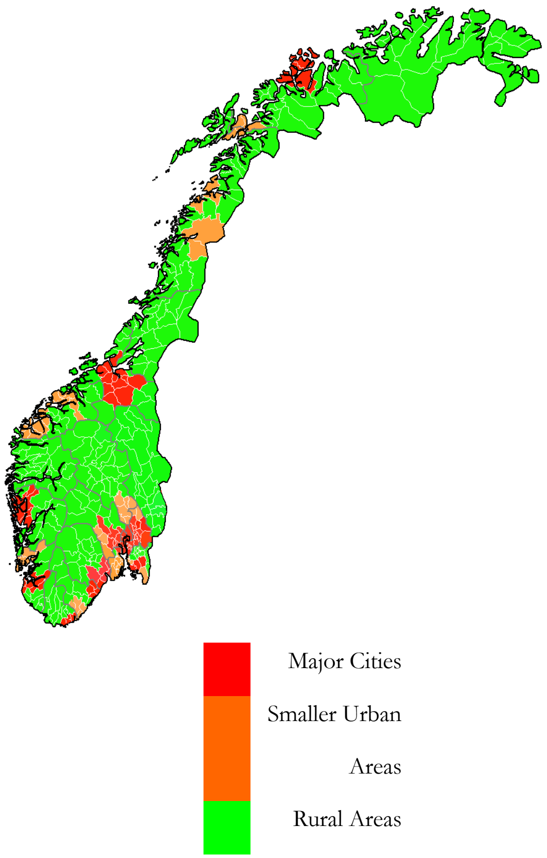

Figure A4.1: Municipality Characteristics Classification for Norway. Some rural municipalities omitted owing to data insufficiency.

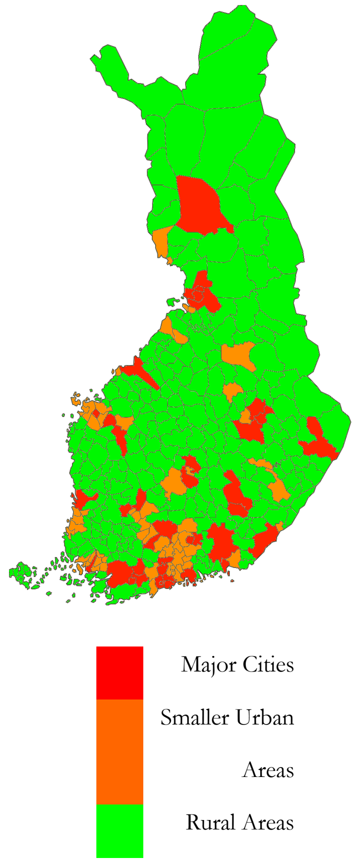

Figure A4.2: Municipality Characteristics Classification for Finland. Some rural municipalities omitted owing to data insufficiency.

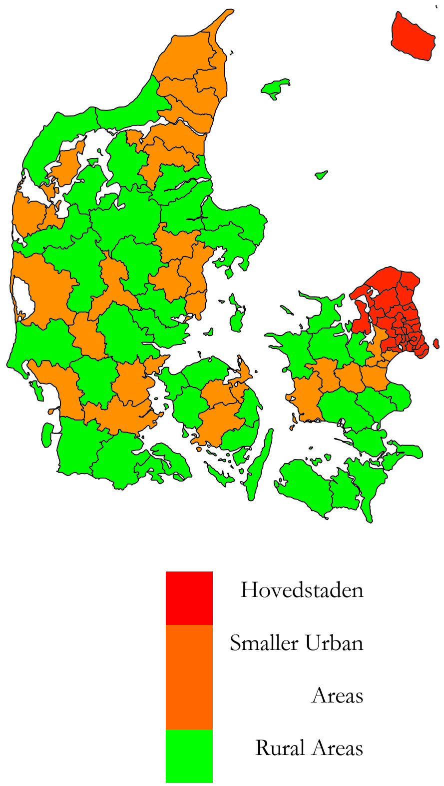

Figure A4.3: Municipality Characteristics Classification for Denmark.

Migration motives analysis, as was conducted for Sweden, is also conducted in the Nordic context. Once again, migrants are grouped by reason for migration, allowing not only for increased applicability in a worldwide context, but also for increased comparability between countries. Table A4.2 summarizes analysis for each country studied (gaps are owing to insufficient data):

Table A4.2: Nordic Migration Motives Analysis

Norway	Finland	Denmark	Sweden
Labour migrants	Labour migrants	Labour migrants, EU, students	Labour migrants, EU, students
		Family reunification migrants	Family reunification migrants
Refugees	Refugees	Refugees	Refugees
Internal migrants	Internal migrants	Internal migrants	Internal migrants

With appropriate comparisons to the Swedish findings, this analysis should allow relevant conclusions to be drawn regarding relative impacts that different forms of migrants have had on housing markets in the countries. Transferability of conclusions drawn in the Swedish context internationally can then also be discussed.

Results

To begin with, I conduct regression analysis on the overall level, in order to examine what the impacts of migration are on the housing market in the Nordic countries overall. Table A4.3 below shows the Nordic results.

Table A4.3: OLS and IV Models Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices by Nordic Country

Dependent Variable: Δ Log Owner-Occupied Price	Norway OLS	Norway IV	Finland OLS	Finland IV	Denmark OLS	Denmark IV
$\Delta Fb_t/P_{t-1}$	0.506***	0.631***	-0.051	-0.032	0.615***	0.655***
	(0.223)	(0.278)	(0.416)	(0.315)	(0.204)	(0.217)
$\Delta Im_t/P_{t-1}$	0.451**	0.472**	0.043*	0.047*	0.513***	0.595***
	(0.198)	(0.211)	(0.025)	(0.027)	(0.151)	(0.186)
Log $income_{t-1}$	0.257***	0.224***	0.453***	0.462***	0.232**	0.244**
	(0.065)	(0.052)	(0.124)	(0.125)	(0.094)	(0.097)
$Employment_{t-1}$	0.125**	0.138**	0.123***	0.112***	0.104***	0.095***
	(0.056)	(0.061)	(0.043)	(0.042)	(0.036)	(0.034)
Log Area	-1.340	-2.345	-0.005*	0.052***	0.456	0.700
	(2.400)	(3.591)	(0.003)	(0.011)	(0.722)	(0.982)
Crime Rate	-0.004	-0.014	-0.052	-0.043	-0.032	-0.022
	(0.032)	(0.055)	(0.409)	(0.452)	(0.209)	(0.157)
Bachelor's degree	0.043*	0.067**	0.127**	0.154**	0.447	0.205
	(0.022)	(0.026)	(0.055)	(0.062)	(0.364)	(0.444)
Working age	0.006	0.007*	0.058***	0.043**	-0.004	-0.012
	(0.005)	(0.003)	(0.019)	(0.017)	(0.087)	(0.104)
New $Stock_{t-1}$	-0.027	-0.055	-0.002	-0.004	-0.031	-0.035
	(0.023)	(0.067)	(0.005)	(0.006)	(0.032)	(0.044)
Oil Refineries	0.022	0.021				
	(0.044)	(0.040)				
Cycling Routes					0.002	0.003
					(0.003)	(0.003)
F stat (f-b. inst)		29.477		14.384		26.933
F stat (i.m. inst)		30.382		15.277		24.780
Year f. effects	Yes	Yes	Yes	Yes	Yes	Yes
Region f. effects	Yes	Yes	No	No	Yes	Yes
Observations	2080	2080	2032	2032	760	760
R-Squared	0.225	0.224	0.143	0.142	0.238	0.239

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

The results reveal a number of interesting trends. First, in terms of the IV results for each of the Nordic countries, in Norway, both foreign-born and internal migration is significant, but with a foreign-born coefficient of 0.631 being larger and more significant than that for internal migration, with 0.472. Further, in Finland, only internal migration is very weakly significant with a relatively small coefficient of 0.047, while in Denmark, both foreign-born and internal migration are significant with relatively large coefficients of 0.655 and 0.595 respectively. The latter coefficients are almost as large as those seen in Sweden in Table 4.4. In terms of the coefficient sizes, in Denmark, these are slightly larger than those found in Norway and substantially larger than those found in Finland, but smaller than those found in Sweden. This indicates that the impacts of migration on house prices are strongest in Sweden, followed by Denmark, Norway, and Finland. However, this could also be a result of different data collection, collation and presentation techniques and differing data sources more generally.

Generally speaking, Denmark and Norway are quite similar to Sweden, in that both the foreign-born and internal migration coefficients are significant, with coefficients also being similar in size to one another. Finland is the anomaly here, where foreign-born migrants have no significant impact on house prices, and internal migrants have only a weak impact at the 10% level. In Finland's case, the limited extent of foreign-born migration generally serves as some explanation for this variable's insignificance. Institutional and socio-economic differences (with Finland being the least similar to Sweden of the Nordic countries in this regard, as identified in Section 3.5 of Chapter 3) explain some of the other differences between the countries, too. The similarities found between Sweden, Denmark and Norway could also be explained by such factors, with foreign-born and internal migrants having similar motivations to migrate on a general level in the countries.

Moving on, in the table below, I undertake analysis based on municipality characteristics.

Table A4.4: IV Models Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices by Nordic Country Split by Municipality Characteristics

Dependent Variable: Δ Log Owner-Occupied Price	Norway Major Cities	Finland Major Cities	Denmark Major Cities	Norway Smaller Urban Areas	Finland Smaller Urban Areas	Denmark Smaller Urban Areas	Norway Rural Areas	Finland Rural Areas	Denmark Rural Areas
$\Delta F b_t$/Population$_{t-1}$	0.587**	0.366	0.714***	0.759***	-0.451	2.791**	0.404**	0.341	-1.055
	(0.281)	(0.415)	(0.224)	(0.303)	(0.617)	(1.413)	(0.196)	(0.788)	(1.737)
$\Delta I m_t$/Population$_{t-1}$	0.644***	0.288***	0.613***	0.604**	0.067	1.905***	0.381***	-0.066	-0.289
	(0.295)	(0.114)	(0.184)	(0.286)	(0.116)	(0.677)	(0.155)	(0.135)	(0.761)
Log income$_{t-1}$	0.352**	0.690***	0.368***	0.278***	0.151***	0.147**	0.127**	0.409**	0.196*
	(0.152)	(0.181)	(0.167)	(0.089)	(0.056)	(0.061)	(0.067)	(0.213)	(0.085)
Employment$_{t-1}$	0.042	0.104***	0.081***	0.045	0.082	0.133***	0.053***	0.049	0.035
	(0.125)	(0.032)	(0.021)	(0.067)	(0.068)	(0.039)	(0.014)	(0.161)	(0.061)
Log Area	-3.367	-0.003*	-0.309	-2.291	0.001	0.122	0.878	0.009	0.067
	(3.881)	(0.002)	(0.245)	(4.204)	(0.054)	(0.202)	(5.375)	(0.031)	(0.055)
Crime Rate	-0.023	-0.018	-0.046	0.010	-0.018*	-0.039*	-0.016	0.016	0.011
	(0.043)	(0.016)	(0.050)	(0.059)	(0.009)	(0.021)	(0.077)	(0.022)	(0.067)
Bachelor's degree	-0.042	0.122	0.595	0.067	0.021	-0.092	0.006	0.074	-0.128
	(0.055)	(0.110)	(0.297)	(0.071)	(0.140)	(0.187)	(0.008)	(0.085)	(2.632)
Working age	0.001	0.023	-0.003*	0.002	0.010*	0.182	0.031	0.009	0.205
	(0.005)	(0.034)	(0.002)	(0.003)	(0.006)	(0.340)	(0.039)	(0.061)	(0.282)
New Stock$_{t-1}$	-0.056	-0.004	-0.008	0.010	0.025*	0.006	-0.025	-0.017	0.040
	(0.041)	(0.104)	(0.005)	(0.036)	(0.013)	(0.006)	(0.041)	(0.041)	(0.055)
Oil Refineries	-0.079			0.430			0.021		
	(0.633)			(0.634)			(1.385)		
Cycling Routes			0.017			0.022			-0.045
			(0.025)			(0.056)			(0.124)
F-test stat (f-b. inst)	25.698	12.488	27.866	32.736	15.683	28.093	30.047	16.733	25.946
F-test stat (i.m. inst)	27.988	14.775	23.572	30.685	16.596	25.280	31.767	15.844	26.004
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes
Observations	520	464	232	585	640	232	975	928	296
R-Squared	0.324	0.545	0.424	0.307	0.239	0.234	0.191	0.090	0.101

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

The results shown in Table A4.4 enable expansion on a number of the trends touched upon previously. In major cities, both Denmark and Norway behave similarly to one another, with coefficients of 0.714 and 0.587 for foreign-born migrants in each of the countries respectively, and 0.613 and 0.644 for internal migrants. In Finland, a strong internal migration effect of 0.288 is noted, significant at the 1% level, while foreign-born migration is not significant at all. These trends overall are a little different to Sweden, with Denmark and Norway being relatively similar to one another. The primary difference between the latter two countries and Sweden is the insignificance of internal migration in Sweden, which has not been experienced in the other Nordic countries. In terms of smaller urban areas, Denmark produces an internal migrant coefficient of 1.905, and Norway one of 0.759, both significant at the 1% level, while Denmark's foreign-born coefficient is 2.791, and Norway's is 0.604, both significant at the 5% level. Neither coefficient is significant in Finland.

Overall, Swedish smaller urban areas are not attracting foreign-born migrants to the same extent as Norwegian and Danish ones, and as a result are not experiencing the same degree of impact on the housing market. This could indicate Swedish housing market resilience, but is likely more indicative of systemic labour market disadvantages being stronger in Sweden. In other words, migrants are simply not drawn to these relatively smaller urban areas to the same degree as elsewhere. In rural areas, only Norway produces significant coefficients of 0.404 and 0.381 for foreign-born and internal migrants respectively. This means that rural areas of Norway are similar in nature, conceptually and geographically, to Swedish rural areas. The other countries produce no significant impacts. This indicates substantially divergent experiences in each of the countries, likely a result of the heterogeneity in classification of rural areas across the different countries studied.

Hence, it is relatively clear that there is no perfect comparison country for Sweden found in any of the other Nordic countries. However, trends found in Norway and Sweden are generally quite similar, while Denmark, aside from the rural areas dimension, is also relatively similar to Sweden. Finland stands out in having an almost entirely different experience to the other three countries, likely owing to its differing institutional context. As a result, it is clear that in line with their historic and institutional proximity, economic and social trends in terms of migration and the housing market have affected the four countries studied in somewhat similar manners, though with a number of heterogeneities also manifesting.

In order to take this analysis a step further, I look now at the impact of different forms of migration on Nordic housing markets. The results of the analysis are displayed in Table A4.5 below.

Table A4.5: IV Models Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices by Nordic Country Split by Municipality Characteristics and Migration Motives

Dependent Variable: Δ Log Owner-Occupied Price	Norway Overall	Finland Overall	Denmark Overall	Norway Major Cities	Finland Major Cities	Denmark Major Cities	Norway Smaller Urban Areas	Finland Smaller Urban Areas	Denmark Smaller Urban Areas	Norway Rural Areas	Finland Rural Areas	Denmark Rural Areas
ΔLabour migration$_t$/P$_{t-1}$	0.525***	0.304*	1.377***	0.521***	0.205**	1.738***	0.486***	-0.225	4.401*	0.524***	1.034	1.255
	(0.284)	(0.153)	(0.332)	(0.165)	(0.100)	(0.755)	(0.184)	(0.985)	(2.425)	(0.157)	(0.885)	(1.377)
ΔFam. reun. migration$_t$/P$_{t-1}$			0.205			1.255**			0.336*			-1.316
			(0.316)			(0.577)			(0.184)			(2.409)
ΔRefugee migration$_t$/P$_{t-1}$	0.467***	0.781	0.561***	0.455*	0.366	0.335*	0.304*	1.376	1.034**	-0.087	0.671	0.377
	(0.145)	(0.886)	(0.134)	(0.235)	(1.355)	(0.187)	(0.173)	(1.568)	(0.437)	(0.056)	(1.355)	(0.661)
ΔInternal migration$_t$/P$_{t-1}$	0.495**	0.064*	0.655***	0.544***	0.251***	0.745***	0.478*	0.058	1.355	0.433**	-0.044	-0.115
	(0.291)	(0.031)	(0.185)	(0.175)	(0.095)	(0.277)	(0.237)	(0.091)	(0.905)	(0.235)	(0.154)	(0.161)
Log income$_{t-1}$	0.281***	0.448***	0.264***	0.341**	0.714***	0.358***	0.297***	0.348***	0.247***	0.127**	0.418**	0.174
	(0.072)	(0.129)	(0.067)	(0.149)	(0.197)	(0.119)	(0.090)	(0.105)	(0.098)	(0.067)	(0.215)	(0.124)
Employment$_{t-1}$	0.156**	0.114***	0.213***	0.033	0.094***	0.257***	0.042*	0.045	0.131***	0.054***	0.084	0.018
	(0.069)	(0.039)	(0.069)	(0.119)	(0.032)	(0.087)	(0.049)	(0.071)	(0.037)	(0.014)	(0.164)	(0.051)
Log Area	-1.220	-0.002**	0.130	-2.350	-0.003***	-0.202	-2.971	0.005	-0.059**	0.973	0.006	0.016*
	(2.405)	(0.001)	(0.201)	(3.880)	(0.001)	(0.498)	(4.240)	(0.021)	(0.025)	(5.378)	(0.003)	(0.008)
Crime Rate	-0.007	-0.043	-0.092	-0.020	-0.018	0.034	0.005	-0.015*	-0.144	-0.013	0.013	0.054
	(0.032)	(0.130)	(0.105)	(0.043)	(0.022)	(0.096)	(0.059)	(0.008)	(0.392)	(0.077)	(0.022)	(0.039)
Bachelor's degree	0.047*	0.159***	0.086	-0.044	0.062	0.102	0.022	0.085	-0.219	0.005	0.126	-0.469
	(0.023)	(0.060)	(0.053)	(0.057)	(0.116)	(0.099)	(0.071)	(0.145)	(0.138)	(0.008)	(0.095)	(0.395)
Working age	0.006	0.055*	0.072	0.001	-0.015	0.077	0.003	0.026	0.043	0.002	0.025	0.283
	(0.007)	(0.032)	(0.087)	(0.006)	(0.052)	(0.174)	(0.002)	(0.072)	(0.030)	(0.004)	(0.074)	(0.219)
New Stock$_{t-1}$	-0.027	-0.003	0.027	-0.059	0.008	-0.064	0.016	0.003**	0.055	-0.028	-0.002	-0.020
	(0.023)	(0.004)	(0.028)	(0.040)	(0.025)	(0.051)	(0.037)	(0.001)	(0.052)	(0.041)	(0.004)	(0.045)
Oil Refineries	0.025			-0.172			0.404			0.022		
	(0.042)			(0.633)			(0.640)			(1.385)		
Cycling Routes			0.017			-0.008			0.023			-0.011
			(0.035)			(0.007)			(0.090)			(0.071)
F-test stat (labour)	28.566	16.309	27.995	26.944	11.272	29.370	33.767	13.400	28.495	27.384	18.046	24.362
F-test stat (fam. reun.)			27.330			26.978			27.333			26.803
F-test stat (refugee)	30.354	13.300	25.607	24.377	15.003	25.409	29.944	16.709	29.552	32.570	12.335	22.441
F-test stat (internal)	30.382	15.277	24.780	27.988	14.775	23.572	30.685	16.596	25.280	31.767	15.844	26.004
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes
Observations	2080	2032	760	520	464	232	585	640	232	975	928	296
R-squared	0.222	0.144	0.257	0.321	0.553	0.348	0.295	0.245	0.219	0.189	0.092	0.127

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

The table reveals a number of interesting trends. Overall, labour migrants are the group to produce the strongest impacts in Norway (coefficient of 0.525), Denmark (coefficient of 1.377), and Finland (coefficient of 0.304). Internal migrants are also significant in Norway (coefficient of 0.495), Denmark (coefficient of 0.655), and Finland (coefficient of 0.064), and refugees are only significant in Norway (coefficient of 0.467) and Denmark (coefficient of 0.561). Generally, the results for Norway and Denmark conform pretty well with those found for Sweden, while even Finland is more similar to Sweden than previously.

In major cities, labour migrants are also significant in Norway (coefficient of 0.521), Denmark (coefficient of 1.738), and Finland (coefficient of 0.205). Internal migrants are significant in Norway (coefficient of 0.544), Denmark (coefficient of 0.745), and Finland (coefficient of 0.251), while family reunification migrants are significant in Denmark only (coefficient of 1.255), and refugees are significant in Denmark (coefficient of 0.335) and Norway (coefficient of 0.455) only. Again, the Norwegian and Danish experiences are mostly similar to Sweden, with the exception of the significance of the internal migration variable.

In smaller urban areas, labour migrants are significant in Denmark (coefficient of 4.401), and Norway (coefficient of 0.486). Internal migrants are only significant in Norway (coefficient of 0.478), family reunification migrants are only significant in Denmark (coefficient of 0.336), and refugees are significant in Denmark (coefficient of 1.034) and Norway (coefficient of 0.304). Generally lower significance levels and some divergences in impacts here indicate some differences between the countries, particularly with regard to internal migration and refugee migrant flows.

In rural areas, only Norway produces significant coefficients, with labour migrants (coefficient of 0.524) and internal migrants (coefficient of 0.433). With the exception of an insignificant refugee variable for Norway, which was highly significant for Sweden, the two countries are not entirely dissimilar with regard to the impacts of migration on rural areas. However, they are quite different to the other Nordic countries.

Overall, then, the Swedish experience with regard to the impacts of specific migrant groups on housing markets has been relatively similar to the Nordic countries, with the exception of Finland. The largest number of similarities have been found between Sweden and Norway, but many have also been observed between Sweden and Denmark and a few even between Sweden and Finland. This indicates that there are some clear Nordic-wide trends that can be identified in this data, and particularly between countries with similar institutional contexts. This underlines the potential applicability of my thesis, and its conceptual findings, beyond Swedish borders. Nevertheless, it remains difficult to speak of an entirely uniform Nordic experience in terms of the impacts of certain migrant groups on the housing market. Indeed, for Sweden, refugees have had somewhat stronger impacts than those that have been seen in any of the other Nordic countries, while a number of other migration flows have had stronger impacts in other Nordic countries than those that have been observed in Sweden. Generally speaking, however, these results do show that there is evidence of the trends and concepts identified by the analysis to be relevant in the Swedish case to also bear relevance in other contexts.

Appendix 4.4: OLS and IV Models Showing the Relationship Between Foreign-Born Migration and Owner-Occupied House Prices Split by Municipality Characteristics

	All Urban Areas		**Major Cities**		**Smaller Urban Areas**		**Rural Areas**	
Dependent Variable: Δ Log Owner-Occupied Price	OLS	IV	OLS	IV	OLS	IV	OLS	IV
$\Delta Fb_{t-1}/P_{t-2}$	1.366***	1.603***	2.148***	4.169***	-0.237	0.820	0.486**	1.044**
	(0.494)	(0.530)	(0.650)	(1.835)	(0.758)	(1.811)	(0.258)	(0.526)
Log income$_{t-1}$	0.461***	0.463***	0.550***	0.549***	-0.117	0.420	0.199	0.195
	(0.147)	(0.153)	(0.179)	(0.183)	(0.265)	(0.212)	(0.185)	(0.121)
Employment$_{t-1}$	0.015	0.015	0.014	0.016*	0.071	0.065*	0.213***	0.236***
	(0.012)	(0.012)	(0.012)	(0.012)	(0.043)	(0.043)	(0.055)	(0.056)
Log Jan temp.	0.007	0.007	0.012	0.031	-0.000	0.000	0.008	0.008
	(0.014)	(0.014)	(0.047)	(0.050)	(0.016)	(0.016)	(0.007)	(0.007)
Log Jul humidity	0.004	0.003	0.000	-0.003	0.005	0.003	-0.001	-0.000
	(0.013)	(0.013)	(0.021)	(0.021)	(0.020)	(0.019)	(0.012)	(0.012)
Log area	-0.001	-0.001	0.001	0.001	-0.002	-0.002	0.002	0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.003)	(0.003)
Crime Rate (1984)	-0.003	-0.003	-0.011	-0.024*	0.003	-0.000	0.005	0.005
	(0.006)	(0.009)	(0.008)	(0.014)	(0.011)	(0.000)	(0.005)	(0.005)
B. degree (1984)	0.063	0.064	0.060	0.133	0.204	0.196	0.654**	0.572***
	(0.063)	(0.071)	(0.071)	(0.096)	(0.172)	(0.162)	(0.255)	(0.209)
F-test statistic		31.837		33.471		27.412		29.540
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1376	1376	704	704	672	672	3168	3168
R-Squared	0.325	0.325	0.469	0.461	0.224	0.216	0.092	0.097

Notes: Analysis of 284 Swedish municipalities between 2000 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 4.5: OLS, Fixed Effects & ARMA Models Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices

Dependent Variable: ΔLog Owner-Occupied Price	*OLS*	*OLS*	*Fixed Effects*	*ARMA (2,2)*
$\Delta \boldsymbol{F}b_t$/Population$_{t-1}$	0.653***	0.956***	0.915***	1.057***
	(0.217)	(0.256)	(0.242)	(0.280)
$\Delta \boldsymbol{I}m_t$/Population$_{t-1}$		0.837***	0.941***	0.894***
		(0.177)	(0.191)	(0.207)
Log income$_{t-1}$	0.086**	0.109**	0.181	0.152**
	(0.030)	(0.046)	(0.150)	(0.070)
Employment$_{t-1}$	0.036***	0.040**	0.055***	0.063**
	(0.010)	(0.011)	(0.016)	(0.017)
Log January temperature	0.009***	0.008***		0.007***
	(0.002)	(0.002)		(0.002)
Bachelor's degree (%, 1984)	0.171***	0.159**		0.121*
	(0.074)	(0.075)		(0.072)
Working age (%, 1984)	0.291***	0.296***		0.255***
	(0.110)	(0.107)		(0.096)
New stock$_{t-1}$	-0.017**	-0.015**	-0.020**	-0.020**
	(0.008)	(0.008)	(0.012)	(0.011)
Legislation	-0.027***	-0.053***	-0.034***	-0.038***
	(0.004)	(0.007)	(0.007)	(0.007)
Year fixed effects	Yes	Yes	Yes	Yes
Observations	4544	4544	4544	4544
R-Squared	0.120	0.125	0.126	ML

Notes: Analysis of 284 Swedish municipalities between 2000 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 4.6: First Stage Regressions for the Model Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices

	1	2
	Dep Var.: Change of Respective Migrant Flow to Population Ratio ($\Delta Migrants_t/Population_{t-1}$)	
Predicted impact (from foreign-born migration)	0.785*** (0.227)	
Predicted impact (from internal migration)		0.804*** (0.183)
F-test statistic for foreign-born instrument	31.043	
F-test statistic for internal instrument		28.367
Other control variables in Table 4.4	Yes	
Year fixed effects	Yes	
Observations	4544	
R-Squared	0.126	

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 4.7: OLS Model Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices Segmented by Local Travel Areas

Dependent Variable: ΔLog Owner-Occupied Price	*OLS*
ΔForeign-born$_t$/Population$_{t-1}$	1.031***
	(0.261)
ΔInternal migration$_t$/Population$_{t-1}$	0.905***
	(0.189)
Log income$_{t-1}$	0.331***
	(0.149)
Employment$_{t-1}$	0.166***
	(0.057)
Average log January temperature	0.008***
	(0.002)
Average Bachelor's degree (%, 1984)	0.175***
	(0.089)
Average Working age (%, 1984)	0.251**
	(0.085)
New stock$_{t-1}$	-0.027***
	(0.010)
Legislation	-0.054***
	(0.007)
Year fixed effects	Yes
Observations	1120
R-Squared	0.145

Notes: Analysis of 70 Swedish local travel areas between 2000 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 4.8: OLS Models Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices Split by Municipality Characteristics

Dependent Variable: Δ Log Owner-Occupied Price	*All Urban*	*Major Cities*	*Smaller Urban*	*Rural Areas*
ΔForeign-born$_t$/Population$_{t-1}$	1.160***	1.209***	-0.951	0.784***
	(0.437)	(0.491)	(0.804)	(0.271)
ΔInternal migration$_t$/Population$_{t-1}$	0.709***	-0.076	1.380***	0.615***
	(0.258)	(0.138)	(0.477)	(0.203)
Log income$_{t-1}$	0.205***	0.918***	-0.151	0.232
	(0.072)	(0.225)	(0.256)	(0.181)
Employment$_{t-1}$	0.036**	0.049*	0.043**	0.104**
	(0.021)	(0.025)	(0.021)	(0.043)
Log January temperature	-0.174	-0.030	-0.005	0.075***
	(0.325)	(0.079)	(0.043)	(0.025)
Bachelor's degree (%, 1984)	0.044	0.023	0.178	0.456*
	(0.055)	(0.061)	(0.212)	(0.252)
Working age (%, 1984)	0.074	-0.134	0.134	0.393**
	(0.101)	(0.109)	(0.267)	(0.200)
New Stock$_{t-1}$	-0.006	-0.004	-0.012	-0.091*
	(0.005)	(0.006)	(0.014)	(0.051)
Legislation	-0.077***	-0.024**	-0.058***	-0.025**
	(0.008)	(0.010)	(0.012)	(0.010)
Year fixed effects	Yes	Yes	Yes	Yes
Observations	1376	704	672	3168
R-Squared	0.338	0.472	0.278	0.096

Notes: Analysis of 284 Swedish municipalities between 2000 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 4.9: Fixed Effects & ARMA Models Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices Split by Municipality Characteristics

	All Urban Areas		Major Cities		Smaller Urban Areas		Rural Areas	
Dependent Variable: Δ Log Owner-Occupied Price	FE	ARMA (2,2)	FE	ARMA (2,2)	FE	ARMA (2,2)	FE	ARMA (2,2)
ΔForeign-born$_t$/P$_{t-1}$	0.971*	1.347***	1.944***	1.567***	-0.844	-0.751	0.833***	0.814***
	(0.516)	(0.488)	(0.512)	(0.555)	(0.815)	(0.782)	(0.285)	(0.299)
ΔInternal migration$_t$/P$_{t-1}$	0.954***	0.877***	-0.114	-0.133	1.460***	1.617***	0.633***	0.712***
	(0.290)	(0.283)	(0.155)	(0.121)	(0.588)	(0.617)	(0.241)	(0.258)
Log income$_{t-1}$	0.442***	0.414***	0.681***	0.717***	-0.165	-0.134	0.126	0.241
	(0.165)	(0.162)	(0.240)	(0.124)	(0.272)	(0.256)	(0.202)	(0.162)
Employment$_{t-1}$	0.069**	0.070*	0.082*	0.076*	0.081*	0.075*	0.295*	0.318**
	(0.035)	(0.038)	(0.044)	(0.035)	(0.049)	(0.048)	(0.186)	(0.161)
Log January temperature		-0.092		-0.015		-0.005		0.072**
		(0.142)		(0.026)		(0.007)		(0.030)
Bachelor's degree (%, 1984)		0.038		0.019		0.063		0.335
		(0.047)		(0.059)		(0.176)		(0.271)
Working age (%, 1984)		0.035		-0.134		0.034		0.356**
		(0.092)		(0.105)		(0.246)		(0.164)
New Stock$_{t-1}$	-0.007	-0.005	0.004	0.006	-0.020	-0.025	-0.196***	-0.156**
	(0.008)	(0.009)	(0.008)	(0.007)	(0.019)	(0.020)	(0.072)	(0.069)
Legislation	0.025***	0.039***	0.023**	0.026**	0.029**	0.035**	0.031***	0.027***
	(0.008)	(0.008)	(0.011)	(0.012)	(0.013)	(0.011)	(0.011)	(0.011)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1376	1376	704	704	672	672	3168	3168
R-Squared (overall)	0.335	ML	0.461	ML	0.277	ML	0.089	ML

Notes: Analysis of 284 Swedish municipalities between 2000 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 4.10: OLS Models Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices Split by Municipality Characteristics and Migration Motives

Dependent Variable: Δ Log Owner-Occupied Price	*All Areas*	*All Urban*	*Major Cities*	*Smaller Urban*	*Rural Areas*
ΔLabour migration$_t$/Population$_{t-1}$	1.341***	2.317***	2.020***	4.362*	0.981**
	(0.310)	(0.796)	(0.731)	(2.467)	(0.355)
ΔFam. reun. migration$_t$/Population$_{t-1}$	1.133***	0.956**	1.278***	1.414	-0.441
	(0.305)	(0.391)	(0.330)	(1.918)	(1.867)
ΔRefugee migration$_t$/Population$_{t-1}$	1.322**	1.955	0.886	0.995**	2.267***
	(0.416)	(1.231)	(0.499)	(0.423)	(0.534)
ΔInternal migration$_t$/Population$_{t-1}$	1.287***	1.569***	0.103	1.441***	1.296***
	(0.301)	(0.316)	(0.214)	(0.463)	(0.234)
Log income$_{t-1}$	0.278**	0.089***	0.161***	-0.511	0.294
	(0.136)	(0.029)	(0.035)	(0.444)	(0.200)
Employment$_{t-1}$	0.117***	0.032**	0.049***	0.038*	0.117**
	(0.042)	(0.011)	(0.020)	(0.023)	(0.048)
Log January temperature	0.054***	-0.205	-0.067	-0.017	0.074***
	(0.022)	(0.388)	(0.099)	(0.055)	(0.027)
Bachelor's degree (%, 1984)	0.135*	0.061	0.022	0.331	0.405
	(0.075)	(0.066)	(0.078)	(0.241)	(0.271)
Working age (%, 1984)	0.316***	0.081	-0.085	0.189	0.456**
	(0.110)	(0.095)	(0.153)	(0.338)	(0.223)
New stock$_{t-1}$	-0.012*	-0.003	-0.006	0.014	-0.069
	(0.006)	(0.010)	(0.012)	(0.019)	(0.052)
Legislation	-0.033***	-0.023***	-0.023***	-0.029***	-0.037***
	(0.005)	(0.004)	(0.006)	(0.007)	(0.005)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	4544	1376	704	672	3168
R-Squared	0.137	0.361	0.491	0.305	0.097

Notes: Analysis of 284 Swedish municipalities between 2000 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 4.11: First Stage Regressions for the Model Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices Split by Municipality Characteristics and Migration Motives

	1	2	3
	Dep Var.: Change of Respective Migrant Flow to Population Ratio ($\Delta Migrants_t/Population_{t-1}$)		
Predicted impact (from labour migration)	1.531*** (0.365)		
Predicted impact (from family reunification migration)		1.204*** (0.305)	
Predicted impact (from refugee migration)			1.634*** (0.497)
F-test statistic for labour instrument	23.444		
F-test statistic for fam. reun. instrument		19.551	
F-test statistic for refugee instrument			21.332
Other control variables in Table 4.6		Yes	
Year fixed effects		Yes	
Observations		4544	
R-Squared		0.141	

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 4.12: OLS and IV Models Showing the Relationship Between Foreign-Born and Internal Migration and Owner-Occupied House Prices Split by Municipality Characteristics and Migrant Income

	All areas		*All Urban Areas*		*Major Cities*		*Smaller Urban Areas*		*Rural Areas*	
Dependent Variable: Δ Log Owner-Occupied Price	OLS	IV	OLS	IV	OLS	IV	OLS	IV	OLS	IV
ΔHigh-income migration$_t$/P$_{t-1}$	1.174***	1.305***	4.051**	4.346**	2.615***	2.866**	5.147	6.376*	0.933**	1.114**
	(0.251)	(0.289)	(1.712)	(1.988)	(1.284)	(1.297)	(3.314)	(3.815)	(0.344)	(0.385)
ΔMedium-income migration$_t$/P$_{t-1}$	0.344	0.414	0.488	0.430	1.143	1.004	-0.414	-0.577	-0.386	-0.279
	(0.705)	(0.944)	(0.855)	(0.900)	(0.955)	(0.931)	(0.818)	(0.809)	(1.561)	(1.300)
ΔLow-income migration$_t$/P$_{t-1}$	1.344***	1.395***	1.785	1.566	0.777	0.713	1.171**	1.304**	2.336***	2.554***
	(0.200)	(0.214)	(1.143)	(0.900)	(1.172)	(1.055)	(0.534)	(0.621)	(0.514)	(0.586)
ΔInternal migration$_t$/P$_{t-1}$	1.044***	1.109***	1.565***	1.677***	0.066	0.033	1.413***	1.471***	1.221***	1.516***
	(0.241)	(0.261)	(0.316)	(0.335)	(0.154)	(0.255)	(0.455)	(0.471)	(0.215)	(0.273)
Log income$_{t-1}$	0.273**	0.259**	0.378***	0.496***	0.456***	0.516***	-0.456	-0.322	0.239	0.261
	(0.135)	(0.132)	(0.136)	(0.177)	(0.169)	(0.178)	(0.396)	(0.370)	(0.184)	(0.195)
Employment$_{t-1}$	0.115***	0.115**	0.080**	0.060**	0.083**	0.097**	0.058	0.105*	0.189**	0.216**
	(0.041)	(0.054)	(0.032)	(0.024)	(0.041)	(0.037)	(0.049)	(0.054)	(0.068)	(0.070)
Log January temperature	0.052***	0.061***	-0.212	-0.096	-0.073	-0.065	-0.004	-0.084	0.065***	0.094***
	(0.020)	(0.032)	(0.368)	(0.137)	(0.096)	(0.084)	(0.048)	(0.110)	(0.024)	(0.033)
Bachelor's degree (%, 1984)	0.131*	0.170**	0.058	0.079	0.019	0.017	0.309	0.337	0.389	0.266
	(0.074)	(0.081)	(0.063)	(0.066)	(0.075)	(0.086)	(0.232)	(0.238)	(0.257)	(0.294)
Working age (%, 1984)	0.306***	0.233*	0.072	0.116	-0.079	-0.077	0.219	0.305	0.434**	0.482**
	(0.109)	(0.129)	(0.109)	(0.105)	(0.122)	(0.109)	(0.298)	(0.399)	(0.205)	(0.204)
New stock$_{t-1}$	-0.011*	-0.024	-0.002	-0.004	-0.005	-0.007	0.012	0.025	-0.063	-0.076
	(0.012)	(0.015)	(0.009)	(0.009)	(0.011)	(0.008)	(0.017)	(0.019)	(0.051)	(0.055)
Legislation	-0.031***	-0.045***	-0.026***	-0.031***	-0.023**	-0.023**	-0.027***	-0.027***	-0.035***	-0.037**
	(0.004)	(0.006)	(0.004)	(0.005)	(0.005)	(0.005)	(0.006)	(0.007)	(0.004)	(0.005)
F-test statistic (high-income mig.)		21.544		21.377		20.189		22.299		21.850
F-test statistic (medium-income mig.)		16.382		17.355		18.634		16.332		15.946
F-test statistic (low-income mig.)		17.181		19.444		15.630		21.436		16.364
F-teest statistic (internal mig.)		28.367		29.358		26.517		31.596		27.692
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4544	4544	1376	1376	704	704	672	672	3168	3168
R-Squared	0.128	0.130	0.344	0.345	0.471	0.471	0.301	0.303	0.096	0.097

Notes: Analysis of 284 Swedish municipalities between 2000 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 5.1: Nordic Results for the Alternative Markets

For a full explanation of the methodology, see Appendix 4.3. Analysis will be conducted in the same way as was outlined there, but with variations as specified below.

In the other Nordic countries, data is often only reported and available for owner-occupied housing, and not for private housing cooperatives, the rental market, or alternative housing classes. Nevertheless, asset class analysis can be conducted for two of the countries, where data for apartment prices is available, which is broadly comparable to price data for private housing cooperatives in Sweden (see Chapter 5).

In Finland, it is possible to separate house price data based on asset class, with separate price information being available for owner-occupied housing (i.e. detached and terraced houses), and apartments. The 127 municipalities included in the analysis provide price data for the full studied period the apartment asset class. Analysis of these apartments will be followed by also segmenting municipalities into major cities, smaller urban areas, and rural areas, studying the impacts which migrants of different backgrounds have on house prices for flats overall and split across these levels. This should allow a fuller insight into the potential differential impacts of migration on house prices across different areas in Finland, and thus provide a more full comparison to Sweden.

Denmark does, similarly to Finland, produce statistics separately for owner-occupied housing and apartments. Hence, some asset class analysis can be conducted, comparing the impacts of migration and other control variables on apartments in Denmark, too. This analysis will be conducted on the overall level. Unfortunately, the analysis cannot be broken down further, owing to the unavailability of data for apartments in many of the municipalities. Indeed, only 39 of Denmark's 95 municipalities produce data for house prices of apartments, most likely owing to the low amount of apartments in many of the remaining municipalities. As a result, asset class analysis may not be perfectly comparable to owner-occupied analysis for Denmark, owing to the reduced number of observations.

Further, owing to the different nature of asset classes between countries, it must be emphasized that comparisons made between Sweden's alternative housing segments and the other countries will not be entirely like-for-like. This could create some issues with regard to the degree of comparability, in addition to differences in variables and the way in which they are collected, classified, and presented. Nevertheless, general trends should still prove interesting to study, and will hopefully reveal some insights into broader similarities or differences between Nordic countries, and thus also the relationship between migration and housing. The results are shown in Table A5.1.

Table A5.1: IV Models Showing the Relationship Between Foreign-Born and Internal Migration and Apartment Prices by Nordic Country Split by Municipality Characteristics

	Finland				Denmark
	Apartments				Apartments
Dependent Variable: Δ Log Apartment Price	Overall	Major Cities	Smaller Urban Areas	Rural Areas	Overall
$\Delta Fb_t/P_{t-1}$	-0.122	0.417	0.188	-0.162	0.583***
	(0.335)	(0.551)	(0.226)	(0.885)	(0.133)
$\Delta Im_t/P_{t-1}$	0.071	0.225***	-0.199	0.031	0.471***
	(0.099)	(0.103)	(0.225)	(0.167)	(0.138)
Log $income_{t-1}$	0.184**	0.527**	-0.231	0.518**	0.518***
	(0.084)	(0.214)	(0.382)	(0.263)	(0.145)
$Employment_{t-1}$	0.094	0.058	0.125	0.252	0.243**
	(0.154)	(0.070)	(0.132)	(0.201)	(0.107)
Log Area	0.004	-0.002	0.004	-0.002	0.156
	(0.021)	(0.002)	(0.004)	(0.004)	(0.359)
Crime Rate	-0.072	0.032	-0.019	0.013	-0.104
	(0.177)	(0.077)	(0.018)	(0.027)	(0.158)
B. degree	0.084	0.085	-0.040	0.043	0.473
	(0.076)	(0.120)	(0.271)	(0.105)	(0.432)
Working age	0.066	0.009	0.076	0.016	-0.007
	(0.044)	(0.056)	(0.134)	(0.090)	(0.054)
New $Stock_{t-1}$	0.048	0.051	0.041	0.017	0.019
	(0.061)	(0.075)	(0.026)	(0.051)	(0.048)
Cycling Routes					0.003
					(0.006)
F-test (f-b mig.)	14.384	12.488	15.783	16.733	26.933
F-test (int. mig)	15.277	14.775	16.596	15.844	24.780
Year f. effects	Yes	Yes	Yes	Yes	Yes
Region f. effects	No	No	No	No	Yes
Observations	2032	464	640	928	312
R-Squared	0.088	0.585	0.092	0.062	0.391

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

The table allows for a range of interesting analyses to be conducted. In Denmark coefficients of 0.583 for foreign-born migration in flats, and 0.471 for internal migrants, are found, both significant at the 1% level. Hence, in terms of apartments, the Danish results are not particularly different to those seen for owner-occupied housing (despite a different number of observations). Indeed, the Danish results show that the impacts of migration on housing are just slightly diminished for flats, when compared to owner-occupied housing (Table A4.3) In Finland, overall, internal migration is not significant for apartments, despite having been significant at the 10% level for owner-occupied housing (Table A4.3). This indicates that there is some differential impact of internal migration on the housing market on the overall level. Indeed, this is slightly surprising, as foreign-born migration is not significant either on the overall level for flats, and one would expect that some form of foreign-born migration should have some degree of impact on housing on the overall level. These results indicate further differences between Finland and Sweden (following on from Appendix 4.3). In the latter country, both forms of migration are impactful on the overall level, for both owner-occupied housing and private housing cooperatives. This therefore also highlights some further similarities between Denmark and Sweden for this scale of analysis. The differences in institutional context between the respective countries is likely to serve as a strong explanatory factor here.

Following this, I take the analysis a step further for these three Nordic countries, and look into whether migrants of different backgrounds are having differential impacts on flats. The results are shown in Table A5.2.

Table A5.2: IV Models Showing the Relationship Between Foreign-Born and Internal Migration and Apartment Prices by Nordic Country Split by Municipality Characteristics and Migration Motives

	Finland				Denmark
	Apartments				Apartments
Dependent Variable: Δ Log Apartment Price	Overall	Major Cities	Smaller Urban Areas	Rural Areas	Overall
ΔLab. m_t/P_{t-1}	0.155	-0.221	-0.286	0.208	1.036***
	(0.438)	(0.881)	(1.444)	(0.985)	(0.296)
ΔFam. reun. m_t/P_{t-1}					0.466
					(1.340)
ΔRef. m_t/P_{t-1}	0.486	0.515	0.984	0.468	0.444***
	(0.988)	(2.366)	(1.311)	(2.005)	(0.128)
$\Delta Im_t/P_{t-1}$	0.037	0.254***	-0.168	-0.061	0.512***
	(0.085)	(0.105)	(0.188)	(0.155)	(0.138)
Log $income_{t-1}$	0.188***	0.539***	0.238**	0.523**	0.602***
	(0.085)	(0.204)	(0.104)	(0.264)	(0.170)
$Employment_{t-1}$	0.099	0.049	0.087	0.027	0.344*
	(0.154)	(0.069)	(0.133)	(0.021)	(0.172)
Log Area	0.005	-0.002	0.004	-0.004	0.212
	(0.020)	(0.002)	(0.004)	(0.004)	(0.410)
Crime Rate	-0.065	-0.035	-0.019	0.017	-0.094
	(0.177)	(0.078)	(0.118)	(0.027)	(0.167)
Bachelor's degree	0.113	0.035	-0.042	0.085	0.781
	(0.081)	(0.126)	(0.271)	(0.117)	(0.787)
Working age	0.062	0.045	0.078	0.093	-0.093
	(0.044)	(0.056)	(0.134)	(0.091)	(0.140)
New $Stock_{t-1}$	0.006	0.012	0.004	0.014	0.017
	(0.008)	(0.027)	(0.003)	(0.051)	(0.049)
Cycling Routes					0.005
					(0.007)
F-stat (lab inst)	16.309	11.272	13.400	18.046	27.995
F-stat (f.r. inst)					27.330
F-stat (ref. inst)	13.300	15.003	16.709	12.335	25.607
F-stat (int. inst)	15.277	14.775	16.595	15.844	24.780
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Region fixed effects	No	No	No	No	Yes
Observations	2032	464	640	928	312
R-Squared	0.089	0.587	0.092	0.064	0.394

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

In the Danish results, there are once again some similarities to be observed. The impacts of labour migrants on flats are slightly weaker, but still strongly significant at the 1% level, with a coefficient of 1.036, compared to the coefficient of 1.377 that was found for owner-occupied housing (Table A4.5). Further, similarly to Table A4.5, both refugee migration and internal migration produce smaller coefficients than labour migration, at 0.444 and 0.512 respectively, both significant at the 1% level. Hence, while the possibility of there being divergences occurring between the Danish owner-occupier and flat markets cannot be completely discounted, the results generally are relatively similar to both the owner-occupier market, and to Sweden to some degree (although Sweden generally had less significant migration flows for e.g. labour migrants). Meanwhile, in terms of the Finnish results, the only significant migration-related variable is internal migration in major cities, with a coefficient of 0.254, significant at the 1% level. Although a number of migration-related variables, such as labour migration and refugee migration, did show some significance for owner-occupier housing in Finland (Table A4.5), these are not significant for apartments. This indicates that migration is having relatively uniformly minor impacts on apartment prices in Finland, and that wealthier and more diverse migrants are impacting the owner-occupier market, but not the flat market. This suggests evidence of self-selection out of this market. In terms of flats, then, the findings for Finland are quite unlike the findings found earlier for Sweden, where different forms of foreign-born migration were significant across different scales. The fact that more definite conclusions could be drawn for the Swedish market underlines that it is difficult to compare the countries in their entirety. However, generally, Sweden and Denmark once again have experienced more similar trends in terms of alternative markets, much like for the owner-occupied market, while Finland remains an outlier in the Nordic context.

To summarize this analysis, then, I conclude that the three Nordic countries have experienced some similar trends with regard to the impacts of different forms of migrants on different asset classes, but only to a degree. In particular, a number of similarities have, similarly to Appendix 4.3, been noted between Sweden and Denmark. Finland, however, once again is a relatively strong outlier. Institutional differences between markets and countries are likely to be responsible for some of the differences in the countries' experiences. Nevertheless, in light of this and all of the previous evidence, to talk of a similar Nordic experience with regard to migration and the housing market remains highly plausible, although with certain key differences manifesting. This once again serves to underline the applicability of the more in-depth Swedish analysis that has been conducted throughout this thesis, on an international level.

Appendix 5.2: OLS Models Showing the Relationship Between Foreign-Born and Internal Migration and Private Housing Cooperative (PHC) Prices

Dependent Variable: Δ Log PHC Price or ΔLog Owner-Occupied Price	*PHC OLS*	*Owner-Occupied OLS*
ΔForeign-born$_t$/Population$_{t-1}$	0.556***	0.903***
	(0.184)	(0.237)
ΔInternal migration$_t$/Population$_{t-1}$	0.633***	0.773***
	(0.244)	(0.167)
Log income$_{t-1}$	0.318**	0.283**
	(0.125)	(0.134)
Employment$_{t-1}$	0.111**	0.125***
	(0.044)	(0.041)
Log January avg temperature (1961-1990)	-0.011***	0.007***
	(0.003)	(0.002)
Bachelor's degree (%, 1984)	-0.137**	0.159**
	(0.059)	(0.081)
Working age (%, 1984)	0.017	0.271***
	(0.103)	(0.107)
New Stock$_{t-1}$	-0.011	-0.018**
	(0.009)	(0.009)
Legislation	-0.027***	-0.041***
	(0.008)	(0.006)
Year fixed effects	Yes	Yes
Observations	1010	1010
R-Squared	0.263	0.126

Notes: Analysis of 101 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 5.3: Fixed Effects & ARMA Models Showing the Relationship Between Foreign-Born and Internal Migration and Private Housing Cooperative (PHC) Prices

Dependent Variable: ΔLog PHC Price	FE	ARMA (2,2)
ΔForeign-born$_t$/Population$_{t-1}$	0.586***	0.605***
	(0.195)	(0.202)
ΔInternal migration$_t$/Population$_{t-1}$	0.651***	0.674***
	(0.255)	(0.263)
Log income$_{t-1}$	0.401**	0.440**
	(0.166)	(0.182)
Employment$_{t-1}$	0.057	0.042
	(0.069)	(0.059)
Log January avg temperature (1961-1990)		-0.014***
		(0004)
Percentage with bachelor's degree (1984)		-0.147**
		(0.065)
Percentage working age (1984)		0.035
		(0.143)
New Stock$_{t-1}$	-0.015	-0.019
	(0.010)	(0.027)
Legislation	-0.029***	-0.028***
	(0.009)	(0.008)
Year fixed effects	Yes	Yes
Observations	1010	1010
R-Squared (overall)	0.260	ML

Notes: Analysis of 101 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 5.4: First Stage Regressions for the Model Showing the Relationship Between Foreign-Born and Internal Migration and Private Housing Cooperative (PHC) Prices

	1	2
	Dep Var.: Change of Respective Migrant Flow to Population Ratio ($\Delta Migrants_t/Population_{t-1}$)	
Predicted impact (from foreign-born migration)	0.647*** (0.225)	
Predicted impact (from internal migration)		0.733*** (0.271)
F-test statistic for foreign-born instrument	23.570	
F-test statistic for internal instrument		26.719
Other control variables in Table 5.2	Yes	
Year fixed effects	Yes	
Observations	1010	
R-Squared	0.260	

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 5.5: OLS Models Showing the Relationship Between Foreign-Born and Internal Migration and Private Housing Cooperative (PHC) Prices Split by Municipality Characteristics

Dependent Variable: ΔLog PHC Price	Major Cities	Smaller Urban	Rural Areas
ΔForeign-born$_t$/P$_{t-1}$	0.724***	1.200*	0.333
	(0.285)	(0.656)	(0.784)
ΔInternal migration$_t$/P$_{t-1}$	0.788***	0.594**	0.477
	(0.288)	(0.270)	(0.954)
Log income$_{t-1}$	0.494**	0.047	0.773**
	(0.229)	(0.070)	(0.314)
Employment$_{t-1}$	-0.009	0.098**	0.073**
	(0.032)	(0.040)	(0.032)
Log Jan. temp. (1961-1990)	-0.025**	-0.012*	-0.010**
	(0.008)	(0.006)	(0.005)
Bachelor's degree (%, 1984)	0.157*	-0.269	0.054
	(0.081)	(0.248)	(0.031)
Working age (%, 1984)	-0.046	0.064	0.345
	(0.090)	(0.316)	(0.569)
New Stock$_{t-1}$	-0.005	-0.001	-0.011*
	(0.013)	(0.002)	(0.006)
Legislation	-0.002	-0.025*	-0.020
	(0.006)	(0.014)	(0.022)
Year fixed effects	Yes	Yes	Yes
Observations	360	300	350
R-Squared	0.543	0.304	0.139

Notes: Analysis of 101 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 5.6: Fixed Effects & ARMA Models Showing the Relationship Between Foreign-Born and Internal Migration and Private Housing Cooperative (PHC) Prices Split by Municipality Characteristics

	Major Cities		**Smaller Urban Areas**		**Rural Areas**	
Dependent Variable: ΔLog PHC Price	Fixed Effects	ARMA (2,2)	Fixed Effects	ARMA (2,2)	Fixed Effects	ARMA (2,2)
ΔForeign-born$_t$/P$_{t-1}$	0.753***	0.727***	1.153*	1.355*	0.385	0.455
	(0.305)	(0.289)	(0.633)	(0.671)	(1.735)	(1.303)
ΔInternal migration$_t$/P$_{t-1}$	0.881***	0.835***	0.633**	0.645***	0.567	0.604
	(0.307)	(0.296)	(0.317)	(0.322)	(0.933)	(0.853)
Log income$_{t-1}$	0.449**	0.422**	0.029	0.034	-0.078	0.054
	(0.203)	(0.202)	(0.293)	(0.377)	(0.593)	(0.677)
Employment$_{t-1}$	-0.017	-0.024	0.076	0.070	0.225**	0.304**
	(0.013)	(0.017)	(0.071)	(0.104)	(0.102)	(0.129)
Log Jan. temp. (1961-1990)		-0.029**		-0.015*		-0.012**
		(0.011)		(0.008)		(0.006)
Bachelor's degree (%, 1984)		0.172*		-0.331		0.056
		(0.085)		(0.346)		(0.079)
Working age (%, 1984)		-0.071		0.089		0.455
		(0.0152)		(0.140)		(0.777)
New Stock$_{t-1}$	-0.007	-0.008	-0.003	-0.006	-0.012*	-0.015*
	(0.015)	(0.019)	(0.005)	(0.010)	(0.006)	(0.007)
Legislation	-0.002	-0.003	-0.027*	-0.029*	-0.025	-0.044
	(0.009)	(0.010)	(0.015)	(0.016)	(0.019)	(0.046)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	360	360	300	300	350	305
R-Squared (overall)	0.540	ML	0.302	ML	0.137	ML

Notes: Analysis of 101 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 5.7: OLS Models Showing the Relationship Between Foreign-Born and Internal Migration and Private Housing Cooperative (PHC) Prices Split by Municipality Characteristics and Migration Motives

Dependent Variable: ΔLog PHC Price	*Overall*	*Major Cities*	*Smaller Urban*	*Rural*
ΔLabour migration$_t$/Population$_{t-1}$	2.505*	2.881**	2.274**	1.341
	(1.355)	(1.215)	(1.140)	(7.095)
ΔFam. reun. migration$_t$/Population$_{t-1}$	0.584**	1.235***	0.488	2.516
	(0.285)	(0.303)	(5.300)	(4.166)
ΔRefugee migration$_t$/Population$_{t-1}$	1.450*	0.517	3.130**	2.340
	(0.778)	(0.844)	(1.617)	(2.509)
ΔInternal migration$_t$/Population$_{t-1}$	0.588***	0.616**	1.159***	0.914
	(0.221)	(0.277)	(0.453)	(0.881)
Log income$_{t-1}$	0.458**	0.555***	-0.331	0.871**
	(0.225)	(0.211)	(0.273)	(0.379)
Employment$_{t-1}$	0.077	-0.017	0.047**	0.125**
	(0.717)	(0.161)	(0.020)	(0.069)
Log January temperature	-0.013***	-0.020**	-0.006	-0.017**
	(0.004)	(0.010)	(0.006)	(0.008)
Bachelor’s degree (%, 1984)	0.055	0.065	0.044	0.018
	(0.072)	(0.077)	(0.279)	(0.460)
Working age (%, 1984)	0.022	-0.042	-0.191	-0.010
	(0.119)	(0.126)	(0.325)	(0.580)
New stock$_{t-1}$	-0.004	-0.009	-0.002	-0.004**
	(0.005)	(0.008)	(0.004)	(0.002)
Legislation	-0.008**	-0.002	-0.034**	-0.023
	(0.003)	(0.011)	(0.016)	(0.045)
Year fixed effects	Yes	Yes	Yes	Yes
Observations	1010	360	300	350
R-Squared	0.351	0.538	0.450	0.277

Notes: Analysis of 101 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 5.8: First Stage Regressions for the Model Showing the Relationship Between Foreign-Born and Internal Migration and Private Housing Cooperative (PHC) Prices Split by Municipality Characteristics and Migration Motives

	1	2	3
	Dep Var.: Change of Respective Migrant Flow to Population Ratio ($\Delta Migrants_t/Population_{t-1}$)		
Predicted impact (from labour migration)	1.976 (1.244)		
Predicted impact (from family reunification migration)		0.935*** (0.309)	
Predicted impact (from refugee migration)			1.598* (0851.)
F-test statistic for labour instrument	19.612		
F-test statistic for fam. reun. instrument		26.330	
F-test statistic for refugee instrument			23.446
Other control variables in Table 5.4		Yes	
Year fixed effects		Yes	
Observations		1010	
R-Squared		0.350	

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 5.9: OLS Models Showing the Relationship Between Foreign-Born and Internal Migration and the Rental Market

Dependent Variable: ΔLog Rent or ΔLog Owner-Occupied Price or Δ Log Queue Time	*ΔLog Rent*	*ΔLog Owner-Occupied*	*Δ Log Queue Time*
ΔForeign-born$_t$/P$_{t-1}$	0.233**	0.853***	0.720***
	(0.095)	(0.261)	(0.214)
ΔInternal migration$_t$/P$_{t-1}$	0.133	0.677***	0.432*
	(0.155)	(0.200)	(0.263)
Log income$_{t-1}$	0.124	0.764***	2.376***
	(0.098)	(0.270)	(0.767)
Employment$_{t-1}$	0.051	0.057**	-0.138
	(0.045)	(0.025)	(0.202)
Log January temperature	0.000	-0.000	-0.095**
	(0.000)	(0.003)	(0.045)
Bachelor's degree (%, 1984)	0.015	-0.061	-0.810**
	(0.021)	(0.105)	(0.290)
Working age (%, 1984)	-0.021	0.104	0.154**
	(0.027)	(0.138)	(0.065)
New stock$_{t-1}$	0.014	0.028	0.026
	(0.014)	(0.067)	(0.052)
Legislation	-0.001	-0.059***	-0.013
	(0.002)	(0.010)	(0.022)
Year fixed effects	Yes	Yes	Yes
Observations	880	880	190
R-Squared	0.190	0.397	0.332

Notes: Analysis of 55 Swedish municipalities between 2000 and 2015 in the first two columns, and 19 Swedish municipalities between 2005 and 2015 in the last column. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 5.10: Fixed Effects & ARMA Models Showing the Relationship Between Foreign-Born and Internal Migration and the Rental Market

Dependent Variable: ΔLog Rents or ΔLog Queue Time	FE Rents	ARMA (2,2) Rents	FE Rental Queue	ARMA (2,2) Rental Queue
ΔForeign-born$_t$/Population$_{t-1}$	0.253**	0.271**	0.700***	0.677***
	(0.103)	(0.113)	(0.224)	(0.205)
ΔInternal migration$_t$/Population$_{t-1}$	0.154	0.188	0.335	0.288
	(0.166)	(0.205)	(0.297)	(0.261)
Log income$_{t-1}$	0.340	0.496*	2.458***	2.680***
	(0.276)	(0.284)	(0.803)	(0.857)
Employment$_{t-1}$	0.065	0.079	-0.199	-0.124
	(0.077)	(0.086)	(0.267)	(0.205)
Log January temperature		0.001		-0.091**
		(0.000)		(0.045)
Bachelor's degree (%, 1984)		0.017		-0.916**
		(0.022)		(0.318)
Working age (%, 1984)		-0.026		0.178**
		(0.028)		(0.073)
New stock$_{t-1}$	0.018	0.021	0.036	0.047
	(0.015)	(0.017)	(0.042)	(0.056)
Legislation	-0.005	-0.009	-0.017	-0.019
	(0.004)	(0.005)	(0.029)	(0.031)
Year fixed effects	Yes	Yes	Yes	Yes
Observations	880	880	190	190
R-Squared (overall)	0.189	ML	0.331	ML

Notes: Analysis of 55 Swedish municipalities between 2000 and 2015 in the rent columns, and analysis of 19 Swedish municipalities between 2005 and 2015 in the rental queue columns. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 5.11: First Stage Regressions for the Model Showing the Relationship Between Foreign-Born and Internal Migration and the Rental Market

	1	2
	Dep Var.: Change of Respective Migrant Flow to Population Ratio ($\Delta Migrants_t/Population_{t-1}$)	
Predicted impact (from foreign-born migration)	0.283** (0.116)	
Predicted impact (from internal migration)		0.135 (0.117)
F-test statistic for foreign-born instrument	19.967	
F-test statistic for internal instrument		16.351
Other control variables in Table 5.4	Yes	Yes
Year fixed effects	Yes	Yes
Observations	880	880
R-Squared	0.191	0.191

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 5.12: OLS Models Showing the Relationship Between Foreign-Born and Internal Migration and the Rental Market Split by Time Period

Dependent Variable: ΔLog Rents	*2000-2015*	*2000-2010*	*2011-2015*
ΔForeign-born$_t$/Population$_{t-1}$	0.233**	0.174*	0.285***
	(0.095)	(0.099)	(0.094)
ΔInternal migration$_t$/Population$_{t-1}$	0.133	0.045	0.021
	(0.155)	(0.166)	(0.075)
Log income$_{t-1}$	0.124	0.117	0.164**
	(0.098)	(0.141)	(0.067)
Employment$_{t-1}$	0.051	0.033	0.056
	(0.045)	(0.045)	(0.088)
Log January temperature	0.000	0.002	0.000
	(0.000)	(0.004)	(0.001)
Bachelor's degree (%, 1984)	0.015	0.045	0.010
	(0.021)	(0.051)	(0.025)
Working age (%, 1984)	-0.021	-0.035	-0.024
	(0.027)	(0.050)	(0.031)
New stock$_{t-1}$	0.014	0.009	0.025*
	(0.014)	(0.017)	(0.013)
Legislation	-0.001		
	(0.002)		
Year fixed effects	Yes	Yes	Yes
Observations	880	605	275
R-Squared	0.190	0.185	0.225

Notes: Analysis of 55 Swedish municipalities between 2000 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 5.13: OLS Models Showing the Relationship Between Foreign-Born and Internal Migration and the Rental Market Split by Municipality Characteristics

Dependent Variable: ΔLog Rents	*Major Cities*	*Smaller Urban*
ΔForeign-born$_t$/Population$_{t-1}$	0.216*	0.288
	(0.116)	(0.305)
ΔInternal migration$_t$/Population$_{t-1}$	0.144	0.151
	(0.123)	(0.199)
Log income$_{t-1}$	0.034	-0.067
	(0.081)	(0.098)
Employment$_{t-1}$	0.032	0.072
	(0.037)	(0.079)
Log January temperature	0.001	0.001
	(0.002)	(0.001)
Percentage with bachelor's degree (1984)	0.023	-0.081
	(0.024)	(0.071)
Percentage working age (1984)	-0.019	0.112
	(0.034)	(0.091)
New Stock$_{t-1}$	0.014	0.025
	(0.016)	(0.029)
Legislation	-0.011	-0.016
	(0.027)	(0.033)
Year fixed effects	Yes	Yes
Observations	384	400
R-Squared	0.191	0.280

Notes: Analysis of 55 Swedish municipalities between 2000 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 5.14: Fixed Effects & ARMA Models Showing the Relationship Between Foreign-Born and Internal Migration and the Rental Market Split by Municipality Characteristics

	Major Cities		Smaller Urban Areas	
Dependent Variable: Δ Log Rents	Fixed Effects	ARMA (2,2)	Fixed Effects	ARMA (2,2)
ΔForeign-born$_t$/P$_{t-1}$	0.233*	0.245*	0.357	0.389
	(0.127)	(0.133)	(0.388)	(0.405)
ΔInternal migration$_t$/P$_{t-1}$	0.056	0.133	0.078	0.153
	(0.227)	(0.154)	(0.100)	(0.183)
Log income$_{t-1}$	-0.034	-0.037	-0.057	-0.068
	(0.068)	(0.091)	(0.084)	(0.091)
Employment$_{t-1}$	-0.042	-0.055	-0.049	-0.055
	(0.063)	(0.078)	(0.088)	(0.101)
Log January temperature		0.002		0.002
		(0.002)		(0.002)
B. degree (%, 1984)		0.029		0.034
		(0.028)		(0.037)
Working age (%, 1984)		-0.007		-0.009
		(0.022)		(0.024)
New Stock$_{t-1}$	0.012	0.019	0.045	0.056
	(0.015)	(0.017)	(0.039)	(0.049)
Legislation	-0.014	-0.017	-0.015	-0.017
	(0.031)	(0.035)	(0.036)	(0.039)
Year fixed effects	Yes	Yes	Yes	Yes
Observations	384	384	400	400
R-Squared (overall)	0.181	ML	0.272	ML

Notes: Analysis of 55 Swedish municipalities between 2000 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 5.15: OLS Models Showing the Relationship Between Foreign-Born and Internal Migration and the Rental Market Split by Municipality Characteristics and Migration Motives

Dependent Variable: Δ Log Rents or Δ Log Queue Time	*Rents Overall*	*Rents Major Cities*	*Rents Smaller Urban*	*Rental Queue Overall*
ΔLabour migration$_t$/Population$_{t-1}$	0.188	1.388	0.618	0.142
	(0.511)	(1.743)	(1.344)	(1.036)
ΔFam. reun. migration$_t$/Population$_{t-1}$	0.300	0.188	0.700	1.005
	(0.508)	(0.344)	(1.390)	(1.627)
ΔRefugee migration$_t$/Population$_{t-1}$	0.246*	0.388**	0.301	0.795**
	(0.133)	(0.166)	(0.361)	(0.326)
ΔInternal migration$_t$/Population$_{t-1}$	0.087	0.131	0.181	0.459*
	(0.088)	(0.104)	(0.139)	(0.286)
Log income$_{t-1}$	-0.066	-0.114	-0.158	2.594***
	(0.040)	(0.076)	(0.071)	(0.863)
Employment$_{t-1}$	-0.041	-0.011	-0.107	-0.161
	(0.082)	(0.073)	(0.148)	(0.249)
Log January temperature	0.001	0.002	0.002	-0.107**
	(0.001)	(0.002)	(0.001)	(0.049)
Bachelor’s degree (%, 1984)	0.016	0.021	-0.073	-1.039**
	(0.022)	(0.026)	(0.073)	(0.355)
Working age (%, 1984)	-0.021	-0.010	0.123	0.178**
	(0.028)	(0.036)	(0.093)	(0.077)
New stock$_{t-1}$	0.015	0.015	0.025	0.039
	(0.014)	(0.016)	(0.029)	(0.056)
Legislation	-0.001	-0.003	-0.002	-0.014
	(0.002)	(0.003)	(0.004)	(0.025)
Year fixed effects	Yes	Yes	Yes	Yes
Observations	880	384	400	190
R-Squared	0.150	0.145	0.244	0.334

Notes: Analysis of 55 Swedish municipalities between 2000 and 2015 in the first three columns, and analysis of 19 Swedish municipalities between 2005 and 2015 in the last column. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 5.16: First Stage Regressions for the Model Showing the Relationship Between Foreign-Born and Internal Migration and the Rental Market Split by Municipality Characteristics and Migration Motives

	1	2	3
	Dep Var.: Change of Respective Migrant Flow to Population Ratio ($\Delta Migrants_t/Population_{t-1}$)		
Predicted impact (from labour migration)	0.368 (0.848)		
Predicted impact (from family reunification migration)		0.341 (0.467)	
Predicted impact (from refugee migration)			0.294* (0.156)
F-test statistic for labour instrument	21.618		
F-test statistic for fam. reun. instrument		17.120	
F-test statistic for refugee instrument			20.363
Other control variables in Table 4.6		Yes	
Year fixed effects		Yes	
Observations		880	
R-Squared		0.147	

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 7.1: OLS and IV Probit Models Showing the Relationship Between Foreign-Born and Internal Migration and Housing Availability and Queue Jumping Including House Price Variable

Dependent Variable: η HA or η Young Adults HA or η Queue Jump	*η Overall HA*		*η Young Adults HA*		*η Queue Jump*	
	OLS	IV	OLS	IV	OLS	IV
$\Delta Fb_t/P_{t-1}$	-7.586**	-7.615**	-4.041	-5.240	-3.314**	-4.626**
	(2.495)	(2.536)	(5.594)	(5.620)	(1.405)	(1.827)
$\Delta Im_t/P_{t-1}$	-16.528***	-17.033***	-5.155*	-4.837*	-3.635*	-3.830*
	(4.789)	(4.934)	(2.683)	(2.741)	(2.001)	(2.288)
Log house price$_{t-1}$	-3.274***	-3.360***	1.200	1.388	3.744***	3.846***
	(1.115)	(1.127)	(1.350)	(1.489)	(1.450)	(1.465)
Log income$_{t-1}$	-17.206***	-18.606***	-6.634***	-5.807**	2.545	-12.303**
	(3.499)	(3.990)	(2.711)	(2.752)	(2.600)	(3.748)
Employment$_{t-1}$	0.721	0.955	0.400	0.278	0.799	-0.150
	(0.520)	(1.878)	(0.514)	(0.551)	(0.616)	(0.516)
Log Jan. temp.	-0.263***	-0.264***	0.112***	0.114***	0.138***	0.068
	(0.045)	(0.044)	(0.041)	(0.042)	(0.039)	(0.055)
B. degree	-10.447***	-10.560***	-2.887*	-3.058*	-2.221	-2.733**
	(1.850)	(1.884)	(1.540)	(1.600)	(1.630)	(1.369)
Working age	-23.305***	-22.641***	-0.612	-1.102	1.201	-2.600***
	(2.441)	(2.927)	(1.920)	(4.334)	(1.955)	(1.357)
Legislation	-2.106***	-2.744***	-0.994***	-0.915**	-1.230***	-1.844***
	(0.127)	(0.205)	(0.123)	(0.400)	(0.122)	(0.136)
F-stat (f-b. inst)		27.762		19.501		17.390
F-stat (i.m. inst)		29.646		22.462		16.729
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3124	3124	3124	3124	3124	3124
Pseudo R^2	0.228	N/A	0.042	N/A	0.050	N/A

Notes: Analysis of 284 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient. HA = Housing Availability.

Appendix 7.2: Robustness Tests for Lags in Construction Model (OLS)

Dependent Variable: η New Stock	No lag	1 year lag	2 year lag	3 year lag	4 year lag	5 year lag
Perc. of HA $_{t-1}$	8.381*	9.541***	7.974**	5.945*	6.631	7.683
	(4.915)	(3.781)	(3.800)	(3.961)	(7.009)	(8.012)
Perc. of YHA $_{t-1}$	14.134	12.615***	11.506*	7.207	7.102	10.047
	(9.430)	(4.341)	(6.377)	(9.151)	(8.566)	(11.936)
Perc. of RHA $_{t-1}$	13.341**	16.251***	17.345*	12.543	13.601	14.783
	(6.147)	(4.707)	(7.281)	(9.846)	(10.180)	(11.762)
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Year f. effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3124	3124	3124	3124	3124	3124
R-Squared	0.841	0.846	0.833	0.827	0.814	0.771

Notes: Analysis of 284 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient. HA = Housing Availability, YHA = Young Adults Housing Availability, RHA = Refugee Housing Availability.

Appendix 7.3: OLS Probit Models Showing the Relationship Between Foreign-Born and Internal Migration and Housing Availability

Dependent Variable: η HA or η Young Adults HA or η Queue Jump	*η Overall HA*	*η Young Adults HA*	*η Queue Jump*
ΔForeign-born$_t$/Population$_{t-1}$	-7.824**	-6.664*	-3.094**
	(2.509)	(3.894)	(1.351)
ΔInternal migration$_t$/Population$_{t-1}$	-16.726***	-4.897*	-3.355*
	(4.499)	(2.590)	(1.907)
Log income$_{t-1}$	-17.522***	-6.363**	2.195
	(3.295)	(2.645)	(2.501)
Employment$_{t-1}$	0.492	0.242	0.729
	(0.404)	(0.467)	(0.493)
Log January temperature	-0.245***	0.104***	0.134***
	(0.042)	(0.038)	(0.038)
Bachelor's degree (%, 1984)	-9.200***	-2.638*	-1.880
	(1.630)	(1.417)	(1.420)
Working age (%, 1984)	-22.906***	-0.327	0.913
	(2.390)	(2.006)	(2.030)
Legislation	-2.100***	-0.951***	-1.166***
	(0.127)	(0.118)	(0.119)
Year fixed effects	Yes	Yes	Yes
Observations	3124	3124	3124
Pseudo R^2	0.226	0.041	0.050

Notes: Analysis of 284 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient. HA = Housing Availability.

Appendix 7.4: First Stage Regressions for the Model Showing the Relationship Between Foreign-Born and Internal Migration and Housing Availability

	1	2
	Dep Var.: Change of Respective Migrant Flow to Population Ratio ($\Delta Migrants_t/Population_{t-1}$)	
Predicted impact (from foreign-born migration)	-6.307*** (1.949)	
Predicted impact (from internal migration)		-13.606*** (3.628)
F-test statistic for foreign-born instrument	26.762	
F-test statistic for internal migration instrument		29.646
Other control variables in Table 7.2	Yes	
Year fixed effects	Yes	
Observations	3124	
R-Squared	0.233	

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.

Appendix 7.5: OLS Probit Models Showing the Relationship Between Foreign-Born and Internal Migration and Housing Availability Split by Municipality Characteristics

	Major Cities			***Smaller Urban Areas***			***Rural Areas***		
Dependent Variable: η HA or η Young Adults HA or η Queue Jump	*η Overall HA*	*η Young Adults HA*	*η Queue Jump*	*η Overall HA*	*η Young Adults HA*	*η Queue Jump*	*η Overall HA*	*η Young Adults HA*	*η Queue Jump*
ΔForeign-born$_t$/P$_{t-1}$	-4.483	-7.884	-12.661**	-5.094	-15.384*	2.437	-10.588**	-12.451	-4.463**
	(5.905)	(10.128)	(5.399)	(10.501)	(9.806)	(14.892)	(4.856)	(14.099)	(2.055)
ΔInternal migration$_t$/P$_{t-1}$	-5.351	-3.242	-2.904	-22.194**	-10.834**	-14.406*	-13.307**	4.805	-5.560***
	(6.899)	(15.800)	(5.891)	(10.193)	(3.546)	(8.899)	(5.673)	(3.979)	(2.241)
Log income$_{t-1}$	3.077	-8.999	5.158	-32.309***	-32.935***	-9.135	-17.021***	-1.715	-2.079
	(3.475)	(10.942)	(11.135)	(12.402)	(11.428)	(8.308)	(3.849)	(2.902)	(2.918)
Employment$_{t-1}$	0.499	0.748	-0.690	-1.316	-0.809	-1.451	-2.306	-3.937	2.253
	(0.650)	(0.568)	(0.622)	(1.535)	(1.458)	(1.487)	(2.609)	(2.431)	(2.429)
Log January temperature	0.376	-0.468	0.062	-0.573***	0.134	0.017	-0.123***	0.144***	-0.131***
	(0.316)	(0.266)	(0.271)	(0.152)	(0.136)	(0.136)	(0.048)	(0.043)	(0.043)
Bachelor's degree	2.688	-2.074	2.631	4.489	-11.235*	15.445**	-21.984***	-3.548	-10.630**
	(2.276)	(2.063)	(2.038)	(7.165)	(6.716)	(6.793)	(4.628)	(4.253)	(4.292)
Working age	-5.773	-1.608	6.991*	-27.533***	-12.186	-13.762*	-22.927***	9.714***	-5.073
	(4.532)	(3.883)	(3.963)	(9.052)	(8.311)	(8.302)	(3.901)	(3.414)	(3.450)
Legislation	-1.139***	-1.215***	-1.103***	-2.740***	-0.810***	-1.012***	-2.269***	-0.914***	-1.238***
	(0.331)	(0.301)	(0.298)	(0.475)	(0.316)	(0.316)	(0.155)	(0.149)	(0.152)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	473	473	473	473	473	473	2178	2178	2178
Pseudo R^2	0.081	0.072	0.081	0.228	0.179	0.107	0.208	0.092	0.161

Notes: Analysis of 284 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient. HA = Housing Availability.

Appendix 7.6: OLS Probit Models Showing the Relationship Between Foreign-Born and Internal Migration and Housing Availability Split by Municipality Characteristics and Migration Motives

	Overall			***Major Cities***			***Smaller Urban Areas***			***Rural Areas***		
Dependent Variable: η HA or η Young Adults HA or η Queue Jump	*η Overall HA*	*η Young Adults HA*	*η Queue Jump*	*η Overall HA*	*η Young Adults HA*	*η Queue Jump*	*η Overall HA*	*η Young Adults HA*	*η Queue Jump*	*η Overall HA*	*η Young Adults HA*	*η Queue Jump*
ΔRef. $m._t/P_{t-1}$	-20.489**	-5.096	-3.398**	-43.588	-33.559	-33.218*	-20.561	-22.456*	-12.906	-14.609**	-15.606*	-3.427**
	(9.356)	(7.884)	(1.569)	(50.671)	(37.728)	(18.509)	(47.884)	(11.847)	(8.566)	(5.783)	(8.714)	(1.606)
ΔOth. fb.m./P_{t-1}	-10.476***	-12.405**	-1.874***	-10.587	-14.335	-31.794*	-5.540	-7.090**	15.836	-13.398***	-24.054	-4.480**
	(3.118)	(5.603)	(0.636)	(7.834)	(10.388)	(16.881)	(4.781)	(2.913)	(12.587)	(5.506)	(19.404)	(1.509)
$\Delta Im_t/P_{t-1}$	-13.573***	-3.851**	-4.616**	-3.365	-3.604	-7.402	-22.784**	-13.582**	-19.547**	-14.532***	-5.295	-7.368**
	(5.671)	(1.736)	(2.055)	(15.652)	(7.486)	(14.682)	(9.243)	(5.956)	(8.578)	(4.038)	(5.935)	(3.376)
Log $income_{t-1}$	-17.016***	-6.247**	-5.255**	13.138	-9.296	-4.905	-26.885**	-33.813***	-9.996	-16.770***	-1.564	-2.071
	(3.297)	(2.645)	(2.502)	(12.478)	(10.965)	(11.217)	(11.820)	(11.491)	(8.460)	(3.850)	(2.902)	(2.920)
$Employment_{t-1}$	0.851	0.233	-0.724	0.468	0.761	-0.613	-1.024	-0.700	-1.325	-2.338	-3.984	2.251
	(0.548)	(0.467)	(0.493)	(0.649)	(0.568)	(0.620)	(2.027)	(1.465)	(1.494)	(2.613)	(2.432)	(2.429)
Log Jan. temp	-0.238***	0.110***	-0.137***	0.383	-0.467*	0.072	-0.445***	0.116	-0.009	-0.133***	0.154***	-0.131***
	(0.041)	(0.038)	(0.039)	(0.317)	(0.266)	(0.272)	(0.141)	(0.138)	(0.138)	(0.046)	(0.043)	(0.044)
B. degree	-10.318***	-2.497*	1.803	2.761	-2.199	2.068	2.416	-12.507*	-13.934**	-21.895***	-3.530	-10.631**
	(1.550)	(1.423)	(1.426)	(2.251)	(2.072)	(2.051)	(6.171)	(6.865)	(6.906)	(4.634)	(4.254)	(4.292)
Working age	-22.071***	-0.071	-1.056	-5.594	-2.013	6.276	-25.007***	-12.159	-13.708*	-22.537***	10.030***	5.089
	(2.241)	(2.022)	(2.047)	(3.938)	(3.919)	(4.024)	(8.309)	(8.319)	(8.318)	(3.907)	(3.420)	(3.455)
Legislation	-2.265***	-0.915***	-1.186***	-1.035***	-1.254***	-1.281***	-3.176***	-0.901***	-1.137***	-2.369***	-0.826***	-1.234***
	(0.155)	(0.123)	(0.125)	(0.379)	(0.306)	(0.308)	(0.567)	(0.330)	(0.333)	(0.267)	(0.157)	(0.160)
Year f. effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	3124	3124	3124	473	473	473	473	473	473	2178	2178	2178
Pseudo R^2	0.228	0.041	0.050	0.084	0.073	0.092	0.237	0.180	0.109	0.209	0.043	0.061

Notes: Analysis of 284 Swedish municipalities between 2005 and 2015. * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient. HA = Housing Availability.

Appendix 7.7: First Stage Regressions for the Model Showing the Relationship Between Foreign-Born and Internal Migration and Housing Availability Split by Municipality Characteristics and Migration Motives

	1	2
	Dep Var.: Change of Respective Migrant Flow to Population Ratio ($\Delta Migrants_t/Population_{t-1}$)	
Predicted impact (from refugee migration)	-26.306** (11.979)	
Predicted impact (from other foreign-born migration)		-11.341*** (3.355)
F-test statistic for refugee instrument	25.637	
F-test statistic for other foreign-born instrument		27.947
Other control variables in Table 4.6	Yes	
Year fixed effects	Yes	
Observations	3124	
R-Squared	0.234	

Notes: * denotes significance at the 10% level, ** denotes significance at the 5% level, *** denotes significance at the 1% level. White-Huber robust standard errors in brackets below each coefficient.